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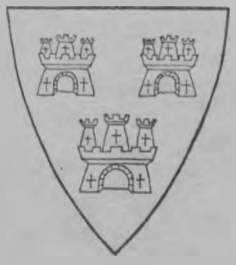

Edited by CEFNI BARNETT

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THE MONMOUTHSHIRE ANTIQUARY

VOL. II. PART III. 1967

ROMAN POTTERY FROM THE BASE OF THE ALLUVIUM AT MAGOR

By GEORGE C. BOON, F.S.A.

In November 1966, the discovery of Roman pottery and animal bones was reported to the National Museum of Wales by Mr. W. Martin, Superintendent of Works for Messrs. Stepnell Ltd., contractors for a new sewerage plant required by Magor and St. Mellons Rural District Council. A visit to the site by Mr. Cefni Barnett and myself established that the material had lain at the base of the grey estuarine silt, locally known as " bungum," which, with a superficial layer of brown soil, possibly a riverine deposit, forms the present land-surface along the Severn Shore for some miles on either side of Newport. The shards were fresh and unrolled by tidal action, and are therefore of some value in the determination of the date at which a rise in the sea began to lead to the formation of the levels. The R.D.C., acquainted by their Clerk, Mr. D. C. V. Gwynne, of the interest of the find, has most generously presented the pottery to Newport Museum.

The find-spot was a square shaft dug close to a bore-hole (No. B1) at about ST 535850 (fig. 1). The pottery and bones—exclusively of Ox—lay nearly 10 ft. below the present level of the ground. A concrete bottoming had already been poured into the shaft at the time of our visit, so that it was impossible to verify the stratification. The ground-level hereabouts, however, is at 22.32 ft. above Ordnance Datum, giving a measurement for the top of the concrete of 13.28 ft., and, by estimate derived from information from the workmen, it appears that the material occurred at about 12.5 ft. above O.D. or thereabouts. The base of the solid peat which underlies the alluvium is given as 16 ft. from the present surface, and it therefore began to be formed at 6.32 ft. above O.D. Samples of peat from other boreholes are in the course of analysis by Dr. Brian Seddon of the University of Reading. The picture so far seems to be an underlying bed of solid peat, representing fresh-water rather than estuarine conditions, probably related to a slow-moving river—conditions utterly different from those of today; and the bed of solid grey bungum, built up by centuries of permanent inundation.

The nature of the uppermost layer of brown silt has still to be decided by expert examination, but if it is indeed riverine, it may mark the great inundation of 1606 which is commemorated by the well-known plaque in Goldcliff church, with its metrical inscription[1]. This, however, is a question which must be left for another occasion.

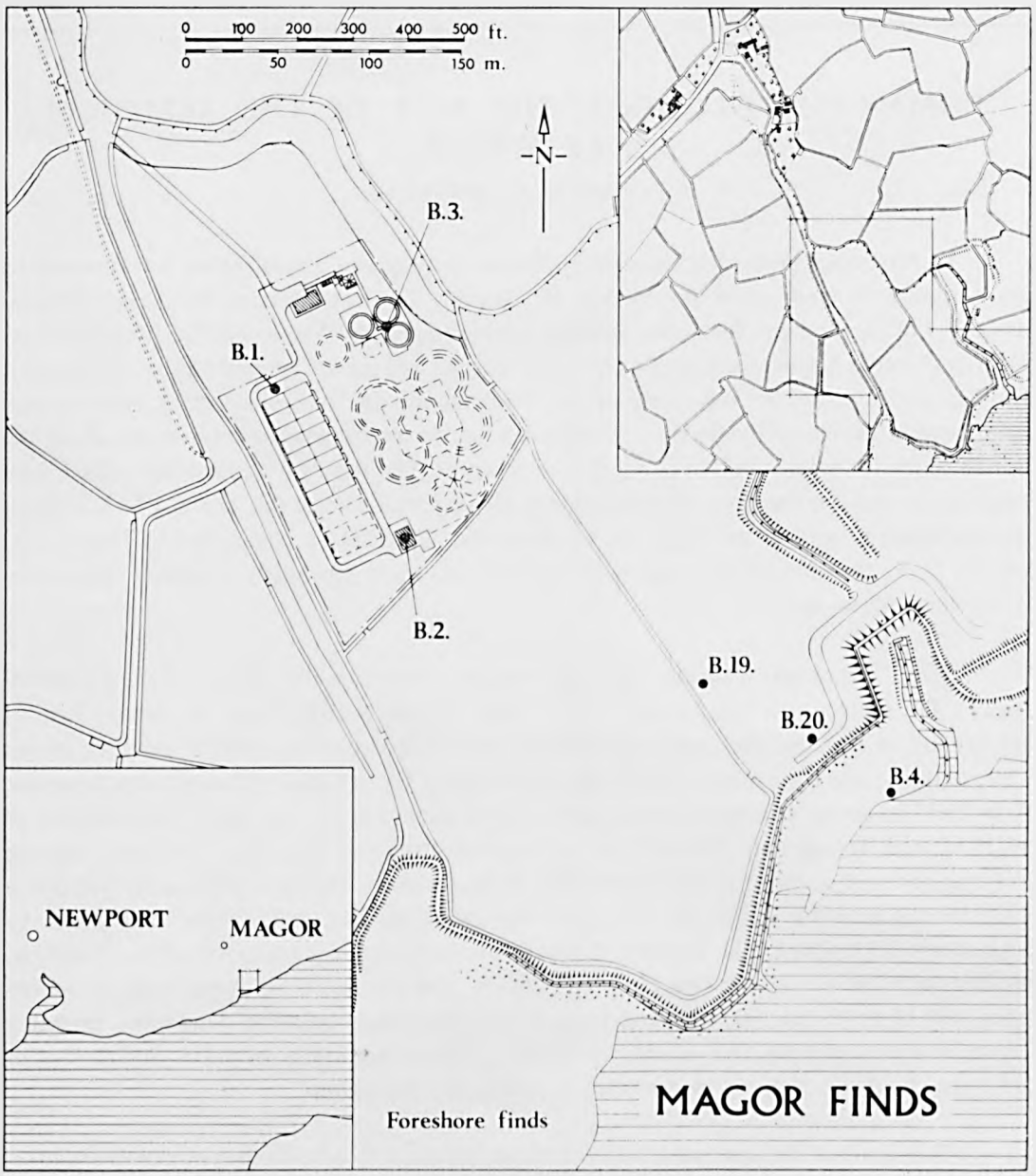
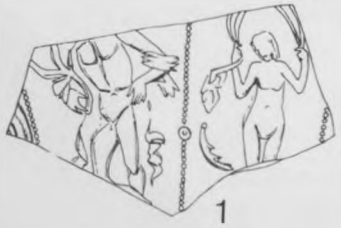


FIG. 1.

THE POTTERY

Fig. 2

1. Dragendorff form 37 sigillata bowl, *c.* A.D. 150–180. Thinly-potted ware with good gloss, somewhat pitted. Fragment showing panel decoration with standing figures. Right: dancer similar to Oswald, *Figure Types*, no. 355, but smaller as is Déchelette's no. 211, the original (Laxtucissa and other potters). Left: Apollo, similar to Oswald's no. 93, but smaller and with the right foot, on tiptoe, evidently almost on the line of the left leg, instead of behind it. The bead-row, with its annulet, and the free acanthus-frond in the dancer's panel, both occur on the work of the potter Laxtucissa (see Stanfield–Simpson, *Central Gaulish Potters*, pl. 99, no. 21) but the frond is smaller than it should be (*ibid.* fig. 27, no. 1). In default of the ovolo border at the top of the moulded zone, it is impossible to be certain as to which potter made this bowl, but its date must lie within the period of Laxtucissa's working career as given above.



2. Carinated bowl or beaker, hard pale orange-buff ware, grey core, smoothed outer surface, faintly micaceous. A devolved form of the Belgic " tazza," cf. *Camulodunum* pl. 75, nos. 211AB, *Bagendon* fig. 62, no. 36, etc. Local copies occur at Sudbrook, *Arch. Camb.*, 1939, fig. 6, no. 27, dated *c.* 50–100; Gloucester–Kingsholm, *Journ. Roman Studies*, 1943, fig. 6, no. 29, and see fig. 1; *Wroxeter* 1912, no. 19, dated *c.* 100–130. Not common at Caerleon: Prysg no. 430 is an example, probably with a flat base: *Arch. Camb.*, 1932, fig. 62. Presumably first century.

3. Black fumed ware, cavetto cooking-pot, Cf. Gillam, no. 139 or 140, *c.* 180–270: *Arch. Ael.* ser. 4, XXXV, fig. 16. There is a small shard from the lattice-scored zone. In the earlier examples of this kind of jar, the angle top and bottom of the intersections of the lattice lines is regularly acute; in the later examples, it is regularly obtuse. Here it certainly inclines to the obtuse, and it is likely, therefore, that the vessel is fairly well advanced in the series, although its rim has yet to take the late form and override the line of the shoulder. This jar must be a third century piece.

FIG. 3 (¼).

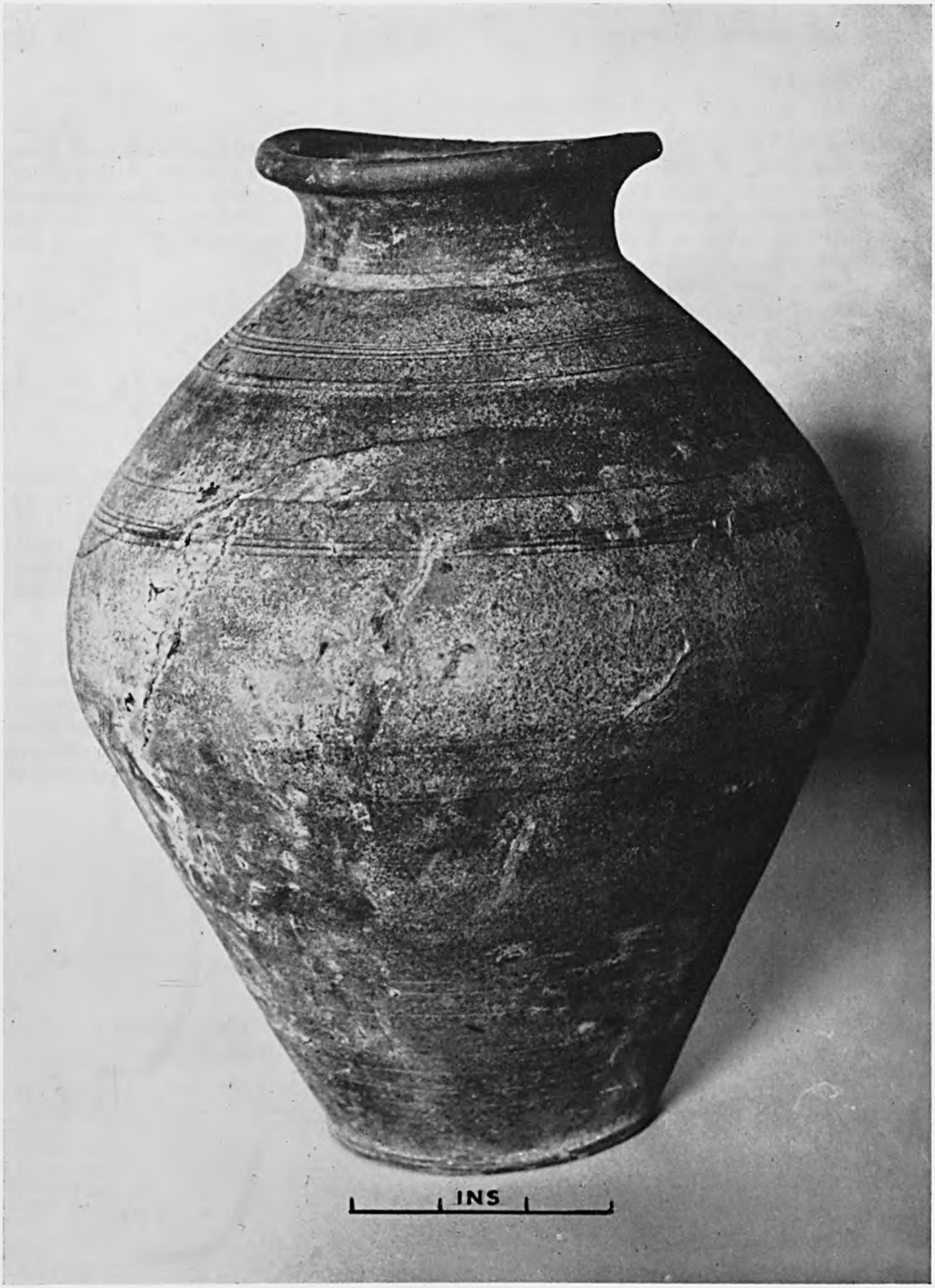


FIG. 4. Grey jar from the foreshore, Magor ("Redwick").

4. Small jar in hard light-grey ware. One from Pagans Hill Well is of the second half of the 3rd century: *Proc. Som. Archaeol. and Nat. Hist. Soc.* CI–CII, fig. 4, no. 3; no. 58 *ibid.* is in a very hard blue-grey ware and is 3rd–4th century in date. It seems difficult to place this vessel before about the middle of the 3rd century.
5. Shallow dish in black fumed ware, plain. Cf. Gillam's no. 327, *c.* 130–180. It could, however, equally well be later.
6. Hard grey ware, brown inside; vestigial groove around the edge of the base. Cf. Gillam's no. 322, not a good match. A Belgic prototype, cf. *Camulodunum*, pl. 50, no. 32A, is evident; cf. also *Bagendon*, fig. 61 no. 28. Probably of much the same date as no. 2 above.

Not illus.

7. Shard from the base/wall area of a large olla or flagon.

Thus these shards appear to cover a fair period of time, from the first to the latter part of the third century. In other words, the deposit cannot well have been the residue of a brief " bivouac " occupation. Somewhere near, there must be traces of a farmstead or settlement of some kind which existed before permanent inundation began around the end of the third century or in the early fourth.

On the foreshore, a matter of 300 yds. from the find, Roman pottery is frequently found after tidal scouring of the warth land. Some of this material has been published[2]. It includes, notably, Antonine samian ware including a Dr.37 in the style of Pugnus, *c.* A.D. 150–95. Unpublished, the most noteworthy vessel (fig. 4) is a complete grey jar, now in Newport Museum. Nearly 11 in. high, it is a late 3rd century type, and was almost certainly produced in the Caldicot kilns excavated by Mr. Barnett a few years ago[3]. There is other third, if not fourth, century pottery, as well as earlier material, in the extensive collections from the sites which are housed in Newport and Cardiff. The shards of medieval and later pottery also collected from the scoured surface serve to underline the importance of our small stratified group.

I have before me as I write an almost complete collection of drawings of Roman pottery from all the coastal sites so far known in the district, extending from Rumney Great Wharf on the eastern borders of Cardiff, to Uskmouth, and to Goldcliff. It would seem that there were several settlements along the banks of the river; Rumney Great Wharf, at least, survived in some measure into the middle decades of the fourth century, for there is an *Urbs Roma* coin of *c.* 330–7 among the finds. The time is not yet ripe, however, for a general survey of the evidence. If that is to be done, the great problems of silt-formation, and hydrographic difficulties, must be faced; and the material can hardly be studied without detailed reference to analogous finds on the English side of the river, which are numerous, and are also problematical. So far, on the Welsh side, there is no single positive indication of the character of the settlements: not a single structure has so far come to light, nor are there small finds to suggest the activities of the people.

Amidst the doubts and perplexities which the present inadequate state of information arouses, the Goldcliff Stone[4] stands forth like a beacon. There, at least, is something which is surely susceptible of interpretation. We know, indeed, that it did not come from the present sea-bank as has often been said: the actual find-spot appears in the photograph (fig. 5), as near

as can be determined; it is marked with a cross. This stone commemorates the construction of some kind of linear work by the century of Statorius Maximus of the first cohort—assuredly, of the Second Augustan Legion at Caerleon—and the length given is 33½ paces which, as Mr. R. P. Wright points out, suggests that three centuries may have been concerned with the construction of a 100 paces run. Now, what was that linear structure? Was it a bank to hold back the insistent tide—the stone is probably 'late,' say third century—or was it a ditch, or a reen for drainage? This we cannot know, or cannot know yet. More interesting, perhaps, is the question of why it should be there at all. The shadowy 'linear work' is *legionary*: this is the point; and *ipso facto* had a connexion with the legion and not with the *civitas Silurum*, which would be expected to carry out whatever dyking or drainage was necessary in that area, if attention was ever given to such problems. Even if the necessity arose, and was recognised, and professional guidance was obtained from the legion, the work would be done by *corvée* and not by soldiers. The fact that it was done by soldiers argues that the 'linear work' was of importance to the legion rather than to the *civitas*. Out of the lands of the Silures, perhaps before the *civitas* ever came into being, the legionary *prata* or farmlands were carved. In 1963, we found a trace of a Roman field-system on the fringes of the civil settlement at Caerleon itself; those fields, perhaps, were for vegetables or the in-pasturing of stock. The legionary lands, however, were much more extensive and could well have reached to the Severn Shore at Goldcliff. The stone may therefore commemorate the construction of a *boundary* dyke or ditch, between the *prata* and the territory of the *civitas*[5], whether or not an element of drainage or flood defence entered into the matter. And, given the advanced date of the stone, one or other of these may have done so.

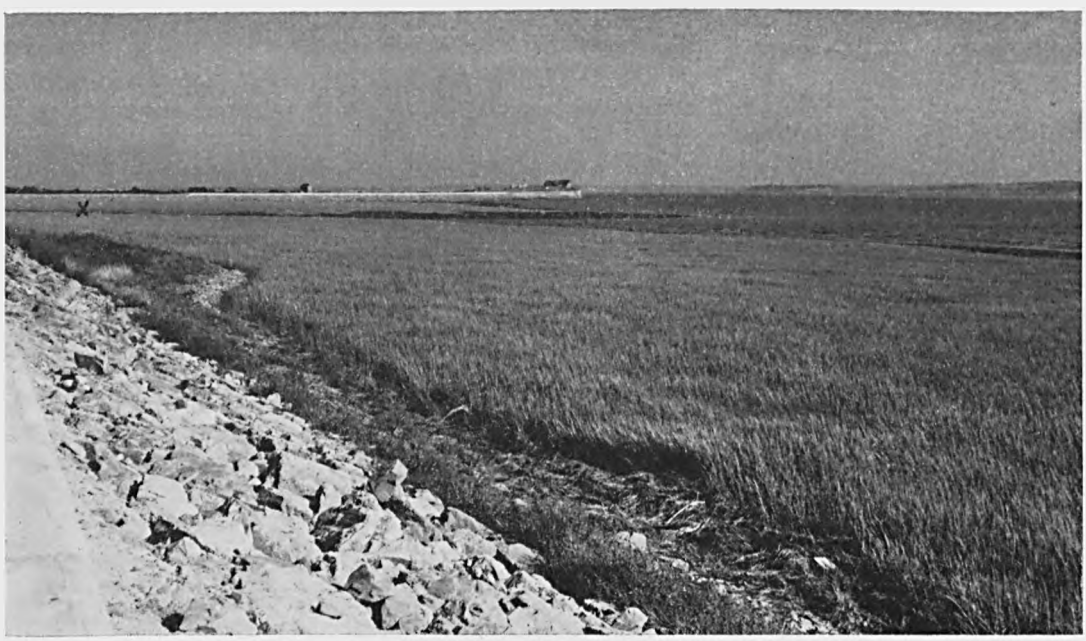


FIG. 5. Goldcliff Pill, from the West; find-spot of inscribed stone marked ×.

NOTES

[1] Facsimile, O. Morgan, *Goldcliff and the R. Inscribed Stone* . . . (This Association's publications, 1882); see further, F. J. North, *The Evolution of the Bristol Channel*, 76–8. It does not appear to have been generally realised that the inscription is, in fact, metrical.

[2] V. E. Nash-Williams, *Bull. Bd. Celt. Stud.* XIV, 254–5. The Pugnus bowl is pl. 6.2, no. 1. There is also a Caerleon Ware mortarium with a typical " feathery " stamp, Antonine.

[3] *Mon. Antiquary* II. 1, 62 f.

[4] *Mon. Antiquary* I, 34–6. *Roman Inscriptions of Britain*, I, no. 395.

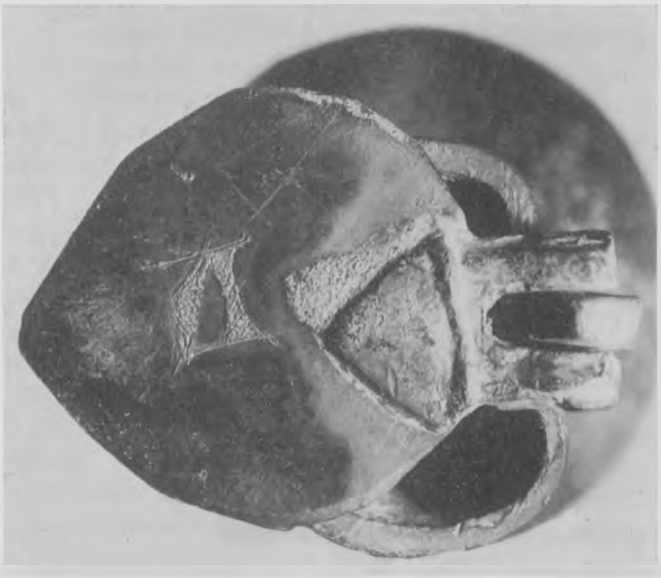
[5] Cf. Dessau, *Inscript. Latin. Select.* nos. 2454–5 for boundary stones between the *prata* of the Fourth Macedonian Legion and the lands of neighbouring communities. A lost boundary stone from Caerleon: *Roman Inscriptions of Britain* I, no. 325.

TWO PEWTER VESSELS FROM WHITE CASTLE

By J. M. LEWIS

In 1927 the late Sir Henry Mather Jackson, Bt. presented to the National Museum of Wales two pewter vessels, a cruet and a ewer, found at White Castle (Accession nos. 27.92/1 and 2; fig. 1 and Pl. 1). A memo accompanying the gift describes the cruet as having " recently been found at the bottom of the well," and the ewer as " probably found in the well at the same time as the cruet." They are both, especially the cruet, objects of some interest.

(1) *The cruet* has a pear-shaped body rising to a tall slender neck, and stands on a hollow splayed base (fig. 1, 1). It is $4\frac{3}{4}''$ (12·1 cm) high, $2\frac{1}{8}''$ (5·4) in diameter at the base and $1\frac{1}{8}''$ (2·9) at the rim, with a maximum body diameter of $2\frac{1}{4}''$ (5.7). Its hinged lid is heart-shaped, which suggests that it might once have had a spout; the front of the rim has been repaired, but the new metal terminates on one side in a straight oblique line, the angle that a spout might well have



Pl. 1. Lid of Cruet

made with the neck of the vessel (see fig. 1). The back of the rim has been pushed inwards and the shape of the mouth consequently distorted, so that the lid no longer lies flat. On the top of the lid is engraved an 'A' (for *aqua*) in Lombardic style (Pl. 1).

The vessel, apart from its lid, seems to have been made in three parts, the upper part of the neck and the base having been soldered on to the body. The body seems to have been made as a pear-shape open at both ends, the bottom of the vessel being part of the base. After soldering, the vessel was finished on a lathe, the outside having fine horizontal rilling, and the bottom, underneath the base, having an incised cross that looks as if it might have been intended to centre the vessel on a lathe.

The body is a dull silvery colour, with a few small patches of purplish patina. The upper surface of the lid is for the most part the same colour as the body, but round its edge are areas of copper colour tending towards purple, which look as if they constitute the body of the metal exposed by the polishing or wearing away of the silvery surface; the underside of the lid has a faint yellow tinge. It would seem that the lid is of different material from the body, but whether this is so, or whether this effect is produced by corrosion, only analysis of the metal will decide.

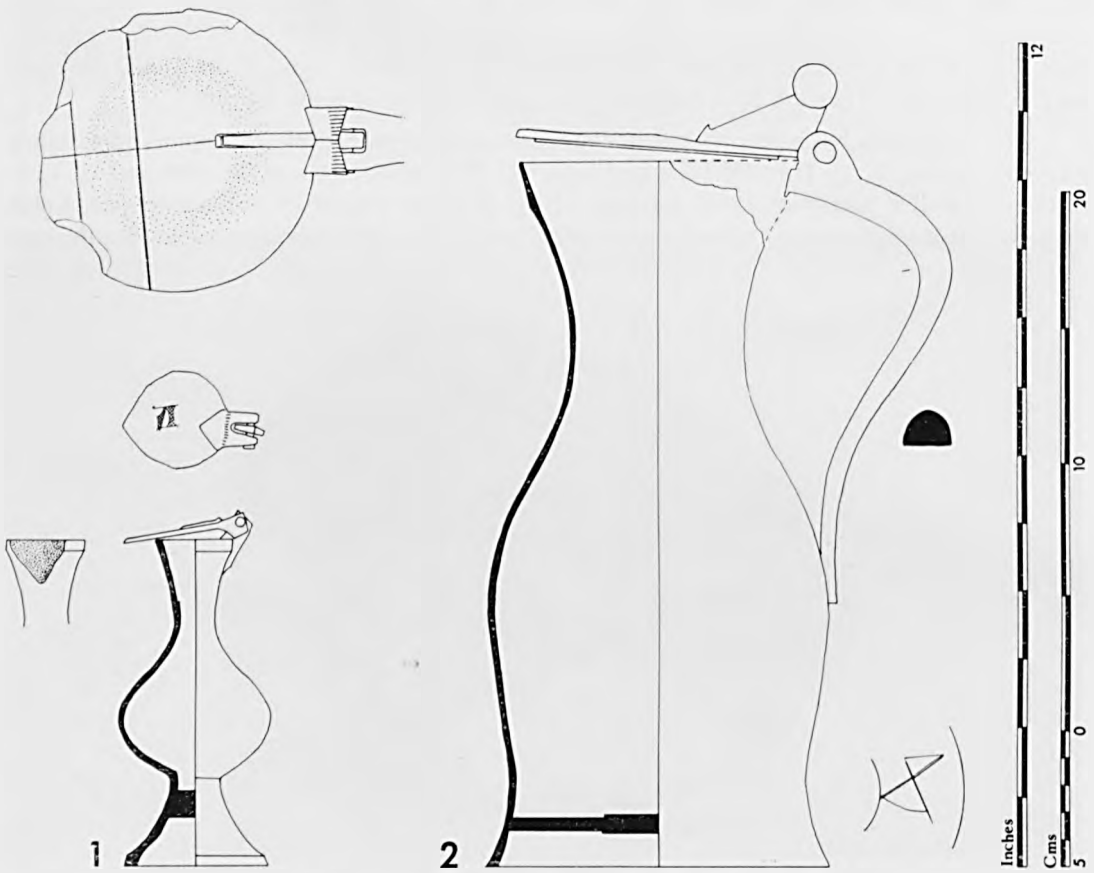


FIG. 1. Two Pewter Vessels from White Castle.

The initial on the lid proves that the vessel was a church cruet used to hold water for the Mass. All churches had at least two of these vessels, one for water, the other, often distinguished by a 'V' (for *vinum*), for wine, which were mixed by the priest at the altar. Its small size compared with its modern counterpart is accounted for by the fact that before the Reformation the congregation did not receive the chalice. Cruets became obsolete at the Reformation, when the custom of mixing water with the wine ceased, only to be reintroduced into the Anglican church in the 19th century. Not unnaturally it is the more elaborate cruets of gold, silver or crystal that have survived, but cruets of pewter or pottery were probably all that most churches could afford[1]. Pewter cruets are nevertheless very rare, and I have been able to find only three other British examples[2], though other unpublished examples may well exist. While corresponding to it in size, none of these offer a close parallel to the White Castle vessel. They are all sexagonal; the Weoley and Ludlow vessels have sides decorated with moulded panels of religious symbols or scenes; the Ashby vessel is like a miniature coffee-pot, with straight sides narrowing towards the top, a handle, and a long spout springing from near the base[3].

The lack of parallels and of a firmly dated context makes the dating of the White Castle cruet difficult, and conclusions must necessarily be tentative. The use of pewter for church vessels goes back at least to the 12th century. The Lombardic initial however indicates a date in the latter half of the 13th or the 14th century. In shape it is related to the elaborate 13th century cruets of Limoges enamel[4], whose elegant shapes are clearly derived from Islamic originals. Some circumstantial support of a late 13th century date is offered by the architectural history of White Castle. The chapel occupied the first floor of the south-east flanking tower of the Inner Ward. Though there was doubtless a chapel at the castle at an earlier date, this tower belongs to the re-fortification in the third quarter of the 13th century, probably *c.* 1267[5]. By 1437 the castle needed extensive repair: the flooring of the three floors of the gatehouse towers, and the roofing and flooring of the Chapel Tower[6]. This implies long neglect, and it may be suspected that the castle had not been continuously occupied since the conquest of Wales at the end of the 13th century. It may be suggested, therefore, that the cruet might have formed part of the original furnishings of the new chapel *c.* 1267. It might be argued that it could equally well belong to a 15th century re-furnishing after the repairs quoted above, but the vessel itself seems to bear less resemblance to the two English silver cruets that have survived from the 15th and early 16th century[7] than it does to the Limoges vessels, and on typological grounds the earlier date therefore seems preferable.

(2) *The ewer* (fig. 1, 2) has a shapely baluster form and measures 10 $\frac{5}{16}$ inches (26·2 cm) high, 5 $\frac{1}{16}$″ (12·9) in diameter at the base, 4 $\frac{1}{16}$″ (10·4) at the rim and 5 (12·7) in maximum body diameter. It is badly damaged, over half the rim, including the section to which the handle was attached, being broken away and the body badly holed. The handle is D— shaped in section, springing from the belly and ending at the rim. The lid is circular and slightly domed. It is hinged to the top of the handle by means of a wedge-shaped attachment with a thumb piece shaped like a hammer-head. The wedge is soldered to the top of the lid, and the back of it forms a tenon which is rivetted between a mortise formed at the top of the handle. On the top of the lid are some faintly incised lines at right angles, which are probably setting-out lines connected with its manufacture. Underneath the base is a faintly incised Roman numeral X, implying that the jug probably belonged to a set (see fig. 1).

Its cubic capacity, measured in sand as the vessel would not hold water, was 1700 cc. to the brim, or 1525 cc. to a well-marked carination $1\frac{1}{4}$ inches below the rim, which looked as if it might have been intended for a capacity mark. These figures represent capacities of 59·82 and 53·67 fluid ounces respectively. In the old English measure a pint was equivalent to 16·65 fluid ounces, so that the capacity of the jug was about $3\frac{1}{2}$ pints. It is not therefore a measure.

It is, however, clearly related to the ' baluster measures ' of the 17th century, the form of its lid and handle corresponding closely to the " hammer-headed " type of *c.*1625 – 1700[8]. The absence of a maker's mark may be accounted for by the fact that more than half the rim is missing.

Its presence at White Castle would be fortuitous, as the castle was certainly not occupied at that date. The latter half of the 17th century however probably saw much activity in the vicinity, with the break-up of the deer-park and the establishment of the local farms[9]. Its presence at White Castle need therefore come as no surprise.

NOTES

1 For pottery cruets see a note in *Medieval Archaeology* XII (1968) forthcoming.

2 These are: Weoley Castle, dated 1300–50 (*Trans. Birmingham Arch. Soc.* 78(1962), 70, Pl. 8); a duplicate of this vessel from Ludlow Castle (*ibid.* Pl. 10c); Ashby-de-la-Zouch Castle, found with a tripod ewer in a well filling dated to 1476. (*Antiq. Journ.* XVIII (1938), 178, Pl. L).

3 These vessels all belong to what must have been one of the two principal types: the Ordinances of the Pewterers (1348) laid down that, among other things, " cruets squared . . . and other things that are made square or ribbed, shall be made of fine pewter, with the proportion of copper to tin, as much as of its own nature, it will take." Other objects, including " cruets rounded " were " to be wrought of tin alloyed with lead in reasonable proportions." (quoted in R. F. Michaelis, *Antique Pewter of the British Isles* (1955), p.3).

4 *Antiq. Journ.* XVIII (1938), 52.

5 *Med. Arch.* V (1961), 173.

6 *The History of the King's Works* II, 854.

7 Oman, *Church Plate*, 61 and Plates.

8 *The Connoisseur* 54 (1919), 200, nos. xv and xvi.

9 *Arch. Camb.* CXII (1963), 165.

LLANTARNAM ABBEY

By DAVID H. WILLIAMS

Site and Remains

Like Grace Dieu, Tintern, and Abbey Dore, the subjects of articles in the last three issues of this *Antiquary*, Llantarnam was a house of the Cistercians or white monks. It was colonised from Strata Florida, and was to follow its mother house in having the cause of Wales at heart. As in the case of Grace Dieu, a great dearth of documentary evidence will, alas, make this also of necessity a meagre and fragmentary account.

The date of Llantarnam's foundation is given variously as 1175, 1179 and 1189 (this last is almost certainly a scribe's error). The founder was Hywel ap Iorwerth, lord of Caerleon, who in a charter refers to " Emsanternon . . . . where I have instituted the white monks," and here the date attributed is 1175. But the *Brut y Tywysogion* gives 1179, with the words " and a community was started in the monastery of Caerleon *upon Usk*, which is called Deuma, *in the glen of Teyrnon* "; (the words in italics are omitted however in at least one version)[1]. An " intimate adviser " of Hywel was brother Meiler of Pendar, also thought to have had some connexion with the earlier foundation of Margam Abbey, and possibly still alive as late as 1189. That Llantarnam was a daughter house colonised from Strata Florida is made clear in a letter (of 1253) from the chapter-general of the Order (meeting at Cîteaux) to the abbot of Strata Florida, and mentioning " Caerleon, your daughter." The abbey was, like all Cistercian houses, primarily dedicated (under God) to the Blessed Virgin Mary; (this is made clear in several references, including a petition to the monarch of 1317, and a papal mandate of 1397)[2]. But there has been (wrongly, I think), a secondary dedication to St. Deuma attributed to the house, while one of its extant seals would ascribe the dedication to St. Mary Magdalene. (This may bear some relation to the actual day of colonisation, recorded by one authoritative source as being July 22nd, St. Mary Magdalene's feast-day). The house was also unusual in that it had a Lady Chapel; being as a whole dedicated to the Blessed Virgin, this was not normal in Cistercian abbeys[3].

Earlier writers (such as Dugdale) assumed the existence of two monasteries, one at Caerleon, and one at Llantarnam, largely because in contemporaneous records the house was described sometimes as being Caerleon Abbey (as in the *Taxatio Ecclesiastica* of 1291), and at other times as Llantarnam Abbey (as in the *Valor Ecclesiasticus* of 1535). But in fact the two houses were one and the same. Until 1239 the monastery was exclusively known as Caerleon Abbey, but from 1266 the use of Llantarnam creeps in, though there are still references after that to Caerleon Abbey; rather conclusive ones, for example, in 1398 and 1465, actually describing the monastery as being that of Caerleon *alias* Llantarnam. Like proof probably comes also in the words of the *Brut* already alluded to, " in the glen of Teyrnon." Occasionally the house also appears to have been described as Vallium (as in 1244 and 1272), and as Duma—being given this latter name not only in the *Brut* (probably of 14th century date), but also in the Hereford Bishops' Registers as late as 1449. This problem of the name of the monastery is however not only one which has occupied modern historians (such as C. J. O. Evans, Canon E. T. Davies,

and, more latterly, F. G. Cowley), it also received recognition at the chapter-general of the Order in 1273 when it was decreed that " concerning the name of the abbey of Llantarnam which is also called by another name, Vallium, it is always to be allotted that name by which it is designated in the table of Citeaux ".[4]

The common usage of the name of Caerleon in the earlier, and then that of Llantarnam in the latter, part of the abbey's history, is possibly because (like a number of other Welsh and Cistercian houses) the monastery was subject at one stage to a change of site. This is indicated in the *Taxatio Ecclesiastica (1291)* where there is mention of the " *old abbey*," and the same term crops up again in 1476 when there is record of " John, abbot of Llantarnam, *lord of the old abbey*." The reason for the change of site is unknown, and so is its actual date, but obviously it occurred prior to 1291, and possibly around 1272 in which year the general chapter bade the abbots of Dore and Tintern " to go personally to Llantarnam, to inquire diligently concerning the said house, and to order and dispose all things as they shall see fit." It has been suggested that the first site may have been at Pentre-bach (nearly two miles WSW of Llantarnam, and formerly called *Kilsant*, literally " holy place "), or that the first site, the "old abbey", was nearer Caerleon than the later and final site. But one thing must be made clear; there is *no* proof whatsoever, documentary or archaeological, to support the view of Wakeman and others that the monks ever inhabited the house called the Priory in Caerleon. Indeed the " old abbey " lay apparently in the lordship of Newport, and not that of Caerleon[5].

Very little remains today of the final foundation, but we know it had a lady chapel, a bell tower, and a cemetery, and that very near the close of its life plans were afoot for the making of an arch at the " entry of the church out of the cloister," and for " the building of an arch in the body of the church." Much of the material of the former monastic buildings probably went

FIG. 1. Seals of Llantarnam, *British Museum Copyright*.

towards the building of an Elizabethan mansion here by the Morgan family, and this in turn was entirely rebuilt in 1837 by R. J. Blewitt. Wakeman remembered the great gate of the abbey standing, but it had been removed about the same time. On rebuilding, a wall four feet thick and probably original, was incorporated into the new building, and on one of the present doors is a knocker bearing an image of the Blessed Virgin, and dated 1516. But the only significant remain today is the derelict and roofless tithe barn, the timbers of which include elm, oak, and beech. Allgood (writing in 1907) described then recent finds of stone coffins, including one inscribed " Hic Jacit Gwladys Filia David," and more latterly during excavations for drainage were found some perfect skeletons (some of them female), each with a deposit of carbon on the skull, and dated as being over 600 years old[6].

Other remains are *seals* (fig. 1), fragments of which are preserved in the British Museum, (one of them giving the unusual dedication of St. Mary Magdalene to the monastery), and *books*. Two books, known to have belonged to Llantarnam, are still in existence; one is a 15th or 16th century copy of the *Annals of Chester*, the other a twelfth century edition of the *Homilies of St. Gregory*. This last now reposes in the British Museum, and has several interesting features. First is the inscription in bold letters in green ink on the front fly leaf (fig. 2 next page):

> " A.D. 1248. The lord abbot and convent of Caerleon gave this book to the convent of Hailes at the instance of the lord Richard, earl of Cornwall, distinguished founder of that house, and brother of the lord Henry, the third, King of England."

Hailes had been founded two years previously in 1246, and earl Richard would seem to have written round to several monasteries in an effort to see his new foundation had its own library. On the rear fly leaf of the same work are two notes (obviously made before the book left Llantarnam); the second is dated 1204, and the first is in a hand of the same period. It (the first) tells of brother Jewaf Talrein's expenses in " digging round " some leased pasture, and the second records the building in 1204 of a mill on the grange of Maestir Kanvawr. The work performed by one of the conversi, brother Philip ap Seisil, was assisted by a loan of 20s. from Kedivor ap John ab Edwi who gained a form of corrody in return. Rollanus, Randulf, Wastelius, and Kadrod were amongst other of the conversi or lay-brethren at this time[7].

Certain of the properties of the abbey call for mention here; those which seemingly were places of pilgrimage. Most noted of these, (and one revived by Roman Catholics in recent times), was the shrine of Our Lady of Pen Rhys (within the confines of the modern Glamorganshire). The manor of Pen Rhys includes properties west of Ynys-y-bwl which were amongst an early grant to brother Meiler and the brethren of Pendar, and presumably passed to Llantarnam in 1203, with the agreement then denoting the Rhondda river as the line separating the spheres of influence of Margam and Llantarnam abbeys. Some original work remains at Pen Rhys, for example the healing well, Ffynnon Fair, while the field names adjacent to what was probably the chapel (at a little distance from the well) are " Y Fynwent " (*the Graveyard*), and " Cae'r Eglwys " (*the Church Field*). The hostelry, to be mentioned in a moment, was perhaps some two hundred yards to the north, at Penrhys Uchaf.

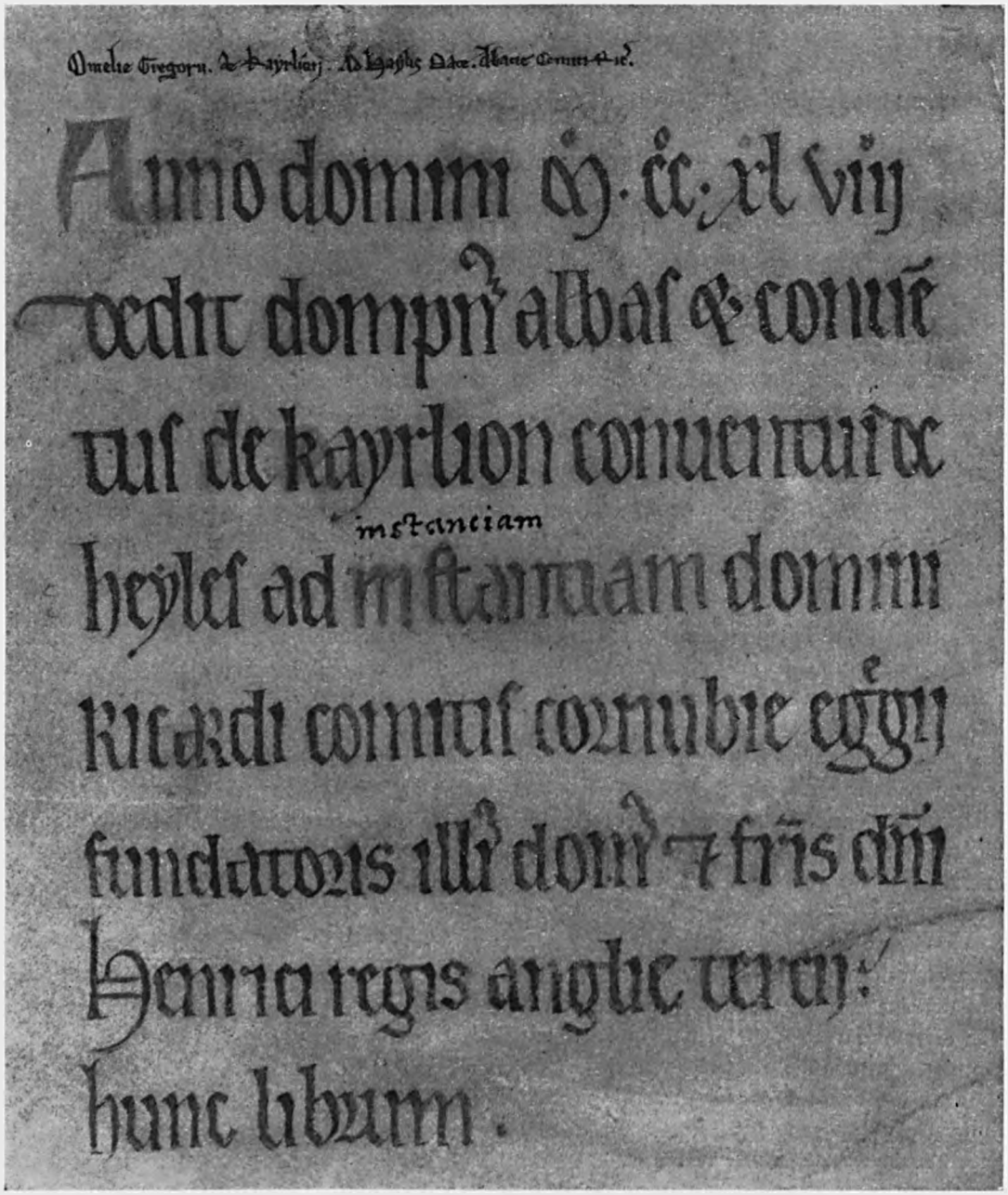


FIG. 2. Inscription on fly leaf of *Homilies of St. Gregory*, (12th Century) *British Museum Copyright.*

Octavius Morgan (writing in 1858) mentions " Penryce, whither the long taper was carried to be offered to Our Lady," but earlier the shrine had found frequent mention in contemporaneous late medieval poetry. Rhisiart ap Rhys (in the fifteenth century) told of " an image that is mentioned afar; at Penrhys, of the tall maid," and Llywelyn ap Hywel ab Ieuan ap Gronwy described the site, " a goodly place is the summit and its wooded slope, and a virgin sanctuary beside the high wood." To Pen-rhys, to offer alms and tapers in honour of the Blessed Virgin came some of more exalted rank, but also many of the sick and common folk. Lewis Morgannwg (in the early sixteenth century) described the journeying there of the sick, and earlier (about 1460) Gwilym Tew had written of " the prayer of the labourers, where at Pen-Rhys is ever a host of them," and " I will go to Pen-Rhys in my one shirt, for fear of ague, upon my knee a taper a fathom (*long*)."

The shrine not unnaturally attracted attention at the Reformation; Thomas Cromwell's pamphleteer Grey describing the pilgrims going thither, as " gaddyng, with few clothes on our backes, but an image of waxe, for the lame and for the blynde." Bishop Latimer wrote to Cromwell on June 13th, 1538, mentioning the image of Penrhys amongst a list of five which would make " a jolly muster in Smithfield. They would not be all day in burning." In August of that year Cromwell wrote to William Herbert directing the image to be removed " as secretly as maybe," and on September 26th it was taken down, without any opposition, and sent to London. By the Dissolution there was a Tavern House at Pen-Rhys, presumably for the refreshment of the pilgrims. Both this, and the manor of Pen-Rhys, had been lately leased (1534) into secular hands, but the abbot reserved to himself and his successors " all manner of oblations offered in the honour of our blessed lady in, or at, the chapel of Penrhys aforesaid." These oblations were worth £10 in the last year of the monastery's life[8].

Another place of pilgrimage belonging to Llantarnam, was St. Derval's chapel (with a relic of the saint) (*Llanderfel*) on the slopes of Mynydd Maen at a height of almost 1,000 ft., and some three miles north-west of the abbey. Oblations here in the last year of the monastery's existence were worth £3–6–8 (possibly £4–6–8), as much as a third of the value of Pen Rhys. The foundations can still be clearly seen (O.S. sheet, 1 in. no. 154, grid reference 263953), with evidence of an enclosing bank and ditch, and would perhaps repay excavations. (At a little distance, at about 263951, are other undulations with some deep—and dangerous—pits, probably the result of open cast coal working). But locally, this is attributed as the site of a monastery and coffins are supposed (some fifty years ago or more) to have been found in the vicinity. Llanderfel was clearly of some importance, and the last monastic tenant of the holding and lands there also leased the tithes of corn and hay pertaining to the abbot in some six parishes[9].

Wakeman also noted that Llantarnam formerly had chapels on its properties at Cil-lonydd (no remains exist), at Abercarn (now converted into a farmhouse called the Chapel, near a bridge known as Pont-y-mynachlog), at Gelli-las (where it was dedicated to St. Bridget, and where the walls remained until a few years before he wrote), and at St. Dial's. This last, remnants of which still exist, raises a problem, because the St. Dial's property is nowhere so mentioned in the Ministers' Accounts (transcribed in Appendix III), and I am inclined to correlate it with the second mention there of St. Derval's chapel—where the oblations had been leased for £1–0–0[10].

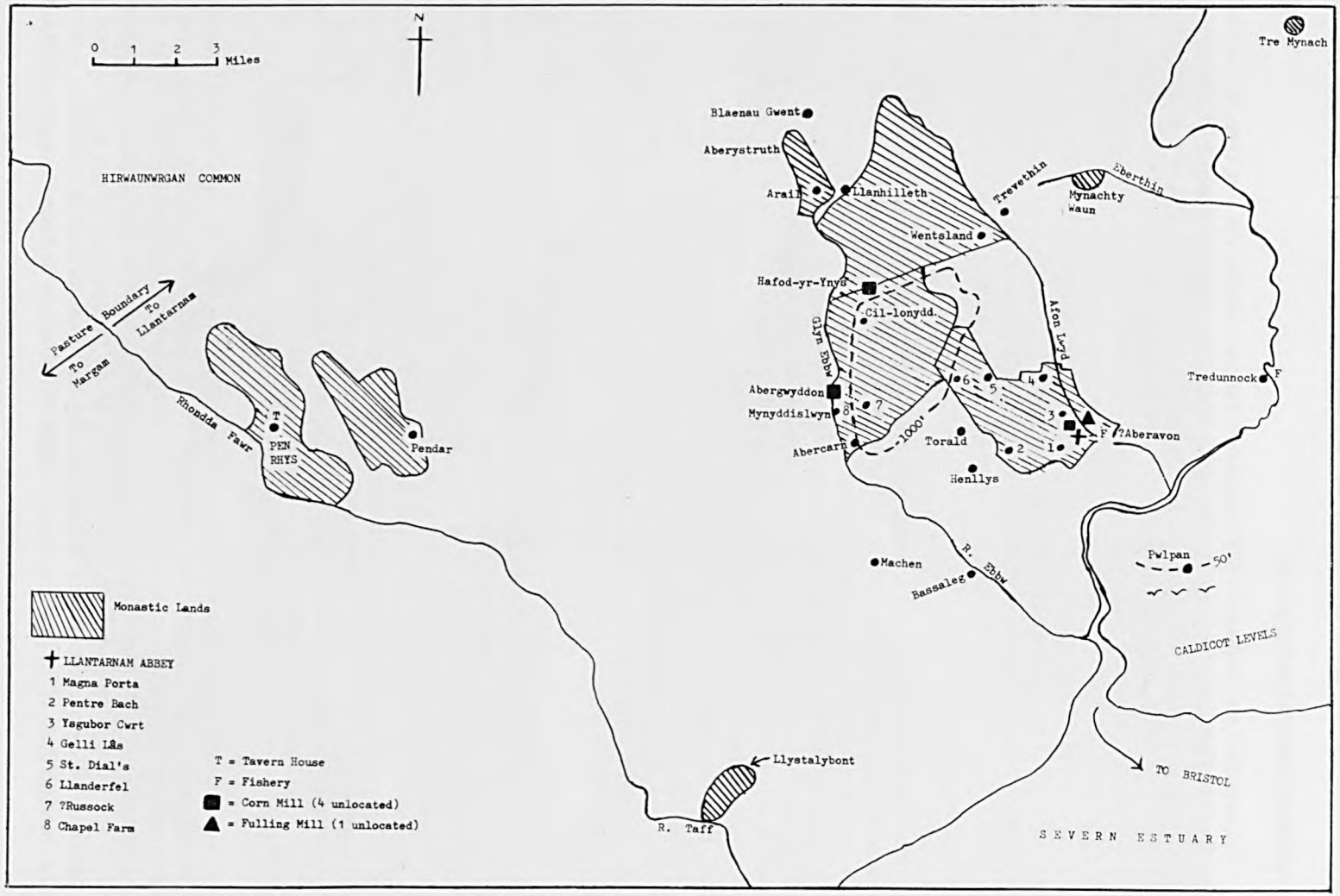


FIG. 3. Localities mentioned in the Text (after Wm. Rees, *S. Wales and Border in XIVth. Century*).

General History

Concerning the history of Llantarnam in the last quarter of the twelfth century, and the first of its life, there is no documentary evidence. Our first note of the monastery comes in an agreement reached with the priory at Bassaleg around 1200, (perhaps slightly before), by which the monks of that house released those of Llantarnam from certain obligations of tithe due to them out of lands now held by the white monks. The monks of Llantarnam " for good peace " gave those of Bassaleg ten marks and four beef cattle upon conclusion of the agreement. Shortly afterwards, in 1208, a papal bull was to exempt Llantarnam from paying tithe on the lands which they " brought to cultivation."[11]

The earlier part of the thirteenth century is punctuated by disputes with other houses, (further mention of some of which will come later), notably Margam (in 1203, 1244, 1251–3 and 1256), but also with Tintern (in 1221). In 1202 it was alleged at the chapter general that the abbot (in company with his opposite number at Aberconwy) " most rarely celebrates, and abstains from the altar." The several abbots had from time to time extraneous duties to perform; thus he was one of those deputed by the chapter-general to investigate disputes in 1221 between the monasteries of Buildwas and Whitland, 1225 between Cwmhir and Strata Marcella, and in 1239 between Dore and Grace Dieu; then in 1266 Llantarnam's abbot was one of the " conservators " of the privileges of Dore, during a troubled period in that monastery's history. Six years later (1272), as has already been noted Llantarnam appears to have been in some difficulty, and was to suffer towards the close of the century from Gilbert de Clare (7th earl of Gloucester, 1262–95), who took from its monks " in the name of discharge, the greater part of their possessions, and promised them the equivalent in lands and rents and other things, and nothing was done." There was for various reasons no immediate redress, but the king granted the house an annuity of ten marks out of the issues of the said lands. The like was true of Margam, its abbot conceding to the chapter-general in 1291 " that he had made a commutation with the earl of Gloucester concerning certain possessions." In the very same year the *Taxatio* records of one property of Llantarnam that its value was reduced "*quia bestie comit' totu' consumunt.*" At first reading this suggests that wild animals had devoured all the land; but it may be a veiled reference to the earl[12].

The opening years of the fourteenth century were also marked by irritations. In 1315 Llywelyn ap Rhys forced Llantarnam's monks to grant him some lands; when, the next year, Llywelyn had been executed the community petitioned the king (in 1317) for their return, they also had to complain at the same time to Edward II of the activities of his foresters of Machen who sold by force their woods " of Glyn Ebbw and Gelli Ezurnoun, of which woods they and their predecessors have been peaceably seized since the first foundation of the abbey." (In this petition, which also detailed their suffering at the hands of de Clare, they relate how there were but 20 monks at Llantarnam instead of 60 as formerly. This probably is a sign of the decline of the conversi). Apart from one or two minor tasks undertaken by the abbot, we have no more news of the house until the very close of the century. Then came a lively period in its affairs[13].

A severe, but accidental, fire did much damage to the monastery about (or before) 1398, and the then abbot, John ap Gruffydd, is credited by Adam of Usk with having restored the house. (Adam called abbot John " *that man of grace* "). In 1397 William Clyff, perpetual vicar of Woollaston, and David ap Hywel, vicar of Bassaleg, were apparently in Rome and " engaged in the service of the abbot of Llantarnam "; their entreaties at the Roman court brought (in March, 1398) not only a canonry of Llandaff to David ap Hywel, but also an " Indulgence of the Portiuncula to penitents who at first and second vespers of the feast of St. John the Baptist (*June 24th*) and during the two following days visit and give alms for the repair of the Cistercian abbey of St. Mary, Caerleon, *alias* Llantarnam, ... the books, buildings, and other ornaments of whose church have been enormously devastated by a fire." The monks may also have obtained some small profit in the following year (1399) by the commitment to them by the king, for one year, of the keeping of the alien priory of St. Clare (co. Carmarthen). Because of the wars with France they could have the issues of the house, but had to render a rental of £10, while " finding there the divine services ordained from old, and maintaining the houses and buildings pertaining to the priory "[14].

A few years later, in 1405, when troops of Owain Glyndŵr were attacking Usk, abbot John ap Hywel (formerly the prior, he succeeded Gruffydd as abbot in 1400), gave his full support. John de Fordun (who incidentally calls him John Powal, and mistakes his order) describes how " the abbot in person heard confessions before the attack and gave absolution, continually shouting and not ceasing earnestly to speak, while the forces were being made ready for the battle. In this cause the abbot was perturbed by nothing, but was only zealous for the liberty of his country and people." Adam of Usk also tells of how the English troops " slew many, and especially the abbot of Llantarnam," whom he describes as " a man of the highest prudence." (John ap Hywel may have been the same monk of that name who was ordained in 1366; David ap Hywel, the recipient of a Llandaff canonry may well have been a relative)[15].

It is also worth noting that, apart from the incident of the fire, Llantarnam crops up —after a long gap—several times in the papal registers for 1397/8. The two emissaries of the house in Rome would appear to have been kept busy, for in 1398 papal mandate was made that John vap Jerp, a monk of Llantarnam, studying theology and canon law at an unspecified Italian university should enjoy the fruits of the monastery as if resident, and that the monks of the house as a whole should be allowed to eat flesh meat on lawful days when absent from the convent on the business of the monastery " in cities and other places," where abstinence from flesh was " inconvenient." (Strictly speaking, healthy Cistercians never ate meat). In the same year, (Dec. 1397), the abbot of Llantarnam was ordered to investigate a quarrel between the vicar and prior of Chepstow, and " to reserve a fit portion for the vicar out of the fruits of the church of Chepstow "; it was alleged that the prior and community had not been resident in Chepstow priory for over four years. 1398 also saw the renewal of certain papal privileges (noted again later), and all this business with Rome within the space of a twelve-month indicates both activity on the part of the two emissaries, and perhaps also the business-like nature and forceful character of abbot Gruffydd. As a matter of convenience we might note here a later dispensation from Rome,—that in 1438 allowing one of Llantarnam's monks, Leyson ap Morris, to be ordained " and hold any dignity of his order," despite the fact that he was the son of a priest and an unmarried woman[16].

Apart from this the only facts of note in the fifteenth century after the death on the battle field of abbot Hywel, are the efforts of successive abbots to maintain the independence of the house and its privileges. In 1398, 1406, and again in 1423, the abbot found it necessary to obtain papal confirmation of the rights granted to the Cistercian Order as a whole in 1257, which exempted " the farmers and tenants of the lands of the order from the jurisdiction of any ecclesiastical judge ordinary," and allowed the monks " to make correction in their chapter house in respect of adulteries and fornications by such farmers and tenants." The latter could also worship and receive the Sacraments in the abbey's chapels within and without the monastery. The petition of 1398 stated that " for the defence of the monastery the monks have great need of the said letters which are beginning to be consumed with age." It was decreed (both in 1398 and 1406) that the tenour of the confirmation should have the force of the original letters[17].

Then in 1476 abbot John, as lord *of the old abbey*, appeared in person before the justices holding the Great Sessions in Newport to claim three liberties:

(i) a court baron within his lordship, held every three weeks.

(ii) cognizance of all pleas of detention of cattle, contracts of debt, or other contracts involving sums of forty shillings or less.

(iii) power to distrain by his bailiff for rent in arrears, fines, and other profits of his court; and to punish persons convicted by imposing fines not exceeding ten shillings, and to do all else pertaining to a court baron.

The justices admitted the claims to have been allowed in previous years, and confirmed by charters, and later, only shortly before the dissolution, in 1533, abbot Jasper and the convent granted " our servant Jenkin Morgan, the office of bayliship of Magna Porta for life." He was to receive £2 yearly and " to keep all court barons that belong to the monastery, twice yearly at Hockday and Michaelmas[18].

The lengthy abbacy of Morgan Blethyn (1507–32), (the son of a William Blethyn of Malpas), saw the monastery required to take in a servant of the household of Princess Mary, when it was dissolved in 1528, and the summoning of abbot Morgan to a convocation of Canterbury in 1529. In the first known year of his abbacy Morgan entered into six recognizances (with William Morgan of Llantarnam) of 20 marks each for the king's use, and in his last year of office (1532), Morgan Blethyn was named as an executor and beneficiary under the will of Morgan Jones of Roxford (*Hertfordingbury*), Herts., who obviously had local connexions. This will is of some interest, including as it does the following bequests, " . . . also I give and bequeath to the monastery church of Llantarnam ten marks sterling to buy a vestment in our Lady Chapel in the said monastery, to be prayed for there, to be taken by the abbot of such money as is owing to the said Morgan by the said abbot . . . . . also I give and bequeath to the abbot as long as (he) shall find my son John, the farm of the King's Park by the town of Usk, called the old park, with six kine and six calves, which farm and calves be worth yearly above all charges £2–17–4, and if it happen the said John not to be honestly intreated as well in his learning and bringing up in virtue and necessary clothing: then I will that the said Master Daryent(?) do enter into the said farm with the appurtenances, and my said wife, and thereunto all find my son John, if he

be alive, and if he be dead then I will the said abbot and his successors have the said advantage of the farm to say a *dirige* and a *masse of requiem* once in a year for my soul, my father (and) my mother's souls, and all christian souls, and take for their labour 30/–, and the said six kine and six calves to be given to Alice Jones my bastard daughter." Provision is made for Alice "if she be married after the advice of the abbot and other mine executors." If his sister is dead, then £4 (which she would otherwise have received) was to go towards "the making of an arch at the entry of the church out of the cloister." Also, "as to the residue of all my goods not bequeathed half do remain to the monastery towards the building of an arch in the body of the church." Jones then goes on to name as executors, abbot Blethyn, Thomas Roberts of London, gentleman, and Lewis Blethyn. The will was dated July 1st, 1532, and probate was granted on December 3rd of the same year, but then only Lewis Blethyn was named as executor. Abbot Morgan himself had probably died in the meantime also—certainly Jasper Thomas had succeeded him by the 16th February, 1533[19]. Other early 16th century bequests to Llantarnam were of £10 by David Mathew in 1504 for the glazing of the west window, and of £6–13–4 by Lewis ap Richard in 1521 for the purchase of a chalice.

This Jasper was the last abbot, and very shortly after the dissolution (before 1536 was out) a commission was appointed to examine as to " certain alleged fraudulent leases made by the late abbot of Llantarnam to the prejudice of the demise granted by the King to John Parker . . and to expel the lessees." Two late leases (more fully detailed in Appx. III) were the manor of Pen Rhys in 1534 to Thomas Williams, and the valuable grange of Pwlpan in 1533 to Lewis Blethyn (who receives mention above, and was possibly a relative of Morgan Blethyn, Jasper's predecessor). In common with other Cistercian houses a number of leases were hastily made in the years immediately prior to dissolution. I wonder whether some of them were last minute efforts purposely and falsely a little back-dated in return for a monetary reward, or retirement home, to abbot Jasper?[20]

At the dissolution (in 1536) Jasper received an annual pension of £15, and there were six other monks still in the community. Some 78 ozs. of silver plate remained in the house; there were four bells, which weighed 3803 qrs. They were still at the abbey in 1555, but were later removed by one William Jones of Caerleon. A final general note comes in *circa* 1539; it is a certificate of the " debts of the suppressed monastery of Llantarnam," namely, to Thomas Morris £6, to John Bagot £3, and to seventeen other persons smaller sums (8d. to 50/–)[21].

Economic History

We have hardly any knowledge of who settled lands upon Llantarnam, but it is certain that Hywel, the founder, will have donated a substantial portion. The chapter-general will have attended to this aspect before allowing the new foundation to be colonised. Much of their land was to be mountainous country stretching westwards well away from the abbey, eventually with pasture rights as far west as the Rhondda river.

The first broad picture of the properties comes in the *Taxatio Ecclesiastica* of 1291, in which, unfortunately, several of the placenames given are now unidentifiable. It does shew us

however that in terms of arable and of value Pwl-pan Grange (in the parish of Christchurch) was the most important, having some 12 carucates, beside 10 acres of meadow; it accounted for nearly half the value of the landed property. Other important granges were the Court Grange and Kynemot. Already, at Wenmy and Llystalybont, much of the monastic land had been demised. In 1325 the house was granted (by Edw. II) 2 acres of land in Llangathen (co. Carmarthen), and the advowson of the church there, but no more is heard of this[22].

Our next general view of the possessions of the house comes at the dissolution with the *Valor Ecclesiasticus* (of 1535), and the *Ministers' Accounts* (for 1535–6), and is more helpful. Now most of the land was demised, very little remaining in the abbot's hands. A great deal of their property was, as mentioned above, in the mountains west of the abbey (up to, and including, Penrhys), and these lands accounted for some 3/5ths of the house's total value; the home lands accounted for about ¼, and the leading single property outside them was, again, Pwl-pan Grange—this, together with leased lands there, accounted for nearly 1/7th of the gross income. Two of the monastic properties were still, apparently, worked on a manorial system (Pen Rhys and Magna Porta — ? the *old abbey* of 1291 and 1476), and there is mention of some eight granges. Income was also gained, at first in kind, from the tithes of several parishes, (Henllys, Machen, Bassaleg, Mynyddislwyn, Gwaynoge, Tir-y-Mynach (in Bryngwyn), and Wentsland (in the parishes of Trevethin and Llanhilleth)[23].

The house remained a relatively poor one throughout its history. Its gross value in 1291 was but £45, and in 1535 only £79 (compared to Tintern—£109, and £257, respectively). Its contribution in 1400 for the support of Cistercian scholars at Oxford was fixed at £1–6–8 (compared to Tintern's £2–13–4), and in 1521 its donation to a subsidy for the chapter-general was assessed at 6/8d (compared to £1–6–8 in the case of Tintern). The exemption of the house from paying tithes on its lands in parishes not appropriated to it was, together with food in kind from a few properties still in its own hands, of course a hidden source of income[24].

References to Llantarnam's economic activities are also scanty. Cistercian houses were usually important in the fields of woodland clearance, marsh drainage, pastoralism, cultivation and trade—and I have given a general account of this in the *Antiquary* for 1965; there is no reason to doubt that the monks of Llantarnam also played, in proportion to their substance, a relatively considerable part in all these activities; it is simply that a wealth of evidence is lacking. No manorial, or grange, accounts, for example, have come to light, and so we cannot obtain the same first-hand and contemporaneous picture that we were enabled to do in the case of Tintern.

The clearance of woodland (*assarting*) was an essential pre-requisite to much medieval agriculture, and one for which the Cistercians were noted. But in the case of Llantarnam the references to clearance, are to that by agencies other than the community. In 1317, as we have seen, the monks had cause in this respect to complain of the works of the foresters of Machen, and near the time of dissolution, on land which the penultimate abbot had leased out, "twenty great oaks" were felled to build "a ship for the maintenance of the navy." (Later references too are of interest; they include the use of a tree (1544–7) in mending one of the old abbey mills,

while (1556–8) men were employed at Llantarnam felling timber " for king Edward's works in the Isles of Scilly "). Late leases indicate the usual rights given by the monks to certain tenants of cutting in the monastic woods for timber for " burning, enclosing, and building," but often only " necessary timber," and the amount cut was to be " at the deliberation of the bailiff." Wood, although relatively plentiful, was an important commodity, and (as with Abbey Dore) care had to be taken. However the home property was still well wooded at the time of dissolution, the " twenty great oaks " cut at Gelli Lâs (*Kellilace*) are perhaps indicative of many more enduring, and near the monastery, at the Court Farm (*Skybbercourt*) there was a thirty acre wood (*Le Therweis*)[25].

We have already noted the bull of 1208 which excused Llantarnam's monks from paying tithe on land they " brought to cultivation "; this shews clearly that assarting, and the recovery of waste, was still active in the early thirteenth century. But cleared land had to be enclosed, and, if need be, drained. Again, we have only isolated references to Llantarnam's activity here; brother Jewaf engaged, as we have seen, around 1200, in " digging about " some leased pasture; " hedges, ditches, and enclosures " made by the monks of the house on hill pastures west of the Rhondda, later (1253) granted to Margam after arbitration; and the late grants of timber cutting to tenants for " enclosing." When we turn to arable farming, which must certainly have been important, the picture is even poorer. Our only evidence is Llantarnam's possession of grinding mills; seven were recorded in 1535/6—one of them was by the abbey, two were in Llanhilleth (one being at Hafod Yrynys), and four in Mynyddislwyn (one of these was the Maes-tir grange mill—the one we have already noted as being built in 1204). Shortly after the dissolution, we have (concerning the home mill), references to " the stream which runs to the abbot's mill," and of timber being felled to repair it, and also it was said of it that there " all tenants of the abbey, and all other resiants adjoining the abbey, time out of mind, have used to grind all their corn "[26].

But to the Cistercians pastoral farming went hand in hand with cultivation, and until the fourteenth century they were leading wool producers and exporters. Llantarnam possessed tracts of pasture land in its hill territories, and came to have grazing rights (subsequent to various disputes and settlements with Margam Abbey) as far west as the Rhondda river, this from 1203 onwards, though Hirwaun Wrgan Common remained in Margam's hands. The *Taxatio* of 1291 credits it with 588 sheep (but its figures are by no means wholly reliable), and Pegolotti's list of wool producing monasteries (perhaps based on Flemish lists of the late 13th century), credits it with exporting yearly only 8 sacks of wool, and that was said to be of a coarse variety. There is no other evidence of external trade by Llantarnam, but, internally, Bristol was important to it. The monks and their goods were free of toll there, (this right having been granted by King John, before he became monarch, and confirmed in 1252), and they at one time owned land there. At an earlier date they may have taken a part in the production of woollen cloth, for, at the Dissolution, amongst their sources of revenue, were two fulling mills, one near the Abbey, and one in Mynyddislwyn parish[27].

There is no record of any mining activities engaged in by the community, but it is quite feasible that they quarried coal at Llanderfel. They had a fishery at Aberavon (near the monastery), and fishing rights (unlocated) every ninth day in the Usk. In this last river, they had at least for much of the fourteenth century the farm of a fishery called the Ceyne at Tredunnock[28].

Conclusion

This brief article draws to a conclusion a series of four which have sought to shew something of the economic history of the Cistercian houses of Gwent and Ewyas, all members of what was officially described in 1521 as the " Welsh province " of the Cistercians[29]. In so doing the general histories of three of them have also been placed, albeit imperfectly, on record. It has been a privilege to prepare them for a resuscitated journal, which by its contents and format, now compares very favourably with those of our other Welsh counties. As in the last few years, again now, I express my thanks to the Editor, Mr. Cefni Barnett, for arranging the drawing of the map, and for waiting patiently for a manuscript unduly delayed.

Appendix I

ABBOTS OF LLANTARNAM

Ruling in:	*Name:*
c. 1205	Walter[30]
1227	Cynfrig[31]
1279	Anian[32]
1313	Griffin[32a]
mid-14th Cent.	David[33]
–1383	John[34]
–1400	John ap Gruffydd[35]
1400–05	John ap Hywel[36]
1431–62	Stephen (?*Went*)[37]
1465	William Nunam[38]
1476	John[39]
1507–32	Morgan Blethyn[40]
1533–36	Jasper ap Roger (*alias* Jasper Thomas)[41]

Appendix II

ORDINATIONS

(of monks of Llantarnam ordered by the Bishop of Hereford. The great majority of the abbeys' monks will have been ordered by the Bishop of Llandaff; unfortunately the medieval registers of that diocese are no longer extant).

Name	*Order*	*Date*	*Register*
John ap Hywel (? *later abbot*)	P	March 21, 1366	LC 100
Hugh	P	Sept. 19, 1383	JG 157
Hywel ap Gruffydd	SD	Febr. 22, 1399	JT 224
David ap Griff	SD	Dec. 22, 1425	TS 299
Stephen Went	D	" "	"
" " (? *later abbot*)	P	March 30, 1426	TS 300
David Carlerton	A	Dec. 16, 1426	TS
David Newport	D	" "	"
John Brawnebone	SD	March 13, 1473	JS 170
fraternus Fyssher	D	Sept. 24, 1513	R.My 263
William Kyrkby	D	" "	"

Abbreviations: A – Acolyte D – Deacon SD – Subdeacon P – Priest

(For the references to the Bishops' Registers published by the *Canterbury and York Society*, please see the *Antiquary* 1966, p.86).

N.B.: There is also one solitary record of the ordination in 1465 of Matthew Harding, possibly a monk of Llantarnam, by the bishop of Llandaff[42].

Appendix III

PROPERTY AND INCOME

(1) in the *Taxatio Ecclesiastica, 1291.*

p. 281b

	£	s.	d.
Pwl-pan Grange: 6 carucates land (£6), 3 carucates and " other 3 carucates (£4), 10 acres meadow, and at the monastery 8 acres meadow (9/–)	10	9	0
Kynemot, 4 carucates . . " *quia bestie comit' totu' consumunt* "	1	6	8
Court Grange, 4 car. (£1–6–8); at *Bryngwyn*, 3(£1–10–0); at *Torald'* 2(8/–); *Maes-tir*, 2(10/–); *Conesiding*, 1(4/–); *Mahenel*, 2(8/–); *Pemrmenny*, 1(4/–); *Mynyddislwyn*, 1(4/–); *Old Abbey*, 1(4/–); *Russock*, ½(2/–); *Kidloneth*, 1(4/–); *Crip* (land valued at 3/– p.a.); *Enesnacrinet* (like at 3/–); *Gaynet* (like at 3/–)..	5	13	8
Wenmy — fixed rents for lands and holdings	2	13	4
Llystalybont — fixed rents, and rents for other reasons	2	16	8
Kenmoys (*Raumneys*) — 2 acres meadow..		8	0
	£23	7	4

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? 132 cows (£13), 588 sheep (£12–5–0); 46 goats (11/6); and a new mare (10/–)	£26	6	6

(2) in the *Valor Ecclesiasticus*, 1535 (iv. 365).

	£	s.	d.
Manor of *Magna Porta*, annual rents there	8	0	0
Abercarn, within lordship of Machen, ann. rents	28	2	3½
Penrhys, within the lordship of Miskin, a.r.	9	2	4
Wentsland and *Bryngwyn*, in lordship of Abergavenny, ann. rents	7	0	9½
Pwl-pan, in lordship of Caerleon, ann. rents	4	17	9
Granges: Pwl-pan (£8), *Ysgubor-cwrt* (£1–6–8), *Llystalybont* (£1–6–8), *Mynachty-waun* (£2), *Cillonydd* (£1)	13	13	4
Oblations: Penrhys chapel (£6); St. Derval's (£1–6–8)	7	6	8
Tithes: of corn and hay, and certain other tithes, of the church of Llanvihangel Llantarnam	1	0	0
N.B.: the ensuing Ministers' Accounts would make some of these values to appear to be underestimates)	£79	3	2

Annual deductions:

to Henry, earl of Worcester, steward	2	0	0
to bailiffs of Magna Porta and Pwl-pan (£2), Abercarn (£2), Wentsland and Bryngwyn (13/4), Penrhys (13/4)	5	6	8
Auditor's fee		13	4
	8	0	0
Net:	£71	3	2

(3) in *P.R.O. SC* 6 (*Henry VIII*), *No.* 2497 (abbreviated).

m.1r — *Account* of *Jenkyn ap Morgan*, . . Llantarnam, suppressed by Act of Parliament at
m.2r Westminster, 4th February, 1536; he accounts for one whole year, Michaelmas (*Sept. 29th*) 1535 — Michaelmas, 1536.

Arrears — nil, because this is the first account made by him for the use of the lord king.

Demesne land — received £5–6–8 for demise to John Parker.

Fixed Rents — £25–19–0 received from 43 tenements, usually ' with appurtenances,' (one having a garden), 1 house, 1acre of meadow land (*iuxta* Caerleon), 1 grinding mill (56/8),—the lessees were to maintain the mill and keep it good repair; 1 fulling mill, with lands of houses (26/8). Mention is made of " the stream which runs to the abbot's mill "; one stable; firebote, etc., for the hospice of the lessee of one tenement; and of one tenement (67/–), with certain lands, at Llanderfel, with the tithes of corn and hay, pertaining to the abbot in the parishes of Henllys, Machen, Bassaleg, Mynyddislwyn, Gwaynoge and Tor-y-Mynydd; £3 from receipts of farm, Gelli Lâs; £2–6–8 for one grange (demised to Lewis Blethyn), and 20/– for 1 tenement called *transemawre*[43].

m.2d *Grant*, by abbot Jasper and the convent (dated Febr. 16th, 1533), to " our servant Jenkin Morgan, the office of bayliship of Magna Porta for life." Morgan to receive £2 yearly, and to keep all court barons that belong to the monastery, twice yearly, at Hockday and Michaelmas.
Allowances — totalling £30–3–10.

m.3r *Account* of *Watkin John*, bailiff for Wentsland and Bryngwyn.

m.4r *Arrears* — nil (as before).

Receipts — £18–11–10½, from 55 tenements with appurtenances (in parishes of Llanhilleth, Trevethin, Blaenau Gwent, Aberystruth)[44], and from 1 corn mill at Hafod Yrynys in Llanhilleth parish, from 1 grange called Brogwyn, and another at Bryngwyn, from certain tithes of Wentsland (in parishes of Trevethin and Llanhilleth) — 53/4, and certain tithes pertaining to . . . . . — 20/–.

m.4d *Fees*: total 8/8d.

Allowances: £18–3–2½. (N.B.: name of " Jasper Thomas, late abbot " occurs there).

Account of *Jenkin ap Morgan*, bailiff for Mynyddislwyn, in the lordship of Abercarn.

Arrears: nil (see before).

m.5r— *Receipts:* £35–16–11½ from rents of 119 tenements, a grange, 6 mills, and one other
m.7d parcel of land. The tenements were generally held with clauses relating to the payments of heriot, etc., " according to the custom of the manor." Of the mills, one (nature unspecified) was lately in the hands of the abbot, 4 were corn mills (one being at Abergwyddon, another at Maestir), and one was a fulling mill. The tenants of the holdings generally had Welsh names, as is to be expected — a few at random are Thomas ap Thomas, Morgan ap John, Llywelyn ap Griffin, Watkin Powell, Lewis ap Roger, and so on. Of the 119 tenements, 3 only were in the hands of the abbot, and one of these was called *tonveda*; one holding was leased to John David ap Howell of Bassaleg and Gwenllian his wife, on Nov. 2nd, 1509, on a 99 years lease; the lessees were to pay suit of court, and heriot, when due, but could have what was " necessary from the wood for burning, enclosing, and building, by the deliberation of the bailiff." Of the tenements three at least were in Bedwellty, and the grange was at Maestir.

m.8r Recounts the grant of £2 yearly (dated 12th October, 1526) to the Earl of Worcester, their Steward, by abbot Morgan Blethyn, and the convent; also of 2/– payable to the scribe.

m.8d Receipt of 10/– rent from one meadow with a house built upon it, together with one small meadow called Parke Pyll.

£14–15–0 received from rent of the manor of *Penrhys*, in the lordship of Miskin, with all lands, tenements, etc. appertaining thereunto. The manor had been leased to Thomas Williams,

gentleman, of Penrhos, by abbot Jasper and the convent on May 14th 1534, by Indenture which " Witnesseth that the said abbot and convent hath given, granted, and to farm letten, to the said Thomas, their manor of Penrhys within the lordship of Miskin with all lands, tenements, and ren'tyons with the appurtenances to the said Thomas and his assigns from the day of the making of these presents unto the end and term of 60 years next following, and fully to be completed, paying yearly therefore unto the said abbot and his successors, £14–15–0 sterling at the feast of St. Martin (*Nov. 11th*) and the feast of Philip and Jacob (*May 1st*) by equal portions, and if it happen the said yearly rent in part, or in the whole, at the said feasts or within 21 days immediately after in abovesaid to be unpaid, that then it shall be lawful for the said abbot and his assigns in the said manor to re-enter, and the same as in former estate to hold, this Indenture in any wise not withstanding, provided that the said abbot and his successors shall enjoy all manner of oblations offered in the honour of our blessed lady in or at the chapel of Penrhys aforesaid, with the tenement belonging to the same chapel now in the hands of Llywelyn ap Morgan ap Thomas during the said term. In witness thereof to this present Indenture as well the common seal of the said abbot and convent as the seal of the said Thomas interchangeable hath been put; dated in the chapter house of the said monastery, the day and year above named." (The *oblations* find mention again below).

40/– received from one tenement called the *Tavern House* in Pen Rhys, leased also to Llywelyn ap Morgan ap Thomas.

m.8d on — m.9r *Pwl-pan*, in the lordship of Caerleon. £20 from rents of the aforesaid grange demised to Lewis Blethyn gentleman, 13th May, 1533, by abbot Jasper and the convent, for 40 years paying £20 sterling in equal portions at the feasts of St. Martin and at Hockday. Provision for re-entry if rent unpaid after 20 days. Lewis was to " uphold and maintain all manner of houses upon the said grange at his own cost."

Llystalybont Grange; £2–0–0 from farm of this grange leased to John ap Jenkyn on Nov. 2nd, 1509 for term of 99 years. To pay suit of court, etc. Right to take necessary timber from the wood of the monks, at the deliberation of the bailiff, for burning, enclosing, and building upon the said grange. Not to alienate to another without leave of the abbot and convent.

Mynachty-tir-waun Grange: £2–0–0; leased to William Jenkin.

Cillonydd Grange: 20/– of rent — in hands of the late abbot this year.

Chapel of the blessed Mary of Penrhys: £10–0–0 from oblations brought to the aforesaid chapel, in the hands of the late abbot this year.

Chapel of St. Darvally (Llanderfel): £3–6–8 of oblations . . . (*as above*).

m.9d *Oblations at the Chapel of St. Darvall':* £1–0–0 from rent of oblations leased to Hywel ap David John.

Usk fishery: £2–0–0 from rent of the fishery of Usk, leased to William Watkin.

Aberavon fishery: 13/4d. from rents of fishery of Aberavon leased to Jenkyn Taylor.

Gross Value: £144–19–6.

N.B.: It is instructive to note the far higher values attributed to the several properties in this Ministers' Account, only a year or so after the date of the Valor Ecclesiasticus,

e.g.: Pwl-pan Grange, £12–17–9 (VE), £20–0–0 (MA).
Abercarn, rents, £28–2–3½ (VE), £35–16–11½ (MA).
Wentsland and
Bryngwyn, rents, etc. £7–0–9½ (VE), £18–11–10½ (MA).

ADDENDA

Last Abbot of Dore.

I inadvertently omitted from my article on Abbey Dore (*Antiquary*, 1967), the important information that its last abbot, John Redborn, later became a monk in the community restored at Westminster Abbey (1556–9), in the reign of Queen Mary, and there he died.

DAVID H. WILLIAMS

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[43] *Gwaynoge* I have not been able to identify; *Tor-y-mynydd* is a corruption of Tir-y-mynach (Tre-mynach) in Bryngwyn. *Gelli Las* is the modern Llantarnam Grange (cf. *NLW* Lockwood Plan 31(*1751*)). For *Bryngwyn*, see also *NLW* Badminton MS 1587.

[44] *Arail* is mentioned as a holding in Aberystruth parish.

BLAST FURNACE AT COED ITHEL, LLANDOGO*

By R. F. TYLECOTE

Synopsis

The remains of a 17th century blast furnace situated on the west bank of the River Wye have been investigated in order to determine its 'lines.' It was found that the normally accepted idea of the typical 17th century furnace as having a widely flared bosh and separate crucible was, as suspected, a myth. This furnace had a bosh and crucible all in one and this made an angle of 77° with the horizontal. As other furnaces of this period are investigated it is becoming clear that the angle is not unusual.

The furnace was charged with Forest of Dean 'limonite' and bloomery slag. The furnace slag was not very basic and carried about 5% of iron which is typical of charcoal furnace slag of the 17th century. The iron was low in silicon but predominantly grey—again typical of the period. The bloomery slag had been brought from a distance as its phosphorus content (0·4%) was not typical of a slag derived from Forest of Dean ores.

Introduction

The visible remains of the Coed Ithel furnace show a rather unique internal structure for a blast furnace. It was this fact that prompted its excavation in the Spring of 1964, excavation being amply rewarded by a nearly complete internal vertical section, part of the tuyere, and some metal. The lines have now been shown by more recent excavations to be similar to those of two other furnaces of about the same period.

History

According to a Survey of the Manor of Portgasseg[1] made in October 1651 there existed,

> 'All that Mansion howse, one iron forge howse, one large Coale howse built wth timber, one Way howse, one Stoare house and one Coalyarde conteyninge halfe an Acre, one furnace to melt Iron myne wth the streames and pondes and Coalehouse to the same and other outhouses to the same app'teyninge Abuttinge upon the river Wey to the North.'

Portgasseg is represented today by a house called Porthgaseg one mile south of Tintern and half a mile west of the Wye. It is almost certain that the above reference is to the furnace at Coed Ithel (map ref. SO/527027), and that this is the furnace that was in production near Tintern in 1672–76 under the Foley partnership[2]. In 62 weeks in 1672–3 it produced 1142 tons and in 61

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weeks in 1675–6, 1034 tons, i.e., an average weekly output of about 18 tons. This furnace may have lasted until at least 1717.

In 1788 there was a cylinder blown furnace working at Tintern[3] on a ' gurgling brook . . . above the village of Abbey-Tintern.' This was on a site now known as ' Old Furnace ' about one mile up the Angidy brook from Tintern Abbey. No signs of the furnace existed in 1947 on the occasion of the visit of the Newcomen Society[4] and there are certainly none there today although the remains of hammer ponds are still very much in evidence.

Powle, writing in 1677–8, refers to the current iron working operations in the Forest of Dean[5]. He refers to the best ore as being the brush ore which is bluish, heavy and full of shining specks like silver. To this was added bloomery slag. The ore was calcined with the aid of coal in kilns rather like lime kilns in order to make it easier to break. It was then carried to furnaces built of brick or stone which were 24 ft. square and 30 ft. high. A sketch of a typical furnace is given, which shows it to be egg-shaped or ellipsoidal, the diameter at the middle being 8 to 10 ft. Behind the furnace were placed two pairs of bellows whose noses met at the tuyere. The bellows were worked through cams by an overshot wheel driving the axle shaft, and were counterpoised. The fuel was charcoal from hazel and oak grown in the forest.

The metal was run into a bed of sand before the mouth of the furnace and into ' furrows ' which were suitably shaped to make sows and pigs, which were the long V shaped pieces of cast iron that were finally destined for working up into wrought iron in the forges.

As we shall see, the ellipsoidal furnace with its maximum diameter at the centre is by no means typical of the furnaces of this period. The contemporary furnace at Gunns Mill is of the more typical square-sectioned shaft with the widest part about 7 ft. from the bottom. When Schubert[6] wrote his book in 1957 he admitted that there were no drawings of furnaces of the early period, i.e. of 16th–17th centuries, apart from that given by Powle. Schubert reconstructed the furnace, which is normally thought of as being typical, from current verbal descriptions. The result of his reconstruction is more like the interior of the furnace at Gunns Mill. Unfortunately the two 17th century furnaces which are still extant, i.e. those at Gunns Mills in the Forest, and Rockley, near Barnsley, have both lost their hearths. This means that we have no reliable evidence of hearth design with the exception of the furnace at Melbourne of which the hearth is the only part that was, until recently, still standing. In this case there is some doubt as to whether the hearth has suffered modifications during the period of use of the site as a pottery.

The Site

The furnace at Coed Ithel today consists of a vertical section nearly through the diameter showing a pyramidal shaft and the top of a circular hearth (fig. 1). This clearly dates it to the second phase of British furnace construction, following the period where both shaft and hearth were square in plan. The site, shown in fig. 2, is situated on a hillside some

30 ft. above the bed of a stream, on a level area supported by well-built retaining walls. The stream originates in a spring a mile or two away, and is in such a good catchment area that it flows regularly throughout the year. No doubt the wooded area of the surrounding country holds up the water sufficiently to ensure this steady flow.

The site was served by a track leaving the present Monmouth-Chepstow road about 700 yards to the north. In order to prevent the hillside slipping down over the track, the whole distance from the point where the track leaves the present main road to the furnace itself is embanked with a retaining wall of large well-cut stones. The track followed the face of this wall and patches of it are clearly visible where it crosses small gullies. This track cuts through the retaining wall at a point about 400 ft. from the furnace. Where it crosses there is a well-paved stone ramp which is sufficiently steep to render it impossible for the ore to have been brought by waggon, and it must therefore have been brought by pack-horse. From this ramp the ore was brought to the top of the furnace probably to the out-houses mentioned in the Survey. The present road was new in 1803, and the bridge crossing the brook is dated to 1825, and it would seem that supplies to, and the products from, the furnace were taken along the track in the direction of Llandogo. The river is tidal, and it would be easy to get boats up to Coed Ithel weir. It is possible that the cast iron pigs were taken downstream by this means, although the point where the track joins the present main road is some 300 yards north of the weir. The track is probably aiming for the Forest ore deposits near Orepool or Bream.

(Courtesy of N. Bridgewater)

FIG. 1. The furnace as it appeared before excavation (Scale: feet).

Excavation

GENERAL

The prime purpose of the excavation was to examine the hearth, and to obtain a diametral section from top to bottom since the furnace seemed to be, with our limited knowledge, of

unique shape. Two trenches were cut, one through the centre of the furnace, and the other some 7 ft. to the east which was intended to cross the casting floor. (*see* fig. 3). Trench 2 (that through the centre of the furnace) disclosed the tuyere system and the upper levels of the hearth. (fig. 4, Section 1). The hearth was cleared and a section at 37° to the line of Trench 2 gave the ' lines ' of the furnace. This angle was chosen as that giving the best vertical section of the furnace structure since at no point was the remaining structure an exact diametral section.

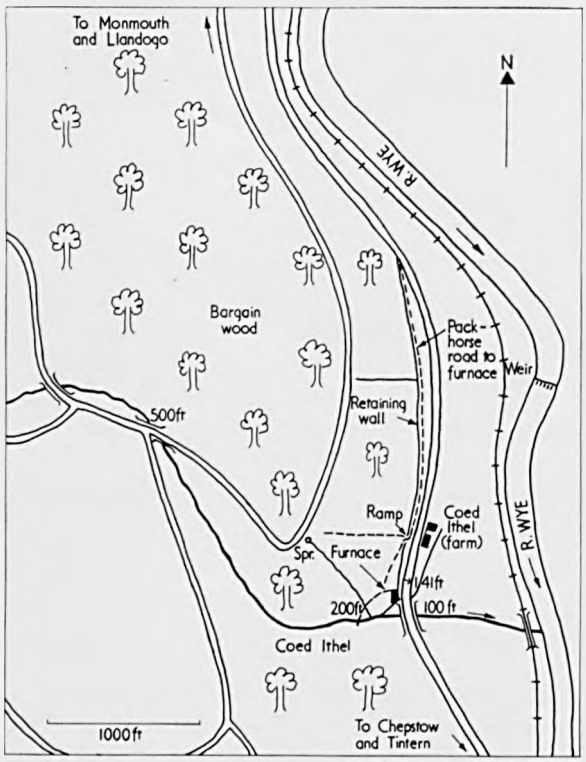

FIG. 2. The site of the blast furnace at Coed Ithel

Trench 1 intersected the south-east corner of the furnace and it was possible to obtain a full outline of the south-east pillar which stood to a height of some 4 ft. (fig. 4, Section 2). The large amount of fallen stone, however, made the casting floor somewhat difficult to examine. It consisted of about 12 inches of red sandy soil underlain by about 6 inches of black soil. The first layer above this contained a large amount of stone roof tile and was therefore the first layer containing the products of decay of the furnace.

The south-east end of this trench disclosed a gully cut into the red subsoil of the site. (See also plan in fig. 3). This appears to have drained rain water from the roof of the blowing house. It must have been allowed to silt up early in the history of the site as it contained a pair of mason's or carpenter's compasses. In this part of Trench 1 were also found three pieces of cast iron which could have overflowed from the main casting stream.

Well up the hill, excavation in Area 5 disclosed part of a wall possibly belonging to the outhouse mentioned in the Survey. Trenches cut to determine the line of the leat supplying the furnace were unsuccessful except for those in Area 4 which revealed a retaining wall which had been built to fill a gully. There is little doubt that the remaining stones in this area mark the line of the leat which started from a dam up the stream. There was no sign of silt on the uphill or downhill side of this retaining wall, and it seems that the water was therefore carried in a wooden trough above the wall. The height of the retaining wall above the tuyere level is 13 ft. 6 in. A recent examination of the hillside showed no signs of a mill-pond; if there was one it must have been on the level marshy ground in the woods before the stream makes its fairly precipitous descent. The length of campaigns, i.e. 61–62 weeks, shows that the water supply was fairly reliable.

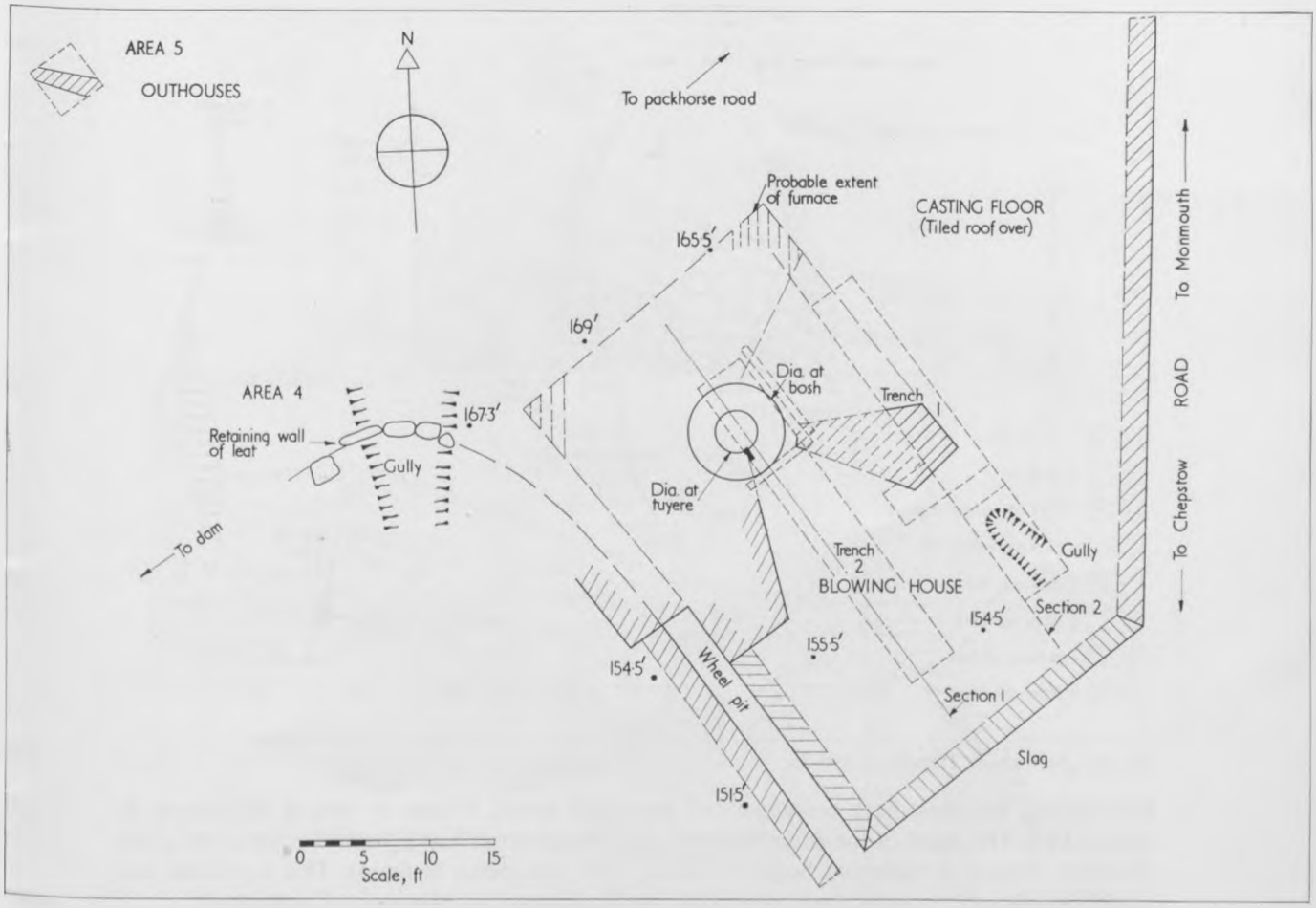

FIG. 3. Plan of furnace-area showing position of trenches.

Some roasted ore, a piece of coal and some bloomery slag were found in Areas 4 and 5. A considerable amount of blast furnace slag had been dumped just below the retaining wall on the south-east side of the site. (fig. 3).

The outer furnace structure is not regular but approximates to a 24 ft. square (fig. 3). Its departure from the perfect right angle at the south-east corner may have something to do with the small amount of space available on this very restricted site. The plan of the furnace is not symmetrical but there is little doubt that the axle was at right angles to the wheel pit and it is therefore difficult to see how the oblique angle of the end wall gave more working space for the casting floor.

Some of the fallen stones in the rubble fill were chamfered for use in corbelling, and it is clear that these stones had been used in the two openings. These openings, therefore, had not

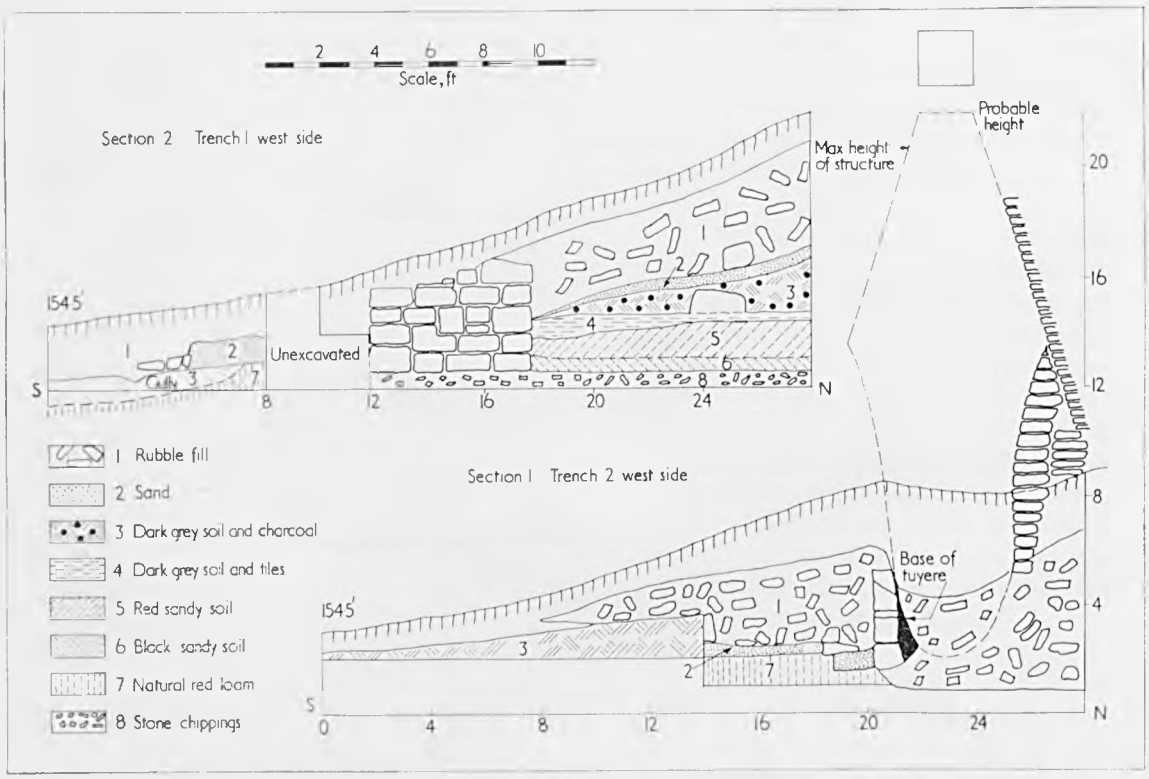

FIG. 4. Sections in Trenches 1 and 2.

been arched, but must have contained cast iron lintel beams, as may be seen in the furnace at Gunns Mill. The angle of the chamfer shows that the openings had a vertical angle of 50°, and therefore reached a maximum height of about 15 ft. (*see* detail in fig. 5). This is normal and compares with the recently demolished 18th century furnace at Maryport, Cumberland.

FURNACE INTERIOR

The square shaft was made of 3 inch thick grey sandstone and continued down well below the present bosh to be supported on the north and west sides by packed stone. (*see* detail in fig. 5). From the shape of the pillar there is little doubt that at the south and east sides the weight of the shaft was taken on cast iron lintel beams, and it is probably the early removal of these beams that caused the structure to collapse, since the shaft of the furnace at Rockley of similar date is still standing.

The interior of a furnace is normally divided into three parts. The inwall, being the part of the shaft sloping inwards towards the top (fig. 5); the bosh which is the funnel shaped portion sloping downwards from the maximum diameter; and the hearth which is the part below the tuyere that contains the liquid metal and slag. In this furnace the circular hearth is continuous with the bosh and they were built up together from the bottom with 6 inch thick white sandstone, joining the pyramidal inwall 11 ft. 6 in. from the bottom of the hearth, i.e. at a point more than

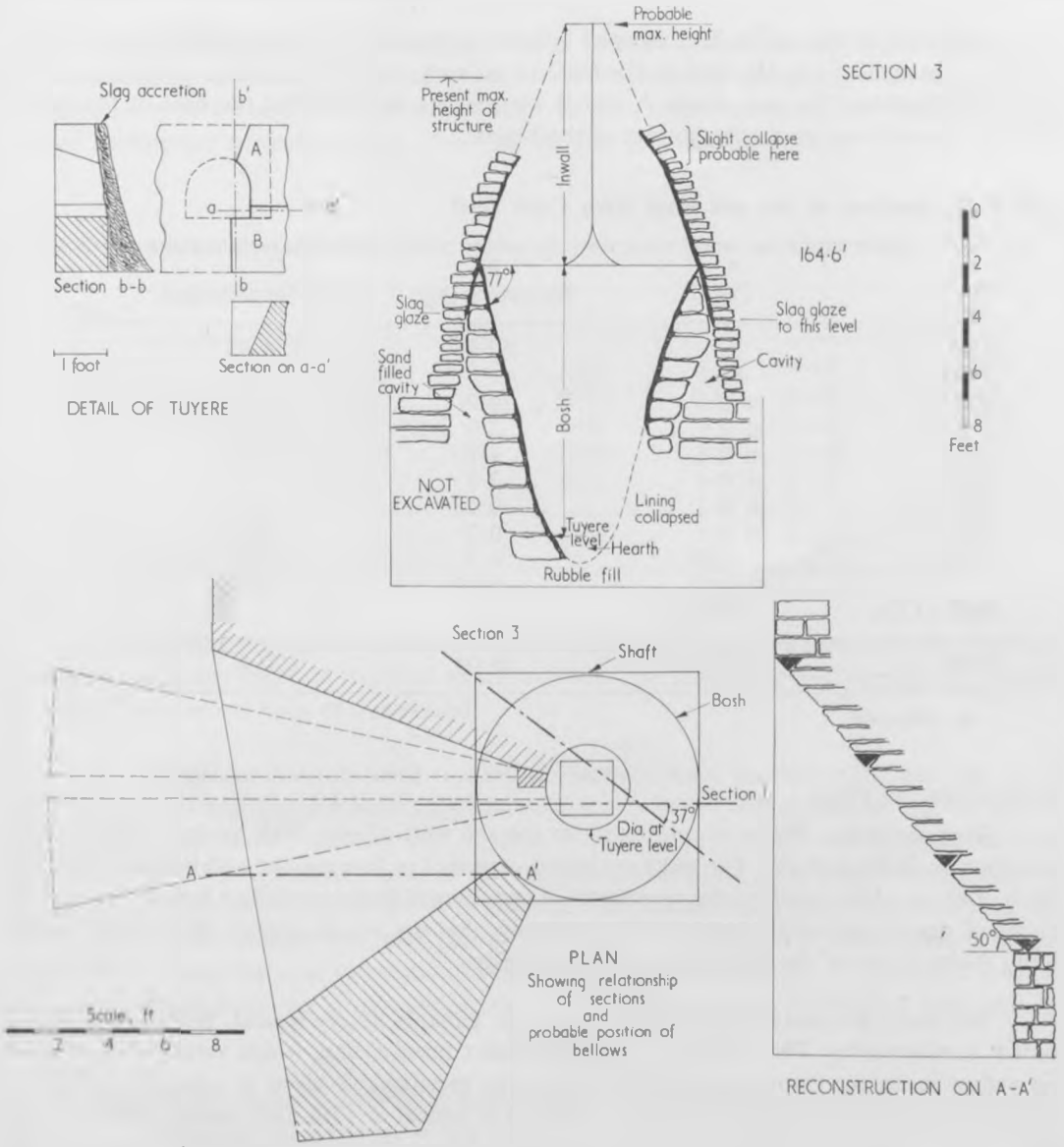

FIG. 5. Furnace interior and detail of openings and tuyere

half way up the interior of the furnace. The maximum internal diameter was 7 ft. 6 in. It is clear from the slaggy glaze on the lower part of the shaft behind the present lining that at one time the top of the bosh was at least 2 ft. lower down. Presumably the opportunity was taken during a reline to raise the height of the bosh. One can understand that a bosh involving the junction of a square shaft and circular hearth must have been difficult to construct and maintain, and it is quite possible that sticking and accretion problems suggested to the operators that it would be a good idea to raise this point to a level where the charge would not be so sticky.

Sufficient of the tuyere had escaped general destruction to show its level and its construction (*see* detail in fig. 5). It is in the form of an arch, unlike the conical tuyere from Melbourne, Derbyshire. The two stones A and B were *in situ* showing that the base of the tuyere would be about 18 in. above the bottom of the hearth.

TABLE I Analyses of ore and slags from Coed Ithel

Wt-%	A Ore	B Bloomery slag	C Blast furnace slag
FeO	..	67·5	4·75
Fe_2O_3	87·5	..	..
SiO_2	< 0·5	20·9	62·8*
Al_2O_3	< 0·1	2·8	7·3
CaO	< 0·5	4·7	15·9
MgO	< 0·1	2·3	8·4
TiO_2	< 0·1	0·1	0·3
MnO	< 0·1	0·2	0·4
P_2O_5	0·08	0·5	0·13
S	0·01	0·04	0·01
H_2O+CO_2	10·07	..	..
Total	< 99·06	99·04	100·0

* By difference

EXAMINATION OF FINDS

Ores and slags Pieces of ore found on the site were of very high grade, as the analysis in column A, Table I shows. The piece examined consisted of fine-grained and lamellar goethite, which often occurred in spheroidal aggregates. Aggregates of finely crystalline hematite and small prisms of quartz were also present. After roasting, this ore would contain 99% Fe_2O_3 which would make it one of the richest ores in the country.

The black bloomery slag (analysis column B, Table I) is very typical. But its phosphorus content is noteworthy. The analysis of the glassy blast furnace slag, which varied between blue and yellow in colour (sometimes greyish, sometimes greenish), is given in column C. With its iron content and comparatively low lime content it is typical of 17th–18th century blast furnace slags.

Metal Three pieces of iron were found. These were probably formed by overflow from the main casting stream to the individual pigs. No. 2, found in the fill of Trench 1, was a grey iron with some white iron on the surface which consisted of pearlite and cementite arising from a coarse eutectic structure. Graphitization had occurred along cracks starting from the surface. There was a little acicular ferrite in the pearlite and also some traces of an angular grey phase that might have been TiC. Phosphide and sulphide were absent. The hardness at the centre was 239 HV5.

Piece 1 was also found in the fill, but No. 3 was found stratified in layer 2 of Trench 1. (fig. 4, Section 2). Both these consisted of grey iron with graphite and pearlite. Some phosphide was present in both these, but little or no MnS. In both cases the matrix had suffered a good deal of preferential corrosion at the edges, leaving the graphite unattacked.

TABLE II Chemical analyses of three pieces of cast iron found at Coed Ithel

Wt-%	No. 1	No. 2	No. 3
Total C	3·89	3·65	4·43
Si	0·58	0·58	0·60
Mn	0·08	0·08	0·08
S	0·043	0·051	0·108
P	0·39	0·36	0·43
Weight, lb.	1·25	0·75	1·25

The chemical analyses of the three pieces are given in Table II. These show the moderate phosphorus contents expected from the microstructure. The low silicon and manganese contents are typical of charcoal irons of this period[7].

The phosphorus contents come as a bit of a surprise since the Forest of Dean ores are of very high quality and are comparatively free of this element (Table I). But as can be seen in column B of Table I, the bloomery slag contains 0·5% P^2O^5 and if (as is very likely in the early days when No. 3 was deposited) most of the charge was bloomery slag, this could account for the higher phosphorus content of the iron. Even so, the bloomery slag could not have been obtained from Forest sources but must have come from the Greensand area (Oxford or the Cotswolds) or from the coal measures of Monmouth or Worcestershire. If the latter, it could have been shipped down the Severn and up the Wye or, if the former, would have been brought across country.

There is little doubt that the three pieces of cast iron found come from a period when the bloomery slag assumed the majority of the charge, if not all of it. The lime in the blast furnace slag could all have been derived from that in the bloomery slag. Once additions of Forest ore were made, limestone would have to be added. Since the ore occurs in contact with limestone, poorer sorting would see to this.

The sulphur content of the pieces is rather high for a charcoal iron. As mentioned, coal was found on the site and was certainly used for roasting the ore. The Forest coals tend to be high in sulphur, and roasting could therefore be responsible for this. The contents of phosphorus and sulphur in the cast metal would not make a very high quality wrought iron.

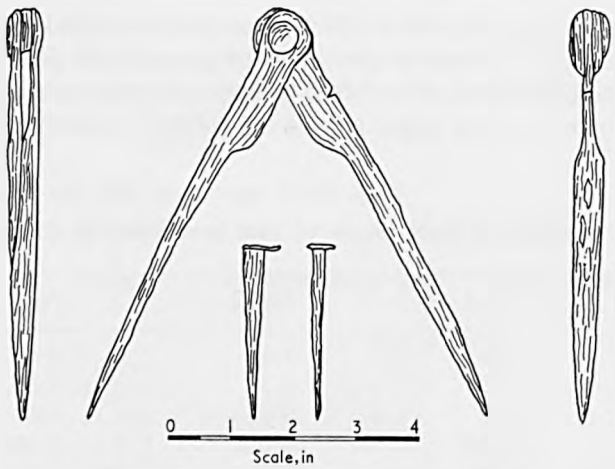

FIG. 6. Compasses and nail from Coed Ithel.

The compasses are shown in fig. 6 and are made of wrought iron. Today, these would be called dividers as both ends have sharp points. The type could have been in use at any time between the 14th and the 19th centuries. They could have been used by masons or carpenters for scribing arcs or setting off distances. Their size suggests that they are more likely to have been used on this site by wood-workers rather than masons as there would have been little intricate stonework.

Some wrought iron nails were found of the type also shown in fig. 6. These may have been used for securing leather to the bellows boards.

TABLE III Coed Ithel charcoal

Area	Oak	Elm	Ash	Beech	Birch	Willow-poplar	Alder	Others
Trench 1A. Layer 2	3	2	2	1	1	8	..	Crab. 2
Trench 1B. Layer 2	1	1	2	3	..	4	1	
Trench 1C. Layer 1	6	1	2					unidenti-fied 1
Total	10	4	6	4	1	12	1	3

Charcoal The results of the charcoal analysis are shown in Table III. There is no clear preference for any one type. This is usual for periods following the Medieval period in this country, although one would have expected that oak would have predominated in an area like this. It seems that most of the wood came from outside the Forest proper, presumably from the Monmouthshire side of the Wye.

Pottery A small amount of pottery was found covering the 16th–19th centuries, but almost all was in the topsoil. However, that which was found in a stratified layer in the south end of Trench 1 was datable to the 16th century onwards. All that this shows, therefore, is that there is no evidence for an earlier usage of the site prior to the 16th century. This particular group of potsherds would be quite at home in the mid 17th century.

The finds have been deposited in the Newport Museum.

Discussion

The plan shows a furnace structure about 24 ft. square. The present maximum height from foundation level is about 20 ft., and it is clear that the furnace never exceeded this by more than a foot or two. The fact that the height of the leat-retaining wall above the tuyere level is 13½ ft. could give a minimum length of bellows of 12 ft. and a minimum wheel diameter of 13 ft. and would necessitate the launder being 16 ft. above the tuyere level. This would suggest that the leat was carried some 2 to 3 foot above the present level of the retaining wall. These are minimum measurements. According to Nicholls[8], the bellows in a Forest furnace in 1711 were 18 ft. long and 4 ft. wide. These would permit a wheel at Coed Ithel 25 ft. in diameter (this compares with 23 ft. at Lydbrook) and would necessitate raising the launder some 15 ft. above the present retaining wall. This would be perfectly possible.

The overall capacity of the furnace would have been 421 ft^3. The capacity of the hearth below the tuyere level is 8.2 ft^3, equivalent to about 1·65 tons of iron. The presence of a fore-hearth, for which there was no evidence due to the general destruction, but which must have surely existed, would double this volume. Some slag volume must be allowed for, and it would seem that the volume available for iron could not exceed about 2½ tons. If the output figures of 18 tons per week apply to Coed Ithel then it would be necessary to tap at least every 18 hours. Normally tapping periods would be more frequent than this, and Lucas[9] mentions every 12 hours for Lancashire in 1717.

Conclusion

The lines of this furnace are, on present historical evidence, unique. The nearest we get to them is in Powle's sketch, and it is clear that these have never been accepted as the lines of a typical furnace. But the furnace at Sharpley Pool, Worcestershire, at present being excavated by some Midlands members of the Historical Metallurgy Group, has lines very similar to those from Coed Ithel, with a bosh angle of about 80°. The remains of the furnace at Cannock, excavated by G. R. Morton[10], appear to have had a bosh angle of 78°. It seems therefore that we have here three examples of a 16th–17th century type.

The cast iron produced seems to have been a typical charcoal iron, grey but with low silicon content. At some stage in the production large amounts of a phosphorus-containing bloomery slag have been added to the charge.

Acknowledgments

This excavation was mainly conducted by members of the Archenfield Archaeological Group during Easter 1964. I would like to record my indebtedness and thanks to the following members of the group and others who took part in the excavation: Kathleen Amorre, Hugh Armstrong, Colonel A. Bellhouse, Norman Bridgewater, Andrew Clarke, Tony Feest, Andrew Fleming, Peggy Howe, John Inglis, and Arthur Selway. I must thank D. Thacker for helpful discussion regarding the compasses, and Eric Parsons for his examination of the pottery.

I would also like to thank Mr. Crum on whose land the site lies for permission to excavate, and Dr. C. Scott-Garret and Norman Bridgewater for introducing me to the site.

I am also indebted to the staff of the Joint Museum of Antiquities at the University of Newcastle-upon-Tyne for cleaning the metalware; the Committee of Archaeology of the same university for a grant towards the expenses of the excavation; to the United Steel Companies Limited and the British Cast Iron Research Association for the analyses; to the National Library of Wales for supplying the extract from Badminton 1631 and to the Badminton Estate for permission to reproduce it.

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REPORTS OF MEETINGS AND FIELD DAYS

The 120th Annual General Meeting of the Association was held on 11th February, 1967, at the Memorial Hall, Usk.

In the absence of the President, the chair was taken by the Chairman of Committee, Col. E. R. Hill, D.S.O. There were 71 members present.

The Hon. Treasurer reported that the Association's Current Account stood at £117, and the Deposit Account at £146 19 0d.

The Hon. Secretary reported that five members had resigned owing to ill-health or removal from the district, and four new members were elected.

The committee were re-elected *en bloc*.

The Hon. Editor reported that owing to pressure of work and other factors there would be some delay in the issue of the 1967 *Monmouthshire Antiquary*.

Arrangements were made for two whole-day excursions and the Hon. Secretary suggested that members might be interested in having two informal half-day excursions in addition. The suggestion was approved.

On completion of business, an illustrated lecture on " The White Monks of Gwent " was delivered by Mr. David Williams, M.A. Tea was afterwards served.

Field Days

HALF-DAY EXCURSION, 4TH MAY, 1967

For the first half-day excursion some forty members met at Penrhos Farm, where Dr. M. Siddons read a paper on the Williams family and indicated the features of the house, and members inspected the fortifications of the hill above.

At Lodge Farm, Caerleon, members were welcomed by Mr. and Mrs. T. Till, and despite heavy showers were able to view the Iron Age hillfort under the guidance of Mr. George C. Boon. Mr. and Mrs. Till afterwards kindly entertained members to tea.

SPRING EXCURSION, 10TH JUNE, 1967

A visit was paid to Frampton-on-Severn where some eighty members were able to view the remarkably fine house under the guidance of their hosts, Major and Mrs. Clifford, the family home for many generations. The orangery, now converted into a charming dwelling, and the garden and the village gave much pleasure. A picnic lunch was taken in the garden, after which members visited Berkeley Church, where they were received by Canon A. Jones.

HALF-DAY EXCURSION, 27TH JULY, 1967

A visit was paid to St. Woolos Cathedral and in the unavoidable absence of the Dean of Monmouth, Mr. Cefni Barnett gave a talk on the history of the Cathedral and indicated the features of the Church.

A violent rain storm was responsible for the cancellation of the intended visit to the Tredegar hillfort, on the outskirts of Newport, but some hardy individuals braved the elements.

AUTUMN EXCURSION, 23RD SEPTEMBER, 1967

At Abercynrig House, Breconshire, a large gathering of members was received by Mr. and Mrs. Lloyd. The Rev. J. Jones-Davies, Hon. Curator of the Brecknock Museum and author of a brochure on Abercynrig, gave an account of the Lloyd family and pointed out the many interesting features of the house. Members afterwards divided into small parties to go through the house under the guidance of Mr. and Mrs. Lloyd. A picnic lunch was taken in the gardens, after which a visit was paid to the nearby salmon hatchery.

At Tretower Court members were met by Mr. Jeremy Knight, who described the history and features of this well-preserved site. Tea was afterwards taken at Gliffaes Country Club.