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St Catherine's Oratory 21 Aug 2017
Himalayan Balsam *(Impatiens glandulifera)* Alverstone 2017

All photos by Mike Cotterill

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EDITORIAL

This is the fourth issue of the Proceedings in an A4 format, and I am pleased to report that due to innovations in printing, it is now possible to have coloured pictures, at no extra cost, on every page! Authors are thus encouraged to submit colour pictures to enhance their text, and to incorporate illustrations within articles, as it is no longer necessary, for the sake of economy, to group pictures at the end.

In line with other counties, the title of our Proceedings is 'Wight Studies'; an important resource as we have published for almost a hundred years and copies are deposited in key reference libraries. In recent years the Proceedings has been restricted to natural history, archaeology and related historical articles. For this issue I was pleased to receive three historical articles relating to the Isle of Wight from John Matthews. These articles are included because they are interesting and the Island does not have alternative academic style publications. It has perhaps been a pity, when such articles relating to the Island, have been published in mainland journals that are more difficult to access.

I am very grateful and indebted to David Biggs, Sheila Caws, Rosemary Cooper, Anne Marston and Colin Pope who have proof read articles. The responsibility for errors of course remains mine. One innovation this year is that the production timetable has been brought forward by a week and two copies circulated at the production stage to hopefully further guard against errors in layout and collation.

Paul Bingham
(Managing Editor)

ROMANESQUE WIGHT: THREE CASE STUDIES

John Margham

Abstract

Case studies of three churches on the Isle of Wight are presented: Shalfleet, Yaverland, and Whippingham. These are based on recording for the Corpus of Romanesque Sculpture in Britain and Ireland undertaken by the author. The architectural and documentary history for each church is summarised before a more detailed account of the Romanesque architectural sculpture is given. Prominence is given to the tympanum at Shalfleet, the chancel arch at Yaverland, and the reuse of sculpture in the Victorian rebuilding at Whippingham. Parallels are provided for the Shalfleet tympanum and the Yaverland chancel arch.

Introduction

The Corpus of Romanesque Sculpture in Britain and Ireland (CRSBI) aims to catalogue all Romanesque sculpture within the British Isles. Fieldwork is undertaken by volunteers and oversight is provided by academic experts. After editing, surveys are published on the internet. The present author has completed the CRSBI recording for the Isle of Wight. This consisted of twenty sites, eighteen of which are parish churches, with the addition of Carisbrooke Castle and Swainston Manor.[1]

The following provides an account of the evidence for Romanesque fabric and architectural sculpture for three churches on the Isle of Wight that originated in or before the Norman period. It is largely beyond the remit of CRSBI to place individual churches in their landscape context and to examine the development of local parish churches through time. A more comprehensive account of each church would include this wider context but the present study is concerned primarily with Romanesque architectural sculpture.

Three case studies are presented, providing examples of the recording of Isle of Wight churches. Shalfleet has a tympanum above the north doorway with iconography which invites comparison with other examples in southern England. Yaverland has a particularly elaborate chancel arch despite the small scale of the church. Whippingham church was completely rebuilt in the mid-nineteenth century, but this rebuilding involved the repositioning of various sculpted stones, along with a Latin inscription. These three churches will be examined in turn, with an overview of each church's architecture, an outline of its early history, and a more detailed consideration of physical evidence from the Romanesque period.[2]

Shalfleet

Shalfleet church consists of a substantial western tower, nave, south aisle, north and south porches, and the chancel. The massive tower is slightly wider than the nave (Fig. 1). The main entrance to the church is through the north porch and the doorway with a tympanum above. The lower parts of the north wall of the nave would appear to be contemporary with this doorway, with much of the wall being rebuilt in 1812. The south arcade of the nave of four bays was constructed in the mid- to late-thirteenth century and the chancel rebuilt at about this time. The north porch was constructed in 1754 (Lloyd and Pevsner 2006, 259-261).

There was a church at *Seldeflet* in 1086, with the manor having been assessed at six hides in 1066 (Williams and Erskine 1989, 53v). The possibility of a much earlier origin of the church was raised by the excavation in 2005 of eight inhumations at the site of the former vicarage, to the east of the church. Radiocarbon dating suggests a late seventh or early eighth century date for these presumably Christian inhumations (West Wight Landscape Partnership). An Anglo-Saxon charter purporting to date from 838 granting 40 *cassati* [hides] in *Scealdanfleote* by king Ecgbert to the bishopric of Winchester may be of significance here (Sawyer 1968 S281; Finberg 1964, no.15), with the church of Winchester possibly providing a church for this substantial estate.

The Romanesque features at Shalfleet are the north doorway to the nave and the tower. The north doorway is constructed of an orange-coloured sedimentary stone which is not found on the Isle of Wight. The importation of the stone from Normandy is a possibility, as is the covering of the stonework with ochre (personal communication, David Tomalin) The doorway is of three orders.[3] The first (inner) order is plain up to the level of the chamfered imposts. The shafts of the second (middle) order stand on slightly convex bases which are rounded in plan. These in turn stand on square plinths. The bases and plinths of the third (outer) order are completely obscured by the side benches of the porch. The capitals of three of the four shafts are identical, having a scallop-type form. The fourth capital is basically of a similar form to the others but not identical.

A semi-circular tympanum rests on the innermost sections of these imposts (Fig. 2). The tympanum depicts two lion-

like creatures facing a central figure. The creatures have luxuriantly floriated tails. The creature on the left is looking at the figure whilst the one on the right looks outwards. The central robed and moustached figure faces outwards with his arms extended and his hands resting on the creatures' heads.

The creatures depicted on the tympanum can be seen as lions, their forms being very similar to that of St Mark's lion in Anglo-Saxon and Irish gospel books, for example the Echternach and Trier gospels, and to that of lions in medieval bestiaries (Henderson 1987, 75, 91; Barber 1992, 21-2). The interpretation of this scene has been problematic. Percy Stone in his *Architectural Antiquities of the Isle of Wight* commented that:

> The carving on this tympanum has given rise to a certain amount of controversy, some alleging it to be Adam naming the animals in the Garden of Eden; others Daniel and the Lion and the Bear, etc. The former is perhaps the more probable, but the figure is *clothed*, and the beasts are *both* lions of the conventional type; the latter is untenable from every point, and in my opinion the whole is but an ordinary Romanesque arrangement which, if it represents anything at all, may have for its subject the story of Daniel in the Lion's Den (Stone 1891, 52-3).

Keyser, in his corpus of Norman tympana and lintels, was more emphatic than Stone, seeing at Shalfleet the only definite depiction of Daniel in the lion's den on a tympanum (Keyser 1927, lii-liii). The present author has added to the speculation by suggesting that as the medieval dedication of Shalfleet church is lost, it is possible that the central figure depicted on the tympanum is St Mark and that this was the medieval church dedication (Margham 1997, 95). Contrary to Stone's implied comment that the tympanum may not represent anything significant, Rita Wood has argued that:

> In post-Conquest England, the subject of a tympanum cannot have been left to chance … the church authorities would have wanted a visual aid with a strong orthodox message in this position [over the entrance] … the church, in the fervour of the reform that followed the Norman Conquest, demanded basic teaching materials at all churches, even the poorest and smallest (Wood 1998, 3-4).

A strong case can be made for the iconography of the Shalfleet tympanum as a representation of the Trinity. Rita Wood has argued that the depiction of the two lions on the tympanum at Milborne Port, Somerset, represents God the Father and God the Holy Spirit, with a representation of God the Son having been elsewhere in the building (Wood 1998, 9-10; Fig. 3). At Shalfleet the two lions are present with the addition of the third figure. This can be seen as showing Christ between God the Father and God the Holy Spirit (Wood 2017, 60-3).

The iconography of the Shalfleet tympanum invites comparison with those at Down St Mary, Devon, and Charney Bassett, Berkshire (Keyser 1927 figs. 71, 72; Figs. 4 & 5). Keyser pointed out that (in his opinion), in addition to Shalfleet being the only definite example of Daniel in the lion's den on a tympanum, Down St Mary is another possibility (Keyser 1927, lii). However, the similarity between Shalfleet and Down St Mary may very well be because this is a further instance of a depiction of the Trinity consisting of a central figure between two lions:

> The two lions at Down St Mary and Shalfleet are greeting the man, jumping up like excited dogs, although they are at the same time the exalted symbols that elsewhere picture God (Wood 2017, 62).

These two tympana '… show Christ's return to heaven in the manner of a homecoming traveller being greeted by boisterous hounds' (*ibid.*). At Charney Bassett there is a third instance of a central figure between two quadrupeds, but here the creatures are griffins, rather than lions. The combination of the characteristics of the lion and the eagle depicted in the griffin would be appropriate as representations of God. The intertwining of the beaks and arms are consistent with a reunion, so a further example of Christ's homecoming can be seen at Charney Bassett (*ibid.*).

The western tower at Shalfleet is square in plan, but with the four corners being accentuated by shallow clasping buttresses which rise to the full height of the tower, leaving much of the walling of the tower slightly recessed. The north-western corner of the tower contains an original spiral staircase which is lit by two small round-headed windows below the string course and a single window of similar proportions but square-headed above. The single string course of double billet runs round the whole of the tower except for the recessed eastern face above the nave. With no trace of a former external doorway, the tower may have had a defensive function, perhaps explained by its position just to the south of the tidal limit of Shalfleet Lake which enters the Solent at Newtown Bay.

Yaverland

Yaverland church originally consisted of a nave and chancel dating from the twelfth century, connected by the elaborately carved chancel arch (Fig. 6). The church was restored in 1887-89 by Ewan Christian who added the western bell turret and the south porch, which now protects the Romanesque south doorway of the nave (Lloyd and Pevsner 2006, 310-2). The Romanesque features are the south doorway and the chancel arch.

Hockey says that the church was founded by the de Aula family, that is before the daughter and heiress of Sir Thomas de Aula married William Russell in the later thirteenth century (Hockey 1982, 4). The earliest references to a member of the de Aula family on the Isle of Wight is Warin de Aula who consented to the foundation of St Cross priory in Carisbrooke parish between 1141 and 1146 and his mention in the foundation charter of Quarr Abbey, between 1132 and 1135, which was amended between 1141 and 1143 (Bearman 1994, 70; Hockey 1991, no. 1). Yaverland was a daughter church of Brading. Hockey records that the dead of Yaverland were buried at Brading until the time of Edward III (Hockey 1982, 4). This was a journey of great inconvenience, especially in the winter (Long 1888, 182). A pension was still paid to the mother church of Brading in the later eighteenth century (Worsley 1781, 201).

The south doorway consists of two orders, an inner order being continuous up to the level of the imposts with a carved tympanum above (Fig. 7). The square-head of the south doorway cutting through the tympanum is unlikely to have been an original feature though it certainly had this form in 1832 when the church and manor house were depicted in a Brannon engraving. The height of the doorway opening to the lower surface of the tympanum from the present ground level is only 1.86 m. The outer order is defined by single nook shafts with a broad hood-moulding above. The imposts of both orders are chamfered. The tympanum is decorated with diaper ornament and small rosettes. These rosettes can be seen as stars: 'Tympana with various individual star motifs … can be understood as depicting heaven…' (Wood 2001, 5, 12-14). An angle roll separates the tympanum from the broad hood-moulding. The inner part of the hood-moulding consists of beaker clasp. The outer part of the hood-moulding has a single band of face chevron. Both capitals are quite worn but are not identical. The western capital is dominated by an upright acanthus whereas the eastern has more of the form of a scallop capital.

Two of the watercolours by Sir John Gardner Wilkinson produced in the 1840s show the south doorway before the construction of the porch (Figs. 6 and 7). These do not depict the sculpted head which is now set above the doorway. In 1969 Derek Renn referred to 'the loose carved idol at Yaverland' which is presumably this head, now reset (Renn 1969, 269). The head is probably Romanesque (personal communication, Ron Baxter).

The chancel arch has been partially restored (Fig. 8). It consists of two orders. A first (inner) order is plain except for the imposts which have a hollow chamfer and the chamfered plinths. The second (outer) order is defined by decorated nook-shafts and an angle-roll between the first order and the elaborately-carved hood-moulding. The nook-shaft is decorated with chevrons which run down the north shaft but round the south. The mouldings alternate the usual convex form with a concave version as a means of varying the surface. The capitals of these shafts are of identical form being trefoil scallop capitals. The inner section of the hood-moulding of the arch is decorated face chevron with a pellet attached to each point. The outer section of the hood-moulding is damaged on the lower segments each side of the arch. The remaining central segment has an outermost plain band defined by a quirk. Inside this there is a narrow band of point-to-point chevron. The eastern face of the chancel arch is devoid of any ornament, with the adorned western face designed to be seen by the congregation in the nave.

The cutting back of the hood-moulding of the chancel arch would appear to be related to the construction of a rood loft after the original construction date but before the Reformation. Steps rise up from the chancel through the wall immediately to the north of the chancel arch which would have given access to the rood loft.

The proximity of the church to Yaverland manor house would indicate that it originated as a manorial chapel. This observation is accentuated through reference to the unpublished Ordnance Survey six-inch map completed in 1793-94 which shows the church within the bounds of the manorial enclosure. The outline of this enclosure became less obvious after the re-routing of the road approaching the manor from the south in the nineteenth century. A date of construction for the church can be suggested through reference to the chancel arch. The chevron and pellet ornament of the chancel arch has a strong parallel with that of the western doorway of the Augustinian priory church of St Mary's within Portchester castle. The now blocked archway in the west wall of the north transept of Portchester church provides an even closer parallel (Fig. 9). The construction of St Mary's can be dated reasonably confidently between its date of foundation in 1133 and the relocation of the priory to Southwick c. 1144-53 (Pevsner and Lloyd 1967, 382). A similar date can therefore be suggested for the construction of Yaverland church, quite plausibly by Warin de Aula, in the 1140s.

Whippingham

Whippingham church was entirely rebuilt between 1854 and 1862, replacing a structure which had been modified by John Nash in 1804-6, but which was essentially a medieval building (Lloyd and Pevsner 2006, 293). This church was illustrated by Tomkins in 1794 (reproduced in Cox 1911, 157; Fig. 10). This view of the church from the south shows a nave with a blocked-up round-headed arch to the left of the porch and a rectangular three-light window under a drip moulding below a small gable to the right; a long chancel lit by a triangular-headed window and with what appears to be a lancet window, the chancel being accessed by a square-headed doorway; an un-buttressed western tower with a saddle-back roof; and a gabled south porch.

Domesday Book does not record the presence of a church at Whippingham despite it being one of the Isle of Wight churches given by William fitzOsbern between 1067 and 1071 to his abbey of Lyre in Normandy (Hockey 1981, no. 4). Whippingham had been the centre of a substantial Anglo-Saxon estate of twenty-two hides, apparently granted by King Cuthred of Wessex to the church of Winchester 740x756, although the charter is now lost (Finberg 1964, no. 4). This estate had become fragmented by 1066.

The three remaining items of Romanesque architectural sculpture at Whippingham church are all built into the external walls of the Victorian south porch. A lintel built into the outside of the west wall depicts two mounted figures wearing pointed headgear facing a central tree (Keyser 1927, xii; Margham 2014, fig, 8; Fig. 11). The lintel is an irregular trapezium with the left side taller than the right. The tree and the mounted figures are within a recessed rectangle. Behind and above the figures are rhomboids, one in each of the upper corners of the rectangle. The lintel would appear to have formed the lower part of a tympanum. This arrangement can be seen in the reset doorway at Binstead, where the lintel is of similar proportions but is not decorated. An early Norman date can be suggested for the Whippingham lintel (Margham 2014, 10-11, fig. 8).

In the outside of the east wall of the porch there are two short lengths of Romanesque moulding, one of triple billet and one of chevron. Both of these mouldings may have formed part of the twelfth century chancel arch as the billet is slightly curved and the chevron block is tapered, suggesting a voussoir.[5] Tomkins' view of the medieval church from the south in 1794 shows no external billet string course (as at Shalfleet), adding weight to the argument that this piece was used internally. In addition to the lintel, an inscription is also built into the west wall of the porch (Fig. 12). It is an incomplete Latin text with a mixture of upper and lower case letters. It has been read as INAT:D:V[S] which can be expanded to -*i natus deus* A possible context for this inscription is of a text describing a scene, possibly a nativity, complementing an adjoining, now lost, stone. The inscription is unlikely to post-date 1250 AD. The nature of the serifs incline opinion towards a post-Conquest date (personal communication, Elisabeth Okasha).

Three other pieces of sculptural stonework built into the fabric of the church have recently been identified. These have been confirmed as being Anglo-Saxon stone sculpture (personal communication, Dr Derek Craig).

Despite the complete demolition of the church in the mid-nineteenth century, pre-existing architectural sculpture was of importance to the Victorian builders. The six pieces itemised above were not just used as rubble during the reconstruction, but were placed with care. Two of the pieces of Anglo-Saxon stone sculpture were cut down into identical sized blocks and built into the eastern end of the aisles, centrally below each aisle window. The third item of Anglo-Saxon sculpture was set centrally in the gable end of the porch. Likewise, the Romanesque lintel, the inscription and the two lengths of architectural sculpture were built into the external walls of the porch where they could be seen.

Conclusions

Taking into account the physical evidence for churches of the Norman period, the following conclusions can be drawn. Firstly, it is important to look closely at architectural sculpture to understand the development of a church. The CRSBI recording process provides this discipline through detailed observation and recording. Secondly, architectural sculpture cannot be studied in isolation. Observations can inform the dating of churches through comparison with other buildings. The ornament of the chancel arch at Yaverland suggests a date of construction through comparison with the Priory Church within Portchester Castle. Thirdly, the recording of church fabric is built on earlier studies. The CRSBI recording for the Isle of Wight was informed by earlier accounts of the architecture of the Island. The most prominent of these were Percy Stone's *Architectural Antiquities of the Isle of* Wight, Derek Renn's *Some Early Island Churches*, and Lloyd and Pevsner's *Buildings of England: The Isle of Wight*. Lastly, interpretation of features encountered during CRSBI recording on the Island has benefitted from the expertise of others, for example the Shalfleet tympanum and the Whippingham inscription.

Acknowledgements

I am grateful to Rita Wood who encouraged me to undertake the CRSBI recording for the Isle of Wight and to Ron Baxter of CRSBI for his support in answering my various queries during this work. Various ministers and churchwardens, English Heritage, and the owner of Swainston Manor have given me permission to conduct surveys and to publish my work on the CRSBI web-site. Thanks are due to Jenny Anscomb for providing access to Yaverland church. I would also like to thank David Tomalin for pointing out to me the inscription and Anglo-Saxon sculpture at Whippingham, Derek Craig of the Corpus of Anglo-Saxon Stone Sculpture for confirming the identification of the Anglo-Saxon sculpture, and Elizabeth Okasha for providing a report on the inscription. Rita Wood provided me with information about Shalfleet and analogous tympana in advance of the publication of her book on Paradise in Romanesque sculpture. Vicky Basford, Alan Phillips and Rita Wood kindly commented on drafts of the text. I am grateful to Chris Rowlin, National Trust Rights Manager, for permission to reproduce the two illustrations of Yaverland church by Sir John Gardner Wilkinson.

End Notes

[1]Romanesque in England is generally taken to have developed at about the time of the Norman Conquest and at parish church level to have continued to c.1200 with the development of Gothic architecture. The web-site of CRSBI can be consulted at http://www.crsbi.ac.uk/

[2] Readers are referred to the CRSBI web-site for full architectural descriptions. Those presented here are summaries.

[3] An order is one of a series of recessed arches and supports around a doorway, chancel arch or other opening.

[4] 'The gryphon is at once feathered and four-footed. It lives in the south and in mountains. The hinder part of its body is like a lion; its wings and face are like an eagle …' (Barber 1992, 39), translation of a 13th century Bestiary. Various suggestions have been made regarding the iconography of the Charney Bassett tympanum, including Christ ascending to heaven borne up by two winged beasts (anon. no date). Caverswall, Staffordshire has an incomplete tympanum depicting griffins facing a central figure.

[5] A voussoir is a single stone forming part of an arch which is wedge-shaped on its face.

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Fig 1. Shalfleet church from the south-west

Fig 2. Shalfleet tympanum

Fig 3. Milborne Port tympanum

Fig 4. Down St Mary lintel

Fig 5. Charney Bassett tympanum

Fig 6. Yaverland church and manor house in the 1840s

Fig 7. Yaverland south doorway in the 1840s

Fig 8. Yaverland chancel arch

Fig 9. Portchester north transept eastern arch detail

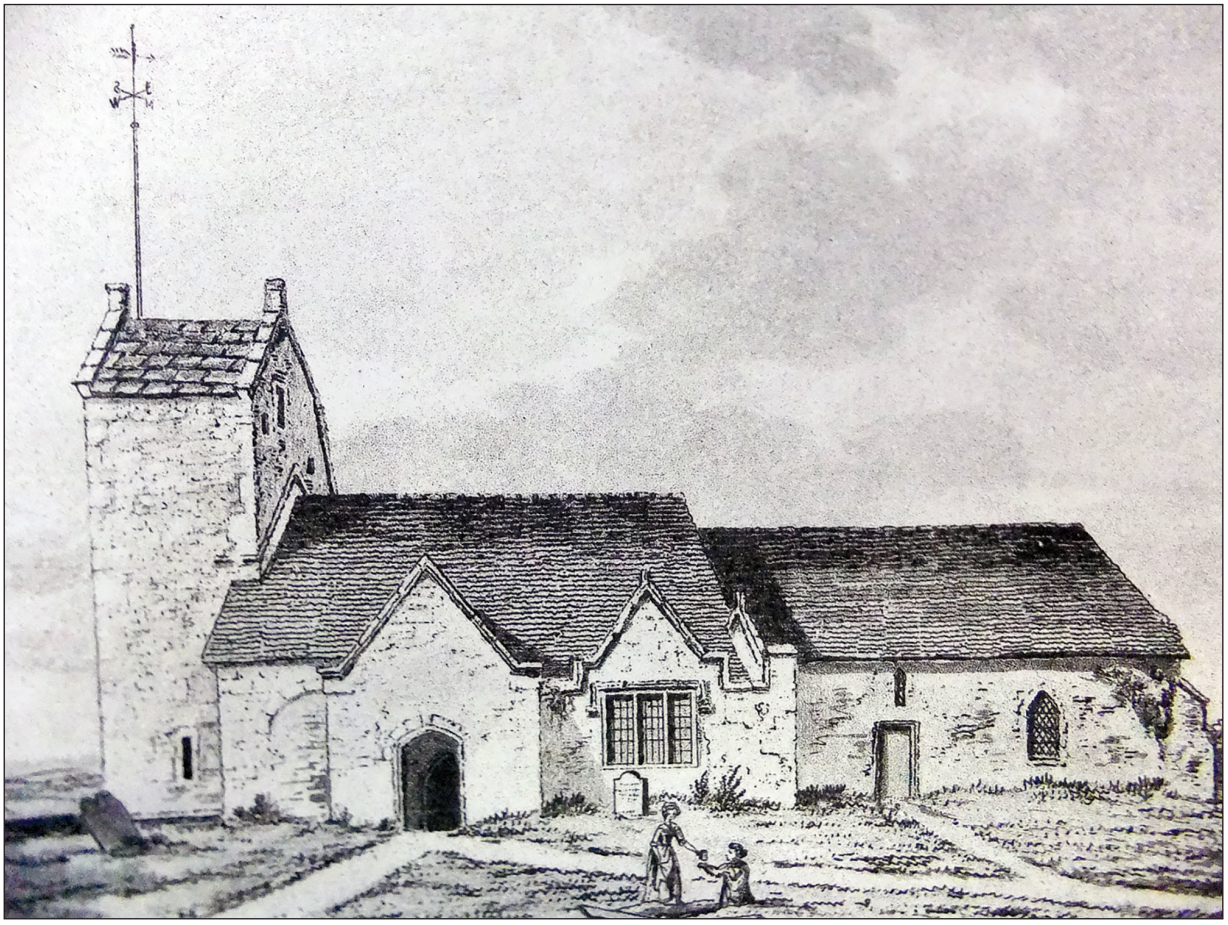

Fig 10. Whippingham old church

Fig 11. Whippingham lintel

Fig 12. Whippingham porch west wall inscription

INVESTIGATIONS IN THE ABANDONED MEDIEVAL TOWN, PORT AND LIBERTY OF NEWTOWN, ISLE OF WIGHT: PART 2, EXCAVATIONS WITHIN THREE BURGAGE PLOTS AT KEY CLOSE.

David Tomalin

Abstract

Three contiguous medieval burgage plots were investigated within the former borough and port of Newtown. A disturbed medieval oyster midden contained sherds of local coarse wares and an import from Saintonge. A Tudor/Stuart oyster midden contained fragments of English white wares (Tudor green glaze) and London/Hampshire red wares. Continental imports included Delft, Rhenish stonewares and a minor presence of Iberian oil jars. Comparative samples of oyster shells hint at decline in size/quality after medieval times. The presence of a perforated Scandinavian schist hone and a fragment of a Bembridge Limestone mortar are noted.

Newtown's co-axial street plan is compared with those of Wight's medieval borough ports of Yarmouth and Newport. The comparative prosperity of their three hinterlands is considered. The report concludes that prior to a disastrous French raid in 1377, Newtown was already failing in its development. Other failed new town ports on the English Channel coast at Melcombe Regis, Newton, Beaulieu, Wardour and Winchelsea are cited. Early failure at Newtown is intimated by a lack of surfacing in its High Street, an absence of a robust quay or wharf, a scarcity of imported pottery and an apparent dearth of human activity in the vicinity of the waterfront. Such failure is attributed to the town's geographical position and local competition from Newport and Yarmouth.

The site

This investigation concerns three adjoining burgage plots within the former medieval town and port of Newtown, on the northwestern coast of the Isle of Wight (fig. 1 & plates A & B). Plot 1 (tithe plot 710) comprised a cottage and garden where a replacement building together with a new sewage treatment unit and drain had been approved in planning application TCP 29782/A. The former cottage on this plot has been described in part 1 of this report. A further report is contained in a desktop archaeological assessment lodged with the Isle of Wight Council (Directorate for Economic Development and Planning). The primary record number in the Isle of Wight Historic and Environmental Record was PRN 8111.

Plot 2 (tithe plot 688) was an undeveloped field separated from plot 1 by an irregular hedge that once marked the boundary of another burgage plot of the medieval town (702). Here, a ground-source heating system was laid in an area measuring 24m x 15m. This site is centred at SZ 4215 9065. The cottage was centred at SZ 42144 90664.

Excavation strategy and methodology

Archaeological works were focussed on monitored trench-cutting, controlled stripping and hand investigation and recording within the development footprint. An area of 941m² was machine stripped for archaeological purposes over pasture zoned for the installation of the new ground-source heating system. A small area of just 5m² was also machine-cut in a service trench designed to relay electrical services across the medieval street. For simplicity, these three excavations are numbered 1, 2 & 3 in fig. 1 where Area 1 straddles two burgage plots (parcels 339 & the northern portion of parcel 341). Area 2 transects the larger waterside portion of land parcel 341 (otherwise known as 'Key Close') and Area 3 bisects the medieval High Street.

Area 1, contexts 110–195

The upper ground-source heating zone was machine-stripped over a surface east of the old cottage and extended down-slope into adjoining burgage/tithe plot 688. Figured in this text, this area is divided by a hedge and ditch boundary into an east burgage and a west burgage plot (figs 1, 2, 9 & 10). These are tithe plots 706 and 688 on John Dennett's map of 1840 where the eastern plot is combined with the large southern field bordering the sea inlet known variously as Newtown Creek or Causeway Lake. By 1864, these plots had become OS land parcels 341 and 339. The excavated area was 400m².

Area 2, contexts 41–460

Lower ground-source heating zone set in the southern portion of OS land parcel 341 (tithe plot 706). Four lanes (A-D) aligned north-south were each stripped to a width of 2m and cut for a distance of 67m down-slope towards the shore of Causeway Lake. The excavated area was 536m².

Area 3, contexts 610–670

A minor box-section bucket trench measuring 11.7 x 0.4m (area 5.8m²) was cut through the make-up of Newtown's former High Street. For clarity, the plan of this area is slightly exaggerated in fig. 1.

The stripping of Area 1 revealed two midden deposits (contexts 160 & 170). It also exposed accrued sedimentary fills in the boundary ditch where it divided the two medieval properties (contexts 180-183). A further midden (context 190) was touched by a minor service trench on the west side of Key Cottage. The location of the three middens is shown in figure 2. Despite careful stripping and trowelling to bedrock, no structural features or pits were encountered within any part of the excavated area.

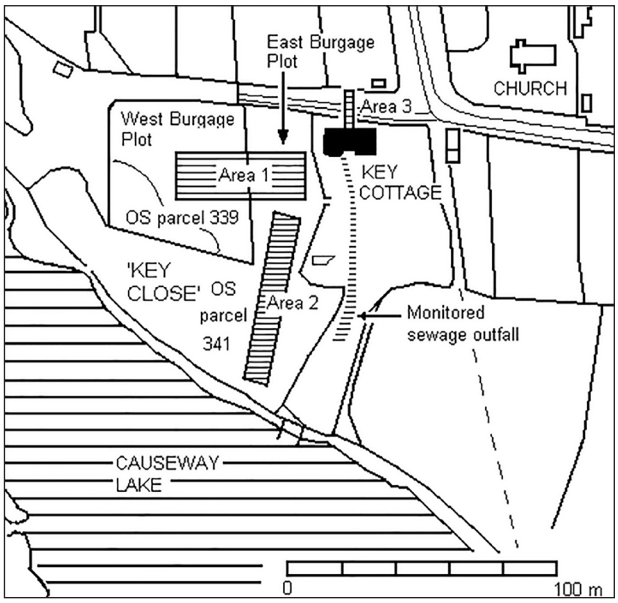

Fig.1. Investigated areas near Newtown's quay.

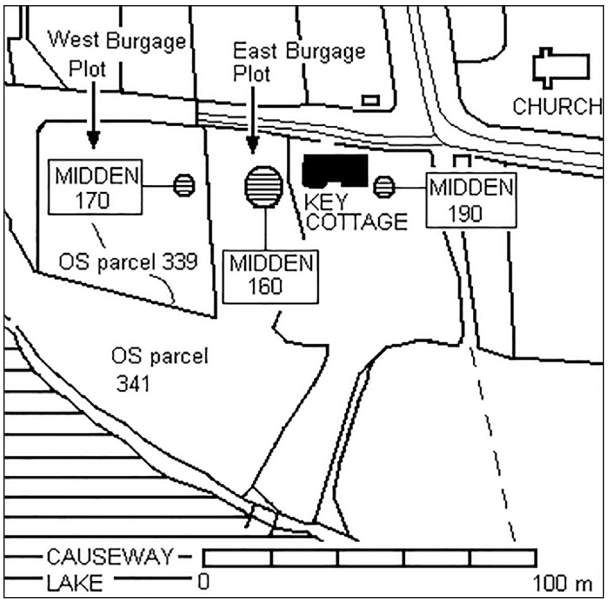

Fig.2. Location of the three shell middens at Key Close.

Stratigraphy

The soil and sub-soil of the entire site was found to be remarkably shallow, seldom exceeding 0.30m in depth and rarely reaching 0.4m. Between the east and west burgage plots, a single exception occurred where further soil had accrued along a decayed hedge-line that still divided these ancient properties (fig. 4, context 180). Across the rest of the site the clay bedrock was covered by a thin but mature pastoral soil some 15cm thick (context 110). This gave way to some 15cm of brown clay/loam (context 120). The latter generally rested on a bed of firm brownish yellow clay, being the local bedrock of the Hamstead Beds (BGS 2013, geological unit *i10*).

Subsoil context 120 mostly contained some 15% gellifracted flint gravel but, in places, its composition changed to deeper sandy patches in which the gravel content intensified. Interspersed amongst these irregularities were deeper patches of brown clay that also descended into similar shallow hollows in the bedrock surface (fig. 6). These pockets of gravel and clay were considered to be geomorphological features associated with past periglacial processes. With the exception of the shallow burgage ditch between the two medieval properties (context 180 with fills 181-184), no artificial pits or dug features were found to penetrate the bedrock clay. This excluded any opportunity to secure uncontaminated palaeoenvironmental evidence.

The principal archaeological features in the stripped area were the two shell middens or strews (contexts 160 and 170). Both rested on very thin horizons of clay/loam (context 120). Neither midden was found to be free from later disturbance or contamination. Disturbance probably arose from cottage gardening. Where random scatters of shell and artefacts were recovered beyond the two specific shell dumps, these were accorded the respective context numbers of 162 and 172. It was strongly suspected that these broader scatters were contemporary lateral extensions to the two shell middens but this remained unproven (fig. 3). It was generally assumed the accumulation of clay/loam (context 120) continued during and after the deposition of the two middens. This appeared to be a natural pedological process that had continued into present times.

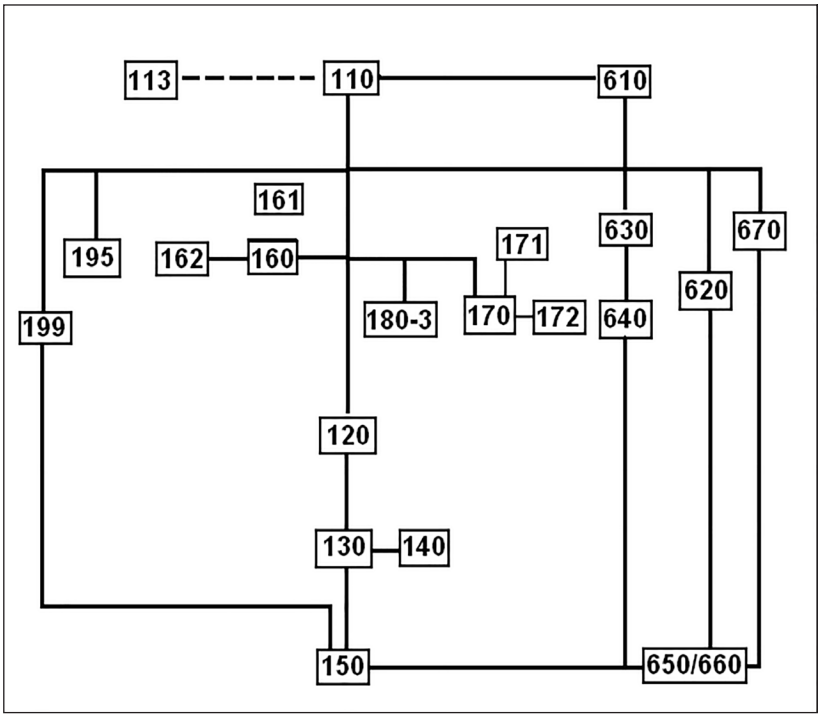

Fig. 3. Harris matrix of principal contexts at Key Close. Context 113 is unstratified

The principal contexts in Area 1 at Key Close

110 Humic topsoil
113 Unstratified
120 Brown clay subsoil resting on bedrock
130 Gravel-bearing clay resting on bedrock
140 Intensified gravel resting on bedrock
150 Clay bedrock
160 Occupation/midden spread in East Burgage Plot
161 Burnt clay particles within 160
170 Midden spread in west burgage plot (centred at SZ 42099 90650).
171 Perceived sub-feature with shelly limestone within 170
180 Cut of burgage ditch
181 Lower fill
182 Middle fill
183 Middle fill (JCB disturbed)
184 Upper fill
190 Oyster midden exposed in service trench near southeast corner of Key Cottage.
195 Shallow midden spread in Lane A of the ground heat-source pipe trenches in Area 2. Otherwise identified as context 460 and suspected to be a lateral extension of midden 160.

The system of archaeological recording

Context numbers were initially assigned in blocks of ten. This allowed for effective on-site interpretation by leaving nine entries available for further differentiation in each case. In Area 1, the principal contexts ran from 110 to 195. These included the three shell midden/strews mapped in fig. 2 (contexts 160, 170 & 190).

The entire stripped surface in Area 1 was divided into 5 metre boxes. These were then divided into twenty-five 1metre quadrats (figs. 5 & 6). When material was recovered from contexts 162 and 172 in this area a locational element was added to their numbering. In the archived inventory these context numbers were appended by // and then the number of the appropriate 5m square. This was followed by the number of the appropriate 1 metre quadrat. A key to the location of these squares is given in fig. 5 where box 10 is used as an example.

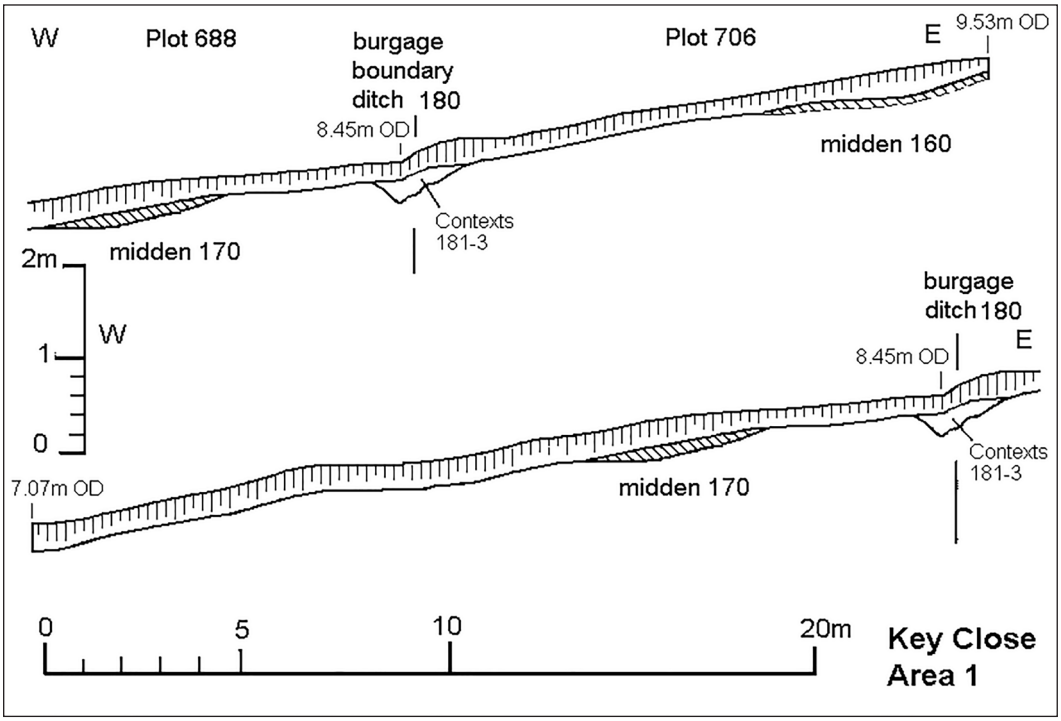

Fig. 4. A cross section though areas 1 at Key Close passes through burgage plots 706 and 688. In this text these are otherwise denoted as the east and west burgage plots. The location of the two principal middens (160 & 170) and the dividing burgage ditch (180) are shown.

In Area 2, 'lanes' A–D were machine-stripped until the sub-surface was considered suitable for trowelling. Each 'lane' was a trench line for the insertion of the ground-source heating pipes. Where contexts 410, 450 and 460 were identified here, these were found to equate with contexts 110 150 and 160 in Area 1. Investigations in Area 2 demonstrated that virtually no human activity had ever taken place down-slope from the building line along the south side of Newtown's High Street.

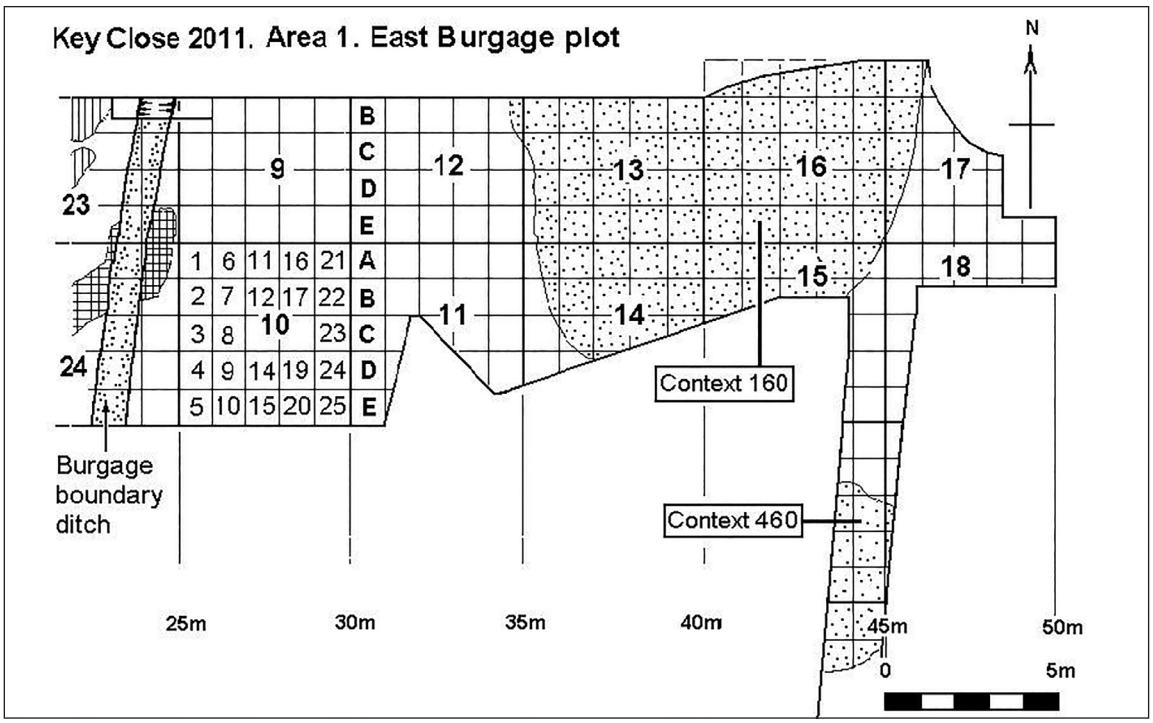

Fig. 5. Plan of the upper excavated portion of Area 1 in land parcel 341 at Key Cottage, Newtown. This stripped area is divided into 25 m² boxes. Artefacts were recorded in 1m quadrats as numbered and shown in box 10.

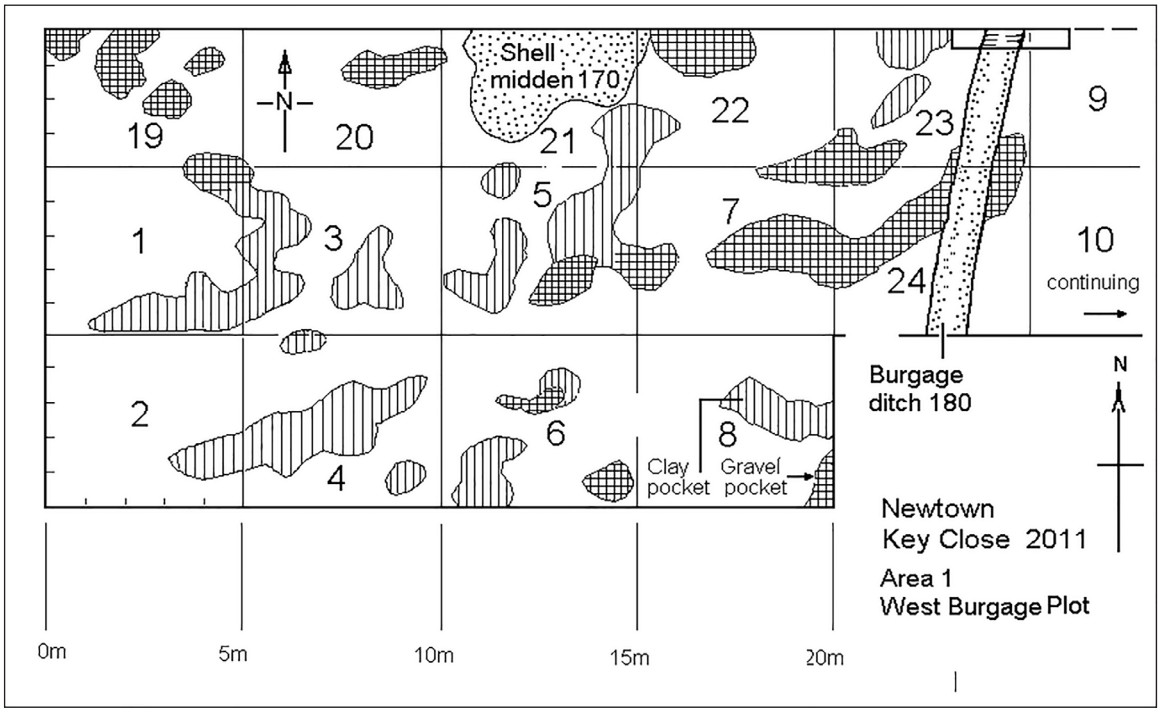

Fig. 6. Plan of the lower excavated portion of 'Area 1' in land parcel 339 at Key Cottage, Newtown. Midden 170 is surrounded by natural pockets of clay and gravel formed by Pleistocene or Early Holocene geomorphological processes on the surface of a bedrock of Hamstead Clay.

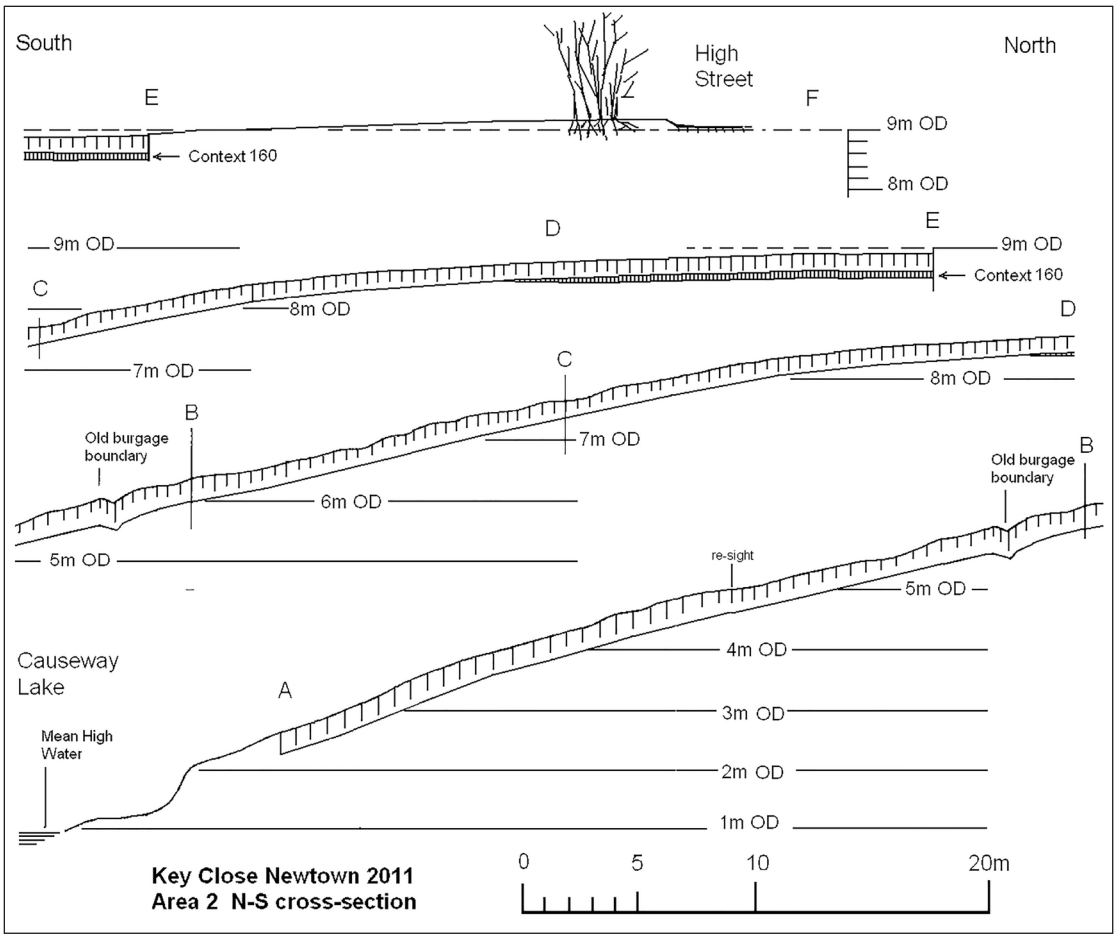

Fig. 7. General north-south cross-section through the area stripped for a ground-source heating grid in Area 2 at Key Close. The section is drawn along the west baulk of lane A. This section showed virtual archaeological sterility between context 160 and the shoreline of Causeway Lake.

The composition of the High Street surface in Area 3

Where the medieval High Street led towards the old quay, this was cut by a minor service trench, designated 'Area 3' (fig. 1). This cross-section was just 0.5m wide and no more than 0.4m in depth (fig. 8). The trench was positioned immediately opposite the front door of the new house at Key Close (fig. 1). The contexts in this trench were numbered 610–660 (fig. 8 & appendix 1).

The cross-section revealed a hollowed area some 2.5m wide, penetrating some 0.18m into the clay bedrock. Where this contained a rich humic loam and common rootlets it was perceived to be the former garden of Key Cottage. Here, the surface of the clay bedrock had been removed to a low depth, presumably to improve fertility (context 620).

North of the garden hedge, the clay bedrock regained its original level. Here it was overlain by a highly mixed deposit of clay, loam, brick fragments, minor flint nodules, coal, and occasional slate and oysters (context 640). These were perceived to represent impromptu highway repairs. Some of the fragmentary bricks were of 19th century type while a few fragments belonged to a thin variety possibly attributable to the Tudor period. The presence of minor fragments of coal near the base of this deposit suggests that most or all of this material may have been deposited no earlier than the 19th century.

Where minor fragments of slate were noted, this material was grey and bore no resemblance to the green slate that can be commonly attributed to medieval imports known elsewhere on the Isle of Wight. It seems likely that all of these materials represent rut or pothole repairs rather than a prepared street surface, although they might have been deposited with a view to underpinning a rammed chalk topping. Where a few scattered oysters were observed at the interface with clay bedrock, here, perhaps, was the street-level of medieval times. At this level no evidence of gravelling or surface preparation could be detected.

An episode of repair, or crude surface preparation, was perceived in context 630 where a thin layer of crushed chalk overlay the mixed highway make-up in context 640. This deposit was observed in two lenses varying from 5 to 8 cm in thickness. While a gap of 1.2m separated these two exposures their common height suggested that the chalk may once have been a single covering for a roadway some 4m wide. Given that this chalk deposit post-dated context 640 it is unlikely to be any earlier than the late 19th century. Where a supply of chalk to Newtown would probably require mechanised transport, it might be supposed that this deposit could be considerably later. Contemporaneity with the remodelling of Key Cottage in the earlier post-War period seems a distinct possibility.

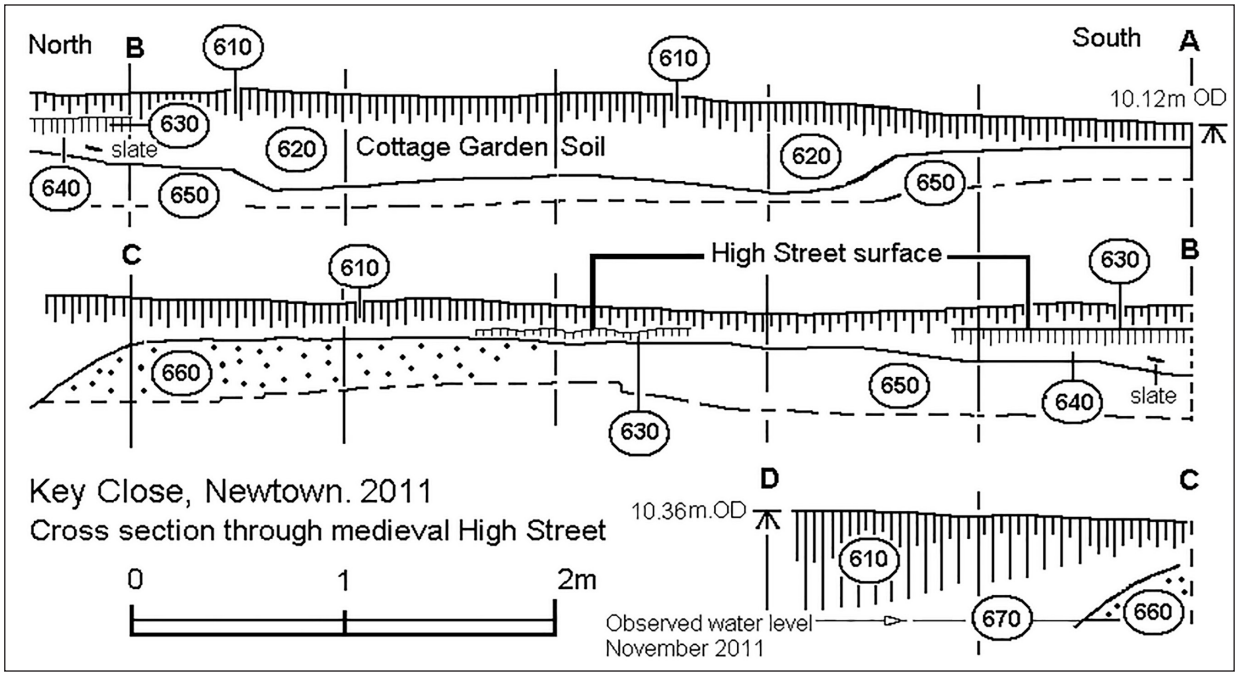

Fig. 8. Cross-section through Newtown's medieval High Street in Area 3. The section shows deepened humus within Key Cottage garden (620) and road deposits 630 and 640. The latter indicate a road surface 3.4m wide.

North of the northern boundary of the highway, the character of the clay bedrock changed by virtue of common and natural inclusions of eroded flint nodules (context 660). This gravelly material resembled some of the natural flint-filled hollows observed in Area 2. Near the northern limit of this cross-section, close to the hedge boundary of the old street, the gravelly clay gave way to deeper topsoil overlying grey waterlogged clay (fig. 8, context 670). At a depth of 0.5m this deposit became completely saturated where it was clearly fed by a soak-away serving the adjoining occupied property. A fragment of a Verwood ceramic bread-bin recovered at this level could be attributed to the 19th century. The depth of the clay-filled hollow could not be ascertained.

Archaeological observations and narrative

Prehistoric flint artefacts

A small number of struck flint items recovered from context 172 and some digger up-cast offered the earliest evidence of human activity on the site (fig. 40). These artefacts complement a number of prehistoric lithic assemblages found around the shoreline of Newtown's harbour and creeks. These commence with Mesolithic lithic material recovered from the East Spit at the mouth of Newtown Harbour. The same shoreline has also produced Neolithic lithic material including a polished stone axe. The presence of Neolithic wooden platforms or trackways in the inter-tidal zone attests considerable human activity at the same locality. A hazel spar from 'platform B' has been dated to the early third millennium BC (2920-2500 *cal*. BC (UB-3273); Tomalin *et al*. 2012, 15).

Since excavations at Key Close were conducted within 100m of the edge of the tidal inlet variably known as Newtown Creek or Causeway Lake, it may be of little surprise to find evidence of Mesolithic or Neolithic activity at this spot. The entire creek system claims a long history of fishing and fowling in a sheltered coastal environment that could offer a valuable subsistence resource for early inhabitants of Wight's northwest coast.

Medieval and post medieval artefacts

Archaeological evidence gathered at Key Close was dominated by medieval and post-medieval ceramic fragments, animal bone and marine mollusca. Amongst the small number of stone artefacts recovered from this excavation, both local and imported building materials could be recognised. Other stone items included a schist whetstone, a fragment of a medieval Bembridge Limestone mortar and an architectural spur-stone of the same material.

Medieval and post medieval middens

The first hint of sustained human activity at Key Close was offered by midden F170. Where this was intercepted by mechanical stripping in Area 1, sufficient evidence was recovered to show that this had accrued in the 13th- century when green-glazed pitchers were in use (fig. 34). Close analogies to this pottery can be found in 13th- century tripod pitchers excavated in Christchurch (Jarvis 1983, figured pottery nos. 3, 10, & 134). The presence of crude sand-tempered sagging-based cooking pots of Fabric Group 1 offered further evidence of 12th- or 13th- century habitation. Unfortunately, these cooking pots were too fragmentary to admit more accurate dating. Although it must be allowed that pots of this type are also known in Mid-Late Saxon contexts, there was no reason to suspect that any of the sherds at Key Close pre-dated the apparent establishment of Newtown during or after 1256 (Page (ed.) 265; Beresford 1988, 445–6).

While midden 170 offered the earliest evidence of medieval activity on the site, it was unfortunate that this deposit could not present a fully sealed archaeological context. Past disturbance and scattering of much of the shell had weakened its stratigraphic integrity. Nevertheless, a possible indication of its date was offered by a fragment of a 13th- century tripod pitcher (UC 2, fig. 30). Due to its very shallow covering of topsoil, this same deposit had remained vulnerable to disturbance in Tudor and later times. Where this midden was little more than clipped by the present excavation, there remained the possibility that more of this deposit still remained undisturbed in an up-slope position on the presumed building line of the old medieval High Street.

Where a larger body of ceramics was recovered from midden 160, it appeared that no more than a few residual sherds of medieval pottery were present amongst midden pottery of Tudor and later date. Here, it seems, this deposit may have accrued during the early post-medieval occupation of Key Cottage. The presence of 'Tudor Green' sherds and fragments Anglo-Rhenish stoneware favour a date during or shortly after the mid-16th century.

Where midden 190 was clipped by a minor service trench on the west side of Key Cottage, some further shell was recovered. Although the excavated sample was small, it was evident in the trench section that this discard of oysters had been profuse. Elsewhere in this text it is suggested that this material may have accrued during the post-medieval history of the site, after discard of shells and pottery on midden 160 had come to an end.

In Area 2, an absence of building materials on the slope towards Causeway Lake suggested that very little occupation, or any other human activity, had occurred south of the building line along the southern edge of the old High Street (figs. 1, 5 & 7). Where the name Key (Quay) Close intimates an important location adjacent to the maritime hub of the medieval town, in this case the absence of archaeological evidence certainly appears to offer a significant indication of true absence.

The burgage plots and boundaries

Where machine stripping in Area 1 cut through the hedge boundary separating OS land parcels 339 and 441, care was taken to examine the boundary between what, in this text, has been termed the eastern and western burgage plots. A helpful record of the ownership of these plots is to be found on James Mallett's map, of 1768 (reproduced in Basford, 1980, 46, map 18). In fig. 9, a redrawn extraction of this map shows that the eastern plot, containing Key Cottage, was then in the possession of one 'Gladhouse'. This is an old Island name, associated in the mid-15th century with property and flocks at Atherfield and land at Barton (Hockey 1982, 138 & 208). At that time, a Robert Gladhouse was handling sheep and poultry.

On John Dennett's tithe map of 1840 (fig. 10) the eastern burgage plot is numbered 706 and is identified as part and parcel of the southern field that also shares this number. This he names Key Close. Where this burgage plot coalesces with the southern field, the configuration of the field boundaries on the map implies that a portion of an east-west hedge-line had been removed in antiquity. This is seemingly confirmed by James Mallett who shows a complete east-west boundary on his map (fig. 9). Where the stripped pipe lanes of Area 2 bisected this perceived boundary, some roots of an old hedge were revealed by trowelling but no evidence other than a most shallow and rudimentary or token ditch could be found (fig. 7). Root disturbance and the presence of occasional brick fragments in the fill of this ditch made any pollen sampling unwarranted.

On the west side of the eastern burgage plot, investigations were more revealing. Here an old north-south hedge-line and a shallow and well-silted ditch demarcated the boundary with the western burgage plot. On his survey, John Dennett numbered this western plot '688' but offered no other field name. Where the intervening hedge was stripped out during the laying out of Area 1, the opportunity was seized to box-section the shallow bank and ditch that divided these two properties. This revealed a very shallow V-sectioned ditch that appeared to have soon been refilled by a return of clay from its slumped up-cast bank (fig. 4). This had re-entered the ditch from the western and up-slope side of the boundary.

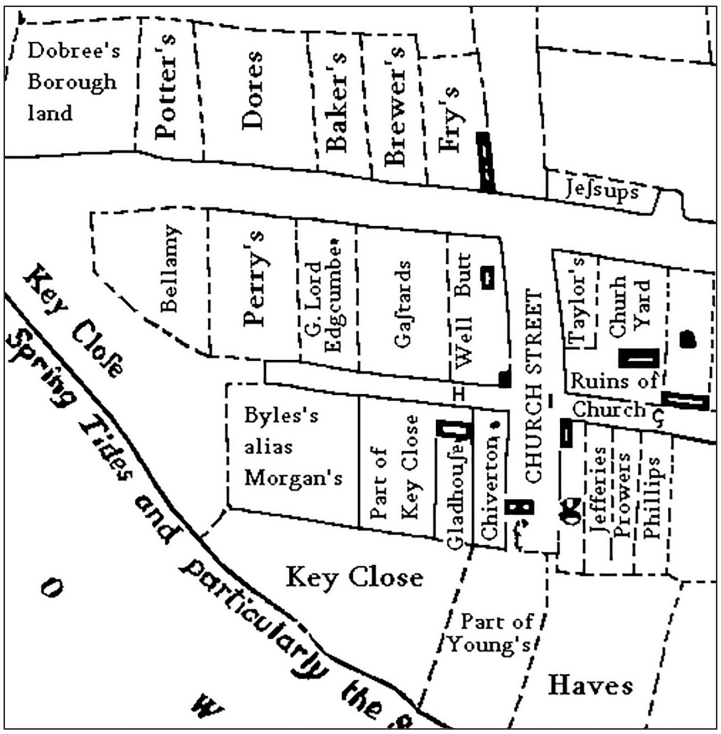

Fig. 9. Plan after James Mallett's borough map of 1768. The Area 1 excavations of 2011 were sited within the burgage plots labelled 'Byles alias Morgan' and 'Part of Key Close'. Key Cottage is shown in the plot assigned to 'Gladhouse'.' Dobree's Borough land' was held by an 18th century brick manufacturer. It is adjoined by a plot occupied by 'Potter's.

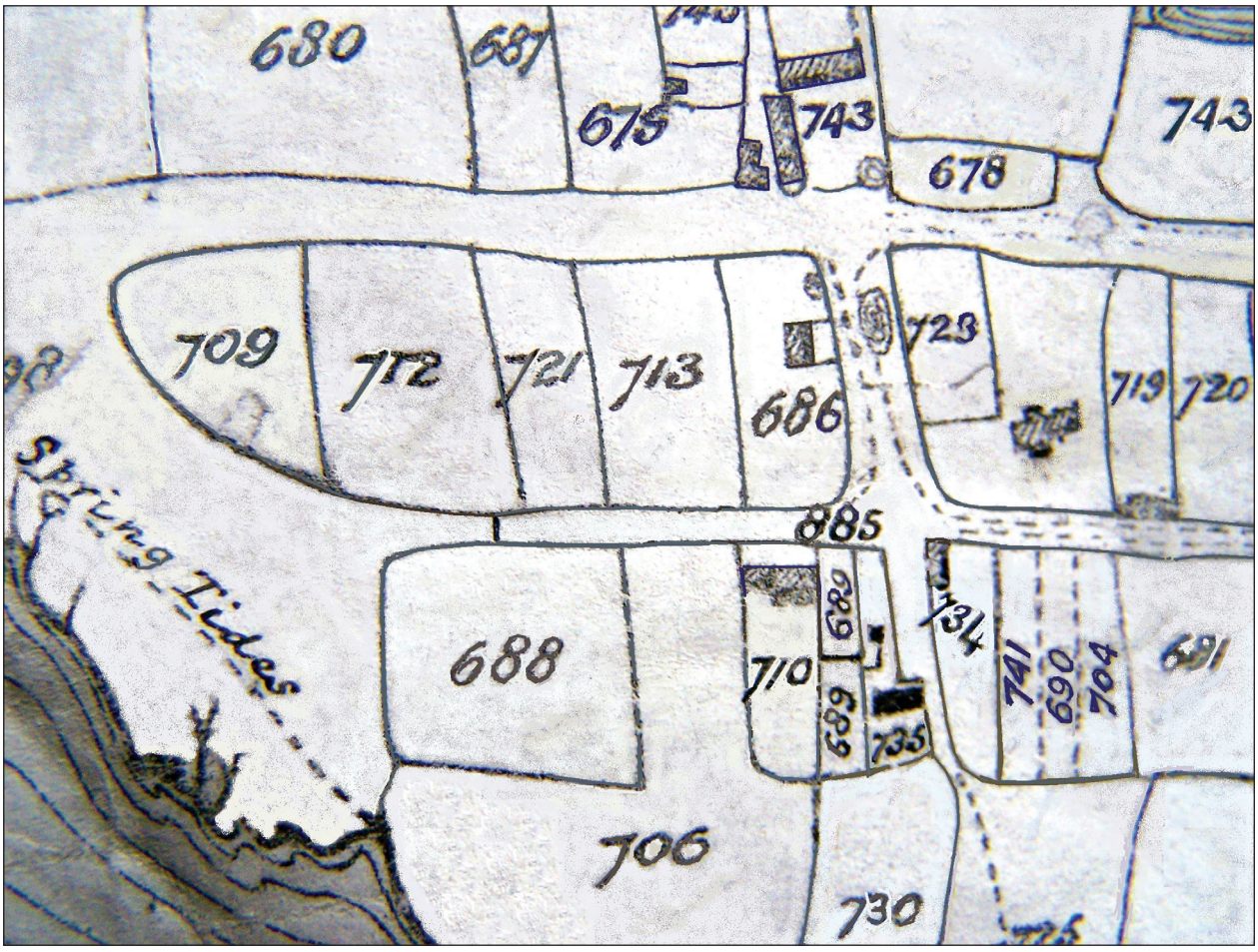

Fig. 10. John Dennett's tithe map of 1840 shows the east burgage plot merged with the southern field under apportionment number 706 (Key Close). The western burgage plot is designated 688. Key Cottage and garden are designated 710.

Medieval and post-medieval ceramics at Key Close

Methodology

All sherds were examined under a binocular microscope at magnifications of X10 and X20. For wares considered to be local or site-specific, fabric descriptions were prepared for this report. For commonly known wares (7–15) fabric descriptions are to be found in the definitive archaeological studies otherwise cited in this report. Where colour has been recorded, reference is made of the CBA Colour Chart devised by the Study Group for Romano-British Coarse Pottery. While this offers less sensitivity than the common use of Munsell soil colour charts, in this instance it presents a better means of unifying significant groups of sherds while averting insignificant colour variation.

The Newtown fabric descriptions include sand grain information in which sphericity has been recorded according to Rittenhouse (1943). Roundness has been calculated according to Powers (1958). Quantities of inclusions have been calculated with the use of Svetsov charts advocated by Terry & Chillingar (1956). Particle-size measurement by *phi* has been calculated with the aid of a Geo grain-size scale.

The pottery from Newtown has been classified and presented here after being divided into principal ceramic groups. These groups have been quantified by sherd quantity, sherd weight and by 'estimated vessel equivalents' (e.v.e.). Where local pottery has been divided into fabric groups 1-6 these are provisionally referred to as 'wares' although further and more detailed studies could provide greater refinement. The remaining 'wares' listed and quantified here are those that are already well documented in archaeological literature. While further textural studies might be instructive, it is felt that the poor stratification at Key Close provided an insufficient chronological framework to support further discussion. Since this present examination has offered no more than a glimpse of past life within the medieval town, this report concludes that future opportunities should be seized to gain well-stratified samples of the ceramics.

The principal contexts of pottery at Key Close

A sample of 2599 pottery sherds, weighing 30.045kg was examined at Key Close. This included a minor scatter of late-19th- and 20th- century china and stoneware fragments that were recorded but not retained. A notable feature of this site was the surprising dearth of ceramic fragments post-dating AD 1800. Given that Key Cottage had remained in occupation until the present day, it is assumed that the pattern of on-site waste disposal during this period may have shifted to some other and un-investigated part of the burgage plot. A lightly wooded area to the east of the cottage seems a likely location.

The principal sources of the recovered sherds were the two low-spread middens or strews, identified as contexts 160 and 170. Both were situated on the west side of Key Cottage, the first (160) at a distance of some 18m. The second, and seemingly earlier midden (170) was found in the adjoining burgage plot some 33m down-slope from the west end of the cottage (fig. 4). It was suspected that this second midden could have been associated with an independent dwelling set within this adjacent plot and erected along the same street-side building line. (See also 'daub' in report on building materials).

Both middens were poorly defined and were best recognised by their shallow strew of dispersed oyster shells. Neither had escaped later disturbance and contamination by later artefacts. Beyond each strew a further irregular periphery of randomly dispersed sherds and bone waste was uncovered. These marginal deposits were designated contexts 162 and 172. Where topsoil was mechanically stripped from both of these areas, this created a disturbed spoil in which dislodged artefact were recovered and assigned an unstratified status in 'context 113'. At least 85% of this recovered material had been skimmed from the area occupied by midden 160. Where this was demonstrably so, it was noted.

Local coarse wares

After inspection at X20 under a binocular microscope the coarse wares suspected to be local were divided into the following over-arching fabric groups.

1 Low-fired coarse ware (LFC)
2 Medium-fired coarse ware (MFC)
3 Hard-fired coarse ware (HFC)
4 Buff wares (BW)
5 Reduction-fired grey wares (RFC)
6 Hard-fired brick-textured coarse ware (BT)

When compared with other studies of coarse wares in the Dorset-Hampshire region, it is evident that fabric groups 1–3 at Newtown are generally comparable with those quartz-tempered products that have been drawn together under the general title of 'Wessex Coarseware' (Jervis (2012). This classification embraces a widespread potting tradition that includes production centres at Poole, Laverstock and Southampton. Notable assemblages of these products are now recognised in the medieval towns of Wareham, Christchurch, Romsey and Salisbury. A lesser quantity has also been noted at Carisbrooke Castle (Mepham 2000, 105-8) where the likelihood of insular manufacture seems high yet difficult to substantiate. Where just one late medieval kiln has been excavated in the Isle of Wight (Fennelly, 1969), it appears that these products from East Wight failed to reach neither the castle (Williams 2000, 210) nor Newtown.

Regional wares

7 White wares including 'Tudor Green'.
8 London/Hampshire Red Wares
9 Post-medieval glazed wares including Verwood pottery

Imports and exotics

10 Delft Ware
11 Imported French pottery
12 Imported Spanish pottery
13 Anglo/Rhenish stonewares
14 Micaceous vessels
15 Unclassified pottery and pottery not retained

Description of the wares

Group 1. Local low-fired coarse ware (LFC, fig. 11)

Form & general description:

The simplest type of pottery comprised reduction-fired cooking pots of the Saxo-Norman tradition (LFC, fig. 11). At Key Close these vessels are distinguished by their oxidised brown surfaces, their sagging bases and their simple out-turned rims. Minor irregularities in the thickness of these sherds suggest that at least some of these pots may be hand-made. Varying quantities and grades of sand have been used in their tempering. Incidental particles of fine shell suggest that the sand may have been obtained from a local beach, but more distant coastal sources of sand and clay are also possible and these could include the Hampshire coast.

Date and analogies:

In the medieval city of Southampton cooking pots of similar form have been recorded in contexts dated from the 9th to the 13th century. While examples of similar vessels at Key Close are highly fragmentary, they can offer no more than weak typological dating. The rim forms seem best matched with those found on type 3 'cooking jars' found in 11th to 14th -century contexts at Carisbrooke Castle (Mepham 2000, 110, fig. 43, nos. 75–9). In a few rare instances, a thin light olive vitreous glaze has been internally splashed on the lower portion of some of these pots. This offers a further hint that this ware is probably a product of the 13th century.

Fabric:

Under the binocular microscope, at least seven sand-tempered sub-groups or variants can be discerned. These groups must be considered subjective because overlap and merging is evident between them. Common fine angular oxidised ferruginous particles appear to be integral to the clay of these vessels. Similar particles are present in the Hamstead Clay exposed on this site but it should be observed that inclusions of this kind are common and can be found in other local clays. The common size of these particles is set around 0.2mm mhi.

The unifying characteristic of Group 1 is the use of sand tempering. Because many of the sherds are quite small, there remains the possibility that the adding and mixing of this temper may not always have been consistent through the entire body of some of the pots. Where incidental shell has been noted in fabric sub-group 1e, its frequency can be as low as 1-2%. This means that its weak presence may not have registered in some of the smaller sherds. It is therefore possible that incidental shell particles were also present in vessels now assigned to other sand-tempered sub-groups of Group 1. Some of these variations in the sand additives could reflect minor idiosyncrasies in the working practices of individual potters.

Under the microscope, transparent, translucent, honey and occasional rose and white quartz particles accompany finer morion grains in a regular matrix. Sphericity of the quartz is about 0.83 on the Rittenhouse scale (1943) but some of the larger grains still retain discernable fractured facets that can be as irregular as 0.71. The general particle size of common quartz grains is 0.5mm, when measured at maximum horizontal intercepts (mhi).

Measured on the Powers scale (1958), the roundness of the quartz grains varies from R4 to R7. This is consistent with weak natural sorting, such as that which might be found in tide-related sand movements on Newtown's Solent foreshore. The occasional occurrence, in some of these sherds, of incidental particles of fine shell gives further support to the suspicion that this may be a particular local ware.

Colour:

On the oxidised internal and external surfaces of this ware, the colours are usually yellow/brown A6 or yellow/brown B7. The core or matrix is usually reduced to brown A5. In some fully reduced versions both surfaces darken to neutral black 2. It seems possible that many more of these vessels were fashioned in a dark reduced fabric before being subject to colour-changes induced by repeated heating during cooking over an open fire.

Illustrated examples of low-fired coarse ware (LFC, fig. 11)

LFC1. Cooking-pot with T-rim. Wheel-thrown with oxidised surfaces and grey core. Lip is damaged. Fabric Group1c. Rim diameter 17cm. 2% e.v.e. Context 460. (Compare Carisbrooke Castle jar type 4, 11th –12th century; Mepham 2000, 110).

LFC4. Bowl or large flared-rimmed cooking pot with bevelled rim. Fabric Group1c. Brown oxidised interior shows occasional weak flecks of translucent honey-coloured glaze. Dark grey core with occasional fine mica. Rim dia. c.28cm. 4% e.v.e. Context 160//13.23

LFC6. Bowl with bevelled rim. Fabric Group 1. Weak traces of internal honey-coloured glaze. Grey core, brown oxidised surfaces. Rim dia. C.18cm. 6% e.v.e. Context 113.

LFC7. Bowl with rounded rim and knife-cut finish on upper external face. Fabric Group 1. Weak traces of thin internal honey-coloured glaze. Rim dia. c.18cm. 6% e.v.e. (Compare Caris. Castle type 8 bowls of 14th century).

LFC8. Rim sherd of a possible colander. An apparent trace of a diagonally thrust perforation appears in the broken edge of this sherd. Context 160.

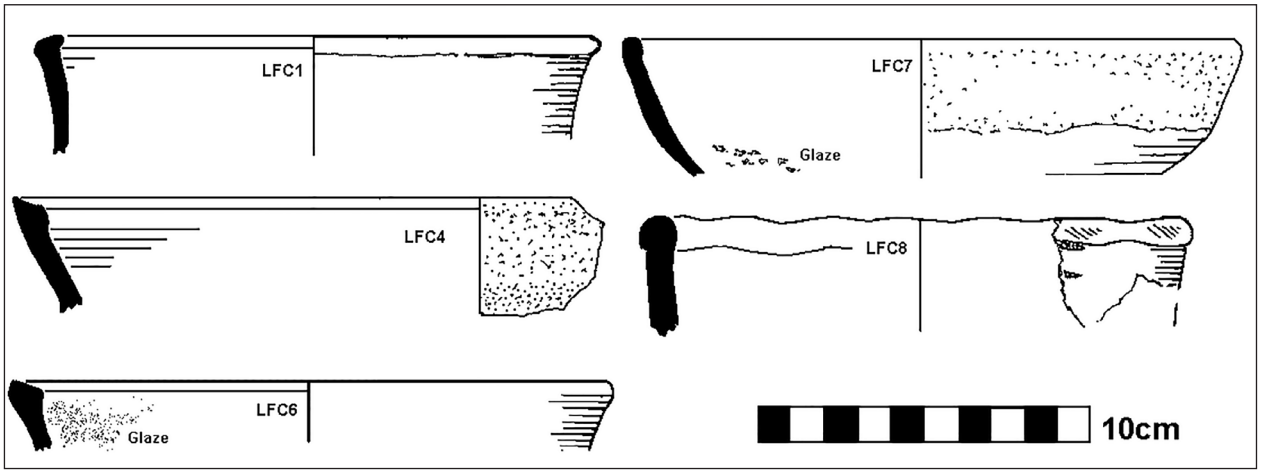

Fig. 11. Fabric Group 1. Cooking pots, bowls and a possible colander (LFC8) of Low-fired coarseware.

Group 2. Local medium-fired coarse ware (MFC, fig. 12)

Form and general description:

The forms in this group appear to be dominated by sagging-based cooking-pots that may sometimes be larger than those of Group 1. Other forms appear to be pancheons and possibly some rolled-rim curfews. At least one vessel displays a finger-pinched base of the type associated with pitchers and cisterns. Select sherds are figured in fig.15.

Differentiation between the medium-fired coarse ware of Group 1 and the preceding group is somewhat subjective. Perceived changes are a preference for thinner body walls and a discernibly harder fabric in which the sand tempering is usually more evenly sorted and distributed. Some rim diameters of cooking pots are calculated to be as large as 30cm. Several sherds show clear confirmation of the sagging base while the tops of these vessels commonly show an out-bent rim with a slight convex neck bulge, just below a squared-off lip. The lips of some of these squared-off rims show internal expansion to provide a T profile (fig. 12, MFC1).

All sherds in this group show even thickness through the body of the pot. Many bear horizontal striations characteristic of wheel-throwing. While wall thickness can be as thin as 3mm, some sherds can be as thick as 9mm. These thicker sherds often show greater consistency in their sand grain size, perhaps indicating that the larger vessels were made by particular potters who were especially discriminating in their tempering recipe.

On some cooking-pots, minor splashes or flecks of olive green vitreous glaze appear on the rims and necks. A few basal sherds show that a thin all-over light green glaze was sometimes applied to the floors of these vessels. This may be the cause of the incidental glaze flecking or spillage on the rims and necks. Other basal sherds remain plain.

Date and analogies:

Pots in this group may be equated with those late medieval well-fired sandy wares that, in Southampton, are dated to the period c.1350 to early 16th century (Brown 2002, 18-20). Duncan Brown includes in these wares fabrics 1027 and 1161 that are characteristic of products from the East Wight kiln at Knighton. An examination of the Knighton products, carried out for this present study, suggests that no convincing match can be found for any of the vessels at Newtown.

Fabric:

The character of the sand temper, including roundness, sphericity and colour, is often similar to Group 1 but quantity normally exceeds 10% and can be as high as 25%. These measurements of quantity accord with the charts devised by Terry and Chillingar (1955). Grain size seldom exceeds 0.5mm or 3 *phi* (coarse sand). Oxidised ferruginous inclusions

can be sub-angular or rounded and are occasionally as large as 2mm. Incidental shell particles, if present, are extremely rare. These are the most common qualities of this fabric group but further division is possible. Sherd ID96 shows streaked differential colour variation within the body of its clay. This is a characteristic commonly found in Fabric Group 5. The sand temper of this sherd also shows some incidental flint particles that might be compatible with a local source.

Colour:
Surfaces are mostly yellow/brown A6 or B5. The core/matrix is usually light grey (neutral 5).

Illustrated examples of medium-fired coarse ware (MFC, fig. 12)

MFC1. Cooking-pot/jar with everted rim and t-shaped lip. Wheel-thrown. Fabric Group 2. Thin oxidised surfaces and grey core. Rim dia. c. 26cm. 10% e.v.e. Context 160.

MFC2. Cooking-pot/jar with slightly concave internal bevel. Wheel-thrown and equally fired throughout. Fabric Group 2. Rim dia. C.26cm. 5% e.v.e. Context160.

MFC4. Cooking-pot/jar with incomplete rim profile and rilled neck. Fabric group 2. Oxidised throughout. Internal rim dia. c.24cm. 8% e.v.e. Context 113.

MFC5. Bowl with rolled rim. Wheel-thrown. Fabric Group 2. Traces of thin translucent olive glaze beneath under-fold of rim. Rim dia. c.30cm. 8% e.v.e. Context 113.

MFC6. Flagon neck. Wheel-thrown. Fabric group 2. Thin oxidised surfaces with grey core. Pre-fired tool damage/indentation on lip. Rim dia.10cm. 15% e.v.e. Context 160.

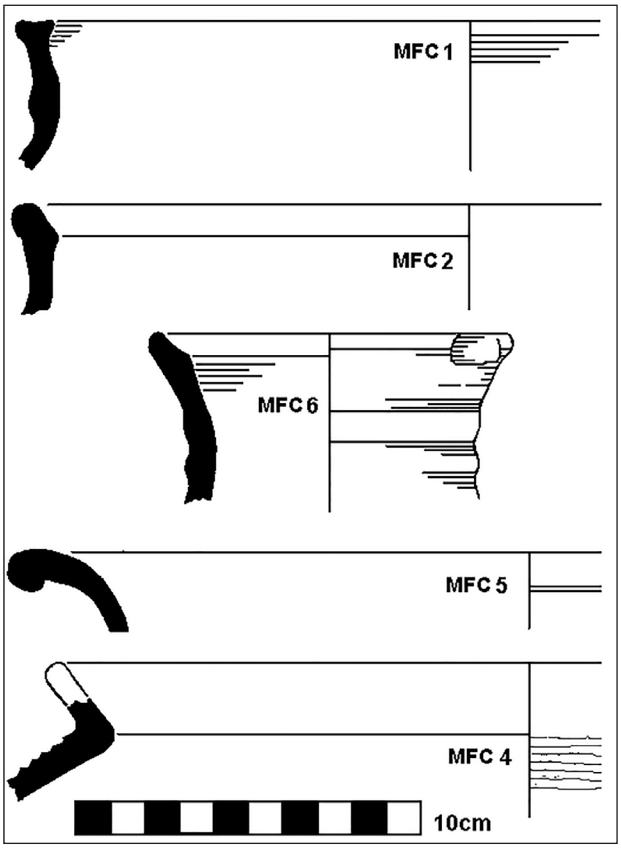

Fig. 12. Fabric Group 2. Jars, bowls and flagon of medium-fired coarseware.

Group 3. Hard-fired oxidised coarse ware (HFC, fig. 13)
Form and general description:
In this third group of local coarse wares, firing increases to a hard red or orange texture throughout the thickness of the pot. These vessels appear to be technologically advanced over the first two groups of coarse ware. While an evolutionary progression from group 2 may be suspected, this cannot be demonstrated through the stratigraphy of this site. Cooking pots, including those with straightened and almost upright necks are present as well as lid-seated jars (fig. 13, HFC8). A flanged bowl with hammerhead lip is also noted. Bowls with an internal light green vitreous glaze also occur. There is also an example of a pinched-footed cistern or pitcher (fig. 13, HFC9).

Date and analogies:
Cooking pots with vertical necks appear in 'Southampton Coarse Ware' during the 13th century and persist until the close of the medieval period. Pinch-footed pitchers and cisterns are common during the 14th and 15th centuries. In Southampton, imported flanged bowls from Beauvais and Red Ware versions from the Low Countries were shipped into the city just before the close of the 15th century (Brown, 2002, 64, fig. 26 no 238: *ibid*. fig. 29, no 276). These may mark inspiration for local plain versions such as the example seen at Newtown.

Fabric:
Sand tempering is noticeably finer than in groups 1 and 2. This is a medium to fine sand comprising angular quartz grains not exceeding 1.5 *phi*. The colours of the grains are mostly clear, translucent or honey-coloured. The quantity is 10-30% on the Svetsov scale. Sphericity commonly ranges from 0.75 to 0.95. Rare fine oxidised ferruginous particles of similar small size can occur as well as rare particles of fine mica. In some of these vessels, continuity from the MFC products of group 2 seems implicit due to certain similarities in the quartz sand tempering. Other variant fabrics occur in which minor angular flint inclusions or a virtually gritless texture may be observed.

Colour:
The external and internal colours are mostly yellow/brown A6 or yellow/brown B5. Sparse and carelessly applied glazes can be red/brown A2 and brown/yellow A3 and A4. There is a discernable similarity between some of the lid-seated jars and pancheons in this hard-fired oxidised group and the appearance of some of the reduction-fired vessels in Fabric Group 5. While the colours certainly differ, both can display a distinctive integral streaking in the surface of the clay.

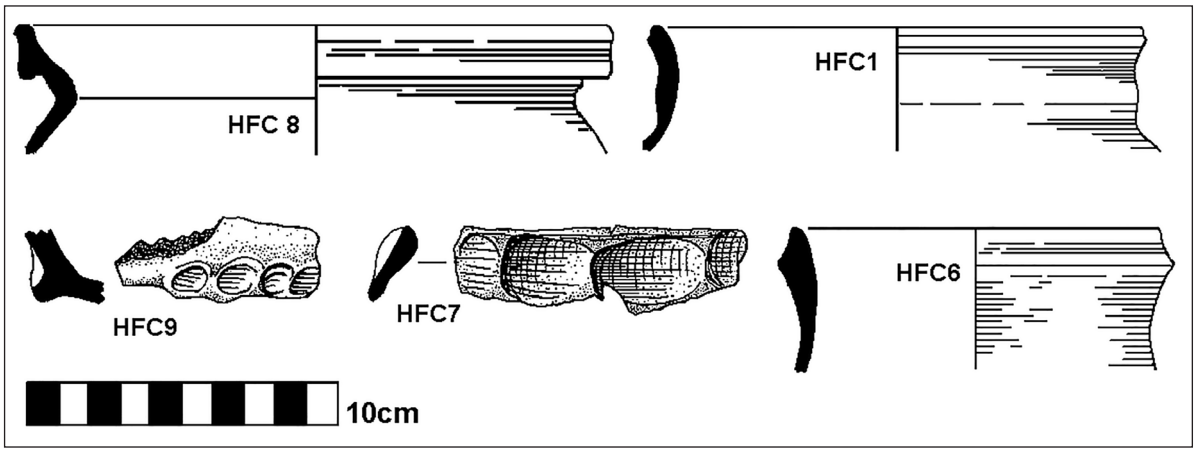

Fig.13. Fabric Group 3. Cooking pot HFC1, flagon HFC6 lid-seated jar HFC8 and foot of pitcher HFC 9 in hard-fired coarse-ware.. The form of fingertipped cordoned sherd HFC7 is uncertain.

Illustrated examples of hard-fired coarse ware showing significant formal features (fig. 13)

HFC1. Cooking-pot with upright neck and slightly everted lip. Lip is externally scored or reeded. Fabric group 3. Rim dia. c.18cm. 15% e.v.e. Context 113. Illustrated.
HFC6. Flagon or jug. Fabric group 3. Rim dia. c.12cm 2% e.v.e. Context 113. Illustrated.
HFC7. Finger-tipped rim or rim cordon. Fabric group 3. Highly oxidised with little trace of body wall. Possibly a waster. Context 160//16.5. Illustrated.
HFC8. Seat-lidded jar. Fabric group 3. Red oxidised surfaces with dark grey core and horizontal streaking akin to fabric group 5. Rim dia. 14cm. 14% e.v.e. Context162//9.5. Illustrated.
HFC9. Basal sherd attributed to pinch-footed cistern or pitcher. Fabric group 3. Context 170. Illustrated.

Group 4. Buff wares/Coarse Border ware (BW, figs 14–16)
Form and general description:
This fourth group of fabrics comprises buff or very light pink coloured vessels. These are tempered with quartz sand mixed with clay that is very weakly micaceous. These vessels mostly show consistent firing and colour throughout their thickness. Some examples show a light grey core and a few sherds show possible indications of an applied slip.

It is evident that many of these products are handled jugs or pitchers bearing shallow centre-grooved strap handles (figs. 14 & 15). These handles can be plain or deeply slashed. Some thinner-walled body sherds closely resemble reduction-fired cooking pots of group 5. When the quartz sand characteristics are compared with this latter group, there

is a suspicion that at least some could be products of the same potting industry. Both groups have been fired in a reducing atmosphere although it is evident that temperature may have been heightened and sustained for a longer time in the production of the buff vessels with large handles. Other items include bowls and a chafing dish (fig. 16).

Date and analogies:
A sand-tempered ware with discernable mica inclusions has been identified in a medieval context in a High Street site in Southampton (Brown 2002, 17, fig. 16 no 131). Described as HSMR fabric 1533, this occurs in a cordoned jug that is devoid of its neck, rim and handle. This is not a strong analogy.

A few other vessels reported in Southampton deserve note. A strap handle of c. AD 1200 from Winkle Street (P & CS, II, 68 fig 142, 234) and an early-13th-century tripod pitcher from Cuckoo Lane (*ibid*, fig. 149, 417) present comparable fabric descriptions. From a late-13th-century pit in the medieval town-port of Poole comes a wide-mouthed pinched-based buff ware jug that might also belong to this same potting tradition (Jarvis, 1983, 55-6, fig.17, 26).

At Newtown the occurrence of buff ware is generous, amounting to 8.4% by sherd quantity and 13.2% by e.v.e. Here we see evidence of cooking pots; pancheons; strap-handled jugs; cisterns and possibly an open-footed chafing dish. No source is currently proposed for this pottery but its relative abundance at Key Close makes production in or near Newtown an interesting consideration.

At Carisbrooke Castle Lorraine Mepham identifies eight medieval pottery fabrics that she attributes to 'probable local wares' yet none accord with the buff ware vessels we see at Newtown (Mepham 2000, 105–6).

Fabric:
On both internal and external surfaces very fine clear and honey coloured quartz grains are held within a weakly micaceous clay. On these evenly oxidised surfaces the quantity of quartz sand commonly varies between10% and 25%. Occasionally, tempering as low as 5% can be observed. The grain size does not normally exceed 0.5 *phi* (medium sand). Sphericity of the quartz grains ranges from 0.83 to 0.97. Roundness ranges from 0.5 to 0.7. Some quartz grains can be partially encrusted with a dark matter that may be a product of firing. This was commonly observed in most sherds.

Sometimes, a grey core may be seen in which clear and plumb-coloured quartz grains are held in a matrix that shows no evidence of mica. Rare and very fine particles of incidental shell can sometimes be seen in the core but not, apparently, on the buff or pink-fired surfaces. These characteristics suggest that some of these vessels may have been slipped. In some instances the surface sand grains can be concealed or obscured, seemingly the result of the vessel being well wiped before firing.

Colour:
The external and internal surfaces, here described as 'buff', are commonly yellow/brown B7 and brown/red A7. To the eye, these may appear slightly pink although this is not technically precise. Some vessels present a parchment colour that may be defined as brown/red A6.

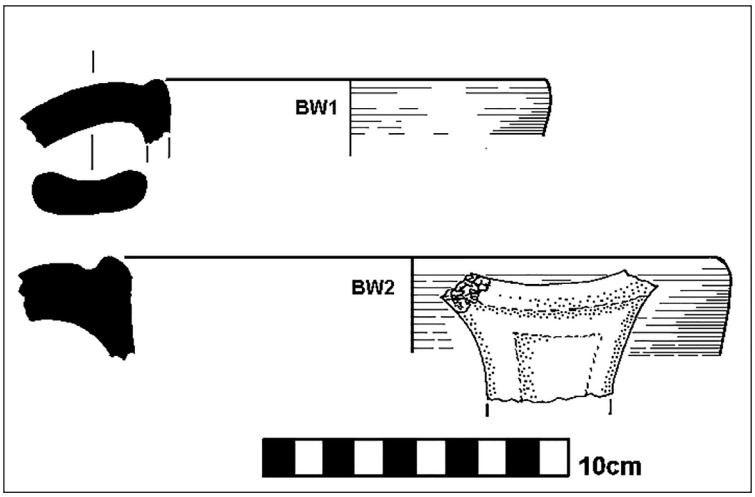

Fig. 14. Buff Ware flagons BW1–2. Neck-handle fragments.

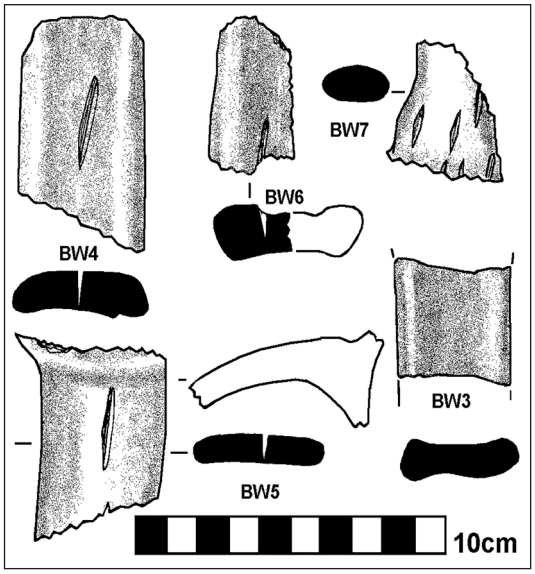

Fig. 15. Plain and slashed handles from Buff Ware flagons BW3, 4, 5, 6 & 7.

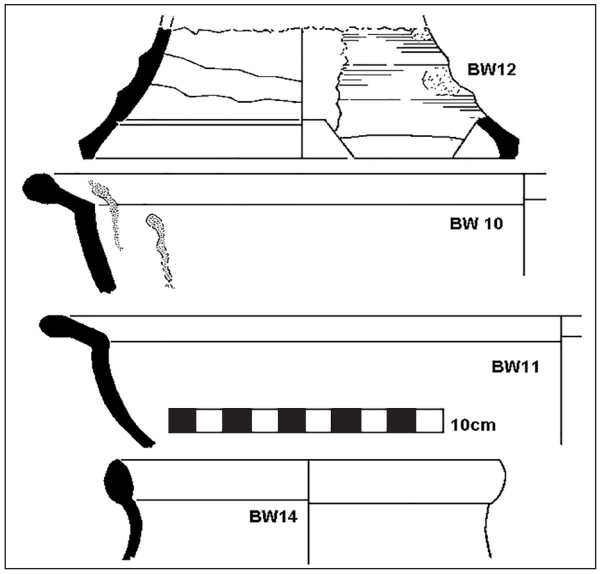

Fig. 16. Buff Ware bow/dishes BW10 & 11, chafing dish? BW12 and jar/flagon BW14.

Illustrated examples of Buff Ware showing significant formal features (figs. 14–16)

BW1. Strap-handled jug. Rim dia. c.12cm. 16 e.v.e. Context 460

BW2. Strap-handled jug. Context 162.

BW3. Strap handle with shallow concavity. Residual grey core. Context 160

BW4. Slashed strap-handle with external convexity. Grey core. Context 170.

BW5. Slashed strap-handle with external convexity. Grey core. Context 113.

BW6. Slashed strap-handle with external concavity. Grey core. Context 460/18

BW10. Dish. Flecks of spilt olive glaze. Rim dia.c.36cm. 8% e.v.e. Context.160.

BW11. Dish. Grey core. Dia. c.38cm. Context 160//16.17.

BW12. Chafing dish? Olive glaze splashes. Knife-cut recesses. Rim 18cm. 14% eve. Context 113.

BW14. Jar or jug with oval rim. Dia. c.14cm. 10% eve. Context 160.

Group 5. Reduction-fired grey ware (GW, figs. 17–19)

Form and general description:

Group 5 is a loose gathering of sherds distinguished by their grey fabrics and reduction firing. Their colour is usually consistent throughout the thickness of the vessel. Some sherds show differential banding or streaking horizontally drawn across the surface of the clay. This may be the result of cloth-wiping or smearing while the vessel was still spinning on the potter's wheel. The sand content is often notably high, as can also be seen in some of the Buff Ware vessels.

Vessels of this reduction-fired group include strap-handled jugs (GW1-4) and bowls (GW5–7). A cooking pot or jar (GW8) found with Tudor pottery in context 160.) also deserves attention (figs. 17-19). From Cuckoo Lane Southampton comes an imported French jug with a rilled shoulder and a rim that is weakly seated for a lid. Dated *circa* 1375–1425, this offers a possible comparison for GW8. Both examples carry irregular and lightly applied patches of green glaze.

A sparsely applied translucent olive green treacle glaze also appears on a number of other grey ware vessels. This includes a strap-handle of a flagon or curfew (GW2), a bowl (GW7) and the rod-handle of a jug (GW9). It seems likely that the glaze was applied sparingly to the rim or shoulder of each of these vessels while minor splashes could occur elsewhere. While sherds of other grey ware pots are plain, it must be acknowledged that their highly fragmented state leaves the presence of glaze unproven on individual vessels.

Some bowls in this group are distinguished by lightly scored swags on the internal flange. A few body sherds suggest that cooking pots or jars were decorated in the same manner. Some sparse splatters of olive green vitreous glaze can also be found on a few external surfaces.

Date:
The bowls of Group 5 find a few general analogies in some vessels from 16th century contexts in Southampton (cf. P&C, 1975 cat no, 697). These offer affinities with flanged bowls GW5 and GW6. Judged by its diameter, depth and the presence of a splashed green internal glaze, sherd GW7 may represent a Late-Medieval/Tudor skillet approximating to the style of Southampton vessel 148. This has been dated to c.1490–1510 (Brown 2002, 55 &79, fig 17n no 148). The French analogy, already cited, may place rilled vessel GW8 in the same approximate time-frame.

Fabric:
Vessels are usually consistently reduction-fired throughout their thickness. Temper comprises high intensities of fine to medium quartz sand generally ranging from quantities of 25 to 33%. The particle size of the grains is mostly set around 375 microns (1.5 phi) with occasional larger clear quartz occurring up to 750 microns. Sphericity does not exceed 0.6 and roundness ranges from R5 to R7. The sand grains are mostly clear or transparent with some darkened translucent and morion varieties also present.

Vessel walls can be as thin as 4mm. Body sherds can often show long and consistent streaks of a different hue. Some sherds also carry traces of fine horizontal bands of white slip or paint. These are quite distinct from the integral streaking. No ready analogies have yet been found but Duncan Brown kindly comments that the fingertipped strap-handle of a large pitcher or curfew (fig. 18, GW 13) might, perhaps, claim an Isle of Wight or a North Devon source. Its style might be attributed to the late 16th century. While loosely allied to this group by virtue of its reduction firing, rilled sherd GW8 could be typological earlier than the other vessels assembled here, although no distinctive variation has yet been observed in its fabric.

Colour:
The body colour of these vessels is generally green/brown A5 to neutral 7. Lighter streaks, when present, approximate to brown/yellow A6. The glaze is generally an olive green vitreous splash commonly partially absorbed into the surface of the pot but occasionally gaining the appearance of hardened treacle. The glaze colour generally ranges between green A3 and A5.

Source:
Unknown but perhaps local.

Illustrated examples of coarse grey ware showing significant formal features (figs.17–19)

GW1. Fragmentary shoulder and strap-handle. The curvature of the body fragment favours a curfew but a very large thin-walled pitcher is also possible. The internal surface has been well kneaded where the handle has been bonded. A detached handle fragment is attributed to the same pot. A hard-fired reduced light grey fabric contains liberal fine quartz sand amounting to some 30%. Some occasional rounded ferruginous inclusions are also present. The external surface bears superficial orange oxidisation that fades near the edge of the handle luting. This effect may have been localised on various parts of the pot. Context 160//16.13.

GW2. A damaged rim sherd of the same fabric as GW1. The rim surface bears a single splash of thin translucent light olive green glaze. On the internal surface there are fine light horizontal rills incidentally produced during throwing or wiping. On this sherd it is the internal surface that bears light orange oxidisation yet there is certainly a suspicion that this may be the same vessel as GW1 where the reduced and oxidised surfaces are reversed. Context 160.

GW3. Strap handle segment attributed to a grey ware jug or flagon. Surface is generally light yellowish brown 10YR 6/4. Reduced fabric contains fine quartz sand. Context 160.

GW4. Strap handle segment attributed to a grey ware jug or flagon. Grey core is irregularly tempered with fine quartz sand. Surface is light brownish grey (10YR 6/2 giving way to reddish yellow where weakly oxidised on underside. This may be a differential effect of the firing. Context 460//1.15.

GW5. Flanged bowl with hooked lip. Light grey fabric contains irregular mix of fine quartz beach sand with occasional fine shell particles. Internal and external surfaces are very finely gritty and vary from grey (10YR5/1) to very pale brown (10YR7/3). Context 160/16.4.

GW6. Flanged bowl with hooked lip. Rim top and outer edge bear parallel lines of very thinly applied white slip. Fabric is thoroughly reduced throughout and is mostly dark reddish grey (5YR4/2) at core. Fabric contains some 10% sub-rounded quartz sand with honey and black predominating. Context 160//165

GW7. Bowl with weakly club-profiled rim. Mouth diameter 20cm. Grey fabric contains some 10% sub-angular fine quartz sand grains that are mostly milky. Blackened external surface is weakly scratch-marked. Internal surface is lightly oxidised to reddish yellow and carelessly splashed with a thin and partially absorbed vitreous pale olive green glaze. Context 160//16.18.

GW8. Rilled necked cooking pot. Diameter uncertain. Dark grey external surface of neck is scored with fine shallow horizontal rills. Internal brown surface is weakly splashed with semi-absorbed thin olive green glazes. Grey reduced fabric contains some 10% sub-angular fine quartz sand grains that are mostly milky. (Glaze and fabric is very similar to GW7). Context 160//16.18.

GW12. Mouth fragment of a flagon or curfew retaining the stump of a slashed strap-handle.

GW13. Centre-grooved and fingertipped handle of a hard-fired flagon or curfew with a notably thin wall. Light grey core with incipient pink oxidisation just emergent on an otherwise grey surface. Minor splashes of green translucent glaze. Rare minor particles of biotite in the clay surface. Duncan Brown suggests a late-16th-century date. North Devon analogies but possibly a local Isle of Wight product.

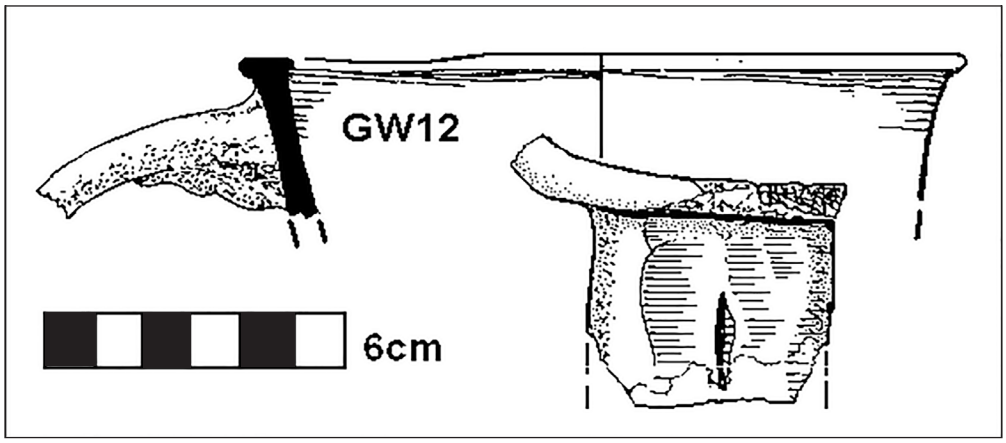

Fig. 17. Flared rimmed flagon GW12 with slashed strap-handle.

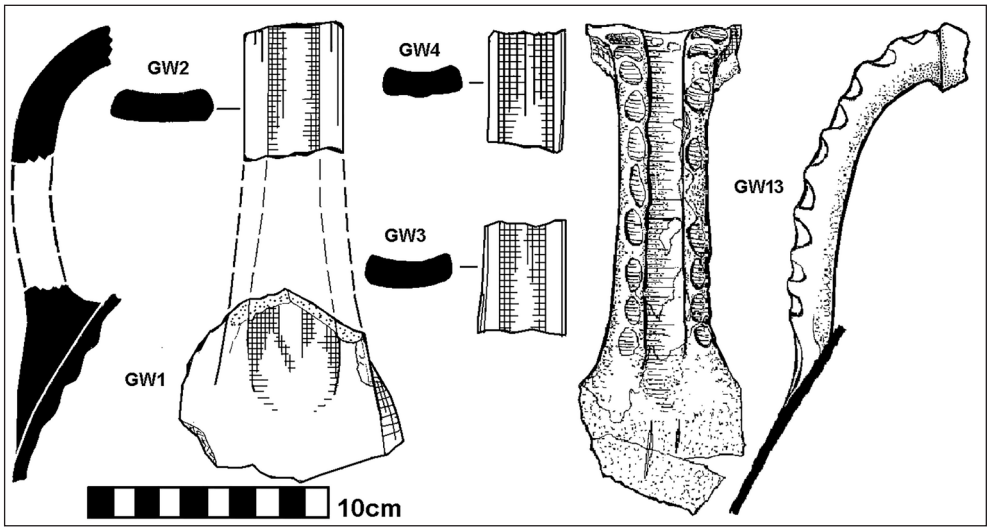

Fig 18. Fragments of strap-handled pitchers or curfews GW1/2 & GW13 and flagons GW3 and GW 4.

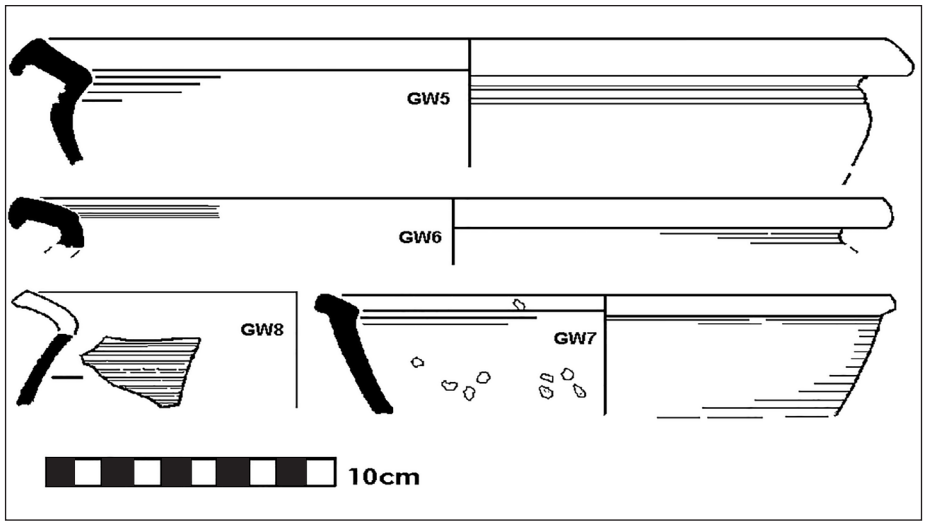

Fig. 19. Grey ware bowls and jar GW5–8.

Group 6. Hard-fired brick textured coarse wares (HBC, fig 20)

Form and general description:

This grouping distinguishes a varied collection of hard-fired vessels with a light brick-red fabric that is sometimes superficially darkened on the external surface. Some highly fragmentary rim sherds indicate flanged bowls or dishes (fig. 20). Some rims could represent lid-seated jars. At least one flowerpot is present. This collection is overwhelmed by featureless body sherds that offer no opportunity for reconstruction. Judged by their hardness and their large rims, it seems that late post-medieval production in the 18th or 19th century might befit these vessels.

Date:

Most of these vessels have a low specific gravity, resembling that light fabric that is commonly to be found in the production of bricks and flowerpots. Foss (2004, 80) cites brick-making by the Prangnell family at Newtown during the late 19th century but tells of no earlier history. The forms of these vessels are difficult to date. Brick-like textures also occur in some Verwood products.

Fabric:

Fine clear, translucent, rose and morion quartz grains are generally found in frequencies ranging from 10% to 30%. Grain size is generally 2 *phi* and sphericity is 7.5. Roundness approximates to R6 on Powers' scale. These are wheel-thrown vessels that are usually oxidised throughout the thickness of the wall, although an occasional and diminutive grey core may, sometimes, be found in some thickened sections like the rim fold or base/wall junction.

In a variant tempering recipe, larger well-rounded quartz grains of 750 microns (approx. 0.5 phi) occur in quantities as low as 5%. Sphericity of these grains is around 7.3 and roundness is R6. Very occasional angular fragments of either white quartz or calcined flint appear as well as very rare incidental fragments of very fine shell. The latter might suggest a local coastal location for their source. It should also be noted that fossil shell is present in some facies of the local Hamstead Clay. If production in the 18th or 19th century truly befits this pottery, the Newtown burgage plot named 'Potter's' on James Mallett's map of 1768 should not be overlooked.

Colour:

Vessels are commonly red/brown B6 throughout while a few versions show lighter streaks of brown B6–7. Vessel BT3 shows strong contrasting streaks that could be consistent with the ferruginous mottling that naturally occurs in the Hamstead Clay bedrock of Newtown.

Illustrated examples of brick-textured coarse ware (fig. 20)

BT1. Dish or possible pancheon. Rim diameter c. 42cm. Context 113

BT2. Dish or possible pancheon with drop-rim. Rim diameter c. 40cm Context 460.

BT3. Flowerpot? Context 162.

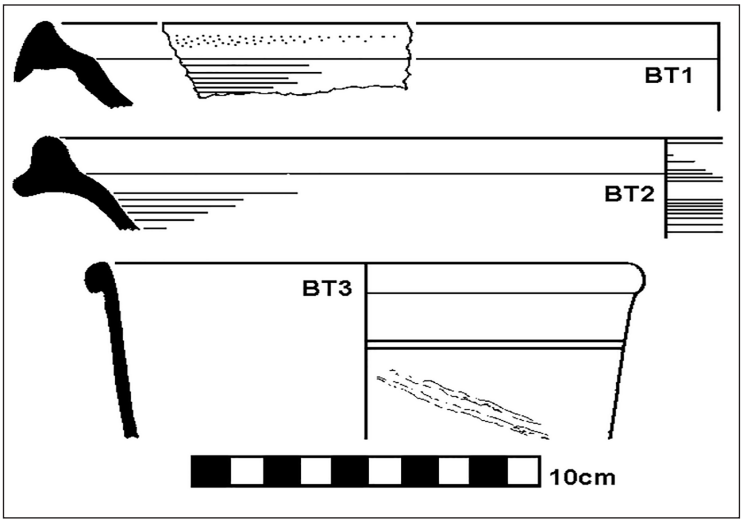

Fig. 20. Brick-fired dishes or pancheons BT1-2 and pot BT3

Regional wares

Group 7. English white wares and 'Tudor green' glazes (WW & TG, fig 21)

Form and general description:

White Wares (WW) and those with Tudor Green glazes (TG) are generic terms employed here to describe products that are mostly attributable to a small number of kilns first identified in the Farnham area of Surrey (Pearce 1992, 1). Further kilns of this industry have since been traced within the Hampshire border at Cove, Farnborough and Hawley. Sometime described as 'Farnham Ware' and 'Surrey White Ware', pottery from these sources has since gained the preferred title of Border Ware (Pearce *ibid*.). Since the production of further contemporary white wares on the periphery of London has now been traced to Kingston-upon-Thames and Cheam, differentiation between the various sources of white ware has become challenging.

At Key Close, a characteristic of group 7 is a white fabric that often bears the green vitreous glaze of 'Tudor Green'. However, due to carelessness and irregularity in the application of the glaze, portions of these vessels were commonly left in raw white condition. Depending on the thickness and thoroughness of its application, the glaze can produce areas of translucency or opacity on the various parts of a pot.

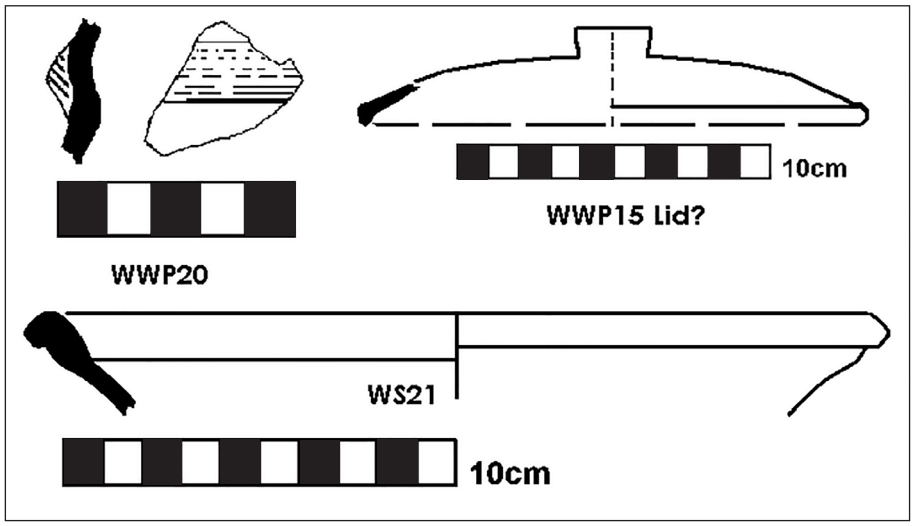

Fig. 21. English white ware with partially applied 'Tudor green' glaze.

Of the thirty-eight sherds of Group 7 recovered from the excavation, fragment TG 4 could be attributed to a shoulder-cordoned 'type 2' chamber-pot of 17th century style (Pearce 1992, 32-4 & 69, fig. 40). Two basal sherds (TG 2 & TG 3) showed relatively small diameters and could represent candlesticks. In each case there was insufficient to provide a positive identification. Other fragments represented at least three drug jars (TG 22–24) and a further example of a 17th century chamber pot (TG 27 from context 162).

Date:
Where white-ware products have been investigated in Southern England, no evidence has yet been found to date their production earlier that the late 16th century. By the time of London's Great Fire in 1666, this ware was well established, yet by the close of the 17th century, it seems that White Wares with their distinctive Tudor Green glaze had given way to a broader body of Border Wares in which red-firing was in the ascendancy ((Pearce 1992, 88–90).

A broader date-range of 1480-1900 has been proposed for Border Ware, yet researchers seem divided in their views on both classification and date. This longer date-range is proffered by those who consider the white wares to be a fine-ware contingent of a larger body of products embracing a later range of coarse red-ware vessels.

At Key Close there is no reason to believe that the modest quantity of white ware is anything other than a contemporary accompaniment to the Anglo-Rhenish stonewares that seem to represent a minor rallying of activity either during or after the time that the first stone building at Key Cottage was erected. Chamber-pot TG27 finds analogy in a similar vessel found in a 17th-century cesspit at Borough High Street, Southwark (Orton 1988, 300, fig.126, no.1188).

Fabric:
A very fine white matrix contains sparse (3%) fine quartz grains showing a mixture of rounded and sub-angular varieties. Fine black particles in TG26 may be limonitised glauconite.

Colour:
A clean white surface (Neutral 9) distinguishes most of the glazed sherds but pink-and brown-tinged variants (Blue/brown A7 & brown/red A) occur in some body sherds that may represent other manufacture (these are noted WW and PWW in inventory). Care was taken to differentiate between these white wares and white body sherds of medieval Saintonge origin.

Group 8. London-area and Hampshire red wares) 1580 – 1900 (LHR, figs. 22a & 22b)
Form and general description:
At the end of the 15th century, some of the producers of Surrey White Wares at Kingston-upon-Thames and Cheam transferred their energies to the production of red ware. This was soon followed by other established producers of white Border Ware. There were also new production centres at Woolwich and Deptford. These everyday red earthenwares included both plain and glazed products as well as vessels bearing zones of white slip. The vitreous glazes on these red wares are often clear or green copper-stained. The adoption of white slips on some red ware products appears to have been prompted by Dutch imports of the 16th century.

A further regional industry to follow these lines was Hampshire Red Ware. This industry also attained a capacity to supply both London and Southampton. Manufacturing sources are poorly understood (London Museum on-line catalogue 2011) but Duncan Brown (2002, 21) identifies production areas around Bishops Waltham and Fareham.

In this report no attempt has been made to differentiate between the individual sources of these later red wares, the impediment being that much definitive information is still unpublished. This text nevertheless distinguishes Verwood Ware where it can be readily identified while further pottery of similar but unproven pedigree is described as Fabric Group 14 and defined as 'Post-Medieval Glazed Coarseware' (PMG). At Key Close we may make a general quantitative distinction between this local cross-Solent source and more distant supplies of London/Hampshire earthenwares but, currently, it seems imprudent to press the evidence any further.

Illustrated vessels attributable to Hampshire and 'London-area' red ware (LHR, figs. 22a & 22b)

LHR1. Pipkin. Handle and body portion only, showing internal very dark green glaze thoroughly applied. Also handle splash. Context 113.

LHR2. Pipkin? Stump handle highly eroded and now of uncertain length. Orange-brown internal glaze. Context 172//7.7

LHR3. Large lipped or distorted panchion. Dark brownish green internal glaze below reeded rim. Also line of further glaze within cusp of rim. Estimated diameter is 44cm. Context 162//.12

LHR4. Chamber pot? Light brown internal glaze extends to rim. Context 113.

LHR5. Chamber pot. Brown glaze with manganese flecks extends to rim. Context 160.

LHR6. Large chamber pot with dark brownish green glaze extending upwards to rim. Context 160.

LHR7. Small chamber pot with pale yellowish green glaze flecked with manganese impurities. Diameter 16cm. Context 460//1.57.LHR8. Panchion with rolled rim and thin greenish yellow internal glaze Estimated diameter 30cm. Context 113.

LHR8. Pancheon with rolled rim and thin greenish yellow internal glaze. Estimated diameter 30cm. Context 113.

LHR9. Small portion of large chafing dish with prominent rim lugs. Interior is thoroughly coated with a brown glaze with common flecks of manganese impurities. Estimated diameter is 22cm. Context 113.

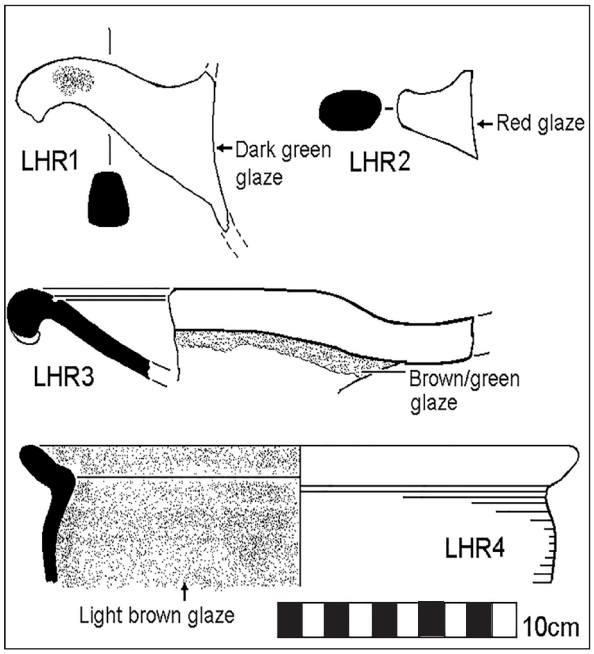

Fig. 22a. London/Hampshire Red Ware bowls & pipkins LHR 1–4

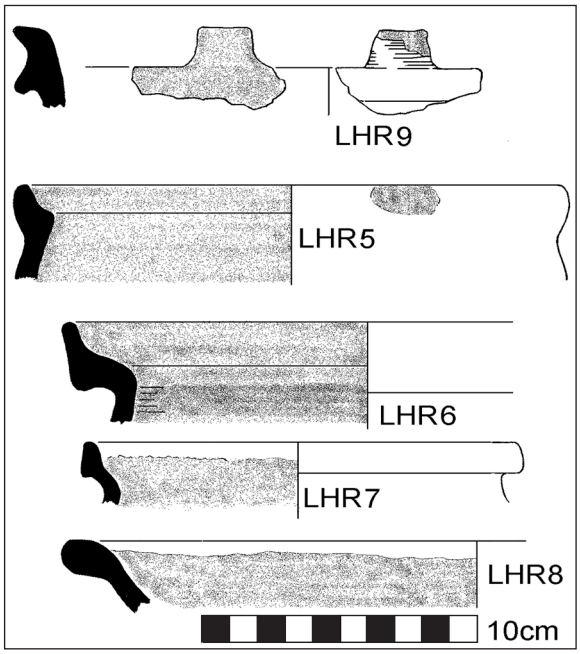

Fig. 22b. London/Hampshire Red Ware. Chamber pots LHR 5–7, bowl/pancheon LHR8 and chafing dish LHR 9.

Group 9. Verwood Ware (circa 1280-1950) and kindred post-medieval glazed coarse wares (fig. 23)

Form and general description

Situated on the eastern margin of the New Forest, Verwood was the centre of a prolific rural potting industry spanning both the medieval and post-medieval periods. A settlement identified in 1280 by the name Potterne marks the earliest known stage of pottery production in and around this East Dorset village. Here, the presence of potters is further confirmed in manorial accounts of 1317 and 1337 (Draper 2002, 31) While Verwood kilns of the medieval period have yet to be revealed, somewhat comparable products have been found in neighbouring kilns at Lavertock, near Salisbury (Draper 2002, 29–30)

The earliest excavated Verwood kiln is at Horton where clay-digging is documented in 1637 (Draper 2002, 32). This kiln produced vessels with light orange and very light green vitreous glazes, the latter being mostly well speckled with fine manganese impurities. Post-medieval products include jugs, cisterns, bucket pots, flagons, costrels, bread bins/ bushels, butter pots, butter churns, colanders, money boxes, bowls, pans, chamber pots and eventually flower pots and other garden wares (Draper 2002).

Eighteenth-century products show a preference for semi-translucent mustard-yellow and brown manganese glazes. These are mostly applied all over the inside of vessels while on the external surface they are more often spread no lower than the shoulder. Honey/amber red glazes show some favour during the 19th century while brown and yellow persist to the close of the industry. Unglazed vessels are also known from the rural industry at Verwood.

In her overview of this ‘Dorset country pottery’ Jo Draper (1984, 8 & 2002) still applies caution in provenancing some of these products. In accordance with this caveat, some of the fragments in Fabric Group 9 are simply described as post-medieval glazed ware. Verwood vessels present at Key Close were jugs, colanders, handled cook-pots, dripping

trays, pipkins, lids, chafing dishes, chamber pots and bread bins. While all sherds in this fabric group were quantified by number and weight, only the fragment of the handled dripping tray (VW30) survived in sufficient condition to warrant illustration (fig. 23).

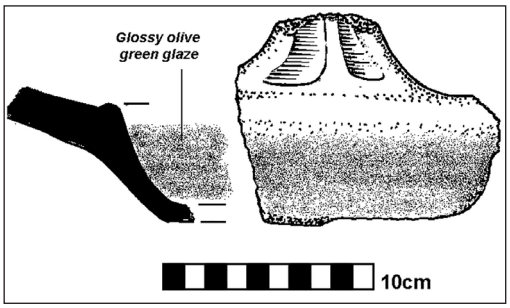

Fig. 23. Large straight-sided dripping tray with glossy olive green internal glaze. The sherd is tilted to show handle detail. Context 113 and possibly derived from midden 160.

Pottery imported from continental sources

Group 10. Delft and related blue and white tin-glazed ware (fig. 24)

Dutch tin-glazed pottery is first documented in the Netherlands in 1511 when plain white glazes were produced. By 1560, manufacture and export are well underway when blue and yellow are often added to produce simple painted decoration. By this time production of the finer examples is centred on Delft. Situated in the hinterland of Rotterdam, this town was well positioned to feed the port's export trade. Kindred wares were soon to emerge at Middelburg, Haarlem, Gouda, Amsterdam and Dordrecht.

Favoured products of these towns are blue and white drug jars, dishes and jugs. In the 18th century these are followed by scenic wall tiles. From *circa* 1570, London versions of the Dutch products are in popular English circulation. No clear differentiation between Dutch or London manufacture has been made in the examination of the Key Close sherds. These are fragments of drug jars, a rod-handled jug and very small remnants of chargers.

Illustrated vessels bearing blue and white tin-glazed of Delft style (fig. 24)

D1. Eroded rim sherd of a small bowl bearing blue flowers on a dirty white background displayed on both the internal and external surfaces. Beneath the vitreous glaze, a pale yellow surface gives way to a slightly rough pale pink core. Probably 16th century. Context 460//110.

D2. Thick-walled body sherd bearing blue, white and yellow painted decoration. The internal surface bears a plain vitreous glaze. Fracture is light pink throughout. The variated decoration and body thickness befits a robust drug jar.160. Context 113.

D3. Two small body sherds bear internal blue and white decoration, perhaps best befitted to a plate or charger. Context 160.

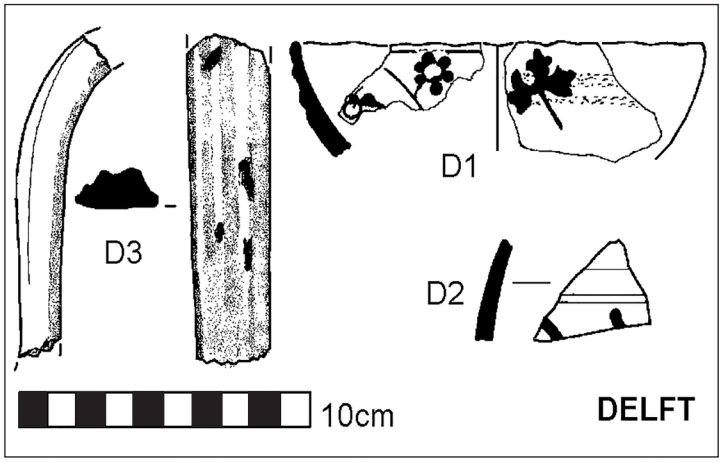

Fig. 24. Tin glazed ware with blue decoration fashioned in the Delft tradition.

Group 11. Imported French pottery (fig 25)
Imported French pottery is markedly sparse at Key Close. Given Newtown's uncomfortable history of Anglo-French conflict this may scarcely be a surprise. Allan (1983, 204) and Mepham (2000, 103) both remark that, with the exception of the major medieval trading ports of the English Channel coast, there is a general dearth of French ceramic imports in the southern counties. This includes the Norman castles of Wareham, Corfe, Carisbrooke and Portchester.

A minimal presence of white Saintonge ware has been noted at Key Close. Here we find just the neck-rim portion of a strap-handled pitcher and a few body sherds bearing sparse traces of spilt or splattered green glaze. These sherds are generally akin to strap-handled pitchers of a type otherwise recovered from the inter-tidal silts on the Isle of Wight coast at Wootton Haven. A complete example with characteristic parrot-beak spout has been illustrated from Cuckoo Lane Southampton (P & C, II, fig. 183, 1014). A date in the late 13th century can be attributed to this ware. Further French imports at Newtown are represented by just one body sherd of Normandy gritty ware. This ware has been also been noted in stratified contexts at Carisbrooke Castle where its use is evident during the 12th and 13th centuries (Mepham 2000, 192).

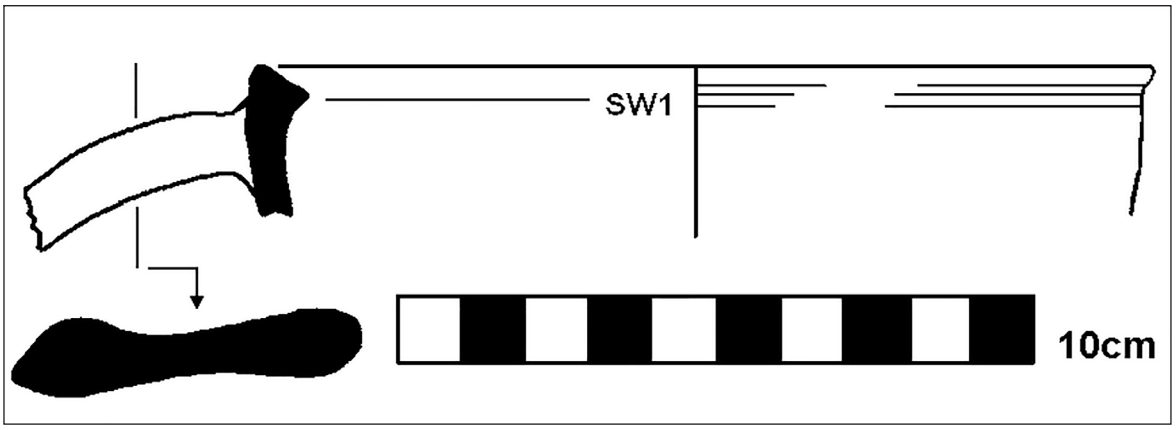

Fig. 25. Mouth of a Saintonge white ware strap-handled pitcher of circa 1250–1350.

Group 12. Imported Spanish pottery
Two shoulder fragments of thick white coarse ware represent Spanish olive jars of 16th-century character. By virtue of their matching fabric, both fragments appear to belong to the same vessel. It is unfortunate that no distinctive formal features of this vessel survive.

From midden 160 comes a portion of the neck and handle of a vessel with a narrow bottle-like mouth or spout. Although it is highly eroded and now virtually devoid of its transparent tin glaze, Duncan Brown comments that this is an Iberian product with features that are suited, or akin, to a costrel. From the periphery of this midden, in context 460, come two thin body sherds of a small red ware vessel with a white internal and external slip. The exterior bears a small diagonal line of green paint. Where the fabric bears metamorphic inclusions, Duncan Brown postulates an Iberian or Andalusian source.

Group 13. German/Rhenish and related stonewares (fig. 26 & plate C)
Forty-eight sherds of imported German and related stoneware include products of the Raeren, Frechen and Seigburg industries. Where body fragments of Bartmann 'Bellarmine' bottles have been identified at Key Close, these may include products from Cologne and Amsterdam as well as imitative examples produced in London. It is, perhaps, a consignment of early Rhenish stonewares that Arnold Johnson is carrying when unloading his cargo at Southampton Quay in 1509. While delivering a consignment of paving stones he also declares a quantity of 'Flanders pots' (James 1990, 18–19).

None of the sherds recovered at Key Close include fragments of the characteristic (Bartmann) bearded face but, on the evidence provided by its girth inscription, fragment ARB20 from context 113/504 can be securely attributed to a standardised product from the Frechen kilns (fig. 26 & plate C). This is a body fragment of a tiger glazed *bartmann* jug bearing a small portion of an embossed girth inscription …*LT:VE*… This captures the first and closing words of a circular inscription. Analogies with other Frechen jugs suggest this to be – ***VE****IL BEDEUTET WIE WANN GOT WILL SO IST MEINE ZE****LT***. Loosely translated, this proclaims that *where God wills it, so it is my goal*. This inscription is otherwise known on similar examples dating from around AD 1570. Although this fragment was recovered from JCB up-cast, it was confidently attributed to the removal of the sandy bedding (504) beneath the flagged floor of Key Cottage.

Other stoneware imports at Key Close were represented by fragments of a thumb-footed drinking jug of Raeren type and tube-necked drinking jugs of Frechen type. The Raeren vessel may have reached Key Close around the opening of the 16th century while the Frechen tube-necked jugs are more likely to have been in use during the mid-16th century. The inscribed Bellarmine jug is likely to have been in use during the last quarter of the 16th century. Production of other Bellarmine bottles is known to have continued well into the 17th century when further Anglo-Rhenish Bartmann (ARB) vessels could have been discarded at Key Close.

Fig. 26. Graphic reconstruction of the Frechen Bartmann stoneware jug represented by a single surviving sherd bearing a standard girth inscription. Recovered from context 113/504 beneath the flag floor of Key Cottage. See also plate C.

Summary of the stonewares

Forty-eight fragments of salt-glazed stoneware were recovered from Key Close. With the exception of a basal portion of a Victorian ink jar, two unclassified footed base sherds and a portion of corrugated marmalade jar (discarded), all could be generally attributed to bottles and drinking jugs of 16th-or 17th-century date.

A large proportion of these sherds were nothing more than plain salt-glazed body fragments, yet after their general diameter and inclination had been extrapolated from their internal throwing rills, many could be reconciled with the bulbous body profile that is typical of 'bartmann' bottles of the Bellarmine type. The description 'Anglo-Rhenish' is applied here where there is insufficient evidence to determine whether some of these vessels are of English or continental manufacture.

The various sources of the imported stonewares are to be found in the riparian environs of the Rhine. These include Cologne, its satellite potting industries at Frechen and Seigburg and the Raeren potteries on the Lower Rhine in the vicinity of the medieval city of Aachen. The latter is now contained within the border of Belgium.

Dating

The earliest stoneware vessels at Key Close are a pinched-based jug of Raeren style and a small flared-necked jug of early Seigburg type (items 17 & 13). These may have arrived at Newtown at the close of the 15th century or perhaps during the early part of the 16th century. Frechen products at Key Close include tube-necked drinking jugs, represented by fragments 10, 11 & 12. Production and consumption of these vessels can be generally attributed to the period 1480 to 1610 (compare Museum of London acc. A2323 & A13366).

A significant item is a small fragment of a Frechen 'bartmann' jug with an embossed girth inscription (item 20). Rhenish production of these vessels is generally dated to the last quarter of the 16th century. The provenance of this particular item, attributed to context 504, pre-dates the laying of the flagstone floor within Key Cottage. Unfortunately

this item was recovered from fresh digger up-cast when the floor and its bedding were mechanically removed. This makes its precise archaeological position uncorroborated.

It appears that the stonewares at Key Close provide a useful index of human activity on this site during the earlier post-medieval period. Robust and easy to recognise, these products were a popular import in 16th-century England. While their use persisted in the 17th-century, Rhenish imports generally show a decline in England during and after Cromwellian times when English stonewares gain the ascendancy. After 1720, the grey German stonewares of Westerwald displace the earlier exports from Raeren, Frechen, Seigburg, Langerwehr and Cologne. These later grey stoneware products are virtually absent at Key Close although one small fragment of a Westerwald stoneware vessel was noted.

Despite the continued manufacture and common use of English stonewares in the later post-medieval period, we find no significant evidence of their use at Key Close. This accords with a general dearth of 18th-and 19th-century ceramics so far observed at Newtown.

Un-assigned pottery

Group 14. Micaceous coarseware (MC, figs 27–29)

The vessels in this fabric group comprise flagons, pancheons, dripping trays, bowls and lids. All show a minor incidence of very fine mica particles that never exceeds 3% in the finished surface. A generous application of olive green internal glaze occurs on rilled bowl MC9. Light brown and brownish green internal glazes occur on body sherds of other small rilled vessels in this group. Unfortunately, none of these other glazed sherds offer much evidence of form although it seems that all may be deep bowls of relatively small size. Bowl MC9 finds close comparison with a 16–17th-century example excavated in Southampton (noted below).

A sherd attributed to a thick-walled dripping pan (MC8) bears minor internal traces of a vitreous honey-coloured glaze. This offers an indication that a more thorough application of this glaze had been applied to the floor of this vessel.

All other vessels in this fabric group appear to be devoid of glaze. The thin-flanged funnel-shaped pieces have been interpreted as lids although it seems equally possible that they are the basal portions of candlesticks. Four examples have a uniform diameter of 12cm that seems well suited to the latter. Two further examples are thinner and smaller.

A weak incidence of fine mica plates can be found in the fabric of some Verwood products and we should consider whether some or perhaps most of these micaceous vessels could have come from this source. However, none of these Key Close vessels find ready matches in the general array of familiar Verwood products. There is, moreover, no evidence for candlesticks or small thin funnel-shaped lids in the Verwood industry. The source of these Key Close vessels is currently unresolved and this demands their treatment as a distinct entity.

Illustrated vessels of micaceous coarseware (figs. 27–29)

MC1 Large strap-handled flagon or pitcher. 12cm dia. 10% e.v.e.
Context 162//18.7. Illustrated.

MC2. Strap handle of flagon. Context 160//16.18. Illustrated.

MC3. Pancheon. 32cm dia. 6% e.v.e. Context 172//12. Illustrated.

MC4. Pancheon. 33cm dia. 8% e.v.e. Context 160//16.19. Illustrated.

MC5. Pancheon. 42cm dia. 10% e.v.e. Context 160. Illustrated.

MC6. Basal flange of lid or candlestick. Diameter 12cm. 20% e.v.e. No glaze. Context 113. Illustrated.

MC7. Basal flange of lid or candlestick. Diameter 11cm. No glaze. Context 113. Illustrated.

MC8. Thick-walled open-form vessel with traces of a pinched corner suited to a dripping pan. Minor traces of internal honey-coloured glaze probably associated with a more thorough application on the lower and lost portion of the pot. Context 113. Illustrated.

MC9. Twin-grooved bowl with olive green internal glaze, probably applied throughout. Compare vessel 729 from 16th–17th-context, Wacher site A1 pit 6, Southampton (P&C-S, 1975, II, 110. fig 166).
1% e.v.e. Context 113. Illustrated.

MC10. Rilled body sherd probably part of a small deep bowl. External rilling is over-scored with zigzag incisions. Interior bears a thin light brown semi-translucent glaze that is partially absorbed into the surface. Context 113. Illustrated.

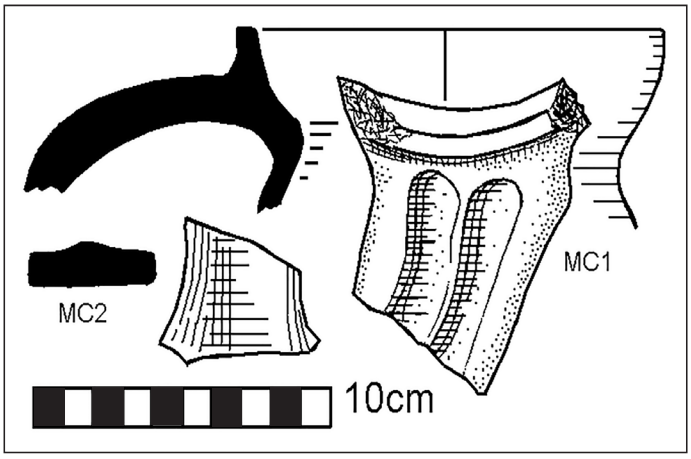

Fig. 27: Micaceous coarseware. Flagon fragments MC1 & MC2.

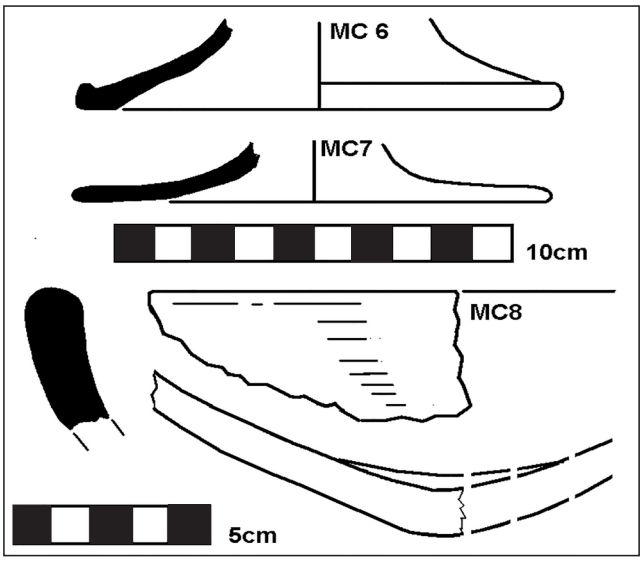

Fig. 28. Micaceous coarseware. Lids or candlestick bases (MC6 & 7) and dripping pan MC8.

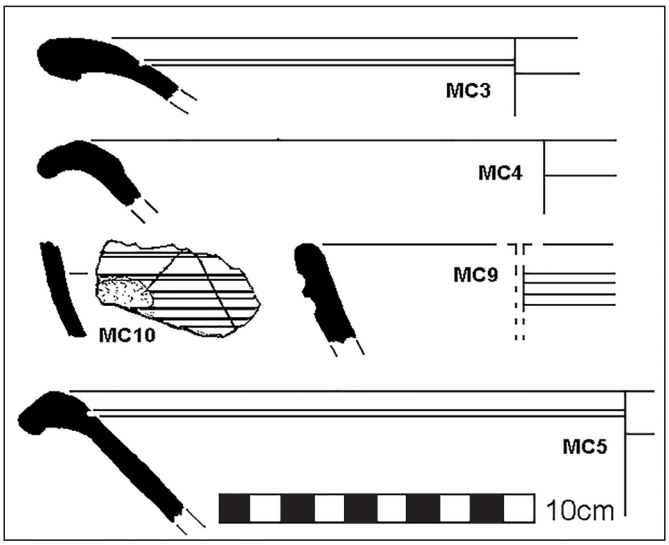

Fig. 29. Micaceous Coarseware. Pancheons MC 3, 4 5, and bowls MC 9 &10.

Group 15. Unclassified pottery noted and illustrated (UC, figs. 30 & 31)

UC2. Medieval shoulder-combed flagon with sparse weak olive green glaze. Midden context 170.

UC3. Small unclassified strap-handled cup with olive glaze on rim and interior. Thin hard-fired wall shows unusual black core. Duncan Brown suggests under-fired Border War of late 16th-or early 17th-century date. Midden context 160.

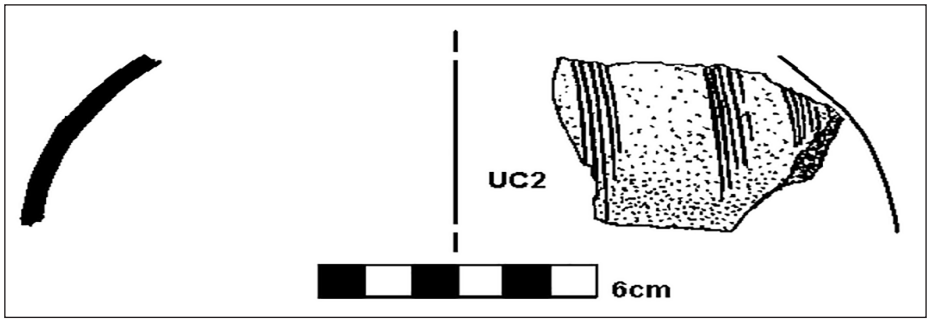

Fig. 30. UC2. Shoulder of flagon with combed rib-lines and weak splashes of olive glaze. Probably mid- 13th century. From midden context 170.

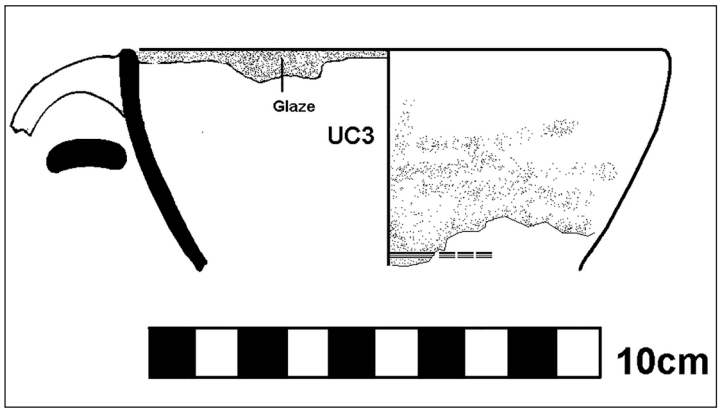

Fig. 31. UC3. Small handled cup with sparse olive green glaze in rim and interior. A trace of an incised basal decoration survives. Possibly an under-fired Border Ware product of late 16th-or early 17th=century date. Midden context 160.

Local coarse wares; questions of fabric and form

Relatively little is known of the production and consumption of medieval coarse wares within the Isle of Wight. Excavations at Carisbrooke Castle have produced a helpful stratified assemblage of sherds ranging from the 11th to the 15th century as well as a small collection of fragments of Saxo-Norman cooking pots (Mepham 2000). In the analytical and descriptive system employed at the castle, a number of coarse wares were considered to be 'probably local' (figs. 32 & 33). The textural classifications applied to many of these sherds can be usefully employed at Newtown. The castle classification begins with a simple division into eight fabric types of which fabrics Q404, S400 and S402 were the dominant wares of the entire medieval assemblage. (These are italicised in the table shown here).

At Carisbrooke Castle, local domestic vessels with sandy tempering (Q404) first appear with the arrival of the Norman castle-builders during the construction of primary defences in the latter half of the 11th century (castle phase 4a). These early forms continued in use until the middle of the 13th century (castle phase 5c). After this time the production of the earlier forms of 'jar' or cooking pot were largely discontinued but some use of sand temper continued to the close of the 14th century after a demand for bowls and jugs in this fabric had come to the fore. Jugs of this ware did not appear until *circa* AD 1250 and then persisted until *circa* AD 1400.

Local coarse wares defined at Carisbrooke Castle

Dominant wares are italicised

Flint tempered vessels		
Caris F400		V. Hard. Sub-angular flint. Poorly sorted quartz.
Caris F401		Hard. Sub-ang flint. Well-sorted quartz.
		Quartz sand-tempered vessels
Caris Q402		Hard. Poorly sorted quartz sand + rare flint.
Caris Q404	*(22.4%)*	Hard. Well-sorted quartz sand. Shelly tempered vessels
Caris S400	*(39.6%)*	Soft. Limestone & fossil shell.
Caris S401		Soft. Lst & fossil shell + some flint.
Caris S402	*(19.0%)*	Hard. Limestone & fossil shell.
Caris S403		Hard. Sparse limestone & fossil + rare flint.

At the castle, the sandy ware is mirrored by a parallel use of similar 'jars' or cooking pots composed of shelly fabric. Dominated by fabric S400, these vessels follow a similar time trajectory. In both wares, diversification into the production of pitchers occurs before the close of the 11th century. A further shift occurs in the mid 13th century when the potters of both wares transfer their interest to jug production. It seems, however, that bowls composed of sandy ware (Mepham types 10–12) persisted at least into the 15th century.

At Key Close it is evident that the predominant coarse ware also comprises cooking pots tempered with sand. (At Carisbrooke Castle this same form has been described as a jar). At Key Close the earliest typological examples are those with a sagging base. Where evidence of these distinctive bases has survived, the tempering of these vessels can be seen to contain poorly sorted sand. This may be compared with Carisbrooke fabric Q402.

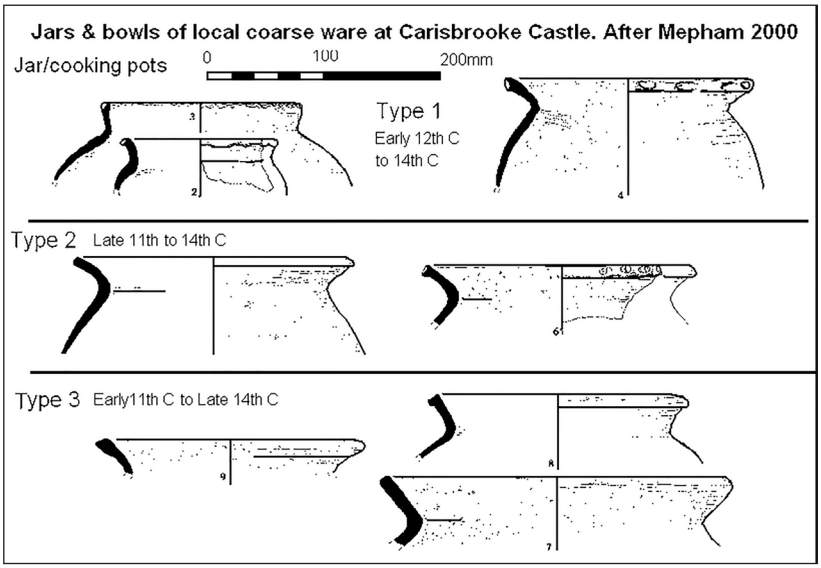

Fig. 32. *Cooking vessels of form 1–*3 *at Carisbrooke Castle. After Mepham.*

In the medieval city of Southampton, archaeological evidence shows that the use of unglazed cooking pots with sagging bases was common until mid 14th century. After this time, this pot progressively gave way to certain glazed versions. It was also eclipsed by the use of footed ceramic cauldrons and pipkins. These latter vessels, like newly preferred metal cauldrons, were better suited to cooking over an open-fire.

It was also around the mid-14th century that the flat-based version of the cooking pot made its debut. This was an opportune modification now allowing an innovative version of the old form to stand securely on a table or shelf where it could gain new life as a storage vessel. A number of vessels at Key Close attest to the use of this form. These may be compared with examples employed in Southampton during the 15th and 16th centuries (*e.g.* P & C 1974 fig. 164 nos. 657 & 674).

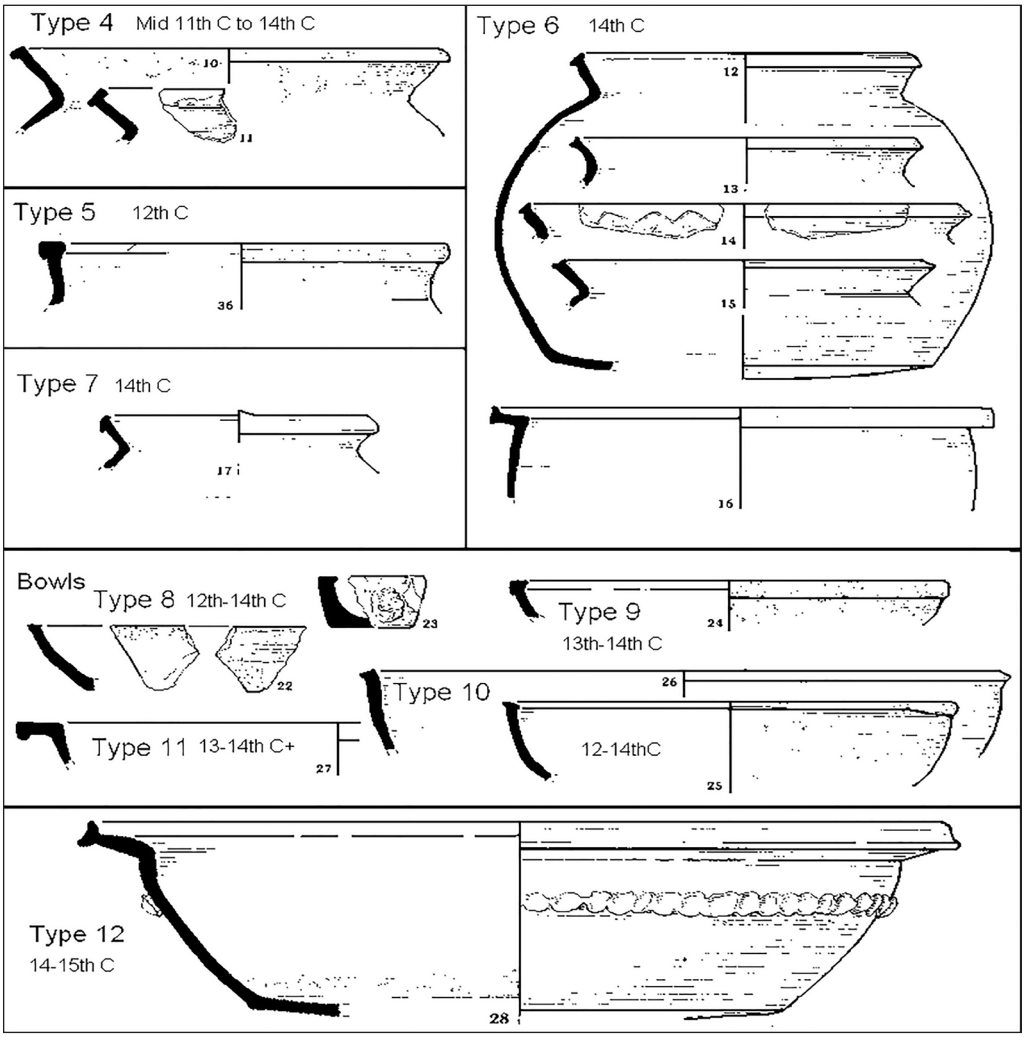

Fig. 33. Cooking vessels of form 4–12 at Carisbrooke Castle. After Mepham.

At Carisbrooke Castle, Mepham (2000, 119, 110) has perceived a number of changes in the rim and neck profiles of local Isle of Wight cooking pots or jars during the period AD 1100 to AD 1500. During much of this time, the basic type 2-4 jar was in use (figs. 32–33). This can be traced from the opening of the 11th century, to the close of the 13th century (Mepham 2000, 119 table 9). Mepham observes that variant jars of form 6 and 7 appear to be notably later, yet neither of these varieties seems to be markedly different from some of the earlier forms (fig. 33). We must remember, however, that, due to their fragmentary condition, we are still unable to view the full profiles of these pots.

Because of the problem of fragmentation, classification of sherds at the castle was reliant on variations in shoulder, neck and rim. This has left, unresolved, the persistence of the sagging based form. This, perhaps, was similar to the history of pottery in Southampton. From pit C5 in Quilter's Vault, Southampton comes a heightened version of the traditional jar now enhanced with an internal glaze but still retaining its sagging base (P & C 1975, 109–110, fig. 166, 731). This attests the persistence of the sagging base at least until the close of the 16th century.

Where the Mepham classification has outlined variations and preferences in the fashioning of rims, this can be helpfully applied to the Key Close assemblage. The caveat remains, however, that this classification rests on no more than 239 rim sherds of vessels discarded within the castle walls during ten discernable periods covering some four hundred years. In some of these periods, vessel types are represented by no more than a single sherd. This makes the relative dating of local cooking pots like those at Newtown a subjective exercise in which the relative effects of deliberate change versus idiosyncratic variation cannot be satisfactorily determined.

At Key Close the fabric and finish of the sand-tempered cooking pots also hint at an evolutionary change. Those pots perceived to be generically early are those with a relatively soft fabric that has been lightly but consistently fired in a weak oxidising atmosphere. The result is a brown texture throughout the thickness of the pot. These attributes are not too dissimilar to Vectis Ware, the indigenous brown pottery of Roman Wight (Tomalin 1987). At Key Close generically 'early' cooking pots amount to 7.6% of the pottery by sherd quantity and 3.6% by estimated vessel equivalents (e.v.e).

Local cooking pots perceived to be of later character at Key Close are those that have received a harder firing and an oxidised finish. Colour can commonly vary from yellow/brown to red/brown while the surface is more often well smoothed with far less exposure of quartz grit. Although, due their fragmentary nature, their forms cannot be fully reconstructed, some of these pots display a very sparse splattering of green glaze on or near the rim. Analogies with cooking pots excavated in Southampton suggest that these glazed versions are unlikely to have appeared before the early 13th century. Cooking pot 269 from pit 1 at the National Provincial Bank belongs to this period and is one the city's earliest noted examples (P & C 1975, fig. 143).

In Southampton, studies suggest that local potters were slow and conservative in making changes to their cooking pots during Norman and post-Norman times (P & C 1975, 22). It also appears that, on occasion, potters could revert to older forms. One wonders whether some of these perceived 'reversions' concern the arrival of supplementary supplies from the Isle of Wight, where response to vogue or change in ceramic styles may have been slower.

Some of the progressive changes in the Southampton pots include a greater reddening and hardening of the fabric and lesser use of the sandier and grittier tempering recipes. These are features that are clearly present in Fabric Group 3 at Key Close. Reversionary trends include a random recurrence of crude scratched external finishes and periodic re-adoption of the old sagging base design (P & C *ibid*).

These observations are certainly helpful at Key Close because they offer the caveat that at least some of the cruder sandy fabrics and, indeed, the sagging based vessels at this site, need not be any older than the harder and splatter-glazed cooking pots that could have been in use here any time during and after the early 13th century. If we accept the archaeological evidence offered in Southampton, a terminal date for the traditional cooking pot style probably lies somewhere in the 16th century. This is suggested by the nature of sagging based vessel 676, from layer 1c at High Street Site C (P & C 1975, fig. 164). Here is an internally glazed jar that still draws its form from a much earlier generation of such vessels.

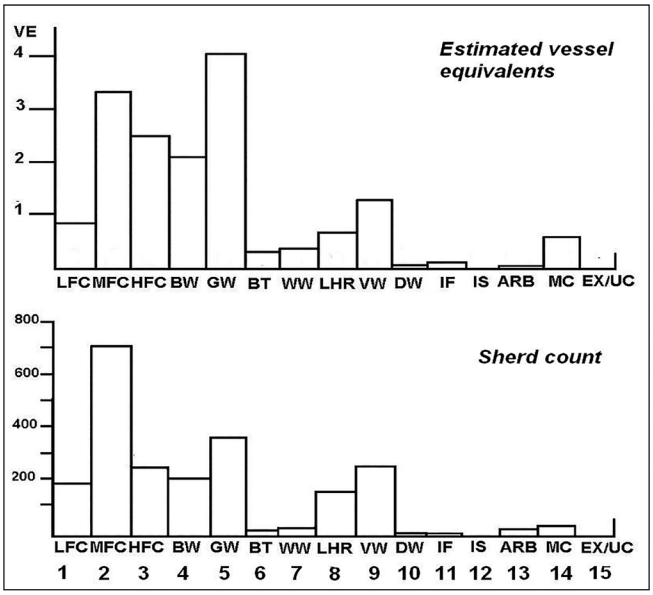

Fig.34. The incidence of Medieval and post-medieval fabric groups in the pottery recovered from Key Close. Groups 1-5 may be attributed to the time frame AD 1250-1550 and might include local products. Groups 6-15 are generally dated 1500-1750. The dating of group 14 may be earlier than 1500.

Quantification of the Newtown pottery

		Weight kg		*EVE*		*Qty*	
1	Low-fired coarseware	*1.435*	*4.77%*	0.59	(3.6%)	198	(7.6%)
2	Medium-fired coarseware	*5.09*	*17%*	2.4	(14.6%)	711	(12.7%)
3	Hard-fired coarseware	*2.563*	*8.53%*	1.5	(9.1%)	260	(10%)
4	Buff ware	*2.346*	*7.80%*	2.16	(13.2%)	218	(8.4%)
5	Grey reduced coarseware + medieval sparse glazed	*4.538*	*15.1%*	4.09	(25%)	389	(15%)
6	Brick-textured ware	*0.490*	*1.6%*	0.35	(2.1%)	32	(12%)
7	White wares (WW +TG)	*0.270*	*0.89%*	0.46	(2.8%)	24 + 14	(1.5%)
8	London/Hants red wares	*1.965*	*6.54%*	0.60	(3.7%)	172	(6.6%)
9	Verwood & other post-med glazed ware	*5.467*	*18.2%*	1.40	(8.5%)	279	(10.7%)
10	Delft	*0.096*	*0.3%*	0.09	(0.5%)	5	(0.2%)
11	Imported French	*0.084*	*0.27%*	0.19	(1.1%)	4	(0.15%)
12	Imported Spanish	*0.066*	*0.21%*	no rims		2	(0.07%)
13	Anglo-Rhenish stoneware	*0.695*	*2.31%*	0.55	(3.3%)	48	(1.8%)
14	Micaceous ware	*1.020*	*3.39%*	1.14	(7%)	55	(2%)
15	Other noted wares						
	a. Other post-med pottery	*2.850*	*9.48%*	0.29	(1.8%)	120	(4.6%)
	b. Exotic & undefined	*0.770*	*2.56%*	0.16	(1%)	20	(0.7%)
	c. Victorian various	*0.300*	*0.9%*	0.41	(2.5%)	48	(1.8%)
	Total	**30.045**		**16.38**		**2599**	

When we consider the quantification of the Key Close pottery by both sherd count and estimated vessel equivalents (fig. 34), it is evident that the medium fired coarse wares of group 2 and the grey wares of group 5 dominate the overall assemblage. The buff ware of group 4 is the third contender. Where the fabric of these first two products is undistinguished and simply tempered with sand, it appears from the quartz-grain characteristics that at least two different sources may have been used. Nevertheless, such differences need not necessarily signify any great difference in location. The sands of the shoreline may be ever changing while the variegated clays of the local Hamstead and Osborne Beds offer all manner of local opportunities to extract suitable clay. Ashore in the same coastland zone, the mixed deciduous woodland of this district has long provided suitable fuel for kiln firings.

A former clay source remarkably close to Key Close was once exploited by Nicholas Dobree. Nicholas's indenture for brick-making at the edge of Newtown Marsh is dated 1730 (Foss 2004, 82). On James Mallett's map of 1768 we find Dobree's land marked on the north side of Quay Street, just 200m northwest of Key Cottage (fig. 9). This is the last property before this street meets with the margin of the creek. Whether Nicholas was living rather than working here is uncertain because just 300m east of this property, James Mallett records for us 'Brick Kiln Close' (fig. 45). Perhaps Nicholas was not the only one to recognise the potential of this local clay because the plot immediately adjoining his land is the one we have already noted to be the one occupied by the 'Potters' (fig. 45).

Ceramic building materials

1. Daub

Fragments of firm clay daub, amounting to 0.758kg come from contexts 160 and 170 where medieval pottery has also been recovered. The organic content of these fragments commonly shows casts of plant stems ranging from 9 to 16mm in diameter. These are indicative of strong wattle rods. Fragments from context 170 had been hardened and oxidised by intense burning. Here, it seems, are traces of a wooden building that may have pre-dated the Tudor construction of Key Cottage. Similar material lay closer to Key Cottage where it was contained in midden context 160.

2. Ceramic roof-ridge tile of medieval type

Two fragments of ceramic roof tile come from contexts 120/160 and 113. The latter fragment appears to have been scraped from the surface of shell midden 160. Together, these two fragments offer a partial reconstruction of an arched

ridge tile with crenulated crest (fig. 35). Along the centre of the underside there is a flat internal luting strip or platform strengthening the apical junction of the two sidewalls. Close to the spurred crest of the tile, some minor splashes of thin weak yellow/green glaze have been spilt and absorbed into the clay. The core of this tile is poorly fired blue/grey with some 15% well rounded transparent and translucent quartz sand and some occasional soft oxidised ferruginous particles. The internal and external surfaces are well oxidised to yellow/brown B5. The shallow dorsal spur is eroded but almost complete.

Ridge tiles of this type have been examined in Southampton where dated examples range from the 13th to 16th centuries (Dunning 1975, 186-196). Flecked green glaze appears with the earliest tiles (*cf*. Dunning in P & C, cat no.1393) but persists beyond the 15th century. It appears that after this time, yellow and greenish yellow glazes gain ascendancy. At Carisbrooke Castle, fragments of ridge tiles with a similar internal luting platform come from a 'Phase 8' context that is dated to the 16th century (Cleal 2000,166-7, fig. 62, nos 5 & 8). If this luting technique is characteristic of local tiles of this period then the Key Close example could belong to the Tudor structure that was to become Key Cottage.

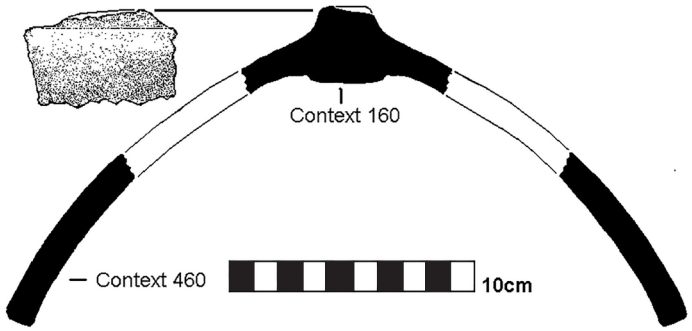

Fig. 35. Reconstruction of the roof ridge tile based on two fragments from contiguous contexts 160 & 460. Minor weak splashes of green translucent glaze are present near the crest.

3. Floor tiles

A large fragment of yellow glazed floor tile was unstratified in context 113 (artefact ID 713). Its thickness is 34mm. The body of the tile is brick red. Its surviving side shows a chamfer similar to that found on medieval encaustic tiles. Insufficient survived to show the full dimensions of this item but a square in excess of 19cm is suggested. The tile bears resemblance to some large medieval floor tiles formerly held and exhibited at Quarr Abbey. Others are known in medieval Winchester. It seems possible that this fragment may have come from Newtown's medieval chapel after its demolition in the mid 19th century.

From context 195 comes a large fragment of unglazed floor tile, fired to soft brick quality. Its thickness is 5cm and its dimensions exceed 19cm. Its surviving straight edge shows no undercutting or bevelling,

4. Brick

A robust fragment of brick was recovered from context 162. Its thickness of 5cm accords with bricks used in the construction of Key Cottage.

From the primary fill of the burgage ditch (Context 181) came a single small and undistinguished fragment of brick. Its presence hints that the cutting of this ditch and the clear demarcation of the burgage plot may not have occurred any earlier than Tudor times.

Stone building materials

Stones from the excavation included two items from the Binstead facies of the Bembridge Limestone Formation. Both had been dressed for specific building purposes. Both stones were mechanically dislodged from the surface of context 160 where their stratification within or on top of this deposit was uncertain.

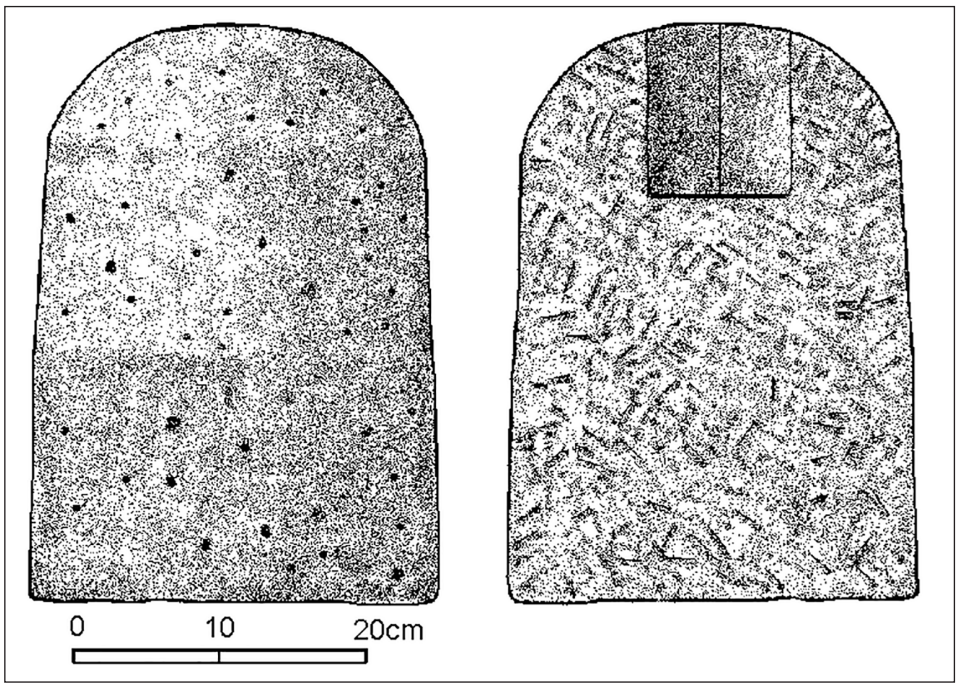

Fig. 36. Bembridge limestone spur-stone or pier-base from the surface of context 160.

Dressed Bembridge Limestone building components

1. The first item has been considered to be a socketed pier-base that had since been longitudinally cleaved and re-dressed for some other purpose. As a socket for a wooden pier it could have supported a lintel in the open front of the phase 1 structure has been noted in part 1 of this report. Due to its semi-design, it may, however, have been better suited to serve as a protective spur-stone, set at the corner of a building.
2. The second stone is a well-dressed rectangular slab that has probably been employed as a quoin.

Stone foreign to the Isle of Wight

3. An irregular fragment of hard limestone containing an intense shell brash. Similar to Jurassic Limestone of south Dorset. Perhaps from a Purbeck quarry. Ballast? (Exm. 1).
4. An irregular fragment of hard compact partially re-crystallised limestone with fine bivalve content. Diffuse haematitic staining. Probably Devonian and similar to coastal outcrops in the Brixham area. Ballast? (Exm. 2)
5. An Irregular fragment of hard micaceous Devonian mudstone with rippled bedding and weak haematitic staining. Probably from a South Devon source. Ballast. (Exm. 3).
6. Thin worn tabular fragment of fine-grained laminated micaceous sandstone with red haematitic staining in alternate layers. Possibly subject to low-level metamorphosis and folding. A South Devon source could be appropriate. Too small for ballast. (Exm. 4)
7. Tabular fragment of a hard fine-grained silty limestone. A thickness of 2cm and a contrast between an upper weather-pitted surface and an un-weathered underside suggests this to be a broken portion of roof slab. A fine texture devoid of obvious fossil content offers no ready analogy with Purbeck Limestone or Bembridge Limestone roof slabs otherwise known in other archaeological contexts on the Isle of Wight. (Exm. 5).
8. Very small beach pebble with well-polished surface showing dark green olivine and feldspar mottling. Probably from a gabbroic source in the southwest of Cornwall. Far too small for ballast. (Exm. 6). Context 172.
9. A fragment detached from a worn boulder of well-cemented gastropod limestone from the Tertiary Beds of the Isle of Wight. Probably from the Bembridge Marls Member of the Bouldnor Formation. This stone contains an intense brash of comminuted shell fragments. A source on the neighbouring Solent coast is presumed. (Exm. 7).
10. Tabular fragment of hard Tertiary limestone with marked weather pitting on upper face and sides. Possibly from an Island source but not necessarily so.
11. Small raw and eroded fragment of Purbeck Limestone perhaps detached from a ballast boulder. (Exm. 8).

Mobiliary stone artefacts

Bembridge Limestone mortar (fig. 37 & colour plate G)

A single fragment of a Bembridge Limestone mortar was recovered from context 160 (fig. 37 & colour plate G). Sufficient survives to show that this stone vessel was some 24cm in diameter and was equipped with simple square lugs. This stone is a classic example of the Binstead facies of the Bembridge Limestone Formation (Insole & Daley 1986). Its surfaces are well puckered with the casts of the Oligocene gastropod *Galba sp*. A simple flattened rim shows traces of considerable wear. A lithological change is evident where the stone is perceptibly harder towards the base. The number of lugs would appear to be four although, from other analogies, there remains the possibility that one may have been a shallow pouring lip. For illustrative purposes, the correct quadrilateral positioning of these lugs has been slightly offset in the drawing.

Dunning (1977) examined the manufacture and export of these distinctive Isle of Wight products in medieval times. Unsurprisingly, they have been found in the medieval towns of Southampton, Winchester and Old Sarum. They can also be traced along the eastern coast of England as far as Kings Lynn.

These mortars have been very rarely found in their Island homeland. A fragment of an unfinished mortar, found on the beach at the mouth of Wootton Haven, suggests that at least some were manufactured from a convenient beachhead outcrop in that vicinity. Offshore, a further mortar has been recovered by a trawler operating on Ryde Middle Bank (Phillips 2012, 435-5, fig. 9.6 no.1). While it seems likely that the Key Close mortar was probably fashioned in the vicinity of Wootton Haven or Quarr, there remains the possibility that it could have been produced at Newtown. In such a case the raw material might be conveniently obtained some 2.2km away from a beach outcrop of the Bembridge Limestone Formation at Hamstead Ledge (SZ 403920).

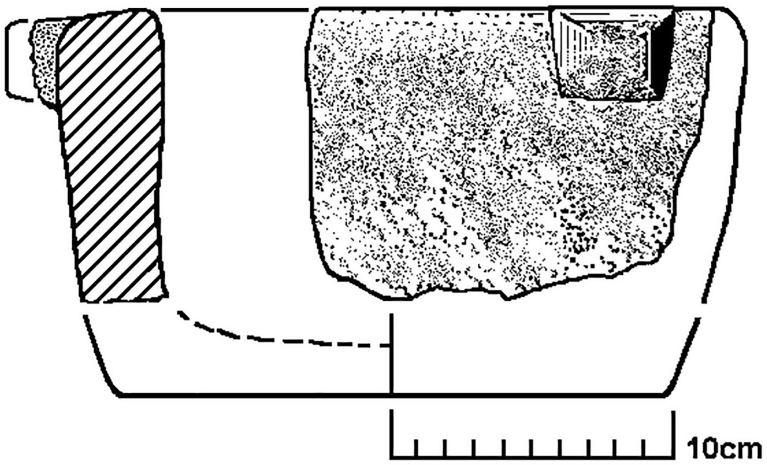

Fig. 37. Fragment of medieval mortar of Bembridge Limestone. From midden context 160.

Schist whetstone (colour plate D)

A perforated schist whetstone was recovered from context 160. This is a hard light grey stone 65mm long with an unusual splayed bi-lobate end. This end is noticeably thicker than the rest of the tool and may have served some specialised purpose. The width of the stone is 32mm and its maximum thickness is 8mm. The butt end is pierced by a weak hourglass perforation, narrowing from 6mm to 3mm diameter. A thin scored channel along the central axis of the stone appears to be a product of tip-sharpening, perhaps involving a needle. The splayed ends of the whetstone seem to be the result of excessive wear on the sides.

This whetstone has every appearance of a cherished and much used item. It seems possible that the recess at the bi-lobate might be the rounded off remnant of a larger and older perforation from a time when the entire stone may have been much bigger.

Writing in 1937, Gerald Dunning was the first to note the occurrence of schist whetstones in the Isle of Wight. A classic perforated example comes from a 12th-century midden at Luccombe (Poole & Dunning 1937, 682, 685, fig. 6.1). A modest scatter of these tools in southern Britain occurred in Late Saxon times as a result of Viking contact with

Scandinavia. A common source of this schist is the Eidsborg region of central Norway, a provenance that might, in this case, be confirmed by petrology. Scandinavian schist whetstones continue in use after the Norman Conquest but their incidence appears to fade by the close of the Norman period.

The occurrence of this example at Newtown could signify Norman trading connections but there also remains the interesting possibility that this tool might claim a slightly earlier history when the Anglo-Saxon Chronicle cites a Viking presence in Late Saxon Wight. This concerns landings and 'winterings' cited in the Chronicle years 897, 998, 1001, 1006, and 1009. A putative etymological link between *Sweyn* and the manor of Swainston makes the creek system at Newtown a possible but unproven venue.

Metal artefacts

1. Cast bronze scrap. Possibly the foot of a late medieval skillet or cauldron. Context 113
2. Flat lead tab with oval outline and plano-convex cross-section. Damaged terminal. Weight 19g. White patina suggests considerable antiquity. Possibly a fisherman's ledgering weight. Context 460. F
3. Folded lead strip. Possibly a portion of window flashing. White patina. Context160.
4. Coin. Halfpenny of George III. 1801. Well worn. Context 120.
5. Iron key (fig. 38). Advanced corrosion. Non-magnetic. Context 161. (Compare P & C cat 2086 dated 1350-1400).

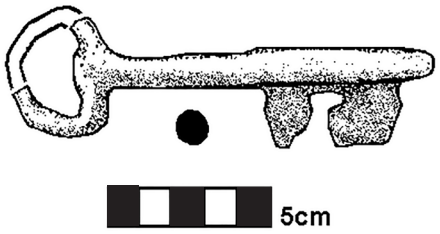

Fig. 38. Iron key from context 161.

6. Iron nails. A total of 35 nails were covered from contexts 160, 162, 170, 172. All showed advanced states of oxidisation with no core metal responsive to magnetism. With the possible exception of an uninformative shank fragment from context 170, none of these items can be considered securely dated.

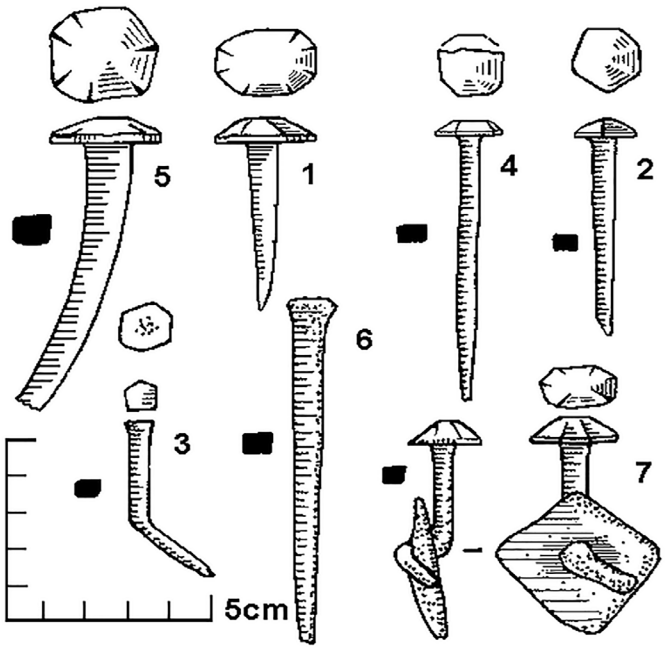

Fig. 39. Newtown's nail types. Probably 16th century.

It seem possible, but unproven, that the nails from context 160 may have been discarded before the close of the 17th century but given the suspicion that this deposit may have been disturbed by subsequent gardening, these items offer no secure archaeological information. For the purpose of record their principal forms have been recorded here before their discard. Figure 39 shows idealised forms with corrosion excluded. The rove shown with nail 7 is one of five examples recovered from context 160. Their shape varies from rectangular to trapezoidal and they are commonly associated with boat construction.

Twenty-one fragments of non-magnetic ferrous slag amounting to 0.654kg were recovered from the unified context 160/162/460. The largest piece weighed 151g. All pieces displayed irregular form with corroded hackly and multi-mammillated surfaces. A single raw nodule of haematite, weighing 120g and showing pecked ochrous surfaces, was recovered from context 170. The slag in context 160-460 could coincide with the first use of the Tudor open-fronted stone building that was destined to become Key Cottage. The quantity, however, is notably small. Haematitic nodules, capable of smelting are obtainable from neighbouring sea cliffs at Hamstead (White 1921, 184).

Prehistoric flint artefacts

Three prehistoric flint artefacts were recovered from contexts 170, 172 (fig. 40).

F1. Transverse flake. Possibly detached from a tranchet axe. Length 37.7mm. Width 61.4mm. Thickness 10mm. Platform width 5.6mm. Context 172.

F2. Backed blade with anvil blunting. Oblique retouch on bulbar face. Length 42.2mm. Width 16.1mm. Thickness 3mm. Bulb eradicated. Context 170.

F3. Tri-planar blade with bulbar bruising. Length 68.9mm Width 30.6mm. Thickness 3.7mm. Context 172.

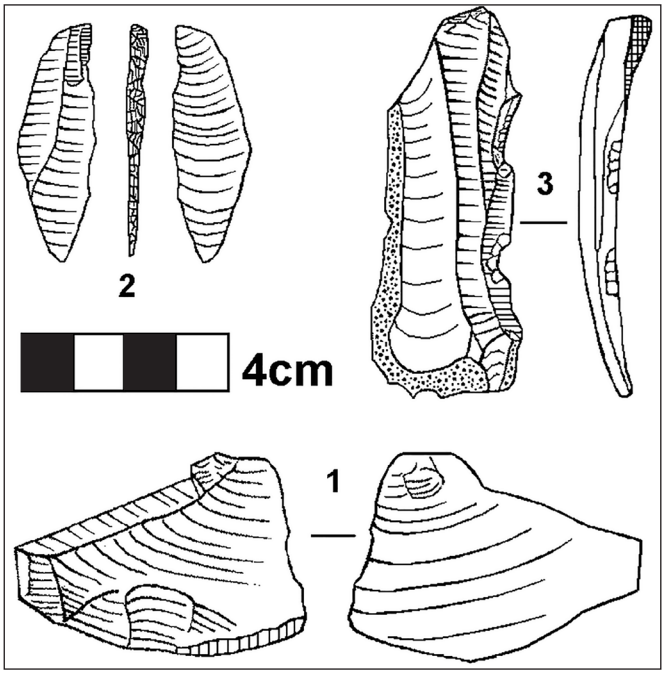

Fig. 40. Prehistoric flintwork.

These flint items are unable to provide a clear indication of date. If, in fig. 40, item 1 is accepted as a transverse flake struck from a tranchet axe it could be attributed to either Mesolithic or Neolithic workmanship. The small backed blade (2) with anvil blunting would certainly be well at home in a Mesolithic context while the long tri-planar blade (3) shows knapping skills that are common in both Mesolithic and Early Neolithic flint industries.

Animal remains
Report by Jennifer Wood

Introduction
A total of 394 (3976g) refitted fragments of animal bone were recovered by hand during the scheme of archaeological works undertaken at Key Close, Newtown, Isle of Wight. The remains were recovered from two midden deposits; deposit (170) dated from the 12th–13th century and deposit (160) dated from the Tudor period (approximately 16th century). The remaining animal bone assemblage was recovered during topsoil stripping.

Methodology
For the purposes of this assessment the entire assemblage has been fully recorded into a database archive. Identification of the bone was undertaken with access to a reference collection and published guides. All animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also fusion data, butchery marks (Binford 1981), gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Un-diagnostic bones were recorded as micro (rodent size), small (rabbit size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was done using the criteria of Boessneck (1969) and Prummel and Frisch (1986) in addition to the use of the reference material. Where distinctions could not be made the bone was recorded as sheep/goat (S/G).

Condition
The condition of the bone was graded using the criteria stipulated by Lyman (1996). Grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

Quantification
Quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated for each taxon. Where fresh breaks were noted, fragments were refitted and counted as one.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982) and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface.

Results
A total of 16 fragments of bones displayed evidence of butchery; 56% were recovered from midden deposit (160). The butchery mark evidence was consistent with jointing of the carcase and meat removal. No evidence of burning was noted within the assemblage. Carnivore gnawing was noted on a total of 21 fragments of animal bone, 81% of which were recovered from midden deposit (160). The presence of carnivore gnawing may suggest that the remains were left open to scavengers as part of or after the disposal process.

A single cattle metatarsal recovered from undated stripping deposit (113) displayed pathological change of macroporosity and eburnation (polishing) on the anterior of the proximal articular facet. These pathological changes are often associated with degeneration of the joint, such as osteoarthritis.

Species representation
Table 1 summarises the number of fragments of bone identified to species or taxon from each deposit, characterised by date. Sheep/Goat remains are the predominant species identified within the assemblage, with sheep being positively identified within the undated assemblage. No positive evidence for goat was identified. Cattle were the next most abundant species, followed by pig. Small numbers of rabbit *(Oryctolagus cuniculus),* domestic fowl *(Gallus gallus),* domestic goose *(Anser anser),* red deer *(Cervus elaphus)* and *fallow* deer *(Dama dama)* were also identified within the assemblage.

Taxon	Date			Total
	12th - 13th Century	Tudor (very late 15th – very early 17th)	Undated	
Equid (Horse Family)		2		2
Cattle	7	42	8	57
Sheep / Goat	16	63	9	88
Sheep			1	1
Pig	10	20	1	31
Domestic Goose *(Anser Anser)*			1	1
Domestic Fowl *(Gallus Sp.)*	1	1	1	3
Bird	1	4		5
Red Deer *(Cervus Elaphus)*			1	1
Fallow Deer *(Dama Dama)*			1	1
Rabbit *(Oryctolagus Cuniculus)*	1	4	1	6
Large Mammal	11	58	5	74
Medium Mammal	10	57	11	78
Small Mammal		1	1	2
Unidentified	6	35	3	44
N=	63	287	44	394

Table 1. Identified taxa from the hand collected assemblage at Key Close, by date.

As can be seen from Table 1, there is a slight variation between the abundances of the three main domestic species from the two midden assemblages, deposit (170) dated from 12th–13th-century and deposit (160) dated from the Tudor period. In the earlier midden deposit (170) sheep/goat and pig remains are more abundant than cattle, with a slight emphasis on sheep/goat. In the later midden deposit (160), cattle and sheep/goat remains are more evenly represented, again with the slight emphasis on sheep/goat remains. This small variation between the two deposits may suggest that there was a change in the importance or availability of cattle in these two periods. However, due to the small assemblage sizes the generalisation of patterns observed within the assemblage should be applied with caution, as they are likely to be influenced by collection bias

Discussion

The assemblage recovered from the two midden deposits at Key Close, Newtown, Isle of Wight, appear to be relatively typical of small domestic assemblages in the UK for the period, representing a mixture of food and butchery discard. Due to the lack of published assemblages from the Isle of Wight, it is difficult to determine if this observed pattern is typical for the immediate area.

Sheep/goat remains are predominant within both assemblages, with cattle and pig varying in abundance between each deposit. There is not enough ageing data available in the assemblage to allow for more than generalised observations to be made about the underlying husbandry practices supplying the site.

There is no evidence of any craft working being undertaken on site, with the exception of a single, small fragment of undated red deer antler, which may have been discarded from antler working.

There is no indication that the assemblages were of particularly high status. The presence of a single fragment of fallow deer bone, may have suggested a slightly richer diet, however, due to the lack of provenance the bone could have been from a later period where its status is less significant.

Jennifer Wood. Osteoarchaeology Services, February 2012.

The marine mollusca

A total of 1012 marine shells were recovered from the site. The retrieval strategy was to recover all oyster shells offering metrical data. This incurred considerable discard where much had been crushed by the weight and action of the JCB. All other shells were collected in their entirety. This produced the raw proportion shown here.

Oysters *Ostrea edulis*	37.0%	43.6%
Whelks *Buccinum undatum*	4.5%	4.2%
Periwinkle *Littorina littorea*	56.0%	49.0%
Cockles *Cerastoderma edule* (*Cardium)*	3.2%	2.8%

Where heavily damaged oyster shells were discarded, the amount is estimated to be some 33% of the excavated *Ostrea* assemblage. When this estimated quantity is restored, this produces the adjusted percentage shown in the right-hand column.

Given the marked difference in the size of all of these edible species, considerable caution is needed in interpretation. Though dominant, the periwinkles represent little more than a small number of meals, while the oysters appear to represent a greater number of meals. Given that none of the three middens were fully uncovered or emptied, nothing is known of consistencies or inconsistencies in the intensity of each of these species throughout these dumped deposits.

The sample values for all of these species are relatively low and they can offer no more than a general indication of the principal sea-foods consumed at this particular location in the town. The absence of limpets suggests that this community had not resorted to desperate shoreline scavenging while the absence of exoskeletal fragments of crab and lobster in these middens suggest that finer sea-foods were also excluded from this diet.

The oyster waste

The principal shells were those of *Ostrea edulis*. A general quantification of the dorsal (right) and ventral (left) valves is given here.

Context 160	Left	62	Right	33	Total	95
Context 162	Left	1	Right	6		7
Context 170	Left	74	Right	78		152
Context 190	Left	65	Right	52		117
	Total	**202**	**Total**	**169**	**Total *Ostrea***	**371**

Metrical data

Length-breadth measurements were obtained for all the 371 intact *Ostrea* shells. These were first counted as left and right valves but where the totals were so small they have been expressed collectively here. Where the left shell can sometimes overlap its counterpart a small difference in size can occur. Where measurements have been assembled in 5mm class categories, the significance of this difference has been ignored.

In the Key Close oyster assemblage, length and breadth measurements showed notable convergence. Perhaps this reflects healthy and unstressed breeding conditions in which the shells were able to expand along both axes during a lifespan that would lie somewhere within a period of ten years. Such an environment might be found in Newtown's well-sheltered creeks.

When the size frequency of the oysters in the two middens is compared, the potentially earlier midden (context 170) shows a higher incidence of middle size oysters being consumed within the length range 54–60mm. The data-set for this midden shows a normal distribution with oysters being generally consumed within the length range of 35mm to 84mm.

In context 160, we find shells perceived to have been deposited during the early post-medieval or Tudor period. Here, again, we see a marked preference for the consumption of oysters within the narrow length parameters of 54–60mm. The consumption of small oysters is now minimal, while the incidence of larger oysters persists yet shows some degree of decline. It is tempting to conjecture an element of resource management here with restraint being exercised in the taking

of small oysters while a favoured 'cropping' of oysters is pursued before they exceed a length of 60mm. In the Solent an oyster diameter of 60mm has been generally considered to represent 5 years' growth (Richardson *et al*, 1993).

In context 195 a total of 117 shells shows a preferred size of 60-64mm while larger oysters still persist up to 79mm in length. Like the contents of context 160, there persists a body of larger oysters. This intimates that local sources were still capable of delivering a sustainable supply without diminishing the larger and more desirable examples.

Other seafood mollusca quantified by context

Potentially, the seafood waste at Key Close has offered an opportunity to compare and contrast two episodes of consumption. In context 170, where medieval pottery alone was present, an earlier date is conjectured although a later date remains possible**.**

Whelks *Buccinum*	Context 160		15
	Context 170		21
	Context 195		12
		Total	48
Winkles *Littorina*	Context 160		177
	Context 162		46
	Context 170		300
	Context 195		38
		Total	561
Cockles *Cardium*	Context 160		12
	Context 162		1
	Context 170		7
	Context 195		12
		Total	32

Whelks *Buccinum undatum*

Only 48 intact shells of whelks were recovered from the site: most from a single dump in midden 170. This low incidence may accord with the observation that fauna of this kind can be difficult to sustain in the Western Solent where a regime of strong currents can be discouraging (Tubbs, 1999, 33). Nevertheless, Morey (1909, 266) comments that inter-tidal shore between Yarmouth and Hamstead is a rewarding source. This lies within 4km of Newtown and is but a short voyage in a small boat.

Periwinkles *Littorina littorea*

Given the very small amount of flesh provided by these gastropods, a total of 561 shells recovered from the site is a relatively small amount in terms of meals. Most shells were of adult size but juvenile winkles were also present. Morey (1909, 264) noted that 'empty shells are cast up in vast numbers at the upper limits of the tide near the Newtown River.' This seems sufficient to explain how readily this food source might be exploited in medieval and post-medieval times.

Cockles Cerastoderma edule

Evidence for the consumption of this common seafood is surprisingly weak at Key Close, the total number amounting to only 32 shells. Morey (*ibid*, 260) notes the abundance of this species along the north shore of the Island and leaves us with little doubt that they would have been readily obtainable in the environs of Newtown. Their scarcity amongst the other edible mollusc at this particular location cannot be readily explained unless, perhaps, they were simply unattractive to this particular household.

Commentary

In the medieval and post-medieval assemblages of marine molluscs at Carisbrooke Castle a preference for oysters and a virtual disregard for other sea-foods seems explicit (Wyles & Winder 2000, 188–9). At Key Close we see a somewhat similar trend, for it must be allowed that the 561 periwinkles recovered from this site represent very few meals in terms of meat weight. The proportions of these molluscs show notable consumption in the smaller and earlier midden 170. If we propose that midden 160 was deposited at least two centuries later, then it seems that winkle consumption may then have been proceeding at a slightly reduced rate.

At Key Close, a taste for both whelks and cockles seems to have been minimal. This certainly reflects the situation a Carisbrooke Castle where the medieval consumption of these gastropods was also negligible (4%: Wyles & Winder 2000, 188). Where oysters were brought to the castle as the preferred seafood, it appears that these were obtained from an offshore Solent source, quite possibly in the Eastern Solent. This supply may have been sorted to the best quality before delivery. This possibility is based on the high incidence of shells graded at 70–80mm maximum diameter. An alternative possibility might see smaller specimens escaping if a standard trawling dredge net of c.51mm was in use.

At Key Close we see evidence to suggest that the castle's oysters were most certainly selected for the very best. In both the medieval and the Tudor midden at Newtown the incidence of 70-80mm oysters is almost negligible. If oysters of this grade were available within the creek system or in adjacent waters, they were certainly not consumed in this part of the town.

From the medieval midden 170 we see a normal distribution of oyster sizes in which oysters in the size range 55–59mm are most commonly consumed (fig. 41a). Where, in this case, dispersion from this mode is regular, we find that the consumption of minor oysters in the range of 30–39mm is as scarce as those the 70–80mm range that are otherwise so favoured by aristocratic tastes within Carisbrooke Castle.

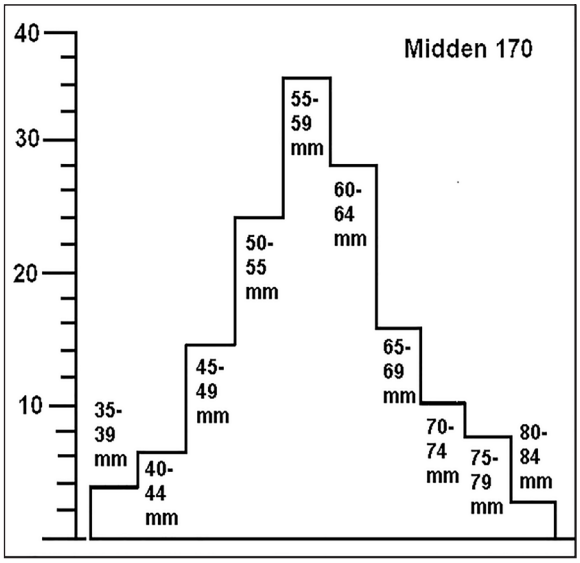

Fig.41a. Medieval oysters in 5mm class categories from midden 170. Total 155.

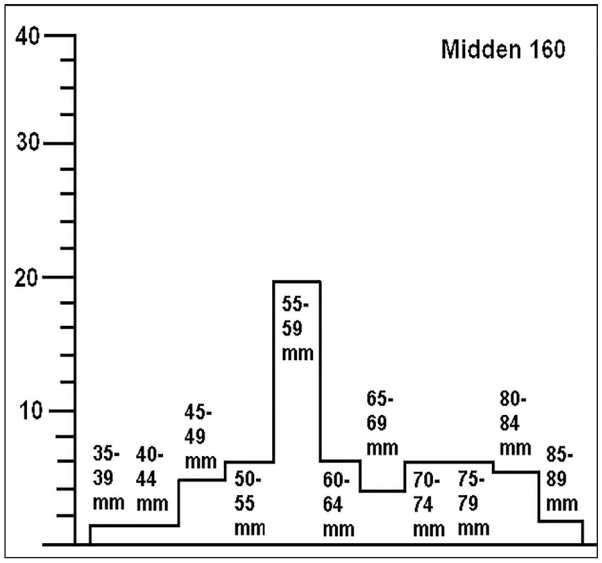

Fig. 41b. Tudor oysters in 5mm class categories From midden 160. Total 95.

By Tudor times we see a notable change in which the same preferred size is now accentuated by a reduction in all other classes (fig.41b). Where consumption of the smallest oysters has fallen particularly low it is tempting to interpret this as an early and necessary attempt at conservation. Where sizes in excess of 60mm have also declined it is difficult to offer a ready explanation. One possibility is that all oysters above this size are being immediately marketed elsewhere. Another explanation could be that local oyster fishery is now so intense that few oysters can survive for more than five years.

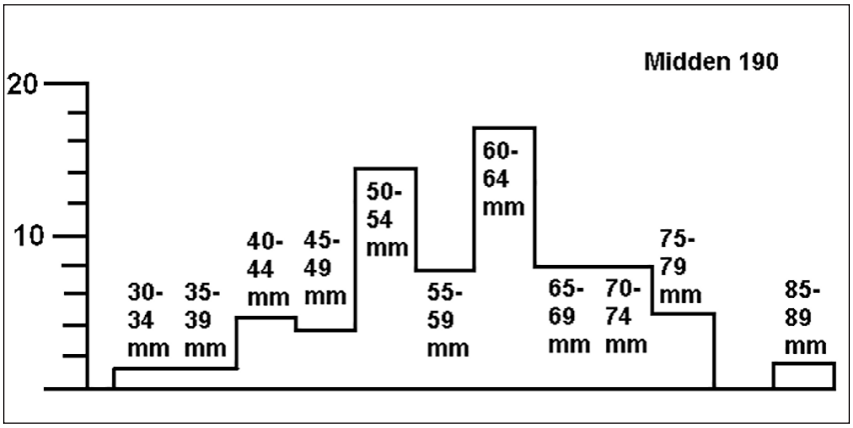

Fig. 42. Later post-medieval oysters in 5mm class categories from midden 190. Total 65.

In fig. 42 we see the size range of just 65 oysters recovered from a small service trench cut through midden 190. No clear dating evidence was obtained here, although a date during or after the use of Tudor Green Ware was evident. The small size of this sample evokes the usual statistical cautions. The histogram shows a weak bi-modal distribution with oysters being taken from all size ranges including the very small (30–34mm).

The favoured preference or availability of oysters seen in the Tudor sample (fig. 41b) now gives way to peaks immediately above and below this size while slightly larger oysters in the 60-64mm class now predominate. Oysters of larger sizes show a very slight proportional increase and there even appear a few oysters in excess of 85mm, a class that has not been seen elsewhere at Key Close. If net size had increased from an aperture of 51mm, this might account for the fall in the 50–54mm class but it does not explain the taking of the notably small oysters or the generous incidence of shells in the 50–54mm category.

It is tempting to suspect a change in fishing practice here, with, perhaps, an element of desperation in which Newtown fishermen are venturing to other parts of the Solent to fulfil demand. An examination of shell characteristics might determine whether new seabed habitats were now being fished.

In this evaluation study of the oyster shells no consideration has been given to growth patterns or to the presence of parasitic organisms such as *Polydora ciliata, hoplura*, and *Cliona celata* that may help to characterise a particular seabed habitat. Wyles & Winder (2002, 187-8) have advocated studies of this kind while observing the need to gather more site-specific evidence within the Solent region. However, for a meaningful analysis of Newtown's medieval and post-medieval oyster fishery, a larger statistical sample is surely required.

Archaeological conclusions

General commentary on the excavated evidence

Mesolithic/Neolithic activity

Recovery of three flint items on the Key Close site marks a seemingly isolated prehistoric episode that could be coeval with known Mesolithic and Neolithic activity on and around the shoreline of Newtown Creek. It is here that wooden trackways or platforms have been dated to the 4th millennium BC (Tomalin, Loader & Scaife 2012, 192–231). A few random fragments of fire-crazed flint from Key Close may represent further prehistoric activity.

Medieval occupation within the two burgage plots

No convincing evidence has been found to demonstrate historic occupation on this site prior to the documented foundation of Newtown in the late 12th century. It is at or after this time that the daub fragments hint at the presence of wooden buildings standing within burgage plots 706 and. 688. In plot 688, pottery recovered in and around shell midden 170 clearly demonstrates activity during the 13th century. It was at this time that a little imported white ware from Saintonge was being received. The presence of intensely burnt daub suggests that a building on this plot may have been destroyed, eventually, by fire. It is conjectured that this lost structure probably stood close to the street line north of the midden. Destruction coeval with the documented French raid of 1377 seems an attractive possibility.

While midden 170 was in use, it seems that a further scatter of domestic waste had begun to accrue within burgage plot 706. This material was deposited in an area close to the west end of Key Cottage. Its scatter included the spot occupied by midden 160. The artefacts from this location include an array of medieval sherds and some further daub. This suggests the former presence, in this vicinity, of another medieval wooden building, its curtilage eventually becoming that of Key Cottage.

Imported stone and indications of seafaring

Fragments of West Country stone found in the vicinity of both of these middens point to maritime connections with the southern coast of Devon and Cornwall. It is here that Devonian limestone and mudstone, and possibly Cornish gabbro, might be taken aboard as ballast. Such West Country contacts may have stemmed the time when Countess Isabella de Fortibus was commissioning extensive architectural works at Carisbrooke Castle. These included a number of re-roofing projects (Stone 1891 2, 74–76). Twenty-five years after her death, more roof repairs are recorded when a delivery of '*10,000 stones called slatts from Cornwall*' was entered into the castle accounts (Stone *ibid, 76*). It seems from the wording of this entry, set down in 1318–19, that Constable John de la Hoese was generally unfamiliar with these slates or 'slatts' which were then, perhaps, a novel commodity on the Isle of Wight.

At this point, in the early 14th century, Newtown's fortunes may still have retained a little promise after the merchants of Southampton and the Abbot of Quarr had formerly brought prosperity into Solent waters through their lucrative wine trade with Aquitaine and Gascony (Hockey 1970, 131). Yet since King John's ducal rights over Gascony had provoked conflict in 1294, and English rights over Aquitaine had been challenged by Philip the Fair, Anglo-French relations had progressively deteriorated and were now within two decades of the outbreak of the Hundred Years' War (1337–1453). Before the close of the 14th century, French incursion would leave Newtown in ruin.

Tudor occupation at Key Close

It is evident from the contents of midden 160 that much of this second domestic strew belongs to the 16th century. At the base of the deposit a *bos* tibia was found driven vertically into the stiff bedrock clay. The excavator takes the view that this bone was an improvised garden marker employed at a time that was either coeval with, or subsequent to, the deposition of the midden. With a kitchen garden now being worked close to Key Cottage, here was a process in which earlier medieval sherds and daub could be intermixed with Tudor and other post-medieval waste. This disturbed material included a little Saintonge pottery.

The dating and phasing of building events at Key Cottage

It is suggested that the construction of Key Cottage began no earlier than the latter part of the 16th century. In the pre-demolition survey of this cottage, large imported diorite beach boulders were found to be individually underpinning the corners of this early stone building. It seems possible that these may have served to support a primary cruck building with its wooden superstructure resting on dwarf stonewalls. The survey in part 1 of this report also concluded that the first phase of this building saw an open-fronted structure best suited to a workshop or stable.

Iron slag recovered from midden 160 and its margins (162 & 460) might accord with metalworking such as smithing but it should be noted that the quantity was small (0.654kg). (The presence of a raw haematic nodule and the availability of this smelting material in nearby cliffs have already been noted).

The fragment of Rhenish stoneware, found beneath the flagged floor of this building, suggests construction during or after the mid-16th century (item ARB20, dated *circa* 1570). Smithing was already taking place somewhere in the town in 1379 when the occupation of William Smyth is listed as 'smith' (Isle of Wight CRO, Webster Lay Subsidy Tax transcript). While context 160 is known to contain pottery of this period, it is impossible to establish a date for the creation and discard of the slag in this horizon.

Imported pottery of medieval and Tudor date

The pottery obtained from middens 160 and 170 provides a first and valuable insight into the economic fortunes of the town during and after the 13th century. The scarcity of imported continental ware is interesting and accords with Newtown's weak historic record as a recognised port. Where continental imported pottery has been quantified in this report, this majors on post-medieval German and Dutch wares that reflect growing and popular English consumption in the 16th century. These were widely circulated in Southern England and they offer no convincing evidence to suggest that Newtown had established its own cross-Channel connections. We have already noted that Arnold Johnson's delivery of 'Flanders pots' to Southampton, in 1509, may mark this city as a local distributor of these wares (James 1990, 18–19).

The question of local pottery production

The character of the principal wares at Key Close is of particular interest. Here, the possibility of local pottery manufacture has been raised. This applies to fabric groups 1–6 where sand-tempered cooking pots (groups 1–3) were accompanied by a distinctive buff ware (group 4) as well as vessels produced in a reduced grey ware (group 5). The high incidence of the latter ware may accord with local production. Sherds HFC7 and BW19, from groups 3 and 4, have also been noted as possible wasters.

In fabric group 6 we find a few brick-fired vessels that may also be local products, seemingly of a later date. In groups 3, 4, 5 and 6 the streaked nature of the clay in some of the vessels suggests that a common source of production may run through at least some of this pottery, perhaps spanning several centuries. On James Mallett's map, we have already noted the presence of a family named Potter on a burgage plot on the north side of Quay Street (Mallett 1768).

The dominance of these seemingly local wares is also demonstrated in their quantification by weight and by their estimated vessel equivalents (e.v.e.). In the later post-medieval period, the relatively low incidence of otherwise popular Verwood ware may reflect the town's eventual fall to poverty and the progressive diminution of its population (fig. 43).

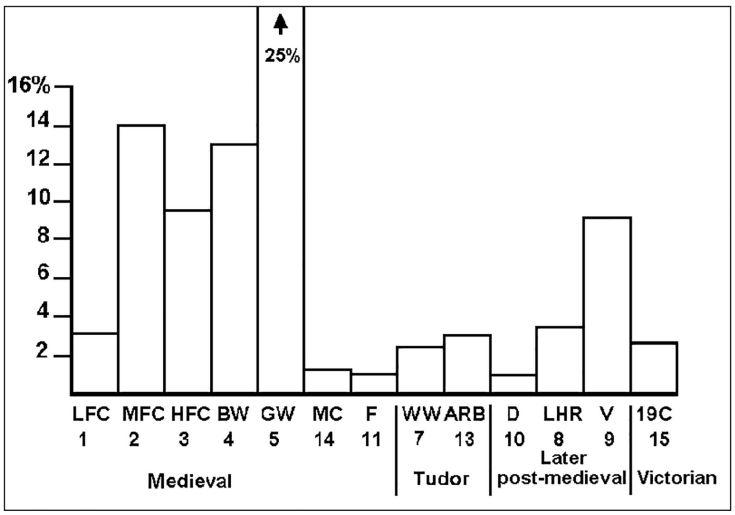

Fig. 43. A general quantification of significant fabric groups at Key Close. Arranged approximately by period.

Oyster fishery and consumption in the medieval and post-medieval periods

Where seafood waste has been examined, the marine mollusca from Key Close show a preferred consumption of oysters. Metrical analysis hints at unselective fishing of both adult and juvenile oysters during the 13th century. In the 16th century there arises the possibility that mature oysters may have been selectively harvested while young oysters may have been conserved.

Pork, beef, mutton and cloth: perceived changes in subsistence, land-use and production

Where the animal bones have been analysed by Jennifer Wood, there is a suggestion that pig and ovicaprids were the principal farm stock of medieval Newtown. The notable incidence of pig in the 13th midden (context 170) could reflect opportune exploitation of pig pannage in the wooded terrain surrounding the town.

In 1086, *Domesday* cites a tax of 20 pigs within Newtown's parent manor of Calbourne and a further 20 in the neighbouring manor of Shalfleet (*DB* IoW2 & IoW 8). These are high returns, and they exceed, by far, all other Domesday records of pigs throughout the whole of the Island. This evidence certainly seems to point to a speciality of this particular wooded district. While all of the Island's northern woodlands seem similarly suitable for such an enterprise, it certainly seems significant that the combination of Newtown's salt and pork supplies, combined with good anchorage facilities, may have offered an early opportunity for commercial butchery and off-island shipments from this particular location.

In the Lay Subsidy return for the year 1379 we find further helpful documentation (see appendix 2). Of the mere 31 tax-paying families listed in the town, three (or 9.7%) are butchers. This number surely exceeds the immediate needs of the local population. Where just two fishermen are listed and rated at 4d per head, there are eight wealthier seafarers

described as ‘boatmen’ (25%). There is also one ‘merchant’. Here, it seems, are the men responsible for the town’s commercial ventures across, and possibly beyond, Solent waters.

Where two tailors, two weavers and two spinsters are listed we may assume that their occupations (amounting to 19% of the town’s named workforce) concern the production of shippable ‘kersey’, the coarse cloth produced from Wight’s sheep. It is also worth noting that, judging by his name, one of the tailors, ‘Robert Winchestre’, could be a master artisan installed by the bishop to promote this craft. Elsewhere, in Southampton’s 15th-century port and customs records, it appears that imported wool shipped into this city was sent to highly experienced cloth-makers of Winchester before being returned as a much refined and exportable product.

In the Tudor midden (context 160), the incidence of discarded pig bones declines in favour of cattle. Here is a change that might arise from greater forest clearance and an expansion of pasture. While the 1379 tax return for hushandmen and labourers shows as much as 38.7% of the town’s population directly associated with agriculture, it seems possible that fewer were similarly engaged during the town’s later history. Farming of cattle would most certainly be less demanding of manpower. An increase in these animals could also reflect greater availability and utilisation of pastoral closes in the abandoned burgage plots of the declining town. By this time it seems that Newport was better placed to capture the local wool and kersey market as well as the processing and export of grain (Fig. 44).

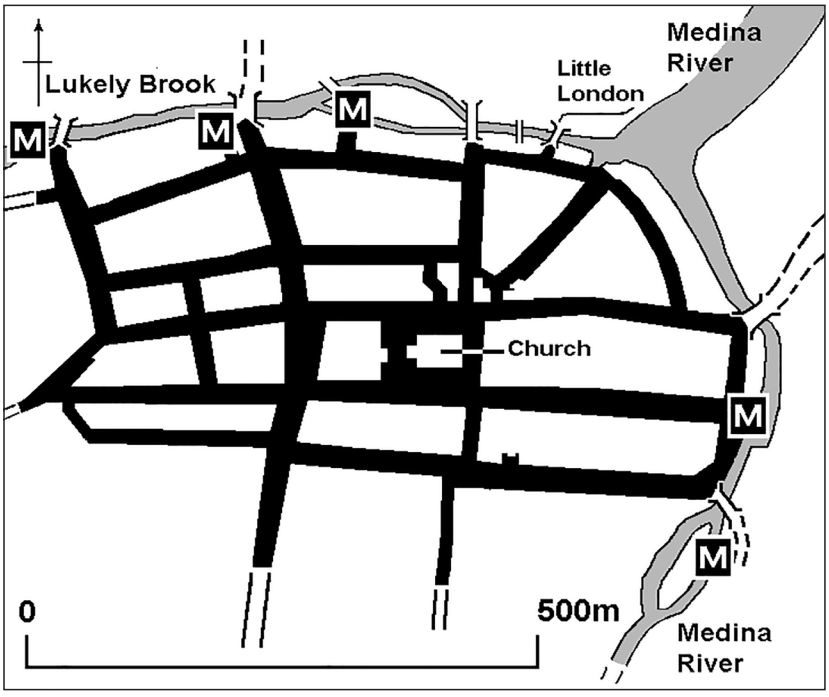

Fig. 44. The medieval co-axial street plan of the port and borough of Newport. The town’s success is assured by a surrounding entourage of prosperous watermills (M).’Little London’ betrays past commercial perceptions of its quay.

Key Close in its local context

Key Close and its neighbouring burgage plot occupy a prime position on the town’s former High Street. Both plots claim the advantage of close proximity to the former quayside of this once enterprising medieval port. Yet despite the perceived commercial advantage of this particular location, we see no archaeological evidence to indicate prosperity here.

A useful indication of 13th-century occupation is provided by the pottery recovered from midden context 170-2 in the west burgage plot. In this deposit we perhaps glimpse a snapshot of domestic life prior to the French invasion of the town in 1377. Here we find no evidence to indicate that habitation persisted on this particular property after the time of this raid.

Given the prime position claimed by this plot, its lasting abandonment is not without significance. We should also note that the burgage ditch separating this property from Key [*Quay*] Close was of such a superficial nature that it seems that no renewal or maintenance was contemplated once it had been dug. These strands of evidence suggest a truly diminished population with little concern for everyday demarcation of town properties. Moreover, a virtual absence of any evidence of occupation on the seaward slope in Area 2 (OS parcel 341), suggests that no significant development had taken place near the waterfront at this location either prior to, or after, the French attack.

Just one item from the excavation may hint at optimistic urban planning. This is the putative Bembridge Limestone spur-stone recovered from Area 1 (fig. 36). If we are correct in its identification, here is a stone designed to protect the corner of a building from damage inflicted by the passing and turning of carts. Whenever this stone was installed, it seems that a busy thoroughfare may have been envisaged.

The archaeological evidence recovered from Key Close complements those historical accounts that suggest that Newtown failed to make a significant recovery after its disastrous sacking in 1377. Although attempts at revival might be discerned in the renewal of the town's royal charter in 1393 (Foss 2004, 1), fourteenth-and fifteenth-prosperity has not been detected in the archaeological evidence offered by this present excavation. Moreover, the dearth of archaeological material in area 2 suggests that no discernible expansion of the town had taken place down-slope towards the shoreline before 1377.

In 1547 the burgesses of the town relinquished significant portions of borough lands to the glebe of Calbourne (Foss 2004 11). Twelve years later, in 1559, we are told that '*ther is nother market nor almost no good howse standing*' (Foss *ibid*). However the presence of Tudor material in midden context 160-162 suggests that the Key Close burgage plot was occupied or re-occupied during the 16th century. This might represent a minor improvement in the fortunes of the borough sometime after the 1559 account had been penned.

Keir Foss (*ibid*) comments that formal re-affirmations of the town's borough status in the 16th century appear to be 'hollow victories' while the commercial prosperity of the town continued to decline. Nevertheless, the accruing of midden 160-162 and the perceived construction of Key Cottage in the late 16th or early 17th century marks the construction of at least one additional building around a time when the town's charter was renewed in 1598. It seems that around this time the first steps were also underway to erect the now incongruous town hall.

The relative dearth of later post-medieval pottery at Key Close is particularly interesting. This complements Foss's observation that, after the erection of the town hall, the borough entered into a terminal decline while its burgesses presided over the notorious political charade of manipulating the town's electoral franchise. Writing of events in 19th-century Newtown, the same writer paints a picture of hardship and poverty, a scenario that well befits the dearth of contemporary archaeological material found at Key Close.

Key Close and Newtown in a regional context

Within the context of the Solent estuarine system and its neighbouring coast, Newtown can be viewed in conjunction with other contemporary medieval new town ports at Portsmouth, Lymington, Yarmouth and Newport (Beresford 1988, 441-450). To these might be added a modest civil settlement at Beaulieu where the medieval inhabitants owed their creek-head livelihoods to the presence of a prosperous Cistercian monastery (*ibid.* 443). A further comparison may be drawn with the Island's ancient and modest borough and former port of Brading. Where this last community has laid claim to a putative Saxon origin (Page 1912 & 1973, 158) we find in its sinuous High Street and attendant properties, no ready analogy with the gridded street plans we see in the Island's other three historic boroughs.

Where most of the Norman towns in the Solent region display a certain commonality in both their planning and maritime positioning, Newtown acquires particular archaeological distinction by virtue of its virtual abandonment. Within the context of the Isle of Wight, the layout of this port finds close analogies in Yarmouth and Newport where the principal streets show similar co-axial plans (figs. 44, 45 & 46) While both of these historic towns have undergone all the disturbances brought by later development, Newtown remains virtually ossified in the 14th century. Transfixed, like a fly in amber, the empty burgage plots and their turf-wrapped archaeological 'archives' are now the very essence of this remarkable medieval ghost town. It is this essential difference that has endowed Newtown with its special and historic sense of 'place'; it has also made the current archaeological interventions at Key Close so instructive.

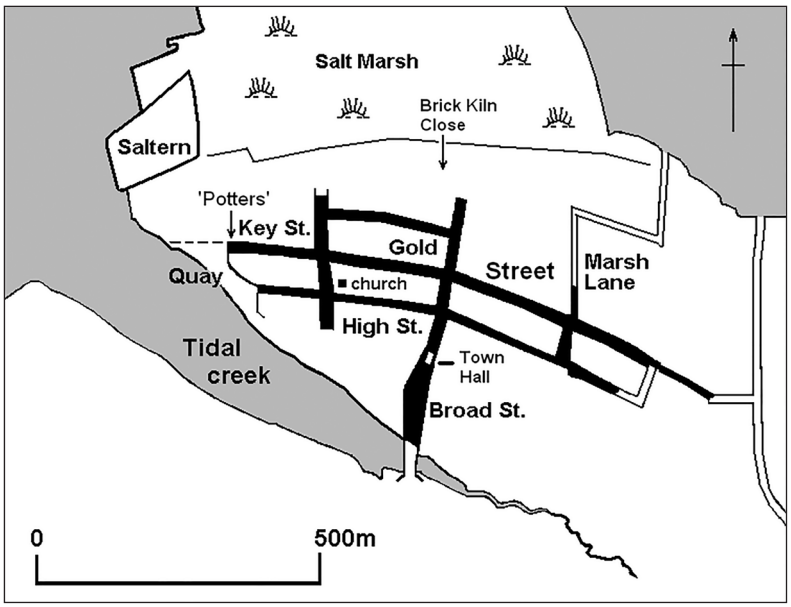

Fig. 45. The co-axial street grid of the planned Norman port and borough of Newtown.

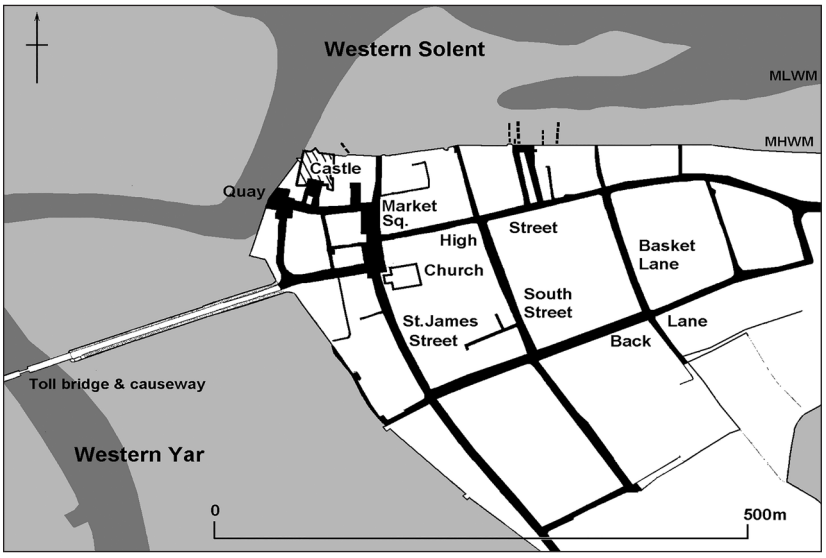

Fig. 46. The co-axial street grid of the planned Norman port and borough of Yarmouth. Despite a generous allocation of streets, the town's urban development was largely unaccomplished.

Newtown in a national perspective

These archaeological interventions at Key Close have provided the first excavated evidence of medieval and post-medieval activity within Wight's only deserted medieval port. Although it would be unwise to postulate a new urban history on the strength of scattered material within just two burgage plots, it has been useful to observe that there is little ceramic evidence here to support significant maritime trade. While this observation is given certain strength by the proximity of these burgage plots to the town's former quay, there is still insufficient archaeological evidence to securely characterise the overall prosperity of the borough. It is worth noting, however, that the shoreline of Newtown's quay area shows no structural evidence of any wharf or waterfront of any kind (plate B).

In an overview of implanted medieval ports on the English Channel coast, Beresford (1988) identifies further communities where the scale of urban collapse might be compared with Newtown. In the West Sussex coastal parish of Sidlesham, Bishop Stephen of Chichester had once promoted a new town and port at a place called Wardour. This enterprise may well have collapsed before the close of the 13th century. Where Beresford (1988, 497) observes that no convincing archaeological evidence can be found to locate Wardour, we may be tempted to suspect that this site may have succumbed to coastal erosion arising from the natural changes within Sidlesham Harbour. Recent lidar images of this natural inlet now show some submerged plots of ridge and furrow and some potential on-shore tofts on its northern shore.

At the East Sussex port of Winchelsea we find another notable economic failure subsequent to French coastal raids of the 14th century. Like Newtown, this ancient borough is now a severely shrunken settlement. In this case, a substantial number of burgage plots are blanketed by grass (Chambers 1938; Beresford & St Joseph 1979, 238–241, figs 103a-b). There have been, however, coastal changes and a shift in river access that may have precipitated the demise of this particular port (Beresford 1988, 498).

In 1286, on the western shore of Poole Harbour, Edward I licensed, the laying out of streets, lanes, building plots, a market, a church and a harbour in a new settlement named 'Newton' (Beresford 1988, 427-8). While noting that Tudor accounts intimate failure and disappearance of this town, Beresford proffers the possibility that the entire speculative enterprise may never have commenced. Competition offered by the neighbouring medieval new borough and port of Poole was certainly an undermining factor. Beresford's view may be unduly negative since aerial views of old hedged closes and burgage boundaries at Newton hint at another co-axial street grid much akin to Newtown, Newport and Yarmouth.

On the shore of Weymouth Bay, at Melcombe Regis, a new town and port had been planned by AD 1244 when borough rights were exercised here. Later, they were shared with the adjacent coastal community at Weymouth. Like Newtown, Melcombe Regis was also burnt during the French raids on the Channel coast in 1377. Prior to this event, the town had gained custom control over wool and cloth, but by 1433 this authority had been ceded to Poole.

At Melcombe Regis we glimpse an economic downturn of a kind that may have similarly disadvantaged Newtown. In the Island's case, its central borough and port lay at Newport, while at Newtown we find a port that was ever distanced from the prosperous chalklands and the fertile Greensand plough-soils of central and southern Wight. As a consequence, Newtown was poorly placed to receive either droves of animals or grain-laden carts. Since the time of Domesday, the waterpower of the Medina River and the Lukely Brook had also bestowed upon Newport a burgeoning array of mills (fig. 44). While the streets of Newport served the well-heeled and the prosperous, the archaeological section through Newtown's High Street shows little more than a raw clay surface proffering unwelcoming mud. As one of the two essential cartage routes to and from the town's quay, here was a thoroughfare that would surely be well surfaced if maintained by a successful trading community.

When we turn to Newtown's Lay Subsidy return for 1379, we find just two tailors, two weavers and one merchant who are apparently capable of winning an economic living from the town and its hinterland (appendix 3). To these can be added two farmers, three butchers, eight boatmen and two fishermen. Recognising that this particular record was made just two years after the disaster of the French raid, we might expect a serious downturn. Nevertheless, the nature of these occupations suggests that the town may never have seen real prosperity. There is, for instance, no mention of a tide mill to aid flour production and, in addition to the boatmen and fishermen, there are only the two weavers and the three butchers who might be capable of producing sufficient produce for export. When we see in this document that Simon Efford and Nicholas Carter were doubling as both farmworkers (husbandmen) and boatmen, here we may glimpse a further indication that subsistence within the borough of Newtown could be harsh and sparse.

When compared with other Channel ports, we see that, regardless of any post-invasion rallying of its population, Newtown might never lay claim to a prosperous hinterland. An ability to serve a burgeoning cloth industry during the late 15th century was often the critical factor in determining eventual development or downturn at many of England's Channel ports. Equally, the fortunes of a number of English market towns could also waver or buckle when facing similar challenges (Platt 1976, 84-95).

With Southampton exerting a centralised power in our region, it was inevitable that Wessex wool and cloth should be drawn into the mercantile hub of this city. Once Islanders had forged their own links with this principal port-of-trade, it is easy to see how Newport might gain its dominance within the Island. Delivery of *kersey*, the Island's simple coarse

woven cloth, can be readily found in 15th- century port records of shipments from Newport to Southampton (Cobb 1961, 121; Foster 1963, 130). This is exemplified during the reign of Edward IV when John Shepard is shipping regular cargoes of Wight kerseys as well as occasional 'pokes' of wool (Quinn 1937, 1, 5 *etc*). On return voyages his boat brings home supplies (iron, coal, oil, tallow, coopers staves, salmon and generous quantities of wine). The records kept by Southampton's water bailiff show that John's boat arrived at least once a week and that these voyages were sustained in all seasons. The port books also tell of other seafarers delivering Wight kerseys, yet on the pages of these early records, we find not a single entry for a consignment of this nature arriving from Newtown.

When *The Marguerite*, of Yarmouth, docks at Southampton Quay in February 1435, its master, John Clavin, includes in his delivery 1 last (a dozen barrels) and 15 cades of herring. The water bailiff records that this contingent of his cargo was delivered on behalf of *William Neutone* (Foster 1963, 34). Judged by this entry it seems that William was unable to make his own shipment and was reliant on a crossing made by a neighbouring boatman in Yarmouth. Perhaps the undeveloped quayside at Newtown was unsuited to the docking and loading of a craft of any substantial size.

Here, it seems, we glimpse the maritime impotency of William's home community, for nowhere else in the published port records of Southampton can we detect any other shipment that is apparently attributable to Newtown. In this case it seems significant that this consignment was nothing more than a simple delivery of herring. With mounting competition between the maritime markets and hinterlands of England's southern seaboard, it now seems that the economic failure of ill-placed Newtown was virtually inevitable.

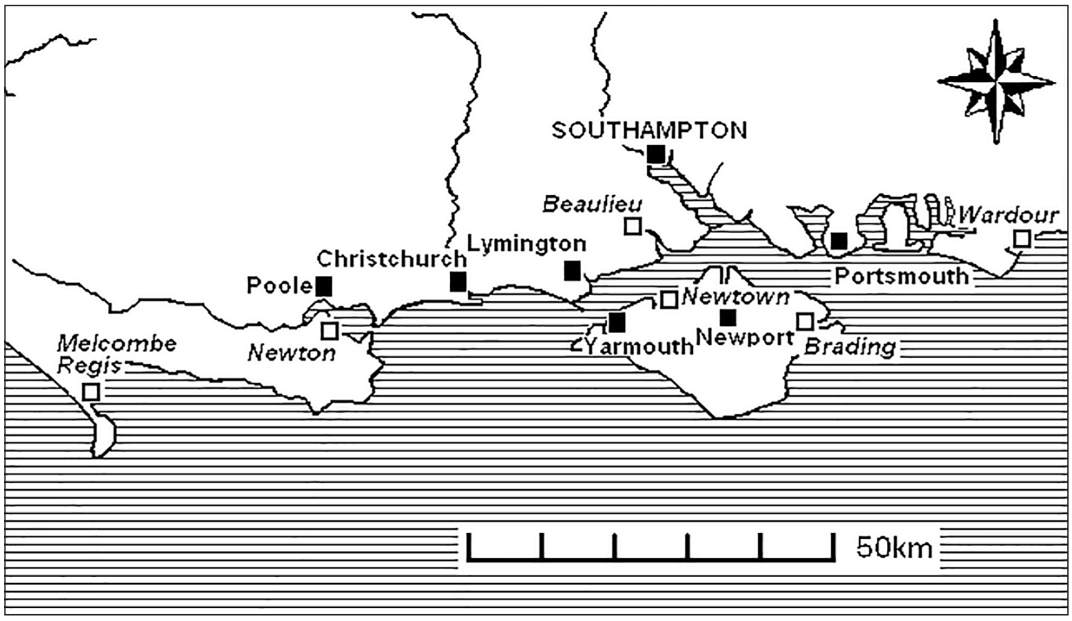

Fig. 47. Newtown in its regional context amongst failed and sustained medieval ports. Failed communities are shown in italics with hollow squares.

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Appendix 1: Contexts in the cross-section of the medieval High Street in Area 3 (fig. 8)

610 Topsoil

620 Humic earthen deposit equated with garden soil at the frontage of Key Cottage.

630 Rammed chalk representing late surface or road repair to old highway.

640 Heterogeneous deposit of earth, brick rubble, stone, coal etc equated with late road repairs and pre-dating context 630.

650 Bedrock of Hamstead Clay.

660 Gravelly variation of clay bedrock.

670 Grey clay fill of soakaway or spring hollow.

Appendix 2: Lay Subsidy return for the inhabitants of Newtown in 1379. (Arranged here in order of occupation)

William Pinghston	butcher & wife	6d
Phillip Clerk	butcher & wife	6d
Richard Whitsyd	butcher & wife	6d
Denise Blackemans	farmer (agricole)	4d
Alice Felyps	farmer (agricole)	4d
John Commynge	husb. & wife	4d
William Cole	husb. & wife	4d
John Champeneys	husb. & wife	4d
Robert Strannche	husb. & wife	6d
Robert Sparkes	husb.	4d
John Conning	husb & wife	4d
John ate Moure	husb.	4d
Simon Efford	husb. boatman. & wife	4d
Nicholas Carter	husb. boatman & wife	4d
John Pavin	boatman & wife	6d
John Lombe	boatman & wife	6d
Robert Daw	boatman & wife	6d
Thomas Peressone	boatman & wife	6d
Gilbert Peressone	boatman & wife	6d
William Horn	boatman	6d
John Rotham	fisherman & wife	4d
Richard Baker	fisherman & wife	4d
John Gould	merchant & wife	6d
Robert Taillor	tailor & wife	6d
Robert Winchestre	tailor & wife	6d
William Skynner.	weaver & wife	6d
Thomas Martin	weaver & wife	6d
Mabel Dawes	spinster	4d
Matilda atte Dane	spinster	4d
Philip Thomas	baker & wife	6d
William Smyth	smith & wife	6d

Appendix 3: Newtown's streets and thoroughfares, after James Mallett 1768

Broad Street	North-South embracing Town Hall
Church Street	North-South linking Gold St & High Street
Bowling Green	North-South High Street & Silver Street
Marsh Lane	North-South from Silver St to Clamerkin Creek
High Street	East-West transecting Broad St.
Quay Street	East-West from Quay to Gold St
Gold Street	East-West from Quay Street to Silver Street
Silver Street	East-West from Gold Street to Town Gate?

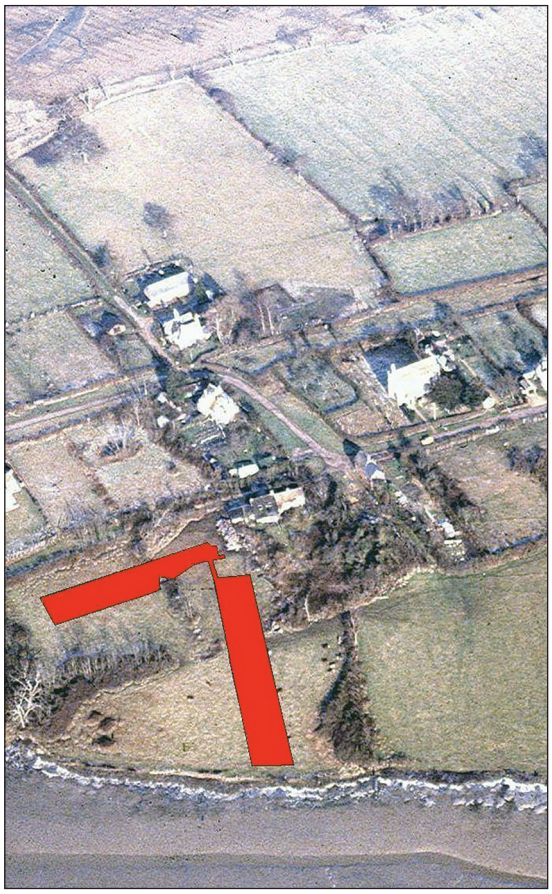

Plate A. Newtown. Key Close viewed from the south, showing excavated areas 1 & 2 in red. An amended aerial view of Feb. 1976.

Plate B. Newtown. Key Close with excavated areas 1 & 2 viewed from the west. Both Quay Street (left) and High Street (right) lead to the site of the town quay.

Plate C. Newtown. Fragment of inscribed Frechen Bellarmine stoneware from beneath the flagstone floor of Key Cottage.

Plate D. Newtown. Scandinavian schist whetstone from shell midden context 160.

Plate E. Newtown. Prominent fingertipping on the splash-glazed handle of a Late Tudor grey ware flagon. Fabric group 5. Local production is suspected but unsubstantiated.

Plate H. Bembridge Limestone pier or spur-stone possibly derived from the first structural phase of Key Cottage.

Plate F. Newtown. Rilled shoulder of medium coarse ware jar or cooking pot of fabric group 2. Context 162. Card scale 5cm.

Plate G. Fragment of Bembridge Limestone mortar showing a lithological change towards the base. Context 160.

Plate I. Handle fragment of a micaceous coarse ware flagon. Context 162.

LEAF MINING ORGANISMS NOT PREVIOUSLY RECORDED ON THE ISLE OF WIGHT 2017

Dr. D. T. Biggs

Thanks to two of my colleagues, five new leaf miners have been found this year; four Agromyzid flies and one beetle of the family Chrysomelidae.

DIPTERA: AGROMYZIDAE

***Aulagromyza similis* (Brischke, 1881)** on Devil's-bit Scabious (*Succisa pratensis*)
The mine caused by the larva of this fly is very long, up to 16cm, always upper-surface, whitish in colour sometimes going brown later. The turns of the mine may lie side by side when they give the appearance of an elongated corridor-blotch on one side of the midrib. Separated grains of frass lie at the beginning of the mine and at the end of the mine they lie in pearl-strings. The larva mines in June and the species is widespread in much of Europe but local. Barry Angell found the first specimen of this species on Newtown Rifle Range SZ4490 on June 6th 2017.

***Chromatomyia blackstoniae* Spencer, 1990** on Yellow-wort (*Blackstonia perfoliata*)
Sue Blackwell found this leaf-miner in Bouldnor Forest SZ383890 on a Botanical Section meeting on September 23rd 2017. The mine is an upper-surface secondary blotch formed from a branching corridor. The frass is in pearl-strings in the greenish-white blotch. The larva is found in July, August and September. Pupation is internal. The mine found contained pupae. Common Centaury (*Centaurium erythraea*) is also mined by this fly.

***Chromatomyia ramosa* (Hendel, 1923)** on Wild Teasel (*Dipsacus fullonum*)
The leaf mines of this Agromyzid fly are quite distinctive. The larva mines primarily along the midrib but where it remains invisible and then forms clearly visible short off-shoots into the leaf-blade on each side of the midrib. Sue Blackwell found the first mine of this species on the cycle-track at Dodnor near Lower St. Cross Farm Creek at SZ502908 on January 21st 2017. In this case the length of the mined midrib was 40mm and there were 11 off-shoots on one side and 14 on the other, 0.5–10.0mm long, no frass being present. There was a white pupal case in the mine. The mine is considered widespread in the south of England and in northern and central Europe. The fly also mines Field Scabious (*Knautia arvensis*) and Devil's-bit Scabious (*Succisa pratensis*).

***Phytomyza autumnalis* Hering, 1957** on Common Knapweed (*Centaurea nigra*)
This is yet another leaf-mine found by Barry Angell at Newtown Rifle Range meadows SZ4490, this time on October 22nd 2017. Several mines with larvae were found. The mine is a long branched upper surface corridor with very irregularly gnawed sides. The pupa is dark brown and found in October and November. The frass is distributed in isolated grains. The fly is widespread in Britain and Europe.

COLEOPTERA: CHRYSOMELIDAE

***Sphaeroderma rubidum* (Graëlls, 1858)** on Common Knapweed (*Centaurea nigra*)
This mine is caused by a leaf-beetle. Again, found by Barry Angell at Newtown Rifle Range on the meadows at SZ4491 on November 10th 2017. The mine is a long corridor, at first on both sides of the leaf, later only upper surface. At first it is transparent, later greenish and the windings of the corridor often lie against each other. The frass is rather sparse and irregular. The leaf can be folded. The mine is found throughout Europe from October to December, the larva being fully fed by mid-October. The specimen found November 10th contained beetle larvae and another found November 13th contained a larva and a dead adult beetle, 4mm in length, hemispherical, reddish-yellow and punctured.

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ADDITIONAL RECORDS OF PLANT GALLS FROM THE ISLE OF WIGHT 2017

Dr. D.T. Biggs

In contrast to the previous two years 2017 was a good year for new gall species. With the help of colleagues to whom I am grateful, eight new galls were found and are described here. The names of the gall species follow Redfern, Shirley and Bloxham (2011) and host plant names follow Stace (1997).

FUNGI: BASIDIOMYCOTA: UREDINALES

***Uromyces trifolii-repentis* (DC.) Lév**. on White Clover (*Trifolium repens*)
My son Nick and I found a very large patch of White Clover looking decidedly sick on the riverside path at Dodnor SZ504913 on December 28th 2017. Microscopy revealed dark swollen and distorted patches on the veins and petioles and the blades of the leaflets. There were also present many dark brown teliospores. The swellings had been caused by the spermogonia and aecia, earlier spore stages of the same rust fungus, producing initially yellow swellings. Stipules can also be galled but none were found affected.

ACARI: ERIOPHYOIDEA

***Cecidophyes nudus* Nalepa** on Wood Avens (*Geum urbanum*)
Sue Blackwell found this new gall in Froglands Lane, Carisbrooke SZ483875 on September 24th 2017. Gall mites often produce erinea i.e. patches of epidermal hairs of plant origin on leaf-blades. The hairs induced by this species are in groups on the underside of the leaf, white at first becoming brownish-red, long, cylindrical and pointed. The mites live amongst the hairs which are situated in the angles between the midrib and the main side-veins. On the upperside of the leaf there are corresponding light green then yellowish or reddish bulges which are round or oval and wrinkled.

HOMOPTERA: TRIOZIDAE

***Trioza centranthi* (Vallot, 1828/29)** on Red Valerian (*Centranthus ruber*)
I asked people to look out for this gall in the Bulletin for February 2017. It is caused by a psyllid or jumping plant louse. It used to be very rare in Britain with only very few records until 2010 when it was found in Portland and Weymouth. Since then it has been spreading rapidly in southern England. The first Island record (by D.T.B.) came from a raised flowerbed in Sea Street, Newport SZ500894 on December 8th 2017 on presumably cultivated Red Valerian. Leaves, bracts, inflorescences were markedly thickened, curled and pink in colour. Adults and nymphs were present. It is found over much of Europe to Turkey and also in parts of N. Africa. I have also found just one galled leaf but no insects in Ventnor.

DIPTERA: CECIDOMYIIDAE

***Harmandiola pustulans* Kieffer, 1909** on Aspen (*Populus tremula*)
The cycle track at Horringford SZ548856 was the site of this gall record on August 15th 2017 by Nikki Falconar and myself. One gall was present, pouch-shaped on the upper surface of a leaf but protruding distinctly below where there was a circular opening. The gall was thin-walled, 1.5mm across, adjacent to the midrib causing a slight curvature of it with some thickening. The larva of this gall-midge is sulphur yellow becoming red on maturity. The gall is described as local, found from Yorkshire southwards. It can also be found on White Poplar (*Populus alba*).

***Loewiola serratulae* Kieffer, 1905** on Saw-wort (*Serratula tinctoria*)
This is a rare gall, the gall-midge inducing a spindle-shaped swelling in a leaf mid-rib, c. 8x3mm. Each larval chamber contains one larva. The original specimen found on Newtown Rifle Range meadows SZ4490 by Barry Angell on July 4th 2017, consisted of several pale green elongated galls. Less often the galls can be found on the side-veins. Adult flies emerge in July. So far the gall has only been found in southern England.

***Polystepha malpighii* (Kieffer, 1909)** on Pedunculate Oak (*Quercus robur*)
During a Botanical Section meeting on October 28th 2017 at Westbrook, Seaview SZ619915 I was handed a fallen oak leaf by Hazel Trevan who had noticed that it was galled. I did not recognise the gall-causer. Recourse to the books resulted in my being able to name the gall-midge which caused the galls. On the one leaf there were five galls, one of which I opened, one I left intact and three which had been vacated. Each gall was a circular pustule on the upper leaf surface, the old galls having a central depression. Each was 2-3mm across, less distinct on the lower surface where an irregular exit hole was seen. The gall matures late June to mid-July and is found widely in Europe. Although there is a British record from 1917, it has appeared much more often since 1995.

HYMENOPTERA: CYNIPIDAE

***Xestophanes potentillae* (Retzius, 1783)** on Creeping Cinquefoil (*Potentilla reptans*)
A gall which I had been looking for since 1975 was shown to me by Michele Van Buren on September 23rd 2017. She found it in her garden in Carisbrooke SZ4888. There were several galls, some fused, on the lower part of the stems of Creeping Cinquefoil close to the ground surface. Each single gall was 5mm x 5mm, woody hard and encircling the stem. Several were fused, up to 25mm x 5mm, and according to the literature up to 80mm x 8mm. The walls of the gall were dark red-brown and wrinkled. Each individual gall contained one gall-wasp larva. The first generation gall appears in July, the second overwinters and the adult gall-wasps appear in June and July. It is described as locally common.

ANGIOSPERMAE: CUSCUTACEAE

***Cuscuta epithymum* (L.) L.** on Saw-wort (*Serratula tinctoria*)
Another gall for which I had been searching for many years was found by Barry Angell on the meadows of Newtown Rifle Range on July 7th 2017. Very few higher plants are gall-inducers (are cecidogenic). Mistletoe (*Viscum album*) is the most obvious. However several parasitic or hemi-parasitic plants do induce galls. Dodder (*Cuscuta epithymum*) is parasitic on many plants and is attached to the host plant's stems by haustoria. At the point of attachment there is sometimes a reactive swelling of the host's tissues i.e. a gall. More commonly the gall is on Gorse or Heather but Saw-wort was the galled host in Barry's specimen. Only easily visible on low-power microscopy, several galls of purplish-red colour and 1mm in diameter were seen on the host plant's stems.

Acknowledgements
To Karen Woodford for her care in typing the above and the article on plant galls.

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SOME RECENT INTERESTING LOWER PLANT DISCOVERIES ON THE ISLE OF WIGHT

Colin Pope and George Greiff

There have been no published accounts of bryophytes (mosses and liverworts) or lichens on the Isle of Wight since Pope *et al* (2003). In the meantime, there have been on-going lichen surveys by a number of recorders. Since Lorna Snow ceased recording, there were no bryological surveys (other than the spring field meeting of the British Bryological Society held in March 2002), until one of us (GG) recently developed an interest in bryophytes. Encouraged by John Norton, leader of the British Bryological Society's Southern Group, substantial progress is being made in updating our understanding of bryophytes on the Island. A selection of the more interesting lower plant finds is presented here. Many of the observations shed light upon some of the impacts of environmental changes such as changes in air pollution, climate change and the condition of habitats. The following accounts have been provided by one or both of us.

Landslips and their importance for bryophytes (GG)

All along the Island's Undercliff, the combination of Upper Greensand overlying Gault clays has resulted in huge landslips in the past and areas of instability today. The most spectacular landslips occur between Luccombe and Blackgang where massive blocks of Upper Greensand, sometimes with overlying chalk caps, have slipped seawards.

A particularly active landslip, Luccombe Chine, has been closed to the public following a landslide in 2010. This variable and disturbed habitat is excellent for certain bryophytes, which colonise the bare soil exposed in these slippages and hold it together. The best landslips have sodden soil resulting from seepages in the cliffs. Though a major catalyst for the landslides themselves, the seepages support communities of mosses, liverworts, hornworts and horsetails, and ensure the areas are generally too wet to support much higher plant life that would otherwise dominate the soil. Luccombe Chine has a great variety of interesting bryophytes including the rare moss *Bryum gemmiferum* and *Riccardia chamedryfolia* a liverwort characteristic of bryologically favourable landslips on the Island. During a recording trip with Hampshire bryologist John Norton in March 2017, the liverwort *Fossombronia incurva* was found new to the Island at this site.

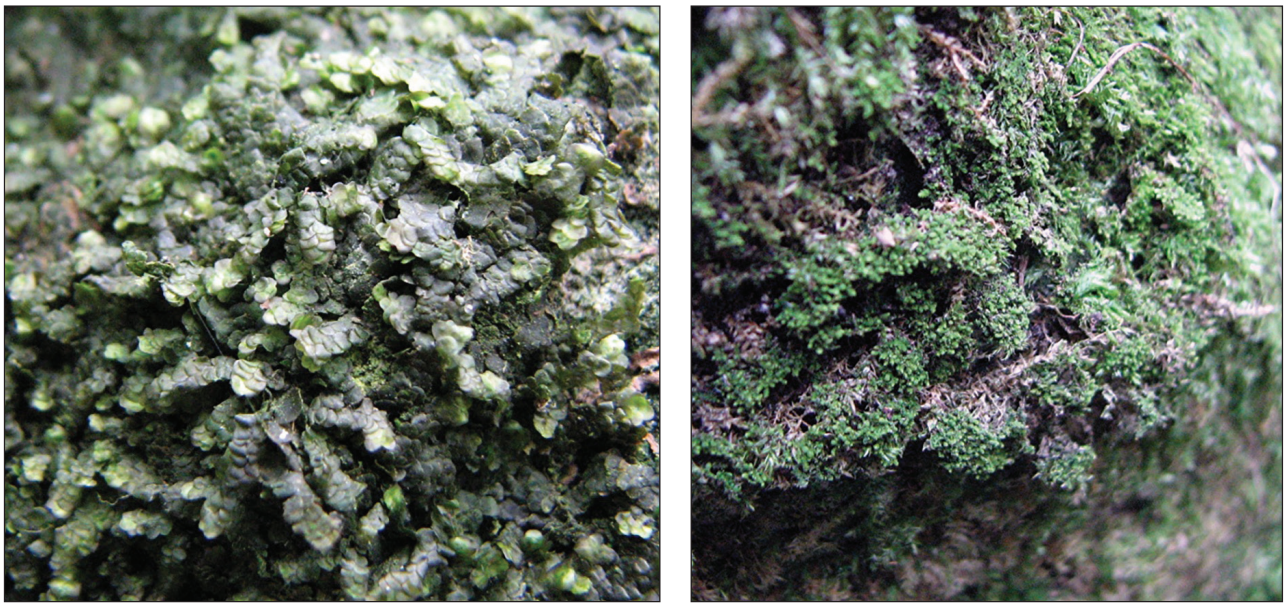

Fig. 1 Some special leafy liverworts in Bonchurch Landslip **Left:** *Marchesinia mackaii*, a dark liverwort of bare rock faces in damp, shady areas (CP). **Right:** *Colojeunea rossettian*a overgrowing mosses (CP).

Bonchurch Landslip is an example of a more stable landslip. Most of the area is heavily wooded and is full of ivy, which together contribute significantly to the stability of the site. The cliffs at the bottom of the landslip are more prone to slippages but these tend to fall into the sea rather than forming new habitat. Therefore, in comparison to Luccombe Chine, this area is far less rich in terms of its bryophyte flora. The specialised elements preferring a more dynamic habitat are lost in favour of commoner species of more established areas. However, there are a number of very rare species present. The Landslip is an SSSI and one of the qualifying features of the site is the presence of southern calcicole bryophytes. These were once more frequent but have declined dramatically as the rocks upon which they grow have become overgrown

with ivy. Neil Sanderson was commissioned by Natural England to carry out a survey of the rarer bryophytes in 2008 and the authors have attempted to update this survey. The liverwort *Marchesinia mackaii*, a western species at the extremity of its range, grows on a handful of exposed, south-facing boulders. It has been recorded by the author growing on three boulders, all in relatively small quantity. *Cololejeunea rossettiana* is another liverwort from these boulders that grows on shoots of the common moss *Thamnobryum alopecurum*. It has now been recorded from a number of boulders but it remains genuinely rare and is an easily overlooked species. Both of these liverworts are only known from Bonchurch Landslip on the Island and are threatened by ivy overgrowing their specialised niches.

Rocken End, St Catherine's – a special place for bryophytes (CP & GG)

Triangular Pygmy Moss, *Acaulon triquetrum,* is a tiny ephemeral moss forming scattered turf of shoots up to 1.5mm in height which soon turn reddish or golden brown. It grows in bare patches of soil on south facing calcareous slopes, germinating in the winter and dying down in early spring. It is a Mediterranean species, which in this country, is restricted to a handful of coastal sites in southern England. It has all but disappeared from Sussex but is known from several sites in Dorset, and on the Island from cattle-grazed slopes near Windy Gap car park at the end of Sandrock Road. *Acaulon triquetrum* seems to be doing well, though it appears that the period in which it is most prolific may be shifting more towards the winter, possibly due to global warming. In 2002, it was seen in abundance at the end of March on a field trip by the British Bryological Society. In 2017 and 2018, however, most of the adult plants had decayed by this time, leaving their spores in the soil to await the next season, with February being the month in which the moss was most prolific.

Fig. 2 The tiny moss *Acaulon triquetrum* near the start of its growth season photographed on 15 January 2018. (GG).

Landslides from Gore Cliff provide the specialised habitat for an incredibly rare Mediterranean leafy liverwort *Southbya nigrella.* It forms intricate sparse mats, with light green shoot tips contrasting with darker green older parts. It is a pioneer species growing on calcareous rocks by the sea. Another Mediterranean species, it is known from a handful of sites on Portland in Dorset and a single site on the Island, where it is threatened with extinction. With us, it grows in a very restricted area on small friable calcareous outcrops and bare soil besides rivulets formed from cliff seepages. During the summer months, moisture evaporates and the 'boulder' skin exfoliates, taking the liverwort off with it and providing a fresh substrate for recolonization (Porley, 2013). In the summer, it dries out and turns black with only the shoot tips remaining green, hence its recent English name 'Blackwort'.

Southbya nigrella was first recorded on the Island in 1979 'near a sycamore tree in small quantity on a boulder' by Clifford C. Townsend. At the time, the site was easily accessible besides a footpath leading west from Windy Gap car

park. The site was visited by Francis Rose, Ted Wallace, Rod Stern and Colin Pope on 26th February 1983 and it was found to be locally distributed on damp rocks above and beneath the sycamore tree. When CP visited the site again in 1992 with Lorna Snow, the valley where it grew had become aggressively colonised by *Buddleja* shading out most of the suitable spots. *Southbya* was found in the one remaining open area with running water. This was a very small area but with many plants.

In 2001, heavy rainfall led to major landslip at St Catherine's below Windy Gap car park, cutting off the area from access. CP was able to reach the area on 8th February 2003 by clambering from the Blackgang end. Many of the *Buddleja* had been broken down by the ground movement and CP was able to locate three patches of *Southbya* on one small boulder.

Since then, the site has become increasingly overgrown and no further attempt has been made to see whether the liverwort survived until 31st March 2017 when a targeted meeting was arranged by Natural England. It was attended by Mark Larter, Simon Curson, Jonathan Cox (NE, Dorset), Jack Potter, John Norton, Ian Riddett, George Greiff and Colin Pope (Fig 3). We went straight to the areas where *Southbya* had last been seen and located the plant on a small, dark, shaley boulder and subsequently on three others. They were all in a very small area and a wider search failed to reveal any more colonies. It was good to be able to confirm that this very rare liverwort continues to survive but concern was expressed as to its vulnerability and the ever-present threat of scrub incursion. Subsequently, Mark Larter (NE) arranged for scrub clearance to be carried out in this area. Time will tell if this has been successful in recovering this vulnerable liverwort.

Cephaloziella baumgartneri is another tiny leafy liverwort that grows in similar situations to *Southbya nigrella.* It is another Mediterranean species at the northern limits of its range along the extreme south coast of England. It occurs in a handful of sites with a stronghold on Portland. (Porley, 2013). It can be seen at St Catherine's growing with *S. nigrella* and on its own, on hardened bare mud and boulders at the site. It appears to be more successful than its counterpart at present.

Fig 3 The site for *Southbya.* Left to right: Ian Riddett, Jack Potter, Mark Larter, Simon Curson & John Norton (CP).
Fig 4 The very rare and tiny Blackwort, *Southbya nigrella.* There are threads of an even smaller rare leafy liverwort, *Cephaloziella baumgartneri* intertwined amongst it (GG).

In June 2013, visiting bryologist Sam Bosanquet, whilst on a family holiday to the Island, took some time off to look for bryophytes at St Catherine's (pers. comm.). Being a competent rock climber, he decided to explore some of the chert ledges of the Gore Cliff outcrop. To his surprise, in an almost inaccessible location close to a footpath up the cliff, he found a moss growing which was new to him. It was growing on thin calcareous soil overlying the chert bed and it had distinctive, very long silvery hair-points to the leaves. He was able to identify this as *Crossidium squamuliferum*, another bryophyte with a Mediterranean distribution, the first record for Britain. It is conceivable that this moss might be present on other inaccessible ledges at Rocken End.

Fig 5 *Crossidium squamuliferum,* new to the UK, with ultra-long hair points and rounded-backed triangular leaves (SB).

Lichen discoveries at Newtown National Nature Reserve (CP)

When Les and Sheila Street moved to live at Newtown in 2011, they set about looking at and recording the lichen flora with fresh eyes, finding many interesting species. These records were abundantly supplemented by a visit from the Wessex Lichen Group on 18th July 2011 and a visit from a few members of the British Lichen Society in April 2016 led by Neil Sanderson. The principal areas of interest were the trees growing in and around Hart's Farm meadows and the oak trees along the edge of the saltmarsh in Walter's Copse.

The ancient field oaks in Hart's Farm meadows proved to be particularly rich. They are growing in unimproved, traditionally managed grassland which is recognised as being botanically and entomologically rich. The traditional management has allowed the field oaks to thrive and a rich lichen flora to develop unmodified by chemical sprays and fertilisers. They include crustose lichens such as *Schismatomma niveum, Cresponea premnea, Lecanographa lyncea, Opegrapha corticola* and *Opegrapha prosodea*, nationally notable crusts which are restricted to the dry bark of veteran, usually oak, trees. A close examination of one field oak (SZ42679031) by Neil Sanderson yielded a number of pin-head lichens, a group characteristic of deep fissures in old dry bark. As well as the nationally widespread *Chaenotheca ferruginea* (but rare on the Island) were patches of the more local *Chaenotheca trichialis* and a small amount of sterile but distinctive *Chaenotheca chrysocephala* thallus. Both of the latter two were new to the Island.

A particularly noteworthy discovery was made by Neil Sanderson inside an ancient hollow Oak (SZ42799042). Here, a rain track on the lignum, supported a few apothecia of the 'Vulnerable' former Elm specialist *Bacidia incompta,* the first post-Elm disease record from the Island. Elms were once a familiar part of the countryside and cultural landscape and were a common hedgerow species at Newtown (Fig 6). Wayside elm trees would have supported a rich lichen flora favouring its rough, water retentive, naturally alkaline bark. With the demise of elm trees in the late 1960s and 1970s through Dutch Elm Disease, some of these lichens had alternative host trees in ash, maple, sycamore and elder. However, a number of elm specialists have largely failed to colonise alternative host species and have become very rare 'Red listed' species today. *Bacidia incompta* is one such endangered species. It would once have been common on old elm trees at Newtown and it is perhaps reassuring to know that it is still hanging on at Newtown. In common with elsewhere, this elm specialist has found a niche around old wounds or sap runs on hard lignum inside hollow trees. A recent (January 2018) search by the two authors has discovered that *Bacidia incompta* also survives in a second hollow field oak at Hart's Farm (SZ4271790574) where it is present in greater quantity with many fertile apothecia. Clearly, these ancient and hollowed field oaks are a very important biological resource.

Fig 6 Noah's Ark, Newtown photographed c. 1939/40 when the building was used as a youth hostel. The trees are all English elm (*Ulmus procera*) which was the dominant hedgerow tree in Newtown at that time. Photo by Owen Lea, courtesy of Keir Foss.

Fig 7 Left: Visiting lichenologist, Maxine Putnam, with Colin Pope looking for *Bacidia incompta* inside a hollow oak in Hart's Farm meadows (HP). **Right:** George Greiff examining *Bacidia incompta* in a second hollow oak (CP).

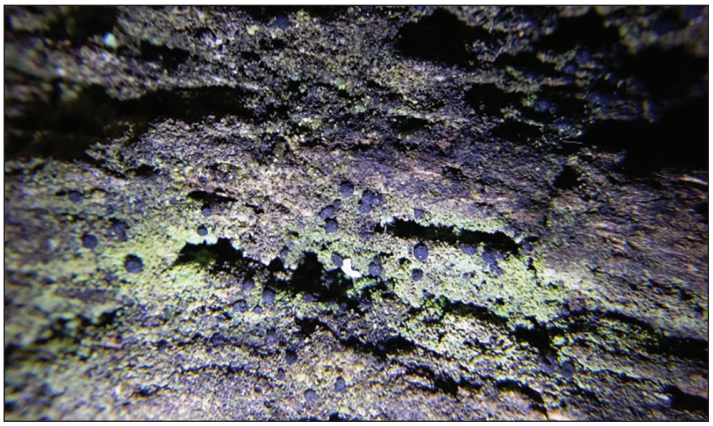


Fig 8 Rare lichens on oaks in Hart's Farm meadows **Left:** Fertile *Bacidia incompta* inside a hollow oak at Hart's Farm meadows (GG). **Right:** *Heterodermia obscurata* on a fallen oak (HP).

One of the old field oaks was felled by a storm in early 2016 and this gave the opportunity to examine what was growing above eye level. There were several surprises, not least of which was a colony of Golden Eyes, *Teloschistes chrysophthalmus,* growing on a twig at the top of the tree. There must be other colonies of this rare lichen growing in the canopy of other trees both at Newtown and elsewhere. We also found a distinctive grey thalloid lichen growing on a main trunk at about 3m from the base which Maxine Putnam was able to identify as *Heterodermia obscurata,* the first record for the Island. This is a lichen of ancient woodlands, parklands and willow carr in southwest England, west Wales and western Scotland. The Island record is at the easternmost edge of its range.

A second interesting habitat at Harts Farm meadows was provided by a thicket of Aspen (*Populus tremula*) trees. The twigs supported a range of crustose lichens which included the small orange disks of *Caloplaca cerinella* on the twigs. This proved to be the first record of this species from the Island since the 19th century. Neil Sanderson was also able to identify *Bacidia arceutina*, *Caloplaca obscurella*, *Catillaria nigroclavata* and *Strigula taylorii,* all rare species on the Island. This range of nutrient rich bark species included several that are under recorded on the Island. Most will have been much more widespread when old Elms still survived so here is another example of a second host tree species providing a refuge for elm specialists.

Another lichenologically interesting site has proved to be the edge of Walter's Copse, along the shore of Newtown Harbour, where the coppice runs into saltmarsh. It is a visually striking area where old oak coppice is being gradually subsumed into the saltmarsh with small, stunted trees, many of which are dead, but still support an interesting lichen flora. The most significant species recorded by Neil Sanderson was a rather slight lichen, green staining on the wood accompanied by black stalked pycnidia and some black apothecia. This was *Micarea misella,* a quite widespread species on damp lignum in the north of Britain but rarely recorded in the south. The nearest current record is from Yateley Common in the north of Hampshire. The dead standing oak wood also supported colonies of pin-head lichens. Les and Sheila Street had already found *Calicium glaucellum* here, a rare species on the Island, and Neil Sanderson added *Chaenotheca brunneola* which was new to the Island.

The dynamics of twig lichen communities (GG)

The general lichen community on twigs has undergone significant changes in the last two decades. Lichen communities growing on twigs, being early colonists, are very sensitive to atmospheric change; much more so than those growing on tree trunks. These changes are considered to be a response to decreased sulphur dioxide air pollution and a reduction in acid rain together with an increase in nitrogenous air pollution. In 2003, when the Isle of Wight Flora was published, the lichen *Lecanora conizaeoides* was very common both on twigs and worked wood (Pope et al. 2003). The small but striking foliose lichen *Candelaria concolor* was regarded as scarce and in decline while the distinctive crustose lichen *Fuscidea lightfootii* was only known from a handful of sites and was declared rare.

In early 2017, a tiny yellow foliose lichen was noticed on an ash tree on Ventnor Down by the author and tested positive for *Candelaria concolor*. In the months that followed, *C. concolor* was found in locations all over the Island including Munsley Bog in Godshill, Wroxall, Newtown and Shanklin. Not long after the initial discovery of this lichen, *Fuscidea lightfootii* was observed in the edge of a photograph of another species, again on Ventnor Down. The author has since noted this species as very common on the Island, occurring in many sites and likely overlooked in others. It is also an epiphyte and prefers the smooth bark of young trees and twigs. It was first discovered on the twigs of a large

hawthorn tree and has since been observed on other trees and also fence posts, where some incredibly large colonies have been noted. *Lecanora conizaeoides*, however, appears to have become very rare. The previously abundant *Xanthoria polycarpa* also appears to have declined.

Fig 9 Lichens on twigs which are making a comeback **Left**: *Fuscidea lightfootii* (GG) **Right**: *Candelaria concolor* (GG).

Golden Eyes *Teloschistes chrysophthalmus*, an exciting new arrival (CP)

The attractive lichen *Teloschistes chrysophthalmus,* sometimes known by the English name of Golden Eyes, has always been a rarity in this country. There are a scatter of early records from the nineteenth century comprising less than ten collections from the south coast between Devon and East Sussex. These include a specimen collected near Ryde, growing on a hawthorn twig. There have been no further British records, apart from a couple of short lived specimens found in Devon and Cornwall, until 2007 when plants started to be recorded more frequently along the south coast of England. It is generally considered that these colonies arrived from spores blown across the Channel, perhaps from Brittany where Golden Eyes is relatively frequent and has been expanding its range.

The first record from the Island came from Les Street who was elated when by chance in April 2012, he came across a thallus growing on a mature hawthorn tree on West High Down. A few days later, Sheila Street discovered another specimen, this time on a mature hawthorn at Hart's Farm meadows, Newtown. The hunt was on to find more and, over the course of the next few years, several specimens were found in different Isle of Wight locations.

Fig 10 Sheila and Les Street pointing out the site of their first discovery of *Teloschistes chrysopthalmus* on the Island, on West High Down. (CP).

In 2014, Les & Sheila Street found a single thallus growing on blackthorn (*Prunus spinosa*) in exposed scrub at Knowles Farm, St Catherine's. In the same year, Robin Lang found a specimen on dead hedgerow bramble at Mottistone. In 2015, CP found one thallus on an exposed blackthorn hedge on Chillerton Down and in 2017, a number of plants on hawthorn and blackthorn growing on a limited stretch of exposed hedgerow on Wroxall Down. Meanwhile Keith and Anne Marston had found an additional thallus at the West High Down site (2015) on a nearby hawthorn and Sheila Street had found a second thallus on Blackthorn at Hart's Farm meadows (2015) and, most interestingly, one in the canopy of a fallen oak (2016).

Fig 11 Golden Eyes Lichen, *Teloschistes chrysopthalmus* at (left) Hart's Farm meadows, Newtown (CP) and (right) Mottistone (CP).

Experience from elsewhere has shown that many of the initial finds of Golden Eyes failed to persist and that has proved to be the case on the Island. At Newtown meadows, the two thalli on thorn bushes were lost to grazing cattle and the third thallus was on a fallen tree. At Chillerton Down, the single thallus was lost due to wind damage to the bush and at West High Down, the original thallus was believed to have died naturally. Hence, generally speaking, these colonies have proved short-lived and this perhaps has always been the history of this species in this country. However, there is room for optimism. At West High Down, although the original thallus has been lost, a total of five new thalli have appeared on the original hawthorn and one on a separate hawthorn. At Newtown meadows, although no plants are currently known, the discovery of a single thallus at the top canopy of a mature oak makes it highly likely that others survive undetected. However, it is the Wroxall Down site which is most encouraging. There are estimated to be a minimum of 20 thalli on Blackthorn and Hawthorn along a short stretch of hedgerow (December 2017 CP, GG). At this early stage, it appears that Golden Eyes may be establishing a few self-perpetuating populations.

Golden Eyes should be looked for elsewhere for there is likely to be a number of as yet undiscovered sites. It has clear habitat preferences which will help to narrow down the search area. Golden Eyes is a twig species and it grows on the sunny side of rosaceous shrubs, usually Hawthorn and Blackthorn. It seems to favour sites which are exposed to south westerly winds where the pH of the twigs on which it is growing is raised from salt laden winds. It grows where other twig lichens are abundant but avoids eutrophic areas dominated by yellow lichens, principally *Xanthoria parietina.* It seems to favour a twig community dominated by grey bushy lichens (*Physcia, Ramalina* and *Evernia prunastri*) but with a few yellow lichens also present, a lichen community characteristic of high sunshine levels and relatively high pH conditions. It is best to search for this lichen on bright days in winter and spring before the leaf buds have unfurled.

Assessing heathlands for their quality (CP)

Lowland dry heath is a rare and threatened habitat which occurs on infertile and free-draining acid sands and gravels. It has been estimated that over 75% of remaining lowland heath in this country is in poor condition. Neil Sanderson has developed a method of assessing the quality of lowland heath in terms of the diversity of lichen-rich habitats, based upon his studies in the New Forest, the best surviving tract of lowland heath in the country. The assessment, known as the CCP Index, is a measure of the total number of macro-lichen terrestrial species (i.e. *Cladonia, Cetrelia* and *Pycnothelia*) recorded from a site. The CCP Index does not include the smaller terricolous crusts. This is a relatively simple index to apply for people competent at naming lichens, and is giving useful assessments of the comparative diversity of lichen-rich heathland habitats.

On the Island, lowland heathland is scarce but there are two good surviving sites, both on National Trust land. The largest remaining lowland heath, in excess of 40ha, occurs on plateau gravels at the western end of the Island on Headon Warren. On Ventnor Downs heathland is developed over angular flint gravel deposits on top of the chalk downs. The Wessex Lichen Group, under Neil Sanderson, has paid visits to each of these sites, to update the species lists and assess the quality of the habitat.

On 14th September 2013, the Wessex group visited Headon Warren, examining the different habitats which make up lowland heath, namely heather dominated heathland, acid grassland and old gravel workings. On heather-dominated heathland, lichen abundance was reduced where heather cover was high but areas with a sparse cover of heather with open gaps had a richer assemblage of *Cladonia* lichens. Surprisingly, the most open, windswept heathland was rather poor in lichens. However, it was the areas of acid grassland, heavily grazed by rabbits, that produced the richest lichen assemblages. Old gravel diggings with small sand banks also supported rich lichen communities including an interesting collection of smaller terricolous crusts, several of which were new records for the Island. Another interesting habitat proved to be bushes of old heather (*Calluna vulgaris*) and bell heather (*Erica cinerea*) which supported interesting epiphytic lichen communities. Neil Sanderson believes that rich epiphytic lichen assemblages on heathers, especially bell heather, are emerging as a feature of coastal heathland in southern England.

Altogether, 55 lichen taxa were recorded from Headon Warren, including eight which were new to the Island. A CCP (*Cetraria*/*Cladonia* / *Pycnothelia*) Index score of 20 was recorded. There were a few patches of the invasive exotic moss *Campylopus introflexus* but these were not obviously a problem. The non-native moss can be very invasive in areas where ammonia deposition from intensive farming methods is high. In some heathland sites in southeast England, the Netherlands and Denmark, the moss has out competed *Cladonia* communities, resulting in monospecific moss swards in places.

On 27th June 2015, the Wessex group visited Ventnor Downs to examine the heathland on top of Bonchurch Down. Here there is a rich and visually striking area, with patchy low growing heather interspersed with bands of flint which has led to the establishment of an unusual area of lichen-rich heath. There is a good *Cladonia* lichen community here together with *Cetraria muricata* at its only known Island site. The assemblage of normally epiphytic species here is particularly striking. *Evernia prunastri*, *Hypogymnia physodes* and *Usnea flammea* are particularly frequent together with very unusually *Fuscidea lightfootii* and *Hypogymnia tubulosa* on flint on the ground. The later was fertile, a particularly rare sight.

Elsewhere on Bonchurch Down, *Cladonia* communities were very localised with the predominantly taller heathland being very lichen poor. However, the most interesting find was growing on a patch of hard black humus on an abandoned path (SZ57307897) where the group found five patches of Heath Tooth, *Pycnothelia papillaria,* growing with several *Cladonia* species. Heath Tooth is now a very rare and declining species in lowland Europe outside of the New Forest, where it is frequent and shows no sign of decline. It is also found on moorland in upland Britain. It is a specialist species of well-lit hard humus which thrives under traditional, pastoral management of heathlands. Although it is tolerant of cool fires and moderate trampling, it is rapidly declining on abandoned heathlands and conservation heathlands managed for other species.

The Group recorded a total of 45 species growing on the heath on the ground, on flints and on the heathers. A CCP Index (*Cetrelia*, *Cladonia* & *Pycnothelia)* score of 18 was recorded, good although slightly less than the much larger Headon Warren site. *Pycnothelia papillaria* and *Cetraria muricata* are only known from this site on the Island. The most impressive feature, however, was the sheer abundance of the common epiphytes on the heather stems and on the ground in parts of the site.

Before Neil Sanderson introduced the CCP Index as a means of measuring the quality of heathlands there had been few systematic surveys of lichens on British heathlands. However, a picture is now starting to emerge. The New Forest has by far the richest lichen-rich heathland in lowland Britain. The somewhat comparable Dorset heaths have proved to be much poorer. Byfield and Pearman (1994) found that the Dorset heaths had become much poorer in specialist heathland flowering plants in the 1980s and Sanderson has found strong indications that the serious 20th century decline in vascular plant diversity within habitats outwith dry heaths in Dorset also applies to lichens in the dry heaths. A decline in management on the heaths is considered to be responsible. Other heaths, as in the Thames Basin, appear on the limited evidence available to be even more impoverished.

Fig 12 Distinctive lichen-rich vegetation of heath 'polygons' in open flinty gravel on Bonchurch Down (CP).

Fig 13 Left: *Cladonia* heath community, Headon Warren (CP). **Right:** Heath Tooth, *Pycnothelia papillaria* on Ventnor Down (CP).

Sanderson has found that in the New Forest, a discrete patch of heath would be expected to have a CCP score of at least 10 to be of high interest, while a 1km square, or a site of about 100ha, would be expected a score of over 15. The highest total CCP score recorded from a 1km grid square in the New Forest to date is 35. From this evidence, the two Island heathlands (Headon Warren 20; Bonchurch Down 18) have scored remarkably well, highlighting their regional importance in this context.

Much more detail on CCP Indices and all the Wessex Group visits to the Island can be found on the Wessex Lichen Group web site, http://wessexlichengroup.org/

Lichenicolous Fungi – A world of new discoveries (GG)

Much as plants are plagued by their fair share of fungal and other parasites, so are the lichens, but in a significantly less obvious manner to the casual observer. Almost all of the fungal parasites that infect lichens are micro-fungi and are usually visible as tiny dots on the host, sometimes causing discolouration around these dots. Not all of these fungi appear to be parasitic; some are commensals and have not been seen to cause any obvious damage to the host they grow on, perhaps until the host weakens or dies. Most lichenicolous fungi are ascomycetes, but rarely there are also basidiomycetes, including a small number of mushrooms.

The lichenicolous fungi of the Isle of Wight are very poorly recorded and, until now, there have been no systematic surveys for them. The majority of records on the NBN Atlas are from visiting lichen experts not looking for these parasites in particular. Most of those species recorded are identifiable without microscopic examination, with the exception of a parasite, *Muellerella lichenicola,* recorded by Colin Pope (det Paul Cannon) in 2016 on Tennyson Down as new to the Island, growing on the nationally scarce lichen *Fulgensia fulgens*.

The first lichenicolous fungus seen by the author was a common parasite of the frequent lichen *Xanthoria parietina*, which causes a distinctive sooty covering of the otherwise bright yellow surface of the host. The next species discovered proved to be a new vice county record for the Island. It was also growing on *Xanthoria parietina* and was found at Ventnor Down. It was confirmed by renowned mycologist David Hawksworth as the nationally scarce *Telogalla olivieri*, a gall-forming parasite. This species has since been found in three other locations with a site beside the River Medina being its best. At this site the fungus is growing exceptionally well and is destroying its host with astonishing speed. Months later the original site on Ventnor Down, where only two fungal galls were seen, the first host lichen had disappeared and neighbouring colonies now displayed many galls. This leads the author to conclude that this parasite may be on the increase. However, its prodigious nature may contribute to its rarity as it may eliminate its host without producing a sufficient number of spores to infect others.

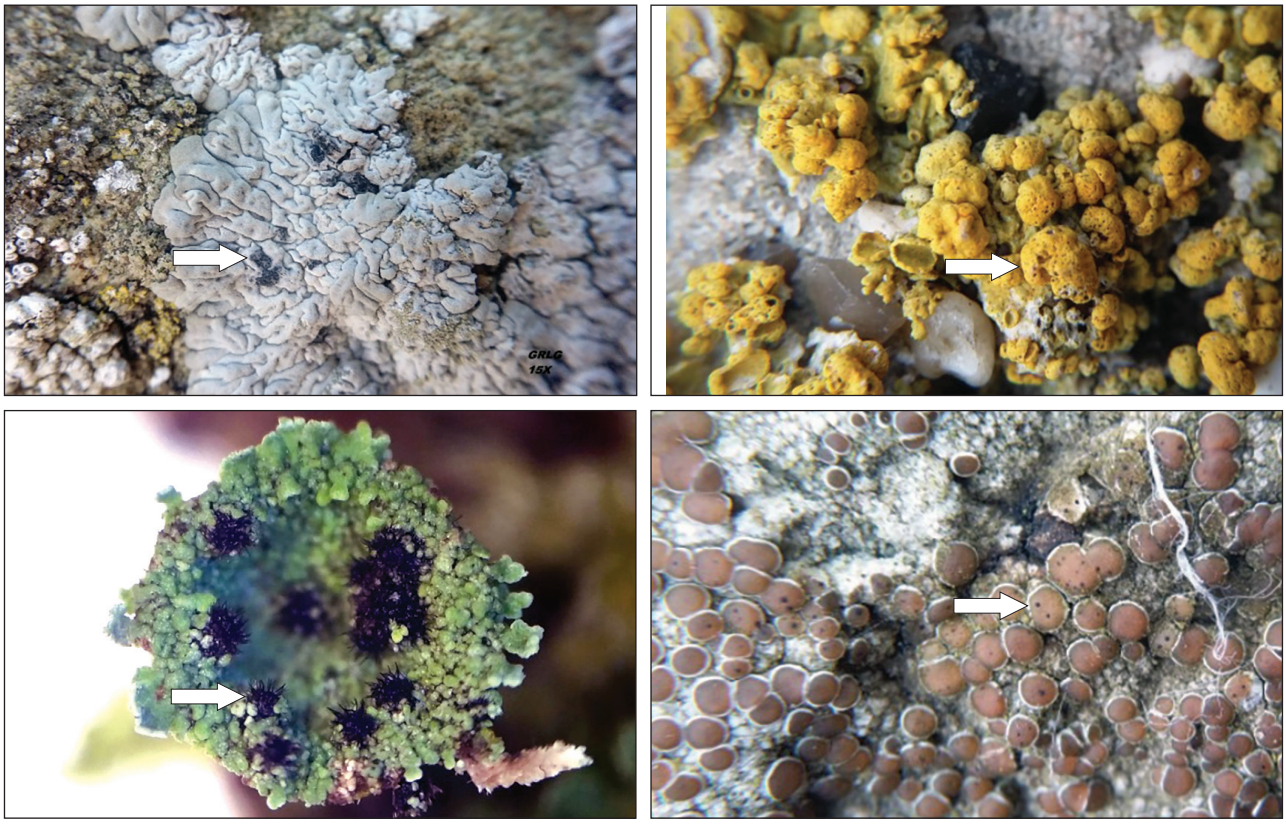

Fig 14 A selection of unusual fungi growing on lichens Top left: *Arthonia diploiciae* (greyish blotches) on the lichen *Diploicia canescens* (GG). Top right: *Telogalla olivieri* (finely speckled yellow galls) on the lichen *Xanthoria parietina* (GG). *Bottom left: Roselliniella cladoniae* (black spikey balls) on the lichen *Cladonia sp* (GG). Bottom Right: *Muelerella lichenicola* (tiny black dots on the host's brown-red apothecia) (GG).The fungi are indicated by pointers.

To date, a total of twenty-nine different lichenicolous fungi have been found by the author in various locations, including other nationally scarce species such as *Arthonia diploiciae*, a parasite of the lichen *Diploicia canescens*

known from old church walls and seen at Godshill Church. Recently, the very rare species *Roselliniella cladoniae* was discovered in a wood below Ventnor Down growing on the squamules and cups of a *Cladonia* lichen. Not long before that, *Myxophora leptogiophilum (*det. Paul Diedrich) was found new to England on a *Collema* host at Lynch Lane chalk-pit in Brighstone. Of the parasites recorded, a great many are new vice county records. It is hoped that data can be obtained for more species of this fascinating and neglected group of fungi.

Big Mead Pond, Shanklin – A case study on eutrophic freshwater environments on the Island (GG)
The pond beside St Blasius' Church in Shanklin is a distinctive feature of the park near the Old Village. The park itself is an excellent habitat for lichens, with some species going so far as to grow in the tops of the plastic rubbish bins there. On a warm, lazy afternoon in the summer of 2017, it came to the attention of the author that the pond was "full of scum" and fish were dying aplenty. Specimens of the green water were collected and taken home for examination under a high-powered microscope.

The samples proved to be incredibly rich in algal life, as the greenish colour of the water had suggested. Masses of the colonial green alga *Scenedesmus quadricauda* were observed along with other members of the Chlorophyceae including *Pediastrum boryanum* and *Micractinium pusillum*, as well as many other species of algae and protozoa. It was originally assumed that this "bloom" of algae was caused by the *Scenedesmus* alone, as it appeared to be the most prolific species in the sample.

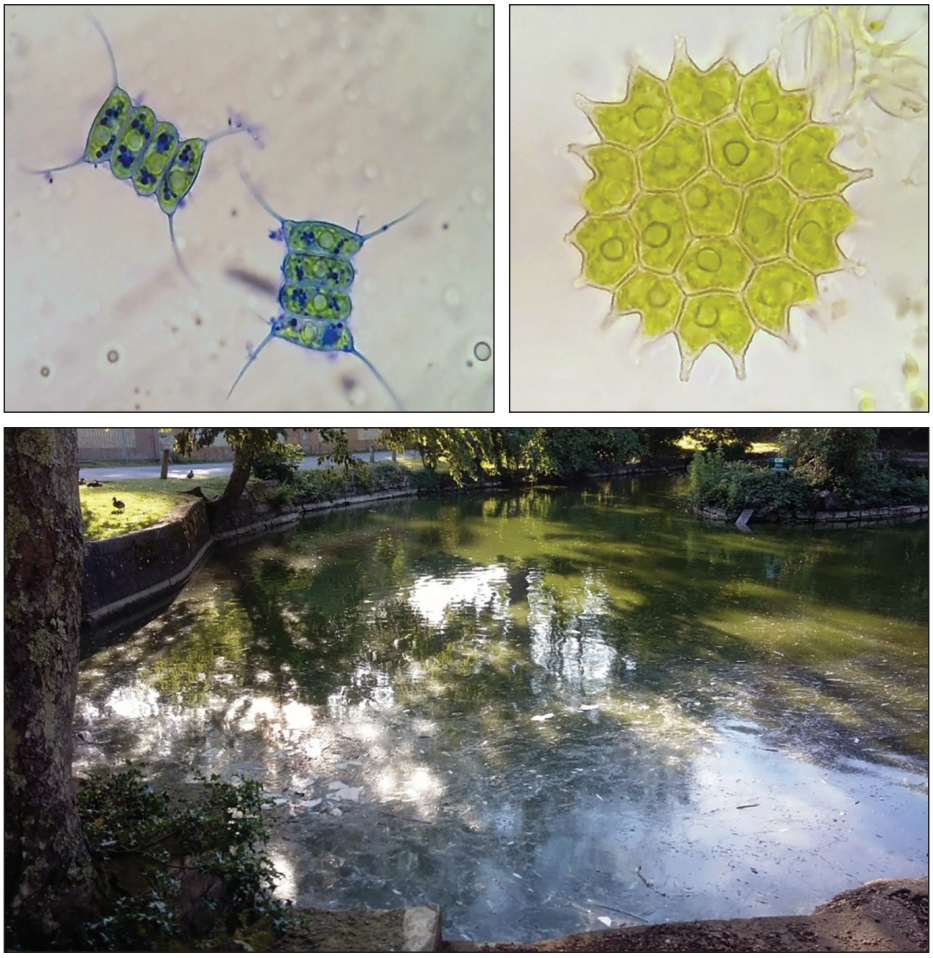

Fig 15 Algae from Big Mead pond. Top left: *Scenedesmus quadricauda* at 1000X magnification (GG). Top Right: *Pediastrum boryanum* at 1000X magnification (GG). Bottom: A photo of the pond whilst eutrophic in July 2017. Note the greenish colour of the water, and the layers of scum on the surface.(GG).

Upon further investigation under a 100X objective lens using oil immersion (total magnification 1000X) it was found that another organism was far more abundant than the *Scenedesmus* species, something smaller and simpler: a bacterium. Formerly known as blue-green algae, cyanobacteria are photosynthetic prokaryotes with the ability to grow larger than many other bacteria, presumably because they can photosynthesise. Their size possibly allows them to avoid many protozoan predators. Further to that, some cyanobacteria, such as the one present here, have in their cells special sacs called air vacuoles. These allow them to float near the surface of the pond, closer to the sunlight they depend on to photosynthesise, a clever adaptation to life in large, deep bodies of water. The author has identified this cyanobacterium species as *Anabaenopsis elenkinii* (John, et al.), a species with a southern distribution in the UK.

The pond in Shanklin had become enriched with nutrients, possibly enhanced by fertilisers from nearby farmland, and by the excrement of its resident ducks, whose diet is supplemented by bread from well-meaning but misinformed people. Rotting vegetable matter from its surrounding trees could also be a contributing factor. This process is known as eutrophication; it is a natural process, but the extent to which it occurs and persists is impacted by human activity. The decomposition and accumulation of nutrients is ongoing whereas the algae remain dormant due to low temperatures and low light intensity during the cold season.

With the weather conditions becoming optimum towards July, conditions were ideal for the rapid growth of algae including *Anabaenopsis*. They reproduced vigorously to such an extent that many hundreds of individuals could be found in a single drop of water, dividing too quickly for their microscopic consumers to keep up. Although these algae are photosynthetic and are net producers of oxygen during daylight, at night they utilise the oxygen in the water. When consumption of dissolved oxygen is faster than it its replenishment by diffusion from the air, its levels will fall. *Anabaenopsis,* with its air vacuoles, swarmed to the surface of the pond and restricted diffusion further, it also prevented light reaching submerged aquatic plants, causing them to die.

Once the death of any organism has occurred, decay processes set in, further adding to the biological oxygen demand of the water and the pond becomes anaerobic. Fish are killed quickly as they are particularly sensitive to a lack of oxygen. The whole balance alters, and populations of the component organisms rise and fall according to their ability to tolerate and exploit the changing conditions. This is the classic 'boom and bust' cycle of eutrophic systems.

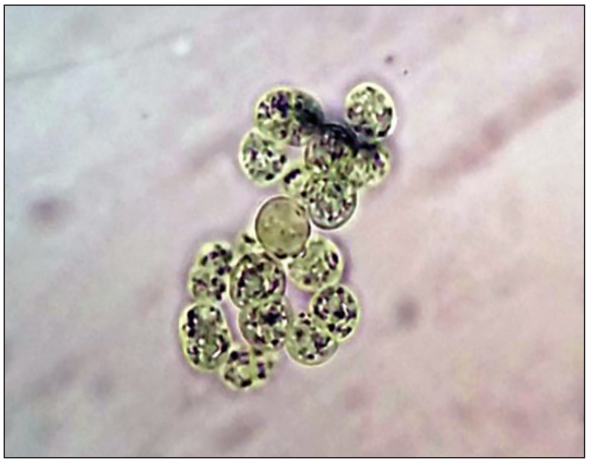

Fig 16 *Anabaenopsis elenkinii* at 1000X magnification (GG). The cyanobacterium consists of short, somewhat tangled filaments made up of sub-spherical to elongated cells. The dark areas in these cells are the air vacuoles this species uses to dominate the top of the water layer. The differentiated cell in the middle of the colony is likely to be an akinete, which is a resistant "spore" that can rest at the bottom of the pond throughout the winter and divide to form a new colony in favourable conditions.

This stage did not persist through the winter. Indeed, when a sample was taken in the autumn, the author found no trace of *A. elenkinii* and the pond was healthy once again. Clearly, its predators finally caught up with it, causing its annihilation in this pond – or so it seems. *Anabaenopsis*, like many other micro-organisms, has the remarkable ability to produce resistant spores when conditions are unfavourable. It is suspected that this species has long dwelt in this pond and will continue to do so, germinating again in the summer and taking its turn at being the dominant organism of this humble waterbody. The pond, for all its apparent stillness, is a dynamic system!

Acknowledgements
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CONSERVATION OF THE REDDISH BUFF MOTH (*Acosmetia caliginosa*) ON THE ISLE OF WIGHT

Richard Grogan

Abstract

The Reddish Buff Moth (Acosmetia caliginosa Hübner 1813) has its only known British location on agriculturally unimproved fields on the north-west coast of the Isle of Wight. Lost from the mainland in 1960s, it was known from a number of sites on the Island, which were all lost by 1987. Its rediscovery in 1988 in new sites has led to a concerted effort to keep it from extinction. The moth has a precarious existence dependent on the goodwill of local landowners as well as the efforts of a number of local and national conservation organisations. The moth is listed as a Species of Principal Importance in England, under Section 41 of the Natural Environment and Rural Communities Act (2006) and listed as Endangered (RDB1) in the UK Red Data Book (Shirt 1987). Furthermore the species is fully protected under the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Introduction

A caliginosa was first described by Hübner in 1813 and was found in Britain soon afterwards. Fust (1868) records the moth in 'Hampshire and the Isle of Wight' whilst Newman (1869) describes finding it in Hampshire. Ramsey and Cox (1869) narrow the location down to the New Forest but it is not until 1891 that the location of Stubby Copse is mentioned (Simes 1891). This was confirmed by Tutt (1902). During the first half of the 20th century other Hampshire sites were listed including Brockenhurst (Fassnidge 1923) and Botley Wood (Cardew 1931; deWorms 1941). The last record seems to have been from Botley Wood in 1961 by D Ffennell. (Goater 1974). Records from other parts of the British Isles i.e. Dorset and Cornwall, are disputed.

The Reddish Buff is also known from a number of European countries including France, Germany, Serbia, Poland and Romania. It has been declared extinct in Sweden (Harvey 2014)

Plate 1 : Reddish Buff Moth (*Acosmetia caliginosa*)

Ecology of the Reddish Buff Moth

A. caliginosa is a medium sized noctuid moth which feeds exclusively on Sawwort (*Serratula tinctoria*), a plant found typically on unimproved grasslands on a variety of substrates. Although Sawwort is widely distributed in the British Isles and on the Island, the moth seem to be restricted, historically, to sites where the soils are neutral or acidic i.e. clay soils or gravel capped soils in south west Hampshire and the north of the Island. Although many of the location names where the moth was found include the word 'wood' or 'forest' in them, this belies the fact that these sites either have open areas within them e.g. Parkhurst Forest or are established on previously open areas i.e. Bouldnor Forest.

Studies indicate that the moth prefers warm, open conditions in which Sawwort is frequent in the sward which is itself relatively sparse. Shade by taller grasses, scrub or trees allows the plant to become taller and more robust but the moth seems to avoid these plants as they are not warm enough due to the height of competing vegetation (Waring 1993).

However, the presence of low growing scrub is desirable as this creates shelter, allowing the Sawwort patches to warm up and remain warm. The presence of the moth in woodland rides is due to remnant populations living in degraded sub-optimal habitat where Sawwort has been retained by regular cutting of the rides.

The generally nocturnal moth flies during May and June (earliest date April 29th: latest July 19th), although it can be 'flushed' from vegetation during the day if disturbed. The female lays eggs on the underside of a Sawwort leaf in a warm, sheltered location. The larva emerges and feeds at night during July and into early August, hiding itself along the midrib of the leaf during the day (Waring 1993). The larva falls to the ground if disturbed. It makes its way to the base of the plant in August and pupates at the soil surface or just below, to emerge in the following May.

The Reddish Buff on the Isle of Wight

The first mention of *A caliginosa* on the Island is by South (1907) who describes it as found 'in the past'. Poole (1922) reports that the species was 'rediscovered' on the Island in 1909 by R H Fox but the location is not recorded. Subsequently it is reported in West Wight, Wootton, Shide and Parkhurst (Jeffrey 1929). It was last recorded in Parkhurst Forest in 1933 (Wakely 1933), who found it three decades later at Cranmore (Wakely 1962).

Reports of the moth being caught at Bouldnor exist from 1950s (Waring 1992) and was still found there in 1968 (Goater 1974), when the conifer crop was young (the Forest was planted between 1951 and 1955). Other records before 1987 included Freshwater in 1956 (Knill Jones 1960) and Nunneys Wood in 1978 (Waring 1992). The moth was recorded at Bouldnor in 1983 (Hadley and Skinner 1983) and subsequently by Peter Cramp in 1987 (Waring 1992). This was the last record from the Bouldnor site.

Species Recovery Programme

In 1987 English Nature (now Natural England) began a programme to concentrate resources on a number of rare and endangered species with a mixture of ecological studies, surveys and practical action. In 1992 the Reddish Buff was brought into this Species Recovery Programme as it is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). The programme for the moth was to include trapping of adults using light traps and searches for larvae to indicate presence; captive rearing and breeding; surveys of the foodplant and practical management work. The programme included a number of partners including Isle of Wight Council Countryside Section, Hampshire and Isle of Wight Wildlife Trust, Forestry Commission, BTCV, Island Conservation Volunteers, Steephill Forestry, Chester Zoo, Paignton Zoo, Marwell Zoo, Forest Nature Quest and English Nature, as well as moth specialists and the numerous landowners at the sites where the moth was found. Increased resources became available when the English Nature Species Recovery Programme was launched in 1992. Confidential reports were produced annually by Dr Paul Waring, under contract to English Nature which described the work carried out until the programme's end.

Although the input from the Species Recovery Programme ceased in 2002, work continues to the present day with the involvement of Hampshire and Isle of Wight Wildlife Trust, Forestry Commission, Natural England, Amazon World, Isle of Wight Zoo (aka Sandown Zoo), Butterfly Conservation, the IWAONB Partnership and the local owners of the different sub-sites.

Conservation of the Reddish Buff Moth

Once the relevant organisations and experts were confident of the habitat requirements of the moth, following the evidence gathered from previous researches, work was undertaken to establish its whereabouts and look at the necessary autecological studies and management work required to conserve it. The moth is fully protected under the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) so the work was carried out by individuals with the relevant license.

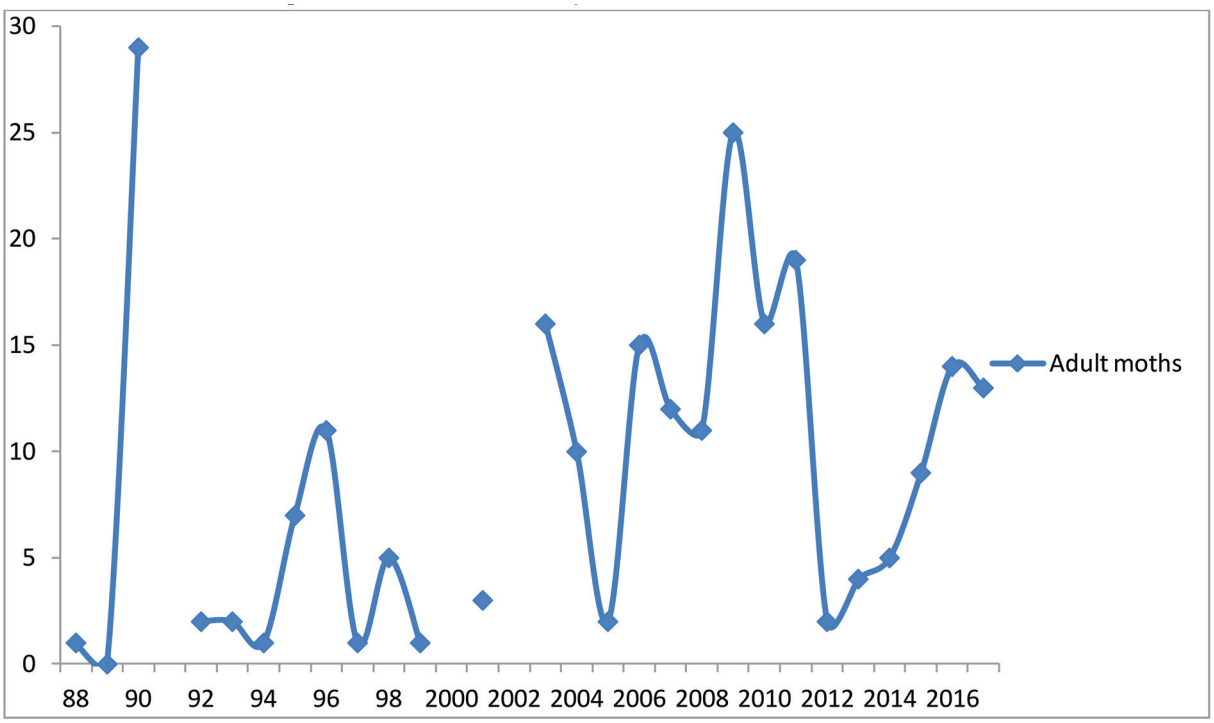
These studies included :

Trapping of adults using light traps: see Figure 1: Traps used were either a Robinson trap with a 125W B/U mercury vapour lamp or a Heath trap with a 6W actinic tube or a combination if more than one trap was deployed. Males readily come to the trap (93% of captures) but females seem to be reluctant or they are more sedentary. The flight period ranged from 29th April until 19th July but the majority of the observations were made from late May to mid- June.

In 1988 the Reddish Buff Moth was re-discovered at Cranmore where it had not been recorded since 1962. By 1996 the moth had been found in a wide area across Cranmore covering nine different landowners. Although the sub-sites have had a chequered history (see below), the moth can still be found reliably here due to the work of the Hampshire and Isle of Wight Wildlife Trust.

Light trapping has been conducted, since 1998, on other sites across the Isle of Wight including areas of Cranmore outside the SSSI, Windgate Copse, Brickfields (Newtown), Briddlesford Copses, Jersey Camp, Firestone Copse and Compton Down where suitable swards containing Sawwort could be located. No new site has yielded any Reddish Buff to date.

Plate 3: Numbers of Adult Reddish Buff caught at the Hampshire and Isle of Wight Wildlife Trust Reserve at Cranmore IW since 1988: this site was the largest area of Reddish Buff habitat at Cranmore and was acquired as a nature reserve by the local Wildlife Trust in 2002.



Searches for larvae: in combination with light trapping searches for larvae have been conducted. Firstly this was done by timed hand-searching, looking at individual Sawwort plants for the larvae on the leaf both during the day and night (Waring 1992). This method was superseded by vacuum sampling using the suction mode on a garden leaf blower. Larvae are collected by placing the nozzle of the machine at the base of the plant and catching incoming larvae on a small net suspended over the nozzle. Both these methods help to distinguish those sites that were used for breeding and those that were not and helped to confirm the establishment of introduced stock (Harvey 2014). Following a number of training courses, vacuum sampling was undertaken at a number of sites (see table 1). It has been carried out annually since 2014, on the SSSI sites, by Amazon World and Isle of Wight Zoo.

Table 1 : Reddish Buff survey results from various sites on the Isle of Wight
Despite introductions and intensive searches, the moth only persists at the Cranmore sites

Site	Native/ Introduced	Grid ref	First and last light trapping dates	Light trapping result	Vacuum sampling (2014)
Cranmore SSSI	Native	SZ3989, SZ3990	1998 - present	Positive all years	Positive
Parkhurst Forest	Introduced (1998)	SZ4790	1990 - 2001	Positive : 1999 only	Negative
Brickfields (Newtown)	Introduced (1996)	SZ4292	1994 - 2001	Positive in 1998 & 1999	Negative
Nunneys Wood	Introduced (1989)	SZ4089	1988-1994	Positive in 1990 & 1992	Negative
Bouldnor Forest	Native	SZ3890	1987 -1998	Positive in 1987 only	Negative
Briddlesford Copse	Possible habitat	SZ5490, SZ5590	1994	Negative	Negative
Walters Copse	Possible habitat	SZ4390	Not undertaken	-	Negative
Harts Farm	Possible habitat	SZ4290	Not undertaken	-	Negative
Windgate Copse	Possible habitat	SZ4390	1993 - 1997	Negative	Negative
Jersey Camp	Possible habitat	SZ4490	1994 & 2001	Negative	Not undertaken
Compton Down	Possible habitat (on chalk)	SZ3785	1999 & 2001	Negative	Not undertaken

Captive rearing and breeding: In 1983 and 1988 females were taken from the wild to establish a breeding stock. Captive populations were initially maintained in enthusiasts' gardens but in 1993 Marwell and Paignton Zoos were involved in rearing and this effort was later augmented by Forest Nature Quest in 1996 and subsequently Chester Zoo.

Populations were introduced into several sites including Nunneys Wood (1989), Brickfields, Newtown (1996) and Parkhurst Forest (1998). These populations lasted up to between three to four years (see Table 1) and no Reddish Buff has been recorded on any of these sites since 1999.

Surveys of the foodplant: As described above a number of sites on the Isle of Wight with a known abundance of Sawwort were visited and comparisons with the Cranmore sites made between 1993 and 2014. These included Compton Down, Briddlesford Copse and a number of sites around the Newtown Estuary.

The autecology of Sawwort generally is described in Jefferson (2017). Whilst the plant is widespread over soil type and geography in the UK and on the Island, the moth is restricted in its distribution. The Hampshire and Isle of Wight Wildlife Trust, having done the bulk of the management for the moth over this time period, have undertaken a baseline survey of the abundance and distribution of Sawwort on their reserve (Kernohan 2015 & 2018) with some subsequent monitoring.

Other notable autecological work on Sawwort include studies on germination (Holzel and Otte 2004) in the laboratory indicating that the plant germinates best at higher temperatures i.e. 26.5 degrees C and after the seeds were kept in cool damp conditions.

Practical management work: Management for the conservation of the Reddish Buff has evolved with the rediscovery of the habitat at Cranmore. Based on our understanding of the ecology of the moth, all management has sought to create a habitat mosaic of sparse unimproved neutral to acid grassland with an abundance of Sawwort together with low-growing scrub to provide warm, sheltered micro-habitat in the area.

Management has therefore been focussed on tree felling, rotational scrub cutting, cutting and raking or grazing. Over the years the application of management has been haphazard across the Cranmore SSSI area, due to changes in funding sources, changes in land ownership and changes in staff at Natural England This situation has led to a contraction of the range of the moth from nine subsites in 1996 covering 11 ha to four covering 8 ha, of which only 4 ha continues to hold a viable population.

Tree felling was undertaken by the Forestry Commission in 1993 at Bouldnor Forest where the moth was last found in 1987. This work widened rides and created glades on the main junction where rides came together. Much of this work led to an increase in the population of Sawwort on the rides as the shade was reduced. However subsequent felling operations and the creation of a road to service the oil exploration platform in the late 1990s reduced the amount of potentially suitable habitat. The remaining Sawwort-rich grassland was developed under the powerlines which cross the Forest from the south. This wayleave becomes overgrown with willow scrub every few years and so it is regularly cut, but continues to support a sward typical of unimproved neutral grassland in the years before it is swamped again by encroaching scrub.

Rotational scrub cutting was first undertaken, as management technique to maintain suitable habitat for the moth in 1989 with volunteers at the site at Nunneys Wood where the species had been found in 1978. The glade, that had existed at the time of the discovery of the moth, had been slowly shaded by scrub in the intervening 11 years. .This cutting was undertaken by hand by volunteers from BTCV and other organisations. Since then this technique has been adopted on other suitable sites and cutting by hand using volunteers (hand tools) or professionals (chainsaws) has been undertaken regularly ever since to maintain the scrub / grassland balance. As well as retaining the moth on all its sub-sites at Cranmore it has helped a number of other species such as Nightjar (*Caprimugulus europea*), Nightingale (*Luscinia megarhynchos*) and Pale and Heath Dog Violet *(Viola lactea* and *V. canina* resp) to continue to flourish. Similar work was undertaken by the Forestry Commission at Parkhurst Forest on a Sawwort-rich glade in preparation for the introduction of the moth in 1998. Following the failure of this re-introduction the ride was left to scrub over.

Following the acquisition of the Cranmore reserve by the Wildlife Trust in 2002, a ride was cut from the road, through woodland and scrub to a large area of suitable habitat where the moth was discovered in 1988. As well as expanding the grassland within the ride, two major scrub removal operations were undertaken in the larger area in 2005 and 2009. Large areas of silver birch, gorse and blackthorn scrub where removed which resulted in temporary increases in populations of both the Reddish Buff and the Small Pearl-bordered Fritillary (*Boloria selene*). These open areas were then grazed by Hebridean sheep. A flock of up to 50 sheep were allowed onto the habitat between August and October each year between 2008 and 2012. The sheep were removed and replaced by three British White cattle in 2013 to graze overwinter and then three cattle in 2016 and 2017 (Kernohan 2018). Kernohan also noted that 68% of the sawwort found was in a sward height of between 10cm and 21cm, indicating that low density grazing in winter is the preferred grazing regime for the plant.

Although further details are required, grazing may have been an issue with the conservation of the moth as no site where the moth was known to thrive in the past appears to have been regularly grazed. However the management of large areas of habitat is unsustainable without the use of grazing animals. This issue was unwittingly solved by the residents of Cranmore who grazed goats on the unimproved grassy glades around the area in the late 20th century. Goats preferentially browse, eating scrub regrowth in favour of the sward, creating the low scrub growth matrix around unmolested grassy swards. Goat grazing declined in Cranmore in the 1990s but was still conducted by one local on the Cranmore SSSI until her untimely death in 2001. Since this time both sheep (as mentioned above) and, more recently cattle, at very low density i.e. 0.3 lsu/ha has been used to similar effect. Unfortunately the use of goats cannot be continued due the costs of fencing (which needs to be twice as tall as sheep or cattle fencing), the availability of suitable goats (need to be low maintenance and hardy breeds) and the isolated nature of the site.

Cutting and raking has been undertaken where goat grazing was generally abandoned on sites across Cranmore in the early 1990s. These sites were either strimmed and then hand-raked by volunteers or cut and picked up by a small tractor with a collecting bin. This management has largely been abandoned on sites, with a subsequent loss of suitable habitat, with the exception of the Wildlife Trust reserve as landowners have become less able to carry out this work.

Work in the field on the autecology of Sawwort by Bissels et al (2009) indicated the poor dispersal of seeds and the fact that sheep grazing seemed to reduce the density of seedlings and flowerheads, increasing the importance of vegetative propagation for Sawwort. Bischcoff et al (2009) showed that parts of the plant below ground could survive intensive meadow management but the resting buds required time to recover.

Jefferson (2017) notes that a hay cutting regime without grazing would be sub-optimal management for Sawwort. All this evidence indicates that the management for the sites should be one of low density grazing by cattle, combined with periodic cutting and raking, to maximise seed germination, seed density and vegetative propagation and to control, but not eliminate, scrub encroachment. The resulting abundance of Sawwort on site in warm, sheltered conditions would then provide optimal habitat for the moth. Fencing and ride management are therefore important considerations in controlling stock movement and retention of scrub to provide shelter.

Factors influencing the Conservation of the Reddish Buff Moth

1. *Resources*: Although most of the funding through the Species Recovery Programme was spent on contractors to undertake ecological studies and surveys, much of the practical work was done through voluntary efforts of the landowners and other willing volunteers. This vital effort should not be under-estimated when considering the sustainable management of these sites. Latterly through Countryside Stewardship Schemes (1994 – 2018) and Countryside Enhancement Schemes, the funding for practical work has been much more secure on the Wildlife Trust sites but elsewhere the small areas owned by multiple landowners makes the applicability of agri-environment schemes much more difficult. The voluntary time given by moth experts such as Ian Fletcher has been vital for monitoring and surveying both adults and larvae. More recently, the help from specialist Wildlife Trust staff and the BIAZA (British and Irish Association of Zoos and Aquariums) group of zoos on the Island has been invaluable in monitoring sites and securing funds.

2. *Land ownership*: Although eight landowners were involved at the peak of the work at Cranmore this rapidly reduced as property changed hands and management effort declined. Of the nine sub-sites in the Cranmore SSSI, only five are now actively managed for the moth and only one has retained a viable population. Acquisition of the largest area of habitat by the Wildlife Trust in 2002, following a generous single cash donation, was important to prevent the extinction of the moth in Britain.

3. *Conservation designation*: The designation of the land as a Site of Importance for Nature Conservation in 1999 and subsequently an SSSI in 2002 have been critical in keeping the attention of conservation bodies on the sites and the future of the moth. Without the designation, the small plots in which the Reddish Buff exist may have been sold as potential building sites or destroyed by cultivation to expand existing gardens.

Future of the Reddish Buff Moth in Britain

As this article has shown *A. caliginosa* has always had a tenuous hold in the British landscape. Restricted to a single foodplant and currently confined to a small pocket of uncommon habitat, it reflects the plight of better known causes célèbres such as the giant panda. The situation has become of increasing concern as the maintenance and creation of suitable habitat is increasingly dependent on the goodwill of landowners and their willingness to undertake specialist land management with decreasing resources for both advice and practical tasks.

However the situation is not lost as a number of organisations are now seeking to co-ordinate effort to ensure the long-term survival of this critically endangered species and its habitat by; working with landowners to continue management of the existing habitat and continue to search for the moth on these sites; work with landowners to increase habitat across the former range of the moth; pursue land acquisition into conservation minded organisations that can then lead on the management of the moth; increase resources and help to those already seeking to conserve the moth through monitoring or practical tasks.

Acknowledgements

This summary would not have been possible without the early work of moth experts from the Island including Peter Cramp and Ian Fletcher and visiting experts from the mainland including Dr Paul Waring and Martin Harvey.

A special mention should go to Chris Archbold, formerly reserve officer for the Hampshire and Isle of Wight Wildlife Trust who co-ordinated management work on the Wildlife Trust reserve at Cranmore between 2002 and 2012 and Roger Lamplugh, who, as a contractor, undertook work on the other Cranmore sites over a similar time period. The National Trust was also a key partner in relation to the early grazing experiments on the site and its help is acknowledged.

Thanks should go to current workers in the field including Jamie Marsh, Steve Egerton-Read and Tony Gillingham from the Hampshire and Isle of Wight Wildlife Trust, Ben Phelan from the Forestry Commission and Tracey Dove, Tara Hayter and Rachel Patrick from BIAZA partners.

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BATS (CHIROPTERA) – 2017

Colin R. Pope

Fourteen different bat species were recorded during 2017. Several house roosts were monitored by householders. The Bat Hospital was, as usual, kept busy with many bat calls dealing with a range of species and circumstances and I am grateful to them for allowing me to use their records in this report and to Donna Street for entering the records into Mapmate. John Whitehurst has continued to develop 'The Isle of Wight Bat Project', an intensive Island-wide acoustic survey of bats in order to be able to model species' range across the Island. He has updated his series of sophisticated baseline models mapping the predicted likelihood of each bat species across the Island using acoustic survey data collected by the Isle of Wight Bat Group together with filtered bat records over a number of years. The updated modelling results can be found at https://sites.google.com/site/iowbatproject/baseline-models/2017-baseline A summary of the predicted distribution for some species has been included in these accounts.

Greater Horseshoe Bat (*Rhinolophus ferrumequinum*)
The IW Bat Group saw and audio-recorded a Greater Horseshoe Bat flying around Mount Joy and Carisbrooke in May (JW).

Daubenton's Bat (*Myotis daubentonii*)
One was trapped by mist netting in Moor Wood, Briddlesford Estate on 29th May (IDW).

Unusually, the Bat Hospital received five individuals in 2017. Two of these, both females, were found in buildings in Newport on 31st August and 20th September. The remaining three were all males: one at Freshwater on 10th October; one at Niton on 25th October; and one at Shide, Newport on 15th November.

Baseline modelling, predicts that Daubenton's Bats are most likely to occur in association with water bodies, and particularly where there is both water and woodland present.

Whiskered Bat (*M. mystacinus*)
One was trapped by mist netting in Sheep Wash Copse, Briddlesford Estate on 29th May (IDW).

The long established house roost at Pallance Road, Northwood produced a maximum count of 23 bats on 17th June. The bats arrived on 9th June and departed on 18th June leaving one baby in the roost. This roost seems to be used erratically in recent years (SC).

The Bat Hospital received three Whiskered Bats in 2017: a female at St Helen's on 20th May; a female at Ashey, Ryde; a male at Chale Green on 17th July.

Baseline modelling predicts that Whiskered Bats are frequent across all deciduous woodland areas.

Brandt's Bat (*M. brandti*)
One was trapped by mist netting in Moor Wood, Briddlesford Estate on 29th May (IDW).

Natterer's Bat (*M. nattereri*)
There was one individual hibernating in crevices at Shide hibernaculum during a monitoring visit carried out on 12th February(C&JP).

During mist netting surveys carried out by Ian Davidson-Watts on the Briddlesford estate in 2017, 4 were caught in Dunnage Wood on 18th July and one was trapped in Sheep Wash Copse on 29th May (IDW).

The Bat Hospital had none in 2017.

Bechstein's Bat (*M. bechsteinii*)
Ian Davidson-Watts carried out mist netting in several woods on the Briddlesford estate in 2017. Maternity roosts were identified in Moor Wood (maximum emergence count of 67 females and juveniles on 31st May) and in Stockers Hole Copse (maximum emergence count of 43 females and juveniles on 20th July). The maternity roost in Stockers Hole Copse has been known for several years. In addition, individual Bechstein's were trapped in Briddlesford Main Copse, Little Briddlesford Moor, Sheep Wash Copse, Moor Wood and Dunnage Copse (IDW).

The IW Bat Group watched two Bechstein's Bats feeding in Combley Great Wood in August (JW).

The Bat Hospital received three individuals in 2017, all males. On 17th April, one was found on a road at Alverstone Garden Village; on 8th May, one was disturbed during building work at Bembridge; and on 1st June, one was found in a doorway at Brighstone (GS). The urban location of two of these is unusual.

Noctule (*Nyctalus noctula*)
The Havenstreet Station Cottage house maternity roost continues to hold both Noctule and Serotine bats. The total count of both species was 30 on 9th June but there are currently some problems with separating the two species (JL).

Individuals were trapped in mist nets set up in Briddlesford Copse. There were 2 in Moor Wood on 17th July, and individuals in three locations in Briddlesford Main Copse on 16th July.

Recorded by bat detector on surveys at Harcourt Sands, Puckpool by consultants (IDW). The Isle of Wight Bat Project also recorded this species widely by acoustic survey.

Serotine (*Eptesicus serotinus*)
A maximum count of 24 on 19th June 2015 at a long established maternity house roost in Lower Adgestone Road, was below average for this site (JA).

Baseline monitoring predicts that the Serotine is widespread across the Island.

Pipistrelle (*Pipistrellus pipistrellus* / *P. pygmaeus*)
Pipistrelle bats are the most frequently treated at the Bat Hospital. They dealt with 39 Common Pipistrelle (*P. pipistrellus*), in 2017, fewer than in recent years. They treated 5 Soprano Pipistelles (*P. pygmaeus*) (GS).

Baseline monitoring predicts that the Common Pipistrelle is widespread across the Island and is the commonest Island bat species. Soprano Pipistrelle principally occur on low ground in the north and east Wight.

Nathusius' Pipistrelle (*P. nathusii*)
Two grounded Nathusius' Pipistrelle bats, both males, were dealt with by the Bat Hospital in 2017. There was one at Freshwater on 12th June and one at Player Street, Ryde on 22nd September (GS).

Brown Long-eared Bat (*Plecotus auritus*)
Individuals were trapped in mist nets in various locations in woodlands on the Briddlesford Estate with a maximum of 3 in Moor Wood and 4 in Sheep Wash Copse both during the evening of 29th May (IDW).

Despite being the second most frequent bat, the Bat Hospital treated very few bats of this species: remarkably just one, a male in 2017 (GS).

Grey Long-eared Bat (*P. austriacus*)
The Island is a stronghold for this nationally endangered species. In 2017, the Bat Hospital dealt with eight individuals compared with just one Brown Long-eared Bat! On 15th May, a male was found on a wall at Quarr Abbey; on 5th August, a cat-caught male was collected from St Edmund's Walk, Wootton; on 16th August, a female was grounded at East Cowes; on 23rd August a male grounded bat was collected from Harts Farm, Rookley; on 24th August, one fell from a letterbox cage in a house on Esplanade, Ryde; on 3rd September, one was grounded at Cambridge Road, East Cowes; on 7th September a female was grounded at Godshill; and on 16th October, a male was found at Brading Station. The majority of these grounded bats had been attacked by cats (GS).

Barbastelle (*Barbastella barbastellus*)
Three individuals caught in 2 locations on 16th July in Briddlesford Copse during mist netting surveys (IDW).

None at the Bat Hospital in 2017.

Baseline monitoring predicts that Barbastelles are strongly associated with older deciduous woodland areas.

Acknowledgements
John Adams, Sheila Cooper, Ian Davidson-Watts, Jessica Lloyd, Jillie Pope, Graham & Donna Street, Jon Whitehurst.

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NEW AND INTERESTING FUNGI IN 2016 and 2017

Colin Pope and Jackie Hart

New in 2016

Inonotus cuticularis (Clustered Bracket)
A rusty coloured bracket fungus found growing on beech in Knighton East Wood (CP).

Puccinia commutata
A rust fungus growing on leaves of Red Valerian (*Centranthus ruber*) found by Chris Kidd on a garden wall at Calbourne and confirmed by CP. Bryan Edwards writes, 'an interesting record and it extends its known distribution eastwards. Malcolm Storey found it in South Devon and I found it more recently on Portland where it is locally common and on Purbeck at Seacombe and Winspit. The aecidia seem to be produced at any time of the year; I first found it in November. I think Malcolm is right. It needs sequencing, It seems to be behaving very differently from the *Puccinia commutata* on *Valeriana officinalis*.' Subsequently found at Ventnor in 2017 (GG).

Fig. 1 The rust fungus, *Puccinia commutata* growing on leaves of Red Valerian, Calbourne (CP)

Sesquicillium buxi
A micro-fungus found growing on dead leaves of Box, found in Shalfleet churchyard (DB). This is not the same fungus as Box Blight, a disease which is dreaded by gardeners.

New in 2017

Ascochyta galeopsidis
A leaf spot found on leaves of hemp nettle, Merstone cycle track (found by Sue Blackwell det. DB).

Dothidella ulmi
Causes black spots on elm leaves. Newtown (AO) New during our annual foray weekend.

Flammulaster subincarnata
A small, pale spored fungus. Parkhurst Forest (AO). New during our annual foray weekend. Alan Outen says, 'I am amongst those who continue to regard this as a full species'.

Hygrocybe psittacina var. *perplexa*
Although this was the first record for this Parrot Waxcap, it is a widespread species which has only recently been split off from *Hygrocybe psittacina.* Northwood Cemetery (CP).

Hypoxylon howeanum
An Ascomycete forming rust-red hemispherical stromata erupting from dead wood. Wydcombe (DB).

Melogramma campylosporum
An Ascomycete with black stromata on dead wood. Knighton East Wood (AO det. Kerry Robinson). New during our annual foray weekend.

Fig. 2 Left: *Melogramma campylosporum* growing on dead wood, Knighton East Wood (AO);
Right: black colonies of *Myriangium duriaei* overgrowing scale insects, Ventnor Downs (CP)

Myriangium duriaei
A remarkable little black entomogenous fungus which attacks scale insects and overgrows them. Found on branches of an ash tree on Ventnor Downs (GG/CP det. Brian Douglas).

Otidea bufonia
One of the hare's ear cup fungi. Found on an early foray in August in Firestone Copse (CP).

Phyllosticta syringae
A leaf spot growing on lilac leaves. Dodnor (DB).

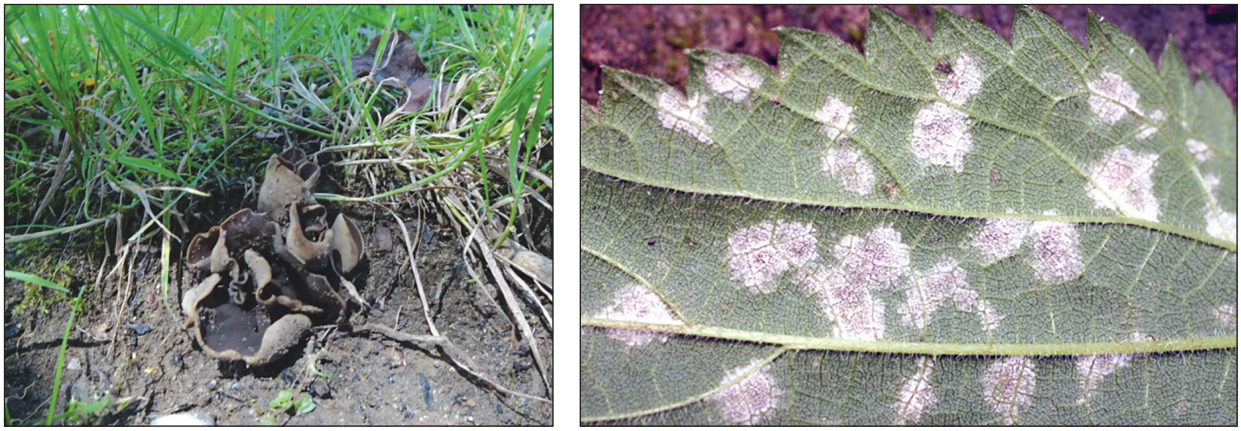

Fig 3 Left: Toad's ear, *Otidea bufonia* Firestone Copse (CP);
Right: Downy mildew, *Pseudoperonospora urticae* on the underside of stinging nettle leaves (AO).

Pseudoperonospora urticae
A downy mildew growing on stinging nettle leaves. Parkhurst Forest (AO) New during our annual foray weekend.

Puccinia nemoralis
A rust growing on common cow-wheat found in Combley Great Wood (CP).

Resupinatus trichotis
The Hairy Oysterling, a small gilled fungus with a reduced stem growing on dead wood, Parkhurst Forest (AO). New during our annual foray weekend.

Septoria hydrocotyles
A leaf spot fungus growing on marsh pennywort found at Bohemia Bog (CP).

Tephrocybe ellisii
A small gill fungus found in Parkhurst Forest (AO). New during our annual foray weekend.

Uromyces trifolii-repentis
A rust fungus growing on clover found at Dodnor (DB).

Xerocomus ferrugineus
A bolete found during an early foray in August in Firestone Copse (CP).

Other interesting finds
Fistulina asexual stage
The Beefsteak fungus, *Fistulina hepatica* is regularly found on forays, growing on old oak trees, but the asexual stage of this fungus is much rarer. An article about it appeared in *Field Mycology* (April 2017) drawing it to reader's attention. At the time, Dr Martyn Ainsworth had not previously seen it and there were very few records held at Kew. Since publication, no further records have come to light apart from the discovery of a specimen in Borthwood Copse in October 2017 (conf. Martyn Ainsworth).

Hericium coralloides
The spectacular Coral Tooth, found for the first time on a fallen ash in Appuldurcombe Wood in 2015, re-appeared on the same tree in 2017. Appuldurcombe Wood (DD).

Fig 4 Left: Coral Tooth, *Hericium coralloides* on ash in Appuldurcombe Wood;
Right: *Boletus legaliae* collected in Combley Great Wood (CP).

Boletus legaliae
This large, spectacularly coloured bolete resembles Satan's Bolete but has pinkish tones in the pale cap. A wet spell in August encouraged a number of bolete species to fruit and this rather rare one was found in Combley Great Wood (conf. Geoffrey Kibby). It appeared in many places in southern England at the same time.

Perennipora ochroleuca
A small bracket fungus growing on blackthorn at Mount's Bay, St Lawrence proved to be this fungus (CP/ GG, conf. Alan Lucas). This is a nationally rare fungus with a distinctly south coast distribution. It was first found in scrub at Blackgang by Martyn Ainsworth in 2012.

Dichomitus efibulatus
This resupinate fungus is another rarity, this one with a markedly south western distribution. It was found in 2012 by Martyn Ainsworth on old blackthorn scrub by the path at Blackgang leading from the View Point carpark. Still present here in 2016.

Fig 5 Left: *Perennipora ochroleuca* on blackthorn at Mount's Bay;
Right: *Dichomitus efibulatus* on blackthorn at Blackgang (CP).

Fig 6 A distinctive little fungus with stalked cups growing on husks of fallen sweet chestnut fruits found by George Greiff on a foray in Beech Copse, Godshill. It has only been found once previously and at the same site but is likely to have been overlooked elsewhere where sweet chestnut grows. (CP).

Recorders
Alan Outen (AO); Colin Pope (CP); David Biggs (DB); Dave Dana (DD); George Greiff (GG)

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FLOWERING PLANTS, ISLE OF WIGHT - 2017

Colin R. Pope

The account of plant records this year has been divided into 'New and first modern records' and 'Other noteworthy records'. There have been a number of interesting new records this year, in particular with regard to alien plant species established in the grassland of touring caravan sites. This is a previously neglected habitat for interesting plants, recently explored by Paul Stanley following similar unexpected discoveries in coastal camp sites in Belgium (Pope & Stanley, 2018).

Fig. 1 Paul Stanley and Eric Clement examining the flora of a camping pitch at Cheverton Farm camp site (Colin Pope)

The lists below cover the principal highlights. I am very grateful to all resident and visiting botanists who submit their records; all of them are valuable and all records have been stored whether reported here or not and have been submitted to the BSBI and will contribute towards the Atlas 2020 project to update the national mapping of all native and introduced plants.

Abbreviations used at the start of the accounts are an attempt to establish the status of the records, namely: N. Native; C. Casual Alien; E. Established Alien; P Planted.

New and first modern to the Isle of Wight

Achillea filipendulina (Fern-leaf Yarrow)
E. A clump at top of cliff at Forelands, Bembridge. A garden escape. SZ655873TP

Atriplex longipes (Long-stalked Orache)
N. Bouldnor on small beach in front of marsh SZ375901 PS det John Akeroyd. The first record for this under-recorded species, although the hybrid with *A. prostrata* is known from several coastal sites.

Atriplex x *hulmeana*
N. Recorded from the same site as *Atriplex longipes* (above) PS det John Akeroyd. This is the hybrid between *A. prostrata* and *A. littoralis.*

Calystegia x howittiorum
E. Vittlefields, flowering profusely with pink flowers, SZ456895 PS. This is the hybrid between Large Bindweed and Hairy Bindweed. It was flowering in August, after *C. pulchra* had finished flowering.

Cotula australis (Annual Buttonweed)
E. First recorded from Nodes Point camp site growing on several pitches, SZ634896 PS (Fig. 5). This was an exciting find and the plant was subsequently found at three additional touring camp sites, always in small quantity. A native of Australia and New Zealand.

Rosa x dumalis
E. Rowridge SZ454865 PS conf. Roger Maskew. A fertile hybrid between native Dog Rose (*Rosa canina*) and Northern Dog Rose (*R. caesia*), which is not native in southern England.

Rubus tricolor (Chinese Bramble)
E. Thriving in several hedgerows at Pan Country Park SZ513890 SB, conf. CP. It looks as though this plant was accidentally introduced as a contaminant (perhaps as seeds within the soil around new planting stock) with new hedging material. However, it has persisted and spread and is colonising adjoining older hedgerows.

Soliva pterosperma (Jo-jo)
This was the first of the suite of touring camp plants to be discovered, growing on many touring pitches at Nodes Point camp site SZ634896 PS (Fig. 5). It was subsequently found to be growing at all the touring sites investigated, a total of 9 sites. This plant has a sharp spine at the top of the achene which can pierce footwear. It is painful to walk barefoot across a pitch where Jo-jo is established. The plant is readily dispersed by the achenes piercing footwear, ground sheets and tyres.

Spergularia marina x rupicola
N. One plant of this hybrid Sea-spurrey found along the eastern end of the revetment at Bonchurch SZ575778 PS. This is the easternmost site on the Island where both species grow together.

Trifolium resupinatum (Reversed Clover)
E. Found at Nodes Point touring site, very locally in great quantity SZ634896 PS (Fig. 5). It is clearly rare and has failed to turn up at any of the other touring sites examined. Reversed Clover has been occasionally recorded as a casual, most recently in one of the meadows at Flamingo Park, Springvale in 1971.

T. tomentosum (Woolly Clover)
C. Just two plants found at Nodes Point touring site, SZ634896 PS/EJC/CRP. It was not discovered at any of the other touring sites. There is one previous record made by J. W. Long in 1931, from the riverside at Seaclose, Newport a favoured site at the time for aliens.

Verbena hastata (American Vervain)
E? Growing in quantity on an embankment below Undercliff Drive, St Lawrence SZ52437623 D&HT, conf. EJC (Fig. 2). It was probably included in a landscaping seed mix. This showy plant is distinctive. The paired petiolate stem leaves are lanceolate with serrate margins and the plants have a distinctive kite-shaped terminal inflorescence of spire-like branches, bearing closely arrayed purple flowers. This plant is just starting to be recorded as a casual elsewhere in the country.

Fig 2 Dave Trevan examining American Vervain, *Verbena hastata,* flowering on a roadside verge at St Lawrence (Hazel Trevan). Inset shows a close up of the plant (Dave Trevan).

Other noteworthy records

Allium oleraceum (Field Garlic)
N. SZ504963 East Cowes tennis court edge PS/EJC

Anagallis tenella (Bog Pimpernel)
N. Three flowering patches on Colwell Common between benches near Colwell Common Road SZ325875 BS (Fig. 3). This was a remarkable find, as the Common has been surveyed on a number of occasions in the past. Bog Pimpernel was first recorded from Colwell Heath (a much larger area than Colwell Common today) by William Snooke in *Flora Vectiana*, published in 1823. It is also recorded in Bromfield's *Flora Vectensis* published in 1856, but he may have just been copying Snooke's observation. There have been no further records from this site until 2017!

Capsella rubella (Pink Shepherd's-purse)
E. First found at Nodes Point Holiday Camp and subsequently found to be widespread on touring sites (Fig 5)

Cardamine corymbosa (New Zealand Bitter-cress)
E. In pots at Honnor & Jeffrey Garden Centre, Lake SZ577833 PS/EJC/CRP

Carex nigra (Common Sedge)
N. Locally dominant in Morton Marsh SZ595854 CRP/SER. Despite its English name this species is not common with us and, although known from a number of sites in the Eastern Yar, it is unusual to find it as a dominant component of marshy vegetation.

Carex pseudocyperus (Cyperus Sedge)
N. A few plants appeared in the fen to the north of the river at Alverstone Marsh following winter scrub clearance, SZ574859 CRP/SER. This is a known site and management work carried out by the Wildlife Trust has enabled the plant to reappear.

Fig 3 Bog Pimpernel flowering in mown grassland on Colwell Common, an historic site from where it was last recorded by Bromfield in 1856! (Beatrice Selwood)

Crassula tillaea (Mossy Stonecrop)
E. Recorded from six camping touring sites, sometimes in great abundance PS, EJC, CP (Fig 5). There has previously been a scatter of records from the Island in small quantity in scruffy places. Touring sites are clearly the stronghold of this plant. It is currently increasing nationally in warm, dry free-draining soil, spread inadvertently by man's activities.

Cyperus longus (Galingale)
N. Reappeared in small quantity at Castle Lane, SZ503754 RL. This is an historic site well known to Victorian botanists. It used to be frequent here but has declined dramatically in the past fifty years and was last seen here by Andy Butler in 2014. The National Trust rangers are going to experiment with grazing and fencing to try and restore the population. It occurs as an introduced alien at several sites. The Botany Group saw it growing in a pond at Swanmore meadows ('Pig Leg Lane') during a meeting on 8th July.

Disphyma crassifolium (Purple Dewplant)
E. Established population on inaccessible cliff at Rosemount, The Pitts, Bonchurch, SZ573781 CRP. This is a previously unrecorded site growing on a natural rock outcrop at the rear of a large private garden.

Epipactis helleborine (Broad-leaved Helleborine)
N. PS At least twenty stems recorded from Bunkers Copse, Rookley SZ503845 PS. It was last recorded here in 2002.

Erigeron acris (Blue Fleabane)
N. Found at two previously unrecorded sites this year. 259 plants were counted on a roadside bank at Gunville Road, Carisbrooke SZ481885 AM; in quantity on waste ground at the north end of Lynn Bottom Tip site SZ537888 PS/EJC.

Euphorbia oblongata (Balkan Spurge)
C? A plant by the old railway track at Carpenters, St Helen's SZ613872 TP.

E. platyphyllos (Broad-leaved Spurge)
N. Several plants appeared spontaneously in garden when soil turned Howgate Road, Bembridge SZ650874 AC.
Fumaria reuteri (Martin's Ramping-fumitory)
N. Several plants at Station St, Brading SZ608870 MS/ NB.

Galium parisiense (Wall Bedstraw)
E. Recorded from two garden sites: Ryde, Buckland Gardens SZ585928; and St Pete Way, Sandown SZ599854 where there were 30-40 plants growing in the kerb PS.

Gastridium ventricosum (Nit-grass)
N? A huge population of some 1000 plants discovered on waste ground at the north end of Lynn Bottom Tip SZ537888 PS/EJC.

Gentianella anglica (Early Gentian)
N. Forty flowering plants in short grassland at Hatherwood Battery, Headon Warren SZ307858 CRP/EJC. A previously unrecorded site, off the chalk. The vegetation is established over old chalky rubble from the construction of the battery.

Hirschfeldia incana (Hoary Mustard)
E. Fifty plants growing on a tennis court edge at East Cowes SZ504963 PS/EJC. This is the largest population of this plant on the Island discovered to date.

Limonium x neumanii
N. This hybrid between Common Sea-lavender and Lax-flowered Sea-lavender was seen at two locations in the Western Yar estuary SZ355889; 351873 TP. No pure *Limonium humile* was seen.

Melampyrum arvense (Field Cow-wheat)
N. It was a good year for this plant at the St Lawrence Bank Wildlife Trust reserve site SZ536768 TS. An estimated 3066 flowering stems were counted on 21st June, the highest count since 1996. A cool, dry spring held back the flush of competing grasses. .

Ophrys sphegodes (Early Spider-orchid)
N. The single flowering plant re-appeared on Tennyson Down, close to the Tennyson Memorial SZ324853 RP (Fig. 4). This plant has now flowered in 2013, 2015 and 2017.

Orobanche purpurea (Yarrow Broomrape)
N. Twelve flowering plants at the foot of northern slope of reservoir on Afton Down SZ358857 PD. This site is the only known one in West Wight.

Phuopsis stylosa (Caucasian Crosswort)
E. Hunts Road, St Lawrence on grassy verge SZ52987631 D&HT. This may be the only current site for this attractive species. It has not been seen recently at the long-established site at the top of Ventnor along the footpath by the Whitwell Road where it was last recorded in 2004.

Fig. 4 The solitary Early Spider Orchid (*Ophrys sphegodes*) again flowered on Tennyson Down in 2017 (Rog Powley)

*Rosa obtusifoli*a (Round-leaved Dog-rose)
N? Recorded from Locks Green, Porchfield SZ443905 PS.

R. sherardii (Sherard's Downy-rose)
N? Three bushes found along Beacon Alley, Godshill SZ514810 PS.

Solanum physalifolium (Green Nightshade)
C. A few plants growing in pavement cracks in Regent Street, Shanklin SZ582817 VB.

Spergularia bocconei (Greek Sea-spurrey)
E. First recorded from Nodes Point camp site, growing on several pitches, SZ634896 PS (Fig. 5). It was subsequently found on two other touring sites. There have been a very few previous casual records but touring sites clearly hold better populations, although it remains rare even in this specialised habitat.

Tetragonia tetragonioides (New Zealand Spinach)
C. One plant at Norton Spit SZ349897 PS. A new site.

Umbilicus rupestris (Navelwort)
N. Two clumps growing either side of the entrance doorway arch to Victoria Street chapel, Ventnor SZ565775 SB. Navelwort (or Wall Pennywort) is an increasing species with us.

Recorders

AC Anne Campbell
AM Anne Marston
BS Beatrice Selwood
CRP Colin Pope
D&HT Dave & Hazel Trevan
EJC Eric Clement
MS Mark Spencer
NB Nick Bertrand
PD Paul Davies
PS Paul Stanley
RL Robin Lang
SER Steve Egerton-Read
SB Sue Blackwell
TP Ted (Edward) Pratt
TS Tony Stoneley
VB Vic Barnett

Reference

Pope, C. & P. Stanley (2018) Caravan Touring Sites – an overlooked habitat for introduced species. *BSBI News*, 139

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Fig 5 The distinctive flora of touring caravan sites. Top left: A fine display of Reversed Clover (*Trifolium resupinatum*) at Nodes Point camp site; Top right: Mossy Stonecrop (*Crassula tillaea*) growing amongst plastic stabiliser grids, Lower Hyde holiday park, Shanklin; Middle left: Pink Shepherd's-purse (*Capsella rubella*); Middle right: Annual Buttonweed (*Cotula australis*); Bottom left: Greek Sea-spurrey (*Spergularia bocconei*); Bottom right: Jo-jo (*Soliva pterosperma*). All specimens gathered at Nodes Point Holiday Park (Colin Pope)

ISLE OF WIGHT MOTH SUMMARY 2017

Iain Outlaw

The year saw a marked decrease in recording effort. However, although overall numbers were down, the range of species recorded remained high. In fact we had the second highest species count for any year, thanks in part to the excellent work undertaken by visiting lepidopterists but also owing to the focus on recording micro-lepidoptera which continues to pay dividends.

Survey work for target species was also reduced and for the first time in many years there was no trapping for **Beautiful Gothic *Leucochlaena oditis***. One species that was searched for, but without success, was ***Sclerocona acutellus***. It appears that the colony found at Afton Marsh in 2010 may have died out; it was last recorded in 2015.

The number of migrant moths recorded was also lower but it is difficult to assess whether it was a poor migrant season as some regular trapping sites were inactive during the autumn.

New VC records
Eleven species were recorded for the first time in the county with eight micro-moths and three macro-moths.

15.003 *Caloptilia populetorum* (Zeller, 1839). Locally distributed on heath and open woodland where the larvae mine the leaves of Birch. One was recorded at Parkhurst Forest on 10 June.

20.019 Apple Fruit Moth *Argyresthia conjugella* Zeller, 1839. One came to MV at Shanklin on 31 May. A further eight specimens were taken during the year suggesting that this species may have been overlooked in the past.

22.003 *Prays ruficeps* (Heinemann, 1854). DNA analysis has confirmed that this is a separate species from *Prays fraxinella*. One was recorded at Brook Down quarry on 12 July.

28.028 *Barea asbolaea* (Meyrick, 1884). Tentatively identified from a specimen taken in Parkhurst Forest in 2014 but not formally identified until two male specimens were collected on 07 July 2017 and confirmed by gen. det. A total of 27 was recorded this year so it appears to be thriving but very little is known about this species either here or in its native Australia.

35.160 *Stenolechia gemmella* (L., 1758). A locally distributed species of oak woodland. One came to MV in a garden at Shanklin Upper Chine on 27 August.

37.048 *Coleophora mayrella* (Hüb., [1813]). A common grassland species but not previously recorded here, probably owing to the necessity for dissection to confirm identity. One at Freshwater Fruit Farm on 09 July, confirmed by gen. det.
45.009 Tansy Plume *Gillmeria ochrodactyla* ([D&S], 1775). Nationally scarce (Nb). One at Bonchurch on 07 July was confirmed by gen. det.

45.038 Plain Plume *Hellinsia tephradactyla* (Hüb., [1813]). A larva was on found on Goldenrod (*Solidago virgaurea*) at Parkhurst Forest on 30 September, confirmed by Colin Hart.

72.065 Levant Blackneck *Tathorhynchus exsiccata* (Lederer, 1855). This is a rare immigrant from North Africa usually appearing from January to March following southerly airstreams. One came to actinic at Golden Ridge, Freshwater on 21 April.

73.027 Silver Barred *Deltote bankiana* (Fabricius, 1775). This Red Data Book species is resident in Cambridgeshire and Kent with records elsewhere referring to migrants. One came to MV at Moons Hill, Totland on 20 June.

73.303 Devonshire Wainscot *Leucania putrescens* (Hüb., [1824]). A Nationally scarce (Na) species found on the coasts of Devon, Cornwall and southwest Wales. One was recorded at Moons Hill, Totland on 22 August.

Other noteworthy records

There were many more important records so the following is a selection of the more significant of those, in most cases these are species seen only once or twice before.

08.003 ***Incurvaria oehlmanniella*** (Hüb., 1796). This species is most common on heathland where the larvae feed on Bilberry (*Vaccinium myrtillus*). In Hampshire and IW it is found in damp woodland. One was collected at Briddlesford Copse on 16 May, the only other record is from Firestone Copse in 2014.

15.001 ***Parectopa ononidis*** (Zeller, 1839). One to MV at Hillis Gate on 12 August is the only record since publication of the Victoria County History of Hants. & I.O.W., Vol. 1, 1900.

20.005 ***Argyresthia trifasciata*** Staudinger, 1871. This species is naturalised through accidental introduction and is slowly spreading. First recorded in Hampshire in 1998 and on the Island in 2013. The second for the county was taken at Parkhurst Forest on 10 June.

34.005 ***Cosmopterix zieglerella*** (Hüb., [1810]). One by day at Afton Marsh on 26 June and five by day on Hop (*Humulus lupulus*) also at Afton Marsh on 30 June. These are the second and third county records.

37.050 ***Coleophora albidella*** Nylander, [1848]. One was taken at Freshwater Fruit Farm on 23 June and confirmed by gen. det.

40.003 ***Mompha lacteella*** (Stephens, 1834). Possibly under-recorded owing to confusion with *Mompha propinquella*. Two came to MV at Parkhurst Forest on 01 June.

45.027 Scarce Light Plume ***Crombrugghia laetus*** (Zeller, 1847). One by day at Mottistone Down on 29 June was confirmed by gen. det.

49.096 ***Hysterophora maculosana*** (Haworth, 1811). The first record since 1969 was of one flying among bluebells on open hillside at Brighstone Common on 21 April.

49.133 ***Cochylis nana*** (Haworth, 1811). The first record for more than a century, one was taken at Parkhurst Forest on 10 June. The larvae of this species feed in Birch catkins.

49.195 ***Bactra furfurana*** (Haworth, 1811). The third for the county was taken at Freshwater Cliffs on 24 May.

49.199 ***Eucosmomorpha albersana*** (Hüb., [1813]). A local species with only one other record since 1900, one came to MV at Briddlesford Copse on 16 May.

49.332 ***Cydia coniferana*** (Saxesen, 1840). First recorded on the Island in 2015, the second county record was of one at Freshwater Fruit Farm on 13 July and was confirmed by gen. det.

63.041 ***Agrotera nemoralis*** (Scopoli, 1763). Recorded new to the vice county in 2015 but not since, an extraordinary year saw four further reports of presumed migrants. The first at Shanklin on 31 May, one at Bonchurch and one at Flowers Brook, Ventnor both on 19 June and the final report, one at Freshwater Fruit Farm on 23 June.

63.046 ***Duponchelia fovealis*** Zeller, 1847. Many UK records refer to adults found indoors and are thought to involve accidental import with plant material. Trapped adults are rare and may well be immigrants. The third county record and the second trapped at light was one to actinic at Golden Ridge, Freshwater on 25 July.

65.012 Satin Lutestring ***Tetheella fluctuosa*** (Hüb., [1803]). Typically associated with birch woodland, the second county record was taken at Firestone Copse on 12 July.

70.145 Bilberry Pug (*Pasiphila debiliata*) (Hüb., [1817]). A Nationally Scarce (Nb) species and not recorded on the Island since 1981. One came to MV at Tennyson Down on 02 July.

73.0301 Druid *Aedia funesta* (Esper, 1786). The second for the county was collected at Afton Marsh on 01 July. This rare immigrant has been recorded on only seven previous occasions in the UK.

73.145 Mere Wainscot *Photedes fluxa* (Hüb., [1809]). The first record for more than a century, one at Moons Hill, Totland on 19 July.

A total of 907 species were recorded in 2017 and my thanks go to all who submitted data. However there are still large parts of the Island with little coverage and there is much scope for discovery. If anyone would like some guidance on moth trapping please come along to one of the public trapping events and a refurbished Robinson trap is available for loan. Please contact the author if interested. Help with identification can be provided directly or through the excellent Facebook group.

A dedicated *IW Moth Report* has been produced as an electronic document and will be available for download from the IWNHAS web site.

Acknowledgements
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DISTRIBUTION OF THE 'PEACOCKS TAIL' SEAWEED *Padina pavonica* ON THE ISLE OF WIGHT

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Introduction

The record of the 'Peacocks Tail' seaweed, *Padina pavonica* (L.) Thivy (Phaeophyceae, Dictyotales) in the British Isles is possibly the most reliable and continuous of any marine alga. Herbarium material in the Natural History Museum (London) dates back as far as 1680, and the distinctive fronds, which make the species relatively easy to identify, have attracted collectors and recorders ever since. The genus *Padina* is widespread throughout the world's oceans and although advances in molecular biology may yet separate populations of *P. pavonica*, the species is commonly known from southern Europe and the Mediterranean and reaches the northern limits of its distribution in the British Isles. A detailed monograph and earlier census of *Padina pavonica* on European shores (Price *et al*. 1979) showed a contraction of the species' geographical range in the British Isles, with main population foci on several shores along the south coast of England in Devon, Dorset and the Isle of Wight. Here, clumps of fronds of the species may be found in rock pools between Mean High Water Neap (MHWN) and Extreme Low Water Spring (ELWS) tide level, particularly where there is relatively soft clay or sandstone substratum backed by rapidly eroding cliffs. Although sexual spores (gametangia) have been infrequently recorded in plants from the south coast of England (Carter 1927), plant growth and dispersal is thought to be mainly through vegetative perennation of stolons and the release of asexual tetraspores. Tetrasporangia, which retain the tetraspores, are located within concentric zones or rings of approximately 1 mm width on the upper surface of the frond and are clearly visible with a hand lens.

Vulnerability of the remaining isolated populations to natural and anthropogenic disturbances has led to the species being listed nationally 'scarce' and of principal importance for the purpose of conservation of biodiversity (England) under the Natural Environment and Rural Communities Act 2006 (formally a UK Biodiversity Action Plan Priority Species). The species is also one of few algae that have been classified as Features of Conservation Importance (FOCI) in England and Wales and is included within the Ecological Network Guidance (England) for Marine Conservation Zones (JNCC 2018).

The general UK distribution has since been updated (Herbert et al. 2016) and the purpose of this paper is to provide more detailed information on the current size and extent of Isle of Wight populations and the growth of plants. Information on the history and extent of Isle of Wight populations prior to 1978 is provided in considerable detail in Price *et al.* (1979) and readers requiring more information on these earlier records are advised to consult this monograph.

Methods

Between 2009-2016, all shores on the island for which there were known historical records listed in Price *et al.* (1979) and where there is rock pool habitat (Figure 1), were visited during low spring tides at least once annually during the months June-September, when fronds are mature. Searches were at least one hour in duration and upon finding *Padina*, the number of separate 'clumps' seen by a single recorder within at least one 5-minute search was noted. A 'clump' refers to an isolated group of fronds (<20 cm apart) attached to what appears to be a single point on the rock. The percentage coverage of clumps was also measured using a 0.25 m^2 quadrat placed directly over the middle of the clump. Where possible, the position of each clump was recorded using a Global Positioning System GPS (accuracy 5m) or with a dGPS (horizontal accuracy <1m and vertical elevation accuracy <0.02m). Where a large number of separate clumps was observed in a discrete area, the perimeter of this patch was 'walked' and mapped with a GPS. Where clumps of *Padina* were isolated then the number of fronds per clump was recorded. Repeat visits were made during the growing season to establish longevity and condition of the fronds and the presence of tetrasporangia. At sites where plants were located at low water springs, the presence of infralittoral populations was investigated by snorkelling. The abundance of *Padina* at each location was classified according to the scale in Table 1. Additional *ad hoc* records of *Padina* subsequent to 1978 were compiled from authors' records.

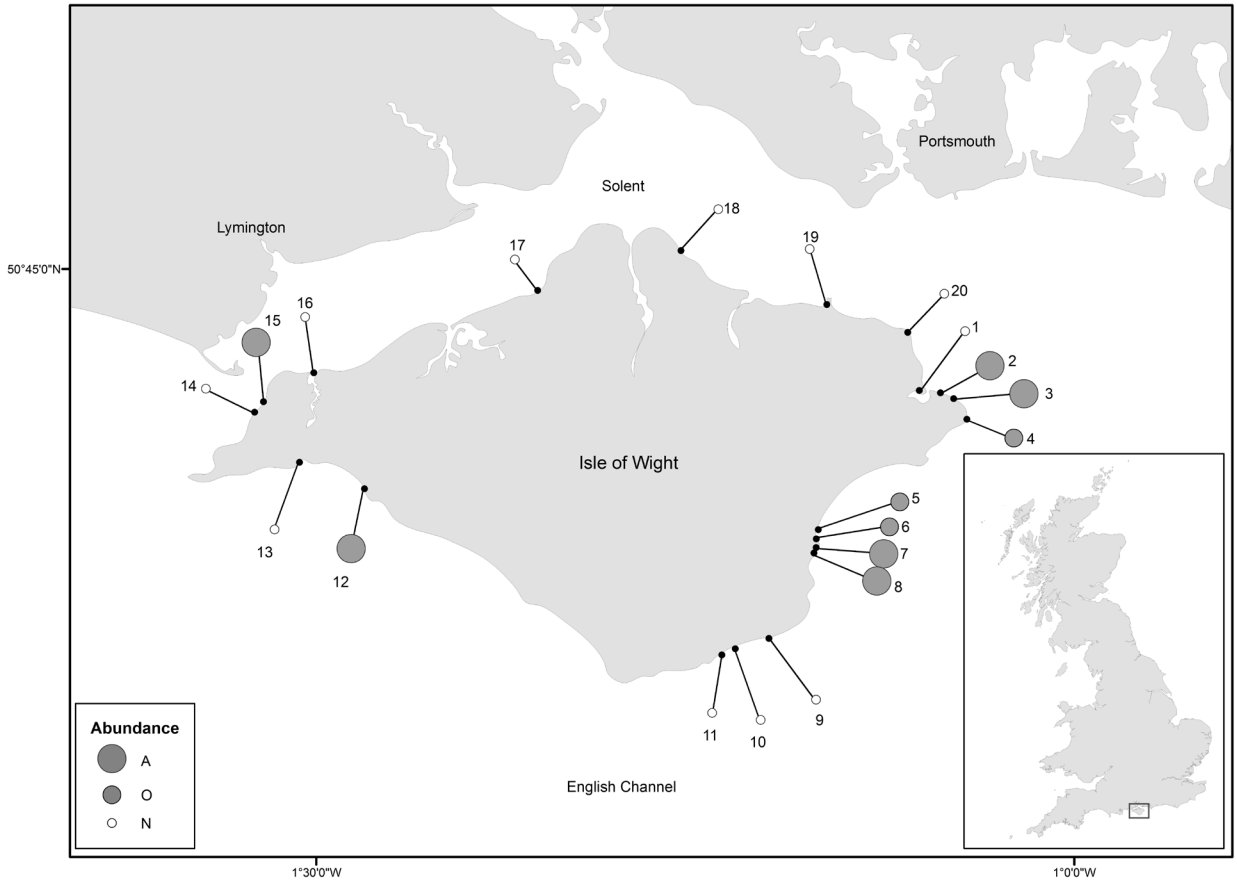

Figure 1. Distribution of *P.pavonica* on the Isle of Wight. Circles show maximum abundance recorded 2009-2017, See Table 1 for Abundance Scale. Sites: 1 St. Helens; 2 Bembridge, Colonels Hard; 3 Bembridge, Lifeboat Station - Forelands; 4 Bembridge, Forelands - Black Rock; 5 Shanklin, Little Stairs Point - Hope Beach; 6 Shanklin, location of old pier; 7 Shanklin, Horse Ledge; 8 Shanklin, Yellow Ledge; 9 Ventnor; 10 Steephill Cove; 11 St. Lawrence; 12 Compton Bay, Hanover Point; 13 Freshwater Bay (west); 14 Colwell Bay, Warden Ledge; 15 Colwell Bay, How Ledge; 16 Yarmouth Pier; 17 Thorness Bay; 18 Osborne Bay; 19 Ryde; 20 Seaview.

Table 1. Scale used to assess abundance of *Padina pavonica* at survey locations. A 'clump' refers to an isolated group of fronds >20cm from another group of fronds. Timed searches were carried out by a single fieldworker. The percentage cover values refer to estimates within gridded 0.25m^2 quadrats placed over clumps.

A	Abundant: >100 clumps per 5 min search; cover frequently exceeds 25%
C	Common: 51-100 clumps per 5 minute search; cover occasionally exceeds 25%
F	Frequent: 11-50 clumps per 5 minute search
O	Occasional: 2-10 clumps per 5 minute search
R	Rare: 1-11 clumps in 30 minute search
N	None found in 30 min searching

Results

Since 2009, populations of *Padina* have only been recorded at the main sites where the species has historically been known to exist (Figure 1; Table 2). No *Padina* was found on the Solent shores of the island apart from at How Ledge in Colwell Bay and at Bembridge. Populations along the Undercliff, where there are historical records from the 19th Century at Ventnor, Steephill and St. Lawrence (Price *et al.* 1979), were not rediscovered. Other sites where populations were not found, but for which there have been previous observations, are Warden Ledge (Price *et al.* 1979) and Seaview (C. Pope, personal communication). The only site for which the current distribution appears to be more extensive than previously is at Shanklin and this is discussed separately below. The earliest sighting of fronds is in April, with maximum size and luxuriance observed in July and August (Figure 2). Populations at most sites begin to degenerate from September onwards (Table 3). Asexual tetraspores were visible within fronds at all sites when frond length reaches 20mm, which was usually from June onwards.

Table 2. Phenology of appearance and degeneration of fronds

Site	Earliest showing	Last record
Bembridge, south of Lifeboat Station	4/05/2015 (One clump 2-3 fronds)	18/10/1996 (Clumps beginning to die off)
Bembridge, Colonels Hard	18/04/2014 (Just showing)	3/11/2014 (18 clumps in 5 mins)
Shanklin, Horse Ledge	19/04/2014 (Just showing)	15/09/2013 (Common still)
Hanover Point, Brook	12/05/2010 (Just showing)	2/10/2009 (Some large clumps still in pools)
Colwell Bay, How Ledge	19/04/2014 (Just showing, though some fronds large (30mm)	18/12/2010 (single degenerating frond)

Table 3. Historic record at known sites on the Isle of Wight (1860-2017) and maximum recorded summer (June-August) abundance. Black indicates presence during period shown. Grey indicates periods when *Padina* was not found in searches by RJHH. Blank indicates not visited/no record. Dates are shown to indicate first, last records or single record for the period. Recent records of 'Abundance' (A–R) are as shown in Table 1.

Location	1801-1850	1851-1900	1901-1950	1951-1975	1976-2000	2001-2010	2011	2012	2013	2014	2015	2016	2017
Bembridge		1860				2009 C	C	C	C	A	A	C	A
Shanklin		1872				2009 C	C	C	C	C	C	A	
Steephill Cove		1883											
St Lawrence	1836												
Compton Bay			1911			2009 A	C	R	R	R	R	R	O
Colwell Bay			1922			2009 C	O	C	C	F	F	F	A

Figure 2. *Padina pavonica* at Colonels Hard lagoon, Bembridge, July 2014.
Maximum frond width of plant shown is approximately 50 mm. Photo. RJH Herbert.

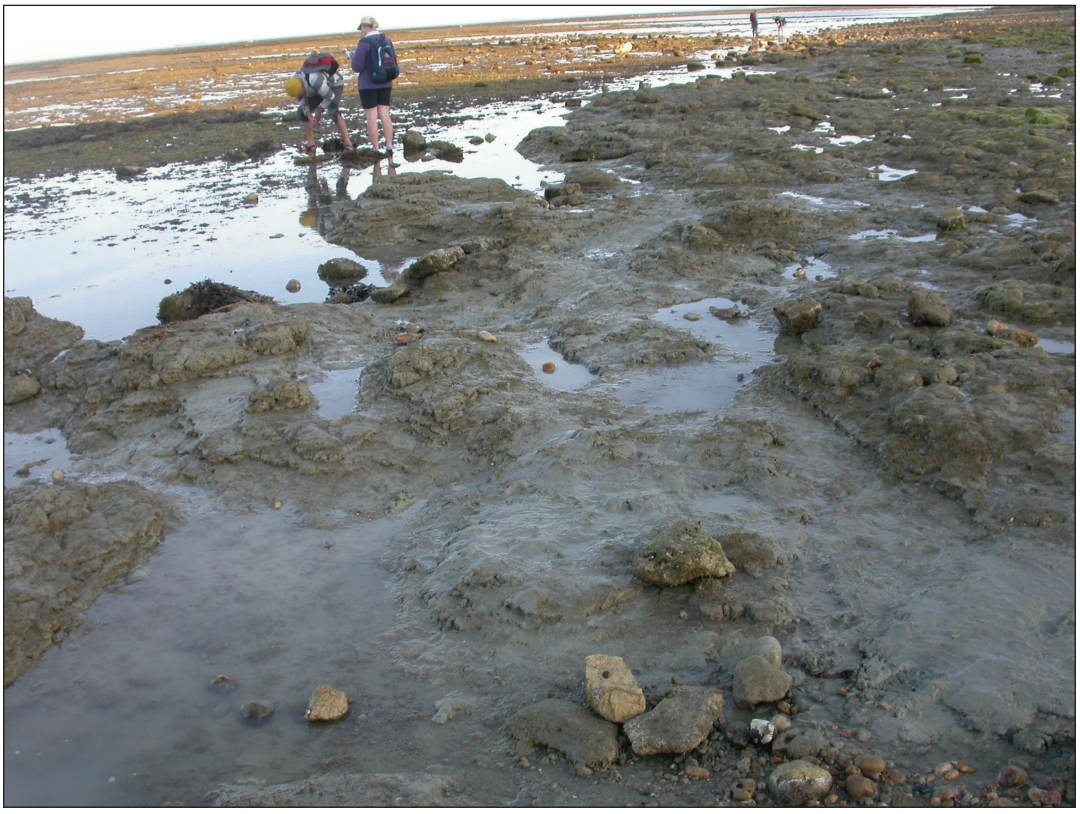

Figure 3. *Padina* pools on the clay ledges south of the lifeboat station near Ethel Point at Bembridge in 2009.

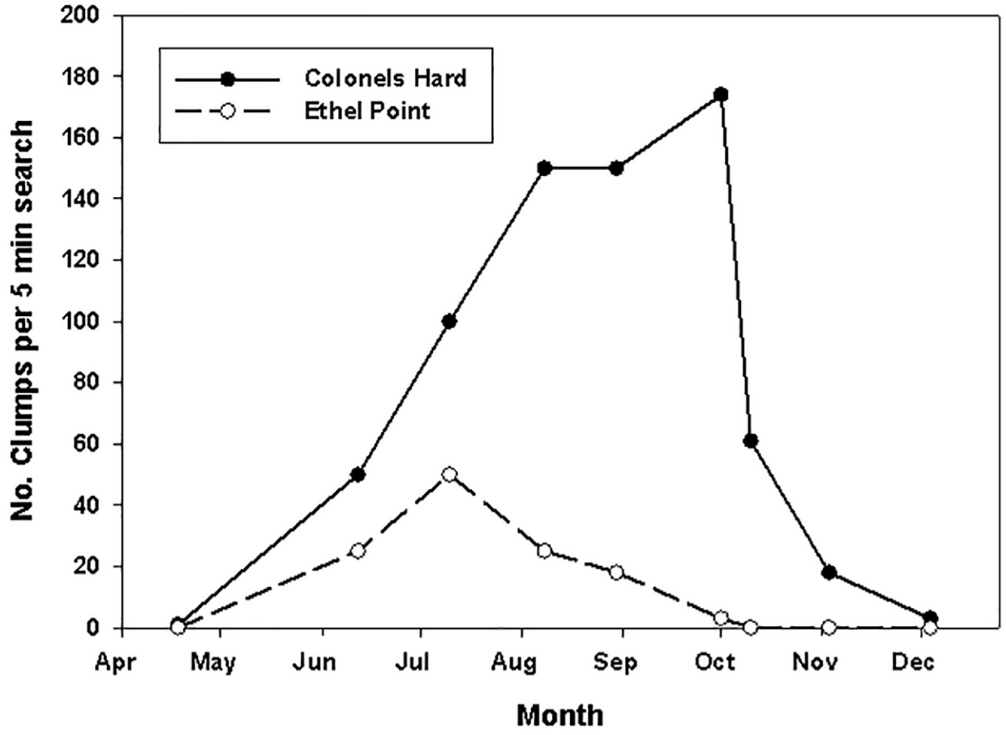

Figure 4. Seasonal variation in abundance in populations at Bembridge in 2014.

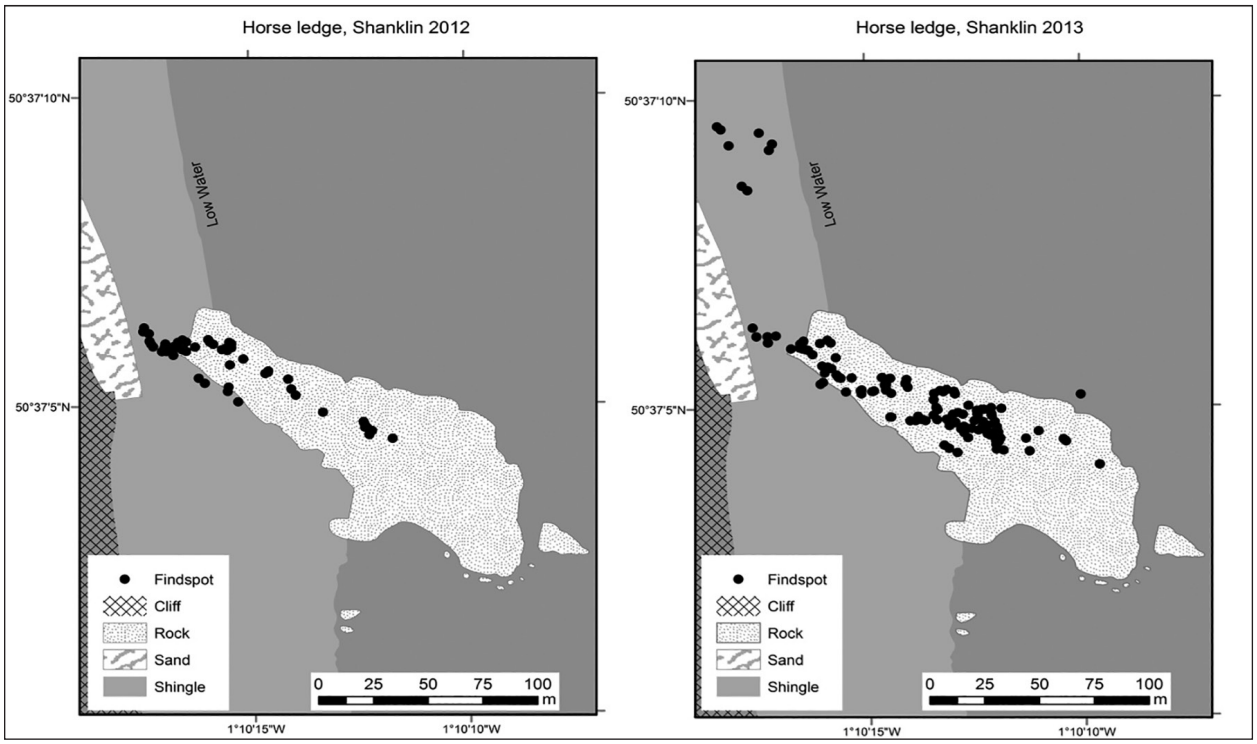

Figure 5. Spatial and temporal variation of *Padina* clumps observed at Horse ledge, Shanklin**.** The distribution of sand and shingle sediments surrounding the rocky ledge were observed to vary between years and are not shown precisely.

Bembridge

The largest and most extensive populations of *P. pavonica* on the Isle of Wight may currently be found within rock pools between Colonels Hard and Forelands. The earliest record for Bembridge is Hambrough in Venables (1860) (cited in Price *et al.* 1979). The species was recorded frequently in the eulittoral Bembridge lagoons in the 1960s and 1970s by W F. Farnham and workers from the British Museum (NH) (Price *et al.* 1979) and although the prominence of its annual appearance has varied it has remained persistent in subsequent decades (Herbert 1988; 2006, RH Personal observations).

In 2009, *Padina* was 'Frequent' in pools on the clay platform at Mean Tide Level (MTL) south of the lifeboat station, and within a channel on the shore below Bembridge Coast Hotel (Figure 3). *Padina* was also found in pools opposite Forelands Coastguard Station and south towards Long Ledge. North of the lifeboat station, clumps of *Padina* were locally 'Common' in pools with silty substratum.

The most luxuriant populations seen in the region were within the long sandy pool at Colonels Hard, which is at approximately High Water Neap (HWN) tide level and has its northern extent on the Bembridge Sailing Club stone path, indicated by a tall black and white pole. There are small and medium sized limestone slabs (>0.25m^2) within the pool, to which *Padina* is attached. Due to the sheltered location, this population can persist later than plants found in smaller pools on the shore closer to the lifeboat station (Figure 4).

Sandown Bay (Shanklin and Luccombe)

As previously stated by Price *et al.* (1979), the historic record of *Padina* from Shanklin is the most consistent of all known populations on the island. However their precise location has not always been clear and there are references to 19th Century observations at Luccombe Ledge (1860) and Sandown. There is a herbarium specimen in the National Museum of Wales obtained 'on the Sandown side' of Shanklin in 1872 (not referred to in Price *et al.* (1979)). Most observations in the 20th Century have been from Horse Ledge where rock pools are plentiful and in recent decades *Padina* has been recorded here since 1987 (Herbert 1988). In 2009, separate 5 minute random searches undertaken by three different fieldworkers found between 30-40 clumps in each search. A stratified search yielded 58 clumps in the lower part of the ledge, 38 in the middle and 30 in the upper part of the species zone. Cover of *Padina* within quadrats ranged between 1-15%. Later surveys in 2012 and 2013 revealed a similar pattern; however there is significant inter-annual variation in the appearance of fronds (Figure 5). Away from Horse Ledge at the site of the old Shanklin pier, small sandstone rocky patches and boulders occur on the lower shore. Two clumps of *Padina* were found on the platform at ELWS, however no plants were seen when snorkelling in the infralittoral to a depth of 3m. Clumps of *Padina* were 'Occasional 'at low water spring tide (LWS) either side of groynes immediately south of Hope Beach below the car park by Shanklin sailing club. Several clumps of *Padina* were also seen in pools on exposed rocky reefs between the 3rd and 5th groynes north of the sailing club. More luxuriant clumps here were recorded in 2016 (I. Boyd, personal communication) and collectively these are the only confirmed and precise records for Sandown Bay north of Horse Ledge.

It is quite possible that 19th Century records from Luccombe and Luccombe Ledge actually refer to Horse Ledge (Price *et al.* 1979). However on 27th May 2014, several clumps were found on Yellow Ledge immediately south of Horse Ledge and by August 2014 *Padina* was Abundant, particularly in pools on the northern edge. It is possible that the historical records from Luccombe Ledge refer to this site due to its proximity to Luccombe Chine.

Brook (Compton Bay, Hanover Point)

Records from Brook and Compton Bay date back to 1911. However subsequent to the observations in 1929 (Price *et al.* 1979), there are no other records of *Padina* here until 1987 where it was found to be common in pools at Hanover Point (Herbert 1988). Observations of its occurrence continued throughout the 1990s and in 2009 *Padina* was found to be 'Common' in pools at Hanover Point between Mean Tide Level (MTL) and Mean Low Water Neap Tide Level (MLWN). Clumps were sometimes large (100 cm^2) with 11-26 fronds per clump. Despite extensive searches on the clay ledges to the east of Hanover Point, *Padina* appears to be confined to the clay reef and the outer ironstone reefs. . However since 2011, the population has not been found in the inner pools as previously and only a few clumps have been found in sheltered pools amongst the ironstone reefs.

Colwell Bay

Records of *Padina* from Colwell Bay date from 1922 and in 1972, populations were known at both Warden Point and a *second smaller platform on the north-east side of Colwell Bay* (Price *et al.* 1979). This latter site must refer to How Ledge, where a population still occurs. However despite extensive searches over the past three decades, no *Padina* has been found on Warden Ledge. How Ledge is a small limestone reef separated by groynes to the east of the main slipway

at Colwell Bay where there are large shallow pools of sandy substrate. In 2009, 50-100 clumps of *Padina* were found on the Ledge in each of five separate searches, often attached to the sides of pools.

Discussion

The populations of *P. pavonica* currently known from Bembridge, Sandown Bay, Hanover Point and Colwell collectively represent the largest in the British Isles. The nearest extant mainland populations are at Chapmans Pool and Kimmeridge in Dorset and other populations occur sporadically along the Purbeck coast, Lyme Bay and as far as Corbyns Head near Torquay (Herbert *et al.* 2016). Although historical records of *Padina* exist on the coast east of the Isle of Wight there have been no observations since the mid-19th Century (Price *et al.* 1979). As within many other southern species (Hawkins et al. 2009) *P. pavonica* may now be responding favourably to increasing sea temperatures through a longer growing and reproductive season, and higher gamete and spore production (Jones 1999; Hiscock *et al.* 2004; Herbert *et al.* 2016). However there is little evidence yet of any significant increase in abundance at known sites or of any range extension. *P. pavonica* appears to have quite specific habitat requirements and is seldom found beyond areas where there is a soft rock substratum and silty sand in the rock pools. The appearance and degeneration of fronds appears to be generally similar to historical observations. Nevertheless, the presence of fronds in April 2014 at Bembridge (Colonels Hard), Shanklin (Horse Ledge) and Colwell (Table 3) is earlier than previously reported by Price *et al.* (1979).

The cause of the species' range contraction in the British Isles is unknown, although climatic changes and a decline in habitat quality may have contributed. Coastal pollution is a known threat to the species in southern Europe (Mallia & Schembri 1995) and the expansion of ports and coastal infrastructure during the 19th Century may also have damaged populations. It is possible that frequent storm events in the 18th and 19th Century may also have dislodged or, as a result of cliff erosion, smothered populations along the south coast of England (Herbert *et al*. 2016). Populations within the most sheltered rock pools may have found refugia and survived these events as frond and clump persistence appears to be greater in pools that are higher up the shore. These pools are less prone to sand-scour and wave disturbance (Herbert *et al.* 2016) though may be more vulnerable to smothering from rock falls. Increasing storminess as a result of climatic change may yet threaten these populations. Although possibly coincidental, the once large population at Hanover Point at Brook, which is one of the sites most exposed to wave energy, has been 'Rare/Occasional' since severe storms in the winter 2011/2012 scoured rock pools and smothered much of the habitat. Smaller scale disturbances may account for short term spatial variation in the appearance of fronds. The presence of perennating rhizoids within the soft substratum, combined with the production and dispersal of asexual tetraspores from remaining plants, is undoubtedly important in enabling the persistence and recovery of populations from these disturbances (Dixon 1965; Herbert *et al.* 2016).

The arrival of invasive non-native species with overlapping habitat requirements with *Padina* may also cause population decline. The Japanese seaweed *Sargassum muticum* commonly co-occurs with *Padina*, and although some fronds of *Padina* can appear smaller beneath a dense canopy of *Sargassum*, this is not always the case and to date there is little evidence that it has had a serious negative effect on the growth and survival of Isle of Wight populations.

A possible cause of population decline in the 18th and 19th Centuries was over-collecting by enthusiastic naturalists attracted by the distinctive shape and appearance of the fronds, unsurprisingly called "peacocks tail". Although this no longer occurs, the increasing commercial and artisanal interest in seaweeds for food and industrial purposes could threaten small populations of *Padina* if not controlled or managed. Future monitoring is therefore important to help understand more fully the complex interactions between environmental change and the longevity and survival of remaining populations.

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CAPTAIN GRAVES IN THE ISLE OF WIGHT

John Matthews

At the end of May 1917, Captain Graves arrived at Osborne House, then being used as a Convalescent Home for wounded Officers. The Army no longer allowed Officers to convalesce at their own homes for fear of their not returning to duty.

Captain Graves had enlisted 2 days after War was declared. After a rather unhappy childhood and period at Charterhouse School, he was at the age of 19, due to go to Oxford in October 1914 to read Classics. He was a Pacifist by inclination but was outraged at the German invasion of Belgium. He was anxious to avoid going to Oxford and thought the War would last a few months only. He enlisted in the Special Reserve and because he had experience in the Officers' Training Corps at Charterhouse, was gazetted a First Lieutenant.

He was placed in the 3rd Battalion of the Royal Welch Fusiliers and his first duties were to arrest and guard enemy aliens at Lancaster. This was ironic as Graves' mother was German and he had as his middle name "Von Ranke". He found it prudent to drop the "Von". His mother was a member of minor nobility in Bavaria, and Graves' Von Ranke uncles and cousins served in the German Army, one uncle being a General. Throughout the War, he was regarded with some suspicion because of his German family. Had he not enlisted when he did, his mother and younger siblings might have been treated as enemy aliens.

After a long period of Garrison duty at Liverpool, he arrived in France in April 1915 and was seconded to the Royal Welsh Regiment 2nd Battalion and on his first night he was ordered to lead a patrol into No Man's Land, a duty he did frequently. After 3 months he rejoined the Royal Welch Fusiliers 1st Battalion in July 1915. When he came home on leave in September 1915, there were only 4 other Officers left in his original Company.

Graves took part in the Battles of Loos and Festubert. From the 24th September to the 3rd October he had only 8 hours sleep and was drinking a bottle of whiskey every day to keep going. "I had been in the trenches for five months and was getting past my prime…" By April 1916, he was close to nervous collapse with shell shock and was sent home for a nasal operation.

He returned to the Front in July 1916 to take part in the Battle of the Somme. On the 20th July a shell landed 3 yards behind him. He had minor wounds in his hands, a more serious wound in his thigh and a shell splinter through his lungs. One third of his Battalion had been decimated before even going into battle.

Graves was immediately taken to a military hospital. He was not expected to live. His Colonel sent a notice of death letter to his parents and the Times published an obituary. However, against the odds, he managed to survive and was taken to hospital in London. By now he had been promoted to Captain. He was between life and death on his 21st birthday.

Against all advice he returned to the Front in January 1917. His lungs were seriously affected and he succumbed to bronchitis within 6 weeks. He was invalided home to Oxford. His Regimental Medical Officer told him he would be court-martialled if he returned to France.

When Captain Graves arrived at Osborne he was given a bedroom which had once been the Royal Night Nursery "This was the strawberry season and fine weather: the patients were able to take all Queen Victoria's favourite walks through the woods and along the quiet sea-shore, play billiards in the royal billiard-room, sing bawdy songs in the royal music-room, drink the Prince Consort's favourite Rhine wines among the Winterhalters, play golf-croquet and go down to Cowes when in need of adventure. We were made honorary members of the Royal Yacht Squadron. This is another of the caricature scenes of my life…..sitting in a leather chair in the smoking-room, drinking gin and ginger and sweeping the Solent with a powerful telescope. Graves often visited the then new Quarr Abbey. "Hearing the fathers at their plainsong made us forget for the moment the war completely". He liked the kindness and seriousness of the monks and the good food he ate there.

"Osborne was gloomy". To lighten the atmosphere, Graves founded the Royal Albert Society with himself as

President "with regalia of Scottish dirk, Hessian boots and side-whiskers". Finding an old ship's fender on the sea-shore one night with knotted ropes looking like strands of hair, he and a friend dressed it with coat, trousers, socks and a boot and draped it with seaweed. They then reported a dead man on the beach. The Isle of Wight County Press reported a hoax "of certain convalescent officers at Osborne" played on the Coroner. Another amusement was changing the labels on the pictures in the Osborne Galleries.

He was desperate to leave Osborne and managed to return to garrison duties and a spell in Ireland before being demobilised in January 1919 at the same time as succumbing to Spanish flu.

Captain Graves' health was shattered. "I was very thin, very nervous and had about 4 years' sleep to make up." He was suffering from intestinal worms caused from drinking bad water in France. "I could not use a telephone, I was sick every time I travelled in a train and if I saw more than 2 new people in a single day it prevented me from sleeping…"

Who was Captain Graves really? He was Robert Graves, the famous poet and writer of "Goodbye to All That", one of the most striking 1st World War books, and the novels "I Claudius" and "Claudius the God"

Ironically, during the 2nd World War, he was not allowed to serve as a special constable because of his German connections despite his Army service in the 1st World War.

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LIEUTENANT MILNE IN THE ISLE OF WIGHT

John Matthews

In February 1915, the newly commissioned Second Lieutenant Alan Alexander Milne, aged 33, arrived at Golden Hill Fort, Freshwater to join the 4th Battalion of the 11th Royal Warwickshire Regiment. He was a most unlikely soldier as he held strong and unfashionable views as a pacifist. His only experience had been drilling the London Old Boys Corps as a civilian in August 1914. He proved to be useless with firearms. "I never… fired a shot in anger and only twelve under the impetus of any other emotion. These all missed the musketry instructor but hit the Isle of Wight…" His time was spent in drilling the men and basic training. He resided at "Delaware" The Avenue, Totland Bay.

In August 1915, he was made a Signals Officer and spent a 9 week course at the Southern Command Signalling School at Wyke Regis, near Weymouth As a qualified Instructor he wrote: "Its rather a pleasant job in its way. I'm entirely my own master, order my own parades, and do things entirely in the way I think best…" He could have been assigned to the 2nd Battalion, which on the Front had all its officers wiped out. He tried to transfer to the Flying Corps as an Observer but failed his eye test.

On his return to the Island, the Battalion had moved to Sandown, and Lieutenant Milne rented a furnished cottage where he was joined by his wife, whom he had married in 1913, and 2 servants. He was regarded as a very efficient Signals Officer and had become an expert in laying telephone lines, signalling lamps, power buzzers, heliographs as well as being proficient in Morse and Semaphore. He led a pleasant existence at Sandown. His duties were light. Before the War he had been Assistant Editor of Punch and he continued to write for that magazine. He was persuaded by his wife to write a play to entertain the troops and this led to his writing plays for the London Stage.

This came to an end in July 1916, when he was sent to the Front in France. Here he found himself in the early stages of the Battle of the Somme. He was in the Front line, under shell fire and saw a number of close friends killed in action. On one occasion he was completely isolated in the front line under bombardment. By now he loathed the Army. On another occasion, the Battalion charged from its trench but was unable to reach the German trenches. 3 Officers and 60 men were mown down by machine gun fire. The remaining 2 Officers in the attack and 100 men were wounded.

At the Battle of Arques, a side show of the Somme in November 1916, he became very ill with Trench fever and was invalided back to England, where he was in hospital for many weeks. He returned briefly to Sandown again in January 1917, but was transferred to the Royal Signal Corps at Fort Southwick in April 1917 as a Signals Instructor. He was still suffering from his illness and returned to the Island for 3 weeks in July 1917 to the Convalescent Hospital for Officers at Osborne House.. In September 1917 a Medical Board assessed him as only suitable for sedentary work. He was transferred briefly to Dover, but in November 1917, he was seconded to the War Office to work in Intelligence and Propaganda where he remained, apart from a mysterious mission to France for 2 weeks in September 1918, until he was discharged from the Army in February 1919.

His experiences on the Somme confirmed his unswerving pacifism but he was so convinced of the evil of Nazism that he returned to the colours as Captain in the Home Guard in East Sussex from 1940 to 1944.

Who was Captain Milne really? He shot to everlasting fame in the 1920s with 4 books; "When we were very young", "Now we are Six", "Winnie the Pooh" and "The House at Pooh Corner". He was of course – A.A.Milne.

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JELLICOE AND THE ISLE OF WIGHT

John Matthews

The Battle of Jutland (1916) was the last battle in which battleships were used in full strength – a form of naval technology into which vast treasure had been poured over the past 20 years, but was after the Battle manifestly obsolescent. The British public were very disappointed in the result, expecting another Trafalgar. The result of the Battle was for many years controversial, being seen at best as a costly Pyrric victory as far as the Royal Navy was concerned. Today after a hundred years, the Battle is being seen perhaps as the most important one of the First World War. The Royal Navy stopped any attempt by Germany to effect a naval invasion and more importantly retained the blockade of Germany and its allies leading to their economic collapse in 1918, closely followed by political collapse, and ultimately military collapse.

The Commander in Chief of the British Grand Fleet at Jutland was Admiral Sir John Rushworth Jellicoe (1859-1935) in the words of Winston Churchill, "…the only man on either side who could lose the War in a single afternoon". Jellicoe had a glittering career, both at sea and on shore in the Admiralty. He was a Captain by 1897 and was Chief of Staff in the Seymour Exhibition to rescue the besieged Legations in Peking during the boxer Rebellion in 1900, where he was severely wounded. He commanded an armoured cruiser H.M.S. Drake in 1903. He became Director of National Ordnance in 1907. Then in the same year he became Second-in-command of the Atlantic Fleet. He operated as Third Sea Lord and Controller of the Navy 1908-1910. Then he became Commander-in-Chief of the Atlantic Fleet, and was promoted to Vice Admiral in 1911. He became Second Sea Lord in 1912. In 1914 he was promoted to Admiral and given the command of the Grand Fleet. After Jutland he spent an unhappy year as First Sea Lord 1916-1917. He was promoted to Admiral of the Fleet in 1919 and for a year carried out plenary powers re-organising Naval strength throughout the Empire. He served as Governor-General of New Zealand from 1920 to 1924. He was made a Viscount in 1918 and an Earl in 1925. He was President of the British Legion from 1928 to 1932.

Jellicoe was the son of Captain John Henry Jellicoe (1825-1914) and his wife the former Lucy Henrietta Keele (1834-1916). His father was a distinguished Master Mariner in the Merchant Navy, who eventually became Marine Superintendent and then Commodore of the Royal Mail Steam Packet Service. Jellicoe was born in Southampton where he spent his early years. Notwithstanding this, he already through his mother's family, had links with the Isle of Wight. His great great grandfather, Captain John Rushworth (1721-1780) was buried at Northwood. The Captain's son, Jellicoe's great great uncle , was Edward Rushworth (1755-1817) an Anglican Deacon, who was M.P. for Yarmouth 1780-1781, 1790-1791 and 1796-1797, and M.P.for Newport 1784-1790, both Pocket Boroughs controlled by Lord Holmes, his father-in-law.

The family had moved to Ryde by 1872, when Jellicoe entered the Royal Navy and his mother bought him his first Naval hat supplied by Ryde outfitters, which he refused to wear as it did not conform with Naval requirements. Jellicoe spent his shore leave at Ryde with his family until they moved to Surbiton in 1880. His aunt, Helen Keele lived at Binstead, whilst a cousin on his father's side, Arthur Jellicoe, resided at Seaview.

By 1900, Jellicoe's parents were living in retirement, again in Ryde. Jellicoe lived with them whilst he recuperated from his wounds and whilst he was in shore posts. Both parents died in Ryde and Jellicoe wrote a moving letter to his aged mother on the outbreak of War in 1914. Despite his social advancement, Jellicoe remained on affectionate terms with his family.

About 1900, Sir George Cayser, a Scottish ship-building magnate and M.P. for Barrow-in-Furness 1892-1906, purchased the St Lawrence Hall estate (now known as Inglewood Park) as a holiday home, although he had another one in the Scottish Highlands. The house originally built for a Captain Fisher in 1886 by the Ventnor building firm of Henry Ingram & Sons was "a picturesque residence" with 5 large well-appointed living rooms on the ground floor as well as domestic offices, kitchen, servants' hall, housekeeper's room, scullery, walk-in pantry all centrally heated with fireplaces.

The Hall included outbuildings, stables, garages and cottages. The Hall had 13 bedrooms and 5 bathrooms with a servants' wing of 4 bedrooms. The Gardener's cottage had 4 bedrooms and 2 living rooms and the Butler had a 2-bedroom cottage. The pleasure grounds included a hard tennis court and Pelham Woods. The Estate included home

Farm, Home Farm Cottage, House under Hill Cottage and 8 other cottages in St Lawrence. There were 86 acres of woods and grassland.

Jellicoe had become friendly with the family in 1898 and in 1901 at the age of 42 married the 24 year-old Florence Gwendoline Cayser (1877-1964). They had 5 daughters, one of them dying aged 6 in 1911 and a son. It is strange to think of the austere First World War Admiral as a devoted family man, but he fathered children when between the ages of 43 and 59 and during the War was with young children and toddlers at home.

The Jellicoes used St Lawrence Hall to reside during shore leave and to spend holidays. Jellicoe was knighted by King Edward VII at Cowes in 1907. He rode to hounds on the Island and raced in the German Emperor's Yacht Meteor and the Krupps Yacht Germanie at Cowes. On departing for his Empire Tour in 1919 the Jellicoes left their children at St Lawrence Hall in the care of their widowed grandmother, who died before their return from New Zealand.

On his retirement from public offices in 1925, Jellicoe and his wife lived happily at St Lawrence Hall which had been left to Countess Jellicoe by her parents. The Countess sold off most of the Estate in 1925 leaving the Hall with 10 acres of land. Jellicoe became a leading social figure in the island becoming a Deputy Lieutenant and opening the Sandown Pavilion in 1934. He was a keen player of cricket even in old age, and captained a team every year during the Ventnor Cricket Festival. He continued to ride to hounds and shot regularly with his friend Lord Mottistone at Brook. He played Golf regularly at the Sandown-Shanklin Golf Course being Vice-President of the Club. He was a member of the Garland Club at Bembridge. He was a devout Anglican and loved singing hymns. He worshipped regularly at St Boniface Church Bonchurch, where he read the Lessons and played Chess with the Rector, an old naval friend.

The Hall was used for village functions. Jellicoe's son, born in 1918 was christened by the Archbishop of Canterbury in St Lawrence Church. The King, Queen, Prince of Wales, Princess Beatrice and Prince Frederick of Prussia all stayed at the Hall. A very youthful Anthony Quayle recalled playing with the Royal Shakespeare Company in an outside performance of "A Midsummer's Night's Dream" and noting that the old Admiral was very deaf, and with a high wind through the trees, hardly heard a word of the play.

Jellicoe died suddenly in November 1935. He had always been a popular figure in the country. The poet, Alfred Noyes, a close neighbour wrote a short elegy which appeared in the Morning post on the 5th December 1935.

By Scapa Flow

The Morning light enkindles the wide sea
And here, far south by his deserted home,
His Isle of Wight remembers. The young leaves
Are stirring even now in Pelham Woods
His garden under the crags is full of sun.
It sees the Atlantic shining. But no sail
Shall bring him, ever again
The alert, slight form.

St Lawrence Hall was sold by Countess Jellicoe. It was empty during the Second World War. It then became a Hotel before being destroyed by fire in 1951. There is a blue plaque on a surviving gate post. There is a memorial to him in St Boniface Church Bonchurch. He is commemorated by Jellicoe Road in Binstead.

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METEOROLOGICAL REPORT FOR SHANKLIN, ISLE OF WIGHT, FOR 2017

Clive Cooper

Abstract
Shanklin Weather Station was established approximately 67 years ago, although weather diaries are only available from February 1983. The Station is owned by the Isle of Wight Council and is maintained by the Met Office. The station is situated at The Mead, a park area near Shanklin 'Old Village' towards the outskirts of the town and is 50 feet above sea level. The station is a simple one consisting of a 5" standard rain gauge and a Stevenson's Screen equipped with three thermometers. Readings and observations are taken once daily at 09.00GMT. The Campbell Stokes sunshine recorder has been located on the roof of Shanklin Theatre, at a height of 180 feet above sea level.

Temperatures

The yearly mean temperature was 11.53°C and was 0.58°C above the long-term average. 2017 was sixth warmest year in the 35 year series. Seven of the twelve months had positive anomalies. The months with the positive anomalies were March with 2.2°C, February with 1.6°C, June with 1.6°C, May with 1.2°C October with 1.1°C, April with 0.7°C and July with 0.5°C. There were five months with a negative anomaly; August with 0.6°C, September with 0.5°C, January and November both with 0.4°C and December with 0.2°C of its long-term average. The winter period December 2016 - February 2017 was the tenth warmest that I have recorded since the winter of 1983-1984, when the weather diaries started. The spring of 2017 was the second warmest in the series. Summer was the equal seventh warmest, with 2005 and 2010. Autumn 2017 was the 16th warmest.

The highest temperature of the year, 26.3°C, occurred on the 6th July. There was a total of 22 days (the long-term average being 30) when the temperature reached or exceeded 21.1°C *(70°F)*: - one in May, seven in June, nine in July and five in August. The lowest maximum daytime temperature, 2.9°C, was recorded on both the 10th and 11th February. The highest overnight temperature was 17.8°C and was recorded on the 21st June. The lowest overnight minimum temperature was -(minus) 2.1°C, on 5th January. There was a total of 12 air frosts, defined as a temperature below 0.0°C; seven in January, one in February and four in December. The latest frost was recorded on 6th February. The first frost of the autumn/winter was on the 12th December.

Rainfall

The rainfall for the year 2017 totalled 932.9mm representing 103% of the long-term average. There were 170 days with measurable rainfall. The eight months with above average rainfall were July with 99.4mm, September with 119.2, May with 73.3mm, August with 83.7mm, June with 68.5mm, December with 134.9mm, January with 126.5mm and February with 79.4mm. This represented 204%, 176%, 146%, 145%, 133%, 127%, 120%, and 114% positive anomalies, respectively. The four months with below average rainfall were April with 6.1mm, October with 42.2mm, November with 51.7mm and March with 48.0mm. This represents 11%, 37%, 46% and 79% of their respective negative monthly anomalies.

2017 was the 12th wettest year that I have recorded. The winter (Dec 2016-Feb 2017), producing 245.7mm of rain, was the 13th driest in the 35 year series. Spring, with 127.4mm, was drier than usual and the tenthdriest in the 35 year series. The summer produced 251.6mm of rain and was the fifth wettest in the series. Autumn, with 213.1mm, was drier than normal and was the seventh driest in the series. The month that stands out was April, with only 6.1mm, was the driest month of the year.

An amount of rainfall reaching or exceeding 25.4mm*(1 inch)* in a 24hr period ending at 09.00GMT, occurred on five days; 12th January with 30.7mm, 5th June 30.9mm, 11th July 35.9mm, 2nd August 41.1mm and the 3rd September 28.2mm.

Sunshine

Problems arose in March when telecommunication masts were installed adjacent to the sunshine recorder. This caused a shadow to fall across the recorder, and was also too close for safe observations to be carried out. After consultation with the Meteorological Office, it was decided to suspend sunshine recordings due to Health and Safety constraints. An alternative site is currently being sought, with the hope that the sunshine recorder can be re-sited.

The total sunshine hours for the first four months of 2017 were 498.8, which represents 100% of the long-term average. During 2017, January and April were sunnier than normal with 137% and 106% of their average, while February and March were duller than normal.

Thunder
Thunder was heard on five days in 2017; two in May, one each in June, July, and September.

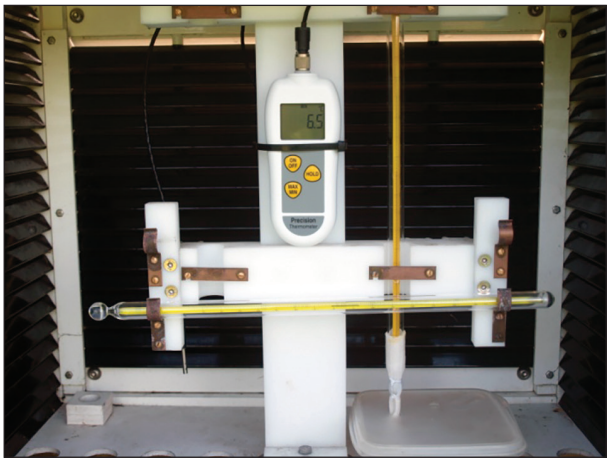
Hail
Hail was recorded on one day in 2017; one in December.

Sleet / Snow
Sleet/Snow was observed at Shanklin in 2017 on 12th January and 10th and 11th of February; sleet was observed on two days in December, the 11th and 27th.

Gales
Gales occurred on 15 days during the year; three in February, one in March, one in June, three in September, two in October, one in November, and four in December.

Monthly weather summary – 2017

Month	Average Temp.	Mean Max.	Mean Min.	Rainfall	Sun Hours
Jan	5.5	8.1	3.0	126.5	94.8
Feb	7.1	9.0	5.2	79.4	63.8
Mar	9.3	11.9	6.7	48.0	125.1
Apr	9.7	13.9	5.5	6.1	215.1
May	13.2	16.5	9.9	73.3	n/a
Jun	16.3	19.6	13.0	68.5	n/a
Jul	17.4	20.2	14.6	99.4	n/a
Aug	16.5	19.7	13.3	83.7	n/a
Sep	14.6	17.3	11.8	119.2	n/a
Oct	13.6	15.9	11.2	42.2	n/a
Nov	8.5	11.6	5.3	51.7	n/a
Dec	6.6	9.3	3.9	134.9	n/a
Yearly Figure:	**11.5**	**14.4**	**8.6**	**932.9**	**498.8**



Thermometers inside Stevenson's Screen on the last day of 2017
Picture by Clive Cooper

Cumulus clouds at Bembridge
Picture by Mike Cotterill

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NOTICES OF ARTICLES AND NEW BOOKS REGARDING THE ISLE OF WIGHT

Six papers and a book published in 2016 and 2017, that come within the remit of our Society and concern the Isle of Wight, have been identified. There may well be others. Generally abstracts are included here. More details may be available on-line, and sometimes the complete paper.

Saltmarsh
Book (British Wildlife Collection). Clive Chatters.
A beautifully produced book that includes chapters on 'The legacy of the Solent's Saltworks' and 'Southampton's Spartinas'. In his Preface, Clive Chatters relates: 'After (Wye) College, chance took me to the Isle of Wight where volunteering for the National Trust gave me simple accommodation at Newtown. The Newtown River is the most complete of the Solent estuaries in that there are no major settlements, few incursions on the intertidal and most of the land is gently farmed. The saltmarshes at Newtown formed part of an extensive landscape of exceptional quality with transitional habitats supporting many exacting species. There was Marsh-mallow *Althaea officinalis* in the shady fringes of the estuarine woods, Slender Hare's-ear *Bupleurum tenuissimum* on the stump of a neglected seawall, and old records of Foxtail Stonewort *Lamprothamnium papulosum* submerged in the lagoons of an abandoned saltworks. Curlew feeding on the intertidal would roost on the ancient meadows, butterflies breeding on those meadows happily 'nectared' on the marsh, the wildlife did not classify the habitat nor was it confined by textbook associations; whatever was useful was used'. This book is highly recommended. Fortunately, there is a copy to loan in our Society library.

Clay Tobacco Pipes and Pipemakers from the Isle of Wight
Proc. Hampshire Field Club Archaeol. Soc. 72, 166-218. David A Higgins.
The Isle of Wight is one of the few places in Britain where pipe clay can be found and this resource was exploited as a raw material and for making pipes from the early 17th century onwards. Both the clay and manufactured pipes appear in shipping records of goods exported but despite this, little research into pipemaking on the Island has been carried out. Recent English Heritage excavations at Carisbrooke Castle provided the catalyst for this study, which has examined four key groups from the Isle of Wight to provide an overview of the pipes produced and the pipemakers who made them. The bowl forms and makers' marks are described, illustrated and discussed, while an appendix provides detailed biographies for all the pipemakers known to have worked on the Island. This study brings together the current state of knowledge regarding pipes and pipemaking on the Isle of Wight and provides a reference point for future work on the subject.

Excavations in and around the Privy Garden, Carisbrooke Castle, Isle of Wight, 2006 and 2008-9
Proc. Hampshire Field Club Archaeol. Soc. 72, 61-128. Michael Russell.
Archaeological evaluations in advance of the installation of a new garden in the area previously known as the Privy Garden, now the Princess Beatrice Garden, at Carisbrooke Castle revealed the first prehistoric feature from the site and established a northern continuation of a Conquest-period ringwork ditch. The main discovery, a 12th century high status, masonry, cellared structure, probably a chamber block of two-stories, is identified as the 'chamber next the chapel' mentioned in a 13th century account. Further structures added in the 13th-15th century are discussed. The demolition of these buildings in the late 16th century and the re-ordering of the site are seen in the context of major works by Sir George Carey. Environmental sampling, particularly of yard surfaces and a midden developed to the east and south of the chamber block, has greatly enhanced understanding of the medieval and early post-medieval diet and economy at the castle.

A Cretaceous calamity? The Hypsilophodon Bed of the Isle of Wight, southern England
Geology Today 33(2) 66–70. Robert A. Coram, Jonathan D. Radley and David M. Martill.
Complete or near-complete skeletons of the herbivorous dinosaur *Hypsilophodon foxii* occur frequently in a metre-thick band of mudstone and sandstone in the Lower Cretaceous Wessex Formation of the Isle of Wight. The reasons for this accumulation have been the subject of some debate. This article examines new sedimentological clues that provide a plausible explanation for these dinosaurs' demise

A comparison of Barremian-early Aptian vertebrate assemblages from the Jehol Group, north-east China and the Wealden Group, southern Britain: the value of microvertebrate studies in adverse preservational settings
Paleaobio Palaeenv 96;149-167. Steven C Sweetman.
Vertebrates are a highly significant component of the Jehol Biota of northern Hebei, western Liaoning, and southeastern Inner Mongolia. Furthermore, Jehol vertebrate fossils from these areas are remarkable for their abundance and diversity, and for their taphonomy which has resulted in the preservation of large numbers of complete skeletons and of soft tissues including the feathers of birds and nonavian dinosaurs. In contrast, and also for taphonomic reasons, skeletons are extremely rare in the approximately coeval (Barremian–earliest Aptian) Lower Cretaceous Wealden Group of the Isle of Wight, southern England, UK. However, collection of isolated macro-remains over a period of almost 200 years has demonstrated that the Wealden Group, and in particular the Barremian Wessex Formation, contains Europe's most diverse dinosaur assemblage. This assemblage, until the relatively recent discovery of China's feathered nonavian dinosaurs and birds, appeared to be of comparable diversity to that of the Jehol Biota. Isolation of microvertebrate remains in an ongoing study commenced in 2002 has demonstrated that not only is the Wealden Group dinosaur assemblage more diverse than apparent from macro-remains and that it includes birds but also that it includes a high diversity of other aquatic, amphibious and terrestrial vertebrates. It is, therefore, now possible to make meaningful comparisons between the Jehol Biota and that of the Wealden Group of the Isle of Wight. Similarities and marked differences are apparent that reflect geographical separation, palaeoenvironmental factors and the remarkably small outcrop area available for the Wealden Group.

Complex neuroanatomy in the rostrum of the Isle of Wight theropod *Neovenator salerii*
Scientific Reports (Nature. Com) 7; 3749. Chris T Barker, Darren Naish, Elis Newham, Orestis L. Katsamenis & Gareth Dyke
The discovery of large, complex, internal canals within the rostra of fossil reptiles has been linked with an enhanced tactile function utilised in an aquatic context, to date in pliosaurids, the Cretaceous theropod *Spinosaurus*, and the related spinosaurid *Baryonyx*. Here, we report the presence of a complex network of large, laterally situated, anastomosing channels, discovered via micro-focus computed tomography, in the premaxilla and maxilla of *Neovenator*, a mid-sized allosauroid theropod from the Early Cretaceous of the UK. We identify these channels as neurovascular canals, that include parts of the trigeminal nerve; many branches of this complex terminate on the external surfaces of the premaxilla and maxilla where they are associated with foramina. *Neovenator* is universally regarded as a 'typical' terrestrial, predatory theropod, and there are no indications that it was aquatic, amphibious, or unusual with respect to the ecology or behaviour predicted for allosauroids. Accordingly, we propose that enlarged neurovascular facial canals should not be used to exclusively support a model of aquatic foraging in theropods and argue instead that an enhanced degree of facial sensitivity may have been linked with any number of alternative behavioural adaptations, among them defleshing behaviour, nest selection/maintenance or social interaction.

Tennyson and the geologists part 2: saurians and the Isle of Wight.
The Tennyson Research Bulletin 10(5); 415-430. Michael A Taylor and Lyall I Anderson.
It is often observed that Tennyson's poetry was profoundly influenced by his reading in astronomy, geology and science in general, and evolutionary thought before and after Darwin. This reflected the period's intense crossover between science and what would today be called literature. The scientific paper was approaching its modern format, asserting specialist authority through formality of description and analysis. But men, and some women, of science also wrote in other and very different veins, especially when aiming at a wider audience than their specialist colleagues. They selected literary concepts and strategies from novels and poems, amongst other genres, to disseminate their work and they drew on the moral and spiritual resources of literature. Thus geological books by, for instance, Charles Lyell (1797-1875) and Hugh Miller (1802-1856) may, and indeed should, be read as works of literature as much as of science. Conversely, novelists and poets seized on new scientific concepts and their implications for the origin and meaning of the world in which they lived. They were stimulated to develop innovatory approaches and explored the new ideas in their works, helping to disseminate these ideas more widely. Geology, the most romantic and exciting of the new sciences, drew much of this attention. In the first part of this paper we examined Tennyson's relationship with geology during his earlier years. In this second part, we consider his later engagement with the science and particularly his interest in animals of the past. We also clarify some hitherto puzzling allusions in the literature.

David Motkin 1938 - 2018: A Personal Tribute by David Tomalin

Beware Maitresse Archéologie,
She will allure and beguile
Allowing re-newed energy,
For no more than a while.

On a very hot summer's day, in 1976, our small team of excavators were cutting trial trenches on the site of the Roman villa in Rock Field, Brighstone. At the field gate there appeared a figure in a white vest carrying a large spade. When quietly introducing himself our visitor announced, in a distinctly northern manner, '*I am David Motkin and I have come to help you dig up this villa*'. Given that we were mostly trowelling, and the garden spade looked ominous, David was given a harmless task shifting a spoil heap. The next day he was first to arrive, still carrying the garden spade but also now equipped with a trowel. No-one had ever met a Motkin before and due to some hesitancy in pronouncing the name, and because other 'davids' were already on the on the site, David was soon distinguished by the team as *Dave Whitevest*. David later explained that Motkins were a Belgian rarity, an aftermath it seems, to those migrations of Belgic settlers who had arrived on our shores during the second century BC before dragging us from the Middle to the Late Iron Age.

Slightly more prosaically, David's own personal life story began in Huddersfield where he was born in 1938 although he lived for most of his childhood in Ossett, Yorkshire. After Leeds University where he read Physics David went to work for GEC in Coventry on telecommunications projects and during that time went out to the Far East testing the telecommunications system on board HMS Eagle for about 6 weeks. Whilst working at Coventry he researched the history of nearby Coombe Abbey, taking to the air in an ancient Tiger Moth with a local pilot (whose inexperience shortly afterwards had fatal results) to photograph the abbey and publishing a booklet about it. Two of his key future interests, photography and archaeology, manifested themselves in this venture. Whilst still at Coventry David met and married Robena, their two children being born in 1967 and 1968. David moved to the Island in 1967 to work for Plessey, the electronics, defence and telecommunications company, where he helped to design the AR3D Radar. After his first foray into Isle of Wight archaeology, as a volunteer in 1976, David remained at Plessey for about ten years but increasingly became involved in archaeological matters.

David the negotiator

Some years after David's arrival on the Island to work at Plessey, and on the eve of Local Government re-structuring, I was appointed to the new post of Assistant Curator at Carisbrooke Castle Museum in 1973. My task was to take special responsibility for the Island's largely un-assessed archaeological riches. Britain, in the Seventies, still retained a little of that exuberant optimism of the Sixties. Archaeology was capturing public imagination and aspirations were turning to grants awarded by the Department of the Environment. Inter-county competition for these coveted regional grants was intense and when I first arrived our county lacked the basic organisational structure that would allow it even to put in an application. Vectensian isolationism was seemingly obdurate, while even the Channel Islands were seeking access to this promising archaeological largesse. When Government next proffered specific help to the Isle of Wight, we were advised to form an Island archaeological committee that could receive and administer grant channelled to the five counties overseen by the Wessex Archaeological Committee. When the Isle of Wight County Council side-stepped this offer 'Carisbrooke conspirators' created their own committee in the curator's office in Carisbrooke Castle Museum. After the new committee had gained charitable status, it was not long before we found David acting as Honorary Treasurer. This gave us vital time to construct acceptable project designs in tune with Government objectives. The Gallibury Down investigation of plough damage and the *Vectis Report*, by Vicky Basford, were early successes for the Committee. Behind the Committee's projects, David was able to apply his Plessey management skills to assure financial stability.

Land sea and air: David in the eighties and nineties

In 1981 the Isle of Wight Archaeological Centre was set up by the County Council and I became the Island's first County Archaeologist. David was still working at Plessey and acting as Honorary Treasurer to the Archaeological Committee when Government funding for the computerisation of archaeological records came to the fore. By now we were already receiving grant for the aerial photographic sorties that were enabling David to identify new archaeological sites that could be at risk from development. At the end of 1984 Vicky Basford stepped down from the post of Sites and Monuments Officer after the birth of her son. Following another short-term appointment to this post, Plessey's loss became Archaeology's gain when David became the Sites and Monuments Officer and later the Deputy County Archaeologist.

Whilst working in these posts he began the task of transforming the simple card index-based Sites and Monuments Record into a sophisticated computerised Historic Environment Record detailing all of the Island's archaeological sites and finds, a task further developed by Becky Loader.

New opportunities for archaeological work on the Island arose from 1984 onwards when graduate-level work and training schemes at the Archaeological Centre were funded by the Manpower Services Commission. As well as schemes concerned with land-based archaeology and recording of buildings and monuments which involved John Margham, Paul Simpson and numerous other participants the Isle of Wight Maritime Heritage Project was launched in 1986. This was an innovative and ambitious scheme for a team of 30 people that enabled underwater archaeologists to examine areas of the Western Solent where prehistoric, Roman, medieval and Tudor artefacts were being found on the seabed. Now working full-time in archaeology David was happy to give extra time to support the Maritime Heritage Project. When a sudden change in Government policy abolished the Manpower Services Commission in 1988, David helped the Isle of Wight Archaeological Committee to find other funds to continue its off-shore work in the Solent. Eventually funds were secured for the Wootton-Quarr Project, an inter-tidal survey of the coastline from Fishbourne Creek to Ryde Sands. Here was a wet silt-buried heritage that included Neolithic fish-traps, Roman and medieval artefact strews, Saxon fish weirs and firm datable evidence of changes in the Island's sea-level. David Motkin, Frank Basford (Field Officer at the Archaeological Centre) and Becky Loader became used to beach visits at the crack of dawn, often in inclement weather conditions, to take advantage of low spring tides. David was particularly involved in the Fishbourne topographic survey that was carried out every two years. Becky Loader recalls that with a scientific regard for precision he encouraged her and Frank to walk at the very water's edge with the survey prism. This could be rather alarming when the ferry was approaching quickly and a sudden surge of water could lead to a welly full of water.

From 1990, new Government policies for Town and Country Planning demanded far greater attention to the protection of the buried heritage and David was instrumental in ensuring that these policies were implemented locally. For some Planners, this could easily be seen as just another unwelcome chore, set to impede the Nation's ever-widening highway to development but David acted as a persuasive and persistent ambassador, ensuring that the needs of archaeology were fully recognised in the planning system.

David's contribution to the work of the Isle of Wight Natural History & Archaeological Society was considerable. Between 1989 and 1994 he undertook the demanding voluntary task of editing the *Proceedings*, continuing the work begun by Allan Insole of turning our Society's annual publication into an academically rigorous journal comparable to the publications of other County societies. He also produced a paper on the discovery of the Roman villa at Gurnard by Edwin Smith in 1864. This was published in the *Proceedings* for 1990.

One of David's principal interests and contributions was aerial photography. Whilst still working as an amateur archaeologist he recognised, from aerial photographs, an ancient and continuous hedge-line boundary running from Palmer's Brook to the crest of the Undercliff. Since then the 'Motkin Boundary' has crept into the literature. Its date is thought to be Late Iron Age. Sometime in the 'nineties' he and I toyed with various clumsy ideas of using cameras hoisted by balloons or with kites to take aerial photographs without the use of an aircraft. The kite experiment soon ended with a camera-shaped dent in the ground. I am sure we can all imagine just how happy David would have been with a modern drone.

On the beach and elsewhere: David's approach to life

Everyone will carry their own reminiscences of David. Mine is a moonlit field survey, during the lowest annual tide on Quarr Beach. David had set up the total station theodolite by the old Quarr sluice-gate and I was now using a hand-held radio to communicate while both of us were virtually out of sight of each other. I was plotting the wooden stumps of a long Saxon fish-weir by carrying the laser reflector and repeating the words '*next stump*' at each point. David would repeat the word and then announce the co-ordinates before I moved to another stump. After we had been following this simple procedure for about an hour, I suddenly saw a Mesolithic flint tranchet axe lying in the mud' - a rare and precious discovery. I positioned the reflector on this item and following David's factual tones I just said '*tranchet axe*'. Back came David's simple confirmation. Just three steps further, I was amazed to find another axe. After I repeated the procedure, back came David's voice '*tranchet axe*'. Just a couple or more steps in the moonlight and yet a third axe came into view – unheard of! I was now feeling really elated and quite unscientific but I managed to say nothing other than '*tranchet axe*'. I waited for David's response and at last it came. '*Mmm, third tranchet axe. Don't lose your position on the fish-posts*'. This was David's humour. Yes, it was there all the time but like searching on a darkened beach it had be sought out. The three flint axes (each around seven thousand years old), were a gratifying find, but David's dead-pan response on the radio was truly a magic moment.

For all of us who gained the privilege of working with David, it is salutary to consider how many projects would never have come to pass without his help. Like Spock, David's logic was all-empowering and this gave him little need for emotion when presenting his case. Like Spock too, the longer you worked with David, the more you would come to admire his unique blend of ability and modesty. David would often appear to struggle with humour or repartee. He more often looked puzzled yet pleased to see others laughing while he still remained wired to a scientific analysis of the joke. Fortunately, there were so many absurdities in day-to-day life in the County Archaeological Centre that there was no need for greater re-charging of the levity batteries. On occasions there were more serious problems to be faced but whenever the Black Dog pawed at our door, David's cool unwavering logic and his Churchillian resolve were always on hand to make sure that we could all regain confidence and good humour. This was one of David's great gifts, removing the shutters from a dark hall and then just quietly standing back to let others gain the sunlight. He never seemed to be in the business of making jokes because he was engaged in creating something far more valuable. This was a secure environment in which others could be happy enough to make their own jokes. On these occasions he would offer a quiet reassuring smile.

David was some years older than me. I fear that even with a generous dispensation of overtime I could never hope to match such a well-spent and generously allocated life. He has certainly left me with a challenging road map.

Excavation of corn-drying kiln at Packway, Newchurch, Isle of Wight in 1982 (published in Proceedings Vol. 8, 1988).

David Motkin is the last figure on the right.
Also in the photo (left to right) are David Tomalin, Jane Driver, Andrew Street, Rosemary Goodyer (then Custodian of Brading Roman Villa), Frank Basford, Bob Liddington, Sally Martin and Linda Newton.

Photograph, from the Isle of Wight HER, is by Norman Davis.

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