



§. 116.





Yours very truly
Henry S. Ball

TRANSACTIONS

OF THE

WOOLHOPE

NATURALISTS' FIELD CLUB.

(INCORPORATED 1851)

1883 - 1884 - 1885.



HEREFORD

PRINTED BY LARMAN AND ARNOLD, 4 & 5, HIGH STREET, FOUR TOWNS.

1886



James F. Ball
James F. Ball

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OF THE
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[ESTABLISHED 1851.]

1883—1884—1885.

“HOPE ON”



“HOPE EVER.”



HEREFORD:

PRINTED BY JAKEMAN AND CARVER, 4 & 5, HIGH TOWN.

1890.





ERRATA ET ADDENDA.

PAGE vi., LINES 19, 21, 23.—For “M.B.I.O.U.” read “M.B.O.U. (Member of the British Ornithological Union).”

PAGE 39.—Add to the footnote: —“The highest altitude of Oldbury Camp has since been ascertained, on the authority of the Ordnance Survey, to be 615 feet.”

PAGE 47.—Add to the footnote: —“The highest altitude of Caplar Camp has since been ascertained, on the authority of the Ordnance Survey, to be 596·6 feet.”

PAGE 135, LINE 2.—For “April 26th” read “April 24th,” and in line 4, after the word “Thursday,” insert “April 24th.”

PAGE 235, LINE 11.—For “Hohecorne” read “Hauchecorne.”

PAGE 238, LINE 25.—For “Van Mons. (Leon de Clerc),” read “Van Mons. Léon Leclerc.”

PAGE 273, LINE 3.—After the word “Thursday,” insert “April 16th.”

PAGE 354, LINE 2.—For “M.B.I.O.U.” read “M.B.O.U. (Member of the British Ornithological Union).”

TRANSACTIONS FOR THE YEARS 1883, 1884, 1885.

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WOOLHOPE NATURALISTS' FIELD CLUB.

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 Norman, Mr. John, Ross.
 Oakeley, Rev. W. Bagnall, Newland, Coleford, Gloucester.
 Orgill, Rev. V. T. T., 42, Mill Street, Ludlow.
 Owen, Mr. Edward Annesley, Fairfield Court, Temple, London.
 Owen, Rev. E. J. Tretire, Ross, Herefordshire.
 Paris, Mr. T. C., Hampton Lodge, Hereford.
 Pelly, Rev. Stanley, Horneyold House, South Bank, Hereford.
 Phillott, Rev. H. W., Staunton-on-Wye, Hereford.
 Phillott, Mr. G. H., Trevor House, Leckhampton, Cheltenham.
 Piper, Mr. Geo. H., F.G.S., Court House, Ledbury.
 Poole, Rev. Wm., Hentland, Ross.
 Power, Capt., The Hill Court, Ross.
 Powell, Rev. T. Prosser, Peterchurch.
 Price, Rev. David, Little Marcle, Ledbury.
 Pulley, Mr. Joseph, M.P., Lower Eaton, Hereford.
 Purchas, Mr. Alfred, Broad Street, Ross.
 Rankin, Mr. James, M.P., Bryngwyn, Hereford.
 Ridley, Rev. O. M., Bishopstone, Hereford.
 Riley, Mr. John, Putley Court, Ledbury, Herefordshire.
 Roberts, Mr. A. W., Castle Hill, Hereford.
 Robinson, Mr. Stephen, Lynhales, Kington.

Ronalds, Mr. Hugh, Edgecombe, Swainshill, Hereford.
 Rootes, Mr. Charles, St. Owen Street, Hereford.
 Salwey, Mr. Theophilus, Ludlow.
 Severn, Mr. J. P., Penybont Hall, Penybont.
 Shackleton, Rev. Thomas, Broomy Hill, Hereford.
 Shaw, Mr. W., King Street, Hereford.
 Shellard, Mr. Orlando, Barton Manor House, Hereford.
 Shepherd, Rev. W. R., Preston-on-Wye, Hereford.
 Southall, Mr. Henry, F.R. Met. Soc., Ashfield, Ross.
 Stanhope, Rev. and Hon. B. L. S., Byford, Hereford.
 Stoodley, Rev. and Hon. W. P. S., Holme Lacy, Hereford.
 Stoodley, Rev. T. A., County College, Hereford.
 Strong, Rev. P. H. S., Cagedale, Clehonger, Hereford.
 Symonds, Mr. J. F., Broomy Hill, Hereford.
 Tatham, Rev. F. H., Cathedral School, Hereford.
 Taylor, W., M.D., 21, Crockherbtown, Cardiff.
 Taylor, Rev. J. R. G., The College, Hereford.
 Tedman, Rev. J., Much Bireh, Ross.
 Thompson, Rev. G., La Châlet, Great Malvern.
 Trumper, Rev. T. Walwyn, Clifford, Herefordshire.
 Turner, Mr. Thomas, St. Owen Street, Hereford.
 Tweed, Rev. H. W., Bridstow, Ross.
 Vaughan, Rev. F. S. Stooke, Wellington Heath, Ledbury.
 Vevers, Mr. Henry, St. Owen Street, Hereford.
 Waldron, Mr. Clement, District Registrar, Llandaff.
 Warner, Rev. R. W., Almeley, Eardisley.
 Watkins, Rev. Morgan G., Kentchurch, Hereford.
 Whinfield, Col., Wyeville, Bridstow, Ross.
 Whitfeld, Mr. W. C., St. Ethelbert Street, Hereford.
 Wilson, Mr. Henry, Eastnor House, Great Malvern.
 Wood, J. H., M.B., Tarrington, Ledbury.
 Woodhouse, Mr. J. G., Burghill House, Hereford.
 Woollett, Mr. R. F., The Mount, Newport, Mon.
 Wyatt, Rev. W., Broughton Rectory, Brigg, Lincolnshire.

MEMBERS ELECTED.

1883.

Brydges, Sir Harford, J. J., Bart., Boultonbrook, Presteign.
de Winton, Capt. R. H., Graftonbury, Hereford.
du Boulay, Capt., R.E., Newton House, Hereford.
Elliot, Rev. Wm., Brinsop Vicarage, Hereford.
Kerr, Capt., H., R.E., Aylstone Hill, Hereford.
Matthews, Mr. S. R., St. Owen Street, Hereford.
Price, Rev. David, Little Marcle, Ledbury.
Ronalds, Mr. Hugh, Edgecombe, Swainshill, Hereford.
Strong, Rev. P. H. S., Cagedale, Clehonger, Hereford.
Thompson, Rev. G., La Châlet, Great Malvern.
Wilson, Mr. Henry, Eastnor House, Great Malvern.

1884.

Ashley, Rev. G. E., Stretton Rectory, Hereford.
Atkinson, Mr. T. R., Madley, Hereford.
Attwood-Mathews, Mr. B. St. John, Pontrilas Court, Hereford.
Bainbridge, Mr. F., Gattonside, Hampton Park, Hereford.
Billiald, Mr. R. A., Kington, R.S.O.
Collins, Mr. F. S., Solicitor, Ross.
Colborne, Langdon, Mus. Doc., Cathedral Close, Hereford.
Glendinning, J., M.D., Larchfields, Abergavenny.
Hancocks, Mr. A. A., Broomy Hill, Hereford.
Jones, Mr. Wm. H., Cherbourg, Great Malvern.
Jenkins, Rev. W. R., Ballingham, Ross.
Lambert, Rev. J. H., The Cloisters, Hereford.
Lee, Rev. J. W., Brilley, Hereford.
Owen, Mr. Edward Annesley, Fairfield Court, Temple, London.
Pelly, Rev. Stanley, Horneyold House, Bodenham Road, Hereford.
Trumper, Rev. T. Walwyn, Clifford, Herefordshire.

1885.

Bird, Mr. Charles P., Drybridge, Hereford.
Campbell, Capt., Tillington Court, Hereford.
Croft, Sir Herbert, Bart., Lugwardine Court, Hereford.
Davies, Mr. Gilbert, St. Nicholas Street, Hereford.
Ely, Rev. Edwin A., Bwlch, Trewyn, near Abergavenny.
Lambert, Rev. W. H., Stoke Edith Rectory, Hereford.
Molony, Major, Fairfield, Peterchurch.
Oakeley, Rev. W. Bagnall, Newland, Coleford, Gloucester.
Powell, Rev. T. Prosser, Dorstone.
Watkins, Rev. Morgan G., Kentchurch, Hereford.
Whinfield, Colonel, Wyeville, Bridstow, Ross.

R U L E S

OF THE

Woolhope Naturalists' Field Club.

I.—That a Society be formed under the name of the “WOOLHOPE NATURALISTS' FIELD CLUB,” for the practical study, in all its branches, of the Natural History of Herefordshire, and the districts immediately adjacent.

II.—That the Club consist of Ordinary Members with such Honorary Members as may be admitted from time to time; from whom a President, four Vice-Presidents, a Central Committee, Treasurer, and Honorary Secretary be appointed at the Annual Meeting to be held at Hereford in the early part of each year. The President and Vice-Presidents to change annually.

III.—The Central Committee shall consist of three Members, resident in the city or in its immediate vicinity, with the President, Vice-Presidents, and Honorary Secretary, *ex-officio*. It shall be empowered to appoint an Assistant Secretary; and its duties shall be to make all the necessary arrangements for the meetings of the year, and take the management of the Club during the intervals of the meetings.

IV.—That the Members of the Club shall hold not less than three Field Meetings during the year, in the most interesting localities for investigating the Natural History of the district. That the days and places of such regular meetings be selected at the Annual Meeting, and that ten clear days' notice of each be communicated to the Members by a circular from the Secretary; but that the Central Committee be empowered, upon urgent occasions, to alter the days of such regular Field Meetings, and also to fix special or extra Field Meetings during the year.

V.—That an Entrance Fee of Ten Shillings shall be paid by all Members on election, and that the Annual Subscription be Ten Shillings, payable on the 1st of January in each year to the Treasurer, or Assistant Secretary. Each Member may have the privilege of introducing a friend on any of the Field days of the Club.

VI.—That the Reports of the several meetings and the papers read to the Club during the year, be forwarded, at the discretion of the Central Committee, to the *Hereford Times* newspaper for publication as ordinary news, in preparation for the *Transactions* of the Club.

VII.—That the cost of any lithographic or other illustrations be defrayed by the author of the paper for which they may be required, unless the subject has been taken up at the request of the Club, and in that case, the cost of such illustration, to be paid for from the Club funds, must be specially sanctioned at one of the general meetings.

VIII.—That the President for the year arrange for an address to be given in the field at each meeting, and for papers to be read after dinner; and that he be requested to favour the Club with an address at the Annual Meeting on the proceedings of the year, together with such observations as he may deem conducive to the welfare of the Club, and the promotion of its objects.

IX.—That all candidates for Membership shall be proposed and seconded by existing Members, either verbally or in writing, at any meeting of the Club, and shall be eligible to be balloted for at the next meeting, provided there be FIVE Members present; one black ball in three to exclude.

X.—That Members finding rare or interesting specimens, or observing any remarkable phenomenon relating to any branch of Natural History, shall immediately forward a statement thereof to the Hon. Secretary, or to any member of the Central Committee.

XI.—That the Club undertake the formation and publication of correct lists of the various natural productions of the County of Hereford, with such observations as their respective authors may deem necessary.

XII.—That Members whose subscription shall remain for *three* years in arrear, after demand, shall be held to have withdrawn, and their names shall accordingly be omitted from the list of Members at the ensuing Annual Meeting.

XIII.—That the Assistant Secretary do send out circulars, ten days at least before the Annual Meeting, to all Members who have not paid their subscriptions, and draw their particular attention to Rule XII.

XIV.—That these Rules be printed annually with the *Transactions*, for general distribution to the Members.



Woolhope Naturalists' Field Club.

APRIL 4th, 1883.

THE Annual Meeting of the Woolhope Club took place on the 4th inst., in the Club-room, at the Free Library. Present—Mr. Thomas Blashill (the President, and in the Chair), Messrs. Cam, Griffith Morris, Kempson, Shellard, Burlton, Moore, Southall, James Davies, and Docking; the Revs. R. H. Cobbold, F. S. Stooke-Vaughan, V. T. T. Orgill, and H. B. D. Marshall; and Drs. Bull and Chapman; who were afterwards joined by Sir John Maclean, Mr. James Rankin, M.P., Messrs. Pateshall, Colt-Williams, J. F. Symonds, Joseph Carless, Levason, Peyton Levason, Shaw, and the Rev. Hargreaves Heap. The financial statement for the year was read, and ordered to be entered on the minutes.

The following gentlemen were elected members of the Club:—Sir Harford J. Jones Brydges, Bart., Captain de Winton, the Rev. P. H. Strong, and Mr. S. R. Matthews; and four others proposed for election at the next meeting.

The following places were next fixed upon for the Field Meetings of the present year:—

Ledbury and Wall Hills—Thursday May 24th.

Caplar Camp and Oldbury Hill—Friday, June 22nd.

Stratford-on-Avon—Ladies' Day—Thursday, July 12th.

Cainham Camp and Titterstone Clec—Thursday, August 23rd.

Fungus Foray—Thursday, October 4th (the locality hereafter to be decided upon).

The financial statement of the *Herefordshire Pomona* was then presented and read, and it was reported that the drawings for Part VI. and the accompanying letterpress were all in course of publication.

The dinner took place at the Green Dragon Hotel, and was necessarily the more quiet since the papers were reserved for the evening.

An evening reception was held at the Free Library, to which the Mayor and members of the Corporation were invited, together with as many other guests as the room would conveniently accommodate. The Library being closed on Wednesday, the whole space of the institution was available for the occasion. The Woolhope Club Room has recently been fitted with glazed bookcases covering each end, and with a series of glass cases along the back for the exhibition of fossils. This not only gives the room a very handsome appearance, but it provides the improved and increased supply of bookshelves which were so much required for the Library. Many of the books are very valuable, and they will now be more carefully preserved than was possible before; and the fossil cases were equally necessary to exhibit the many local fossils of the district for study, and for the in-

spection of geological visitors. The room, too, has been supplied with proper lights, tables, &c. For this reception, every preparation had been made to entertain the visitors. Rev. E. J. Holloway, Messrs. H. C. Moore, Edgar Morris, J. Griffith Morris, and Mr. With had powerful microscopes arranged to exhibit a most interesting series of objects. It is impossible now to do more than mention the most remarkable, and they certainly were those virulent minute funguses which are so fatal to human and animal life. They are so minute as to require a magnifying power of 2,000 times to show them, and they can therefore only be shown by the most powerful microscopes. Mr. With exhibited thus the *Bacillus Anthracis*, which is the cause of splenic fever, and which destroys so many thousands of animals; he also showed what was even more interesting to most people, and that was the *Bacillus*, which is now supposed by many observers to be the cause of consumption, with other *Bacilli* and *Micrococci*; Mr. With's whole time was occupied throughout the evening in showing these minute objects to the visitors. On the central tables were cases filled with a complete collection of British butterflies and moths, most beautifully preserved and exhibited by Dr. Chapman. There were also laid out many illustrated books of funguses and drawings—not to pass over the several numbers of *The Herefordshire Pomona*, which meets with such general approval. On the walls of the room, above the fossil cases, were hung a most interesting series of photographs. At the upper end of the room were the likenesses of Lindley, Murchison, Lyell, Darwin, and other leading men of science, honorary members of the Club; whilst on the other side were many photographs of the working scientific men belonging to the Club—Berkeley, Cooke, Wren Hoskyns; Rev. James Davies, McCullough, and many others. Between the windows hung the portrait of the late Mr. Mackay Scobie, the father of the present Mayor of Hereford, who was the first honorary secretary and the chief founder of the Woolhope Club. An hour was spent very pleasantly by the visitors in inspecting all the various objects of interest in the Club Room. At nine o'clock, in accordance with the programme, they adjourned to the Museum Room to hear the papers.

Dr. Bull, at the request of the President and Committee, called attention to several circumstances that combined to render the meeting a memorable one in the annals of the Club, dwelling in particular on the satisfaction they had in cordially welcoming their principal guest—the chief magistrate of the city—as the son of the founder of the Woolhope Club. In 1851, he said, the idea of establishing a Naturalists' Club, in imitation of the Cotteswold and Tyneside Clubs, arose in two or three directions, but it was due to the energy and ability of Mr. Mackay Scobie, the Mayor's father, that all parties united and the Club was really formed. Mr. Scobie, recognising the unparalleled field for the study of geology afforded by Herefordshire, threw all his energy into the subject, and was quickly rewarded by making some of those discoveries which always await the diligent student of nature. Mr. Scobie discovered the dome of Silurian rock which appears on the surface in Hagley Park. It was previously unknown, for it had escaped the careful Government survey by the officers of the Ordnance Department. Here, too, in the "fish-bone bed," he met with the remains of that remarkable Silurian

lobster, *Pterygotus problematicus*. These discoveries created much interest, and the locality was visited by Mr. Hugh Strickland and Mr. Salter, who described and figured the fossil in the *Geological Journal*—a paper afterwards transferred to the Club's *Transactions*.* It was the enthusiasm created by this early success which gave the Club its name—"Woolhope,"—that village occupying the centre of the great upheaval of Silurian rocks in Herefordshire. Mr. Scobie became honorary secretary of the Club, and remained so until his death. There were many in that room who would remember how much his early and sudden loss was lamented. His bust of marble was presented to his family, and the sympathy felt by every one was very great. Had his life been spared, in all human probability, the rocks of Herefordshire would have been much better known, and the work of the Club would have been far greater than it has been. Dr. Bull mentioned many circumstances in the history of the Club, and the success of its work and publications. He paid a high compliment to Mr. Rankin, who, as a member of the Club, founded this institution, which becomes year by year more fully appreciated by the citizens of Hereford; and concluded by welcoming very cordially the presence of the two ladies, Miss Ellis and Miss Bull, whose great artistic talents have enabled the committee to publish that magnificent work—*The Herefordshire Pomona*—a work that will carry down the renown of the Woolhope Club for many generations to come.

The President, Mr. Blashill, then read a very able description of Dore Abbey, illustrated by many beautiful drawings.

Mr. Rankin read an able paper on "The Effects of Ocean Currents on Climate"; Dr. Chapman gave the history of "Bee Moths," and exhibited the creatures themselves; and lastly, Dr. Bull read for Miss Helen Caddick, a very amusing paper on "The Tame Hares of Caradoc."

Mr. Rankin and Mr. Alderman Symonds made some complimentary remarks, and the President thanked the Mayor, members of the Corporation, and all the other ladies and gentlemen who had done the Club the honour of attending the reception; and thus a very pleasant evening was brought to a close, and the feeling was general that the meeting was a great success.

The following is the list of visitors at the reception:—

LADIES.

Mrs. Armitage, Mrs. B. St. John Attwood-Mathews, Mrs. Barber, Miss M. Beddoe, Mrs. Bowen, Miss Bowen, Miss E. A. Bowen, Mrs. Bosley, Miss Broomhead, Mrs. Bull, Miss Bull, Miss E. M. Bull, Miss M. E. Bull, Mrs. Burgess, Miss Burgess, Mrs. Capel, Mrs. Carless, Mrs. Chapman, Miss Chapman, Miss L. Chapman, Miss Clarke, Miss Cust, Mrs. T. Davies, Miss Davies, Mrs. Daubeney, Mrs. Docking, Miss du Buisson, Miss Duncombe, Miss Ellis, Mrs. Entwistle, Miss Francis, Miss Goodwin, Miss Guthrie, Mrs. Heap, Mrs. H. S. Hall, Mrs. Holden, Miss Kent, Mrs. Knight, Mrs. Lambe, Mrs. Levason, Mrs. Lomax, Mrs. Maund, Mrs. McAdam, Mrs. Maybery, Miss Moberly, Mrs. Morris, Mrs. Musgrave, Miss Musgrave, Miss A. Musgrave, Miss E. Musgrave, Mrs. Myer, Mrs.

* *Woolhope Transactions*, 1870, p. 171.

Parker, Miss Pitt, Miss Powell, Mrs. Ralph, Miss Rankin, Miss Reeve, Mrs. Rogers, Hon. Mrs. Smith, Miss Smith, Mrs. Slade, Mrs. Slatter, Mrs. A. Smith, Lady Scudamore Stanhope, Mrs. Stallard, Mrs. Stoodley, Mrs. Stillingfleet, Miss Stillingfleet, Miss Steele, Miss B. Symonds, Miss Tomson, Miss Underwood, Mrs. Victor, Mrs. With, Miss With, Miss A. With, Mrs. Woods, Mrs. Colt-Williams, Miss de Winton, and Miss E. C. de Winton.

GENTLEMEN.

Mr. Whalley Armitage, Mr. B. St. John Attwood-Mathews, Mr. W. Barber, Mr. H. C. Beddoe, J.P., Mr. E. E. Bosley, J.P., Rev. C. C. Brugh, Mr. E. du Buisson, Rev. A. J. Capel, Mr. J. Carless, jun., Dr. T. A. Chapman, M.D., Mr. R. Clarke, Mr. O. E. Cresswell, Mr. G. Davies, Mr. J. Davies, Mr. J. Docking, Rev. T. Dowell, Rev. W. D. V. Duncombe, Mr. T. Entwistle, Rev. J. E. Grasett, Mr. H. S. Hall, His Worship the Mayor of Hereford, Rev. Hargreaves Heap, Mr. G. H. R. Holden, Rev. E. J. Holloway, Mr. E. K. Jakeman, Mr. T. Jones, Mr. C. Kempson, Mr. F. R. Kempson, Mr. J. H. Knight (Alderman and J.P.), Mr. J. Lambe, Mr. A. Levason, Mr. P. Levason, Mr. T. Llanwarne, J.P., Rev. J. J. Lomax, Mr. J. F. Lomax, Mr. W. J. Lomax, Mr. G. C. McAdam, Major Macgregor, Sir J. Maclean, Mr. C. G. Martin, Mr. S. R. Matthews, Mr. Thomas Maund, Rev. G. M. Metcalfe, Mr. H. C. Moore, Mr. E. Morris, Mr. J. Griffith Morris, J.P., Mr. J. Morris, J.P., Rev. Canon Musgrave, Mr. G. Myer, Rev. V. T. T. Orgill, Rev. E. Palin, Mr. J. Parker, Mr. Evan Pateshall, J.P., Rev. A. Phillipps, Rev. H. W. Phillott, Rev. J. C. Pyper, Mr. P. Ralph, Mr. J. Rankin, M.P., Mr. R. Rankin, Mr. H. Rogers, Rev. T. Shackleton, Mr. C. W. Slatter, Rev. Canon Smith, Mr. W. Stallard, Rev. H. Stillingfleet, Rev. T. A. Stoodley, Mr. H. Southall, Mr. J. F. Symonds (Alderman and J.P.), Mr. J. R. Symonds, Mr. Noel Symonds, Rev. F. H. Tatham, Rev. C. A. Treherne, Mr. E. M. Underwood, Mr. E. Colt-Williams, Mr. F. S. Wilmot, Capt. R. de Winton, J.P., Rev. Frank Woods.

ABBAYDORE.

By Mr. THOMAS BLASHILL, F.R.I.B.A

Just within the entrance to the Golden Valley, ten miles south-west of Hereford, and on a site that in ancient times was far remote from the busy world, stands the Church of Abbeydore. It consists of the transept, choir, and chapels of a building, once of noble size and beautiful detail, and which is even now one of our most interesting examples of architectural style.

Built in the 12th century as the church of a community of Cistercian monks (of whom I have given an account in my paper on Tintern Abbey, printed in the volume of our *Transactions* for 1877), it was in great part destroyed after the dissolution of the monastery in 1534. It then remained a ruin for almost exactly a hundred years, until it was restored to religious uses through the piety of a Herefordshire nobleman, whose family name of Scudamore had been connected with it from its early days, and was thus to become honourably attached to it for all time.

Leland, who passed through the Golden Valley shortly before the dissolution of the monasteries, and would hear the account then current, says that Dore was founded by Robert de Ewyas, youngest son of Harold, Lord of Ewyas, in King Stephen's time. From their charters and from other sources this account receives sufficient confirmation, the year of foundation being 1147, a date that agrees very well with the architecture of the oldest part of the church.

The site fixed upon was part of the parish of Bacton lying south of the river that gives its name to the valley. "Dwr," the ancient British name for water, was without doubt applied by the early inhabitants of this valley to the river, as being the most important piece of water within their daily view. The monks who settled here, to whom French would be a familiar tongue, slightly modifying the word, called their house the Abbey of the Val d'Or, a name of pleasant sound, which survives as the "Golden Valley" to this day. It is interesting to notice that there is a valley of the same name in Gloucestershire, and at least one other in England. I find also a notice of a Cistercian Abbey on the continent called "Aurea Valle." Leland's description of the site is still sufficiently accurate. He says "The Broke of *Dour* runneth by the Abbey of *Dour*, and there it breketh a little above the Monasterie into two Armes, whereof the less Arme renneth thoroughe the Monastery. The bigger Arme levith the Abbey a Bowe shot of, on the right hond or bank. The confluence is again hard bynethe the Abbey." This "lesser arm" is the artificial channel made by the monks to turn the Abbey mill, a purpose which it still serves, and afterwards to run as a cleansing sewer under the domestic buildings.

There are evident signs that certain parts in and near to the transept are older than the eastern end of the church, and, as these older parts exactly agree with the plan on which the Cistercians built all their early churches, I shall

venture to indicate what the early plan must have been, and the reason why it was soon afterwards changed for the fine arrangement which we now see. Buildwas is a good example of their older churches, which had a rather long nave with a very short choir, and transepts from which four chapels (sometimes six) projected towards the east. This gave them, besides the high altar for the more important services, four minor altars, which would be sufficient in the early days for the celebration of masses on less important occasions, and for the commemoration of deceased benefactors to the community. The church was, like all the Cistercian churches, dedicated to the Blessed Virgin Mary, whose name had then for some long time been rising in importance, and greatly exciting the devotion of all classes.

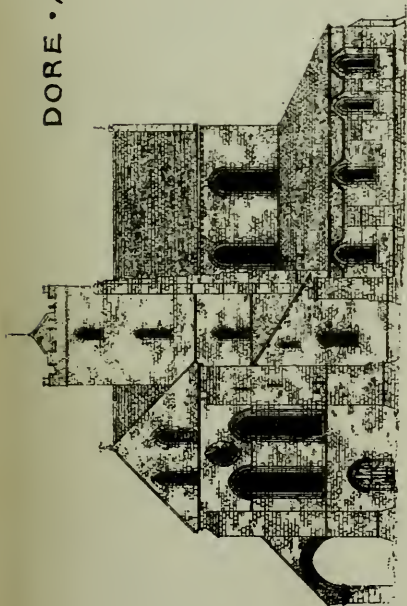
It is hardly probable that the church could be quite completed on this original plan before a great development took place in the ideas, and growth in the importance of the Cistercian order. When the wealthy laity began to desire to be buried with the Cistercian monks, or to have their names commemorated perpetually in their services, making large grants of lands to the abbeys, it became necessary to extend the modest dimensions of the original choirs, so as to provide several additional chapels with minor altars for these services. Now this might be done in different ways. The French rather favoured the idea of a chevet of chapels radiating round a semi-circular apse. Of this we have two English examples—at the abbeys of Croxden, in Staffordshire, and Bealieu, in Hampshire. But they were usually contented with adding aisles to the choir, and so obtaining space for additional altars. At Fountain's abbey, in the 15th century, they built an enormous transept east of the church, called the chapel of the seven altars. In the church of Byland abbey, Yorkshire, built just before Dore, they carried the aisle across the east end of the choir, affording space for more altars, but at Dore this idea was much developed by adding a range of five complete chapels outside the eastern aisle. Even these were found insufficient, as altars were afterwards added against the outer wall of the south aisle.

At Ebrach and Riddagshausen, in Germany, chapels were built out on both sides of the choir aisles. Ebrach is known to have been built with special intention for the burial of the laity, and, as to Dore abbey, Camden says, it was a place wherein very many of the nobility and gentry of these parts were buried; amongst them were Walter de Ploket, Ganfrid de Geneville, Walter de Clifford and Roger de Clifford.

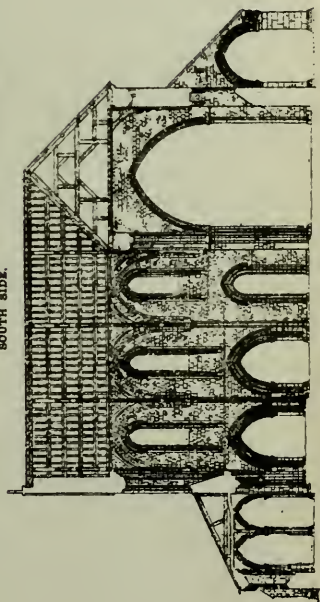
The new work was done in about 1185, which was the thirty-first year of Henry II. It is the most remarkable English example of the style called "transitional," between the Norman work of the 12th century and the early English work of the 13th century. All the arches are pointed and of beautiful proportions, while the large number of carved capitals are of types peculiar to the reign of Henry II., showing the early attempts of the sculptor towards the beautiful foliage of the 13th century, such as we see in the Lady Chapel at Hereford Cathedral. Some of these capitals, which are 700 years old, are, I think, unmatched in style and workmanship by anything done either then or since.

In the 13th century, a doorway, with beautiful ironwork, was made in the

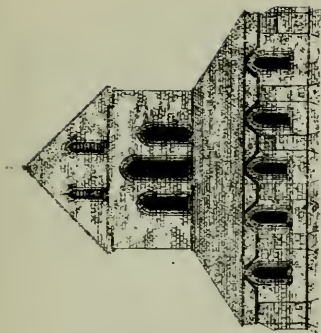
DORE • ABBEY.



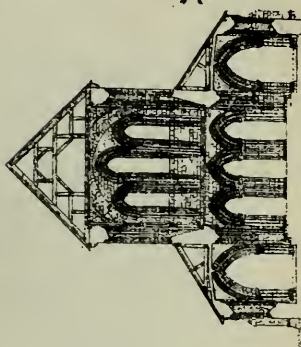
SOUTH SIDE.



SECTION LOOKING SOUTH.



EAST END.



SECTION LOOKING EAST.

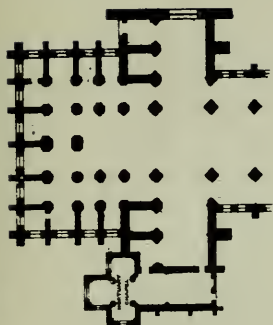
Woolhope Trans.
1857

W. H. Stiles

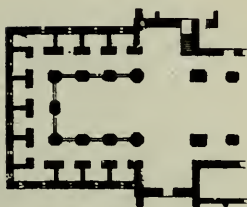


Woolhope Trans.
1883.

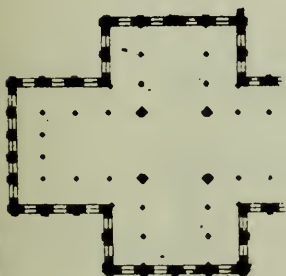
EBRACH



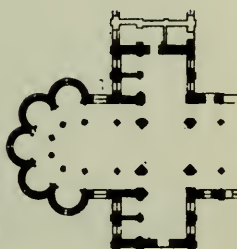
RIDDAGSHAUSEN



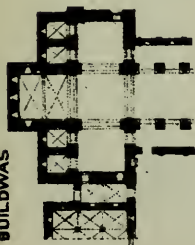
BYLAND



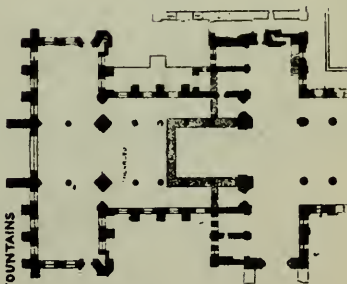
CROXDEN



BUILDWAS



FOUNTAINS



Thos. Blashie



Woolhope Trans
1883.

- DORE ABBEY -

MILL STREAM AND CULVER

NORTHERN BUILDINGS
(KITCHEN REPECTORY)

MONKS' DAY ROOM &c.
WITH DORMITORY OVER.

SITE OF CHAPTER HOUSE.
POLYGONAL - PROBABLY SIDED.

The picture of the site of the
house only and the site of the
house is shown in the plan.
The site of the house is
shown in the plan.

ENTRANCE TO CHAPTER HT

CLOISTER
GARTH

DOORWAY
TO
CLOISTER

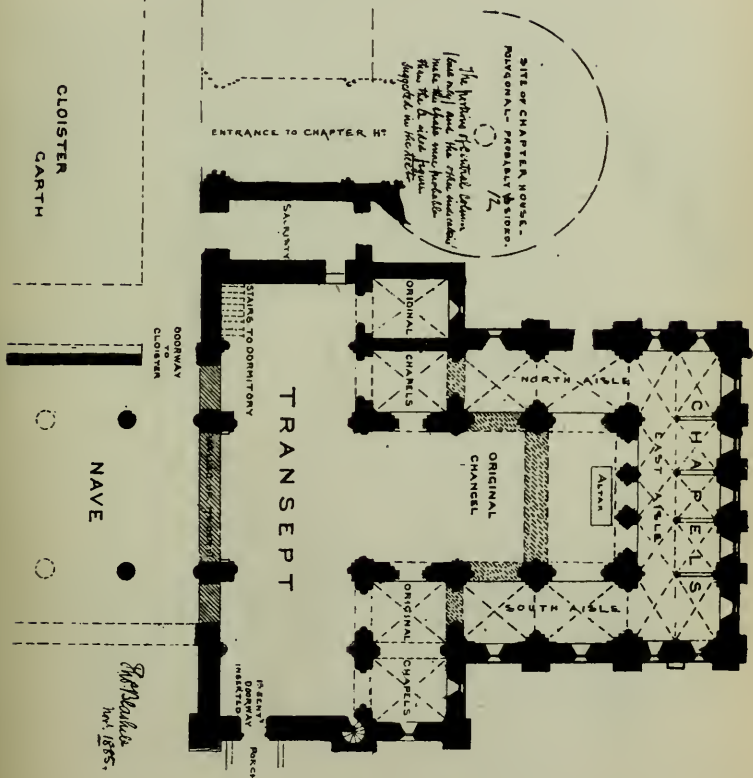
NAVE

TRANSEPT

STAIRS TO DORMITORY

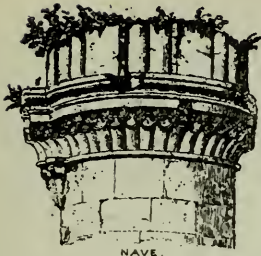
RECENT
DOORWAY
PARCH
INSERTED

Revised
Nov. 1885.

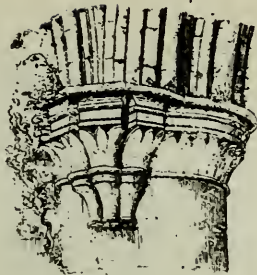




DORE • ABBEY.



NAVE.



NAVE



CHOIR



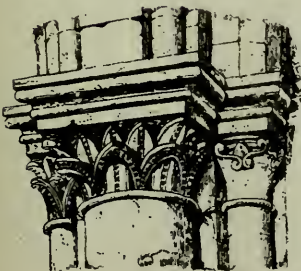
CHOIR



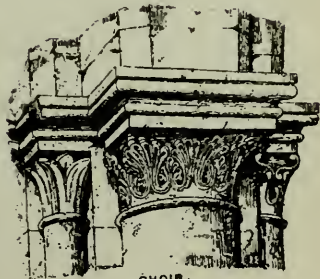
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north aisle, which might lead to the cemetery, and also allow the aged monks in the infirmary to get access to the chantry chapels without interfering with the privacy of the cloister. Another door was then added in the south transept to allow the laity to attend these services in the chapels, keeping clear of the choir of the monks.

The nave has been so nearly destroyed that we can only judge from the slight remains of the eastern arches that they must have been of the same date as the choir. The conventual buildings first built are also destroyed, but their junction with the north transept can still be seen. Similar marks of the loftier buildings that succeeded them in the 13th century also exist.

Before the middle of the 13th century large grants of land and of church livings had been made to the monastery, so that they had become possessed of extensive estates. In the fourteenth year of King Stephen,—two years after the foundation of the monastery,—Walter de Scudamore gave a parcel of land called Fulkes mead; Alan de Plokenet lord of Kilpeck, the Alans of Alansmore, the Cliffords, and others gave benefactions that can still be partially identified. In 1216, the last year of the reign of King John, he gave them “All the land between the river Dore and the rivulet called Trivelbrook,” a tract of 500 acres, extending to Whitfield.

It is not surprising that we find them about the middle of the 13th century executing considerable works. In 1260, Peter de Aquablanca, Bishop of Hereford, issued a letter granting 20 days abatement or release of penance to such as contributed to the building of “the sumptuous church of Dore.” This probably refers to the completion of the nave, which was of very great length. His successor, Thomas de Cantilupe, called St. Thomas of Hereford, consecrated the church at the risk of his life, owing to the armed opposition of the Welsh partizans of the Bishop of Menevia, who claimed part of the diocese. The church would be blessed only in its early stages, the fact of its consecration shews that it was considered complete. About the same time, that is, towards the middle of the 13th century, very extensive buildings were being erected on the east side of the cloister garth.

When our Club visited Abbeydore on 25th May, 1882, I formed the opinion that the chapter house had been not of the usual square form but polygonal, although no Cistercian abbey in Britain, except Margam, in the county of Glamorgan, was then known to have had a polygonal chapter house. By careful search and excavations we have since ascertained that the chapter house was a twelve-sided, or perhaps a six-sided building, of beautiful design, having a *clustered column* in the centre, the base of which was found by me in the rectory garden; from it the vaulted ribs sprung to the angles of the building. I think also that we have found parts of the small arcade that ran round the interior, forming stalls for the monks, and a base stone that stood in one of the angles of the building was found by me in the belfry. There is indeed evidence to show that the chapter house at Dore abbey was no unworthy precursor of those of Westminster, Salisbury, Wells, and Hereford. The chapter house at Margam abbey measured about 50 feet (internal diameter), which size I have adopted in the rough plan of Dore which accompanies this paper.

The other buildings of the monastery have been entirely destroyed. The site of the cloister is now part of the rector's kitchen garden. East of it was the chapter house, and probably a passage leading to the infirmary, a distinct building with its own chapel and kitchen, where the aged monks lived, free from care and from the austerities of the monastic life. Beyond this passage came the frater or day room of the monks, vaulted with stone, without fire, and partly open to the outer air. Over these was the dormitory, with a passage leading to a high doorway in the north transept wall, by which the monks entered the church when they came direct from their beds to the midnight and early morning services. This doorway exists, but the staircase leading down into the transept has been destroyed.

On the north side of the cloister would be three rooms, the calefactory, which was a small room with a fire, where they might warm themselves in very cold weather; the refectory, with a pulpit in which one of the monks read while the rest dined, having first washed their hands at a stone lavatory built in the cloister wall; and lastly came the kitchen.

On the west side came the day room and dormitory of the lay brethren, and probably the residence of the abbot. In the outer court, quite away from the cloister, would be the barns and workshops, and the abbey mill, where a mill now stands. As both rich and poor made a monastery a place for rest and lodging, there would be guest houses and an almonry close to the entrance gate.

Numerous fragments of carved work, belonging to the early part of the 13th century, have been found. They consist of foliage and sculpture equal to anything that was executed during the Gothic period, comprising bosses from the vaulted ceilings and carved capitals from the cloister buildings. Two mutilated effigies of knights of the 13th century are preserved in the church, and two large bosses from the vaulted roof; these represent the coronation of the blessed Virgin, and the Virgin with the infant Saviour. One small figure of a bishop, lying in the church, has long been a matter of curiosity. It is supposed from the inscription to have been placed over the burial place of the heart of John de Breton, Bishop of Hereford. One very interesting piece of stonework was found in an excavation lately made near the west end of the nave; it seems to have formed part of a shrine made in the 13th century, and when found was richly gilded. Many other beautiful bits of 13th century work are preserved in the garden at the rectory.

Towards the close of the 15th century, the ancient rule of the Cistercians against towers became relaxed, thus, at Fountains, Kirkstall, and Furness abbeys, towers were then built, and it is evident to me that the tower at Dore abbey is of that date, although it has always been said to be part of Lord Scudamore's work. Indeed, the consecration Deed, in which we might expect to find an authentic account of what was done, says that he furnished the church with "a chancel and seats, a belfry and bells." But it is abundantly clear that he did not build the chancel but only roofed it—that is in my judgment what he did to the tower, putting also in it two floors and the framing for the bells, all as set forth in John Abell's contract.

In 1236, Cadogan, Bishop of Bangor, resigned his see to become a monk of Dore. He was a scholar and author of a Book of Homilies called "a Looking Glass for Christians." In 1330, the abbot was Richard Straddel, no doubt a native of these parts, as the name occurs in two or three places near. He also was a writer of homilies, a branch of literature now little cultivated, I think. In 1380, Walter de Blasel, probably one of the monks, was presented by the Abbot and convent of Dore to the vicarage of Avenbury. The household expense book of Richard Swinfield, Bishop of Hereford, shows that he called at Dore, on the invitation of the Abbot, who is also recorded to have visited the Bishop. The Kings of England at different times employed the abbots of this secluded place on important embassies. In the eighth year of Edward III., the abbot was so sent to Philip, King of France, and again the next year. The abbots were also named in commissions to appease disorders on the Welsh border.

Dore abbey is specially mentioned as one which was always on good terms with the bishop—a somewhat rare and notable fact—and some proof of blameless conduct. Indeed the only piece of evidence which I have met with that tells against this monastery is, in another way, equally strong in its favour.

In the Harleian MSS. is a letter from the young Prince Arthur, the elder son of Henry VII., written *about* 1501, when he was a boy of 14, living on his manor of Bewdley. He writes as follows to the Bishop of Salisbury, introducing John, the abbot of Dore :—

B. M. Harl., 6158, f. 151.

"By Prince Arthure To the Right Reverend father in God our Righte trustye and welbeloved the bysshop of Salisburye.

"Right reverende fadre in god, Right trusty and welbeloved we grete you. Well and where we be enformed and also understand that by meane of suche inordinate Rule and governance as hertofore hath byn used within the moastary of Dore and precyncts of the same in the dayes of Damp Richard, late Abbote there, as well by graunts and lettres patents passed thens ayenst due ordre ande forme as otherwise, by excessive costs for defaulte of good oversight the said monastery is gretly in ruyn and decay. Wherthrough without the more speedy reformation the Divine service ther cannote be mayntened ne upholden to the laude and prayse of almyghty god, as belongeth in that partie. Wherefore and inasmoche as Damp John, nowwe Abbote ther of thordre of Cisteoux, admytted thether by the Reformation, and othrs fadres of that Religeon whiche by gods sufferannce and aide of vertuose and wel disposid people entendeth as he saithe to do for the weale, encrease ande Reducyng of the said place to the former good state and ordre as in hym is or shalbe possible. We desir and hertely pray you that in all suche his matiers and causes as he hath to pursue unto you at this tyme concernyng the premysses, ye wolbe his favorable good lorde accordyng to equitie and conscience. the rather at this our instance and contemplation of theis our lettres wherby you shall not only in our opinion do a dede meritorious anempst God but also unto us Right singuler Pleasure, ande over this that it may lyke you to gyve credence to the said nowwe abbote in the causes above recyted whiche can declare unto you the circumstances of the same more at legnth. Geven under our Signet at the manour of beaudeley the viii daye of June."

This was one of the mutterings which preceded the storm that was soon to break over the monastic orders. Thirty-three years afterwards, in 1534, all the smaller monasteries, those worth less than £200 per annum, were dissolved, and Dore abbey among them. The abbot, John Radburn, and eight monks went out to live on the scanty pensions allowed them. The abbey and its lands were granted to John Scudamore, one of whose descendants bought the great tithes that had belonged to the abbey.

The destruction of the abbey buildings began at once, and progressed as fast as the need for building materials arose in the neighbourhood. Of all the endowments that had existed for religious purposes there was left only one sum of fifty-eight shillings per annum, and before the church came to be restored, one John Gyles, [called "Sir Gyles"—as was the habit in those days]—used to come and read prayers in the ruins, standing under an arch to keep his book from the wet.

Such was the condition of things which was waiting amendment, and had to wait for just one hundred years. The story of the restoration of Dore abbey by John Viscount Scudamore belongs to another chapter of English history. The Reformation had been accomplished, the Puritans were getting the upper hand, literature and the arts were different in the minds and hands of the third generation of men. John Abell, the carpenter who put the new roofs upon the church, set about his work in a way that was then new, but is now old and forgotten.

I hope at some early opportunity to contribute to our *Transactions* that portion at least of the history of the restoration of Dore abbey.

The following list of Abbots is taken from Dugdale's *Monasticon*—

Adam the 1st.

Adam the 2nd, A.D. 1200.

Gothefridus, A.D. 1240.

Stephen de Wigorn, A.D. 1251.

Henry, A.D. 1263.

Hugh, elected A.D. 1293.

John, elected A.D. 1298.

Richard Straddel, elected A.D. 1330.

John, elected A.D. 1361.

Richard Rowcester, elected A.D. 1440.

Philip de Lluellin, elected A.D. 1478.

John Glynn, occurs 1523.

Thomas Clebury, died 1529.

John Radborn was the next, and last. He had a pension of £14 a year granted to him at the dissolution

EFFECTS OF OCEAN CURRENTS ON CLIMATE.

By MR. JAMES RANKIN, M.P.

I WISH, this evening, in the very few remarks which I have to make, to put before you one leading idea, so that you may be able to carry away and remember the object and aim of this short paper ; and the idea or point which I wish to impress upon you is this—That ocean currents are far more important agents in distributing the sun's heat over the surface of our globe than are the currents of air, or, as we call them, the winds.

To show this, I must ask your attention for a few minutes to some of the known facts connected with that most remarkable current called the Gulf Stream, and I take this current as an example because it is by far the best known.

I do not intend to discuss to-night the question of the dynamics of the Gulf Stream, but merely to institute a comparison between it and currents of air, with a view of testing which is the more important factor in the distribution of heat, and therefore the more important as an agent affecting the climate. The Gulf Stream, as is so well known, issues out of the Gulf of Mexico, round the Cape of Florida, as a current about 30 miles wide, 2,200 feet deep, and moving at the rate of 4 miles an hour, and its temperature is about 80° Fah.

Now it has been calculated that such a body of water carries with it into the Northern Atlantic Ocean an amount of heat equal to an energy of 77,479,650,000,000,000 foot pounds daily, or in other words a quantity equal to a quarter of all the heat of the sun poured upon that area. This amount of heat derived from the sun's tropical rays is equal to half the heat of the sun which falls upon the entire Arctic circle, or to an amount of heat dispersed over a belt of 32 miles wide on each side of the equator, or, on a surface of 1,560,935 square miles. This enormous amount of heat poured into the Atlantic, has the effect of carrying off the heat from the tropics, and distributing it over the temperate and polar regions, and its effect upon our island country is an elevation of temperature of 12° above the normal temperature of our latitude.

It must not, however, be supposed that 12° rise of temperature is the whole effect of the Gulf Stream upon the climate of our island, or of north-western Europe, or of the North Atlantic generally, but the 12° is only the rise above the mean or normal temperature of our latitude, for other places in the same latitude as we are have their temperature affected by ocean currents as well as we ; and on the other side the effect of cold Polar currents has to be considered, for the heat of the warm Gulf Stream is to a great extent employed in counteracting the depression of temperature caused by the Polar currents.

I will endeavour, very briefly, to show the probable fall of temperature in the North Atlantic were there no Gulf Stream of hot water.

We have seen that the amount of heat carried by the Gulf Stream equals the heat of the tropical sun on a surface of 1,560,935 square miles, and as the amount

of heat received from sun in temperate regions is to amount of heat received from sun in tropical regions as 9.08 is to 12, therefore the Gulf Stream conveys a heat equal to the heat from the sun in temperate regions over 2,062,960 square miles, and as the area of the Atlantic, north of the Straits of Florida, is 8,500,000 square miles, it follows that the heat carried by the Gulf Stream into the Atlantic is to the heat received from the sun over the whole area as 1 to 4, or very nearly. It follows, therefore, that of all the heat possessed by the Northern Atlantic, one-fifth is due to the heat of the Gulf Stream. Now, what is the measure of the heat of the waters of the Atlantic?

If there were no sun to impart heat to this earth, its temperature would fall to that of stellar space, which scientific men inform us is (minus) 239° Fah.

The actual heat of the water of the North Atlantic is about (plus) 56° Fah., therefore the heat of the sun and the heat of the Gulf Stream are able to raise the temperature of the water $239^{\circ} + 56^{\circ} = 295^{\circ}$ Fah. above stellar space, and we have already seen that one-fifth of this is due to the Gulf Stream, that is $\frac{295}{5} = 59^{\circ}$, or in other words 59° of heat is the heating power of the Gulf Stream in the Atlantic.

The method, of course, by which currents of water affect climate is by imparting their heat to the air which blows over them, and as water has a greater specific heat than air, by 4.2 to 1, and as the density of water is 770 times as great as air, it follows that to contain an equal amount of heat, the current of air must be 3,234 times as great as the current of water, if at the same temperature and the same velocity, it will be seen that a comparatively small current of water will have as great effect in distributing heat as a very much larger body of air. It has been calculated that the Gulf Stream carries with it as much heat as a volume of air 24,000 miles wide, and $1\frac{1}{4}$ miles deep, and moving at the rate of 2 miles an hour, at a temperature of 65° .

But the point I wish to call attention to is this, that the heated air at the equator never comes into the temperate zones as hot air heated by the rays of a tropical sun, (1) because the trade winds, which blow over tropical regions and take up tropical heat, blow from the temperate zones towards the equator, and not from the equator to the temperate zones, and (2) because the heated air of the equator rises and flows north and south as an upper current above the snow-line, and therefore in a very cold region, and hence by the time the equatorial upper current descends to the earth's surface to blow as a S.W. or N.W. anti-trade wind, it has become a cold or cool and dry wind, and as far as the North Atlantic is concerned, all its warmth and moisture is derived from contact with the Gulf Stream north of the point where the trade and anti-trade winds cross, which is in the northern hemisphere, in about latitude 30° N. Thus we see that it is to the heat carried off by the Gulf Stream from the equatorial regions into the Northern Atlantic that we owe the moisture and warmth of our south-west and west winds, and not to the currents of air or winds blowing direct from the tropics, as no such winds actually do blow, except as upper currents above the snow-line, when they become both cold and dry winds. And I wish particularly to draw attention to this fact, that all heated air has a tendency to rise, being lighter and more expanded than cold air, and hence it rises up from the surface of the earth and

becomes an upper current, giving out its heat for the most part into stellar space, and doing but little to warm other portions of the globe, whereas in the case of ocean currents, the warmest water comes to the surface, and flows over or along the surface of the ocean, giving out its warmth to the air above it, and, as I have already shown, heating a much greater volume of air than its own volume, and bringing heat directly from the hottest parts of the globe to the temperate and polar regions, thereby reducing the heat of the one region, and elevating the temperature of the other region. And, again, it must be noticed that the cold water currents sink to the lower strata of the ocean, and do not directly chill or cool down the *air* above them, though of course the cold currents have the effect of generally reducing the temperature of the ocean, and thus indirectly affect the climate. If all the equatorial regions of the globe were solid land, we should have no equatorial currents at all, and only very feeble currents in the temperate regions, and hence we should lose the benefit of the great amount of heat which I have shown comes into the Atlantic, and the effect would be an increase of heat about the equator, and a very considerable decrease of heat in the temperate regions, and to some degree a lowering or decrease in the heat of the whole globe, as the hot air over the tropics would ascend to the upper regions, and give out its warmth into stellar space. I must not, on this occasion, say more than to point out to you that equatorial currents flowing towards the poles exist in every ocean in both hemispheres.

THE TAME HARES OF CARADOC.

By Miss HELEN CADDICK.

"Other shelter'd hares
That never heard the sanguinary yell
Of cruel man, exulting in *their* woes."—COWPER.

On the 9th of July, 1880, four little leverets were found in some mowing grass at Caradoc. They were considered to be not more than a week old. They were too young to eat, and did not do so until nearly a fortnight afterwards. They were put together in a basket of hay, and, after much trouble and perseverance, some warm milk was given them. They would not take it themselves, nor would they suck a quill, but at last some was given to each of them from a small medicine drop-glass. They were fed the last thing at night, but next morning early two of them were dead, and the others seemed almost dying; some warm milk was given immediately, and they were nursed into warmth and comfort. It seemed evident that they required feeding through the night, and this was done for the future, three or four times each night, with milk just warm. They soon began to know the glass, and, when lifted from their box of hay, would come running towards it, and whilst one was fed, the other would sit up, and beat impatiently with its little paws, until its own turn came.

In disposition and character they were very different. "Tiney" was very quiet and undemonstrative; but "Jack" was an excitable creature, as lively as possible, and very affectionate. They began to eat food themselves in about a fortnight, when they were fed with sowthistle, dandelion, clover, parsley, and lettuce. Their favourite food was sowthistle, but with this they did not forget to look out for their milk, and if they were not quickly attended to when they wanted it, they would come and beat the bed until they awoke me and got it. They were most lively and active during the night. It was very amusing to see them jumping and scampering about, as playful as kittens, but they were always safely in their box in the morning, generally retiring to it about five or six o'clock.

They grew very fast and looked well, but when they had been a month in the house, the lively Jack was seized with fits. He would begin to run about with his head on one side, and then suddenly turn round and round until he fell down exhausted and panting. Various remedies were tried in vain. The fits got worse and worse, and although between the attacks the poor little thing was as patient as possible, licking my hands and liking to be nursed, it became necessary at last to resort to chloroform.

The survivor "Tiney" was soon afterwards put into a large pen out of doors, with two little rabbits as companions. They agreed pretty well for a time, but one morning poor Tiney was found in a sad plight; his fur was badly torn off, and his skin much scratched, too. He was brought into the house again, and was nursed for three weeks, until he was quite well. He was ever after terrified at the sight of a rabbit.

Once Tiney escaped into the wood near the house, and it was thought he was lost irretrievably. He was found, however, lying on a tuft of dead grass. He lay quite still for me to catch him, and seemed quite pleased to come back into the house.

It might be said of him, as the poet Cowper said of his namesake, his own pet hare "Tiney":—

" His diet was of wheaten bread,
And milk, and oats, and straw;
Thistles, or lettuces instead,
With sand to scour his maw.

On twigs of hawthorn he regal'd,
On pippin's russet peel;
And, when his juicy salad fail'd,
Sliced carrot pleased him well;

and swedes and mangolds, too, for the matter of that, and any wholesome green food that presented itself.

This Tiney, however, had higher instincts. He became accustomed to the luxuries of household life. He was brought into dinner every day, behaved himself with great propriety, and ate what was presented to him. Seated on my lap, or by especial favour on the table, he would remain quite still, and eat off his own plate. Tapioca and custard puddings he seemed to like best, but he would eat any milk pudding, oatmeal biscuits, bread, bread sauce, onion sauce, potatoes, cream cheese, cheese and pastry. On Christmas Day he ate plum pudding, with custard, and seemed thoroughly to enjoy it. Tiney did not seem to mind the smell

of meat brought to the table, however it was cooked, but one day when the cover was lifted he became furious with excitement, bit my hand, jumped down, and rushed across to his box. The dish held a roasted hare, which he seemed to recognise at once by instinct. But strange to say, somewhat inverting the customary order of things, he was very fond of red-currant jelly himself whenever it was offered to him.

After dinner he would wash his face, and clean all his fur, using both paws like a squirrel, then he would fold his paws under him, and lie down in a corner near the fire by my father's chair, and go to sleep.

It has been said that hares never close their eyes in sleep, but Tiney always did so. No ordinary noise or movement would frighten him. He seemed to rely chiefly on his sense of smell, and if he discovered anything new in the room, he was not satisfied until he had thoroughly smelt it over. In his habits he was scrupulously clean, and was never troubled with any insects in his fur. A pet cat, which was often in the room with him, at first used to chase and frighten him into his box, a retreat ever in readiness for him, but they soon got accustomed, and ceased to notice each other; and thus Tiney's life went on through the year.

On the 21st of June, 1881, two other little hares were picked up in the mowing grass and brought into the house, and were about the same age, and were fed and brought up in the same way. They presented, too, very similar variation in character, the one being lively, affectionate, and wild with fun as night came on; coming when called by his name, and licking my face and hands with much satisfaction to himself; whilst the other was more shy and reserved in disposition. When put out of the house into a pen three weeks afterwards, the excitable little creature was found dead the next morning. Little Puss missed her companion very much for a time, but at length became contented and happy, and grew rapidly.

The jealousy shown by Tiney to little Puss was quite curious; he took every opportunity of striking at the poor little thing with its forepaws and trying to bite it if she came near him, and became quite sulky if Puss was patted or played with in his presence.

On leaving home for three or four weeks Puss was kept in the pen and became very wild, and would scarcely allow herself to be caught, and would bite and scream at anyone who attempted to catch her; but on my return she recognized my voice, crouched down in her old corner to be picked up, smelt and licked my hands, and was quite pleased to be fondled.

Tiney met with a very sudden end. He was found dead in his pen December 19th, 1881, with his neck dislocated. It is supposed he met with an accident in jumping, which he was apt to indulge in very wildly during night.

Puss seemed to mope and decline from Tiney's death. She remained very quiet and affectionate, but refused all food, even the most tempting delicacies, got thinner, and more thin, until she died on my lap about a month afterwards.

Thus perished my pets.

"I kept *them* for their humour's sake
For *they* would oft beguile
My heart of thoughts that made it ache,
And force me to a smile."—COWPER.

Woolhope Naturalists' Field Club.

THURSDAY, MAY 24TH, 1883.

LEDBURY AND WALL HILLS.

"Fled now the sullen murmurs of the North,
The splendid raiment of the Spring peeps forth ;
Her universal green, and the clear sky,
Delight still more and more the gazing eye.
Wide o'er the fields, in rising moisture strong,
Shoots up the simple flower, or creeps along
The mellow'd soil : imbibing fairer hues *
Or sweets from frequent showers and evening dews."

BLOOMFIELD thus describes the lovely weather, and charming freshness of the spring foliage and flowers, that greeted the first Field meeting of the year of the Woolhope Club. It took place on Thursday, 24th, and passed off very enjoyably. The trysting place was the Ledbury railway station, and on arriving there the members and visitors at once proceeded towards the rocks that are being so extensively quarried for ballast, in forming the new line of railway to Gloucester. The rocks are now extremely well displayed, and they were discussed so individually and so leisurely that it was evident somebody was being waited for. A contingent from the Malvern Club was expected by the train arriving half-an-hour later, it appeared, so the opportunity was taken of transacting the business of the Club. The Rev. Wm. Elliot, of Brinsop ; Captain H. Kerr, R.E., Hereford ; Mr. Hugh Ronalds, Stretton Sugwas ; and Mr. G. Thompson, Great Malvern, were elected members by ballot, and several other gentlemen were proposed. The fourth meeting of the Club to visit Caynham Camp, near Ludlow, and the Titterstone Clee Hill, on Thursday, August 23rd, was changed, for reasons given, to Monday, August 20th. The train had still not arrived, so the interval may be taken to give a list of the members and visitors present. The President, Mr. G. H. Piper, F.G.S., and his brother, Mr. Francis Piper, from Boston, were supported by one of the Vice-presidents, Mr. T. C. Paris ; Revs. H. W. Phillott, and Augustin Ley ; Drs. Bull and Chapman ; and Mr. W. A. Swinburne, Presidents in former years : the Revs. W. Bowell, John Buckle, C. Burrough, J. E. Grasett, Michael Hopton, A. W. Horton, E. Horton (Dymock), John Jackson, A. G. Jones, G. Long, H. B. D. Marshall, J. Tedman, G. Y. Toler, and F. S. Stooke-Vaughan ; Messrs. Phillip Ballard, T. D. Burlton, James Davies, Gilbert Davies, J. T. Owen Fowler, E. Maddison, C. G. Martin, Samuel H. Miller, H. C. Moore, and J. J. Mutlow ; Captain Morgan, R.E., Dr. J. H. Wood, and Mr. Theophilus Lane, the secretary. With the Malvern train, when it did arrive, came the Rev. W. S. Symonds, who was gladly welcomed by every one present, Messrs. Baines, J. Tom Burgess (a host in himself), R. Cooke, V. Vassar-Smith, and H. Wilson.

As far back as 1860, the eminent geologist, the Rev. W. S. Symonds, in a communication to the Geological Society of London, said that "Nowhere in the world is there exhibited such a view of the passage-rocks between the Silurian and Old Red Systems, as at the entrance to the Ledbury tunnel." What was true then is vastly more apparent now, for at that time a few feet only of the passage beds were to be seen outside of the tunnel's mouth; the remainder had to be sought for within, by the aid of candles, amid dirt and mire indescribable. At the present time, the whole of the beds are uncovered, and geologists should take early advantage of the rare opportunity for inspection now afforded to them.

After the Club had made a close and careful examination of the whole cutting, the President said:—The great geological formation known as the "Old Red Sandstone," and the vast range of fossiliferous strata named by Murchison, "The Silurian System," found beneath the Old Red, and above the Cambrian Schists, meet conformably on the western flanks of the hills, which lie on the eastern side of the town of Ledbury. The area of the ancient town is entirely of Old Red Sandstone, and the very lowest beds of that important series. The Frith wood, close by, is Upper Ludlow. Dog hill, or Roberts's wood, with the large quarry in the Knap lane are of Aymestry limestone, and the Conigre wood with the Commissioners' quarries, and the deep rocks near the Pear-tree walk, are of Wenlock limestone. The sections in Cut-throat lane are Lower Ludlow. These places are all close to the railway station. The recent cutting at the eastern end of the great excavation, near the railway station at Ledbury, has laid bare the lowest of the passage beds between the two great systems, and has sectioned and exposed to view all the Upper Silurian Strata, down to the Lower Ludlow beds, so that in a few minutes' walk you may, in broad daylight, examine the true base of the Old Red Sandstone, and all the different strata which lie in their exact positions between it and the blue muddy formation known as the Lower Ludlow, which attains here a thickness of several hundred feet, and lies immediately upon the solid beds of Wenlock limestone. It may be safely asserted that there is no other spot in the whole world where the exact union of these two great systems may be so readily observed, and so thoroughly studied, as here; and in order that a record of the true sequence and dimensions, and lithological character of the various bands composing the passage beds may be preserved, I have made a careful examination and admeasurement of the whole. This has never before been done. To do this, now, merely required care and attention, but in the course of a year or two, weathering, and the growth of weeds and plants, would render it altogether impracticable. Another object was to identify, with precision, the few beds which contain the exceedingly rare and interesting fossils found here—some of which are new to science—for I need scarcely say fossils are not scattered everywhere; each has its own peculiar habitat, and some of the larger and more conspicuous of the beds are without fossils; indeed, it may be said that of the true passage beds, which here attain a thickness of 396 feet, some 350 feet are practically without organic remains, which are principally found in five narrow bands, having an aggregate of 14 feet only. My admeasurements have been taken on the north side of the section, and in order to have a starting point, at once conspicuous and

incapable of removal, I commenced at the narrow bed of grey sandstone, opposite the end of the goods shed in the station yard, and thence proceeded in an eastward direction. Time will not allow me to do more than briefly mention the thicknesses of the various beds.

The President then proceeded to give the respective thicknesses of the various beds between the Grey sandstone of the Old Red formation—The Red Marls and Clays, the Top of the True Passage Beds, Ledbury grits or Auchenaspis Beds, down to the Upper Ludlow Shales, Aymestry Limestone, Transition Beds, and Lower Ludlow soft muddy rock—29 beds in all. This very interesting geological subject will be treated of, with the attention its importance demands, separately in a paper by the President.

The way was then taken for Wall Hills, some in carriages, and some on foot, as inclination led. From the farmhouse below the camp, the route was taken up the fosse way, beneath a 40-foot embankment on the south side, as far as the King's Ditch, when the chief camp was entered; then the little camp or proctrium, or place of drill; then, passing by the wet fosse, across Peas hill, the great bastion, guarding the main northern entrance to the camp, was reached. Here a halt was called, and a very interesting paper on Wall hills was read by Dr. Bull, which gave rise to some discussion. It was illustrated by an admirably drawn plan of the whole entrenchment made by Mr. H. H. Lines, of Worcester. The beautiful spring which arises close by was then visited, and the party then left the camp by the main entrance through the division, Fluck's Close, and returned to the farm.

The foliage and wild flowers were in great perfection, Water Dropwort (*Enanthe Phellandrium*) grew in the pool by the fosse. The common bugle (*Ajuga reptans*) was remarkably fine, and often grew in such masses of colour as to be mistaken at first for clusters of bluebells (*Scilla nutans*), and these, too, were very fine. A good specimen of the bugle with white flowers was gathered here—a very uncommon variety. A butterfly orchis (*Orchis bifolia*) was gathered in flower at least a week earlier than usual, showing that the bulbs are not so late as ordinary vegetation. The *Iris foetidissima*, or stinking iris, a very local but not very uncommon plant, grew on the camp, and so, too, did *Astragalus glycyphyllos*, the sweet milk vetch. The Rev. Augustin Ley had made a botanical ramble before the arrival of the Club, and has recorded the following list of plants, with their localities:—On the Ragged-stone hill, he gathered *Lepidium campestre*, *Mænchia erecta*, *Cerastium semidecandrum*, *Ornithopus perpusillus*, *Potentilla argentea*, *Taraxacum levigatum*, and *Filago minima*. At Eastnor, he gathered *Paris quadrifolia*, and *Ranunculus floribundus*. On Midsummer hill, *Carex vulgaris*. About Ledbury, *Sagina apetala*, *Sedum album*, *Carex vulgaris*, *Carex distans*, *Rumex Hydrolapathum*, and some others, more common, with several mosses.

The beautiful old parish church was then visited, and the rector, the Rev. John Jackson, who is so thoroughly acquainted with its architecture, pointed out choice bits of the Norman period, grand masses of Early English, Decorated and Perpendicular, with here and there specimens of "Churchwardens' Gothic," and other enormities. The restoration of the church (which, by the way, is not yet

fully completed) is mainly attributable to Mr. Jackson's exertions and skill, and to him entirely belongs the credit of having preserved the stately and dignified old roof, which "an eminent architect" had condemned as rotten and worthless, and proposed to replace with one of varnished deal.

A rapid descent was then made on the Feathers' Hotel, where ample justice was done to an excellent dinner, provided by Mr. and Mrs. Rayner; after which the rector of Ledbury read an elaborate paper on the "Architecture of Ledbury Church."

From the hotel the members proceeded, on the kind invitation of the president, to visit the room of many characters—the Court House. Here the fine collection of Silurian fossils he has collected, has its permanent abode: here, ever and anon, at stated intervals, justice is administered indifferently, alike to rich and poor. A clear discriminating eye is on them all; a kindly sympathy meets the unfortunate, the nervous are encouraged, and honesty grows bold, whilst selfishness is rebuffed, and roguery trembles. In this room, too, a genial hospitality is ever ready to invade its precincts on all seasonable occasions. The spirit of science brought all the visitors to-day; but the goddess of hospitality was also present, and the tables at both ends of the room were crowded. Your reporter, remembering the *genius loci*, is fairly puzzled to do justice to both sides—on one side, with eager accents, was to be heard, "Where are the *Cephalaspidean fishes*?" On the other, "Do you take tea or coffee?" "Tell me which is the *Pterygotus problematicus*?" "You'll find the cream below." What a grand collection of *Orthoceratidæ*." "Where is that rare fossil, the only one yet discovered in all the known world, the *Cephalaspis Piperi*?" "What lovely *Lingulidæ*!" "Here's a fine *Auchenuspis*!" "How graceful these *Nautilidæ* are!" "How good the *Gasteropods*," &c. Whilst cake, and biscuits, and preserves, and sweetmeats, mix up strangely with the long-syllabled words of palæontology. But what is the point of interest there now? A plate, decorated nicely with curled parsley, is handed round. Surely it is some elegant preparation of preserved ginger? No! it is a mild practical joke, the fungus *Peziza badia*, the only fungus found during the excursion. Time, time, inexorable time! Visitors had to leave to catch the last returning train; and so passed into history another red-letter day in the archives of the Club.

WALL HILLS, LEDBURY.

By Dr. BULL.

“ . . . the good old rule
Sufficeth them, the simple plan,
That they should take who have the power,
And they should keep who can.”—WORDSWORTH.

Few things are more remarkable in Herefordshire than the number and strength of the entrenchments scattered through the county. There is scarcely a hill of any importance without its camp; and there is scarcely a plain or a valley, without its barrows or tumuli, which indicate so sadly the scenes of battles fought there. The formation of these camps date back to a period so remote, that their names and localities are not even recorded, and they may be said truly to have no definite individual history. There are not any British authorities of so early a period to be relied on, and the only true relation of the proper sequence of events, with their right dates, is given by the Roman historians, and refer solely to the time of the Roman occupation of this country. Herefordshire beyond question was the chief theatre of the great struggles made so bravely, and with such perseverance by the Silurians against the Roman invaders. It was the advanced battlefield of the Silurians, and, in its northern part, of the Ordovices also, but the account given by Tacitus has cast so great a halo of romance and hero worship around the name of their first great leader, Caractacus, as to throw into the shade the history of all later struggles, and their leaders, Romans and Britons, are alike proud of his great energy and bravery as a soldier; they sympathise with his misfortunes and the treachery that delivered him into the hands of his enemies; and especially do they admire his noble and manly bearing before the Emperor and the people at Rome. Thus, dazzled by the brilliancy of his character, every camp in the county whose entrenchments are oblong, or follow the irregular outline of the hills, is a British camp—a camp of Caractacus: whilst every one with rectangular sides is Roman—a camp of Ostorius Scapula; and the existing chain of camps thus differing in shape, in proximity to each other, so well bears out the idea, that men are contented to say, that they trace out the march of Caractacus followed by Ostorius, as if there was no fighting after the time of Caractacus; as if the camps had always remained as originally constructed, or as if no other invaders had ever reached Herefordshire and occupied the strong positions they found there.

The Woolhope Club has recently taken up the subject, and it will be well to give briefly such leading facts and dates of early history as may serve to elucidate the many signs of warfare that exist around us.

The early history of Britain begins with the invasion of the Romans under Julius Cæsar, A.A.C. 55, and again the next year, A.A.C. 54. He found it occupied by many rulers, whose rival jealousies neutralised their bravery and insured his own success. An interval of 97 years then occurs, during which all that is

known of Britain is that its inhabitants were engaged in a perpetual turmoil of quarrels amongst themselves. The Emperor Claudius invaded Britain A.D. 43, and found many petty states at war with each other. Tacitus mentions 64 British tribes, and Appian increases the number to 400. The conquest was finally completed by Julius Frontinus (A.D. 70), and thus a period of only 37 years was engaged in the conquest, of which the last 30 were occupied in subduing the Silurians. Tacitus notices the peculiar obstinacy of the Silures, "præcipua Silurum pervicacia." Claudius issued proclamation after proclamation in vain, to induce them to submit, until at length he is said to have threatened to blot out their very name. Caractacus alone is said to have fought 30 battles with the Romans with varying success, but greatly to his own repute for skill and personal valour—"Non atrocitate, non clementiâ mutabatur," says Tacitus, "quin bellum excerceret castrisque legionum premendo foret" (*Annal. Lib.*, II. c. 8). Ostorius Scapula overthrew Caractacus A.D. 51, but then another brave energetic general appeared, Venusius, a chieftain of the Hwiccas, who led the Silurians, and gave Ostorius "no rest, but harassed him by day and by night with skirmishes, ambushes, and surprises," until it is said Ostorius died of a broken heart from vexation. Venusius defeated the legion of Manlius Valens, cut off small bodies of Roman troops, and on one occasion took two whole cohorts of their auxiliaries, and carried off all the plunder they had seized; and so the fighting went on and on for 29 years after the defeat of Caractacus.

The Roman historians give no notice of British affairs from A.D. 86 to 117; and the accounts from that time until A.D. 412, when the Roman legions were withdrawn from Britain, bear no special mention of Herefordshire.

The most melancholy and degraded portion of British history commences with the departure of the Romans, after a continued residence of 369 years. History is silent, happily silent, on the misery and wretchedness of the country during the next century or two. Enough is known to show that human nature appeared in its worst form, and every species of wickedness and brutality were practised, from wholesale murders to the selling of the families of their vanquished rivals, for the time being, into slavery. Many veteran Roman soldiers at first remained, but in two years, A.D. 414, they gathered their goods together and returned into Italy. On the most abject and earnest entreaties of the Britons, the Emperor Honorius sent a legion of soldiers, A.D. 416, to relieve them; and once again, A.D. 418, under Gallio, who remained two years and restored peace over the whole country, drove off the Picts and Scots, and rebuilt the walls of Severus and Antoninus Pius, and left A.D. 420. The Britons were now left to their own resources. The Picts and Scots broke through the wall of Antoninus, A.D. 422, and that of Severus, A.D. 426, and soon began to ravage the country southwards. The Britons again applied to Rome, A.D. 446, most abjectly, but Ætius, thrice consul, declined any assistance: and they were driven to seek aid from the Jutes, who sent Hengist and Horsa. They landed on the Isle of Thanet, A.D. 449. The Angles or English from Sleswig invaded Britain, A.D. 540, and the Saxons from Holstein, A.D. 477.

During the next hundred years there is nowhere to be found any reliable his-

tory. Herefordshire, it may be conjectured, was left in peace for many years after the Romans left. It probably suffered little from the Picts and Scots, and other early invaders, owing to its remoteness from the seashore, to the seclusion of its vast woods, and possibly also to the renown for determined bravery of its inhabitants. The Britons occupied here the towns and houses the Romans left, and enjoyed the peace of retirement so long as they remained at peace amongst themselves. It was not long to remain so. The great battle of Deorham (near Bristol), which took place A.D. 577, brought the West Saxons to the Severn. Ceawlin conquered here the three rulers or kings of the three cities of Corinium (Cirencester), Glevum (Gloucester), and Aquæ Solis (Bath), and it is remarkable that the names of these rulers were all Celtic—namely, Conmael, Condidan or Condylan, and Farinmael, showing that any Romans who had remained in Britain had been compelled to bow to the supremacy of native chieftains. Ceawlin destroyed Uriconium (Wroxeter) A.D. 583, but was defeated himself at Faddiley (near Nantwich), shortly afterwards, and was obliged to fall back, and thus the Upper Severn Valley was lost as quickly as it had been won. *Welsh Legends*, quoted by Mr. Guest (“Conquest of Severn Valley,” *Archæological Journal*, xix., p. 195), “say the Saxons stretched across the Severn to the river Wye.”—It is probable that this was so, since Creda, the first King of the Mercians, is said to have ruled from A.D. 583 to 600, when he died, and he, at least during the latter part of his reign, took up his residence at Credenhill camp, making that the centre of his operations through Herefordshire, as the Romans before had made Magna, lying beneath it, the centre of their works. He it was who probably destroyed and burnt all the Roman towns in this county, killing or driving off the inhabitants from this district. Saxon superstitions prevented their taking possession of the towns, and thus they lived for some considerable time at least in the camps they had taken possession of, and which in all probability they fortified much more strongly than they had ever been before.

It is impossible to follow further here the history of this district. “No written record tells us,” says Green, “how Saxon or Angle dealt with the land they had made their own; how they drove out its older inhabitants, or how they shared it among the new; how the settlers settled down in township or thorp, or how they moulded into shape under changed conditions, the life they had brought with them from German shores. Even legend and tradition are silent . . . and any sketch of its outline must necessarily be dim and incomplete” (page 132). For many years afterwards it was but a series of confused struggles, of which there is but a very imperfect record, dates are unreliable, and the sequence of events, the rise and fall of local rulers are alike uncertain and not to be depended upon.

It is time now to turn to the subject of investigation before us; to enquire what is known of Wall hills; and to consider how far the actual position of the camp; its local traditions, the names of places around it, with such discoveries as may have been made upon the spot, may help to give it a more or less probable history.

There is scarcely any mention of Wall hills in the records of local archæology.

Mr. Chapman, of the Free Library, who enjoys a hunt of this kind very much, has searched the archives of the library in vain, and drawn blank every cover. However, in that valuable repertory of local lore, the *Records of the Woolhope Club*, there is a lengthened notice of it. The Club visited the camp in the year 1869, when a very interesting paper was read by Mr. Edwin Lees, and was afterwards published in the *Transactions*.* Mr. Lees believes it to have been "the site of a British town rather than of a military station," since it exactly bears out the description in the *Commentaries* of Julius Cæsar, "the Britons call by the name of town, a place in the fastnesses of the woods, surrounded by mound and trench, and calculated to afford them a retreat and protection from hostile invasion." The name of Wall hills is not uncommon. In Herefordshire there are several other instances, as Wall hills near Thornbury, Wall hill near Orleton, Cox-wall Knoll, Sutton walls near Hereford, Wal-ford near Goodrich, Wall-field near Cradley, and there are many others elsewhere. Mr. Lees derives the names from "Wealas" or "Wales," and thinks that "Waals" or "Wall Hills" were so called "not from the walls upon them, but from the people, who had there their habitations," a very dubious conclusion certainly.

Mr. Allies, author of the *Folk lore of Worcestershire*, thought the camp to have been originally British and subsequently occupied as a Roman station.

Mr. Flavell Edmunds derives the name through the Britons from "Vallum," with the "V" pronounced "W," which is far more probable, or from "gwawl," meaning a trench, and at a later period a wall. He thinks it wholly unproved that it ever was a British town. "Not only has the camp no British name, but there is not a single British named place within some miles. Hill and dale alike, all round it, are thoroughly Saxon in name." He looked upon the camp "as one of the chain of late British fortifications, constructed near the Roman road from Magna eastwards, as a defence against the Anglian invaders, or perhaps even as late as Athelstan's time" (A.D. 925, 941).

In Mr. Edmunds's work, *Traces of History in the Names of Places*, it is stated that whenever the words "Hils" with one "l," or "Hills" with two "l's" is used for a single hill, the name is derived from Ella, or Ælla, King of Mercia and Northumbria, so that "Wall Hills" would thus mean "the entrenchments of Ælla." This King Ælla or the tribe of Engles called "Deira" waged bitter warfare with another tribe of Engles, still further north, called the Bernicians, under their king, Æthelric. The prisoners on both sides were slain in cold blood, or were sold into slavery. Bæda relates one of the most memorable stories in our history of one of these groups of slaves. It is thus given by Green in his *Making of England*. "As the slaves stood in the market-place at Rome, it may be the great Forum of Trajan which, still in its decay, recalled the glories of the Imperial city, their white bodies, their fair faces, their golden hair, were noticed by a Roman deacon who passed. 'From what country do these slaves come?' Gregory asked of the trader who brought them. The slave-dealer answered 'They are English' (or as the word ran in the Latin form it would bear at Rome, 'They are

* *Woolhope Transactions*, 1869, p. 9.

Angles'). The deacon's pity vented itself in poetic humour. 'Not Angles, but Angels,' he said, 'With faces Angel-like.' 'From what country come they?' 'They come,' said the merchant, 'from Deira.' 'De ira,' was the untranslatable word play of the vivacious Roman, 'aye, plucked from God's ire and called to Christ's mercy!' 'And what is the name of their king?' They told him 'Ælla,' and Gregory again seized on this word as of good omen, 'Alleluia shall be sung in Ælla's land,' he said, and passed on, musing how the 'Angel faces' should be brought to sing it."

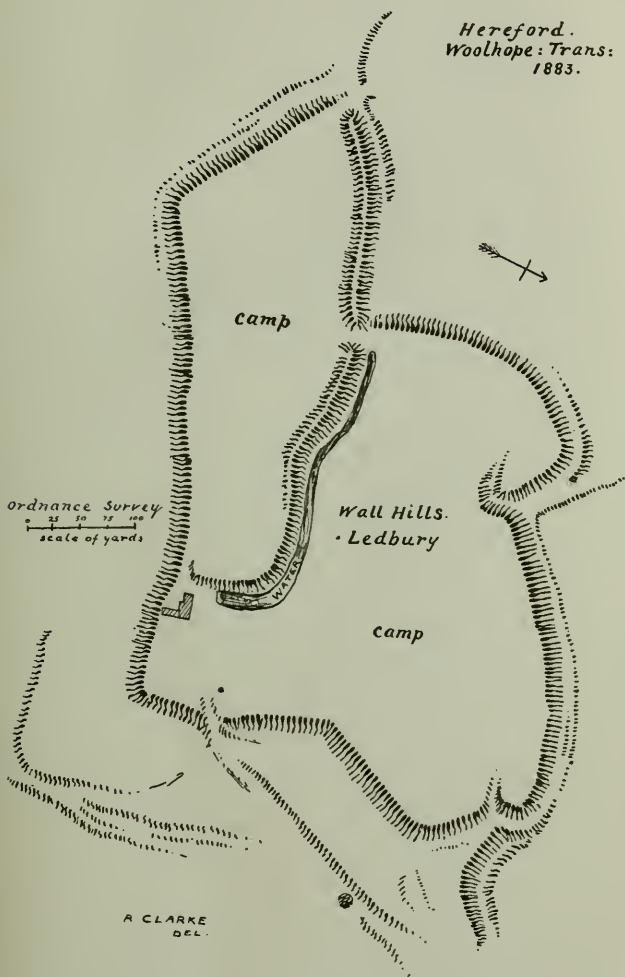
Ælla died in 588, and his children fled from Deira, as Æthelric entered it in triumph to take possession. Whether Ælla really ever came into Herefordshire must be left for others to discover—as yet there is no proof that he did so.

It may be mentioned here that Napoleon, when writing the *Life of Julius Cæsar*, sent some of the most eminent engineers and surveyors to visit and examine thoroughly all the encampments in Gaul, which could bear any relation to Julius Cæsar, and they arrived at the very decided conclusion that "the Gauls did not make intrenchments before the invasion of the Romans. They did not understand an inclosure with a regular vallum and ditch. They threw up embankments of earth and stones, and left the trench from which the earth came, but they did not make the ditch a part of their defence." If such entrenchments were not used in Gaul, it is little likely that they would be in Britain, and their existence, therefore, implies work of a later date.

The camp itself is very large. It comprises within its area nearly 30 acres of ground. It has two main entrances; one from the north, through the outer portion, called "Fluck's Close," and another from the east—this entrance is approached by a deep fosse road, or covered way, from the north, and it is also defended by a traverse and deep fosse in front of it. The camp is supplied with water from a spring close to the ramparts, and by two ponds in the southern side of the outer fosse. The portion on which we now stand is the bastion guarding the northern entrance, and is called "The Churchyard," but whether the human bones which have been found in the camp came from here is not stated. The portion termed "The Camp" is nearly rectangular, with a small projection at the eastern end, called "The Little Camp." It is nearly 20 feet higher than the western portion. This is called "Peas Hill," with the narrow portion near the eastern entrance, called "Humble Bee Park." In a surveyor's plan, dated 1733, this portion is covered with wood, and it was doubtless the removal of this that caused the outer ramparts to be so much defaced. The very excellent plan of the whole camp now shown to you was drawn by H. H. Lines, Esq., of Worcester, who has most kindly given permission to have it lithographed for the Club's *Transactions*. You will observe an entrance on the western side; this is not an original entrance. The fosse near it is called "The King's Ditch," but the origin of this name is lost. The camp is surrounded by woods, named Kite's Nest wood, Mallenders wood, Red Hill wood, and Foxholes wood, but these names do not afford much information.

The present tenant of the farm, Mr. J. J. Mutlow, has found Roman coins of brass in the camp, but they have been lost. It is said also that spear heads, arrow

Hereford.
Woolhope: Trans:
1883.





heads, and horse shoes of ancient form have been found here. It should be mentioned also that just within the outer rampart (Fluck's Close) are several small hollows that may mark out the position of the buts of the occupants, or with a probability to say the least quite as strong, they may be the holes remaining from uprooting the trees which formerly grew there.

Was Wall hills ever a British town or station? It is extremely probable that it was so. The fact that from the highest part of the camp the Herefordshire Beacon is within sight, suggests that it would form an excellent reserve to that truly British fortification—an open signal by day, a beacon-fire by night, or a trusty messenger at all times, would quickly call up men in support of it. The Herefordshire Beacon could never have been occupied for any length of time by a large body of men, in consequence of the want of water supply there, and the difficulty of providing stores. The chief immediate reserve was doubtless the old British entrenched town on Midsummer hill, two miles south of the Beacon camp, but there is no reason why Wall hills should not have been a second reserve. The President has found flints, and fragments of British or Romano-British pottery within its area, which affords strong confirmation of it, but further evidence is not forthcoming, and if a definite verdict must be given, it must be that of the canny Scotch—"Not proven."

There scarcely remains a doubt but that it was a Roman station. The form of the camp itself indicates it, and its position almost proves it. The hill is not lofty or difficult of approach, and cavalry could conveniently occupy it. Its advantageous position is very evident. It could communicate on the north side with the Roman camp at Stretton Grandison, near the site of the Roman town Circuitum, on the banks of the river Frome; to the south, it could signal with the Roman camp at Haffield; on the east, with the Herefordshire Beacon, as before stated; whilst on the west it could hold still more direct communication with a Roman villa, whose remains have been found at Putley. No Roman road seems actually to approach it; but there is one from Stretton Grandison (Circuitum), by Ashperton, the Trumpet, Little Marcle, Preston, and on by Dymock and Newent to Gloucester. There was also, very probably, a vicinal way, on the eastern side, crossed by the present Hereford road at New Mills, and from this, possibly, one to the camp by the way taken on the present occasion. The Romans, however, were scarcely likely to have made these strong entrenchments, since their only necessity for defensive works was to prevent sudden surprise. It seems most probable, therefore, that its principal occupants were the Saxons, and that to them the great embankments are due. There is no other camp in this district of the county whose position would suit them so well. It bears, moreover, a Saxon name itself, and is surrounded by places with a Saxon nomenclature. From Wall hills, the Saxons might readily destroy the town of Circuitum, and guard against any approach on this side of the county.

This camp may also have been the scene of some trifling engagement in the Parliamentary wars, for our President has a cannon ball found within its area, and it is stated in Mr. Webb's valuable work, *Memorials of the Civil Wars in Herefordshire*—a work that should find its place in every library in the county—that

Mr. John Skip, the owner of the property, had cut out a small round shot from an oak tree in or near the camp. It was probably but a passing skirmish, for there is no record of any real engagement near it, written by a tumulus, nor does any tradition exist to render it probable that any such event has occurred in later times.

The many centuries that have passed since the formation of Wall hills, has blotted out such history as it may have had. The names of the victors and the vanquished, if such there ever were, are alike lost and gone. Our county has enjoyed since then so long a period of peaceful happiness, that the troublous times of the past, when every man had to fight for himself, or was compelled to fight for others, can scarcely now be realized. The region of sober history has passed, and it remains only for the poets to imagine, and refer in fancy to those

“Antient times so long forgot,
Of feuds whose memory is not ;
To manners long since changed and gone,
And chiefs who under the grey stone
So long have slept, that fickle fame
Has blotted from her scroll their name.”—SCOTT.

The President said they were much indebted to Dr. Bull for his interesting paper, and to Mr. Lines for his excellent plan of the camp. He thought it would be a very good thing for the Club to have plans of all the leading camps lithographed for the *Transactions*. This work had never yet been done, and as time went on it would become more and more difficult. There is a fine traverse and an elaborate covered way opposite the eastern entrance, which he thought had not been sufficiently noticed in the excellent paper just read. He himself believed the camp was originally a British fortified town ; then that it was occupied and largely altered by the Romans ; and that afterwards, probably, the Saxons lived there. The Saxons, however, were not great at castrametation, and he doubted if the strength of the works was due to them. He himself had found worked flints, and British or Romano-British pottery within the area of the camp, and this he regarded as very strong proof of its having been a British town.

Captain Morgan, R.E., thought all earthworks had a distinctive meaning, and would be formed with reference to the weapons employed in the attack and defence. He would like to know the *raison d'être* of the strong escarped bastion on which they stood, and that should form some guide to the people who made it. He did not think the British or the Romans made it, and therefore that they were due to a later period. Masonry might be of any age, but earthworks had a distinctive meaning.

The President thought the bastion, strengthened as it would be by a stockade, would form a strong defence to the narrow covered entrance to the inner camp. Not only would arrows be effectively used, but stones might be hurled on the heads of the attacking foes.

Mr. Wilson, of Malvern, made a few remarks in favour of the Saxon theory ; and the Rev. Prebendary Phillott thought there was no evidence whatever to show that the Saxons made their entrenchments.

Mr. J. Tom Burgess, F.S.A., of Worcester, said he had visited the camp on a previous occasion, and was much struck by the intervening ramparts. These intervening ramparts were not uncommon, and were frequently found where they had written records of Saxon occupation. This camp, however, was peculiar from its large size, and it would seem to have had portions added to it, as its occupants increased, so that whilst one portion was occupied by the people, the other might form a cattle pen, or what in India was known as "the compound," and in Ireland as the "Faha," or open court of exercise, and which is there a common feature; and with respect to the origin of the camp, he begged to point out the absence of any direct evidence that the Saxons were given to erect earthworks. They were shipbuilders and carpenters. Their grave mounds were small. The sites of their kingly palaces were undefended by earthworks, and though they undoubtedly used and held the strong military posts which already existed, there was no record that they erected any of these great camps and mounds, and yet they lived in historic times. He knew that in that neighbourhood he should be confronted with the name of Offa, and the dyke which bore his name. He had examined that dyke at various points, and, doubtless, it was a line of demarcation in which Offa took some interest. They must not, however, forget that these dykes were not uncommon, and the very name of some of them seemed to indicate that the Saxons thought these remarkable earthworks had a supernatural origin, as for example, "Wan's dyke," in Wiltshire. This has been thought to be a corruption of "Woden's dyke"; and the northern part of Offa's dyke bore a similar name—whilst the common appellation of "Thorbury," or "Thornbury," to earthworks seemed to indicate a reference to the god Thor. They must remember that Offa was a great king and a power in mid-England for a great many years, and he might possibly, and indeed probably, have repaired the dyke which bore his name, and also have proclaimed it as a line of demarcation under the penalties they were all familiar with, and which he (Mr. Burgess) had embodied in his paper on the subject, read before the British Archæological Association during the Congress at Llangollen. They must not forget that on this side of Oswestry the dyke divided. The eastern fork joined the great camp at Old Oswestry, which he took to be the great oppidum of the Ordovices, just as the Herefordshire Beacon was obviously the great stronghold of the indomitable Silures. The dyke called "Wan's dyke" went through a broken country, full of nooks and dingles, which were far more likely to hold a foe, than to be a protection against enemies. Offa might have found this detrimental, and made the western fork to the Dee, and thus gave his name to the whole. His palace at Sutton Walls was obviously a Roman settlement, and the regulation that the space between the two dykes near Wrexham should be considered as neutral ground, favoured the suggestion he threw out, and accounted for the western fork passing over the site of a Roman settlement or villa, near Wrexham, which a Cambrian archæologist had found out to be the case. That was not the time nor the place to enter into any details of the Saxon invasion and mode of settlement. After the first flush of conquest, they left the towns and the old inhabitants undisturbed, and many of them retained their old Roman municipal privileges, and those towns which were destroyed were regarded as

haunted by the *Deæ Matres*, or other gods, and so preserved from future spoliation. He might mention one fact, that Mercia seemed, judging by the graves, to have been overrun by Angles from the north, who marched along this fosse way. The various battles and struggles along the Welsh marches, recorded in later times, would cause points of vantage, like Wall hills, to be occupied by the defeated, as well as the victorious, troops. He could not resist the conviction that Wall hills was one of the chain of Silurian frontier tribal fortresses, from which the warriors could be summoned to defend the greater and stronger post on the Herefordshire Beacon. It had its outlying signal post on the hill above Ledbury station, and it had its means of retreat to the low-lying marshy land, which was a distinctive feature in old British tribal settlements, and a common one in many savage lands.

Dr. Bull, in reply, said he was much obliged to the gentlemen who had criticised his paper. The subject was one upon which many different views might be taken. Mr. Burgess, in stating that the Engles from the north had subjugated Mercia, surely did not mean to call in question the battle of Deorham, when Ceawlin, at the head of the west Saxons, overthrew the Celtic rulers, advanced up the Severn and destroyed Uriconium (Wroxeter). That was the earliest record with any degree of authenticity of Saxon proceedings. The Engles from the north came at a later period. In considering these large mounds and earthworks, which would require so great an amount of labour, he had been led from the study of the Credenhill camp, to regard them as being Saxon for these reasons. The Britons, it was believed, did not make regular entrenchments with vallum and ditch succeeding each other, with covered approaches, and protecting traverses, before the Romans came. The Romans would have no object in undertaking such enormous labour. They had only to protect themselves against the sudden attacks and night surprises of the Silurians. They had their towns to build, and their roads to make, and very slight fortifications were necessary for them. At Credenhill, if as was believed, Crida or Crida, took up his residence there, and destroyed the Roman towns of Magna (Kenchester), Ariconium (Weston, near Ross), Circutium (Stretton Grandison), Black Caerdun (near Risbury, whose Roman name is lost), and Bravinium (Leintwardine), and they were all destroyed by fire in the same way as Uriconium, then he would require to fortify the camp he resided in. The Saxons, and, at this period, the west Saxons, might be conjectured to have fortified all the camps they occupied, besides such as Credenhill, or Wall hills, Ivington, &c. After all, it was conjecture, and these great earthworks might possibly have been constructed at a later period. Offa's work he would not consider now, for the subject would be brought forward at the next meeting of the Club.

The questions of defences by stockades, escarpments, covered ways, spears, slings, and pieces of rock-work, were then generally discussed, the President remarking that the defence of such works as these might be compared to that of the New Zealand "Pahs," in our own times.

THE ARCHITECTURE OF LEDBURY CHURCH.

By the Rev. JOHN JACKSON, M.A., Rector.

ECCLESIASTICAL architecture must always be regarded with peculiar interest. A thoughtful mind cannot but experience melancholy feeling on beholding the barbarous mutilations and additions to which the Gothic piles of the middle ages have been subjected, which nevertheless still retain a holy and venerable character appearing through the land like monuments reared to bear testimony to the genius and piety of our forefathers. In former times the fabrics set apart for religious purposes were usually built from drawings under the immediate superintendence of the ecclesiastics themselves, who sometimes even worked for the love of Christ's Holy Church, and although no vestige of their plans or their names exist, yet they wrought out for themselves each his own monument "ære perennius": the wonder and admiration of succeeding generations. The appearance of an ancient Gothic church is often most magnificent and imposing, and even when of a plain and homely description it is impressive and beautiful. There is a spirit in its time-honoured walls, and a reality about the building that is extremely pleasing; for however rude the materials employed in its erection, there is never any attempt to make them appear other than they really are. The faithful builders, conscious of having exerted themselves to the uttermost, seem to have felt that any false pretensions would be at variance with the holiness of the service to which the building was to be consecrated, and that alone in their estimation would invest it with sufficient majesty. The great charm, however, of all the ancient churches, consists in their possessing a sacred and devotional character, which at once distinguishes them from every other class of buildings, so that, notwithstanding the different styles and variety of their architecture, they have a certain similarity of appearance which marks in a very significant and expressive manner that they are alike dedicated to the same Holy Service. At the Reformation, in the sixteenth century, they were generally despoiled of their sumptuous furniture and costly decorations; but in other respects their appearance was not very materially affected by the alterations that were then made.

They were afterwards subjected to many wanton and disgraceful mutilations during the reign of Charles I., but since that stormy and eventful period the injuries which the buildings have sustained are for the most part the result of shameful neglect or tasteless reparations.

THE CHURCH.

On the south side of the church is a paved narrow way leading therefrom to the main road, which bears the rather uninviting title of "Cabbage Lane," being a corruption of the word "Capuchin," which would indicate that at an early period of English History a body of Capuchin monks were established here. It is placed beyond doubt that a priest was stationed at Ledbury at the time of the

Norman Conquest. Whether any remains exist of a church earlier than the Conquest is doubtful, but if there be, the only fragment is the Hagioscope on the north side of the chancel, which, until about six years ago, was blocked up with stone-walling, plastered over, and hid from sight. The rudely constructed arch, built of stone from a neighbouring quarry, might lead to the conclusion that it was Saxon work, but on this point various opinions have been given. I am in some degree confirmed in my opinion that this is of pre-Norman date, from the fact that on the north side of the Hagioscope, in what is known as St. Mary's Chantry Chapel, a Norman piscina was introduced without interfering with the Hagioscope on the south side of the wall. Shortly after the Conquest a Norman church existed of the length of the present one, viz.,—nave, 97 feet, and chancel, 90 feet, with side aisles of narrow width, and chantry chapels at the east end of those aisles, with their altars, aumbries, and piscinas, the latter of which are still remaining. In the year 1553, the following pensions were paid to the incumbents of chantries at Ledbury. To John Porter, *alias* Potter, incumbent of St. Mary's Chantry, £6; and Griffin Fowler, of St. Anne's Chantry, £5. In the register of burials is the following entry, "1559 Sr Griffyn Fowler Chantry Prite and after prist in the Hospitall was b: ye XIIIth of Septemb."

The Norman doorway, with its rich mouldings, not unlike in character to the chancel arch of Kilpeck Church in this county, the outline of two Norman windows, and the Norman buttresses with their conical heads show this at the west end; and the Norman arches of the chancel, the remains of two Norman windows, the two perfect ones in the north and south walls, and the buttresses at the east end, show unmistakably that such church existed.

All traces of Norman work in the east wall have disappeared, and a Perpendicular window has taken the place of the Norman. An examination of the outside of the west end of the south aisle shows the foundation of an aisle about eight feet in width, similar to the south aisle of the Priory Church at Great Malvern, and the drip-stone in the north and south walls of the chancel, underneath the circular clerestory windows, show that those windows, during the existence of that church, were in the outer walls of the building. In the north aisle is a Norman pillar and capital, from which sprung the arch which separated the aisle from the chantry chapel, and at the west-end of the drip-stone on the north side of the chapel, is a portion of stone cut out at an angle, which shows the pitch of the roof of that aisle and chapel, which was evidently what is called a "lean to" roof. From the grotesque carving of that date (forming no doubt some of the corbels) which has been fortunately preserved and inserted in the eastern ends of the north and south arcades, there is sufficient to show that the Norman church was of no mean pretensions. The pillars of the Norman arches on the north and south sides of the chancel, square to a certain height, and then circular, are singular specimens of Norman architecture. The chapels on the north and south sides would appear to have had a stone screen to separate them from the chancel, for on the east end of the walls, under the capitals, are stones with mouldings, which have formed one side of doorways to communicate with the chapels and chancel. The chancel arch is one of the obtuse-pointed or drop arches, which are occasion-

ally found in Norman work of the latter part of the 12th century. The peculiarity thereof is that the east and west sides do not correspond in their character and mouldings.

The next important change which we find is the removal of the Norman side aisles.

In the early part of the 13th century when the Early English style of architecture changed the form of the windows, and elongated ones with tracery took the place of the Norman, the principal portion of the south aisle was built of a greater width than its predecessor, and appears to have been built at three different periods. The eastern-most part (known as St. Anne's Chapel), as appears from a straight joint in the wall, with its three windows and doorway, being the most ancient; then the aisle, with its four windows, to another straight joint in the wall, where it probably ended. From that point westward a totally different style prevails, in the formation of the buttresses, string-course and inner mouldings of the window jambs, the concave being changed to convex, in the heads of the south-west and west windows. A respected parishioner, on whose judgment and authority I can rely, lately taken from us in mature old age (Mr. Robert Edy), has told me that he recollects the window at the south-west corner, and the window at the west end of the aisle, with horizontal transoms and upright mullions, which would indicate the perpendicular style, and in this he is confirmed by entries in the churchwarden's books, in which is recorded, "1818. Sep. 19. By cash received from Biddulph on account of west window £20," and in the year 1824, "Mrs. Myddleton Biddulph one moiety of expense to window in south-west corner of Church £6," when the tracery of the old windows was taken out and new introduced, to correspond with the other windows on the south aisle, and with the west window on the north aisle, producing the wretched specimens of anachronism which we now see. At a later period, while the Early English style prevailed, the north aisle was built with its beautiful tall windows at the east and west ends. The porch or parvise appears to have been added about that period, as the same character prevails in the outer arch, in the arch of the doorway, and the windows of the north side of the aisle, which have this peculiarity, that the heads are not curved to merge gradually into the jambs, but spring from a point, and the heads take a shape approximating to an equilateral triangle.

In the porch is a lower chamber formerly connected by a staircase with two upper chambers for the use of the sacristan. One of them has a fireplace and piscina of Early English date; the proportions of the rooms have, however, been entirely destroyed by a fine specimen (I hope the last of its kind), of what is called "Churchwarden's architecture," when, about 30 years ago, the ceiling of the lower chamber was raised, thereby interfering with the windows of the upper chamber, as well as with one, or it may be a doorway, in the north wall of the church.

Up to this date the north and south arcades of the nave remained in their Norman shape. In the early part of the 14th century, when the Decorated style was introduced, the south arcade was taken down, and the present pillars and arches were built, corresponding in form and moulding with those at Sandhurst Church, in Kent, viz., a plane octagonal pier with a simple capital and moulded

abacus. A few years ago, when, in consequence of their deflection from the perpendicular, two of the present arches were taken down and rebuilt, several Norman corbels like to those still remaining in the south wall of the chancel, and portions of circular clerestory windows were found in the walls between the arches.

At the same period, when the ball-flower, the ornament most peculiarly characteristic of the decorated style of Gothic architecture, prevailed, the beautiful chapel, known as St. Catherine's, at the north side of the north aisle, was built. The wall was pierced, and an archway was made to connect the aisle and chapel; the original window over the archway was shortened, and left as it appears at present; but, until a few years ago, it was walled up and plastered over.

It may not be uninteresting to relate the legend of St. Catherine to whom it is supposed this chapel is dedicated. Katherine Audley, or St. Catherine, as she is commonly called, was a religious woman in the time of Henry II., and had a maid called Mabel, and not being fixed in any settled place, she had a revelation that she should not set up her rest till she came to a town where the bells should ring of themselves. There is a piece of land near Ledbury, to the westward, called Katherine's Acre, and another near it called Mabel's Furlong. She and her maid coming near Ledbury heard the bells ring, though the church doors were shut and no ringers there. Here, therefore, she determined to spend the remainder of her days, and built a hermitage, living on herbs, and sometimes on milk, which she sent for to a place called The Hazle, about half a mile distant. The king, in consideration of her birth or piety, or both, granted her an annuity of thirty pounds.

About this time (1400) a college was founded by Bishop Treffnant. The college was instituted in the second year of King Henry IV., and having existed nearly a century and a half, was dissolved in the first year of King Edward VI. (1547), and the lands belonging thereto were given to the Crown. It is not improbable that this chapel was intended to be the chapter house of the collegiate body.

The last change which took place in the architecture of the church was the substitution of the present north arcade for the Norman, in the year 1619, as appears by a date on the wall-plate of the roof. The meagre capitals, with the lozenge-shaped pillars, show that Gothic architecture was then on the decline.

The workmen who built those arches and pillars appear to have had one of two motives for their work, either to be at as little trouble as possible, or to preserve all that remained of the Norman arcade, for in the eastern-most pillar some portion of the moulding of a Norman capital is visible, and in the four western-most arches the Norman hood-mouldings were used, which give them their irregular and zigzag appearance, while the two eastern-most arches have mouldings of a different character.

The tower, with its spire, next calls for our attention. This is, and always has been separated from the Church. The lower part thereof, up to and including the lower tiers of the windows, is of strictly Early English character. The original tower was surmounted by a shingle spire, placed thereon without battlements. In

the year 1725, October 10th, the following resolution appears in the Churchwardens' books—"Resolved that the steeple shall be taken down as conveniently as it can, it being so much out of order that it cannot be repaired;" and in the year 1727, July 14th, an agreement was made with — Wilkinson, mason (who built the Worcester spire), "for the new erecting a stone spire of hundred feet in height," above the present stone work. A subscription, to meet the cost, was set on foot, also a "brief." These being insufficient, the liability was transferred to the rate-payers, for on the 20th day of February, 1734, there is the following entry, "at a vestry meeting, it was ordered and agreed that the Churchwarden be allowed to make a book towards paying the debt that was borrowed for building the spire and going forward with the work and defraying his charges by a book not exceeding forty months, and also that the Churchwardens do their endeavour to borrow money to pay what money was borrowed towards building the steeple." The tower was raised one story, in which the bells were re-hung, and the present spire was built, a passable work, considering the time of its erection, though the Corinthian cornice underneath the battlements, and the upper windows in the tower, ill accord with the graceful outline of the Early English windows and doorway beneath. The height of the tower and spire is 202 feet.

About this time (1736) a vial of parochial wrath was poured on a self-willed churchwarden, as appears from the following extract from the parish books:—"Whereas John George, one of the Churchwardens of this parish, has wilfully and unadvisedly against the consent of the parish signified to him at a parish meeting, fixed up the bells in the new steeple before it was finished whereby considerable damage has already happened: the greatest bell being since broke. Therefore it is agreed that in case the said John George does not at his own proper cost make the said bell as good an usefull as formerly, we will prosecute him by what method shall be thought most advisable in order to recover the damages which are or shall be sustained by the parish on that behalf." The tenor or "greatest" bell was re-cast at this time, with extra metal, at a cost of £43 17s. 7d. It weighs 1 ton 3 cwt. 2 qrs. 17 lbs.

In the year 1771 the mutilation of the timber roofs commenced. A resolution in the churchwardens' book for that year is as follows—"1771, Sept. 5th. Mr. Bridg the present Churchwarding shall seele the middle ile of the Church." No doubt the men of that generation were so well pleased with their performance, that the north and south aisles were also "seeled," and in carrying out this unfortunate work, the mouldings on the timbers and wall-plates, and the stone cornices were recklessly destroyed. These ceilings have disappeared, and the original roofs are again brought to light.

The roof of the south aisle, constructed entirely of English oak of massive dimensions, is an exact restitution of the original. On its being repaired, a few years ago, every feature of the old roof was retained. I have little doubt that the settling of the south wall from the perpendicular took place immediately after it was built; as it was found, on careful examination and measurement of the principals of the roof, that they had been fitted to the expanded form of the walls. The panelled roof of St. Anne's Chapel, at the east end of the aisle, is an exact

copy of the original, all old work being carefully retained. The roof of the north aisle is similar in character and detail to that of the south aisle. The roof of the nave is wagon-shaped, and of much later date. All the roofs of the Early English character were of very high pitch. Towards the end of the 15th century, they became much lower. Unfortunately, the roofs of this church are placed on walls of a much earlier date, and consequently, in the nave and north aisle, they interfere with the heads of the windows. As we find them, so we must leave them. I have in my possession, a report made by an eminent architect in the year 1858 (two years prior to my incumbency), in which the grand old roofs were pronounced to be decayed, sentence was passed upon them, and plans with specifications were given, supplanting them by ordinary tie-beam roofs of red deal. Happily, these plans were never carried out, and the roofs, so far from being decayed, will last for many ages to come.

The doors at the northern entrance have a greater interest attaching to them than their homely appearance would claim for them. About two years ago, when they were cleaned and planed to a fair surface, the workmen found several bullets embedded in the wood. From their appearance and colour, there is a little doubt that they were in existence at the time of the civil wars, in the reign of Charles I.

Attention may be called to the glass sun-dial in one of the windows of the south aisle. There are not many of the kind in existence. They are curious, but not altogether to be depended upon for their accuracy in denoting time, as the surface is affected by the action of the wind. The painted glass in the tracery of the east window, some figures in the north window of the chancel, some fragments in the window over the door of St. Catherine's Chapel, which have been collected from other parts of the church, and re-glazed, are all that is worthy of notice. The other painted or stained glass is of a modern and inferior character.

Two or three monuments call for a passing remark.

The first is a small square brass in the floor, at the south-east corner of the south aisle, with the following quaint inscription:—

“ The world's fashion defied
Our Lord's passion applied
His bliss only in this descried
Ould Richard Hayward died
An. Dom. 1618.”

An entry in the burial register records that “Richard Hayward, gent. buried the seventeenth day of August, 1618”; and that he lived at Prior's Court, would appear from the following entry—“Dorotie Pikely, servant with Mr. Haywarde, of Prior's Court, was buried in 1615.”

The next is a small brass figure on the floor of the chancel.

The next is in a recess in the north-east window of the north aisle, where there is a recumbent figure of a female (unknown), which has evidently been removed from some other part of the church, as the altar-tomb on which it is placed is Perpendicular Work, while the dress of the figure is of the time of Edward II. The cushion on which the head reclines having been reduced in size would indicate that it had been placed elsewhere, but removed and fitted to its present position.

In the north wall of the south aisle is a remarkable monument, where the out-

line of the figure is incised on the stone of "Mr. Edward Cowpe the good master of this hospittall in Ledbury, who departed this life at the collage in Worcester, uppon the sixteenth day of this instant July, about nine of the clocke in the morninge and was buried in the Chauncelle at Ledbury uppon the XXVIth day of July, 1596." On the monument is the following inscription :—

" Edward Cowper, grave, learned and wise
Archdeacon of hereff, and Canon Erst here lies
Ot Ledburies Hospital maister in his life
The poor did greet their land rid from strife
The decesseó the XVI day of July An. Domini 1596
The time will come that you shall be as I am now."

The following inscription on a monument which has long since disappeared, is remarkable. It is recorded that "at the east end of the Chancel Charles Godwin, Bishop Godwin's son, and Dorothy his wife" lie under a flat stone thus inscribed—

" Præibit Dorothea
Sequetur Carolus
Ambo resurgent."

God-wyn the one, God-won the other. An entry in the burial register informs us that Dorothy Godwine was buried the seventh day of May, 1638.

Woolhope Naturalists' Field Club.

JUNE 22ND, 1883.

“Land of delight! let mem'ry strive,
To keep thy flying scenes alive;
Thy grey limb'd orchards scattering wide
Their treasures by the highway side;
Thy half-hid cottages, that show
The dark green moss, the resting bough.”—BLOOMFIELD.

OLDBURY CAMP AND WOLDBURY OR CAPLAR CAMP.

THE programme of the Club for this meeting has so important an announcement at the end of it, that like the postscript of a lady's letter, it outweighs all the rest. We give it here “prominence of place” :—

SPECIAL NOTICE TO MEMBERS OF THE CLUB.

“The *Pomona* Committee have the great satisfaction to inform the members that the experiments they have caused to be carried on during the last four years, for the restoration of those valuable orchard fruits, the *Foxwhelp* and *Skyrme's Kernel* apples, and the *Taynton Squash* pear, have completely succeeded. They have now upwards of 800 young trees in vigorous health, viz. :—

	Foxwhelp.	Skyrme's Kernel.	Taynton Squash.
One year maidens, 3 ft. high ...	500	100	30
Two years' old trees, 4ft to 5ft. high ...	80	30	18
Standard Foxwhelp trees, 5ft. to 6ft. high	100		

“Members desiring to have these in the autumn, should apply immediately to Mr. Theo. Lane, the secretary, who will register the list for the Committee in the order of application.”

This is really good news. If the *Pomona* Committee of the Woolhope Club has thus saved for us these valuable fruits, it will indeed have rendered a great service to our celebrated orchards. Foxwhelp cider has become very scarce, and only to be met with now and then, and is only produced on special occasions. All honour to the Woolhope Club! “if” it restores it again to us. The Committee, who have taken so much trouble to propagate these excellent old varieties, must pardon the use of the “if.” Trees are apt to canker when they have been planted a few years, and the doubt is expressed to suggest to the Committee the advisability of issuing special directions for the planting and care of the young trees, before autumn comes. Orchard trees are too apt to be “tucked in by the heels,” anyhow, and left carelessly to themselves, and then people wonder that they “canker,” and complacently set it down to the age of the variety, rather than to their own negligence, and the verdict, as usual with them, is “I told you so.”

Another peculiarity of the programme was; the places named in it to be visited —“Oldbury Camp,” and “Woldbury Camp,” and the common thought was,

where in the world has the Woolhope Club found these camps. However, this must be left for the day's proceedings to unfold.

The day was cloudy and overcast, but yet three carriages, well laden with members, left the Free Library at 10 a.m., by Lower Bullingham and Holme Lacy, for Fownhope.

FOWNHOPE CAMP,

situated on the hill above Fownhope Court, but on the other side of the road leading to Woolhope, was now passed and pointed out. It has a single entrenchment, is elliptical in shape, and incloses an area of three acres, and is thought to have been a Roman camp, held in temporary opposition to the camp on Caplar hill. It is planted with trees, and its embankments are gradually becoming effaced. It was not visited on the present occasion. The village and its restored church were quickly passed through, but the parish stocks and whipping-post attached to it, near the churchyard walls, excited great interest, as a relic of by-gone times, not often met with now. There is not an old toper left in the parish, who, like Parolles in "All's well that ends well," has "sat in the stocks all night." The President was considerably "exercised" that he could not stop to make a drawing of it, and, by the way, if any resident would be so kind as to send a sketch of it to the "Court House, Ledbury," it would be gladly received, and no doubt would afford that gentleman some consolation for the constraint he had then to put on his archæological proclivities.

The high road was left at the Knap, and the way taken for Soler's Hope, through most picturesque lands. This parish was the birthplace of the renowned "Dick Whittington." The Whyttingtons came from Whyttington, in the county of Warwick; and the great-grandfather of our hero, William de Whittington, married Maud, the daughter and heiress of John de Solers, of Soler's Hope, at the end of the 13th century, and then became lord of the manor of Soler's Hope, and of Pauntley, in Gloucestershire, both of which belonged to the de Solers. The family made the Manor House of each of these places their occasional residence, but Pauntley was the more important of the two, and more in the civilized world. Pauntley is the burial place of the family, and it disputes with Soler's Hope the honour of being his birthplace.

Richard Whittington was the youngest son of Sir William de Whittington, who had succeeded to the Manors in 1284, and served in the Lincoln Parliament as M.P. for Gloucestershire. His father was outlawed for some unknown offence, and his mother, with her young family, is supposed to have taken refuge in the extreme seclusion of Soler's Hope. Here Richard was born, after his father had been obliged to fly, as the tradition of four centuries fully confirms. His father died, and his mother re-married, and thus, though of knightly descent, Richard had to become an apprentice in the household of a London merchant, and adventurer.

"I would fayne be a clarke,
But yet hit is a strange werke :
The birchen twiggis be so sharpe,
Hit makyth me have a faynt harte,
What avaieth it me though I say nay?"

One can fancy the disgust of the office drudgery of those days driving the high-spirited boy to run away, and it may also be readily imagined how his better thoughts had begun to prevail by the time he sat to rest on Highgate Hill, and heard the bells ring out in fancy—

“ Turn again, Whittington,
Lord Mayor of London ! ”

A stone marks his resting-place, and alms houses for thirteen poor men on Highgate Hill remain to bear out the tradition. He was thrice Lord Mayor of London, and his last mayoralty was in the year 1419. These particulars have been chiefly derived from Mr. Cooke's account of the parish of Soler's Hope, in the *History of Herefordshire* (Vol. iii., pp. 139—142), a book which demands its place in every county library that deserves the name. A full description will be found there, with the pedigree of the family, and the arguments for the probability of his having supplied cats, so lucratively to himself, to destroy the rats of Madeira, the Canaries, and islands off the coast of Africa.

The church of Soler's Hope was not visited. Nothing remains there referring to the Whittingtons, but a portion of a very ancient shield bearing their coat of arms.

The extreme seclusion and rurality of the district was well experienced to-day, in its narrow lanes and distant cottages ; the weedy so-called “summer fallows,” and the solitary high chimney-stacks of cottages ruined and gone. The trees so shaded the roads, and the hedges were so wild that the travellers had ever to watch against losing their hats from the overhanging boughs of an oak, or getting their faces scratched by the thorns on a long spray of wild roses. Well might the few inhabitants that were to be seen at the scattered cottages gaze at the unwonted sight of so many visitors winding along the lanes, and give but doubtful answers as to where Oldbury Camp was to be found. The Ridge Hill—the scene, up to twenty years since, of the annual saturnalia of the district, the “ Wake ”—was in full sight. “ It's the Aymestry Limestone,” said the President, with such geological emphasis that none dare dispute it ; and on reference to his map the way to the camp was clear. Down another pitch and up another hill brought the travellers to a narrow lane-end, where orders were given to descend from the carriages and mount the hill.

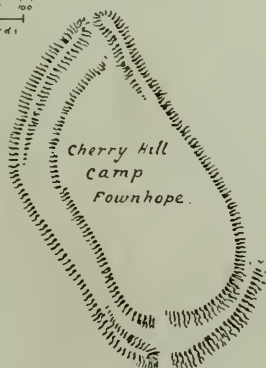
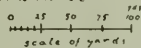
OLDBURY CAMP

and Oldbury hill on which it is situated, form the southern extremity of Marcle hill, or the Ridge hill, as this end of it is called. The camp is elliptical in shape, and contains an area of about thirty acres, now divided into two fields. The entrance was on the northern side, and it is still well marked by embankments on either side covering the approach. The ditch, or fall in the ground, on the western and part of the southern sides, varies from about six to fourteen feet ; but, on the eastern and northern sides, the fields extend beyond the ditch, and the entrenchments are now regularly ploughed over, and are almost obliterated by cultivation. The camp is not lofty, nor is the hill difficult of approach. The barometers carried to-day, as compared at fixed times with that at the Free Library in Hereford, made

Hereford.
Woolhope: Trans:
1883.



ordnance survey



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the height to be 582·5 above sea-level, which no doubt is fairly approximate to its true altitude.* A steep ascent in the road below the camp is called "Wooboro Pitch," a locality much better known by the natives than the camp itself. Notwithstanding the Saxon names of the camp, the hill, and the pitch; and notwithstanding its round elongated shape, tradition states it to have been a Roman encampment, and some archæologists support this view. It may have been so, but it seems more probable that it was the residential place of some local Saxon chieftain, who enclosed this large camp to protect himself and his cattle from any sudden attack of a quarrelsome neighbour. There is one difficulty, however, that would meet any idea of continuous occupation, and that is the want of water supply. There is no spring on the hill, and all buildings on it are provided with tanks or pools to preserve rain-water. The comfortable cottage just below the tank, with its pretty and well cared for garden, and its choice ornamental shrubs and many fruit trees, had no water supply. Its occupants had to go down two fields, and draw all their spring water with chain and bucket, from a well twenty feet deep. They had faith, however, that water could be got if a well was sunk, but it was evidently only the faith which always exists in such cases. There is a deep hollow near the entrance to the camp, and within the protection of its embankments, which, when puddled, probably formed the pool for the preservation of rain-water to supply the people and cattle.

At the summit of the camp, beneath a friendly stunted oak tree, the President read the following address on the

LUDLOW AND AYMESTRY ROCKS OF THE SILURIAN SYSTEM.

To stand upon the outer edge of the Woolhope basin and be called upon to speak about geology is a strong temptation to make some general observations upon that remarkable and interesting valley, but as the members of our Club live all round it and in it, and have adopted its classical name, and explored its wonderful structure over and over again during the last thirty years and upwards, it is a fair assumption that they all know everything that can be said about it, and are not disposed to bestow their time upon the discussion of so stale a subject. I will not stay to enquire whether this supposition exists or does not exist, and if it does exist, whether it is correct or otherwise, but propose to abandon the greater question, at any rate for the present time, and leave its marvellous history in repose, and confine myself to a few general remarks on the Ludlow formation and its sub-division into Lower Ludlow Rocks, Aymestry Limestone, and Upper Ludlow Rocks, all of which are so conspicuous here, and form the great walls by which the Woolhope valley is encircled—thus taking the fringe of the subject only—and I am led naturally to this course by the fact that Oldbury camp, which we are here to explore, stands almost entirely on the Aymestry limestone, and is carved out of the solid mass of the calcareo-argillaceous rock

* This proves to be much too low. The nearest Ordnance Survey Bench Mark, on the main road about two hundred yards north of Oldbury Camp, makes the true altitude at the site of Bench Mark to be 617·2 feet.

which bears that name, and forms the extreme western spur of the great sustaining barrier to which I have just referred. The Ludlow Rocks of the Silurian regions of England and Wales must be simply viewed as a continuation of the argillaceous masses which prevail in the underlying formation of Wenlock Limestone and Shales. The central portion, however, in several places, particularly at Aymestry, consists of a dark grey clayey limestone. The uppermost division of the series, *i.e.*, the Upper Ludlow, is more sandy and calcareous than the other portions, yet retains in parts much of the "Mudstone" matrix, and is in great measure an imperfect thin-bedded, grey coloured, earthy building stone. Occasionally the highest stratum is composed of light-coloured sandy freestones, through which the formation graduates lithologically and conformably into the lowest beds of the Old Red Sandstone, but the commingling of the two great series must have occupied a very long period of time, as the Passage Beds at Ledbury, which are not all Silurian, nor yet all Old Red, have a thickness of nearly four hundred feet; nevertheless, these Passage Beds partake more of the latter formation than of the former, and the fossils chiefly belong to the system of the Old Red, though probably evolved from the Ludlow Bone bed, which will be mentioned below. The Lower Ludlow Rocks are an upward prolongation of the Wenlock series, and are composed of dark-grey shale, rarely micaceous, with occasionally narrow bands, an inch or two in thickness, and small concretions of impure limestone. They attain at Ledbury a thickness of seven hundred feet and upwards, and they surround the valley of Woolhope within the wall of Aymestry limestone. They occur also in extensive tracts in Shropshire, Montgomeryshire, and in the valley of the Usk and other places. Throughout the typical districts these shales occupy the base of the ridges, the harder summits and outward slopes of which are composed of Aymestry limestone and Upper Ludlow rocks. The inferior strata, for the most part argillaceous, are often arranged in large spheroidal masses, showing a tendency to concretionary structure, which rapidly exfoliate under the atmosphere and break into shivery fragments, as may be seen at any place and every place where the stone lies for a few months, or sometimes for weeks only, exposed. Calcareous nodules, differing chiefly from those of the Wenlock deposit in being usually of a darker colour, are often formed round an *Orthoceras*, or a *Trilobite*, or other fossil as a nucleus. The occurrence of *Graptolithus Priodon* (which is rare at Ledbury), *Cardiola interrupta*, and *Murchisonia Lloydii*, prove the indivisibility of the Silurian System of life. In ascending, the strata in some places become somewhat more sandy, but it is not so at Ledbury; at Woolhope and Ledbury and most other places it is the same dull non-micaceous shale, which, from its want of cohesion, has been denuded for the most part, thus giving rise to deep valleys which separate the harder parts of the Wenlock and Aymestry rocks from each other. This is very perceptible in the Woolhope valley now before us, and at Ledbury, and is well shown in the great and highly interesting Synclinal near Eastnor Castle. The Lower Ludlow stone is perfectly useless for building, road making, or any other economical purpose, although, by some extraordinary oversight it is being quarried, in common with Aymestry limestone, but not to the same extent, and used for ballast on the new railway

now being constructed there, for which purpose it is utterly unfit, consequently opportunities for examining its structure and obtaining its fossils do not very frequently occur. The heavy railway works now in progress at Ledbury afford extraordinary advantages for obtaining additional knowledge relating to it, of which every advantage should be taken by geologists. The Aymestry Limestone is a subcrystalline earthy rock, arranged in beds from one to five feet thick, the laminae of deposit being marked by layers of shells and corals. The rock when unweathered is of indigo, or bluish-grey colour, in parts mottled by the mixture of white calcareous spar. It is regarded by some as only a calcareous condition of the Lower Ludlow formation. The quarries, like those in all the harder bands of the Ludlow formation, present natural backs or divisions, usually coated by a dirty yellow or greenish shale of an ochreous character. These are the faces of joints more or less vertical, and when open, they occasion the rock to separate into rhomboidal masses, which are easily detached if the strata are much inclined. The rock is, therefore, subject to slides and subsidences, particularly where the underlying saponaceous "Walker's Clay," or Fuller's earth prevails, bands of which are frequently found near Ledbury varying in thickness from a mere marking to a depth of one or two inches. Great risk is run in building on sloping ground of this character. Examples of these slides may be seen on many spots, particularly at the "The Wonder" at Marcle, and at Dormington and Backbury, and also on a smaller scale in many instances round the outside of the Valley of Woolhope. In the Woolhope Valley the Aymestry rock assumes precisely the same external or physical features as at Ledbury and Ludlow, having from its hardness resisted denudation better than other portions of the deposit. It thus forms the crest of the external and encircling ridge, and is prominent in the hills of Seager and Backbury and the Cockshoot, and is quarried for road and other purposes all along the flanks of these eminences. There are whole hills of it at Ledbury and Eastnor, but the finest open section is at Rock Hall quarry, near the village of Aymestry, whence it takes its name, and where the huge *Pentamerus Knightii* is found. It is seen also in Staffordshire and Shropshire, at Usk, May Hill, Abberley, Eastnor, and Coddington, and the interesting outlier Shucknall Hill is of this formation. The Upper Ludlow Rock is the most diversified in structure and contents of the three sub-divisions of the highest Silurian formation, and is also remarkable in exhibiting a transition into the next overlying system, the Old Red. Its lowest stratum is a calcareous shelly band, charged with *Rhynchonella navicula*, and occasionally attains a thickness of 30 or 40 feet. This is surmounted by the grey calcareo-argillaceous masses, so common throughout the Silurian rocks, which, from their incoherent nature, easily decompose into mud. The chief and distinguishing portion of the Upper Ludlow contains more calcareous matter and sand than the beds immediately beneath. It is, on the whole, a slightly micaceous, thin-bedded stone, of bluish-grey colour within the solid portions, but weathering externally to a brown rusty grey, and remarkable for its symmetrical transverse joints. It is used extensively for building, but if not placed horizontally in the wall is prone to decomposition. It is largely developed round the outsides of the Woolhope valley, and at Ledbury,

where there is an extensive quarry near the Frith farm. The stone from this quarry was used in constructing the farmhouse and buildings. Portions of it, and of Downton Sandstone may be seen in the easternmost wall of Ledbury church, which have probably been there more than 700 years, and are still perfectly sound. It occurs also at Ludlow, Usk, Abberley, and elsewhere. The Upper Ludlow beds at Ledbury attain a thickness of about 150 feet. This formation is overlaid by the Ludlow Bone bed, which varies from one inch to one foot in thickness, but the latter dimensions are very rare, and is made up of bony fragments of fish spines and other organic matter. The Downton Sandstone is immediately above the Bone bed. It is a thin, light-coloured, and slightly micaceous sandstone, which takes its name from Downton, near Ludlow, and is the highest member of the Silurian system. It may be seen to advantage in the cutting at Redding's Hole, eastward of the railway station at Ledbury, at the base of the Passage Beds there, and is found in Gloucestershire, Worcestershire, Shropshire, Pembrokeshire, and Carmarthenshire. It rarely exceeds a few feet in thickness.

When the President had finished his address, the position and character of the embankments of the camp were examined, and the carriages regained. The way back was taken by the Crossway, where the old Roman road was gained, and by Rugden to Caplar Hill, with fine and extensive views the whole way if the mist would but have allowed them to be seen. The ascent to Woldbury Camp from this side is easy, and the visitors were soon engaged in examining its embankments, considering the water supply, and taking the height of the summit, where stood that now familiar object, an Ordnance Survey pole. The papers were to be read beneath the yew trees on the large south-western embankment, where "the British Chieftain was buried," said a resident on the spot, but a drizzling rain came on, and in a barn conveniently at hand Dr. Bull read his paper on "Woldbury or Caplar Camp," and the Rev. Augustin Ley read another on "The Rarer Plants of the District." Both these papers were listened to with much interest.

The road home was taken by Fownhope, Mordiford and Hampton Bishop, and the members reached Hereford quite ready for the good fare provided for them at the Mitre Hotel.

The botanists of the party enjoyed very much the luxuriant "greenery" that met them on all sides throughout the day. The foliage of the trees could scarcely be finer than it is this year, and the crops of all kinds look more promising after the refreshing rains of the last three weeks. From the carriages in the lanes about Soler's Hope, besides the dog-rose and the wild guelder-rose, *Viburnum lantana*, they could have gathered easily blossoms of the honey-suckle and the dog-weed, *Cornus sanguinea*, which was plentiful in every hedge. The abundance of orchis blossoms was very striking throughout the day. The common spotted-leaved *Orchis maculata* grew in large quantities, with spikes of blossom, sometimes nearly six inches long, and if it was but rare or difficult to grow how lovely it

would be thought. The green-winged *Orchis morio* was common also, and fine specimens of the butterfly orchis, *Habenaria bifolia*, were also seen. On the limestone soil of Oldbury Hill *Orchis pyramidalis* was found, and another always interesting plant, *Chlora perfoliata*. In the hedge on the hill near the camp was gathered *Lonicera xylosteum*, the twin-flower honey-suckle, probably a wanderer from the cottage near, and the *Euonymus Europæus*, the spindle tree, a true native, whose berries are so pretty in autumn. On Oldbury hill were also gathered *Myosotis collina*, *Ligustrum vulgare*, *Scenecio erucifolius*, and *Trifolium medium*. *Symphytum orientale*, confirmed by the highest botanical authorities to be correct, was found on the road side at How Caple. *Lycopus Europæus*, by the stream side at the foot of Oldbury Hill. On Caplar Hill, *Tilia grandifolia* grows unquestionably, *Daphne Laureola*, the lovely wood vetch, *Vicia sylvatica*, and many other plants too numerous to mention now.

The plant of the day, however, was *Stellaria nemorum*, Wood starwort, which was found, after the papers were read, on the river bank in Caplar wood. It was a good "find," and very rare in Herefordshire.

The business of the Club was conducted after dinner, when, amongst other members, the Rev. David Price, of Little Marcle, and Mr. Henry Wilson, of Eastnor House, Malvern, were elected members. An excellent paper on "Offa's Dyke" was then read by Captain Morgan, R.E., which led to some little discussion.

A very pleasant day, and a profitable one, was thus spent, notwithstanding the dreary weather, with ever and anon a shower, that cheerfully might be spoken of as "Scotch Mist." It was a pity, however, that the lovely scenery passed through was not brightened by sunshine.

The gentlemen who took part in the day's proceedings were the President, Mr. George H. Piper; Revs. Augustin Ley, E. J. Holloway, A. G. Jones, H. B. D. Marshall, G. M. Metcalfe, P. H. S. Strong, and E. Price; Drs. Bull, and Chapman, and Mr. Jones; Major Doughty; Captains de Winton, Kerr, R.E., and Morgan, R.E.; Messrs. T. D. Burlton, Robert Clarke, Charles Fortey, J. T. Owen Fowler, J. Greaves, W. H. Harrison, G. H. R. Holden, F. R. Kempson, John Lambe, S. R. Matthews, H. C. Moore, J. E. Norris, T. C. Paris, Evan Pateshall, J. Riley, O. Shellard, Wm. Stallard, James Stevens, Henry Wilson, and the Secretary, Mr. Theophilus Lane, with a sprinkling of natives, who came to listen to the papers, and pick up a few crumbs of science, and who, it is believed, listened with much gratification to the many-syllabled words introduced on the occasion.

WOLDBURY, OR CAPLAR CAMP.

By DR. BULL.

THE hill on which this camp is situated is variously named Capler, Caplar, Capiller, or Capillar, and the origin of the name has been derived from still more varying sources. Mr. Flavell Edmunds, in his *Names of Places*, derives it from the British word "cop," a summit, and "le," a place, a derivation that would apply to every hill, and he therefore supposes the hill to take its name from the camp; others suppose the name "Capler" to be derived from the old family of Caple, or Capell, who for so many centuries held the adjoining manors of How Caple and of Fownhope; though they seem only to have had a small part of this hill in their possession. The most common belief, the version of the guide book, thinks the name a corruption from the second name of Ostorius Scapula, and supports it by an old tradition. Ostorius Scapula is said to have attacked Caractacus when he was about to cross the Wye by a ford near Caradoc, to have been defeated by him, and to have been obliged to retire and entrench himself on the summit of this hill. There is certainly a large tumulus, or "tump," as it is called in Herefordshire, near the church of King's Caple, which usually indicates the scene of a battle, but there is no historic record of any battle having taken place at King's Caple. If the Roman general was beaten there, however, he would not be likely to record the defeat. Roman historians seldom did so, and no other record of the period exists. The origin of Capler from Scapula is really too remote to be probable.

The most likely derivation of the name is given by Mr. Cooke, in his excellent continuation of Duncumb's *History of Herefordshire*. He thinks it simply an abbreviation of *capitularius*, a designation having reference to the early owners of the manor, the Deans and Chapter of Hereford. They still hold the manor, and it may be stated here that from the quarry at the foot of the hill, near the river, much of the stone required for the construction and repairs of St. Ethelbert's Cathedral at Hereford has been obtained.

The British names of the camp, or the hill, have been lost, and the earliest distinctive name which has come down to us is the purely Saxon name of "Woldbury," and this seems to have been nearly lost also, for the Ordnance and other recent maps do not give it, and it is scarcely ever alluded to elsewhere. This name is given on the old maps, however, and it is just mentioned incidentally in local histories. Two large fields on the south-western slope are also named "Upper Walboro" (containing some 35 acres), and "Lower Walboro" (23 acres), on the maps of the estate, whilst the small parish in which the camp is situated is called Brockhampton—a name equally Saxon in derivation.

There is no historical record of the Romans having occupied this camp; some authorities would attribute the sally-ports from the inner camp to the trenches to them. It is extremely probable that they did occupy it, though there is no trace

of their having done so to be derived from the names of the locality. The camp lies close to the road from Ariconium, by Crow-hill, Old Gore, Snogs Ash, How Caple, Rugden, Fownhope, and Mordiford, to Withington, turning westward to Magna, or proceeding due north to Black-caer-dun, Bravinium, and on to Uri-conium. They did leave behind them, however, the coin now submitted to your inspection. It was found by Mr. Stallard's men, when uprooting the gorse bushes on the south side of the hill. They also found some worked flints at the same time. Mr. J. J. Reynolds has been kind enough to examine the coin, and has sent the following satisfactory description of it :—

“The coin is a fine specimen of a Sestertius, or Roman 1st brass coin. The Roman coinage is usually classified by collectors as 1st, 2nd, or 3rd brass, to which our English pennies, half-pennies, and farthings roughly correspond. The obverse bears a noble bust of Lucilla Augusta, who, according to Akerman, was the daughter of Marcus Aurelius and Faustina, and wife of Lucius Verus. She was born A.D. 147, exiled to Caprea, A.D. 183, and killed shortly afterwards. Augusta is not her name, but denotes her title as Empress, just as an Emperor is styled Augustus. So this little disc of metal left the die at least 1,700 years ago. On the reverse, stands a priestess offering votive wreaths at an altar, with the letters S. C. The legend is almost entirely obliterated. It would appear that the Roman brass coinage was under the direction of the Senate, whilst that of the precious metals was controlled by the Emperors; hence we perpetually find on the former the letters S.C. (*Senatus Consulto*), and usually, as in the present instance, conspicuously placed on the disc of the coin. It was a common practice with the Romans to issue money with effigies of the Empress for the time being, but it must not on this account be confounded with our medal copper tokens. The coins so issued were as much currency of the realm as though they bore the image of the ‘*Cæsar Augustus Pontifex Maximus*’ himself. This is a measure of dignity and commemoration accorded to the crowned ladies, which we degenerate moderns have not been polite enough to follow, and, truth compels me to add, that we follow at a very respectable distance indeed, the superb series of the money of Imperial Rome, comprised in the successive issues of the bronze Sestertius. Coins have proved themselves most valuable historical records, and it does seem a pity that when Macaulay’s New Zealander shall contemplate from the ruins of London Bridge, the site of Old London, England will not have left behind any memorials in this form worthy of her vast colonial empire, her naval and military triumphs, and her commercial greatness.”

There is very little doubt, therefore, that the Romans did occupy this camp when it suited their purpose to do so, though they have left no other certain trace behind them than this one coin.

The Saxons, or Anglo-Saxons, occupied the camp and district at a later period, since the names of the district are, for the most part, clearly derived from them. “Woldbury,” itself, has a distinctive meaning in each syllable. “Wold,” says Dr. Johnson, “means either a plain open country or downs,” which this certainly is not; or, secondly, “a ruler, governor, or general of an army,” whilst “bury” means either “a dwelling-place,” or “a mound above the dead.” Verstegan says

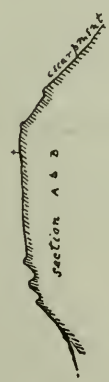
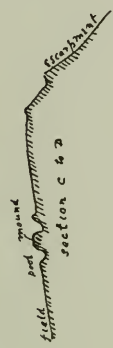
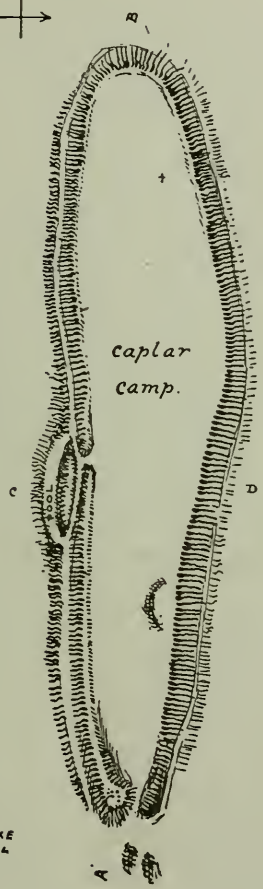
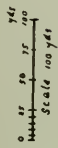
"The dead bodies of such as were slain in the field were not lain in the graves, but were placed on the ground, and covered with turves or clods of earth; and the more in reputation the person had been, the greater and higher were the turves raised over their bodies. This some used to call 'biriging,' some 'beorging' of the dead, all being one thing, though differently pronounced; and from hence we yet retain our speech of 'burying the dead,' that is 'hiding the dead.'" Mr. Thomas Wright, in his interesting book, *Wanderings of an Antiquary*, says "'burys,' or 'burrows' are sometimes found within the intrenchments on hill-tops . . . and such elevated spots were favourite places of burial," but he also says "'bury' may mean 'beorg,' or 'burgh,' from the Anglo-Saxon verb 'beorgam,' to defend; and it was used to denote the residence of the earlier Anglo-Saxon chiefs, when surrounded by an earthen wall or entrenchment . . . and when we find," he concludes, "the word 'borough,' or 'burrow,' or 'bury,' in the name of such entrenchments, it seems to me that we have a primary presumption that it may have been a Saxon mansion" (pp. 207—209). The meaning, therefore, of the name "Woldbury," may be said to be the dwelling-place of a Saxon, or Anglo-Saxon, ruler.

There is a tradition that assigns the western bastion at the chief, or northern, entrance of the camp, as a tumulus, or burial-place of a British chieftain; but, though much more massive than its fellow, it defends the weakest point of the camp, and would naturally be made the largest. The centre of this bastion is occupied by a yew tree, measuring 7ft. 9in. in circumference, at two feet from the ground; and at some ten yards distance are four yew-trees, planted 6ft. apart, east and west, and 9ft. north and south, and closely approximating to the points of the compass. The dimensions of these trees are as follows—The north tree, 5ft. 1in.; the south, 4ft. 6in.; the east, 4ft. 2in.; and the west, 4ft. 10in. in circumference. On the same mound were also three other yew-trees, measuring in feet and inches—3.3, 5.9, and 6.2. These trees cannot be more than three centuries old, and if their funereal character has given rise to the burial tradition, the interment must have been of a comparatively recent date.

The camp itself occupies the ridge which forms the summit of the hill. It is long and narrow, and slightly curved in direction from the entrenchments following the shape of the hill. Its inner area is 612 yards, or upwards of a third of a mile, long, by a varying width of 46 yards, 78 yards, and 111 yards. It is divided by a hedge into an orchard of about 4 acres, and a larch plantation of $6\frac{1}{2}$ acres. On the north and eastern sides, from the natural steepness of the hill, there is but a single entrenchment, but on the western side, there are double lines of defence, and towards the southern entrance the embankments are large.

The only supply of water is obtained from the outer fosse on the south-western side, which is deepened into a pool 138 feet long, and the approaches to it are guarded by a high bastion behind it. The water was fresh and good, and a small spring was flowing into it from the ground of the camp above. This spring would certainly fail in dry summers, but the absence of any outflow was explained by the fact of a pipe being laid from it to supply a cottage below. The nearest good water supply from springs is at the Dockwell Farm, above a quarter of a mile from the camp.

Hereford.
Woolhope: Trans:
1883.



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There is a deep hollow within the camp, surrounded by an embankment, opposite the sally-port to the pool. It suggests the site of buildings for protection against weather ; but it must also be confessed it may have been made in a search for stone.

The chief entrance to the camp is at its narrow south-eastern end. It is well protected by the entrenchments which extend along the southern side. There are also two pits in front of the eastern bastion, which might be very useful in defence. A hollow extends down the field approaching the camp, and there is a drop in the ground of from three to four feet, for above a hundred yards at the fence, which suggests also the position of a stockade.

The altitude of the hill is not very great, the barometers to-day, as compared by arrangement with the Free Library, Hereford, made it 622·5 feet above sea-level, which is fairly approximate.* It is not nearly so high as Aconbury hill (which has been ascertained by careful measurement to be 915 feet above sea-level) but has a far wider range of sight. From the position Caplar hill occupies in the valley of the Wye, the views from it are most varied and extensive. To the west are seen the Black mountains, the Sugar-loaf, and the Skirrids ; and towards the north, the Radnorshire hills ; the Cleve hills in Shropshire ; the Malvern hills to the east ; and May hill and the Forest of Dean to the south ; with so rich an array of intervening hills, woodlands, and valleys, as to make the scenery extremely fine and interesting. It is the only place from which the spires of Hereford and Ross may be seen from the same spot.

From a military point of view, the advantages it might afford would be very great. It not only commands the river from a considerable distance, but is in full view of the neighbouring camps of Fownhope, St. Ethelbert's camp on Backbury hill, Oldbury, Caradoc, Aconbury, and Dinedor, which surround it ; but it is in sight of Credenhill, Sutton Walls, and the more distant Herefordshire Beacon ; besides numerous other hills and places that circumstances might render important.

Horseley considered this camp to possess all the characteristics of a true British camp, and the leading authorities agree with him. It is supposed to have been formed by Caractacus in his march across the county from Little Doward towards the Grand Camp on the Herefordshire Beacon. As Shenstone wrote, with reference to a similarly fortified hill, it may be said here—

“ 'Twas on those heights, by Roman hosts annoy'd,
Fought our bold forefathers ; rustic ; unrefined ;
Freedom's plain sons : in martial cares employ'd,
They tinged their bodies, but unmasked their minds.”

It is conjectured also, with great probability, that this camp was occupied by the Romans ; and it certainly may be stated with still higher probability, that in the long period of unrecorded English history, Saxons and Anglo-Saxons occupied the camp, settled the district, and have left their traces in the names of the people and places.

* The nearest Ordnance Survey Bench Mark is upon the building north of Caplar Lodge, at which Bench Mark the altitude is given as 449·7 feet.

A remarkable feature in the physical history of Caplar hill must not be passed by. It shares the liability to landslips, with all the hills around the large Woolhope dome of Silurian rocks. The great disturbance of the upheaval seems to have so shaken their stratification, that, by the gradual action of water, large portions slide away from time to time. It is remarkable too, that the landslips occur in the outer crust of the Silurian rocks, called Upper Ludlow rocks, as well as in the Old Red Sandstone rocks adjoining, through which the Dome was forced. Thus it was, doubtless, with the landslip which carried away part of St. Ethelbert's Camp on Backbury hill, at some unrecorded period; the well-known landslip at Marcle, called "The Wonder," where twenty acres of land moved from February the 17th to the 19th, in 1575, is another example; that at Claston Farm, Dadnor hill, Dormington, which occurred on March 15th, 1844, when upwards of three acres of land with forty oak trees standing upon it, moved two hundred yards down, is another; and others of lesser magnitude might be named.

The following account of the landslip of Caplar hill is given in Mr. Cooke's *History of Herefordshire*, Vol. iii., p. 241.

"This hill experienced a landslip of considerable extent in April, 1793, when the ground sank fifty perpendicular feet, and then moved forward. It was witnessed by a labourer, who, when working near a hedge, found the ground moving, and at the same moment heard a loud noise resembling a distant hailstorm. Running from his work towards the river, across a narrow meadow, he observed with alarm the sloping hill, with trees on it, moving gradually towards him, and this progressive movement is represented to have continued from Thursday to the next morning. It was a movement downwards, and in its progress S.W. It has left immense caverns in the earth, and moved stones there of the magnitude of five or six tons. A number of trees were thrown down, some moved standing and are now remaining so. A large old yew tree was moved nearly sixty feet, and is now standing firm and uninjured. The people assert that six acres of ground were moved. Some part of the fallen earth reached the river, and had the fall continued it must have materially affected the face of the stream."—*Gentleman's Magazine*.

The general progress of the Caplar hill landslip, lasting so many hours, closely resembles that on Marcle hill, which moved for forty-two hours. Here, however, the slip of rocks was Old Red Sandstone, whilst at St. Ethelbert's camp, and at Marcle, and at Dormington it was the Upper Ludlow rocks, of the Silurian system, that were affected.

The estate of Brockhampton was owned for many generations by an old yeoman family of Herefordshire, the Skyrmes. It was this family who produced and gave their name to that valuable orchard fruit, Skyrme's Kernel. The grandson, Thomas Skyrme Prothero, sold the estate in 1833 to another old Herefordshire family, the Stallards. This family restored the church and planted the approach to the Camp from the western side, and Mr. Stallard bought also Woldbury, or Caplar Camp, which had not before belonged to the estate, from the Powells of Woolhope. To such old families, in times gone by, might well apply the oft-quoted Kentish distich—

"A gentleman of Wales, a knight of Cales, and a laird of the North Countree;
But a yeoman of Kent, with his yearly rent, would buy them out all three."

The Stallards suffered for their loyalty in the troublous times of the Civil War. It is stated by Mr. Cooke in the *History of Herefordshire*, Vol. iii., that "Richard Stallard had to compound for his lands in Ross and Weston for having adhered to the forces raised for Charles I. against the Parliament" (*Royal Comp. Papers*, 2nd series, Vol. xlviii., p. 7). In 1869 the estate was again sold. Sir Christopher R. Lighton, Bart., who has succeeded his father in the possession, has erected a commodious residentiary mansion upon it; and it is by his kind permission that the Club now visits the Camp.

Caplar hill, and indeed all the Woolhope district, is classic botanical ground. Mr. John Stackhouse, a descendant of an old Cornish family, succeeded to the Manor of How Caple in 1764. He was a Fellow of Exeter College, the author of the *Nereis Britannica* and other works, and moreover an excellent botanist. He was a Member of the Linnæan Society, and a friend of Dr. Withering. He made the first synoptical arrangement of British *Agarics*, as given in Withering's great work on *British Plants*. In this work the name of Mr. Stackhouse is often quoted as the authority for funguses and other plants found in the Caplar or Woolhope woods. Thus Caplar is given as a locality for the funguses, *Clavaria Herculaneum*, the "Club of Hercules"; *Polyporus perennis*, on "the charcoal heaps of the Dean and Chapter grove"; the elegant little *Nidularis campanulata*; *Russula integer*; *Agaricus ovalis*; *piperatus*, *terreus*, &c., and many others are named as found in the Woolhope woods. Mr. Stackhouse's son, Mr. Thos. Pendarves Stackhouse, who graduated at Jesus College, Cambridge, M.A., 1807, succeeded his father in the manor of How Caple, married Mr. Thos. Andrew Knight's eldest daughter, and getting the manor and estate of Acton Scott in Shropshire, added the name of Acton to his own. His widow was the highly gifted lady, Mrs. Stackhouse Acton, who has so often aided the enquiries of the Woolhope Club, and who died only last year, 1882.

Badgers are still to be found in the recesses of Carey wood, and they wander still to Brockhampton occasionally. Vipers are still to be found here, as they are in places throughout the Woolhope District; but they are not so numerous on Caplar hill since Mr. Stallard destroyed the gorse bushes, which formed their stronghold. Insects exist in great variety, and the more rare plants of the district will now be mentioned to you by the Rev. Augustin Ley.

ON THE MORE RARE PLANTS OF THE DISTRICT.

By the Rev. AUGUSTIN LEY, M.A.

SOME of my earliest recollections are connected with an outlook, in which the hill upon which we are now standing forms a prominent feature. Caplar Camp and the yew trees which mark its south-east angle, were conspicuous objects from the windows of my father's house; and I remember distinctly an occasion when I was eight years old, on which I was taken by some uncles of mine upon an expedition to what seemed to me then an enormous distance, when after my being carried pic-a-back along some very muddy lanes, we arrived at length at Caplar hill and Caplar Camp. It must have been, I think, a year or two earlier than this that the present Vicar of Lugwardine used to frighten me, as a child, by the idea of the dragons which inhabited the solitudes of the Carey woods just behind Aramstone house; and I remember distinctly the awe with which the idea inspired me when I was wandering in them alone.

Since that first expedition, and those childish years, I have made many others to this place; Carey woods and Caplar hill being reserved for us boys as a holiday treat for a long ramble in search of birds' nests and flowers, and I shall always connect Caplar with the unique pleasure which a lover of nature derives from forming his first acquaintance with some of the less common among our common plants.

I ask your pardon for imposing upon you in the beginning of my paper these childish trifles; my apology must be that in my relation to birds and flowers I feel still but a grown-up child—and indeed in our botanical pleasures of later years, how much is but a child's ramble grown-up; the same love of outward nature, and the same wonder what may come next, deepened, it may be, by an increased sense of beauty and a more intelligent questioning in Nature's great open secret? But at least these childish reminiscences may not be an unsuitable beginning of a botanist's paper, since they, and such as they form the common beginning of a botanist's life.

Geologically speaking, Caplar lies wholly within the Old Red Sandstone formation, and you must therefore not expect to hear of a rich flora. It is the dominating point of a ridge running S.W. for about $3\frac{1}{2}$ miles, and forming the earliest of those characteristic great horse-shoe bends which mark the lower course of the Wye, from Caplar downwards to the Wyndcliff and Llancaut, and add so beautiful a feature to its scenery. The view obtained from the western face of Caplar hill over the Wye, running immediately underneath, and over the expanse of country both to the north and south, is well known and justly admired. The steep northern escarpment of the ridge just mentioned is densely clothed with wood, and varies in breadth from one to two hundred yards at its western extremity to three parts of a mile at Caplar hill. This wood takes the name of the "Carey woods," and is the home and hiding place of many of the pretty though

common flowers which cling to the remains of original woodland throughout Herefordshire. At first entering, where meadow land joins woodland, the Meadow Saxifrage (*Saxifraga granulata*), rather a rare and local plant in Herefordshire, has found a congenial home. Further on in the wood, the Snowdrop (*Galanthus nivalis*) nestles in the thickets along the damp lower hedge, looking quite like a native plant, though whether it is so or not I must not attempt to discuss in a paper of this sort. Again, further on, the beautiful Wood Vetch, (*Vicia sylvatica*), magnificent in its ranging stems and long clusters, and delicate in the lined petals of its flowers, grows in small quantity. Here the ever-welcome Woodruff (*Asperula odorata*) stars the June shades, and the Spurge Laurel (*Daphne Laureola*), with its powerful sweet odour, courts the sun in the warm days of the end of February. This plant is not found till after the curve of the ridge has turned to face the S.W., and thus catches the early spring sun as well as protects the plants from the early spring Easterlies. In the cooler slopes of the wood one of the handsomest of Herefordshire plants, the Spreading Bell-flower (*Campanula patula*) is in certain seasons abundant, covering open spaces in the wood with its tall slender stems, supporting a profusion of fine purple flowers. This plant is a little uncertain in appearance. During dry seasons it almost disappears, but in summers when heat is joined with a good deal of moisture, it is abundant, especially delighting in parts where the wood has been cut one or two years previously. The strange Herb Paris (*Paris quadrifolia*) and the equally strange Bird's-nest Orchis (*Neottia Nidus avis*) are to be found in the darker parts of the wood. The Wood Rush (*Luzula sylvatica*) and its congeners are abundant. Of these, the rarer species, the Narrow-leaved *Luzula Forsteri*, is a very characteristic Herefordshire plant; it is here, as in many parts of Herefordshire, far more abundant than its (usually more common) brother, the Broad-leaved *Luzula pilosa*. In Carey woods wherever these two appear together, their sterile intermediate, Borrer's Woodrush, is never absent. It is strange that these two species, being sufficiently removed from each other to produce an almost uniformly sterile hybrid, should yet transgress the common laws of plant life, and produce that hybrid in such abundance. A sylvestral variety of the Common Rush (*Juncus communis*) which I have not seen mentioned in books, occurs in Carey woods, differing conspicuously from the type in its stems being striate when fresh. Lastly, the beautiful Wood grasses, the Melic grass (*Melica uniflora*) and the Wild Millet (*Milium effusum*), abound in these woods.

But enough of common plants, or you will draw the conclusion that there is nothing rare to be found here.

One of the characteristic plants of the lower course of the Wye is the large-leaved Linden (*Tilia grandiflora*). This reaches its greatest development on the limestone cliffs of Symonds Yat and the Dowards, and again, I believe, at the Wyndeliff; and this district is one of the two in which alone Hewett Watson, our great authority on these matters, considered it a native tree. But it is curious that the tree begins with the highest horseshoe of the Wye valley, on the Red Sandstone of Caplar. An ancient pollard belonging to this species (I believe, but I have never seen it fruiting) stands, and has stood perhaps for 100 years, the outpost

of its kind, in the border of the wood about half-a-mile below Caplar. Considering its occurrence at Doward, Symonds Yat, and again at Welsh Bicknor, I think the evidence balances in favour of its nativity at Caplar also. But it reappears in great quantities in the limestone woods at Downton, in the gorge of the Teme. Are we to consider it native there, or was it planted as an ornamental tree before the introduction of the more favourite *Tilia intermedia*, which is now the ordinary planted lime? One question with regard to this tree I want to ask: Does it occur in the woods overhanging the Wye at Linder, three miles south of Caplar? If it does, we should then have a complete chain of stations for it in the lower course of the Wye, and its indigenoussness in the Wye valley would be fairly certain. It does not apparently occur in the ordinary Herefordshire woods, away from the river valley; and when occurring in the open country it is always clearly planted.

Right under the dominating point of Caplar hill there is an extensive natural slip, the lower part of which has been converted at some distance of time into a quarry. From this quarry, I believe, the stone used for building Hereford Cathedral is traditionally said to have been obtained. Here it is that the rarer plants of Caplar are crowded (as is often the case) into a small space. On approaching the quarry from the river the appearance of Yellow-wort (*Chlora perfoliata*) quickens the botanist's attention, and shows him that he is in a place where some "good things" may turn up. Nor will it disappoint him; for, after a few steps, turning to the right upon the *débris* of the quarry, he will see the Mountain St. John's-wort (*Hypericum montanum*) in abundance. Clambering up steep bushy slopes on the other side of the quarry, he will, if he is fortunate, find himself in a colony of the beautiful Bee orchis (*Ophrys muscifera*). This plant was discovered here by my brother some years since, and I have myself seen it here in several subsequent years. But it is not to be seen there by any means every year. Mounting in the line of the slip, the Mealy Guelder-rose (*Viburnum Lantana*) will next claim his attention; and still further up, in the same place, I found, two years ago, the Fingered Sedge (*Carex digitata*) in small quantities. This plant is the rarest yet detected upon Caplar. It is its third station in Herefordshire, but, as far as I am aware, the only one in the British Isles where the plant occurs off the limestone.

There is good botanising ground about this slip, and the loose coppice-clothed rocks which lie underneath it, among which something very good ought some time to turn up. And I want to call the attention of botanists to the fact that limestone—or what are usually considered limestone—plants, are in Herefordshire often to be found on our Red Sandstone formation, especially when there is much marl present in the strata. Here at Caplar, besides the limestone plants above-mentioned, several rare mosses occur which belong chiefly to limestone—*Trichostomum crispulum* and *Barbula recurvifolia* and *spadicea* (both these last in fruit), while the beautiful velvet *Ctenidium molluscum* clothes the fallen stones in masses. The Caplar and Carey woods are remarkable for the fruiting of some mosses rare in producing fruit, such as the *Brachythecium glareosum*, *Thuidium tamariscinum*, and *Hycomium triquetrum*. *Anomodon viticulosus* fruits freely here every year.

I must not venture upon the plants of the Woolhope District which lies immediately upon our north, but will finish this short paper with two introduced plants, one of which belongs properly to the Woolhope District; but I venture to mention it because its *habitat* lies within our excursion to-day.

Two miles down the river, immediately above the railway bridge, a ridge of stones runs diagonally across the river-bed, giving rise to rapids, and two or three densely wooded islets which take the name of Carey Islands. It is a spot well known to fishermen; and the glimpse of which from the train between the Fawley and Ballingham tunnels ought to be well known to all lovers of exquisite natural beauty. This ridge was once utilised—or possibly originally constructed—as a mill dam; hence the locality is still called ‘Carey Mill.’ This mill (originally Caerau) was formerly, like the New Weir at Great Doward, an iron foundry, as appears from the interesting notice of it quoted by the Rev. T. W. Webb in his *Memorials of the Civil War in Herefordshire*, Vol. i., p. 124. Mr. Webb quotes a letter dated “Bristol, 2nd September, 1642,” from a Mr. Heillier to Mr. William Scudamore, the owner of the foundry at Carey, “the place whereof knoweth it now no more.” The letter is in answer to one making application for the money for nine tons of iron which had been sent at £16 15s. per ton, and the writer states that he “cannot send him any money owing to the troubles of the Civil War.” There is a curious tradition which I have heard from cottagers in the vicinity (the origin of which I do not know), that a ship was once constructed at Hereford and brought safely down the river to this spot, and that it grounded, and was finally abandoned on one of these islands. But the interest of the place for the botanist lies in the fact that amid the tangled vegetation of the uppermost of these islets there exist two or three large clumps of the rare *Narcissus odoratus*. No doubt it is a mere waif; literally so, perhaps, wafted down by the river floods; or more likely a relic of a time when Carey Mill was so flourishing that the miller’s wife extended her garden along the mill dam into the islands. Still it is not a common plant even as cultivated in cottage gardens, and as a naturalised plant is quite rare.

Two miles on the other side of us stands one of the small out-of-the-way Herefordshire parish churches, that of Sollers Hope. A path runs through the churchyard, and ascends through meadow land to the farmhouse of Whittlebury. In these meadows *Orchis palustris*, a scarce plant in Herefordshire, makes its appearance. But it is not of the *Orchis* I would speak. Along the path in the pasture adjoining Sollers Hope churchyard, and on through another large meadow, is scattered in great abundance the Caraway plant (*Carum Carui*). “Oh! a mere introduction,” you will exclaim. I suppose it is; and yet there are some points of interest about it, and some which need further clearing up. The Caraway, as an introduced plant, is confined to waste places, the receptacles of rubbish in the proximity of towns or houses; and there it is uncertain and inconstant in its appearance. Here, on the contrary, it exists in the depth of country, such as country can only be in so delightful a county as Herefordshire, and it exists by the thousands in the turf of deep virgin meadow land. But again, on the other side, though scattered throughout the meadow, it is in markedly greatest abund-

ance, as it fringes the foot-path ; just as if some large packet of the seed had been at some period carried along the path, and its contents allowed to sift out on either hand. But yet again, the plant not only exists in these Sollers Hope meadows, but in several other meadows between this station and Woolhope ; meadows in which it is scattered uniformly and in tolerable abundance in the turf, much as the common Earth-nut (*Bunium flexuosum*), which it nearly resembles, would be. In point of geographical range, the Caraway is scattered throughout Europe, and is abundant in the European countries lying both to the north and south of us. Its geographical and climatic range therefore offer nothing to oppose the *a priori* expectation that it would be a native of Britain. The existence of only one or two other districts in which it occurred after the manner it does in the Woolhope District of Herefordshire would make its indigenoussness the easiest explanation of its being where it is. But in the absence of such evidence, can it have been purposely sown in this district ?

Here I come to the end of my ramble. Sufficient has been said to show you that Caplar, though not supporting a rich flora, yet affords—as I suppose every district would—abundance to interest one who greets plants with the affection of old friends, and who loves to ask them questions as some of the great secret-holders of Nature.

P.S.—An hour after reading the above paper, I had an interesting proof that the botanical resources of Caplar and its neighbourhood are by no means exhausted, by making the pleasant discovery of the Wood Chickweed (*Stellaria nemorum*) in Carey woods. It occurred in two spots in fair plenty upon the wooded bank of the river a short distance below Caplar hill. This is a wide spread plant in the north of England and Scotland, but becomes rare in the English midlands and lowlands. In Herefordshire, where we are nearly upon its southern limit, it is extremely rare ; having only been found previously by the Rev. Sir George Cornewall at Moccas—there, too, in a wood over-hanging the Wye. There is just a chance that in both instances the plant has originally been brought down from Wales by the river floods, but it is, I think, more likely to be a true native in its Herefordshire stations.

Woolhope Naturalists' Field Club.

JUNE 22ND, 1883.

OFFA'S DYKE.

By CAPTAIN W. L. MORGAN, R.E.

VERY many differences of opinion exist as to the origin and object of the various dykes which are found in so many parts of England and Wales, and these are caused not only by the different and various purposes for which they were intended, but also that they have afterwards been used in parts for purposes for which they were not originally designed. For instance, a dyke may have been originally designed as a fortification, and in some parts was excavated down to firm ground, perhaps rocks.

Now, after the lapse of years, the object of the dyke was lost, and the inhabitants, finding along its bottom a good firm road leading in the direction they wanted ready made for them, would naturally use it as such and in time repair it, and so in those parts it would assume all the characters of a road, and now would lead us to believe that the whole length of the dyke was intended as such. These dykes differ in age, perhaps thousands of years, from the comparatively modern one on the Malvern hills, dividing the Crown land of Malvern Chase from that of the Bishop of Hereford, to the prehistoric ones which existed before the time of the Romans, as is shown in the notable case of the Roman road from Silchester to Bath, cutting through the Wansdyke. There is also a very clear instance in Blenheim Park, which has, I believe, never before been noticed, where the Roman road, the Akerman street, from Cirencester to Bicester, cuts through the Grimsdyke.

Dykes have been made for various purposes—

(1) Boundaries. This would seem at first to be the most natural object of most of them, but I think it will be found that comparatively few of the great dykes were intended for that purpose, though a very large number of the smaller ones were.

(2) Roads. Some of them may have been intended as roads from the beginning, and many of them have no doubt been afterwards used as such; but the only one I know made originally as a road is the Wattle bank, in Oxfordshire.

(3) Hedges. For the protection of the cultivated land from the inroads of deer and wild animals driven from the wastes in search of food.

Now, this will comprehend a very large number, especially on the Wiltshire Downs, and gives a reason for the peculiar turns and twists they make, which I think can be explained in no other way, and they were well adapted for this pur-

pose. The hedges round a Himalayan village made for a similar object in the present day would, if fallen into decay, present a very much the same appearance.

(4) Fortifications. Some of them, as the Great Roman Wall in the north of England, were fortifications, and intended to be defended; but most of them, and those principally of large profile and of great extent, were never intended to be so, but were designed as military obstacles simply.

That Offa's dyke was not a boundary, may be shown from the position it occupies on the ground and the course it runs. Why should a boundary run round the side of a barren hill, when a straight course would have saved nearly half the length, and the intervening ground is of no value, nor ever has been? Why should a boundary always take the Welsh side of the hills? Why should a boundary go along the side of a steep hill, and at two-thirds of its height? Surely it would have gone along either the top or bottom. Why should a boundary take the turns and twists it does, and not go straight from point to point, or at least, follow some natural features of the ground? Why should the character of a boundary change from a steep scarp in the hills to a high bank in the valleys? and has a boundary ever been made anywhere by scarping the hills? Why, in North Wales, should a boundary have another boundary parallel to it within a few miles, both taking an enormous amount of labour to make? And lastly, taking Offa's dyke in Gloucestershire (although Herefordshire antiquaries deny that it ever went across the Wye), whoever made that dyke along the left bank of the Wye, made it for the same purpose as Offa's dyke in Radnorshire and elsewhere—it has the same character. But if they had wanted a boundary, they had a natural one straight at hand, far more striking than any they could make; and so to call that long stretch of dyke scarping the hills within a few yards of this great natural boundary and cutting off bends of the river which would be of no use to the opposite side—to call that a boundary is absurd. It is undoubtedly a military work, and allowing they were not both of the same date, although I believe they are, their object was the same, and if one is not a boundary the other is not; if one is a military work, the other is.

If not a boundary, what was it? Certainly not a protection from wild animals. It was too long and big for the purpose. Was it a fortification intended to be defended? The most elementary book on fortification would say that it was not only impossible but absurd to defend such a line, which could only be a means of weakness instead of strength.

Now, first, as to the age it was erected. There is a good range of time to choose from. That it existed before the 10th century is certain, as that is about the time the present parishes were formed, and as the dyke forms, in some cases, the parish boundary, it is certain it was in existence then. How long before, there is no evidence to show, but that it did not exist before Roman times is shown by its being made in one place on late Roman remains. This shows it must have been made between the 5th and 10th centuries. Tradition assigns it to Offa, about the year 790, to keep out the incursions of the Welsh. The first mention of it is to be found in Asser, and history even goes so far as to say that Offa drew up a code of laws for the regulation of the two races on the border. The code is lost,

but it is mentioned by Alfred in his laws (*The Making of England*). Now all this proves nothing as to its object ; it might have been a boundary or a fortification, as whatever its object, it is only likely that different laws should have governed the races on either side. But it is very significant that although in some cases the dyke does form the boundaries of the parishes, yet in many cases it does not, the parishes overlapping it in all directions. Sometimes the dyke even runs down the centre of the parish ; yet the parishes had assumed their present boundaries early in the 10th century. Judging from that, the dyke had fallen into disuse as a boundary thus early.

Now, if we take the general character of the dyke. It chose high ground, always taking the Welsh side of a hill. If the hill is steep it exists only as a scarp, if not, a bank is raised to increase the scarp. Descending the hills, it assumes the character of a deep ditch, and as you cross the valleys, the ditch disappears and gives place to high bank. But everywhere the one object seems to have been to get a scarp against the Welsh side, of some six to eight feet high, as easily as possible, and utterly regardless of taking up any particular ground.

If we take the facts as related by history, we find that Offa, after repeated battles with the Welsh, advances the western frontier of Mercia beyond the Severn, and occupies the country thus taken, but does not expel its former inhabitants in the same way that the Saxons had hitherto done. He would then, no doubt, be as anxious for peace on his western, as on his eastern frontier, in order to give him time to consolidate his empire. But what was he to do? He was at peace no doubt, nominally, with the Welsh princes, but how was he to protect his fertile settlements in the Shropshire and Herefordshire vales from the incursions of the marauders? If he complained to their princes, he would probably get the same answer that the Ameer of Cabul gives to the Viceroy of India, when he complains of an Affridi raid on the Peshawar frontier—"that he had better punish them himself." But how is he to do it? He cannot follow them to their fastnesses, as he is ignorant of their position ; and even if he did, he would find, as we find in India, that the cattle have been driven off, and all valuables removed long before he got there. Besides, it would take a standing army, and even then it would be inefficiently done, and so he makes every settlement protect its own frontier, and constructs Offa's dyke. Up the gentle slopes he makes a big ditch with a slight bank ; on the flat valleys, a high bank ; on the sides of steep hills, a scarp, six or eight feet high ; but all continuous. What he was aiming at was to construct a military obstacle of such proportions that cattle could not be driven over or across it, and through which it would take some hours to make a passage for them. For this reason, he takes the far side of the hills, as here he can get a six or eight feet scarp with little trouble— the steeper the slope, the easier scarped—and when once made, would require no watching or defence, and in the hour of danger he can concentrate his forces on more vulnerable places. Now, what happens when a raid is made, supposing the marauders to have crossed the dyke unobserved, and to have successfully attacked a settlement and driven off the cattle, and to be returning homewards, having beaten off their pursuers? They are not to get off so easily. A small patrol has found traces of a body of men who

had crossed the dyke, and now the fires on the hills tell the Saxon settlements where the raid has been successful, and so they know where to make for. There is no chance of half their numbers being sent in the wrong direction by their (the marauders') Welsh friends, left as peaceful citizens in the country. They assemble quietly on the dyke and await the enemy's return, keeping as close a 'touch' upon him as they can, but not troubling to attack him until he arrives at the dyke. Now what is he to do? He can cross the dyke anywhere, but the cattle cannot cross, and if he cannot get them over, he might as well, or better, have not come. To make a way down the steep scarp would take some hours. The easiest way would be to fill up the ditch with branches and brushwood; but he cannot work and fight too, and so finally he thinks it better to escape over the border with any valuables he can carry easily and leave the cattle, the object of the whole attack, to be re-captured. Thus, after a few attempts, he would think the game was not good enough and give it up, or, at least, only attack in bands large enough to leave a party to defend a passage over the dyke, and against whom the Saxons knew pretty well how to defend themselves. It was against the small marauder, who harrowed them and made their lives one continual worry, that the dyke was intended. Of course, during a regular attack of the whole army, the dyke would be crossed and re-crossed as easily as a mole hill. Offa himself once crossed the dyke with his army, and later on it was often crossed; but it was never intended to be an obstacle to the advance of the regular armies of either side.

The Saxons, no doubt, were fond of a little raiding, too, against the Welsh, and as they had their friends behind the dyke to make a passage on an agreed-upon spot, their raids were more likely to be successful, and so the Welsh, seeing the advantage of the dyke, proceed to construct one in North Wales, parallel to Offa's, for themselves. This explains the existence of the second dyke made by the Welsh. On this theory, the turns and twists the dyke makes are intelligible. As they did not care what particular ground they went over, they chose the easiest direction for shaping the scarp wall, and so, if they found the rock in one place very hard, they turned off and followed a softer vein, or, if they found it would stand better in one direction than another, they followed it, utterly regardless of the ground as long as it went tolerably well in the direction they wanted. On this theory, it is perfectly intelligible why it took the Welsh side of the hills, and why it went along the slope of the hill, instead of the top or bottom. This explains why the parish boundary does not always go along the dyke, but overlaps it so often. The dyke was there, and so it often became the boundary of the manor, but the land in the immediate neighbourhood of the dyke, on the Welsh side, would still be in the possession of the Saxons. No doubt the cattle would be more carefully guarded there; but it would be Saxon for some distance, and so the manors, and consequently afterwards, the parishes, extended over the dyke, which never was the boundary between the two nations, except for a very few miles.

Had Offa's dyke been for a boundary or any other purpose than a simple military obstacle, it might better be described as Offa's folly, instead of being, as it is, a well-made, admirably-designed, and skilfully-executed military work.

Woolhope Naturalists' Field Club.

JULY 12TH, 1883.

A VISIT TO THE BIRTHPLACE OF SHAKESPEARE.

"Nature never lends
The smallest scruple of her excellence,
But, like a thrifty goddess, she determines
Herself the glory of a creditor,
Both thanks and use."

Measure for Measure, Act I., Sc. 1.

THE programme of the Club for this meeting was issued in true Shakespearean form. It was "the Ladies' Day," and the announcement was supported by the quotation—

"Ladies, welcome! Welcome, ladies!"
Coriolanus, Act V., Sc. 4.

The three hours railway journey to Stratford-on-Avon and back was made the best of. "The journey is long," said the programme, "but the way is pretty, and the travellers will not be rendered

'Servile to all the skyey influences.'
Measure for Measure, Act III., Sc. 1.

So let them take courage :

'A merry heart goes all the day,
Your sad tires in a mile-a.'
Winter's Tale, Act IV., Sc. 2.

The early morning was unfortunately wet and very unpromising, and thus many were prevented from joining the excursion.

"Our doubts are traitors,
And make us lose the good we oft might win
By fearing to attempt."
Measure for Measure, Act I., Sc. 5.

And so, indeed, many lost a very enjoyable day, for, with the exception of a light shower at middle-day, the weather was fine, and those only who stayed at home, as was wittily said, were "Servile to the skyey influences."

The travellers left by the 8.10 a.m. train, and as the way is so well-known to Worcester, the names of those who were present may as well be given whilst the journey is supposed to be made.

GENTLEMEN—President, Mr. George H. Piper, F.G.S. ; Mr. Ball ; Rev. John Buckle ; Captain du Boulay, R.E. ; Mr. Henry Brown, M.A. ; Dr. Bull ; Mr. Ernest H. Bull ; Mr. J. Tom Burgess, F.S.A. ; Mr. Burgess ; Rev. Charles Burrough ; Mr. P. C. Cleasby ; Mr. Docking ; Major Doughty ; Mr. J. Greaves ; Mr. H. S. Hall ; Mr. Thomas Hutchinson ; Rev. J. H. Lambert ; Mr. A. Levason ; Mr. J. W. Lloyd ; Rev. H. B. D. Marshall ; Mr. H. C. Moore ; Mr.

J. E. Norris; Rev. V. T. T. Orgill; Mr. G. H. Phillott; Mr. Pilley; Rev. David Price; Mr. A. W. Roberts; Mr. Charles Rootes; Mr. Henry Vevers; and Mr. Theophilus Lane.

LADIES—Miss Allen; Miss Armitage; Mrs. Baker; Miss Buckle; Miss S. C. Buckle; Miss Evelyn Bull; Miss Maude Bull; Miss Leila Bull; Miss Burgess; Miss A. Burgess; Mrs. Burrough; Mrs. Colt-Williams; Fraulein Eisenbart; Mrs. H. Scott Hall; Miss Holgate; Miss Hunt; Mrs. Kerr; Mrs. Levason; Miss Levason; Miss Moberley; Mrs. Orgill; Miss Piper; Miss Isabel Piper; Miss Pitt; Mrs. A. W. Roberts; Miss Rhind; Miss Edith Symonds; and Miss Beatrice Symonds.

An itinerary of the points of interest beyond Worcester had been kindly prepared by Mr. J. Tom Burgess, F.S.A., copies of which were distributed to the visitors, and they were thus enabled to recognize them as they passed by.

On leaving Worcester station, Perry Wood was seen on the left, where Cromwell's army was posted on the morn of the Battle of Worcester. The railway passes over the scene of the conflict.

About two miles further, the tree-crowned Cruckbarrow hill was conspicuous on the left hand. It is one of the largest barrows in England, and is assumed to be the southern outwork of the British *oppidum* of Worcester.

After passing the Barracks, there is little of interest until Fladbury is reached, in the church of which, Bishop Lloyd (one of the seven bishops) lies buried. The Avon was here crossed for the first time. On the left, the woody heights of Norton (the estate of the Duc d'Aumale) and his lodge are seen. Immediately afterwards, on the same side, green hills, the site of the Battle of Evesham, appear, crowned by the hall called the Abbey, a tower and obelisk, and near the latter Simon de Montfort is said to have been killed.

After leaving Evesham station, the site of the Abbey and the Clock Tower of Abbot Lichfield was seen. On the right, as the train crosses the Avon again, just before reaching Honeybourne (celebrated for its two churches), the rail crosses the Rykmeed-Street Way.

The train is now in Shakespeare's country,

"Piping Pebworth, dancing Marston,
Haunted Hillboro', hungry Grafton,
Drudging Exhall, papist Wixford,
Beggarly Broom, and drunken Bidford."

Just a glimpse of "Drunken Bidford" was seen on the left, but the village most conspicuous was Binton. "Piping Pebworth" was on the right, and just before reaching Long Marston station—"Dancing Marston"—a glimpse was obtained through the foliage of the house of Mr. Tomes, where Charles II. and Jane Lane stayed the first night on leaving Bentley, after the Battle of Worcester. The spit is still preserved which the King was set to turn.

The following short paper which had been prepared for the ten minutes' delay at the Honeybourne junction, was now read by Dr. Bull, and, illustrated as it was by fresh specimens of the pretty Nigella, it created much interest.

LOVE-IN-IDLENESS.

The flower alluded to under this fanciful name, in *Midsummer Night's Dream*, is so generally supposed by Shakesperean authorities to be the little wild pansy, *viola tricolor*, that any attempt to call it in question is very bold, and must be expressed with much diffidence. Shakespeare himself gives it merely as a popular name :

"And maidens call it Love-in-idleness."

He mentions the pansy elsewhere, but not in allusion to love—

"There is pansies, that's for thoughts,"

Hamlet, Act IV., Sc. 5.

says Ophelia, playing apparently on the French word, *pensée*, in her wild rambling on flowers and plants. It remains, therefore, to be seen what other information can be obtained with reference to it. In a work rich in legendary lore, called *Historic Warwickshire*, by J. Tom Burgess, this pretty legend is given as to the origin of the name of Love-in-idleness—

"It was at the noontide bower,
A lady reposed in a bower,
Where, shaded between
The branches of green,
Blossom'd and blush'd a fair flower ;
Not a pinion was moved, nor a breeze was heard,
As with curious hand the lady stirr'd
The leaves of this unknown flower
She saw in its cradling bloom,
A cherub with folding plume,
And a bow unstrung,
And arrows were flung
O'er the cup of this opening flower ;
And the lady fancied she much had need
Of the light of his wak'ning eyes, to read
The name of this unknown flower.
She placed it too near her breast,
And the cherub was charmed from his rest ;
Then he winged a dart
At the lady's heart,
From the leaves of this treacherous flower.
'Ah ! cruel child !' said the lady, 'I guess
Too late, that *Love-in-idleness*
Is the name of this unknown flower.'"

But pretty as the legend is, it cannot be said to help much in the determination of the plant.

The full passage in Shakespeare, founded on the legend, or, more probably, giving rise to it, is infinitely more beautiful. Oberon says, Act II., Sc. 2—

"That very time I saw (but thou couldst not),
Flying between the cold moon and the earth,
Cupid, all armed : a certain aim he took
At a fair vestal, throned by the west ;
And loos'd his love-shaft smartly from his bow,
As it should pierce a hundred thousand hearts :
But I might see young Cupid's fiery shaft
Quenched in the chaste beams of the wat'ry moon ;
And the imperial vot'ress passed on,
In maiden meditation, fancy-free.
Yet mark'd I where the bolt of Cupid fell ;
It fell upon a little western flower,—
Before, milk-white ; now purple with love's wound,
And maidens call it Love-in-idleness."

And once again the plant is mentioned, but equally vaguely, in *Taming of the Shrew*, Act I., Sc. 1—

“But see! while idly I stood looking on,
I found the effect of Love-in-idleness.”

It is, perhaps, a very prosaic task to seek the particular plant at all, but it is, nevertheless, a tribute to the wonderful genius of the man, to search for the slender facts he has so richly clothed in poetry. The common wild pansy is generally believed to be the thread on which he hangs his beautiful imagery, and whether it had the name before or not, it has it now, amongst the many others attributed to it. Gerarde, the celebrated botanist and surgeon, a contemporary of Shakespeare, but an older man, in his *Herbal*, gives many names to it:—“Hartes ease” or “Paunsies,” “Knapweed,” “Bull weede,” “Matfellow,” “Herba Trinitatis,” (from the triple colour of its flowers), “Herba clavellata,” “Live (not love) in idleness” (as a wild waste weed was sure to do), “Call me to you,” “Three faces under a hood,” and it has since been called “Pink of my John,” “Kiss behind the garden gate,” and, amidst its many other fanciful appellations, it will, doubtless, hereafter bear in literature, though not with common people, as its chief name, “Love-in-idleness.” The plant now presented to you as very possibly the true “Love-in-idleness,” has a very striking appearance from the peculiar way in which its fennel-like leaves at first conceal the bud, and then support the blossom. There is a purely white variety, but its usual colour changes from a creamy white in bud, to blue in full blossom—the colour dedicated to true love. It was a common garden plant in Shakespeare’s day. Tusser, at the beginning of the century, recommended its black shining seeds to be sown in the open border in March, and Gerarde mentions no less than three varieties in the *Herbal*. Its botanical name is *Nigella Romana*, and its earliest English name was “Gith,” the Saxon for corn weed. It is called, also, “St. Catherine’s Wheel,” or “The Golden Fennel Flower,” and, in Cambridgeshire, “Bishop’s Woort,” but its common names—the names by which it is known by the people—are “Love in a Mist,” “Love in a Puzzle.” The Germans call it, also, “Maid in the Green,” “Bride in Hair,” and you will probably be prepared to admit that Love-in-idleness might sometimes render its other common name, “The Devil in a Bush,” peculiarly appropriate.

This plant, the *Nigella*, has gone much out of fashion during the last century, but it is happily growing into favour once more, and deserves to do so.

The train was not delayed long at Honeybourne, and the itinerary began again to be useful.

The hill, so conspicuous on the right, is the great British fortress of Meon hill, 30 acres in extent, where British, Roman, and Saxon remains have been found. The hills to the east, are those of Ilmington.

At Milcote (where the tickets are taken) a vast number of skeletons were found some 18 years ago, but it is chiefly remarkable as being the seat of one of the Grevilles, who was pressed to death for refusing to plead to a charge of murdering his steward.

After leaving Milcote, attention should be given to the pretty hamlet on the left (Luddington), on the bank above the river, where Shakespeare is thought to have been married. Again crossing the Avon, we have, on the left, Shottery (Anne Hathaway's home), and on the right, the weir bank, a tree-crowned slope, the "Cross o' the hill," where Shakespeare's signet ring was found; and behind, the Church of the Holy Trinity, where the poet lies buried. The station at Stratford was soon reached, and as the programme foretold:

"Being well arrived."

Winter's Tale, Act II., Sc. 3.

the President, assisted by Mr. J. Tom Burgess, F.S.A., conducted the visitors to the several points of interest.

"A well-appointed leader fronts us here."

2nd Henry IV., Act IV., Sc. 1.

The house where Shakespeare was born, and the museum attached to it, was the first object to be visited.

On leaving the station, the party kept straight on to the open space called the Rothermarket, and then, turning to the left, speedily reached Henley Street, in which the birth-place is situated. It should be remarked that the birth-place is restored exactly in accordance with an ancient print. All the old timbers have been preserved as far as possible. The new ones, which are fitted into the old peg holes, are coloured brown, the old ones black, to show the difference. By the kind permission of the trustees, the birth-place and museum were thrown open to the members of the Woolhope Club free of charge. The old picturesque half-timbered house and its contents were inspected with great interest. His gold seal ring, the letters written to him, the many portraits of him, old documents, early editions of his plays, and other most interesting memorials of Shakespeare and the town of Stratford, deserved a longer time than could be given to them. The garden was visited,

"There's rosemary and rue; these keep
Seeming and savour all the winter long."

Winter's Tale, Act IV., Sc. 3.

and a young mulberry tree and other plants associated with the poet were there.

Leaving the birth-place the party proceeded down Henley street. There are some old houses worth note as this street *debouches* on the wide Bridge Street and High Street. Passing down High Street, what is known as the Glover's House, is now seen on the right hand, opposite the Corn Exchange. It is a gable-fronted western building, and was built (according to the date) when Shakespeare was young.

New Place and the gardens were next visited, also thrown open to the Club by the kindness of the trustees. Here stood the house in which the poet died. It is said to have been razed to avoid taxation, and now its foundations—covered with grating—alone remain to be seen. The house adjoining, and the site, was purchased in 1861 by public subscription, chiefly through the exertions of Mr. J. O. Halliwell, and here a Shakespeare library and museum has been established, where, besides books and prints, the poet's drinking cup, and many other relics are to be seen.

The Falcon Tavern was next visited, to inspect the old oak wainscoting supposed to have been taken from the house at New Place. The Shakespeare Memorial Theatre, commenced in 1877, both its library—in anticipation—and its picture gallery were next inspected. Then a building of his own time, the Guild Chapel, where Shakespeare is thought to have gone to school during the repairs of the school house. This owes its origin to the Cloptons, who built New Place in the time of Henry VII. The old Guild Hall adjoins, in which Shakespeare is said to have seen his first play, and the school in which he acquired his “little Latin and less Greek,” is over head. This, too, was visited afterwards, somewhat to the discomfiture of the master, though very gratifying to the boys then at work there.

The Town Hall, with a statue of Shakespeare, was the next object to be seen. The justices were sitting, and the inspection had to be made in decorous silence. Above the hall is the assembly-room where Garrick was entertained at the great Jubilee, and his portrait, by Gainsborough, is at one end of the room, and that of Shakespeare, by Wilson, on the other. The other portraits are those of Queen Anne and the Duke of Dorset, the hereditary High Sheriff of the borough.

By this time the visitors were well prepared for the luncheon dinner which had been provided for them at “mine hostelry,” “The Shakespeare”; and so well had the company been marshalled, that all were seated at the table five minutes before the time appointed. Grace having been said by the Rev. David Price, the President arose immediately, and with energetic voice declaimed from King Richard III.—

“Let those not live to taste this land’s increase,
That would with treason wound this fair land’s peace.”
Act V., Sc. 4.

The room was crowded, and the repast was merry, for though all did well, those did best who looked a little after themselves, and there seemed small need for the poet’s aspiration—

“Now good digestion wait on appetite
And health on both.”
Macbeth, Act III., Sc. 4.

Grace had no sooner been said, than the President again, fully equal to the occasion, rose to propose the one toast allowed to the Club, which he did by a clever adaptation of the prophetic words of Cranmer on the young Queen Elizabeth :—

“’Tis of our Queen I speak. The words I utter
Let none think flattery, for they’ll find them truth.
A pattern to all princes living with her,
And all that shall succeed. All princely graces
With all the virtues that attend the good,
Shall still be doubled in her. * * *
She shall be lov’d and fear’d. Her own shall bless her,
Her foes shake like a field of beaten corn,
And hang their heads with sorrow. Good grows with her
In her days, every man shall eat in safety
Under his own vine, what he plants, and sing
The merry songs of peace to all his neighbours;
She shall be to the happiness of England
An aged princess; many days shall see her,
And yet no day without a deed to crown it.”
King Henry VIII., Act V., Sc. 4.

"The Queen!"

The toast, so appropriately proposed, was duly honoured, and the President then called on the author of *Historic Warwickshire* to speak a few minutes on the topic he loves so well.

Mr. J. Tom Burgess said that it had been truly observed that in this life there was nothing certain but the unexpected, and though it was a common remark by speakers that "they were unexpectedly called upon," it was never more truly applied than on the present occasion, when the Woolhope Club relaxed one of their strictest rules in order that he might say a few words. He should be untrue to himself if he denied that the proposal gave him pleasure, for "out of the fullness of the heart the mouth speaketh," and at the name of William Shakespeare thoughts came with a power almost too great for utterance. From his earliest youth he had been a pilgrim at the shrine which has given Stratford a place in history, and many a time and oft he had been "the faithful one amongst the faithful many" at each recurring anniversary of the poet's birthday—St. George's day, be it remembered. The memory of these old-new associations brought home to him the fact that though Shakespeare was born when Field Clubs were not, still he had an intense love of nature: he could notice the freckles of a cowslip as well as portray the tempest of passion in the human heart. Their President had quoted to them the eloquent words applied to Her Majesty in Henry VIII., and that reminded him that the first Queen of bluff King Hal, when discarded and forlorn at the gates of death, called to her maidens and said,

"When I am dead, good wench,
Let me be used with honour; strew me over
With maiden flowers, that all the world may know
I was a chaste wife to my grave."

Act IV., Sc. 2.

It said something for the rough and passionate soul of Henry that he spared the Cathedral of Peterborough—the old minster of The Medehamstead—as a fitting tomb of Catherine of Arragon, his first, if not his best-loved wife. The eye that could see the

"Willow growing ascaunt the brook
That shows its hoar leaves in the glassy stream."

and

"The gentle ripple kissing every sedge,"

could give the world such thoughts, and shaped those thoughts in such language that appealed to every one—which the world cherished as the best and most valued of its literary treasures. The boy Shakespeare and "the poet of all time" was no recluse, hoarding sentimental dreams in the cloister or the closet, he was a man of the world, living amongst men and women, observing their foibles and the springs of action, using up as he went along the garnered facts of others, which he polished and set until the rude pebbles became precious jewels. His contemporaries, envious of the fame which he himself seems to have despised, charged him with decking himself out in other men's garbments; but they should not forget that the man who digs the clay, makes the bricks, or hews the stone, is not the architect or creator of the fabric in which princes love to dwell, artists admire,

and poets love. So it was with the son of the gentle Mary Arden, and frequently he had gone from Snitterfield by the old tumulus at Pathlow to Wilmcote along the road which John Shakespeare must have trod when he went courting the yeoman's daughter, who was destined to be the mother of one to whose birth-place they had that day made a pilgrimage. They could imagine the anxiety of that mother when the plague was raging, for the safety of her infant son. They could imagine her pride in his prosperity and fortunes. They could picture forth the stories she told of the deeds her ancestors had done, for it is shrewdly guessed that her grandfather had fought at Bosworth, from the neighbourhood of which bloody field the Shakespeares had migrated. There were passages in Richard III. which seem to betoken an acquaintance with the detail of the last battle of the Roses, other than what was to be gleaned from books and chronicles, and he may have heard only at second-hand how Richard exclaimed,

"Saddle White Surrey for the field to-morrow!"

and thus it was that this great genius thought no detail too insignificant, no stupendous thought too grand to be embodied in his marvellous plays, and in his heart-felt poetic effusions. It had been truly said that whilst he could give Hamlet an everlasting fame, he could remember to leave his wife his second best bed. It was but right that such a man should be born in the heart of England, and that he should live in the hearts of every English-speaking people. As a Midland man, he was proud to be a loving fellow-countryman. He was proud of having a common lineage derived from the county of his fathers, and when in sickness or in sorrow he wanted his mind diverted and fed full of sumptuous things, he found an everlasting font of immortal words in those books of which the author seemed to have no care in his lifetime. He seemed to have been prouder to be a country gentleman than the author of *Lear*. He left his beautiful *Ophelias*, *Cordelias*, and *Imogen* to the casual care of careless printers. He thought more of his barley apparently than his sonnets, and perhaps thought more of his lineage from the old Saxon Earls of Warwick, who were said to have been descended from Alfred himself, than of the Queen and heroes—the stalwart soldiers and finest patriots—to whom he had given a lasting name and fame. The subject was a vast and tempting one. Each gushing seemed overtaken by another. He felt that he was trespassing beyond the few minutes allowed him; he could only a

"Round, unvarnished tale deliver"

off-hand, a simple collation of crude ideas, when he would have liked to have set before them a rich repast. The trees, the hedge rows, and the meadows bear witness to him. They are the faithful, truest witnesses of his fame, and seem to speak in a low monody,

"We shall ne'er look upon his like again."

It had been a great pleasure to him to leave the bustle and toil of London, to accompany the members of the Woolhope Field Club by the banks of the Avon, and he trusted that each one would remember with pleasure the day of their pilgrimage to Stratford, and proposed the toast, which was duly honoured, Club rules notwithstanding—"To the immortal memory of Shakespeare."

The company then broke up, for strict obedience was the rule of the day.

"Stand not on the order of your going
But go at once."

Macbeth, Act III., Sc. 4.

Thus, after a somewhat hurried dinner, as the programme suggested, lest

"You waste the treasure of your time."

Twelfth Night, Act II., Sc. 5.

the visitors proceeded through the open, clean, and pleasant streets of the town, towards the church. The almshouses founded by Edward VI. were passed, and so, too, was the house of Mr. Wheeler, the historian of Stratford, marked by a row of pollard trees. From the church-yard gate, an avenue of leafy lüne trees makes an excellent and picturesque approach to the church itself, beautifully situated on the banks of the river. Here the Avon

"Makes sweet music with th' enamel'd stones,
Giving a gentle kiss to every sedge
He overtaketh in his pilgrimage."

Two Gentlemen of Verona, Act II., Sc. 7.

It was said by Washington Irving that at Stratford-on-Avon "the mind refuses to dwell on anything that is not connected with Shakespeare," and certainly the interest culminates in the church. A spire has been added since that day, but the main building remains the same. Here he was baptised three days after his birth, and on the vellum leaves of the register, under the date of April 26th, 1564, is shown the entry, "Gulielmus filius Johannis Shakespeare." Here, in the vestry, is shown the remnant of the font itself in which he is believed to have been baptised. Here, within these very walls, beyond question, he worshipped and was buried. His tomb, between those of his wife and daughter, lies within the altar rails on the left side of the chancel, and on the wall above, is his coloured bust, with this inscription beneath it—

"Judicio Pylum, genio Socratem, arte Masonem,
Terra tegit, populus mæret, Olympus habet."

(A Nestor in judgment, a Socrates in genius, a Virgil in art.
The earth covers him, the people mourn him, Olympus has him.)

The church itself is Early English in architecture, and spacious, from the nave, side aisles, chancel, and transept all being open, and the peculiarity of the chancel not being in the same line as the nave is thus very striking. The chancel inclines to the left, as it does in many other churches, and is thus supposed to typify the inclination of our Saviour's head on His body. There is much to be seen within the church, as the inscriptions on the tombs, many of them curious and interesting, the old oak work, the carved roof and the sedilia, the American window, and other points of interest, but time was short.

The visitors walked along the terrace by the river, and then started to visit the cottage at Shottery, where Ann Hathaway was born and lived until her marriage to Shakespeare. It lies about a mile west of Stratford, through pleasant fields, as the programme said,

"The fields are fragrant."

Titus Andronicus, Act II., Sc. 2.

and so the footpath was taken on which Shakespeare himself must often have trodden, when his heart was beating high with love and hope.

"One touch of nature makes the whole world kin."
Troilus and Cressida, Act. III., Sc. 3.

"Thou know'st fond heart, Ann hath a way ;
She hath a way,
Ann Hathaway
To make grief bliss, Ann hath a way."
Ode to Ann Hathaway.

The little bridge over the brook was passed, and

"The rank of osiers by the murmuring stream
Left on your right hand, brings you to the place."
As You Like It, Act IV., Sc. 2.

The thatched cottage, with its timber frame-work and its curious windows, was close at hand, and the house was quickly filled, to the dismay of the old lady who lives there. She chanced to be upstairs, and evidently doubted greatly if she would get her threepences correctly. Here, besides the room and carved oak bedstead where Ann Hathaway was born, and the settle where the lovers must often have rested, are also to be seen many heirlooms of the Hathaway family—an old spinning stool, an oak linen chest, the embroidered bed linen of the family, the usual Shakesperean engravings on the walls. The visitors' book contained many names of interest, and had a few more when the Club left the house to look round the garden, gather a few Shakesperean leaves, and sit on the wall where Dickens sat so long to meditate.

From Shottery, the road was taken direct to the railway station. The tall obelisk, which is so conspicuous, was erected to the memory of the late Mark Phillips ; it shows the site of Welcombe, where Shakespeare owned tithes and property, and is about half way to Snitterfield, the parish in which his father was born. The station was reached a few minutes before time, and the following paper was read by Dr. Bull—

SHAKESPEARE'S NOTICE OF FLOWERS AND PLANTS.

"Here are flowers for you."
Winter's Tale, Act IV., Sc. 3.

"Fairies use flowers for their charactery."
Merry Wives of Windsor, Act V., Sc. 5.

The genius of Shakespeare was so many-sided and so wonderful, his observation so minute, his memory so accurate, his mind so acute, and his description so original, so terse and so truthful, that he seemed to comprehend at a glance every object that came under his notice. He makes few mistakes, his sayings admit of quotation on every subject, and there is no writer, apart from Holy Writ, with whom a few minutes may be more profitably spent.

Shakespeare was neither botanist nor horticulturist, but he was a true lover of the country, and had a great popular knowledge of the plants and flowers of every day life, whether they were the wildings of Nature or the cultivated pets of the rural garden. He no more put himself out of the way to find them or to learn their names and characters than he did to refer to them in his writings. His knowledge

was the simple result of truthful observation, and the use of his knowledge is equally natural and unaffected. He has, nevertheless, actually named upwards of 160 different flowers, plants, and trees, to illustrate his writings. His very omissions prove the casual manner in which he gained his knowledge: in the spring flowers, he does not name the three earliest flowers of spring—the graceful snowdrop, the brilliant crocus, and the golden winter aconite. He begins the year with March. Autolycus says—

“ When the Daffodils begin to peer,—
With beigh ! the doxy over the dale,—
Why, then comes in the sweet o’ the year,
For the red blood reigns in the winter’s pale.”

Winter’s Tale, Act IV., Sc. 2.

and again—

“ Daffodils
That come before the swallow dares and take
The winds of March with beauty ; violets dim
But sweeter than the lids of Juno’s eyes,
Or Cytherea’s breath ; pale primroses
That die unmarried, ere they can behold
Bright Phœbus in his strength, a malady
Most incident to maids ; bold oxlips and
The Crown Imperial ; lilies of all kinds,
The flower-de-luce being one.”

Winter’s Tale, Act. IV., Sc. 3.

Here is a sweet country picture that everyone is so familiar with—

“ I know a bank whereon the wild thyme blows,
Where ox-lips and the nodding violet grows ;
Quite over-canopied with lush woodbine,
With sweet musk-roses and with eglantine.”

Midsummer Night’s Dream.

In another spring description of flowers, Shakespeare says—

“ When daisies pied, and violets blue,
And lady-smock, all silver white,
And cuckoo-buds of yellow hue,
Do paint the meadows with delight.”

Love’s Labour Lost, Act. V., Sc. 2.

The distant sound of a well-remembered tune calls forth this charming comparison—

“ That strain again. It had a dying fall ;
O, it came o’er my ear like the sweet south
That breathes upon a bank of violets,
Stealing and giving odour.”

Twelfth Night, Act I., Sc. 1.

Who but Shakespeare would have put the epithet “ nodding ” to violets, and “ freckled ” to cowslips ?—

“ The cowslips tall her pensioners be ;
In their gold coats spots you see ;
Those be rubies, fairy favours,
In those freckles live their savours.”

Midsummer Night’s Dream, Act II., Sc. 1.

Here are moral lessons from spring vegetation—

“ Now ’tis the spring, and weeds are shallow rooted,
Suffer them now, and they’ll o’ergrow the garden,
And choke the herbs for want of husbandry.”

King Henry IV., Act III., Sc. 1.

"Unruly blasts wait on the tender spring,
Unwholesome weeds take root with precious flowers,"
Rape of Lucrece.

"We see the appearing buds, which to prove fruit,
Hope gives not so much warrant as despair."
2nd Henry, Act I. Sc. 3.

"Oh that this good blossom could be kept from cankers!"
2nd Henry IV., Act II., Sc. 2.

"Most subject is the fattest soil to weeds."
2nd Henry IV., Act IV., Sc. 4.

and many others might be added.

In the early summer flowers, there are also three very remarkable omissions. Shakespeare makes no mention of the Lily of the Valley, the Forget-me-not, or the Foxglove. They are all flowers that one would think a poet could scarcely forget. The Lily of the Valley and the Snowdrop are the true emblems of innocence and purity. In vain do horticulturists try to tint their white blossoms with colour. They have, indeed, doubled the snowdrop, but the lily refuses to alter its size or part with its scent. The Forget-me-not is equally lovely, and the Foxglove strikingly handsome, but he seems not to have seen much of them, since he has left them entirely unnoticed.

There is abundant allusion to summer flowers and plants—

"In emerald tufts, flowers purple, blue, and white,
Like sapphire, pearl, and rich embroidery."
Merry Wives of Windsor, Act V., Sc. 5.

"The fairest flowers o' the season
Are our carnations and streak'd gilliflowers."
Winter's Tale, Act IV., Sc. 3.

"Herewith fantastic garlands did she make
Of corn-flowers, nettles, daisies, and long purples."
Hamlet, Act IV., Sc. 7.

Here is a summer picture with an admirable simile, where Hero sends Margaret to Beatrice—

"And bid her steal into the pleached bower,
Where honeysuckles, ripen'd by the sun,
Forbid the sun to enter;—like favourites
Made proud by princes, that advance their pride
Against that power that bred it."
Much Ado about Nothing, Act. III., Sc. 1.

"Here's flowers for you;
Hot lavenders, mints, savory, marjoram;
The marigold, that goes to bed with the sun,
And with him rises weeping."
Winter's Tale, Act IV., Sc. 3.

The effects of neglected agriculture are graphically described in *King Henry V.* as the result of long-continued war in France. Its literal truthfulness our President can vouch for, since we visited together, last year, an unoccupied farm in

Worcestershire, of melancholy aspect. Speaking of France, says Burgundy—

“ Her vine, the merry cheerer of the heart,
Unpruned dies ; her hedges, even-pleached
Like prisoners wildly overgrown with hair,
Put forth disordered twigs ; her fallow leas
The Darnel, Hemlock, and rank Fumitory
Doth root upon ; while that the coulter rusts,
That should deracinate such savagery :
The even mead, that erst brought sweetly forth
The freckled Cowslip, Burnet, and green Clover,
Wanting the scythe, all uncorrected, rank,
Conceives by idleness ; and nothing teems
But hateful Docks, rough Thistles, Kecksies, Burs,
Losing both beauty and utility,
And as our fallows, meads, and hedges,
Defective in their natures, grow to wildness,
Even so our houses, and ourselves, and children,
Have lost, or do not learn, for want of time,
The sciences that should become our country
But grow like savages.”

King Henry V., Act V. Sc. 2.

Here, again, is desolation well delineated—

“ The trees, though summer, yet forlorn and bare,
O’ercome with Moss and baleful Mistletoe.”

Titus Andronicus, Act II., Sc. 3.

Horticulture, in Shakespeare’s hands, too, can afford spirited political satires—

“ Go, bind thou up yon dangling Apricocks,
Which, like unruly children, make their sire
Stoop with oppression of their prodigal weight ;
Give some supportance to the hanging twigs.
Go thou and, like an executioner,
Cut of the heads of too-fast-growing sprays
That look too lofty in our Commonwealth.
* * * *

I will go root away
The noisome weeds that without profit suck
The soil’s fertility from our wholesome flowers.
* * * *

When our sea-walled garden, the whole land,
Is full of weeds, her fairest flowers choked up,
Her fruit trees all unpruned, her hedges ruined,
Her knots disordered, and her wholesome herbs
Swarming with caterpillars.”

King Richard II., Act III., Sc. 3.

The pretty custom of decking graves with flowers is thus given—

“ With fairest flowers,
While summer last, and I live here, Fidele,
I’ll sweeten thy sad grave : Thou shalt not lack,
The flowers that’s like thy face, pale Primrose ; nor
The azured Harebell, like thy veins ; no, nor
The leaf of Eglantine, whom not to slander,
Out-sweeten’d not thy breath.
* * * *

Yea, and furred Moss besides, when flowers are none,
To winter-ground thy corse.”

Cymbeline, Act IV., Sc. 2.

Such are a few of Shakespeare’s many illustrations from flowers and plants. More might be added, did time and space admit. Poor Ophelia’s rhapsody, must end the list—

“ There’s Rosemary, that’s for remembrance ; pray, you,
Love, remember : and there is Pansies—that’s for thoughts.
* * * *

There's Fennel for you, and Columbines : there's Rue
 For you : and here's some for me : we may call it
 Herb of Grace o' Sundays : You may wear your Rue with a
 Difference. There's a Daisy ; I would give you some Violets,
 But they withered all, when my father died.

Hamlet, Act IV., Sc. 5.

The paper was read amidst interruption from the tramp ! tramp ! tramp ! of the Warwickshire militia returning home, and the usual station noises ; but it was Shakesperean, and thus had to be read on the spot. By the time it was finished, the special carriages appeared for the return journey. This journey, too, was very pleasantly accomplished though a very interesting paper, by the President, on the "Life of Shakespeare," had to be read to the occupants of a single carriage. (We hope, however, that this may be sent to us for publication, that the occupants of the other carriages may be in some measure consoled for their loss).

The Woolhope Club has thus been able to accomplish a pilgrimage to the birthplace of Shakespeare, which has long been contemplated. He, of all poets, deserves admiration and devotion from the members of Naturalist Field Clubs, for he, of all others, has best described their aim and objects.

" And this our life, exempt from public haunt,
 Finds tongues in trees, books in the running brooks,
 Sermons in stones, and good in everything."

As You Like It, Act II., Sc. 1.

Woolhope Naturalists' Field Club.

AUGUST 20TH, 1883.

CAYNHAM CAMP AND TITTERSTONE CLEE HILL.

Retirement, rural quiet, friendship, books,
Ease and alternate labour, useful life,
Progressive virtue and approving Heaven.

SUCH are the fascinations attributed by the Ludlow Handbook "to the beauties of Nature lavished around within ten miles of the town." Beautiful, certainly, the scenery is. Ludlow itself, its castle, its church, and the walks on Whitcliff, are sufficiently attractive, and the interest in the country around is exceedingly diversified and beautiful. A Club Field Meeting at Ludlow is always appreciated, and the members of the Woolhope Club rarely pass a year without going there for some object or other.

The meeting this year was a joint one with the Malvern Club, and at the station at Hereford the Woolhope members welcomed the arrival of Mr. Henry Wilson, the Malvern President, with the Rev. I. Gregory Smith and his sons Masters Arthur and Basil Smith, Colonel Twynam, Messrs. W. Barkley, E. R. C. Hayes, E. L. Lakin, and G. H. Williamson, with Mrs. Taylor.

The Woolhope members present at the meeting were: The President, Mr. G. H. Piper; the Revds. W. Bowell, Godfrey Buckle, C. Burrough, Dr. Robert Dixon and Master Charles S. Dixon, E. R. Firmstone, J. E. Grasett, H. B. D. Marshall, A. Palmer, H. W. Phillott, David Price, and H. W. Tweed; Drs. Bull and Chapman; Major Doughty; Captains Kerr, R.E., and Morgan, R.E.; Messrs. H. G. Apperley, A. Armitage, W. Beacall, T. Davies Burlton, J. Docking, P. C. Cleasby, T. W. Fortey, Charles Fortey, G. H. Hadfield, W. Hebb, E. E. Ingham, Edwin Lloyd and Miss Lloyd, H. C. Moore, T. C. Paris, G. H. Phillott, William Phillips, A. J. Purchas, H. T. Purchas, J. Riley, O. Shellard, and J. Stanley Whittock.

On arrival at Ludlow carriages were awaiting the visitors, and drove off at once for Caynham camp. Here the party were joined by Sir William Curtis, Bart., Mr. G. B. Charleton, Miss Charleton, Master J. E. Charleton, Miss Dyke, Rev. J. Ross (vicar of Caynham), Mr. and Mrs. Lloyd (Ludlow), and some few others whose names did not get on the list of those present.

The visitors having examined an outwork on the western side then entered the camp, and walked along the outer vallums on the southern side. The camp occupied the summit of a hill some 600 feet above sea-level, and its strong entrenchments must have made it very formidable to attack. These advantages, however, are dealt with in the papers which follow, and it is sufficient to say that having reached the high embankments which guard its eastern entrance, the

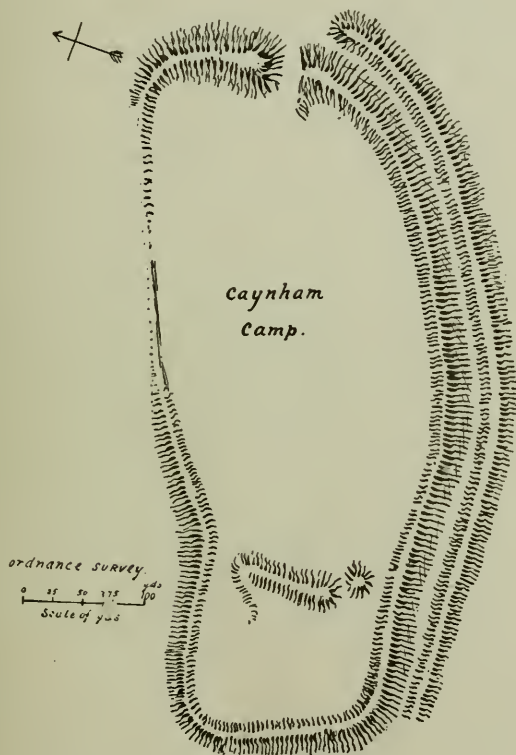
President's whistle was heard, and the visitors soon clustered around him to hear the following paper read by Mr. Wilson, the President of the Malvern Club :

CAYNHAM CAMP.

(BY A SOLDIER ASSOCIATE OF THE BRITISH ARCHEOLOGICAL SOCIETY.)

On my last visit to Ludlow you expressed a wish to have my opinion noted down about your very interesting encampment about two miles east of the town, which goes by the name of the Roman camp. Here I differ completely from the public as to this origin of Caynham, and I will give you my reasons. The Romans under Cæsar, when first in Britain, 53 years before the Christian era, were very expert in the rules and methods of the art of castrametation, and were equally if not more clever in this respect about 100 years afterwards, which was the time of the final conquest of England. They had experienced in their long continental wars the necessity of constructing their camps in the form of a square as the true way of sound defence, facing the enemy on all its lines and obtaining flank defence (flank fires as we should call them now). This figure, either a perfect square or a parallelogram, has ever since been adopted by modern nations. The camp at Caynham is of the shape of a broad ellipse, and has not the regular outlets to the four points as was always the case in Roman camps. Perhaps the north and south sides being very precipitous these doors or outlets might have been unnecessary, but two would have existed and would have been made in the centre of the faces, and not, as at Caynham, in a corner of the west and east sides or faces. However, here the opening in the east face led into the camp from what was formerly an esplanade, a level land of a triangular shape which might have served for the purpose of assembling, or marketing, or storing for a while provisions outward bound or inward due, and some kind of rude path must have led from there to the bottom of the hill. Not the slightest geological or topographical vestige remains to give even the faintest idea of any Roman "via" thereabouts. The opening in the west side of the parapet led to a second camp which adjoined the great one. Its form is that of three sides of a square and was protected on its west side, facing the Ludlow valley by an epaulment or breastwork some 130 yards on the brow of the declivity, the only vulnerable point in the whole encampment. My opinion is that this addition was of a later date and was erected to strengthen the former on that side, or for the purpose of securing impedimenta which could be brought up hill. In this square camp there exists a sort of deep cavity which may be the site of a quarry, but perhaps more probably the remains of some well or natural cistern for rain water so much needed by living beings. The great camp is about 400 yards in diameter. Now none of these features belong to Roman genius. All is contrary to their notions of camps. The choice of the position it is true was perfect, and exhibits a shrewd notion of self preservation and defence. Situated on the round summit of a large hill, isolated from higher ground, very steep on every side but one, the access was difficult and the stormings must have been very hard work in those days. The earthen defences or parapets at Caynham are good, and were higher no doubt. They must have

Hereford.
Woolhope: Trans.
1883.



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presented a truly warlike show when seen from far, as no trees on the top spoiled its outline; but still the Romans would never have originated such a position in permanence at first. Their military tactics and policy were not of a defensive character during their conquests; this was only incidental, their warfare was an aggressive one, and perching on tip-top of high hills was not much in their line of rapid movements and attack unless passes or borders were to be defended. No, the Caynham camp is of true Briton character, and was constructed by those Celto-Britons whose policy and ignorance was of a defensive nature. This form of encampment (the round one) was the custom of all the Hindoo-Germanic races all over Europe, such as the Teutons, Celts, Gauls, Scythians, Pelasgians. No doubt that after the fall of the Britons, the Romans (according to custom) may have occupied Caynham for a time as they did all along the valley of the Wye, the Dee, the Severn, the great Woden dyke, the Cotteswold hills, and elsewhere. When they succeeded they fortified afresh the Briton defences. The Saxons came afterwards and made the best use of all these positions, and no doubt Caynham was one of their strongholds. The last part of the word seems to warrant the truth of this statement. "Ham" is a corruption of the Saxon word "Heim," which means a dwelling, and from which comes our "home," or the private family residence dear to all English hearts. I may add that the earthen defences of Caynham are rather difficult to explain as to their erection. Where did the people take the earth from? that is the question. Was it brought up from below, or was it taken from the inside along the round top. I should incline towards that opinion. There might have been a second outlet from the great camp into the adjoining square one equally on the west as it is seen now and might have proved useful. The north side of the camp appears to have had no parapet or breastwork, as the ground there is most precipitous, steep, and deep, but this may have been removed, though the Romans would not have left the work unprotected by art even with this natural advantage. Then, too, a curious feature is that the very top of the hill is allowed to remain projecting as Nature made it. No, these conquerors of the world would have levelled the bump if they had constructed the camp according to all sound rules of castrametation.

(This paper was written by a distinguished French officer, General Baron de Mallet, and was sent to Meymott, of Ludlow, who kindly sent it for the club. The Baron has also added the following postscript, which slightly modifies his views):—

"P.S.—August 12th, 1833:—Really my antiquarian opinion about that charming spot close to your town is merely a personal appreciation and has nothing official in it. I have seen in England and on the continent several curious remnants of the Celtic Period of various families, tribes, and nations, and could not accept the Ludlow one as purely Roman. No doubt this wonderful nation of conquerors occupied, enlarged, or better fortified the place, but I do not believe that they moved the first spade of earth. That is the question."

The President having given the thanks of the meeting to Mr. Wilson, the following paper was read by Mr. Charles Fortey :—

NOTES ON THE HISTORY OF CAYNHAM AND ITS CAMP.

(FROM THE WORKS OF THOMAS WRIGHT, ESQ., F.S.A., &c.)

The earliest record of Caynham is to be found in *Domesday Book*. The manor of Caynham, it is there stated, had belonged to the celebrated Saxon, Earl Morcar, and passed after the conquest into the possession of Earl Ralph de Mortimer. This part of the country was densely wooded at that time, and the extent of the woodland was estimated by the number of animals it would maintain. The *Domesday* record states, that in the days of the Conqueror there was at Caynham 'a wood of two hundred swine;' there was also 'one mill;' and as part of the produce of the manor is reckoned 'four loads of salt' (iiiij summe Salis de Wich), which very possibly came from the salt spring of Saltmoor, at the foot of Tinker's Hill. This spring is close by the Ludlow and Hereford Railway, about two miles from Caynham and from Ludlow. When *Domesday Book* was written (c 1085) there was neither town nor castle at Ludlow. Dinham is not named, and the only church in the neighbourhood mentioned is that of Bromfield.

A very curious Anglo Norman history of the Fitz Warines has come down to us. It is written in verse, and is called the "Romance of the Fitz Warines." It must have been composed at an early period in the thirteenth century, and gives a very early notice of Caynham. It states that when Joce de Dynan laid siege to Ludlow castle he made his headquarters here, and it gives also the only details known of the early history of the castle.

This Joce, or Gotso, was a very valorous knight, and a great favourite of King Henry. He is spoken of as "a knight of good experience," handsome, strong, and of goodly stature. The King gave him "the castle of Dynan (or Dinham) and all the country round it towards the river Corve, with all the honour," and from this time he took the name of Joce de Dynan. Roger de Montgomery had commenced this castle, since known as the castle of Ludlow, at the close of the eleventh century, and Joce finished it. "He made his castle of Dynan of three wards (baylles), and surrounded it with a double foss, one within and one without." Joce seems to have occupied his castle for some time, but during the conspiracy in favour of Matilda it had become possessed in some unrecorded manner, by Gervase Pagenel, who defended it bravely against the king. The castle was restored however to Joce in the last year of Stephen's reign (1154), and he maintained his rule there for many years, acting with great vigour and bravery whenever the occasion called for it. Hugh de Mortimer had quarrelled with him and harrassed him greatly. But Joce managed to take him prisoner, and kept him in a tower in the third "baylle," or ward until he paid the heavy ransom of 3,000 marks of silver besides all his plate and his horses, and birds (hawks) for his liberty. This tower still retains the name of the Mortimer tower. The border chieftains, Hugh de Lacy and his son Walter de Lacy, had claimed Joce de

Dynan's lands in Herefordshire, and hence were at bitter feud with him. Water de Lacy with Arnold de Lisle attacked the castle in great force, but they were driven off with much slaughter, and through the bravery of young Fulke Fitz Warine they were both taken prisoners.

Fulke Fitz Warine, a boy of gentle lineage, had been placed in the family of Joce de Dynan when only seven years old, according to the custom of those times, to be educated in the practice of knightly experience, and at the time of this attack he had reached the age of eighteen and fought for the first time. The prisoners were confined in the "Pendover" tower (which has not kept its name to these days), and were kindly treated with a view doubtless of another rich ransom, being visited by the ladies of the household—one of them "a very gentle damsel" named Marian de la Bruère (Marian of the heath), smitten with the courtly mien of Arnold de Lisle, aided their escape through one of the windows of the tower by means of towels and napkins fastened together.

An interval of peace occurred after some time, and Fulke Fitz Warine was married with great ceremony to Joce de Dynan's daughter Hawyse. After the festivities were ended Joce de Dynan with his household left to spend some time at "Hertland" with the bridal party, having entrusted the castle to the care of thirty trusty knights and seventy good soldiers "for the fear of the Lacy and other people."

The frail Marian remained on plea of illness, and no sooner were they all gone than she invited her lover Arnold de Lisle to visit her in the castle, promising to admit him by the same window, from which she had contrived their escape. Arnold informs Walter de Lacy, and they agree to attempt to take the castle. Arnold ascends by a rope ladder, which he leaves at the window for one hundred of his men, well armed, to ascend after him. The guards in the night are thrown from the walls, the knights and soldiers slain in their beds, and the Dynan gate thrown open to admit the rest of de Lacy's soldiers. Marian, at daybreak, hears the shouts of the victors, and learning the treachery which had been enacted, she seizes Sir Arnold's sword and thrusts it through his body, and breaks her own neck by jumping from the window.

Joce de Dynan was at Lambourne when these tidings reached him. He and the Fitz Warines immediately assembled their friends and dependents and came with about seven thousand men to recover his castle, which had been thus lost by treason. They took up their quarters, says the history, in the castle of Caynham, situated on a hillock about a league from the present town of Ludlow, "then very old and the gates rotten." The siege was carried on with great activity, and many men were slain in the sorties of the garrison on the site of the present town of Ludlow. The besiegers at length made a fire of bacon and greese at the gateway, which burnt so fiercely that it not only destroyed the triple door of the gateway tower, but also the tower itself, and Joce became master of the outer ward of the castle.

Walter de Lacy, finding himself very hard pressed, sent for assistance to the Welsh Chieftain, Jorwerth Drwydrwn (Jorwerth with the broken nose), who at once invaded the marches with twenty thousand Welshmen, ravaged the country,

and soon arrived to raise the siege of the castle of Dynan. Joce de Dynan, and his son-in-law, Fulke Fitz Warine, fought the invaders with great bravery, but they were over-powered by numbers, and were at length compelled to retire to Caynham, where they themselves were besieged for three days. Unable to procure provisions, and without hope of assistance, they sallied out on the fourth day from the ruined fortress to force their way through their enemies. After killing many Welsh and Irish, they were completely surrounded, and Joce de Dynan, with most of his knights that were not killed, were taken prisoners, and committed to the dungeons of his own castle (c. 1165). Fulke Fitz Warine made a desperate attempt to rescue his father-in-law, but was himself wounded, and with difficulty escaped and joined King Henry at Gloucester. It may be briefly added that the King received him with great favour, and commanded Walter de Lacy to set free Joce de Dynan. He did so, and Joce joined his son-in-law at the Royal Court, then retired to Lambourne, where he died in peace shortly afterwards. On his death the King confirmed the right of Fulke Fitz Warine to the castle of Dynan, and the dependent honour of Corvedale, and afterwards made him Warden of the Marches (c. 1176).

The "Romance of the Fitz Warines" tells much more of the great deeds of Fulke Fitz Warine, but it may not now be followed further. The town and church of Ludlow soon began to be built by the mound, which Mr. Wright supposes gave the town its present name. The castle became Ludlow castle, though the name Dynan exists yet in the modern Dinham, the name by which the district in which the castle is placed is still called. The leading historical facts in the "Romance of the Fitz Warines" are generally believed in, supported as they have been in so many instances by other testimony after facts well authenticated; and if it may be depended upon here, buildings existed within the entrenchments of Caynham at the beginning of the 12th century. The Normans were great castle builders, and no Anglo-Norman writer, at so early a period, would employ the name of "Castle" to simple entrenchments. The buildings, moreover, must have been of considerable antiquity since they were "very old and the gates rotten." The name Caynham is Saxon in derivation, being derived from the small brook the "Cay," on which it is situated, and the Saxon "ham," thus meaning literally "the home or dwelling on the Cay," and the inference becomes therefore all the stronger that Caynham camp had a castle, long before the Conquest—a castle which was the entrenched residence of some Saxon ruler, long before the time of Earl Morcar, in whose possession *Domesday Book* states that it had then been. Leland notices the castle, and writes thus:—"Kainsham or Kensham castle, *clene down*, stood within two miles of Ludlow on a hill top." It was probably built of wood, which will explain its total disappearance. It belonged, (says Camden) to the Mortimers, and the Church to Wigmore abbey.

The camp as we see it to-day occupies the summit of a hill which forms part of a broken ridge extending from the Clee hill. The chief measures 260 yards in length by 140 yards in width, comprising an area of about seven acres and a half. A deep embankment separates this from the western portion, which measures in the continued length 60 yards, with a width of 100 yards, adding about another

acre and a quarter to the camp area. Outside the true camp to the west is also a deep escarpment, about 130 yards from the camp entrance, which may have been very useful in the defences. Two fields on the east side are still called "the Castle fields," and immediately below is another in which a deep and wide intrenchment occupies the principal part. Tradition says that this was the Depository for horses and military stores during the siege of Ludlow castle by Oliver Cromwell in 1646. The camp has no water supply, and therefore in fine weather a siege of three days would be the utmost limits of time it could be held by any body of men, when besieged. At the present time the embankments are covered with trees and underwood, which greatly impede the beautiful views to be seen on every side. Judicious openings made through them would be of greatest advantage. To the west the Black Mountains are visible; nearly due south the Malvern Hills are to be seen; and indeed on all sides where the opening in the trees admits of it, the views near and distant are rich and varied. Quite apart from the historic interest attached to the camp, it forms a pleasure ground worth visiting for itself.

The paper was listened to with much interest, and the President, in proposing a vote of thanks to Mr. Charles Fortey, which was received with great applause, said "he had not believed that so much history and interest could be attached to any camp before. The number of men engaged were afterwards critically commented on, as exhibiting an example of the exaggeration which is so very common in the accounts of ancient battles—an extra decimal at least must have dropped from the recorder's pen, and Joce's 7,000 men may be reduced to 700, and Jorwerth's 20,000 were probably far from reaching 2,000, for if such numbers of fighting men could be found then—though it is true that all men were obliged to fight in those days—the commissariat department must have broken down in the wild districts they had to traverse and occupy.

The President then directed attention to the ancient church of St. Mary, at Caynham, which they were about to visit. The original church is supposed to have been erected so early as the close of the 11th century—to be replaced at the end of the 12th or beginning of the 13th century. The handsome Norman doorway, and two small Norman windows were preserved and built in their old places, but an early English character was given to the new building, and the peculiar chancel arch, its principal feature, was introduced. This triple arch, with massive square pillars and rude caps and labels, almost isolates the chancel from the body of the church, and is of a character but rarely met with. The church is now in course of restoration, or rather it may be said of rebuilding altogether. The Vicar will now kindly take us to see it, and some of you may like to know that a receiving box will be at hand for the "smallest contributions."

Amidst laughter and applause the descent was made through pleasant meads to the church. The chancel, vestry, and organ chamber had been rebuilt in excellent 14th century style, the nave walls are begun, and the square old tower, which it is hoped may be restored, instead of rebuilt, has nothing but its walls

standing. The three bells were on the ground. The two oldest bore the common mottoes "God save the church," and "Jesus be our speed," with the same date 1606; the third had no inscription but bore the date of 1642.

In the churchyard was a fine old cross of the 14th century. It bears the remains of very rich design and elaborate careful workmanship. It stands on a base of three steps, the upper one formed of a single stone of great size and thickness. This stone has the four Evangelists at the corners; a tabernacle on the west side, the emblems of the Passion on the eastern side, and a handsome cable pattern goes round its upper edge. The shaft has the remains of crockets up its angles, but it is much worn and the cross is gone. Much injury to the church and this cross is said to have been caused by Cromwellite desecration.

The carriages were now regained somewhat hurriedly, for longer time had been taken up than should properly have been allowed, and "Forward, forward," was shouted vigorously. The ride up the slopes of the Titterstone Clee hill, through Knowbury to the Dhu Stone quarries was very interesting; many limekilns were observed on the mountain limestone rocks, and the refuse heaps of of coal mines frequently passed. It was, unfortunately, the dinner hour at the quarries, and but very few men were at work. The manager very kindly went with the visitors, explained the works, and soon showed where the coal began. It was necessary, however, to pass quickly on.

The coal mines were not visited, but it was stated here that clear proof exists that coal was obtained from the Titterstone Clee hill so far back as the 13th century. In the *Monumenta Historia Britannica*, published by the Record Commission in 1848 are records which show this. The "taxatio Ecclesiastica" of Pope Nicholas IV., A.D. 1291 and following years, was made in order to raise one-tenth on ecclesiastical revenues for a crusade. Among the items of property belonging to Wigmore abbey are the following:—"Apud Kayhm and Swytton Item de minera carbonum, ibidum, 0 5 0." Kayhm is no doubt Caynham, and Swytton is doubtless Snitton in the parish of Bitterley. A subsequent entry states that the church of Kayham belongs to the Abbot of Wigmore.

The ascent of the Titterstone hill began from the quarry margin, along the basaltic ridge called Hoar Edge, and the way would have seemed long but for the interesting wild plants found. *Wahlenbergia hederacea*, the delicate and graceful ivy-leaved Bell flower, was very abundant; *Scutellaria minor*, *Narthecium ossifragum*, *Eriophorum vaginatum*, and the fly-eating Sundew, *Drosera rotundifolia*, was plentifully gathered; but the *Viola lutca* had done flowering. Children were gathering whinberries, or whortleberries, *Vaccinium myrtillus*, on the slopes of the hill, but were not inclined to sell the flat-tasting fruit.

Descending from the Hoar Edge into a dip in the hill called Horse Ditch, a curious three-sided stone is carefully erected, which looked like a boundary stone. It had these inscriptions on its flat sides. On the south was cut L. C. WILLMORE, P. W. L., 1826; on the easterly side, T. B. L. C., MINE; and on the N.W., the letters or word, WERE. These inscriptions may be clear to the natives, but to strangers they seem enigmatical and quite past ordinary comprehension. Will some of your readers kindly give the right interpretation of the mystery?

The cairn at the summit was reached at length, and the Ordnance Survey cairn, simply and firmly built was close at hand, and, with the Giant's Chair, were all visited, and the glorious view on all sides enjoyed. Where was the President, who was announced to give here the Geological address? He had last been seen hammering out fossil plants from an outcrop of coal in the valley below, and it was clear he had shirked the hill and gone off "by Bedlam to Bitterley" according to the programme, so the descent was soon begun to rejoin him.

The parsley fern, *Allosorus crispus*, was seen growing at the foot of the old cross in Caynham churchyard, but none was met with on the hill. The *Osmunda regalis*, was not seen at all, nor yet the *Botrychium lunare*; but the oak-fern *Polypodium Dryopteris*, and its limestone sister *Polypodium calcareum*, were found in abundance on the stony descent of the hill, with many more common varieties; and here it may be added, to conclude the botany of the day, that on the banks of the river Ludwyche the poisonous Monks-hood, or Wolfsbane, *Aconitum Napellus*, has completely naturalized itself, and was growing freely in patches all along its banks.

The carriages were rejoined at Bitterley, and another pleasant drive soon landed the visitors at that good hostelry, the Feathers' Hotel, fully prepared to enjoy the good things provided. How they did so, how an excellent paper on "The Salmon Disease" was read by Mr. H. C. Moore, and how Dr. Bull showed that Leintwardine occupied the site of the old Roman station and town of Bravinium, and how the President's Geology was given in the return train, there is neither time nor space to tell. A large section of the company immediately after dinner fled from the papers and went off to see the castle and the church; let us hope they did it in the spirit of the local poet above quoted, with

"Progressive virtue, and approving Heaven."

ON THE COAL MEASURES AT THE CLEE HILLS.

By MR. GEO. H. PIPER, F.G.S. (President).

No doubt most of my hearers are familiar with the generalized statement that coal lies in the lap of the Mountain, or Carboniferous, Limestone. This rock is a tough, bluish-grey, crystalline formation, and occurs in massive beds immediately upon a band of yellow sandstone, deposited upon the Devonian Limestones and Old Red Sandstones, which prevail so extensively in Herefordshire. At the Clee hills the Mountain Limestone is found only in two places, one on the south and the other on the north of the Titterstone Clee. These beds are in some places highly fossiliferous, and are exposed, north-eastward of the Clee hill, at Oreton and Farlow. The quarries at Oreton supplied the very numerous and fine specimens of palatal teeth of *Orodus ramosus*, and fish spines, in the collection of the late Mr. Weaver Jones, of Cleobury, which many of us have seen; and here we have the base of the Clee hill Coal Measures. The limestone occurs again between Cornbrook and Knowl, southward of the hills. From the nearly vertical positions of the sections at this place it has been suggested that the great dislocation of the Mountain Limestone, which is traceable in various parts of the Clee hill district, occurred *before* the carboniferous deposition. The condition of the rocks proves that before the coalfields were laid down, subterranean forces were active beneath this tract, but the present position of the lava affords satisfactory evidence that it was poured out by volcanic means over the surface of the coalfield after the carboniferous deposit had taken place. Further proofs of earthquake forces having existed here, before the deposition of coal, may be found at Oreton and Knowbury, where there is evidence of great dislocation of the Mountain Limestone, which must certainly have occurred before the Millstone Grit was deposited. The Rev. W. S. Symonds says, "Nothing in physical geology appears to me to have less foundation than the supposition that such outliers as the Clee hill Limestone and those of North Wales, were little isolated coral reefs. The Millstone Grit which overlies them should be sufficient to overthrow such theories, for, even allowing that isolated coral reefs may have accumulated in the Lower Carboniferous seas, we cannot suppose that the Millstone Grit could have been deposited above every outlier by accommodating and peculiar currents, which spread their particular and peculiar pebbles over those accommodating coral islands, and adapted their flow to such widely distant and separated areas as are those of the Little Orme district, near Llandudno, the Titterstone Clee, and Pen Cerrig, near Crickhowell. Fossil shells and fish spines—*Otenacanthus*—similar to those found at Oreton, occur at Knowbury. *Producti* have been obtained at Gorstley Rough; thus the fossils yielded by these patches of limestone are identical with those found in carboniferous limestone districts miles and miles away, on the flanks of Dean Forest in the South Wales Coalfield, or the isolated outlier of Pen Cerrig." The inference to be drawn from these appearances is, that at

some early period of the earth's history, that which we know as the South Wales Coalfield extended very many miles northward and eastward of its present site, and included in its area the carboniferous formations of the Dean Forest, the Clee hills, and other places, at a time when much of the Old Red Sandstones of Herefordshire was overlaid by some important mineral.

A few minutes more may perhaps be usefully occupied in considering the manner in which coal was formed and deposited. It is a subject which has been much discussed, but upon which geologists are by no means agreed. On examining sandstone and shale, it is easy to perceive from their texture and composition, that they must at one time have been respectively loose sand and mud, borne down by, and deposited from, water; but the case is somewhat different with Coal. This mineral being chiefly composed of carbon, hydrogen, and-oxygen, and revealing in its mass evidence of vegetable structure, no doubt is entertained of its organic origin. But whether the plants of which it is composed were drifted down by rivers, and deposited along with layers of mud and sand in estuaries, or whether dense forests and peat mosses were submerged, and then overlaid by deposits of sand and mud, are the two main questions at issue. According to the latter hypothesis, the vegetable matter must have grown and accumulated in dense jungles and peat mosses for many years; then the land must have sunk and become the basin of a lake or estuary, into which rivers carried mud and sand; these covered the vegetable matter itself, which then underwent the process of bituminisation and mineralisation, and was converted into Coal. This being done, or while in process of being done, it is supposed that the area of deposit was again elevated, or at least so far silted up and rendered so shallow as to become once more the scene of luxuriant vegetation; again submerged in the process of gradual subsidence, and overlaid by new deposits of sandstone and shale; once more shoaled and covered with plants, and then submerged; and this alternating process of submergence and shoaling is presumed to have taken place as often as there are beds of Coal in any particular coalfield. The other hypothesis is, that while partial elevations and submersions of land might have taken place, as at the present day, and jungles, pine-swamps, and peat mosses been thereby thrown beneath the waters, the great masses of the Coal Measures were deposited as drift and silt in lakes and estuaries, that the vegetable matter of which Coal is composed was carried into these estuaries by rivers and inundations, and that various rivers might discharge themselves into one estuary, some chiefly carrying down sand, while others transported plants, mud, and heterogeneous *débris*. This hypothesis also supposes that the transporting rivers were subject—like the Nile, Ganges, &c.—to periodical inundations, and that during the intervals of overflow the deltas were choked with a rank growth of vegetation which, in conjunction with the vegetable drift from inland, went to the formation of beds of Coal. These hypotheses are known as the “terrestrial” (or “peat-moss”) and “drift” theories. There is truth in both. We see in some thick, continuous, and pure beds of Coal, the remains of submerged peat-mosses or pine swamps; in others the matted masses of drift vegetation, enclosing shells and fish-bones; in some, the upright trunks and accumulated foliage of gigantic

forests, with their "underclays" or ancient soils on which they flourished; while beds of impure Coal or bituminous shale bespeak the preponderance of muddy silt among the drifted vegetation that slowly decayed and dropped to the bottom of the estuary of deposit. I would refer those who wish for further information on this very interesting subject to *Page's Advanced Text-Book of Geology*, 5th edition,* to which valuable work I am indebted for the theories on the formation of Coal now brought to your notice.

Very much that is interesting might be said of the Basaltic formation which crowns these hills, but time will not now admit of it. You will have seen by the section figured in *Murchison's Siluria*, a vertical mass of Basalt rises up through the strata, and overspreads the hill tops. This is a more compact form of Dolerite, and has been molten under intense heat, and could again be reduced to that condition; it consists essentially of Augite and Felspar, the former predominating, with a considerable admixture of iron. It is close-grained, hard, usually black, and frequently columnar, which structure is the result of cooling. It would probably be of Permian age, intruded into and overflowing the carboniferous rocks in Permian times. The fact of Coal being now found on these hills is chiefly attributable to the hard Basalt having, by its resistance to denudation and other eroding influences, seized the Coal and held it in its present position. How much of it was washed and worn away before this condition arose there are no means of ascertaining, but it is known that the Coal Measures here are of trifling thickness and importance as compared with those of South Wales; and yet the supposition is perfectly reasonable that at some period they were united. Coal Measures vary greatly in thickness, and most geologists consider that it is seldom, or perhaps, never, that we obtain the full thickness, because great denudation has in nearly all cases affected the strata. In South Wales the total thickness of the series has been reckoned at from 10,000 to 12,000 feet. It has been estimated that the sediment increased two feet in a century, and that it would probably take 1,000 years to form a bed of Coal one yard in thickness, and a calculation has been made that the deposits forming the South Wales coalfield might have been accumulated in 640,000 years.

* This work, revised and in great part re-written by CHAS. LAPWORTH, has now, 1883, reached its twelfth edition.

ON THE SALMON DISEASE (*SAPROLEGNIA FERRA*).

By MR. H. C. MOORE.

THE great advantages of fish as an article of diet are unquestionable, not only from its cheapness, but also from its suitableness as a food for all classes. It is excellent for the robust, the sedentary, and for brain-workers; and it is often peculiarly adapted for the delicate and the sick. A very interesting experiment has recently been tried by the Board of Guardians of the Bristol Workhouse. They decided to substitute for a single day, twice the amount of fish, in lieu of beef, to their inmates in the Union, and they met with the following gratifying result:—They found that whilst

2½ cwt. of beef, at 65s. per cwt., cost	...	...	...	£	s.	d.
5 cwt. of fresh fish from Grimsby (with carriage) cost only	...	...	...	8	2	6

and they thus effected a reduction of expenditure in one day of £2 11s. 2d., with much gratification to their inmates. With such an example of discriminating economy before us, there is sufficient reason why we should devote every attention to preserve an ample supply of this important article of diets: and especially so when we take into consideration the value of fisheries, of which, taking one branch,—that of the Salmon Fisheries—the value of the yearly produce from rivers in England and Wales amounts to £150,000, and if the produce from Scotland and Ireland be added, amounts to not far short of £750,000, or three-quarters of a million.

In Herefordshire we have a river which contributes its share of fish to the London markets as well as to our own tables; and we also have, fortunately, a Board of Conservators, whose objects are the preservation and improvement of this supply. It must be confessed, however, that there is no lack of disturbing elements. The quarrels amongst conservators themselves, with the Rebeccaites, poachers by night, and poachers by day, riparian owners called brinkers, netters, “gentle fishermen” who have been brought up by the river side, and have educated themselves to a faith that since God made the river and the fishes, they have as much right to them as any other man: are not all these difficulties chronicled in the columns of the *Hereford Times* and *Hereford Journal*? But the divers interests of all communities are now concentrated upon one subject, viz.:—the fatal epidemic amongst the fish and its probable effects on the yield from the river.

The disease broke out in the river Wye for the first time, in the nature of an epidemic, early in the spring of this year, 1883, and continued during the drought, which lasted throughout the months of February, March, April, and the beginning of May; it abated after a “fresh” which occurred in the latter month. It caused, as Mr. Stephens, the lessee at Hereford, states, the death of hundreds of

salmon, of thousands of salmon fry, and of numerous trout and grayling, the coarse fish being slightly affected. The fresh salmon just returned from the sea, and invigorated with renewed vitality after their sojourn in salt water, and therefore in the perfection of health, were often attacked, and succumbed to the disease, and it was not, therefore, necessarily the result of weakness, of disease, or of injury.

The disease has long been known in other rivers. Other, and somewhat similar diseases to which fish fall a prey have also been recorded and scientifically described.

In 1844, Unger published a description of a similar disease on carp in the Botanical Gardens at Gratz. Trout and salmon breeders have, for many years, observed the disease amongst their ova.

Although it has been previously observed, the attention of the public seems hardly to have been aroused to its serious ravages in our own rivers until the year 1877, when it was observed in the rivers Esk and Nith, which both flow into the Solway Firth; shortly afterwards it is reported from neighbouring rivers flowing into the same Firth. In 1879, a serious mortality amongst the salmon is reported from the Tweed; and about the same time it is observed in the rivers in Ayrshire.

It has been noted as a curious circumstance, that whilst no serious epidemic has occurred in the rivers south of the Tweed, along our eastern coast, that the disease has gradually extended thence upwards and downwards along our western coast from the borders, until at length this year (1883) it reaches the Wye in Herefordshire. This raises suspicions of its being *transferred* by some means at present undetermined. Mr. A. D. Berrington, in his recent report on the fisheries of the river Usk, states, that for many years it has been known to occur occasionally in that river; nor does it appear to have been unnoticed by the netters on our own river Wye. It is probable that it did not assume the character of an epidemic, and thus escaped public attention.

A few recent records of the mortality from the disease, in rivers carefully watched, present much interest and importance. The bailiffs removed 5,222 dead and dying salmon from the river Tweed in the year 1880, 2,907 in 1881, and 14,627 in 1882, making in three years an aggregate total of 22,756 fish. In a single year 2,000 fish have been removed from the Tay; and nearly as many for several years from the river Eden; and also from the small river Esk. From this last river 351 fish have been taken out dead in three days. The following table shows the mortality amongst the salmon in the river Eden, where the disease has been very carefully watched:—

1,560	fish	were	removed	in	1878
422	„	„			1879
514	„	„			1880
409	„	„			1881
2,036	„	„			1882
1,177	up	to	the	31st	May, 1883

This disease is due to the invasion of the fish by a fungus, which is called *Saprolegnia ferax*. This fungus is probably no new disease. It has existed with-

out being studied, or even noticed as a fungus disease. Mr. Andrew Brotherston (Kelso), in his prize essay International Fisheries Exhibition, Edinburgh, 1882, reports the appearance of a disease on bull trout in the Eden 36 years ago, and the fact of having counted as many as 35 dead salmon in a distance of 100 yards in the Tweed itself in the spring of 1872. The late Mr. Stirling (Royal Society, Edinburgh, Proc., 1879-80,) recorded several epidemics at Igtham, in Kent, one of them dating as far back as 1850. These diseases were probably identical with the *Saprolegnia ferax* now under consideration.

This disease is so clearly of an infectious or contagious character, that where fish are plentiful and subject to the same influences, many must die; but it is interesting to have the positive information that notwithstanding the serious mortality it has caused amongst the salmon for several years past, the supply even from the infected rivers has been increased rather than lessened. This fact seems to show that it is in some way connected with a great increase in the number of the fish, and that overcrowding may be as fatal to salmon as it is known to be with grouse.

The fungus which constitutes the disease (*Saprolegnia ferax*) has been under scientific observation for many years. It is propagated with great rapidity on any dead organic matter, and we know well now that it becomes a parasite on living freshwater fishes, and has the power of quickly killing them. The fungus, like many other microscopic funguses, presents a different form when grown in the air from that in which it appears when grown under water, and it is much more common than is generally supposed.

A similar fungus has long been known to affect the common house flies in autumn. The fly is first noticed to become gray in colour, stupid, or "muzzy;" it then dies, and may be found adherent to windows, ceilings, walls, &c., very firmly fixed to the object by its proboscis, and with its legs well spread out. If seen at this time upon the windows it presents the appearance of having swollen and burst, with a well marked spray surrounding it.

A microscopical examination reveals the fly to be surrounded by numerous round spores like white globules, and having transparent tubular threads proceeding like rays from between the rings of the abdomen, terminating in rounded extremities, and enclosing the globular spores which in the act of maturation are discharged from the extremities of the tubes, giving the appearance of ground glass efflorescence surrounding the fly.

If the diseased fly be placed in water, it will be observed in a few days to be covered with a fluffy cottony web, with all the characteristics of the salmon disease.

This fungus upon the fly has the name of *Empusa muscæ*, or *Sprendonema muscæ*, and when this plant is produced in water it becomes the *Saprolegnia ferax*, or the fungus of the salmon disease—the fungus of the fly being the form when grown in the air, and the fungus of the fish being the aquatic form of the same plant.

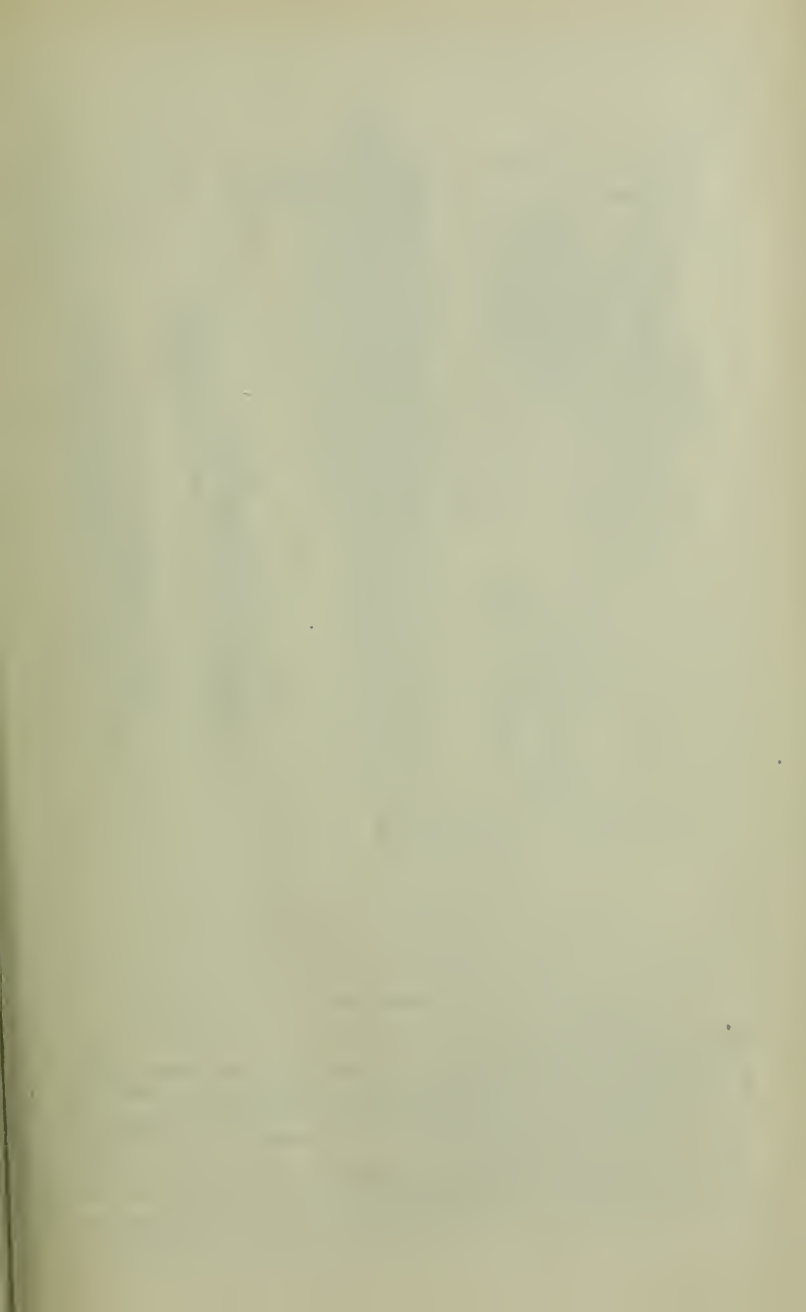
If a fly, killed without breaking the skin, be rubbed against a fresh patch of diseased skin from an infected salmon, and be then placed in water, it may in two days develop traces of the salmon disease, and may infect any fish, especially upon

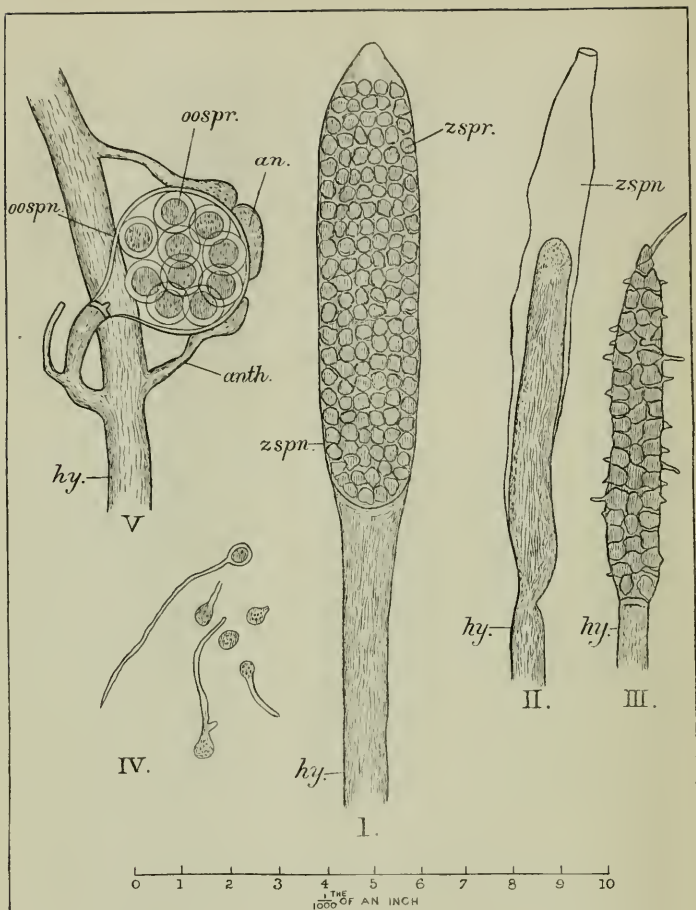
any abraded surface, with which it may come in contact, in from 24 to 36 hours. Mr. George Murray, of the Botanical Department of the British Museum (who has been assisting Professor Huxley in his investigation of this subject), inoculated two healthy dace on the 2nd March, 1883, with a diseased fly. On the 5th March a patch of disease was visible, which had become much larger on the 10th March. On March 16th one fish died covered with fungus; the other fish had escaped, but was afterwards found dead just as extensively diseased. Under similar treatment two others died; one in 10 days, the other in 14 days.

Saprolegnia ferax attacks any kind of fish, eels, frogs (it has been found growing upon frog-spawn and upon the ova of fish), tadpoles, beetles, as well as many other forms of organic matter. The disease is not confined to our own rivers, for it has been observed in Russia and America. It is often very troublesome and fatal in the aquarium, and broke out in the Fisheries Exhibition a few days after it was opened.

When the *Saprolegnia* attacks a fish, a diseased patch or patches are observed to appear first upon such soft parts of the fish as are devoid of scales: these patches are ash-coloured, raised in the centre with a well-defined margin, from which the disease extends with marvellous rapidity, neighbouring patches becoming confluent, until the entire body—if the fish lives long enough—gets covered with a gray gelatinous mass adherent to the skin. In the early stages the patches can be removed, and the scales underneath are found undisturbed. In advanced cases the disease is found extending beneath the scales and epidermis, which has been destroyed, into the true skin. The fish now presents the appearance of being covered with light, gray or whitish patches, and in its latter stages the tissues of the tail and fins are often eaten away, leaving the rays bare and separated. The fungus, when it has appeared upon the soft integument of the head, extending over it, closes the eyes, plugs the gill covers and the mouth, whence it often extends along the mucous membrane; sloughing and ulceration even to the very bones of the head not unfrequently occurring. The unfortunate fish attacked must suffer greatly from irritation, and apparently dies from exhaustion, and suffocation due to obstruction of its respiratory functions. It does not lose much in flesh, which may be attributed to the rapid growth of the fungus, causing a speedy fatal termination, and, indeed, upon a careful examination, the body and viscera of the fish are usually found healthy, the disease being confined to the skin itself. In fact, there are found some martyrs to science, who, having ventured the experiment of eating salmon thus diseased, are not only still surviving, but confess themselves to have been unable to detect any depreciation of the characteristic flavour of the healthy salmon, or to have been in any manner affected by this food, whose associations alone would repel any ordinary appetite, unless it were goaded on by the cravings of hunger or of science.

By the kind permission of Professor T. H. Huxley, I am allowed to make any use I like of his diagram which accompanied the Twenty-first Annual Report (Blue Book, C. 3127 of 1882) of the Inspectors of Salmon Fisheries for the year, 1881. A study of the figures will more impressively explain the character of the *Saprolegnia Fungus*. To this Report, and also to the Report of Salmon disease in





Characteristic Forms of the Sporangia and Spores of *Saprolegnia*.

I.—A zoosporangium full of nearly ripe zoospores from the skin of a living diseased salmon.

II.—An empty zoosporangium, through the centre of which the hypha is growing in order to produce a new zoosporangium. From the fresh growth of *Saprolegnia* on the diseased jaw membrane of a salmon, cut off and placed in water.

III.—A dictyosporangium from salmon *Saprolegnia* cultivated on a dead fly. The spores have remained in the interior of the zoosporangium, and, after encasing themselves, have there germinated.

IV.—Zoospores of salmon *Saprolegnia*, germinating in water.

V.—An oosporangium of *Saprolegnia* from the pike, cultivated on a dead fly. The oosporangia of the salmon fungus in all respects resemble this.

Signification of the letters:—*hy*, hypha; *zspn*, zoosporangium; *zspr*, zoospore; *oospn*, oosporangium; *oospr*, oospore; *anth*, antheridial filament; *an*, antheridium.

rivers in England and Scotland in Blue Book, C. 2660 for 1880, I would refer all who are desirous of making a more extended acquaintance with the Scientific knowledge of the *Saprolegnia Fungus*. For the present, I will endeavour, by the aid of the drawings, to epitomise the character of the disease in such a manner as to render it intelligible to those who have never had the advantages of seeing it either with the unaided eye, or under the microscope.

A microscopical examination of a vertical section through a diseased patch reveals, upon its exterior, a number of slender transparent tubular filaments, growing oftentimes in a singularly regular manner, and terminating generally in rounded, although sometimes in tapering, club shaped, or pyriform extremities. These tubular filaments (*hyphæ*) are the stems of the plant, which, if traced downwards, are found to have their rootlets ramifying some horizontally in the superficial, middle, and deep layers of the epidermis, others vertically downwards penetrating the true skin, disorganising its structure, destroying its nutritive material, laying open the small blood vessels in its substance, and causing its ulceration and sloughing. These rootlets are the *mycelium*, and correspond to the "spawn" of our Mushroom beds.

Beyond the margin of the diseased patch, the skin appears normal in structure. The ulceration and disorganization follows the Fungus growth, thus indicating that the Fungus is the primary cause of the disease and not its consequence. The Fungus must therefore be classed amongst the epizoid fungi: its life commencing externally, as is the case with that of the potato disease, vine disease, hop mildew, &c., &c. The Fungus stems are seed vessels (sporangia, zoosporangia, Fig. I., II.) enveloping a colourless granular protoplasm of minute spheroidal cells, (spores, zoospores). The cells rapidly increase in size, and when mature are liberated in an ovoid form as *zoospores* or living spores from the extremity of the filaments, having attached to them a pair of cilia or tail-like appendages, which give them the power of motion, and which alighting beyond the circumference of the diseased patch are prepared to extend the disease centrifugally. Should the zoospore fail to attach itself to any substance capable of giving it nourishment, it speedily dies. Each sporangium contains swarms of these zoospores.

In some instances, the zoospores germinate within the zoosporangium itself, as is seen in diagram Fig III. (dictyosporangium).

There is yet another method of reproduction. The hyphæ break up into joints which are capable of germination. The short branch of a hypha dilates into a spheroidal capsule with a thick cellular covering within which protoplasm is developed, containing one or more spheroidal masses called *oospores*. This capsule is called an oosporangium (Fig. V.) Fecundation probably takes place where an antheridium from an adjacent branch of a hypha applies itself to the outer wall of the oosporangium (Fig. V.), and the spores, when liberated from their capsule, are enveloped in a thick tough skin, which enables them to remain quiescent, (as do the spores of the *Peronospora infestans*—the fungus of the Potato disease—see *Woolhope Transactions*, 1875, p. 166) and for this reason are called "resting spores."

The well-known fact that the disease is propagated by these zoospores leads

to the consideration as to what circumstances are favourable and what are antagonistic to their growth. The conditions under which the zoospores germinate most readily are the presence of animal and sometimes vegetable matter in a moist state of decay, or even of living animals, especially if the skin has been injured in any way. Warm weather, deficient oxygenation of the water, as from absence of rainfall, form additional causes of its rapid growth; and thus a mild winter and spring encourages it. Pollution of rivers by sewage, refuse from mill factories, infusions of agricultural manures, sheep washing, and other causes to which the disease has been often attributed, is clearly exonerated from the charge of producing it for the very obvious reasons of the disease having been most virulent in rivers particularly free from pollution, such as the river Eden, the river Kent, the river Leven (which flows out of Lake Windermere), and some rivers in California, although of course it is not denied that the greater the amount of decayed animal and vegetable matter present in the water, the more the production of the disease must be encouraged, seeing that it might convert a disease which was simply sporadic into an epidemic. In the epidemic this year in the Wye, the gravel beds were observed by the fishermen to be covered in some places—for instance, at the mouth of the Lugg river—with a layer, several inches thick, of a very filthy deposit.

Any injury that the salmon may meet with certainly renders them very liable to be attacked by *Saprolegnia*. Mr. Wilmot, engaged in the cultivation of fish in Ontario in 1867 to 1868, found that the fish transferred from one stream to another suffered so much from disease when seized by the head and back, that he introduced the use of indiarubber gloves, and directed that the fish should always be seized by the tail. Although the mortality was diminished by this means, nevertheless, in a year or two many fish died with the fungoid growth appearing first round the tail.

The injuries salmon inflict upon each other, and their low vitality when returning from their spawning beds, render them almost certain to be attacked when the fungus is prevalent.

The causes which tend to prevent the growth of the fungus are numerous. In the first place, cold is as antagonistic to the *Saprolegnia* as it is to all fungoid growth. Thus Mr. A. D. Berrington, in his last report on the Usk fishery, observes that “the only year in which there was no evidence of disease at all in the Usk river (although carefully looked for) was in the year 1881, following the very severe winter of 1880”; and many other similar instances might be given.

Sea water, or common salt in water when of a sufficiently strong solution, is fatal to the growth of the fungus. Mr. Silk (pisciculturist to the Marquis of Exeter,) has in two days cured black bass fish infected with the disease by placing them in salt water. Again, Mr. List (Chief Constable of Berwick,) has, at the instigation of Professor Huxley, kept several diseased salmon in cages at the estuary of the Tweed with the result of so complete a recovery, that upon a microscopic examination no trace of the disease could be discovered by Professor Huxley.

The most antagonistic cause however to the increase of the disease is, beyond

question, the occurrence of a flood on the river, for this not only removes most of the causes tending to produce it, but also carries off the poor weak afflicted kelts into sea water, where many may arrive dead, no doubt, but where others not so badly affected get a chance of recovery. It was a flood of this character that put an end to the disease in the river Wye in the month of May, during the epidemic this year.

As a general conclusion it may be stated, that the disease which kills the salmon is now well proved to be the fungus *Saprolegnia ferax*. It is this, and this alone, which destroys the fish by its rapid development on the skin. It attacks weak or injured fish by preference, and they have less power of resisting the growth of the fungus, but it is yet capable of attacking salmon which are in the very best condition of health and strength when just fresh from the sea, and of destroying them in a very few days. Professor Huxley suggests the possibility that some rootlets or mycelia of the disease may remain from a former attack, but too deeply seated to have been eradicated by the beneficial effect of the salt water, but as yet there is no proof of this. The cause of the appearance and rapid growth of the fungus has yet to be discovered, but if one thing is more clear than another it is that river pollution does not produce it. The same wonderful mystery attends the development of this microscopic fungus as does that of many others, which, extremely minute as they are, yet by their rapid production produce the greatest changes in organic nature. Their prevalence is possibly due to meteorological causes not yet fully appreciated. The life-history of some of them, however, as that of the funguses which cause fermentation; of the fungus *Pero-nospora* which affects the potato; of muscardine (*Botrytis bassiana*), the fungus which destroys the silkworm; and now, too, we may say the same of *Saprolegnia ferax* which kills salmon; and of some others also; is beginning to be understood, and as knowledge further advances, the means of checking their production will doubtless be increased. It would be valuable to discover the *habitat* of the "resting spore," and some practicable system of exterminating it, and otherwise diminishing the development of a disease which has so many methods of reproduction. Persevere then, oh Woolhopeans! in the study of the minute funguses which has already given so much renown to your Club! Take warning, oh fishermen! Injure the fish as little as may be possible! Use your nets sparingly in the early season of the year, when the exhausted fish are on their way back to the sea; and when you do take them, handle them tenderly, as if you loved them. And, lastly, oh conservators and legislators! spare no efforts to purify the rivers. Remove without delay from your rivers all dead, and all badly diseased fish, and bury them deeply, or far better still, completely annihilate every spore by cremating them. Knowing as much as we do about the prolonged dormancy of resting spores, knowing how disturbed the ground may be by the burrowings of rats, moles, earthworms, &c., and that latent spores may thus, at some future period, be again brought to the surface of the ground, and, upon the advent of the next flood or shower, washed into the river, there again to re-exercise their deadly influence; we should recommend providing against this contingency by a system of cremation. Let the bailiffs be supplied with a few faggots wherewith to form

the simple funeral pyre, and in these days of Sanitary Reform let cremation and purification be substituted for corruption and putrefaction. None of you may prevent the appearance of the *Saprolegnia ferax*, but you may all aid each other in lessening its ravages. When the meteorological causes which produce the fungus are prevalent you may do much to improve your rivers and save your salmon.

The gradual increase in the supply of salmon to the public markets—notwithstanding the prevalence of the disease in many of the best salmon rivers during the last five years, is very remarkable. The supply from our own river, the Wye, in which the disease this year destroyed so many fish, has never been exceeded in any previous year, and as Mr. Stephens, the lessee of the fishery, says, “Never in all my experience have I seen so many fishes with their heads up stream determined to pass all obstacles.”

This, however, is not a mere matter of opinion, it is a commercial fact, as may be seen from the published account of the supply of salmon to Billingsgate Market. Mr. Henry Ffennell, in *The Times* of August 15th, 1883, says,—“I have before me figures giving the numbers of boxes of salmon received at Billingsgate for the last ten weeks ending on Friday last, and also figures showing the amount received for a corresponding period of last year. From this it will be seen that Londoners at least have had the opportunity of enjoying the benefit of a largely increased supply of salmon. The numbers of boxes of salmon received at Billingsgate respectively from Scotch, Irish, and English waters for the ten weeks of 1883 ending Friday last and the ten corresponding weeks of 1882, were as follows:—

				1883. Boxes.		1882. Boxes.
Scotland	...	...	...	22,991	...	13,141
Ireland	...	...	...	5,336	...	2,758
England	...	...	...	1,155	...	971
				<hr/> 29,482	...	<hr/> 16,870

From this it will be seen that there has been an increase of 12,612 boxes over the number received during the ten weeks of 1882, and as each box is calculated to hold 150lb. weight of fish, the figures I give represent, I think, a substantial augmentation to the fish supply of London.”

Or again, the arrival of salmon in London during the month of June for the last five years, as given in Professor Huxley’s address at the Fisheries Exhibition (July 3rd, 1883,) shows this increase equally clearly:—

	1879.	1880.	1881.	1882.	1883.
English ...	409	756	524	848	760
Berwick ...	132	182	197	198	245
Irish ...	1,553	1,864	1,995	1,243	3,073
Scotch ...	1,541	1,847	2,544	3,605	6,643
	<hr/> 3,635	<hr/> 4,649	<hr/> 5,260	<hr/> 5,894	<hr/> 10,721

Thus we may take courage, and still grow cucumbers, with good faith that we may enjoy salmon in its season for many a year to come.

THE WOOLHOPE CLUB AND HEREFORDSHIRE ORCHARDS.

To the many benefits the Woolhope Club has rendered to the district in which it exists (says the *Journal of Horticulture*) it has added another, which in our opinion far exceeds in importance and lasting good to the country any of its former achievements, important and useful as these may have been. It is an old cry that the varieties of cider apples which made the reputation of the Herefordshire orchards had died out, and that even their progeny had so far partaken of the senility and effeteness of their parents that they, too, had lost all the vigour that was necessary even to existence. This is an idea which we have always fought against; we have denied over and over again that there was any truth in the theoretical views that have from time to time been propounded by those who professed to base them on what they vaguely term scientific and physiological principles. We are glad to know that the Woolhope Club have discarded such views, and have entered upon the work of restoring to the Herefordshire orchards the old orchard fruits which have added fame and fortune to the county. Since the Club has engrafted pomology on their constitution attention has been given to this all-important subject, and willing hands and sound heads have not been wanting to help in furthering the good work. There have always been in the country a few trusting men, firm in their own convictions, who either disbelieved the prevalent error, or were so sceptical on the subject that they have been silently doing their own work and perseveringly preserving some of the best sort of cider apples, grafting and regrafting from young and vigorous trees, till they have established and fixed a progeny which possesses all the vigour and health of the original trees. Witness, for instance, what has been done by Mr. John Bosley, of Lyde, in the case of the Foxwhelp. He has proved conclusively that these old varieties can be restored; and although the cider from young trees cannot be expected to be of a quality equal to that made from old and matured ones, any more than fine wine can be obtained from a young vineyard, still every year these trees live they are approaching nearer maturity, and every year becoming of greater value. We are convinced that landowners who will now set to work and plant orchards of Foxwhelp and Skyrme's Kernel Apples and Taynton Squash Pears of the true sorts, such as are being supplied by the Woolhope Club, will add greatly to the value of their estates—a value which will every year increase with wonderful rapidity.

We have been led to make these remarks from having received the following circular from the Secretary of the Woolhope Club:—

SPECIAL NOTICE TO MEMBERS OF THE CLUB.

The Pomona Committee have the great satisfaction to inform the members that the experiments they have caused to be carried on during the last four years

for the restoration of those valuable orchard fruits, the Foxwhelp and Skyrme's Kernel Apples and the Taynton Squash Pear, have completely succeeded. They have now upwards of 800 young trees in vigorous health—viz.,

		Foxwhelp.		Skyrme's Kernel.		Taynton Squash.
One-year maidens, about 3 feet high	...	500	...	100	...	30
Two-years-old trees, 4 feet to 5 feet high	...	80	...	30	...	18
Standard Foxwelp trees, 5 to 6 feet high	...	...	...	...	100	...

The prices of these trees are 2s. 6d. for maidens, 3s. 6d. each for two-year-old trees, and 5s. each for the Standard Foxwhelp trees. They are offered, in the first instance, to members of the Club, who will be allowed a reduction of 10 per cent. on these prices.

Members desiring to have any of these trees should apply immediately to Mr. Theo. Lane, the secretary, who will register the list for the committee in the order of application up to the end of August, when the list will be closed. The trees will be sent out in October.

The committee are very desirous that every care should be taken to maintain the vigour of the young trees. They beg therefore to suggest :—

1. That the trees should be planted on fresh ground, well-drained and deeply trenched.
2. That holes 1 yard square, or trenches 1 yard wide, be dug at once in readiness.
3. That the loam from the ground be mixed with turf parings and a little lime rubbish to fill the holes, and be firmly trodden down.
4. That the roots be carefully spread out immediately below the surface, and covered with fine soil, thus avoiding the error of deep planting.
5. That the young trees be firmly staked when planted ; and lastly,
6. That a thick layer of rotten manure be placed on the ground above the roots to preserve moisture and keep out frost.

Woolhope Naturalists' Field Club.

OCTOBER 4TH, 1883.

THE FUNGUS FORAY.

THE last meeting of the year is devoted by the members of the Woolhope Club to the search for funguses in the surrounding woods. These forays have now been carried on for many years, and always with the same interest and enthusiasm. Almost the whole week is engaged in mushroom study, and hither come mycologists of the highest distinction to discuss their characters, their merits and demerits. The real workers this year were Mr. Broome, from Bath; Dr. Cooke and Mr. Wharton, from London; the Rev. William Houghton, from Wellington, Salop; the Rev. Canon Du Port, from Norfolk; the Rev. J. E. Vize, from Welshpool; Mr. Phillips, from Shrewsbury; Mr. Plowright, from King's Lynn; Mr. Howse, from Guildford; Mr. Bucknall, from Clifton; Dr. Carlyle, from Carlisle; Mr. Bennion Acton, from Wrexham; Mr. Soppitt, from Saltaire, aided by Drs. Bull and Chapman, Mr. H. C. Moore, Mr. J. Griffith Morris, and some other members, who might say of mycology as Don Diego Snapshorto said with regard to Greek, "though he did not understand it he liked the sound of it." Forays were made to the Woodeve copse and Moor park, near Ludlow, Dinmore woods, Conigre wood, near Eastnor, and Ledbury park. The foray on the Club Day was made to the rich hunting ground of Haywood forest, and on the grassy slopes of Bryngwyn hill. The weather was fine, and so many members attended the meeting that some delay occurred in finding carriages for them. A very successful search was made, and a pleasant field day spent. Immediately on the return of the Club, a meeting of the members was held in the Club-room at the Free Library, when the following gentlemen were elected as officers for the ensuing year: President—The Rev. Charles Burrough, M.A., Eaton Bishop. Vice-Presidents—Mr. G. H. Piper, F.G.S. (retiring President), Mr. H. C. Beddoe, J.P., the Rev. H. B. D. Marshall, and Mr. J. Griffith Morris, J.P. Central Committee—The President, Messrs. H. G. Bull, M.D., J.P., Joseph Carless, jun., C. G. Martin, J. Griffith Morris, J.P., and Orlando Shellard, J.P. Editorial Committee—Dr. Bull, Dr. Chapman, and Mr. J. Griffith Morris. Treasurer—Mr. Thomas Cam, J.P. Auditors—Messrs. James Davies and J. T. Owen Fowler. Secretary—Mr. Theophilus Lane. The Rev. Canon J. M. Du Port, M.A., of Mattishall, East Dereham, Norfolk, was elected an honorary member of the Club.

The dinner took place at the Green Dragon Hotel, when the tables were well filled with guests. The agaric served up this year was the Chanterelle (*Cantharellus cibarius*), and so well did the *chef de cuisine* perform his part that he re-

ceived a special compliment from the Central Committee, and an additional one from the guests in the generally expressed regret that there was not more of it.

After dinner a very amusing satire on mycological theories was read by Dr. M. C. Cooke, M.A., &c., entitled, "A Missing Chapter from the Tramp Abroad." It was a little above the audience generally, since it required some knowledge of mycological science fully to appreciate its pungent wit. This was followed by a very learned paper on "Fish-Culture, as Practised by the Ancients," by the Rev. Wm. Houghton, M.A., &c., &c., which proved, once again, that the ancients were much more wide-awake than the moderns are always willing to allow. An evening reception was afterwards given by Mr. and Mrs. Cam, in St. Owen Street, where an excellent paper on "The Fish-Eating Birds at the Fisheries Exhibition," by E. Cambridge Phillips, Esq., F.L.S.; and several other mycological papers, were read by the Rev. Canon Du Port and Messrs. Edwin Lees, Henry T. Wharton, and C. B. Plowright. A very interesting and pleasant evening has thus passed into history.

In addition to those already named, the following gentlemen took part in the day's proceedings:—The President, Mr. G. H. Piper; the President of the Malvern Naturalists' Field Club, Mr. Henry Wilson; the Vice-President of the Worcester Field Club, Mr. Edwin Lees; Mr. and Miss Bartlett, from Malvern; the Revs. C. H. Bulmer, J. E. Grasett, E. J. Holloway, A. G. Jones, J. J. Lomax, V. T. T. Orgill, from Aston, Ludlow; H. P. Strong, T. A. Stoodley, and F. S. Stooke-Vaughan; Messrs. Arthur Armitage, Thos. Blashill, Joseph Carless, jun., A. D. Chapinan, C. Dawbeny, from Cote, Westbury-on-Trym; Charles Fortey, from Ludlow; S. Greaves, from Malvern; Arthur Houghton, from Cheshire; G. H. Jones, from Malvern; J. Tuke Mannell, from Croydon; C. G. Martin, A. E. Owen, W. A. Roberts, O. Shellard, Henry Southall, and Theophilus Lane, Secretary.

During the week papers were read on the following subjects:—

"A Missing Chapter from the Tramp Abroad:" by Dr. M. C. COOKE, M.A., &c.

"Jensenn's Discoveries concerning the Potato Disease:" by Mr. CHAS. B. PLOWRIGHT.

"Fish-Culture, as practised by the Ancients:" by the Rev. WM. HOUGHTON, M.A., &c.

"On some so-called Fish-Eating Birds at the Fisheries Exhibition:" by Mr. E. CAMBRIDGE PHILLIPS, F.L.S., &c.

"On the Colours of Fungi, as indicated by the Latin Words used by Fries:" by the Rev. Canon DU PORT, M.A.

"Mr. C. G. Stewart's Notes on the Alkaloids and other Substances that have been extracted from Fungi:" by Mr. HENRY T. WHARTON, M.A., Oxon.

"Some Remarks on Polycistina:" by Rev. J. E. VIZE, M.A.

"Notes on some Species of Tricholoma not easily distinguished from each other:" by the Rev. Canon DU PORT, M.A.

"Researches upon the Uredines:" by Mr. CHAS. B. PLOWRIGHT.

"Notes on the Chroolepus Jolithus and other Algoid Colorific Plants:" by Mr. EDWIN LEES, F.L.S., F.G.S., &c.

THE FUNGUS FORAY.

OCTOBER, 1883.

THIS is the sixteenth year of the fungus forays of the Woolhope Club. The first one of which we can find any account was held in the October of 1868, since which time they have been continued without interruption. For some time after they were instituted the forays of this Club were unique; they were not fashionable, however successful they might have been, and no Society followed the example. When, however, the Woolhope Club came to be celebrated for its fungus forays and their repute floated abroad through the continent of Europe, other societies were inspired with a desire to emulate the Hereford Club, and gradually of late years fungus forays have sprung up in all directions. If imitation be the sincerest of flattery, then the Woolhope Club has been flattered, for it certainly has been imitated, with some amount of success, although not with equal success, because the plan has been so modified that in most instances the "imitation forays" have only been imitations. The whole method has only been followed by the Cryptogamic Society of Scotland and the Botanical Society of France, but the latter only attempted the forays for about two years, and then they ceased altogether.

The characteristic features of the Woolhope forays consist in bringing together, by invitation, all the principal botanists who devote themselves to the study of fungi for a week's holiday, four consecutive days being devoted to excursions in neighbouring woods in search of fungi during the day, and in the evening or early morning the specimens are examined and determined, and papers read on mycological subjects. The objects, therefore, which the Woolhope Club keep in view are to bring together the students of fungi, for social intercourse and exchange of ideas, from all parts of the country, to organise for them excursions on four consecutive days for the purpose of collecting specimens, to provide for them a large room in which to deposit and arrange the fungi for exhibition, to entertain visitors from a distance, to provide a *conversazione* for each evening where all the excursionists may meet and read or hear papers on kindred topics; and finally, a public dinner: all these objects being most successfully accomplished.

The forays which have of late years been organised by some half dozen societies have been much less ambitious. These forays are limited to a single day, or in most cases to the latter half of one day, and therefore, if that proves to be a wet one, a complete damper is put on the foray for the year; but when the forays extend over three or four days, it is most probable that if some days are wet, there will be one or two dry ones for a change, and the foray in the end has its object achieved. Under these circumstances it is scarcely too much to claim for the Hereford gatherings that, in spite of imitations, the genuine article remains unique.

During the first week in October the sixteenth annual forays of the Woolhope Club have been held, and in results are behind none of their predecessors, thanks to the presiding genius, who has undertaken all the labour and responsibility of arranging the entire series from the first to the last.

Monday, October 1st, was announced on the programme as the day for the arrival of visitors, and the majority followed the programme; those who did not, met the excursionists at Ludlow the next morning. Amongst these were:—Messrs. Broome, Bucknall, Carlyle, Cooke, Canon Du Port, Rev. W. Houghton, Messrs. Howse, Lees, Phillips, Plowright, Soppitt, Wharton, and Rev. J. E. Vize.

The excursion for Tuesday was by rail to Ludlow for Moor Park and Wood-eve's coppice. Omnibuses in waiting at the station conveyed the party to their destination and awaited their return. The hunting ground was a good one, almost unlimited in extent, and the day as favourable as could be desired. By Two p.m. all the baskets were filled to overflowing, and their owners making the best of their way in one direction—towards Moor Park, where Mrs. Foster had kindly provided a most substantial luncheon, to which the assembled party did ample justice, although a peremptory signal to be “ready in ten minutes,” which fell like a thunderbolt in the middle of the repast, startled some of the novices, who were not prepared to experience a practical joke from the “presiding genius” at such a solemn moment. After this interlude followed a stroll through the gardens and park to regain the carriages, and pick up the stray specimens to be met with in the way. At the entrance to the park flourished quite a colony of some twenty or thirty specimens of *Boletus satanas*, some of them being eight or nine inches in diameter, and over them some discussion was proceeding, when a member of the party was discovered staggering along under the weight of a mass of *Polyporus giganteus*, nearly 30 inches in one direction and 2 feet in the other. The “presiding genius” bore aloft another smaller, but somewhat neater specimen of the same *Polyporus*, while others of the party followed bearing large masses of *Polyporus dryinus*, and other fungi. One after the other, the three waggonets were loaded up, and started on the return journey to Ludlow. The “presiding genius” occupied a box-seat on the front carriage with his own open basket at his feet filled with the treasures collected during the day. As this, which was the foremost vehicle, rushed down a steep hill close to Ludlow, the occupier of the box-seat turned round sharply to see what had become of the other two carriages, when, by some unlucky mishap his foot disturbed the equilibrium of the basket, and the whole contents fell like a shower of toadstools into the road, some under the wheels, others broken by the fall—here a cap and there a stem—“white fungi and red, brown fungi and grey, mingled, mingled, mingled, in an unexpected way.” Going rapidly down hill, with the “skid” on, and other carriages following, there was no hope of stopping till at the bottom, and then, at length, some one returned to collect the basket, and gaze upon the ruins of *Boletus*, *Agaricus*, *Hygrophorus*, *Cortinarius*, *Strobilomyces*, and Crab Apples, which imparted to the road a most picturesque appearance.

Soon after five o'clock, the entire force collected around the hospitable table of the Messrs. Fortey, enjoying a high tea, and looking back with equanimity upon the crowning disaster of the day. A graphic account might nevertheless be written of the Herculean labours of Mr. Moore, as he struggled under the weight and the responsibility of the gigantic *Polyporus*, till it was safely deposited in the Museum. How it travelled to the Ludlow station in a wheelbarrow; what aston-

ishment it created at the railway station ; the suspicious remarks which rough country youths did not hesitate to employ ; and the yells of sundry small boys whenever it became exposed to their gaze ;—all this, and more, might be recorded, had we not other and more prosaic details still to furnish of the results of the various expeditions.

Wednesday, October 3rd, maintained, as it was bound to do, the juicy features of the Woolhope excursions. The morning dawned, if it could be called a dawn, in a universal sombre grey, which matured into a persistent drizzle, with now and then an earnest downpour, and was in all respects a miserable day. Some of the enthusiasts, encased in waterproofs and leggings, made their way to the station to procure tickets for Dinmore, but only four of them succeeded in overcoming their prejudices and entered the train, the rest returned to the Museum, to their pipes, to their drawing materials, or to their correspondence, and the elaboration of excuses for staying in town. Those who went, brought back *Hygrophorus discoideus*, and *Agaricus (entoloma) lividus*, and some other interesting species. Then arose a vigorous discussion on the meaning to be attached to the word "*lividus*," the majority holding to an opinion which had to be abandoned the next day, after finding and consulting a *Latin Dictionary*. Then it was discovered that "*lividus*" and "*luridus*" had got mixed up, and the wrong word came to the top. At eight o'clock, after several private dinner-parties, the mycologists were assembled again in solemn conclave, with the President in the chair, in the Woolhope Club Room, at the Free Library, to hear two papers read on the chemical constituents of fungi, and a new way to battle with the Potato disease. *Apròpos* of the latter a waggish visitor's suggestion, that the cause of the Potato disease was the ro-tatory motion of the earth, was not accepted by the commen-tator who had explained Jensen's process.

Thursday, October 4th, was the Club day, and opened with sunshine, which was fairly maintained throughout the day. The excursion was undertaken in waggonets, and considerable delay was experienced by those who had filled the first two vehicles, and looked down for half-an-hour on their disappointed friends, standing in melancholy expectation on the pavement, waiting for the advent of the third vehicle. This was a source of great delight to the small boys in the streets, and the chambermaids at the windows, who looked up to, or down upon, the party with as much interest as if they had been a regiment of soldiers on parade, or a batch of "Invincibles" starting for the county gaol.

The Club excursion was first made to Haywood Forest, through which the call of the whistle and the familiar "For-ward !" hurried the party to the common beyond, where the carriages were again in waiting. *Agaricus Bloxami* and *Cortinarius Bulliardi* were amongst the most cherished of the "finds." After a very pleasant drive the party again dismounted at Bryngwyn, and roamed over the park without securing any fungi, or anything else, except the pleasure of waiting for a truant member of the party who unfortunately missed his way, and was found to be absent when all the rest had comfortably seated themselves in the vehicles. Notwithstanding a considerable amount of vigorous shouting, whistling, and the dispatch of a mounted horseman in pursuit, it was some time before

the delinquent was observed in the distance quietly marching at the rate of two miles an hour, as calculated by pedometer, towards his vacant seat.

Returned to town once more, but half-an-hour behind time, the annual meeting of members was held, the President for the ensuing year elected, the honorary chaplain, the Rev. Canon Du Port duly elected an honorary member, and the members, visitors, and friends adjourned to the "Green Dragon" for the dinner.

There is a great similarity in all public dinners, and one Woolhope dinner is very much like another, so there is nothing very special to record. After some preliminaries, including the presentation of an excellent portrait of the venerable Fries, sent to the Club by his sons, came the reading of two or three papers. One of these, entitled "A Missing Chapter from the Tramp Abroad," gave some humorous illustrations of recent mycological theories. The others were on "Fish Culture as Practised by the Ancients," and some observations by Mr. Edwin Lees, F.L.S., now in his eighty-third year. Subsequently the members and friends adjourned to a reception at the house of Mr. Thomas Cam, where the remaining papers were read, and some drawings exhibited, including some characteristic sketches by Mr. C. B. Plowright, and a large folio of drawings sent for exhibition by Mr. George Massee, of Scarborough. This brought the official meetings of the week to a conclusion, with the exception of the final excursion to Ledbury on the morrow, and a last cup of coffee with the "presiding genius" under the shadow of his own roof.

The papers communicated during the week were the following:—

"A Missing Chapter from the Tramp Abroad:" by Dr. M. C. Cooke, M.A., &c. "Jensen's Discoveries concerning the Potato Disease:" by Mr. Charles B. Plowright. "Fish Culture, as Practised by the Ancients:" by the Rev. Wm. Houghton, M.A., &c. "On some so-called Fish-Eating Birds at the Fisheries Exhibition:" by Mr. E. Cambridge Phillips, F.L.S., &c. "On the Colours of Fungi, as indicated by the Latin Words used by Fries:" by the Rev. Canon Du Port M.A. "Mr. C. G. Stewart's Notes on the Alkaloids and other Substances that have been extracted from Fungi:" by Mr. Henry T. Wharton, M.A., Oxon. "Some Remarks on Polycystina:" by the Rev. J. E. Vize, M.A. "Notes on some Species of Tricholoma not easily distinguished from each other:" by the Rev. Canon Du Port, M.A. "Researches upon the Uredines:" by Mr. Charles B. Plowright. "Notes on the Chroolepus Jolithus and other Algid Colorific Plants:" by Mr. Edwin Lees, F.L.S., F.G.S., &c.

Friday, October 5th.—The final trip by rail to Ledbury was somewhat modified on account of the funeral of Earl Somers, which took place on the same day, in consequence of which the visit to Eastnor Castle was abandoned. After a short ride by omnibus from Ledbury, the visitors alighted at the corner of an unpretending country lane, which promised to lead to nowhere, and commenced scrambling through the wood close by—a process persevered in for an hour or two without any perceptible results, fungi being very scarce, and the species very common, not a single one of any interest having been found at noon, when the party retreated towards Ledbury Park and woods with manifest satisfaction. Here the ground was evidently good, some few species were found which had not

previously been collected during the forays. A quiet walk through the gardens and grounds was duly appreciated as a *finale* to the week's engagements, the weather having become very unsettled in the afternoon; and, to the surprise and satisfaction of the foragers who, under the care of the gardener passed out at an unexpected corner, they found themselves in the streets of Ledbury not far from the President's residence, where dinner was in course of active preparation on their account.

Even as the season has been somewhat unusual or abnormal in its character, so in the neighbourhood of Hereford there has been an undoubted peculiarity in the fungus flora. The species of *Russula*, for instance, which are generally exceedingly plentiful both in species and individuals, were comparatively rare. Of the *Lactarii* also only a few species were observed, and those not very prolific in individuals. *Lactarius pubescens* was plentiful in one locality only, whilst three or four species so common in previous years were not seen at all. The white-spored *Agarics* were certainly scarce, except perhaps *Agaricus terreus* and a few *Mycenæ*, whilst the sub-genus *Amanita* was represented by its noblest example, *A. muscarius*, in rather more than an average number, and *A. vaginatus* by a few scattered specimens, the common *A. rubescens* being almost absent, and a few others represented by a single specimen. In like manner there were none of the larger species of the sub-genus *Lepiota*, not a single *A. rachodes*, or *A. procerus*, but the pretty little *A. Bucknalli* turned up at Ledbury for the first time out of the Bristol district. Even amongst *Armillariæ* the ubiquitous *A. melleus* was by no means common.

To make up for these deficiencies it soon became evident that the experiences of the first day were to be repeated in the succeeding excursions, that *Cortinari* were the ruling genii of the woods. Never perhaps were the species of *Cortinarius* in stronger force than this season, and fully compensated by their interest for the absence of other fungi. This was characterised by one of the excursionists as a *Cortinarius* year, and he was not far wrong in his estimate, as the following enumeration will testify. The first section, called *Phlegmacium*, which is characterized by a glutinous cap and dry stem, contains some of the largest and most attractive species. *C. triumphans*, so well figured by Mrs. Hussey, was found in one or two places. On the last excursion of the week *C. claricolor* several times went into the baskets. *C. sebaceus* was at home in Haywood Forest, one specimen over eight inches high. *C. varius* was reported from Ledbury. *C. cyanopus* on one or two occasions. *C. anfractus* was brought from Shrewsbury by Mr. Phillips, and during the week was met with in two Herefordshire localities. *C. multififormis* turned up on the last day, as also did *C. glaucopus* and one solitary specimen of *C. calochrous* found a place on the table for exhibition, whilst the golden *C. fulgens* was bagged in two or three localities.

The next section, *Myxaci*um, with a slimy stem as well as a glutinous pileus, is a much smaller one, and had less numerous representatives. Of course the common *C. elatior* was collected, together with two or three small specimens of *C. mucifluus*, and one or two of *C. Riederi*, and this completes the list. There is a species called *C. salor*, which was not present, although it was announced one day,

with a flourish of trumpets, and repudiated the next. By some misadventure names got a little mixed and "*salor*" became a joke for the week.

The section *Inoloma*, and those which follow, are not glutinous, either in cap or stem, but either silky or scaly. The most attractive of its species, *C. violaceus*, was not found but *C. albo-violaceus* was present in two forms; *C. Bulliardi*, with its brick-red stem was collected in Haywood Forest, and *C. pholideus* was one of the commonest species in the first day's excursion. The fourth section is *Dermocybe* with a smooth cap and stem. Of these *C. ochroleucus* was one of the most plentiful. *C. caninus* was discussed more than once, as was also *C. anomalus*, and both were doubtless represented, although some uncertainty still prevails whether all the specimens called by these names were fully entitled to them. Of the bright coloured species there was one solitary *C. militinus*, a few *C. sanguineus*, and a pile of *C. cinnamomeus* of variable forms, sizes, and tinting. In this section *C. infucatus* was found for the first time in Britain, in Haywood Forest.

The fifth section is named *Telamonia*, characterised more or less distinctly by a double veil. The species found were *C. bulbosus*, not uncommon; *C. torrus*, in considerable quantity, though small in size; a single and perhaps doubtful specimen of *C. scutulatus*; almost an unlimited quantity of *C. armillatus*, with red bands round the stem; *C. hinnuleus* in profusion, and of all sizes; and the pretty little *C. paleaceus*, with its pileus silky with minute white hairs.

The last section is *Hydrocybe*, and most of the species are small. *C. subferugineus* was not uncommon in Haywood Forest. The shining chestnut coloured *C. castaneus*, which has the reputation of being edible, if only a sufficient quantity for a meal can be found, but only very few were seen. To these must be added *C. erythrinus*, in two or three places; *C. decipiens*, not uncommon; and two or three other species not yet accurately determined.

From the above enumeration it will be evident that the genus in all its sections was unusually well represented, and as it is allowed to be one of the most critical and difficult of the genera of gill-bearing fungi, there was plenty of occupation in discussing equivocal forms. A new "crux" was constantly on hand awaiting its turn.

In the course of this report the most important species have been mentioned which were found during the week, except perhaps *Hygrophorus calyptreiformis*, with its conical amethystine cap. *Hygrophorus cossus*, with an odour resembling that of the caterpillar of the cossus or goat-moth. *Russula drimicia*, an acid purple species, with persistently sulphur-coloured gills, only found previously in Black Park, Berks. *Agaricus laxipes*, a small species, with dark velvety stem, found only previously at Holme Lacy.

Visitors also brought for exhibition *Sparassis crispa*, excellent for the table; *Agaricus sarcocephalus*, from Bristol; *Agaricus (armillaria) constrictus*, from Epping; and others of less interest.

There can be no doubt that, although the present year has proved somewhat better than the last, it is in most localities a very unproductive one for fungi. Since the sharp winter of two or three years ago the number of fungi developed have been very much diminished. This is not an individual opinion, but one in which all persons present at the above forays concurred. Let us hope, like the farmers, for better luck next year.—M. C. C., *Gardeners' Chronicle*, Oct. 13, 1883.

FISH-CULTURE, AS PRACTISED BY THE ANCIENTS.

By the Rev. WM. HOUGHTON, F.L.S.—Read October 4th, 1883.

ARTIFICIAL pieces of water for the preservation of fish are ancient inventions; ponds with living fishes are exhibited in some pictorial relics of ancient Egypt. The Assyrians also had ponds or stews for fish in their ornamental gardens. Fish were kept in the *vivaria*, as they were termed, for two purposes, namely, as sacred pets, or as food for the table. Varro speaking of certain Lydian fishes, held sacred, says with a pun, "that no cook ever dares to summon them—to sauce!" *jus* is a Latin word, which means both "law" and "fish-sauce." Ælian speaks of certain sacred fish which were dedicated to Jupiter which even poachers would seldom dare to catch. Here is Martial's warning to any fisherman meditating a day's angling in the Baian lake, whose fish were sacred to Domitian—

" From the Baian Lake with awe
Angler, I advise, withdraw :
Lest of hallow'd blood unspilt
Thou should'st rash incur the guilt.
Sacred fishes, swimming bland,
Hail their lord and lick his hand :
Hand whose greater cannot wave,
Or to sacrifice or save.
Names respective know they all
And attend their Master's call.
Once a Lybian rued the deed
When he play'd the trembling reed.
Sudden light his eyes forsook,
Nor display'd the fish he took.
Now he well the hook may hate,
Clothèd with so dire a bait ;
Where he, by the Baian pool,
Sits a-blinded, begging fool.
Then, dear Angler, still by law
Innocent, do thou withdraw,
Throwing just a simple dish,
Venerate devoted fish ! "

Epigram iv. 30.

Fish were sometimes used in augury, as we learn from Ælian (*Nat. Anim.* viii., 5), who speaks of men who prophesied from fish in a certain town in Lycia. Whether the Greeks kept fish in *vivaria* or not there is no definite information, so far as I know ; but there is distinct notice that the people of Agrigentum, in Sicily, constructed a fish-pond of great size and depth : it was about a mile in circumference, and twenty cubits in depth. Water was brought into this reservoir from rivers and fountains, and various kinds of fish—but no mention is made of the kinds—were kept in it, both for amusement and pleasure. Numbers of swans swam about on the water, which gave a pleasant prospect to the eye. In time, however, the pond was allowed to fill up with mud, till at last it became dry ground. Diodorus Siculus (xi. 25) is the authority for this fact. But the most remarkable thing connected with fish-preservation is that which Athenæus records in the 40th chapter of the 5th Book of the *Deipnosophists*. Hiero, king of the Syracusans, ordered an enormous ship to be built, under the superintendence of Archimedes :

she was intended for the transport of corn. At first Hiero called this ship the "Syracusan," but he afterwards altered its name to the "Alexandrian." Trees from mount Ætna were felled in sufficient numbers to build 60 triremes. Great numbers of woodmen were employed; and 300 carpenters were day and night at work. The vessel was launched by Archimedes; she was a three-decker, with 20 rows of rowers. The floors of the rooms were mosaics, exhibiting the whole story of the *Iliad* "in a marvellous manner." The ceilings, doors, and furniture were all finished in a remarkable manner. She was furnished with a gymnasium and walks; artificial gardens of great beauty, enriched with all sorts of plants, and shaded by roofs of lead or tiles, were a prominent feature; there was a trellised vineyard and avenue of trees to shade the walks on deck; an aphrodisium, or temple devoted to Venus, inlaid with Silician agates and panels of cypress; an academic saloon, a library, a bath-room, beautifully variegated with marble, ten stalls for horses, and rooms for grooms, harness, and accoutrements. To state no further particulars of this remarkable vessel, it will be enough to say that near the bows was a large reservoir containing 2000 measures of water, made of wood closely compacted with pitch and canvas; next to this cistern there was a large water-tight well for fish, constructed of beams and lead; this was kept full of sea water, and great numbers of fish were kept in it.

Our chief information however, concerning ancient *rivaria* is derived from the writers on Roman husbandry (*Scriptores de Re Rusticâ*), as Columella and Varro, from whom much curious information of a useful and practical kind may be derived, and which may be profitably read by modern pisciculturists. I will give a translation of what Columella, who treats the matter more copiously than Varro, has handed down to us; you will then be able to gather some good general idea of pisciculture as it was practised by the ancient Romans. You will see that fish-culture was pursued not only for the sake of amusement, as sometimes erroneously asserted, but for the sake of profit. True it is, that in the days of the later Roman Empire fish-culture had lapsed into a luxurious and most expensive amusement; but from the beginning it was not so. The Romans were well aware of the importance of fish-culture in an economic point of view; and though they were entirely ignorant of the art of the artificial fecundation of fish, they well knew the desirability of stocking both fresh water and sea water ponds with such fishes as experience had taught them would thrive therein respectively.

Columella writes as follows:—

"Since I have spoken of aquatic animals,"—he had been discoursing on ducks, geese, water-fowl-aviaries, &c.—"it is not inopportune to speak of the cultivation of fishes; and although one would think a digression on this subject quite foreign to the agriculturist,—for what is more opposed than earth and water?—still, I shall not pass the matter over, for our ancestors have rendered the study even of these things celebrated, to such an extent as to have confined sea-fishes in fresh water, and to have bestowed the same care in feeding the grey-mullet and the scarus, as they now bestow on the *muræna* and *basse*. For that rural offspring of Romulus and Remus considered it a great matter, that, if country life was to be put into comparison with town life, it should be in no respect

deficient in resources ; wherefore they stocked not only the ponds which they had constructed, but even filled natural fresh water lakes with produce brought from the sea. Thus the river Velinus, the lakes Sebatinus,* Volsineusis,† and Ciminius,‡ nourished basse and guilt-heads and other kinds of sea-fish tolerant of fresh water. Later on a succeeding age abolished that kind of fish-cultivation, and the luxury of the rich made enclosures round the seas and Neptune himself, so that even at that time, in the memory of our grandfathers, a certain deed and saying of M. Philippus, a very luxurious man, were talked about as being exceedingly witty. For this man, when by chance he was supping as a guest at the house of Casinus, and when he had tasted basse from a neighbouring stream which had been placed before him, spit the piece out of his mouth, following up his impudent act by the expression, ‘May I die, if I did not think it fish that had been placed before me.’ This false oath therefore made many men’s throats more daintily, and taught educated palates to disdain a river basse unless it was one that had swum in the strong current of the Tiber. This led Terentius Varro to say that there is not a single low fellow who does not say that you might as well stock your *vivaria* with frogs as with fishes of this kind.

“But still, in those days in which Varro has made mention of this luxury, the severity of Cato was especially praised ; and yet he nevertheless, the tutor of Lucullus, sold the fish-ponds of his ward for the large sum of 400,000 sesterces. For at that time, cook-shop dainties (*deliciæ popinales*) were in high request, when *vivaria*, to which men were excessively devoted, were brought down to the sea, just as before that time Numantinus§ and Isauricus|| (heroes) of conquered nations, also Licinius Muræna and Sergius Orata, rejoiced in names derived from their captive fishes. But since in this way manners became hardened, we indeed, lest we should appear to be fierce reprovers of so many past ages, and in order that these matters should be regarded not as common things, but as especially honourable and praiseworthy, will show that this country house business is even a gain to the family. For he who has bought either islands or land adjacent to the sea, and who is unable from the poverty of the soil generally prevalent near the sea to derive therefrom the fruits of the earth, may make his profit from the sea.

“Now the very first thing to consider is the nature of the locality in which you may have resolved to make your fish-ponds, for all kinds of fish cannot be had from all shores. A muddy region suits the flat fishes, as the sole, turbot, and brill ; the same does for various kinds of shell fish. Sandy streams feed flat fishes fairly well, but they are better for guilt-heads, and sea-bream whether Carthaginian or native, and for umbræ ; they are not good for shell-fish. Again, a rocky sea nourishes rock-fishes, such as dwell among rocks, and are therefore so called (*saxatiles*)—as the *merulæ* and the *turdi* (wrasse?) and the *melanuri*. We ought

* Lago di Bracciano in Etruria.

† Now Lago di Bolsena.

‡ Lago di Vico.

§ Numantinus, *i.e.*, Scipio Africanus the younger, who received this surname from his capture of the city of Numantia in Spain, B.C. 133.

|| Isauricus, *i.e.*, L. Servilius, so surnamed from his victory over the Isauri, daring robbers of Asia Minor, B.C. 75.

also to take into account the difference of the seas as well as of the shores, in order that fish brought from foreign places may not disappoint us ; for every fish cannot live in every sea, as for instance the *helops* which is nourished only in the Pamphylian sea, the dory (*faber*), accounted as one of the best fish in our municipality of Gades, and which according to old custom is called *zēus* ; the *scarus*, which is most abundant on all the shores of Asia Minor and Greece as far as Sicily, but never swims out to the Spanish sea. Therefore if they are caught and brought to our *vivaria*, they cannot be kept long. Of the valuable kinds, the *murena* alone, although indigenous in the Tartesian sea and in the Carpathian sea, which is its most distant *habitat*, is able to live in any sea. But let us now discourse about the site of fish-ponds.”—*Columella* viii., 16.

“We judge a pond to be far the best which is so situated that each following wave of the sea removes the one before it, and does not suffer the old one to remain within the enclosure ; for this is very similar to the sea which is constantly agitated by the wind and is unable to become warm, since the cold sea rolls up from the depth the cold wave to the upper portion. A pond is either cut out of a rock—but there is very seldom a favourable opportunity for this,—or is constructed on the shore by means of masonry. But in whatever way it is made it ought to have a hollow cavity near the bottom, if it is always to be cold with the influx of the rushing water ; some cavities should be simple and straight whither the scaly shoal may retire, others should be bent in the form of a snail-shell, sufficiently capacious, in which the murenæ may take shelter, although some persons do not like to mix these fish with others of a different kind, because if they are harassed with rabies similar to that which occur in dogs, they savagely persecute the fishy shoals and kill many by biting them. Passages should be made on every side of the *piscina*, if the nature of the place permit it, for thus the old water is more easily removed, when an exit for the water is open opposite to its entrance. These passages we think should be made near the bottom of the enclosure, if the situation of the place allow it, so that the plummet line placed in the bottom of the *piscina* should show a depth of seven feet of water above ; for this measurement for the fishes of the pond is quite sufficient ; and there can be no doubt that the more the water comes from the bottom of the sea, so much the colder it is ; a condition which is most suitable for the swimming fishes. But if the spot which we have thought suitable for a *vivarium* is on a level with the water of the sea, the *piscina* is to be dug out to a depth of nine feet, and within two feet from the top streams of water are to be brought by channels, and care must be taken that these streams come in very copiously, since the quantity of water (in the pond) which lies below the level of the sea, is driven out just as if a fresh rush of sea-water had gained admittance. Many people are of opinion that, in ponds of the nature just mentioned, long and tortuous recesses should be made for the fishes in the sides of the cavity, as dark retreats for them. But if fresh sea water is not continually running through the pond ; to do this is injurious ; for reservoirs of this kind do not readily admit fresh supplies of water, and with difficulty get rid of the old ; and stinking water is more injurious than darkness is beneficial. Nevertheless, little holes should be hollowed out of the walls to

protect the fish from the heat of the sun. But one ought to remember that for the channels through which the *piscina* receives its water, brass gratings with narrow openings should be fixed, by which the escape of the fish may be prevented. If space permit, it will be advisable to place in different parts of the pond rocks from the shore clothed with sea-weed, and thus, so far as the ingenuity of man can contrive, to represent the actual appearance of the sea, in order that the confined fishes may be as little as possible aware of their imprisonment. In this way we shall lead the aquatic flock to their appointed stalls. Even in matters connected with water it may be well for us to remember the old precept connected with land questions, 'whatever each region may produce'; for we could not be able—however much we wished it—to feed in a *vivarium* a multitude of red mullet—as we sometimes have seen in the sea—because this kind is very delicate and impatient of captivity. Rarely indeed, but one or two out of many thousands endures confinement; but on the other hand, we frequently witness within the barriers marine shoals of the sluggish grey-mullet and the rapacious basse. Therefore, as I had proposed, let us consider the nature of our shore; and if we see it to be rocky, let us approve (and make our stew rocky). Many kinds of *turdi*, *merula*, and greedy *mustelæ*, also the spotless *lupi* let us introduce into the pond; other rock-loving fishes, if they are of any value, may be introduced, for the worthless host it does not pay to capture, let alone to feed.

"Those kinds which belong to a sandy shore may be kept in the stews; but shores which are full of slime and mud are, as I said before, better suited for shell-fish and creatures which lie on the bottom. A site of a store-pond which suits flat fishes may not suit other kinds; the same kind of food may not do for flat fishes and for those that swim erect; for soles, turbot, and such like animals, a shallow depression of two feet is made in that part of the shore which is never left by the retreating tide. Then many closely-placed bars are placed on the sides (of the ponds) which are always high above the sea-water even when the waves swell. By and by embankments (*moles*) are thrown up around, so as to form an enclosure and rise above the height of the pond, for by this means the fury of the sea is broken by the base of the embankment, and the fish in calm water are not disturbed from their places, and the pond is not filled by a heap of sea-weed cast up in storms by the force of the sea. In some places also it will be necessary to interject earthworks of a meandering form with small and narrow passages, which will admit of the sea-water without the waves at the most tempestuous times.

"Flat fish require softer food than those which dwell near the rocks, because they are either without teeth, or lick their food or swallow it entire, but cannot chew it. Therefore you should offer them dripping halec, bits of salt *chalcis*, putrid sardine, the gills of *seari*, or any part of the intestines of the *pelamis* or *lacertus*, the bellies of mackerel, dog fish, and *elacateæ*, and not to mention full particulars, all the salted refuse swept from the fishmongers' shops.

"We have mentioned many kinds, not because all may be had from all shores, but in order that out of these, we may offer some which you may obtain. It answers also to give them green figs which have been opened, and the mild arbutefruit broken by the fingers, and the soft crushed fruit of the service tree (*Pyrus*

[*sorbus*] *domestica*), as well as such food as is readily sucked in, as curd, fresh from the dairy pail, if the situation of the place and the year's produce permit. You can, however, give them no better food than the before-mentioned salt fish, because it has a strong odour, and every kind of flat fish finds out its food rather by the nostrils than by the eyes, for whilst it always rests supine it looks upwards and therefore does not easily perceive what is flat on the ground either on the right or left side; therefore when salt food is thrown to them they come to it, being guided by the smell. Other fish, however, whether rock fish or deep water fish, are better fed with fresh fish, though they will do with salt. For both the *halecula* newly captured and the *cantharus* and the little goby, and in fine every kind of little fish, nourish the big ones. But if the severity of the winter does not permit this kind of food to be given, then stale bread crumbs or any chopped up fruit in season are offered them. Dried figs are a staple fish-food (*semper obijcitur*) and always given, especially the large kinds such as Bætic or Numidian. But that must not be done, which many people do, namely, give the fish nothing at all, simply because when confined they are able to sustain themselves for a long time, for unless the fish is fattened with food supplied by its master, when it is brought to the fish market, its leanness shows that it was not taken from the open sea, but from confinement, on which account it loses much of its value.'

—*Columella* viii. 17.

ON SOME SO-CALLED FISH-EATING BIRDS AT THE INTERNATIONAL FISHERIES EXHIBITION.

By E. CAMBRIDGE PHILLIPS, F.L.S., &c., &c.

THE extraordinary and almost un-looked for success which has attended the Fisheries Exhibition, and the enormous numbers of the people of all classes that have up to the present time visited it, must open our eyes to the fact that science is at length steadily and surely working its way among the masses, who have been only too anxious to enjoy that practically scientific treat which the International Fisheries Exhibition has been and is still affording them.

Among the various collections exhibited, those of the British piscivorous and non-piscivorous birds particularly attracted my attention, and suggested the remarks which follow, and which are here offered in the hope that they will help to remove some of the misapprehension which prevails concerning the food of our aquatic birds. This seems the more desirable since most of the birds which are exhibited have been seen by thousands for the first time; I allude particularly to those of the working classes who have thronged the Exhibition.

Let me therefore first notice as briefly as possible those fish-eating birds about whose scaly diet there is no possible doubt; and secondly, more fully, those birds which, though exhibited as "fish-eating birds" are not in my humble opinion of piscivorous habits, and which for this reason ought not to have been exhibited with the others. Among the fish-eating birds, properly so-called, are some exceedingly good specimens of the Fish Hawk or Osprey (*Pandion haliaëtus*). Herons in numbers, two of which I noticed stuffed as if killed by an eel tightly twisted in a knot round the neck—an apt illustration of the biter bit. Kingfishers in abundance seemed to have more attractions for most people than any other bird in the collection. A Night Heron is labelled in the catalogue as "very rare," although a White Stork, Egret, and Spoonbill seem not to have been deemed worthy of such distinction.

An excellent collection of Gulls, Grebes, and Divers (in many instances beautifully preserved and set up, especially the young of the common coot) is especially worthy of notice. Why the Darter (*Plotus ankinga*) should have been exhibited in a British collection I am at a loss to imagine, it being a native of America which has never yet found its way to this country. Perhaps one of the most striking cases in the Exhibition is a pair of Lesser Terns (*Sterna minuta*), beautifully stuffed by Mr. T. E. Gunn, of Norwich, one bird hovering over its eggs in the sand, arranged correctly in their so-called nest with the four ends pointed together, the other bird dead by its nest with the blood on its breast, having evidently been shot, affording an admirable illustration of the necessity of protecting by legislation our sea-birds during the breeding season, the Cormorant and Great Black-backed Gull perhaps alone excepted. Passing by numerous waders which are classed as "fish-eating birds" such as the Greenshank, Redshank, Godwit, Stints, and Plovers of various kinds, but which properly speaking can hardly be so designated, though I may give them the benefit of the doubt,

since on the sea-shore their food probably consists of mollusks, worms, and smaller crustacea left on the edge of the retreating waves, I now come to those birds which, I think, have no claim whatever to be regarded as fish-eaters.

First is our old friend the Water Ouzel or Dipper (*Cinclus aquaticus*), the cheeriest of all our water-birds, but which not being well stuffed looks very unlike the burly little bird, with the white breast always turned towards us, that we meet on all our Welsh streams. The late Frank Buckland could not bring home the charge of fish-eating to this bird, although he tried hard to do so. I myself, after much observation, have never yet seen it with any spawn in its mouth, and have come to the conclusion that its food consists chiefly of aquatic insects and small mollusca, in which view I am supported by many ornithologists. We have then the Moorhen (*Gallinula chloropus*) that semi-domesticated bird that we are all so familiar with; although it is usually found on lakes, ponds, still flowing rivers, and canals permanently, yet I have often seen it frequent ponds in which there were not, nor ever had been any fish. There can be I think no doubt that it feeds on the seeds of various aquatic plants, and on snails, worms, and beetles, together with corn or other grain when it gets a chance. Hearing the remark, "Here is a rum little fellow," I looked up and saw a good specimen of the spotted Crake (*Crex porzana*), a hen bird, with the customary red eyes inserted by the bird-stuffer. Where taxidermists got this idea I do not know, the eye of a living spotted Crake which I had in my hand was a beautiful olive-green, and exactly matched the colour of its legs and feet. In Wales this beautiful little bird is usually found in bogs, especially where intersected by a small warm stream. I have moved six one day in a spot like this, where no fish could possibly be, but have never seen one on an open brook. The food of this bird consists probably of the more minute aquatic insects, something like the Moorhen, which it much resembles in shape. I do not think, however that it ever touches grain, the places which it frequents being far enough away from all kinds of corn. The Water Rail (*Rallus aquaticus*) in its habits resembles the two preceding species, except that it is found in such strangely different localities. I have flushed it on the banks of a large lake, often in a brook, sometimes in a dry grass field, as well as in an open lane, but have never seen it or the Moorhen on hill bogs. I imagine that its food is much like that of the Moorhen, though, from it constantly shifting its quarters, it may be possibly more varied. It however, never feeds on the water swimming like that bird, but may be sometimes seen feeding along the edge. Both this and the Spotted Crake are such extremely shy birds that it is difficult to observe their movements except at brief intervals.

The last bird I have on my list is the Grey Wagtail (*Motacilla suphurea*), I need hardly say that it chiefly feeds on flies and perhaps occasionally aquatic insects; but if it ever should catch a tiny fish, which I doubt, why are not all the other Wagtails included in the collection, their food and habits being so very similar? Had the Dipper, the Moorhen, the Spotted Crake, the Water Rail, and the Grey Wagtail been separately exhibited as aquatic birds, no exception could have been taken; but to include them amongst such as feed exclusively on fish is, to say the least of it, misleading.

NOTES ON SOME SPECIES OF *TRICHOLOMA* NOT EASILY DISTINGUISHED FROM EACH OTHER.

By the Rev. Canon Du Port, M.A.

WHEN one has found specimens of species somewhat similar in appearance to some others, it is not always easy with no other help than that of descriptions, however accurate these may be, to assign to a specimen its specific name, but when one sees specimens of all the allied species, then the salient points in the descriptions of each stand out quite clearly and one wonders how one can have ever doubted before.

I was fortunate enough last year to meet with some six or seven species of *Tricholoma* about each of which I had previously had doubts as to which species each particular specimen was to be referred. Though such doubts may never have troubled the more experienced mycologists in whose presence I am speaking, perhaps it may interest even them to hear detailed some of the marked characteristics of plants in which they cannot but be interested; and they may too, most probably, be able to correct any erroneous statements that I may make.

These species are *Agaricus flavobrunneus*, *A. albobrunneus*, *A. ustalis*, *A. pes-sundatus*, *A. stans*, *A. imbricatus*, and *A. vaccinus*. The last two, *A. imbricatus*, Fr., and *A. vaccinus*, Pers., stand out conspicuously from the others in that they are never viscid. This most important feature is sometimes overlooked, and a beginner does not always readily distinguish between a viscid pileus become dry, and a dry pileus wetted with rain or mist. The dry pileus however never has bits of grass or fragments of earth really sticking to it, and the viscid pileus is very seldom found without some foreign substance attached to it.

Ag. vaccinus, Pers. (the colour of what in Norfolk we call a red cow—a sort of brownish red) differs very widely from *Ag. imbricatus*; it is a much more slender plant; the whole pileus, disc and all, is floccose, and it is very much redder: its stem is hollow, while that of *Ag. imbricatus*, Fr., is solid. The stem of this latter, however, varies much in different specimens. Fries says from $1\frac{1}{2}$ —2 inches in some specimens, to 3 inches in others.

Ag. albobrunneus, Pers., is not in the least like *Ag. vaccinus*, and though it may at first sight be mistaken for *Ag. imbricatus*, its viscid pileus with leaves, pieces of straw, or grass always sticking to it at once distinguishes it from its very dry relation; the streaks on the pileus of *Ag. albobrunneus* are innate, while the other plant is torn into small scales in all parts but the disc. The smell can be no safe guide in this case for Fries says of it “odore nullo,” while Secretan (in describing what Mr. Berkeley considers to be this plant under the title of *Ag. compactus*), says of it “l’odeur est très fétide.” I find its smell very strong and exactly like that of *Polyporus squamosus*.

Ag. flavobrunneus, Fr., is not easily distinguished at first sight from this last; its stem does not always bear that long ventricose form which is generally one of

its common characteristics : but the flesh of the always-hollow stem is always yellow either wholly or only at the margin, while the flesh of the solid stem of *Ag. albobrunneus*, though it may become hollow when old, is always white ; the apex of the former is perfectly naked but of the latter *albo-farinaceus*. The gills of *Ag. flavobrunneus* are emarginate with a distinctly decurrent tooth, and its pileus has always a reddish or yellowish tint, while the gills of *Ag. albobrunneus* are rotundato-emarginate and not decurrent, and its pileus is brown.

In fine, *Ag. flavobrunneus* has a strong smell of fresh meal, while *Ag. albobrunneus* according to Fries has no smell. I have had no opportunity of correcting my impressions since last October, but if I remember rightly some specimens which I brought to Hereford last year, and which were universally admitted to belong to *Ag. albobrunneus*, had a disagreeable odour.

Ag. ustalis, Fr., in the form in which I have found it, differs conspicuously from the two latter : its emarginate gills and stem soon hollow, distinguish it from *Ag. albobrunneus* ; its lack of smell, smooth pileus, the flesh becoming red here and there when broken, distinguish it from *A. flavobrunneus*.

Ag. pessundatus, Fr., has a strong smell of fresh meal, the pileus is not streaked, the gills are so deeply emarginate as to be nearly free, and the flesh turns red. It has generally a short obese reddish stem, but in mountainous districts a form is found with a white stem three inches long, and with a smaller pileus, which Fries thinks is a separate species if it has no smell, and which then would be *Ag. stans*, Fr.

ON THE COLOURS OF FUNGI, AS INDICATED BY THE LATIN WORDS USED BY FRIES.

By the Rev. Canon DU PORT, M.A.

SOME five years ago when I was examining the Grammar School at Bradford, in Yorkshire, I asked the opinion of the Head Master and of my Classical Colleague as to the colours indicated by certain words used by the Latin writers. Copies of Virgil and Horace, dictionaries, and commentaries, were produced, and after much discussion we came to the unsatisfactory conclusion, adopted by one of the Commentators, that the application of our names of colours to the names used by the ancients, if ever these were consistent in their use of them, must frequently be but conjectural.

For instance, the word 'gilvus,' for which the Dictionaries generally give the meaning 'pale yellow,' Virgil applies to horses, and he says that they are as bad as white ones—"color deterrimus albis, Et gilvo."—*Georg.* iii. 80.

Horace applies the word 'luteus,' another form of yellow, to the pallor induced by fear—which, with a more natural epithet, though the noun be somewhat vulgar, when I was at school, we used to call a 'blue funk'—but Horace writes thus—

"O quantus instat navitis sudor tuis,
Tibique pallor luteus!"

Epod. ix. 16.

(What perspiration—the cold sweat of fear—comes upon
Thy sailors, and what yellow pallor upon thyself.)

Virgil uses this word 'luteus' at one time as synonymous with saffron-colour, for in describing the halcyon days prophesied by the Sibyl, he says that "then there will be no need to dye the wool, for the sheep itself will spontaneously produce a lovely red or a saffron yellow."

"Ipse sed in pratis aries jam suave rubenti
Murice, jam croceo mutabit vellera luto."

Ec. iv. 44.

But with what to modern eyes seems a strange inconsistency, he applies this same epithet to the dawn, and that we may not imagine he means the yellowish tint indicative of a fine day, he adds the epithet 'rosy.'

"Aurora in roseis fulgebat lutea bigis."

Pliny the naturalist uses the same word for the yolk of an egg,—"*lutea ex ovis quinque columbarum.*"

Thus disappointed and perplexed I next sought for some clue in the derivation of our English names.

'Yellow' is undoubtedly the same as the old English 'gelu,' which is very closely related to the German 'gelb,' and ultimately sprung from the same Aryan root as Virgil's epithet for the colour for a horse, namely, 'gilvus.'

The Italian 'giallo' is said (strange as it may seem,) to be descended from

the same old Teutonic 'gelu' as our yellow, while the French 'jaune,' with greater verisimilitude, is derived from the Latin 'galbanus,' a greenish-yellow, the adjective probably being formed from the noun 'galbanum,' which is supposed to be the same as the Hebrew 'chelb'nâh,' the gum used in making incense, and said to be the resin of an umbelliferous plant growing in Syria.

"Confusion became worse confounded," and I was about to give up the question when, becoming possessed of a copy of Fries' *Icones Selectæ*, I proceeded to compare his descriptions with the colours of the plates.

But even with this help success was rendered uncertain by two serious difficulties—one arising from the very nature of the objects described, the other due to the imperfections of human art. Fungi are seldom of one simple colour; so, while specimens may be easily found as *aureo-fulvus*, or *gilvo-testaceus*, &c., it is not so easy to discover one simply *aureus*, or *fulvus*, or *gilvus*, or *testaceus*. Again many fungi undergo considerable changes in colour either as they grow old or become dry, so that often some doubt remains as to which state of the fungus is represented in the plate.

When a few cases have been found of simple colours then the imperfections of human art introduce a new uncertainty, the same colour in the description of the fungi not being always represented by exactly the same tint in the coloured figures.

In order not to occupy too much of your time, and not to expose myself to an attack along the whole line at once, I shall confine my remarks chiefly to the yellows.

The colour which surprised me most was that represented by a word of which you have already heard something, viz., 'gilvus.' This is no pale nor bright yellow as I had imagined it to be, but a very full yellow with a reddish brown tinge and drawing towards *aurantius*, i.e., reddish or brownish orange. It is the colour of *Boletus borivius*, of *Tricholoma eivilis*, of *Clitocybe vernicosus*, and *opiparus*. *Clitocybe splendens*, better known than these last, has a little too much 'luteus' to be an exact representative of 'gilvus.'

The results of the comparisons which I have made lead me to arrange the 'yellows' somewhat in the following manner; beginning with the paler forms. *Ochraceus*, is often a very pale yellow with just a suspicion of drab: the colour of the stem of *Tubaria paludosus*. Sometimes it is much darker.

Sulfureus is the palest of the pure yellows, the colour of *Hygrophorus chlorophanus* in its typical form, and of the flesh of *Pholiota spectabilis*.

Luteus is a pure bright yellow: I can give no British species to illustrate it, but can only refer to Fries' pictures of *Clitocybe pachyphyllus*, *Pleurotus ornatus*, and *Leptonia formosus*. It seems to me to be just the colour of the earliest oranges imported. In describing the flesh of *Tricholoma flavobrunneus* in the *Icones Selectæ*, Fries calls it 'luteus,' while in the *Monographia* he had called it 'sulfureus.'

Flavidus is a little fuller, between 'luteus' and 'flavus.' The colour of *Clitocybe venustissimus* in its paler form and of the stem of *Nolanea vinaceus*.

Flavus is a rich golden colour with no red about it, but perhaps a shade of brown.

The best examples I can give are the ground colour of *Tricholoma sejunctus* and the pileus of *T. quinquepartitus*.

Vitellinus is the colour of the well-known *Cantharellus cibarius*.

Aureus is of course golden; and, it seems to me, inclining to reddish, but I can find no good example but the stem and the edge of the pileus of *Cortinarius malicorius*. Sowerby has a figure which he calls *Agaricus aureus*, and which seems to be like *Pholiota spectabilis*, only that the pileus is of a red orange.

Gilvus I have described above.

Aurantius is what we call orange, a deep yellow with a good deal of red about it.

Armillaria aurantius is a good example.

Aurantiacus is hardly as red as 'aurantius'; the dark form of *Clitocybe venustissimus* about represents this shade, while the paler form becomes 'flavidus.'

Fulvus is the colour of a lion; "corpora fulva leonum"; and is represented in *Flammula abruptus*.

Helvulus, though closely connected by derivation with 'gilvus,' is scarcely a pure yellow: it is used to describe wine and grapes: but 'fulvus' is also used of wine; it seems to be a rich brownish yellow tinged with red, like a faded vine-leaf. The best example I could find is a pale form of *Naucoria hamadryas*.

Isabellinus is said to be the colour of the horses of the King of Holland,—a cream colour with a darkish tint in it—the colour of linen that has been worn for some time next the skin.

I have not been able to find an example of pure 'Croceus.' I think it ought to come between 'lutens' and 'flavidus.' I have taken the colour from a solution of saffron.

The only other colours upon which I shall touch are the 'browns.'

Badius is a sort of reddish brown: it is the colour of *Collybia distortus* and of the upper part of the stem of *Mycena cohorens*. Fries says that the lower part of the stem is 'spadiceus,' but in his figure the stem seems to me to be all of one colour, and that, something intermediate between 'badius' and 'spadiceus.' Some of Fries' bays are very red, and nearly the colour of a 'sorrel horse.'

Spadiceus is a duller and darker colour than 'badius,' and has no red in it: it is the colour of the pileus of *Cortinarius varicolor*. The name is derived from a palm-branch broken off with its fruit which some Commentators have thought to be 'shining red.' The date, as we know it, is a rich brown and may well interpret 'spadiceus.'

Umbrinus is still darker and is the colour of *Cortinarius uraceus*.

MR. JENSEN AND THE POTATO DISEASE.

MR. CHARLES B. PLOWRIGHT made some observations upon the various experiments made by Mr. Jensen in Denmark, with the object of mitigating the ravages of the potato disease, which appeared to have been attended with satisfactory results. They were conducted by a protective system of culture, consisting of giving the Potato plants a second or protective moulding when the first disease blotch is seen upon the foliage, so that the uppermost tubers have a protection of 5 inches of earth over them, at the same time bending the tops so that they hang over the furrows in a half-erect manner; the object being to protect the tubers, by a layer of earth, from the spores of the parasitic fungus which causes the disease. When moulded up in the ordinary way the covering of earth over the uppermost tubers is not, as a rule, more than $1\frac{1}{2}$ or 2 inches. Upon this important field of research, we may expect shortly to receive an extended account from Mr. Plowright's pen.

Mr. Plowright also made some observations drawn from his further researches on the *Uredines*, since the publication of his paper on page 134 of *Woolhope Transactions*, of 1881.

[The following extracts, recently published in *The Gardeners' Chronicle* are of sufficient interest to be here reproduced by the permission of the Editor of that paper.]

WHEAT MILDEW.

WHILE working at the connection of Wheat mildew with the *Barberry Æcidium*,* I came across a reference in De Bary's papers to the fact, that in America this subject had been at one time made the object of legislation in that country. Being anxious to find out if possible the exact nature of such legislation, I applied to my friend Professor Farlow, of Harvard University. He instituted inquiries, and has just sent me a copy of the law in question, which he obtained from Professor Ames of the law school of that University. It is very interesting to find, that more than a century ago the farmers of the great western continent came to so decided an opinion upon this subject as a matter of practical experience, and forthwith framed a law bearing upon it. For the benefit of those interested I have appended a copy of this law.—*Charles B. Plowright, King's Lynn, Dec. 23, 1882.*

PROVINCE LAWS OF MASSACHUSETTS, 1736-1761, p. 153.

"Anno Regis Georgii II., Vicesimo Octavo chap. x. (published January 13, 1755).

"An Act to prevent damage to English grain arising from Barberry bushes.

"Whereas it has been found by experience, that the blasting of Wheat and other English

* See *Woolhope Transactions*, p. 118, 1881

grain is often occasioned by Barberry bushes, to the great loss and damage of the inhabitants of this province :—

“Be it therefore enacted by the Governor, Council, and House of Representatives, that whoever, whether community or private person, hath any Barberry bushes standing or growing in his or their land, within any of the towns in this province, he or they shall cause the same to be extirpated or destroyed, on or before the 10th June, A.D. 1760.

“Be it further enacted, that if there shall be any Barberry bushes standing or growing in any land within this province, after the said 10th June, it shall be lawful, by virtue of this Act, for any person whosoever to enter the lands wherein such Barberry bushes are, first giving one month's notice of his intention to do so to the owner or occupant thereof, and to cut them down, or pull them up by the root, and then to present a fair account of his labour and charge therein to the owner or occupant of the said land; and if such owner or occupant shall neglect or refuse by the space of two months next after the presenting the said account, to make to such person reasonable payment as aforesaid, then the person who cut down or pulled up such bushes may bring the action against such owner or occupant, owners, or occupants, before any justice of the peace, if under forty shillings, or otherwise before the inferior court of common pleas in the county where such bushes grew, who upon proof of the cutting down or pulling up of such bushes by the person who brings the action, or such as were employed by him, shall and is hereby respectively empowered to enter up judgment for him to recover double the value of the reasonable expense and labour in such service, and award execution accordingly.

“Be it further enacted, that if the lands on which such Barberry bushes grew are common and undivided lands, that then an action may be brought as aforesaid, against any one of the proprietors in such manner as the laws of this province provide, in such cases where proprietors may be sued.

“Be it further enacted, that the surveyors of the highways, whether public or private, be and hereby are empowered and required *ex-officio* to destroy and extirpate all such Barberry bushes as are or shall be in the highways in their respective wards or districts, and if any such shall remain after the aforesaid 10th June, A.D. 1760, that then the town or district in which such bushes are shall pay a fine of 2s. for every bush standing or growing in such highway, to be recovered by bill plaint, information, or on the presentment of a grand jury, and to be paid one half to the informer and the other half to the treasury of the county in which such bushes grew, for the use of the county.

“Be it enacted, that if any Barberry bush stand or grow in any stone wall or other fence, either pointing on highway, or dividing between one proprietary and another, that an action may be brought as aforesaid against the owner of the said fence or the person occupying the land to which such fence belongs; and if the fence in which such bushes grew is a divisional fence between the lands of one person or community and another, and such fence hath not been divided, by which means the particular share of each person or community is not known, then an action may be brought as aforesaid against either of the owners or occupants of the said land.

“Be it further enacted, that where the occupant of any land shall eradicate and destroy any Barberry bush growing thereon, or in any of the fences belonging to the same (which such occupant is hereby authorised to do, and every action to be brought against him for so doing, shall be utterly barred), or shall be obliged, pursuant to this Act, to pay for pulling them up or cutting them down, and then the owner or proprietor of such land shall pay the said occupant the full value of his labour and cost in destroying them himself, or what he is obliged to pay to others as aforesaid; and if such owner or owners shall refuse so to do, then it shall be lawful for the said occupant or occupants to withhold so much of the rents or income of the said land as shall be sufficient to pay or reimburse his cost and charge arising as aforesaid.

“This Act to continue in force until 10th June, 1764.”—*Gardener's Chronicle*, January 13, 1883.

HETERŒCISMAL FUNGI.

THE word heterœcism, though compact and convenient enough for technical use, will, we fear, not be accepted without protest by those who dislike to be troubled with hard words. It is applied to those fungi which grow, in one stage of their existence, on one plant, and in another stage on another, generally on quite a different plant. If the metaphor may be allowed, the fungus in these cases has a town residence and a country house, the two houses being as unlike as houses can be, and the resident, when he takes up his abode in the country, dons quite another costume from that which he wears in town, and *vice versâ*. This is heterœcism, and if any reader can suggest a sufficiently expressive English word to replace the Greek one we should be glad. The most familiar case of the kind is that of the mildew of the Wheat, and the *æcidium* of the Barberry, lately illustrated by Mr. Plowright.* The experiments there detailed are not the only ones conducted by Mr. Plowright, and in the current number of the *Grevillea* we find the following summary, which is so important that we reproduce it and add a tabular list of the experiments with their results. In the first column we have placed the names of the plants infected, in the second the name of the fungus by which they were infected and its source, and in the third column the name of the fungus which resulted.

It is clear that the names in the second and third columns refer to the same plant, and therefore, according to ordinary rules, one or the other should be suppressed, preference being given, other things being equal, to that which enjoys the right of priority. But under such very extraordinary circumstances it is difficult to lay down a rule. Certainly we shall not attempt to do so. Botanists may well be forgiven for having applied different names, for who could have dreamt of such a state of things as is now proved to exist? Who, for instance, could have supposed that the fungus on the Groundsel was the same as that which occurs on the Fir?

Pear	Podisoma sabinæ, from Savin.	Ræstelia cancellata.
Thorn (Cratægus) ...	Podisoma juniperi, from Juniper.	Ræstelia lacerata.
Mountain Ash ...	Gymnosporangium juniperi, from Juniper.	Ræstelia cornuta.
Barberry	Puccinia graminis, from Wheat.	Æcidium berberidis.
Wheat	Æcidium berberidis.	Uredo linearis.
Nettle	Puccinia caricis.	Æcidium urticæ.
Carex	Æcidium urticæ.	Uredo caricis.
Dock	Puccinia Magnusiana.	Æcidium rumicis.
Oats	Æcidium rhamni.	Puccinia coronata.
Poa annua	Æcidium tussilaginis.	Puccinia poarum.
Inula dysenterica	Uromyces junci.	Æcidium zonale.
Senecio vulgaris ..	Peridermium pini.	Coleosporium senecionis

Gardeners' Chronicle, January 6th, 1883.

* *Woolhope Transactions*, page 118, *et seq.*, 1881.

NOTES ON ALKALOIDS AND OTHER SUBSTANCES THAT HAVE BEEN EXTRACTED FROM FUNGI.

By CHARLES G. STEWART, Chemical Laboratory, St. Thomas's Hospital.

(Read by HENRY T. WHARTON, M.A., F.Z.S., &c.)

THE chemistry of Fungi is by no means in a satisfactory state. Many of the existing statements are rendered doubtful by a bad identification of the species. It is also difficult to obtain a sufficient amount of raw material, and its perishable nature interposes another obstacle. Beyond this, the research itself is so difficult and expensive, and the question of profitable result is so remote to ordinary minds, that few qualified chemists have even ventured upon the task. This paper offers little that is original on the subject. I have only endeavoured to collect together such facts as were scattered in chemical literature, and to explain them as untechnically as possible, with due regard to exactness and truth. This must be my apology if to some I seem too elementary, and to others too abstruse.

Assuming that all plants are built up of cells, and that the essential parts of a cell are the *cell-wall* and the *cell contents* (or protoplasm), we may assert that the cell-wall mainly consists of one of the varieties of cellulose, a colourless, tasteless substance insoluble in water, existing in three forms:—*Cellulose proper*, as found in cotton; *paracellulose*, existing in some roots and the epidermis of leaves; and *metacellulose* or *fungin*, occurring in fungi and lichens. These are distinguished by different solubilities in ammoniated copper solution.

The cell-wall of fungi consists then of this metacellulose or fungin. They contain no lignin or woody fibre. All varieties of cellulose have the composition $C_6 H_{10} O_5$, or a multiple of it.

The cell-contents, on the other hand, are very complex. Of course there is water, varying from 90 per cent., in fleshy species, to 9 per cent. in a woody *Polyporus*. Also essential to life is some variety of fibrin or albumen; substances classed together under the name of "albuminoids," and distinguished by containing nitrogen as well as carbon, hydrogen, and oxygen, by their complicated constitution, and the ready changes they undergo under the action of vital forces or of putrefaction. As these substances are especially valuable in food, the nutritive value is in great part indicated by the percentage of nitrogen. This percentage in fungi is very high, higher indeed in dried Agarics than in peas and beans, the next articles in this respect. As to the special kinds of albuminoids present in fungi, this has not been made out, but we know that they closely resemble the varieties found in animal food.

Mineral Salts, found as "ash" on burning, are also essential in food. The cells of fungi contain a large proportion. Analyses by Schlossberger and Düpping show amounts of nitrogen varying from 7.2 per cent. in *A. (Psalliota) arvensis*, to 3.2 in *Cantharellus cibarius*; and an "ash," or mineral matter, varying from 19.8

per cent. in *Psalliota arvensis*, to 3.0 in *Polyporus fomentarius*, all calculated on the dried plant.

Another class of substances containing nitrogen are "alkaloids," or organic bases. These do not afford nutriment, but are characterised by poisonous or medicinal action. They are generally present in very small quantities. We will defer their consideration for the present.

Starch and *chlorophyll*, two prominent constituents of other vegetals, are absent in fungi, but a near relative of the former, *Myco-inulin*, closely resembling the inulin found in *Dahlia* roots, &c., has been discovered in a kind of truffle, *Elaphomyces granulatus*. It is a white, tasteless substance, soluble in hot water, and not blued by iodine. Its formula is $C_6 H_{10} O_5$.

The *Sugars* found in fungi are:—

1. *Mannite*, identical with that extracted from the manna of *Fraxinus ornus* and other kinds of Ash.

2. *Mycose* or *Trehälose*, formula the same as cane sugar, $C_{12} H_{22} O_{11}$, contained in ergot and other fungi, and in a peculiar kind of manna from the East. It is colourless, crystallizable, very sweet and soluble, and ferments with difficulty.

3. An uncrystallizable and easily fermentable sugar, resembling honey or treacle (*lævulose*).

Other obscure gummy substances are present, and are classed together as "extractive matters." They present little interest.

Oils and *fats* occur in most. Ergot contains 30 per cent., consisting of palmitin, olein, and possibly peculiar fatty acids.

The vegetable acids of fungi comprise citric, malic, fumaric, oxalic, agaricic, and others. *Fumaric acid* is closely related to malic, the acid of apples; it occurs also in *Chelidonium majus* and *Fumaria officinalis*. *Agaricic acid* is a crystallized colourless body, discovered by Fleury (J. Pharm. [4] x., 202) in *Boletus laricis* and *Polyporus officinalis*. Hamlet and Plowright established the presence of oxalate of lime, or acid oxalate of potassium, in 30 species of *Agaricus*. In *Fistulina hepatica* they found 0.083 per cent. of free oxalic acid. See the *Chemical Society's Journal*, 1879, for other analyses by them. The "fungic acid" of Braconnot and earlier observers is a mixture of citric, malic, and phosphoric acids. Some fungi contain free acetic acid.

Various *resins* have been isolated, but are not well defined.

The *colouring matters* of fungi are often very characteristic, but are chemically still very obscure. Four yellow or orange matters have been made out, distinguished by giving, when viewed through the spectroscope, two absorption bands in the green or blue, differing in position. *Phycoxanthine* is yellow. *Pezizaxanthine* from *Peziza aurantia* is orange. There are also two relatives of the *Xanthophyll*, or yellow colouring matter of leaves. All these are destroyed by light, but are not immediately altered by weak acids or alkalis.

A red colouring matter was extracted by Phipson from *Agaricus violaceus*.

From *Polyporus purpuraceus* occurring on oaks, and remarkable for turning violet with ammonia, Stahl Schmidt (*Liebig's Annalen*, clxxxvii., 177) extracted

"*Polyporic acid*," formula, $C_9 H_7 O_3$, constituting 43·5 per cent of the dry fungus. It is an ochre-yellow powder, insoluble in water, but soluble with intense violet colour in alkalis. It crystallizes from hot alcohol in small plates, having a bronzy lustre. The salts also crystallize. It belongs to the aromatic series, and is related to benzoic acid.

A section of *Boleti*, notably *B. luridus*, contain a yellow colouring matter which turns blue on exposure to air. Phipson has asserted that this was a derivative of *aniline*. But neither *aniline* nor its salts have this property. Seeing that the Indigo plant and the *Woad* (*Isatis*) contain a yellowish substance called *Indigogen*, which is converted into Indigo-blue on exposure to air, I suggested, some years ago, that *B. luridus* contained this Indigogen. I extracted about 2lbs. of the fungus with alcohol, and obtained a brownish-yellow extract, becoming rapidly blue in air. But Indigo is a very stable substance which may be reduced by organic matter to colourless *Indigo-white*, and then again oxidised to Indigo-blue on exposure, and this transition may be effected any number of times. The pigment of *Boletus*, on the other hand, rapidly passes from yellow to blue, and from blue to brown; while in the blue state it can be again reduced to yellow; but when it has once become brown it seems to be destroyed, as I could not by any means restore the blue colour. Indigo gives, in the spectroscope, a very definite absorption band: in the blue matter of *Boletus* I could not detect any special band. The finally-resulting brown matter was amorphous, acid, soluble in water and alcohol, and appeared very similar to the humus-like bodies extracted from peat, &c. It did not contain nitrogen. I could not, however, obtain the blue matter in a pure state on account of its rapid decomposition, but it certainly contains neither Indigo nor *aniline*. It has been stated that *B. cyanescens* yields a brownish-yellow pigment, turned deep blue by sodium hypochlorite, and unaffected by weak alkalis or acids, and that similar reactions occur with *B. luridus*, *Satanas*, *calopus*, and *variegatus*. I found, however, that *B. luridus* was simply bleached, and not blued, by sodium hypochlorite. No cyanogen compound is present.

Now as to the *Alkaloids*. An alkaloid means literally a compound resembling an *alkali*. The alkalis are potash, soda, and ammonia; they have the well-known effects of blueing vegetal reds, of forming salts with acids, of an acrid taste, a soapy feel, and characteristic odours. Certain compact groups of carbon and hydrogen which can pass entire from compound to compound, are thence called *compound radicles*. The alkali ammonia, then, being composed of one atom of nitrogen to three atoms of hydrogen, can have its hydrogen replaced by one or more of these compound radicles. So we form a "*compound ammonia*," or "*amine*." These "*amines*" partake of the characters of the alkali ammonia, and hence are called *alkaloids*. They are generally colourless, alkaline in reaction, and form crystallizable salts by union with acids.

As a rule, they are powerful in their action on the system, hence the plants which contain notable quantities of them are either medicines, poisons, or perhaps condiments like pepper, or semi-medicinal foods like tea or coffee. For this reason their study is a most important feature of plant-chemistry.

From ammonia (NH_3), by substituting the "*compound radicle*" *methyl* (CH_3)

for hydrogen, we get a volatile alkaloid *tri-methyl-aminc*, a colourless liquid with a powerful fishy odour; in fact it is the cause of the smell of decayed fish, and is extractible from herring-roe, from cray-fish, and from other fishy sources. It is also found in the flowers of *Cratægus oxyacantha*, *Cratægus monogyna*, *Pyrus aucuparia* and *communis*, *Chenopodium vulvaria*, and in some odorous fungi, especially Ergot of rye, and in putrefying yeast. Probably *Phallus impudicus* and *Clathrus cancellatus* owe their odour to trimethylamine.

The formula of trimethylamine is $N(CH_3)_3$ or C_3H_9N . This group itself forms the nucleus of a series of alkaloids differing from one another by two atoms of hydrogen:—

Betaine, $C_2H_2[N(CH_3)_3]O_2$ or $C_5H_{11}NO_2$.

Muscarine, $C_2H_2[N(CH_3)_3](OH)_2$ or $C_5H_{13}NO_2$.

Amanitine, $C_2H_4[N(CH_3)_3](OH)_2$ or $C_5H_{15}NO_2$.

Betaine occurs in *Beta vulgaris* and *Lycium barbarum*, but has not yet been found in fungi.

Muscarine, $C_5H_{13}NO_2$, was discovered by Schneideberg about 1873. In the "Chemische Centralblatt" of 1876, p. 554, occurs his paper establishing its composition and artificial production. It occurs together with *amanitine* in *Am. muscaria*. The juice is evaporated, treated with alcohol, and then with lead acetate. After a long and complicated process the *hydrochlorides* of *muscarine* and *amanitine* are obtained, and are separated by pressing with paper, which absorbs the more deliquescent muscarine salt, and leaves the *amanitinc*. The yield is very small, as 2 lbs. of the alcoholic extract (representing a very much larger quantity of the fungus, perhaps about 40 or 50 lbs.) gave only about $\frac{1}{4}$ oz. of *muscarine*.

Muscarine forms a colourless inodorous syrup, crystallizing with great difficulty, easily soluble in water and alcohol, sparingly in chloroform, and not soluble in ether. It is strongly alkaline, forms crystallizable deliquescent salts, and is a strong narcotic, in some respects antagonistic to atropia. [Later researches show that this antagonism of physiological effect is not complete; there are *lateral* actions of each poison which may make a combined dose of each more fatal than the same quantity of either separately, so that its action as an antidote must be carefully watched.] *Muscarine* has not been obtained from any other natural source, but can be made artificially from *amanitine*.

Amanitine, $C_5H_{15}NO_2$ is identical with the animal bases *choline* and *neurine*. Its sources are:—

1. *Am. muscaria*, hence the name *amanitinc*.
2. *Bile*, hence the name *choline* (Strecker).
3. *Brain* and *nerve tissue*, hence the name *neurine*.
4. From eggs and the milt of the salmon, &c.
5. It can be prepared artificially by a complicated process.

It is only of late years that the identity of these products has been proved. *Amanitine* is chemically called—

"Trimethyloxethylammonium hydrate."

It is a white crystalline substance similar to *muscarine*, but not so deliquescent, and not so poisonous.

By oxidizing agents, such as strong nitric acid, *amanitine* is converted into *muscarine* by the loss of two atoms of hydrogen. By heat both *muscarine* and *amanitine* yield *trimethylaminic*. The passage from *muscarine* and *amanitine* to *betaine* has not yet been effected. The price of *muscarine*, either natural or artificial, is 1s. per grain. I have not seen *amanitine* mentioned in a price list, except as *choline* or *neurine*.

The singular occurrences of *amanitine* (*neurine* or *choline*) are another link between fungi and the animal kingdom. The production of these bodies artificially is of great interest, as very few natural *alkaloids* have yet been artificially made; and these successes lead us to hope that we may some day produce such medicinal *alkaloids* as quinine and morphia by chemical means at a cheaper rate.

I do not know of any other *alkaloids* from fungi. I remember a paper by Phipson in the "Chem. News" about "*Agaricus violaceus*" (*Cortinarius?*), which professed to describe two new colouring matters and an *alkaloid*, but the information was very scanty. The processes are so tedious and costly. I myself tried to obtain an *alkaloid* from *Boletus luridus*, but failed. It requires about $\frac{1}{2}$ cwt. of raw product to have any chance of success.

Selmi asserts that mildew and the larger fungi give off *hydrogen* and carbonic acid gas.

Taci (Comptes Rendus, lxxvi, 505) gives the following analysis of *Agaricus* (*Russula?*) *foetens* in percentages:—Water, 67; *mannite*, 0·6; *fibrin* (*albuminoid* matter), 4·6; gum, 1·5; *fungin* or *cellulose*, 20; fat, 0·68; ash, 5·13; with acids, colouring and odorous matters undetermined.

NOTES ON THE *CHROOLEPUS JOLITHUS*, AND OTHER ALGOID COLORIFIC PLANTS.

By EDWIN LEES, F.L.S., F.G.S., Fellow of the Botanical Society of
Edinburgh, &c.

THE particle of minute research that I here offer to the Woolhope Naturalists' Field Club, I must confess is not of an utilitarian character. I have not collected the "fungous fruits of earth," like my far-searching friend Dr. Bull, with a view to gastronomical enjoyment, but have chiefly directed my attention to the colorific tints that Cryptogamic vegetation has spread over rocks, walls, roofs, and stagnant waters, thus

" Noting all the changes of the sky,
And viewing Nature with artistic eye; "

for Lichens, Algæ, and minute Fungi, verily give an aspect to a rocky landscape not generally sufficiently considered even by those whose profession it is to delineate landscape scenery. This has led me to study a production not very generally noticed, to which I now propose to direct an investigating eye. This substance forms a coloured rust upon rocks, stones, and old buildings in secluded places, and is with difficulty scraped off, and thus is very different to the soft structures of the *Confervoidæ* or *Palmellacæ*, though agreeing in some respects with the latter family. These minute substances require very close examination, and as a study demand minds that delight in poring into the mysterious; for in this department where Nature descends to form complications whose interior development is invisible to the naked eye, the microscope becomes indispensable, and a student requires to have a microscopic mind.

Yet these minute organisms impart a colour to objects in the landscape more or less apparent according to the state of the atmosphere, and are often conspicuously developed by rain, though in this respect they have not been sufficiently noticed by observers in their descriptions of the country, or by artists who in their pictures might take advantage of them in contrasting colours.

The Cryptogamous vegetation that chiefly prevails upon rocks, lofty heights, or damp walls, are the Mosses, Lichens, and Algæ, and these cover more or less not only rocks and walls, but even the ground almost everywhere, even roofs also in rural places often glow with the brightest colours of yellow and orange, as the poet Crabbe has noticed in describing scenery—

" The living stains which Nature's hand alone
Profuse of life pours out upon the stone."

Lichens give a very beautiful investiture frequently to masses of rock, which they often cover with a white, black, or variously coloured adventitious crust, which in some cases gives a name to the rock itself. Thus in South Wales, I once noticed a mass of rock near Fishguard bearing the native Welsh appellation of "Carn Wen," commonly called, or the "White Rock," from the milk-white lichen that

covered it, which proved to be a variety of the Crabs'-eye lichen (*Leconora parella*).

The Algal tribe is very much developed everywhere both on land and the surface of water, and colours walls and stagnant pools mostly with a green scum, while occasionally a crimson coating is produced, which has at times been a source of terror to superstitious minds. But Algals are mostly of a green colour, and are lovers of moist places whether rocks or damp walls, and it is algalic vegetation that gets upon old neglected churches, and stains their walls even in the interior, as I have often observed. I have seen green spaces on the Malvern hills covered with *Lynghya muralis*, and not long since I observed the side of a quarry near Malvern beautified by a bright green *Ulva*. What is called Water-flannel, the *Conferva capillaris* of Linnæus, a green flossy substance, may be seen covering the sides of ditches, or the surface of stagnant pools. The trunks of trees are made often to look green by a very common algal called in botanical nomenclature *Hæmatococcus vulgaris*. I may also mention a little spreading algal known as *Botrydium granulosum*,* which curiously enough in a hot summer is seen to cover exposed bottoms of dried-up ponds, and is an interesting subject for the microscope.

The vegetable organism which I shall now describe forms a hard dense crust upon rocks or buildings, and to the naked eye or a superficial gaze might be supposed to be a mere colour of the stone, for it is very hard to get off, but when moistened or rubbed, it gives out a peculiar fragrant scent. I may remark that to be within the limitation boundary of the observation of the *Woolhope Club*, I have found the *Jolithus* upon very old tombstones in the churchyards of Cradley, Colwall, and Abbeydore, all in Herefordshire.

This curious substance, conspicuous enough where it has established itself to any great extent, has caused great diversity of opinion among botanists as to where to place it generically, though all agree that being without gonidia it has no claim to be a lichen, although from its crustaceous character it has a very lichenic aspect to a superficial gaze. Linnæus was the first to observe this appearance, and characteristically says, in his *Tour in Lapland*—"Here and there in the woods lay blood-red stones, or rather stones which appeared to be partially stained with blood. On rubbing them I found the red colour merely external, and perfectly distinct from the stone itself. It was in fact a red *Byssus*, (and I named it) *Byssus Jolithus*." But Linnæus afterwards referred it to the Lichen tribe.

Although some botanical writers have ranked the *Jolithus* among the smaller fungi, its permanence where it has once established itself, and its internal structure, removes it with certainty from that tribe, and places it amongst the *Algæ*. Forming, as shown by the microscope, branched tubes or filaments enclosing globules, this cryptogamic plant has a confervoid aspect, but these globules, which become red, are different to the conjugating cells of the *Conferroideæ* or *Zygnemaceæ*, and are of a more enduring character. Thus classed with the *Algæ Globu-*

* See page 187 of *Woolhope Transactions*, 1870, and the diagram opposite page 193.

lifera, this crustiform production must be arranged either with the *Palmelleæ* or the *Protococcææ*. The former comprehends the common *Palmella cruenta*, or "Gory Dew," so called from its sanguine aspect, and also the *Protococcus nivalis* or red snow of the Alps or Polar regions. But these productions have their globules enclosed in an envelope of gelatine, while the object here dilated upon would seem to belong to the division *Protococcææ*, forming a friable stratum of globules not immersed in gelatine, and readily separable.

Agardh has given the generic name of *Chroolepus* to certain minute byssora structures, which Griffiths and Henfrey in their *Micrographic Dictionary* say have been regarded "sometimes as Fungi and sometimes as *Alge*," but they indicate the *Protococcææ* and name the genus *Chroolepus*, but take no notice, nor give any description of the individuals presumed to rank under it. The well-known learned and observant fungologist Mr. Berkeley has somewhat doubtfully placed this persistent production under the genus *Chroolepus*, but in his *English Flora* expresses a hope that he "shall not be accused of mischievously adding to the already numerous synonyms of this little plant." He has, however, placed it as a member of the *Byssoidææ*, which he defines as "Plants of doubtful affinity, related to the Fungi." Notwithstanding this intimation, I have in my *Botany of Malvern Hills*, placed the little plant mentioned in this paper under the *Protococcææ*, and have had the temerity not only to give it generic rank, but a specific title also, as under.

Jolithus.—Forming a friable stratum of globules not immersed in gelatine, the filaments crowded together, and enclosing concatenated coloured globules.

Jolithus lichenoideus (Lichen *Jolithus*, Linn.) Filaments tufted, erect, very short, orange red, dichotomous, the enclosed globules longer than broad.

Appearing like a red crust or powder, on rocks and stones, and when rubbed or moistened emitting a fragrant violet-like scent. It colours rocks and stones in Switzerland in damp and shady places with a gorgeous colour, but in England it is most abundant on the walls of old churches near the coast, or on tombstones of great age in churchyards. Where it has once fixed itself the *Jolithus* remains as permanent as the rock or building on which it grows and extends.

I have noticed this *Algal* in great abundance in a rocky ascent between the Rhone valley and the next village on the road to Zermatt; and as it also reddens the rocks to a considerable extent at the base of Monte Rosa also in Switzerland, I am inclined to think that the name applied to the mountain was given to it from this circumstance rather than to the transient effect produced by the reflected rays of the setting sun.

The walls of the churches of Wyke near Weymouth, and of Portishead in Somersetshire, have portions conspicuously coloured by the extended crust of this *algal*.

It must be admitted that the red globules when mature have a considerable resemblance to those of *Hematococcus*, which some botanists regard the same as *Palmella*, but I have never seen them duplicated as those of *Hematococcus* are, and the latter is an inhabitant of water. In fact the globules differ but little from those of the famed "red snow," which has been placed in different genera as

observers took divergent views ; and it shows how difficult it is to allocate minute algoid forms without a careful use of the microscope. Nevertheless the colour given to rocks and even to water at particular though uncertain times, cannot escape the attention of wanderers in the exciting fields of Nature ; thus Crabbe in one of his poems has truthfully written

“ See how Nature's work is done,
How slowly true she lays her colours on ;
When her least speck upon the hardest flint
Has mark and form, and is a living tint.”

Indeed, while even botanists have scarcely sufficiently examined or admired the coloured dust that has fallen from Nature's robe, and marked the ground that her garments have swept as she passed along, artistic eyes have been delighted with the living stains of crimson, orange, and purple that appear not only upon old structures, but on the highest rocks in Alpine countries. Thus Ruskin in his poetical language, speaking only as a contemplative artist of these minute but lovely productions, says :—

“ And as the earth's first mercy, so they are its last gift to us. When all other service is vain from plant and tree, the soft mosses and grey lichen take up their watch by the headstone. The woods, the blossoms, the gift-bearing grasses, have done their parts for a time, but these do service for ever. Trees for the builder's yard, flowers for the bride's chamber, corn for the granary, moss for the grave.

“ Yet as in one sense the humblest, in another they are the most honoured of the earth-children. Unfading as motionless, the worm frets them not, and the autumn wastes not. Strong in lowliness, they neither blanch in heat nor pine in frost. To them, slow-fingered, constant-hearted, is entrusted the weaving of the dark eternal tapestries of the hills ; to them, slow-pencilled, iris-dyed, the tender framing of their endless imagery. Sharing the stillness of the unimpassioned rock, they share also its endurance ; and while the winds of departing spring scatter the white hawthorn blossom like drifted snow, and summer dries on the parched meadow the drooping of its cowslip-gold,—far above among the mountains the silver lichen-spots rest, star-like on the stone ; and the gathering orange stain upon the edge of yonder western peak reflects the sunsets of a thousand years.”—*Modern Painters*, vol. v. part vi. ch. x., par. 24, 25.

But whether in our researches among the Cryptogamic forms we gain additional condiments for the table, or add to the number of species and thus extend our knowledge in the domains of Nature, we cannot but feel pleasure in the pursuit, and agree with M. Vaucher of Geneva, who was a devoted searcher among the lower tribes of vegetation, that it was an empire whose bounds he desired to extend, believing that no happier kind of life is to be found, or more real pleasures enjoyed than what Nature affords to those who truly love her.

GREAT APPLE AND PEAR EXHIBITION AT HEREFORD—1883.

“THE finest show ever held in the provinces.” That is the verdict of the experienced judges who awarded the prizes at the Hereford apple and pear exhibition held in the Shirehall, on Wednesday and Thursday, October 24th and 25th. And in the quality of some of the exhibits it was considered that the show surpassed even the immense exhibition of fruit which is now being held at Chiswick. This year’s crop of fruit, the best in development and colour during the last seven or eight years, has of course depended on the climate, but much of the improvement is very probably due to the more careful and scientific attention which has of late years, and during the last two years particularly, been paid to the cultivation of fruit. Not a little of this advancement in the art of fruit culture may be attributed with justice to the efforts of the Pomona Committee of the Woolhope Club, foremost among whom stands Dr. Bull, whose interesting researches in apple lore are well known. It is under the auspices of the above-mentioned committee that this annual show at Hereford is held, the objects of the exhibition being—

- 1 To encourage the growth of valuable fruits in place of worthless varieties ;
- 2 To name fruits unknown to the exhibitors ;
- 3 To afford information to the committee ; and
- 4 To provide characteristic specimens for illustration in the *Herefordshire Pomona*.

These objects need no explanation, and they will be more appreciated as time goes on. With regard to the *Herefordshire Pomona*, it may be mentioned that the last part of this beautiful work is to be published next year after the Congress and Exhibition of the Pomological Society of France, to be held at Rouen in October, 1884, where the so-called “Norman” apples of Herefordshire will be placed upon the Normandy tables for comparison. Seventy-five varieties of vintage fruit were sent from Normandy for exhibition at the Hereford show on Wednesday and Thursday, but were delayed in transit. It was afterwards exhibited at the Free Library, in the Woolhope Club Room.

Numerous plates of apples were sent to be named, and this task occupied the attention of the judges a considerable time. The three judges who were originally appointed were Dr. Hogg, Mr. Barron (of Chiswick Gardens), and Mr. Rivers (of Sawbridgeworth). Dr. Hogg and Mr. Barron were unable to attend in consequence of being engaged at Chiswick, and Mr. Rivers was unfortunately taken ill. The gentlemen who did act as judges were Mr. George Bunyard (Maidstone), and Mr. Carrington (Worcester), for the dessert and culinary fruit ; and the Rev. C. H. Bulmer and Mr. G. H. Piper for the cider fruit. Mr. H. Cecil Moore was the acting honorary secretary, and Mr. D. R. Chapman was the fruit secretary, his task being the arrangement of the fruit.

GREAT APPLE AND PEAR EXHIBITION AT HEREFORD.

THIS annual Exhibition, kept in abeyance last year on account of the unproductive fruit season, was held in the Shire-Hall on the 24th and 25th October. To report with what amount of success, I need but state that some 2500 plates were staged, while for lack of room the cider and perry fruit, which may be calculated to have been equal to another thousand plates, had to be grouped in admired disorder throughout their respective classes. However, as the Judges did not seem to object to this perfunctory arrangement, the public certainly were gainers in the picturesque effect gained by the general effect. Not in extent only was the Exhibition pronounced to be the finest ever held in the provinces, but in the rare quality of the fruit; and, in a notable degree, in the marvellous dash of colour which pervaded the entire hall, an eloquent tribute was paid to our Herefordshire soil, which I feel sure our Kentish friends, so justly priding themselves on their superior climate and the consequent smoothness and symmetry of their fruits, will be the last to grudge us, roughly handicapped as we of the West Midlands are well nigh every year—even if we escape the spring frosts—before the early growths get a fair start. The size attained by the largest Apple (Belle Dubois) among the collections of that noted exhibitor, Mr. Haycock, gardener to Mr. Roger Leigh, M.P., Barham Court, Maidstone, 1 lb. 4 ozs., was 2 ozs. in excess of the largest specimen in the Middlesex collection at Chiswick, but not equal by several ounces to previous records attained at these exhibitions. The same exhibitor carried off the prize for the heaviest dessert Pear (Pitmaston Duchess), 1 lb. 8½ oz. Indeed, it may be said that the clean and level as well as grand exhibits of this talented fruit-grower was the theme of general admiration, as I hear it also was at Chiswick.

I would venture here to guess at one great secret in Mr. Haycock's staging, conducing so signally to his success in gaining the Judges' fiat and popular favour. It is simply this, that, given the grand material he has to make the most of (of course, as Mrs. Glass says, you must first catch your hare), he always aims at levelling up throughout his entire collection, and thus never dwarfs a single specimen, or lets in a single weak corner, by introducing a disproportionate large plate or two. May it not be possible Mr. Haycock carries this principle too far in his magnificent collection of dessert Apples, for which he won first prize in an excellent class? Several noted fruit-growers, as Mr. Bunyard, pronounced it the finest ever staged. Still I venture humbly to suggest, first-rate as every plate was, that size throughout was too large for orthodox dessert Apples, where such all-round varieties as Queen Caroline and Blenheim Orange never (as here) should find a place. Perhaps the most interesting varieties were Melon Apple, Ross Nonpareil, perfect in colour; Mother Apple, Washington, superb specimen (from under glass I learn); Pine Golden Pippin, perfect; Margil, wonderful colour; and King of the Pippins, true type.

Mr. Thomas Griffiths, Tillington Nurseries, won the second prize with a fine collection, including the refined Pomeroy, the fragrant Summer Queening, and juicy Astrachan, not to omit mentioning the local Onibury Pippin (called after one of Andrew Knight's many nurseries near Ludlow), a perfect model for a dessert Apple from its handsome neat looks, golden colour, and lasting properties. Third prize, Mr. John Watkins, Pomona Farm, Withington. Fourth, Mr. John Barnes, Hucclecote Gardens, Gloucester.

In culinary Apples, twenty-four varieties, Mr. Haycock was first with wonderfully bright and level specimens, specially including Royal Russet, Northern Spy, grand in colour and size; Bedfordshire Foundling, fine; Belle Dubois, immense; Lord Derby, splendid everywhere; Cox's Pomona, finest colour in the Hall; Lady Henniker, great acquisition; Annie Elizabeth, great size and density. Second prize, Mr. Ward, gardener to Lady Emily Foley. Third prize, Mr. J. Watkins.

The single plates, for which many private as well as committee prizes were offered, were very interesting and keenly contested, especially the Blenheim Pippin, Ribston Pippin, and Seek-no-Further, which appear to find a natural home in the orchards of Herefordshire from the number and excellence of the plates exhibited. Mr. H. Higgins, Thing Hill, Hereford, took first prize for Blenheim Pippin, and Seek-no-Further, and Mr. Haycock first prize for Ribston Pippin. The first Apple, I may mention in passing, is not being planted in such number as formerly, owing to the tree not coming into profitable bearing for many years. Mr. Haycock also took first prize for a high-coloured and fine Cox's Orange Pippin; and Mr. Haywood, Blakemere, first prize for the somewhat sensational culinary Apple of the district, Tom Putt, an everlasting bearer but no keeper.

Single plates of dessert Apples for present flavour, were shown by Mr. Haycock, who was first with American Mother Apple, exquisite in flavour but too soft in flesh for most palates. Mr. C. Ross, gardener to Mr. C. Eyre, Welford Park, was second with Cox's Orange Pippin, of fine delicate flavour and crispness of flesh. Third, Mr. Walter, gardener to the Earl of Chesterfield (Holme Lacy), with the same variety; and fourth, Messrs. H. J. Smith Brothers, Ledbury, with the Old Pomeroy. A grand class, twenty-eight plates.

Culinary Apples for size, weight, and quality, any variety.—First prize, Mr. C. Haycock, 5 (plate of), with Belle Dubois, 6 lbs. 3 ozs. Second prize, Mr. Higgins, Thing Hill, with Peasgood's Nonesuch 6 lbs. 1 oz. This decision was not endorsed by the general public, the latter being of far greater diameter and more taking appearance, but the greater weight and density, and consequent longer keeping properties of the less popular variety perhaps rightly decided the Judges.

Dessert Pears for present flavour, any variety.—First prize, Mr. G. H. Piper, Ledbury, with small but exquisitely ripened specimens of Thompson's. Second prize, Mr. Wm. Woodhall, with small standard-grown Marie Louise, very sweet. Third prize, Mr. Ross, Welford Park, Berks, unusually fine Seckle; and fourth, Mr. Haycock's Beurré Superfin.

Culinary Pears, for size, weight, and variety went as usual; first prize to Uve-

dale's St. Germain, Mr. C. Ross, 6 lbs. 4 ozs. Second prize, Mr. Tremling's Grosse Calebasse (under glass), 5 lbs. 7 ozs. Third prize, Rev. H. Tweed's Catillac.

In the class for any new variety of Apple or Pear, there was no variety to call for special mention. Messrs. Saltmarsh sent a plate of their fine new Apple, The Queen, lately certificated by the Royal Horticultural Society. Mr. George Bunyard brought also a plate of the promising new Apple, Grenadier, of large size and density. This well-known orchard nurseryman also brought a collection of twenty plates of the leading varieties of the day, not for competition, staged and named as one would expect from so high an authority. Messrs. Wheeler & Son, of Gloucester, also sent a collection of twenty varieties of Apples, not for competition, hardly up to the high reputation of this old-established firm. Messrs. Cranston & Co., King's Acre Nurseries, added considerably to the interest and success of the Exhibition, as well as to their increasing renown in fruit culture, by a really admirable collection of 150 varieties of most of the leading Apples in cultivation of a local and general character. The most noticeable perhaps were Chiffey Seedling, fine; Herefordshire Beefing, splendid colour, good bearer and keeper; Peasgood's Nonesuch, good everywhere; Stirling Castle, useful; Sops-in-wine, curious, typically shown; Keswick Codlin (well kept), best early in Herefordshire as orchard tree; Lady Henniker, soon comes into bearing; Winter Queening, exquisite; Loddington, not its year.

Collection of dessert Pears, fifteen varieties.—First prize, Mr. Haycock. This exhibit was perhaps the greatest feature in the Hall; certainly the finest I have ever seen staged as grown in England. They included—all nearly of same grand and level type—Triomphe de Jodoigne, General Todtleben, Easter Beurré (enormous), Marie Benoist (grand), Conseiller de Cour, Pitmaston Duchess (almost as large as the Premier Pear), Doyenné du Comice, Beurré Diel, Doyenné Boussoch, Beurré Hardy (handsome), Passe Crasanne, Duchesse d'Angoulême (immense), Durondeau (fine), Beurré Superfin, Nouveau Poiteau.

Mr. Walters, gardener to the Earl of Chesterfield, was second with a smaller but clean bright collection, hardly up to the renown of the Holme Lacy cordon wall. Specially noticeable were Gen. Todtleben, Flemish Beauty (a real beauty), Marie Benoist, and Beurré Hardy (handsome). Third, Rev. C. Stacey, Wessington Court, Ledbury.

Suffice it to add that the cider and perry fruit classes were well filled, and as a useful result of these exhibitions, better filled than previously, with recognised varieties from which really good saleable cider and perry will be made. Sir Rupert Kettle sent a branch of the long willow-leaved Pear, and another full of fine fruit was also sent by Mr. Goodwin, of Hampton Bishop. It is an interesting curiosity. Its botanical name is *Pyrus salicifolia pendula*, and it is being planted sparingly in the Herefordshire perry orchards to supply the tannin and acid which is apt to be deficient in perry Pears.*

The gentlemen who kindly acted as Judges, were, Mr. Smith Carrington,

* Loudon says *P. salicifolia* is a native of Siberia, and that trees 20 feet high exist at White Knights

Worcester; Mr. George Bunyard, Maidstone; and Mr. Lewis Killick, Maidstone; the Rev. C. H. Bulmer, Credenhill Rectory, Hereford; and Mr. G. H. Piper, Ledbury, only taking the cider and perry fruit division.—*The Herefordshire Incumbent.*

I am anxious to add a postscript to my report of above Exhibition in reference to the Onibury Pippin. This excellent dessert Apple cannot be too widely made known and recommended; indeed, I believe it to be worthy a place in every collection however small, where it might form a well-matched triplet with one of the very best and hardest culinary Apples, Wormsley Pippin, and that well-known late dessert Pear, the Monarch; all *chef d'œuvres* of that indefatigable pomologist, Andrew Knight. It was a subject of general regret that a choice collection of cider Apples (some fifty varieties), expressly sent from Normandy to the Exhibition at Hereford, arrived too late. From a cursory glance I have had there is hardly any resemblance to be now traced between them and our present Norman cider varieties, presumed to have been introduced from Normandy into our Herefordshire orchards by Lord Scudamore, of Holme Lacy, about the early part of the seventeenth century. I will only mention that the nomenclature of the several varieties, as now grown in the different countries, is as widely different as their structural and other characteristics; but this is not the occasion to more than allude to this interesting subject.—*The Herefordshire Incumbent.*

CANKER IN APPLE TREES.

THERE are probably several diseased conditions of Apple trees known as canker. During the past two or three months I have been looking into this disease somewhat attentively, and I have come to the conclusion that the commonest and most serious form is due, as was pointed out by Goethe, to a sphæriaceous fungus, *Nectria ditissima* (Tul.)* The various members of *Sphæriacei* occur, as a rule, upon dead wood—not upon the living tissues of plants. There are, however, many important exceptions—such, for example, as the *Valsa parvularia*, described many years ago by Mr. Berkeley, upon living Oak twigs. More important, from an economic point of view, is the *Sphaeria morbosa* of Schweinitz, the cause of black knot in Cherry and Plum trees in the United States: closely allied to which is *Gibbera vaccinii* upon living branches of *Vaccinium Vitis-Idæa* in our own country. The *Dothideaceæ*, too, occur, many of them, upon living leaves and branches, as the genus *Phyllachora* for example. Although there is nothing impossible in the notion that a *Nectria* may be parasitic upon living branches, yet I must confess my first impression was, that the fungus found a suitable home upon Apple twigs which were already dead rather than that it was the cause of the death of the affected branches. It is well known that winter and spring are the seasons in which the *Sphæriacei* as a rule are found in the best condition of fructification. I have, therefore, closely examined cankered Apple trees during the past two months wherever I have had an opportunity of doing so, and in no single instance have I failed to find the *Nectria* upon every tree examined. It is not implied that every cankered patch was found producing *perithecia*; at the same time the majority of the cankers upon each tree were found bearing the fungus in abundance: and, further, it was not found upon any other part of the trees. The trees were not confined to one garden nor to one locality. The specimens which I submitted to the Scientific Committee recently were gathered from (1) Mr. J. Bird's nursery at Downham; (2) Mr. S. N. Marshall's garden at West Lynn; (3) Mr. J. T. Stevenson's garden at Clenchwarton; (4) Mr. C. Peek's orchard at Tilney St. Lawrence; (5) Mr. G. B. folke's garden at Wolferton; and (6) Mr. T. Pung's garden at King's Lynn. When the parasite gains an entry into the bark of a medium-sized branch, which it often does through a lateral twig having been broken or cut (fig 1), it at first causes the death of the bark and subjacent wood to only a limited extent. The bark cracks concentrically; in the cracks and upon their edges the *perithecia* are most commonly found. It is obvious that a certain time must elapse between the period of infection and the time at which the mycelium or spawn can develop its perfect fruit. This probably takes some months, for it will be seen by inspecting the specimens them-

* *Nectria ditissima*. Tul., *Carp.*, iii., p. 73, t. 13, f. 1-4 (= *N. coccinea* of many authors).—*Perithecia* widely scattered or densely gregarious, globoso-obtuse then papillate, naked blood red asci cylindrico-clavate, 82×8 mk.; sporidia ovate-oblong, uniseptate, $14 \times 6-8$ mk., hyaline.—*Conidia* = *Tubercularia crassostipitata* Fuckel, *Symb. Mycol.*, p. 180., ovate-oblong, continuous, $6-8 \times 3-4$ mk.

selves that the *perithecia* are most abundant in those cases in which this devitalised area has become surrounded by an enlarged and swollen margin (fig. 2, A, B) of healthy bark. When the parasite attacks a small branch shoot of the last year it kills it outright for some inch or two downwards; especially is this the case when the end of the shoot has been cut off (fig 2, B); but with the older and thicker branches attacked lower down the disease gradually but surely works its way through the branch, eventually cutting it quite through (fig 2, A). In this case a callus above and below, as well as surrounding the canker generally, is observable. Thus the distal part of the branch becomes in course of time strangled by the fungus. It is useless to look for *perithecia* on those places in which the disease has only just made its appearance. As far as I can judge, the cankers made last autumn produce the perfect fungus in spring.

In the *Gardener's Chronicle*, March 8, 1884, p. 312, Goethe's paper in the *Monatschrift des Deutsche Garten* for 1880 is referred to, in which the author has shown that *Nectria ditissima* is capable of producing the disease on Apple, Beech, and Sycamore respectively. The remedy is to cut out the diseased parts and to seal the wounds thus made, which would otherwise remain as vulnerable points inviting the attack of the fungus-spores, by painting them over with warm coal-tar.

The injuries which branches receive by rubbing against one another may, of course, open the door to the fungus spores; but unless the latter be present, a true canker is not produced by this means.

At a recent meeting of the Scientific Committee a very curious form of canker on Hawthorn was exhibited, in which the disease resembled a honey-comb. Whether this was due to an insect or to another fungus, I cannot at present certainly say. It, however, bears some resemblance to the *cicatrix* of a wound caused by a fungus, *Ræstelia lacerata*, attacking a young twig last summer, and the presence of some brownish spores in the bottom of some of the cells seems to favour this view. There were also, however, found some spores very like those of a *Fusicladium*. By further observation I hope to clear this up*—Charles B. Plowright, King's Lynn, April 7th. (*The Gardeners' Chronicle*, April 19th, 1884.)

* This subsequently was found to be caused by the *Æcidiospores* of *Gymnosporangium Confusum*, Plow.



FIG. 1.—Canker on Ribston Pippin, showing the cracks in the bark, and the perithecia : half nat. size.

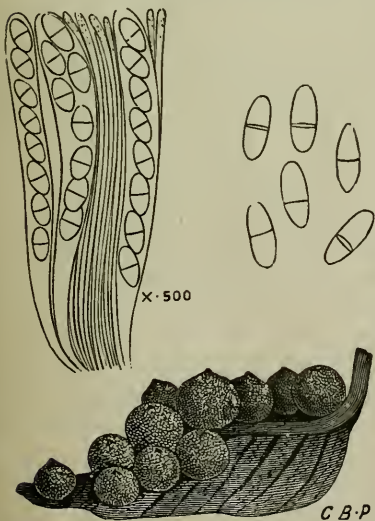


FIG. 3.—Below are shown the perithecia of *Nectria ditissima*, enlarged. Above, the asci and spores magnified 500 diam.

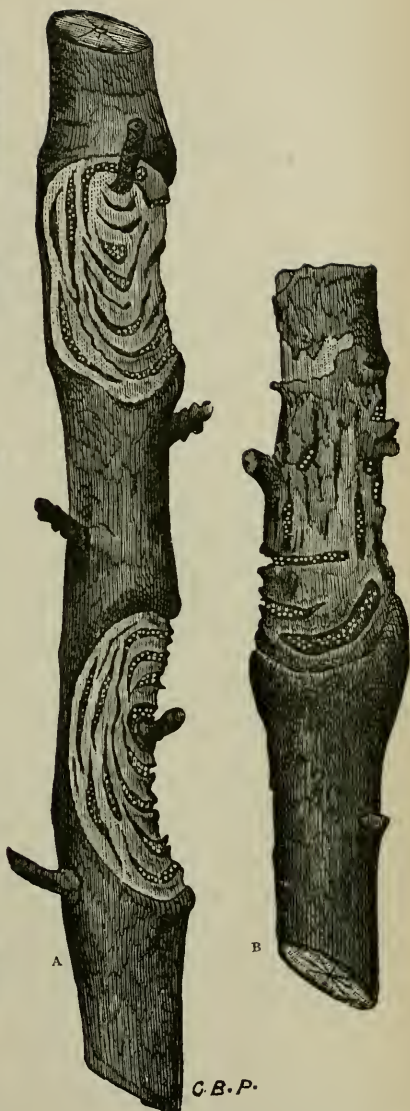


FIG. 2.—A, B, Canker in Apple trees, showing progress of the disease : half nat. size.



Woolhope Naturalists' Field Club.

APRIL 26TH, 1884.

THE Annual Meeting of this Club was held at the Free Library, Hereford, on Thursday, to fix the dates and places of meeting for the present year, and to pass the Accounts of the Club. The following are the meetings fixed upon :—

Thursday, May 15th.—Pandy, for the Black Mountains and Cwm Yoy Rocks.

Thursday, June 19th.—Leominster, for Bache Camp and Berrington Woods.

Tuesday, July 15th.—(Ladies' Day), Ludlow, for the Gorge of the Teme at Downton.

Monday, August 25th.—Ross, for Great and Little Doward.

Thursday, October 16th.—For the Fungus Foray.

The Accounts of the Club were examined and passed, as were also those of the Herefordshire Pomona. The last part, vii, of this beautiful work, was announced to be in a forward state of preparation. It will be larger than any of the preceding ones, for besides the necessary introduction, indices, &c., it will contain no less than 15 coloured plates. In order to render this work the more useful to our orchards, a deputation, consisting of Dr. Hogg, of London, Mr. George H. Piper, and Dr. Bull, was appointed to attend the Congress of the National Pomological Society of France, which is to be held at Rouen, in the first week in October. This deputation will exhibit the Herefordshire Vintage Fruits, both apples and pears, compare them with those from the Normandy orchards, and make arrangements for the introduction, by exchange, of some of the most valuable Norman varieties.

The Members afterwards dined together at the Green Dragon, when the President read his "Retiring Address." A very learned and excellent paper on "Roman Camps, early and late," was read by the Rev. Prebendary Phillott, M.A., and also a very interesting paper was read by Mr. Henry Southall on "The exceptional character of the winter 1883—4."

The following gentlemen took part in the proceedings : Mr. Geo. H. Piper, F.G.S., the retiring President ; the Rev. Charles Burrough, the President-elect ; Mr. Henry Wilson, President of the Malvern Club ; Drs. Bull, and Chapman ; the Rev. H. B. D. Marshall, and H. P. Strong ; Messrs. Bainbridge, Burlton, Cam, Carless, Davies, Gilkes, Griffith Morris, Moore, Shellard, Southall, R. Symonds, and Lane.

THE proceedings of this Club during the past year have been fully published in the reports of the transactions at our Field Meetings. A few brief extracts only from the President's retiring address are now given.*

ON THE PASSAGE BEDS OF THE OLD RED SANDSTONE AT LEDBURY.

By Mr. GEORGE H. PIPER, F.G.S.

Referring to the first Field Meeting at Ledbury, on Thursday, May 24th, 1883, Mr. Piper said:—On quitting the railway carriages the celebrated Passage beds lying near the mouth of the tunnel, and almost entirely within the limits of the station yard, were thoroughly inspected. These are called Passage Beds because here the great system of Old Red Sandstone, which reaches from Skomer Island in the Irish Channel and St. Anne's Head, Milford Haven, right away to Ledbury, without any break whatever—except some half dozen miles of Carboniferous Formation near Haverfordwest—passes into the Upper Silurian system by a series of beds, twenty in number, and of various thicknesses, with an aggregate depth of about 400 feet. Some of the least important of the Passage Beds would appear to be of Silurian Mud and Shales, but nearly the whole belong to the Old Red Formation; I am not aware that any pure Silurian fossil has been discovered in the series, for although I found in 1882 in the Silurian band opposite the entrance to the tunnel, and not many feet below the top of the Passage Beds, a small Trilobite five-eighths of an inch in length, I am not prepared to say it belongs exclusively to the Silurian Formation. The general conformation of the beds affords a rare opportunity for studying physical geology, and I would counsel an early inspection, for the line of demarcation will soon become obliterated; indeed, in some instances great obscurity has already arisen, but as I have made careful admeasurements of the whole section, and have noted the bands wherein fossils are specially located, the searches of future explorers will be much facilitated. The value of this work will be seen when I state that of the 400 feet of Passage Beds the portions yielding fossils of interest would not give a total of 25 feet, and several of the thicker beds would appear to be unfossiliferous. Geologists will remember that heads of the Old Red Sandstone Fish, *Auchenaspis*, were found here, and at Ludlow, almost simultaneously in the year 1858, but simply the head plates. Our much valued member, Mr. Symonds, who graced our meeting by his presence on the occasion of the Club visit, and who is beyond doubt one of the most eminent of living geologists, says in his *Records of the Rocks* (page 202),

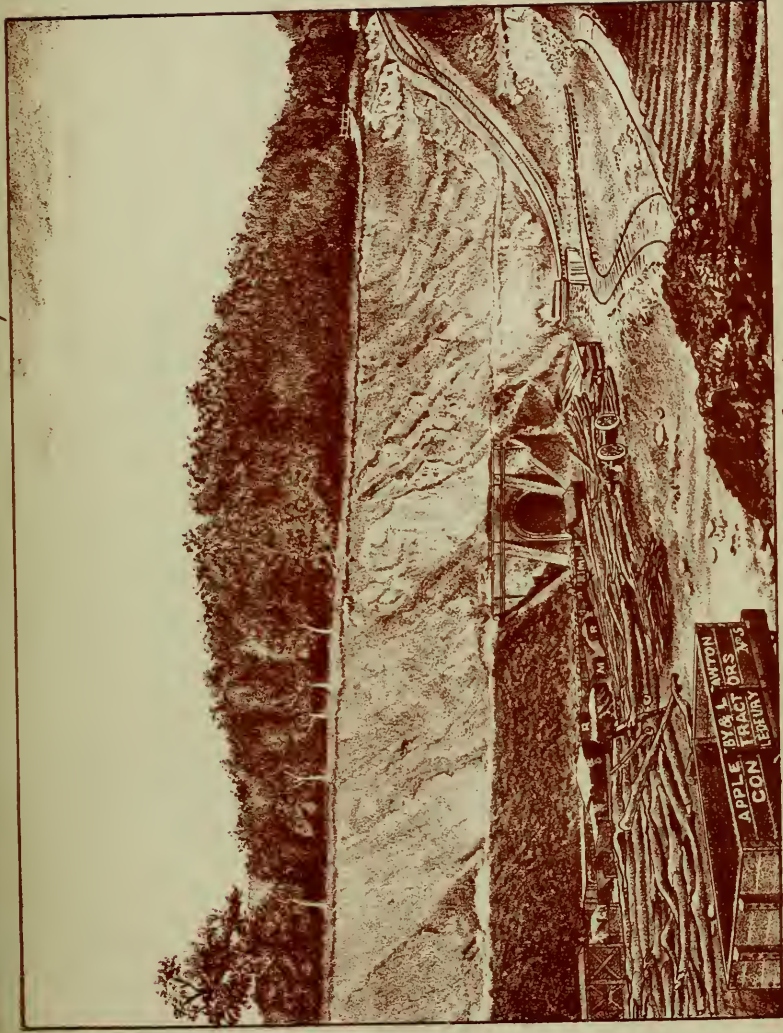
* Some apology is here necessary for presenting our members with *extracts only* from the President's retiring address. It is promised us that the very important subject of *The Passage Beds of the Old Red Sandstone at Ledbury*,—the most important which has demanded the attention of the Geologist of the County of Herefordshire for many years,—will be treated, *in extenso*, by Mr. Geo. H. Piper in his forthcoming paper on the Geology and Physiography of the Ledbury district.—ED.

"The tail and body of this fish are as yet unknown," and I believe they remained unknown until the 16th March, 1882, when I found at Ledbury, in one of the Silurian bands of the Passage Beds, a head plate with a few body scales attached; since that time I have discovered three tolerably perfect fish in a true Red Sandstone band, many feet below the Ledbury Auchenaspis grits, where the head plates were first seen. These fish now form part of my collection, and are, I believe, the only specimens extant. I am not aware that Auchenaspis has been found elsewhere than at Ledbury and Ludlow, unless the solitary specimen, from the Passage Beds at Trimpey, near Kidderminster, which is some $2\frac{1}{2}$ inches across the head plate—it has no body—and may be seen at Jermyn Street Museum, is really an Auchenaspis. But if the generic name of that particular specimen is correct, I do not think the specific one can possibly be so. I have also found in these beds some magnificent specimens of Cephalaspidean Fishes, one of which has been pronounced by Dr. Woodward, L.L.D., F.R.S., F.G.S., &c., and Mr. William Davies, F.G.S., of the British Museum, and South Kensington, to be of a new species. The beds have also yielded large thoracic and abdominal segments of two or more species of Pterygotus, and many other objects of interest. During the construction of the Ledbury railway, some 25 years ago, Henry Brookes found some dwarfed specimens of Pentamerus Knightii in blocks of Aymestry limestone brought out of the tunnel. Since that time he and I have frequently sought for the band on the surface, but without success. In the spring of last year I hit upon it at a distance of 27 feet from the south east corner of the Frith wood, and found that it nowhere exceeded two inches in thickness, and that the largest fossils did not reach the size of a florin, the whole forming a remarkable contrast to the noble development of this formation, and its huge fossils, as seen in the great quarry at the back of Aymestry village. Another find of some importance occurred last year in the little cutting, then newly made, to connect the station yard with the Silurian quarry, whence ballast is obtained for the surface of the railway now in course of construction between Ledbury and Gloucester. Mr. Symonds has long lamented that the "Bone Bed" has not been seen at Ledbury: but soon after the cutting in question was opened, I succeeded in finding the true Bone Bed in its proper position at the top of the upper Ludlow series. It may be observed a few yards below the wooden bridge which joins Reddings Hole to the Frith, and is most conspicuous on the north side.

After a due examination of the Passage Beds proper, the succeeding series of Downton Sandstone, upper, middle, and lower Ludlow were visited, where many men were engaged in getting ballast for the railway. In the earlier stages of the work, hundreds of tons of the lower Ludlow Formation were sent away for this purpose, all of which, if subjected to the ordinary sub-aerial influences, will inevitably become mud within two years after exposure. I presume those in authority have at last discovered the inutility of this material for the purpose to which it was applied, as they have ceased to use it, and now employ the Aymestry limestone only. It must be admitted that these formations *in situ* differ little in external appearance, and are so commingled in this particular section that I have felt compelled to allot nine feet as passage beds, for here there is no true line

of demarcation. As I have in preparation a paper on the geology and physiography of the Ledbury district, which may at no distant period take the form of a small book, I will not now further occupy your time on this subject beyond briefly giving the thickness of the various beds.

No.		Feet.
1	Grey sandstone of the Old Red Formation (without fossils) - - -	15
2	Red marls and clays with a few thin bands of stone (containing a few foralites) - - - - -	332
3	Top of the true Passage Beds, Ledbury grits, or Auchenaspis Beds -	2
4	Blue mud (without fossils) - - - - -	1
5	Ledbury grits, lower bed. (This band has head and neck plates of the very rare fossil fish—Auchenaspis, in some profusion, Cephalaspis, Pterygotus, Onchus, and other species) - - -	3
6	Red and purple shales and laminated rocks, with new Cephalaspis, &c., a portion only of it being fossiliferous - - -	64
7	Blue, muddy, soft, frangible stone of the Lower Ludlow character, with a few Lingulas—(the President stated he had found a trilobite here)	3
8	Red marls, and thin band of Old Red Sandstone - - -	7
9	Grey sandstone embedded in blue mud - - -	4
10	Red marls with strong bands of Old Red Sandstone - - -	52
11	Soft bluish stone - - - - -	1
12	Red marls and shales - - - - -	10
13	Brownish-grey band of soft stone with new Cephalaspis, Auchenaspis with body scales (never before seen), Lingulas, Onchus, &c. -	1
14	Old Red Sandstone; tabular; very compact - - -	4
15	Red shales and marls - - - - -	4
16	Fine-grained Old Red Sandstone, containing Cephalaspis (new species), head and neck plates and body scales of Auchenaspis, Lingulas, &c. -	3
17	Blue shales, Pterygotus, &c. - - - - -	1
18	Red shales and marls, with narrow bands of Old Red - - -	80
19	The Lingula bed of greenish-grey muddy shales - - -	4
20	Red marl with thin bands of Old Red - - - - -	93
21	Grey shales, partaking of the Downton Sandstone character - -	1
22	Old Red shales and marls - - - - -	15
23	Laminated Silurian shales - - - - -	9
24	Old Red Sandstone shales and marls, overlain by a downthrow of broken-up fragments of Downton Sandstone—(this is the true base of the Passage Beds) - - - - -	33
25	Upper Silurian; Downton Sandstone; retroverted westward -	8
	The bone bed is entirely absent.	
26	Upper Ludlow shales - - - - -	140
27	Aymestry Limestone, containing the Pentamerus bed dwarfed down to one inch only in thickness - - - - -	236
28	Transition beds - - - - -	12
29	Lower Ludlow soft muddy rock.	



The Tassany - Beds. Ledbury.



The very expensive and careful restoration of the inside and roofs of Ledbury church effected at different periods since 1870, under the immediate and skilful direction of the Rev. John Jackson, the rector of Ledbury, excepting as to the north aisle, which is still unfinished, attracted due notice, but there were critics who objected to the somewhat too free use of chisels in cleaning the walls and thereby obliterating the tooling of the old masons, and it was hinted, in undertones, that if William of Wykeham wished to use black mortar, he preferred to employ it where it was never seen. Something too was said about covering an eleventh and twelfth century church with Cumberland slate and Broseley tile, when there is tilestone enough in the parish to re-roof all the buildings in the county, but another century may see this anomaly corrected. Meanwhile the tilestones are getting no hurt.

* * * * *

Some slugs and bullets were shown which I obtained from the old north door when it was recently cleaned down. These I believe to be relics of the battle of Ledbury, which was fought on the 22nd April, 1645, and attention was called to bullet marks in the stone work of the porch. I have no doubt sharp fighting took place there, and it is most probable that Massey's men were quartered in the church.

* * * * *

As long as the records of the Woolhope Naturalists' Field Club endure, it will never be forgotten that the year 1883 yielded the final harvest of fruit from which were selected the specimens for the concluding part of the *Herefordshire Pomona*—a book pronounced by those best able to judge the most perfect and thorough, and artistically beautiful work ever published on the subject upon which it treats; and one moreover that will for centuries to come remain an enduring monument of the Club's existence, of the ability of its members, and of their persevering energy to improve the orchards of the county of Hereford.

* * * * *

Mr. Piper concluded his paper with a graceful tribute to the memory of the members of the Club, who had died during the past year, viz., Major Meysey Clive, Mr. De la Barre Bodenham, the Revs. James Davies, of Moor Court, and Stephen Thackwell, of Little Birch, and Messrs. J. E. Norris and W. A. Swinburne; a heavy loss to the Club in a single year.

ROMAN CAMPS.

By the Rev. Prebendary PHILLOTT, M.A.

WE all know that although the great Julius made two descents upon Britain, of which the first was in B.C. 55, no serious attempt was made by the Romans to subdue our island for nearly 100 years. Dion Cassius tells us that the Emperor Claudius, at the suggestion of an exile, named Beric, sent Aulus Plautius to invade Britain, A.D. 43. Plautius had great difficulty in persuading his soldiers to undertake the expedition, until an officer named Narcissus, sent expressly for this purpose by the Emperor, made an oration to them, and induced them to go (*Dion. ix., 19*). Orosius tells us that this was in the fourth year of his reign, viz., A.D. 44 (*Oros. vii., 6*). Plautius obtained some important success, and, in conformity with the express wishes of Claudius, sent for him to partake in his victory. The Emperor crossed the Straits from Gesoriacum (Boulogne), and advanced as far as Camalodunum (Colchester), where he received the submission of some of the native princes, and, as Suetonius sarcastically observes, without having taken part in any fighting or bloodshed, returned to Rome, after an absence of six months, and celebrated his achievements by a splendid triumph (*Suet. Cl. 18*). But the subjugation of Britain was not accomplished by a military promenade of this kind, even though under the direction of an Emperor, for we learn from the same Suetonius that Vespasian, who served under Plautius, and who, as Tacitus expresses it, made the first display of his destiny in the campaign, encountered the enemy no less than 30 times, overcame two powerful tribes, and, among other conquests, reduced to submission the Isle of Wight (*Suet. Vesp. 4, Tac. Agr. 14*).

Plautius was succeeded in his command by Ostorius Scapula, and by this time the Roman supremacy appears to have been tolerably well established in the southern and western parts of the island as far at least as the Severn, but in order to keep in check the Britons of the North and East, among which last, the tribe of the Iceni may be reckoned among the most warlike and troublesome, as the Ordovices and Silures were also on the West, Ostorius established a chain of forts from the river Antona or Aufona, a name which by some is understood to denote the Northamptonshire Nen, and by others, perhaps more probably, the Warwickshire Avon, as far as the Severn. Among these may probably be reckoned some of the numerous camps whose sites are to be traced in Herefordshire and Shropshire, and though it is not always easy, and often impossible, to connect these sites with the names handed down to us by geographical and topographical writers, it may be worth while, by way of introduction to such an inquiry, to describe, so far as our knowledge extends, the form and arrangement of a Roman Camp both in what we may call its best days, and also in later times. As regards the earlier period, we learn on the best authority, from writers who were not Romans, but who, contrary to their national predilections were driven by force of circumstances to study and to admire the Roman system, that the plan of a

Roman Camp, at any rate in early days, was uniformly systematic, and was carried out in general with so much care and laborious precision as to deserve the name of a substantial structure, as if the toiling conquerors who designed it were resolved that the places on which they planted their ponderous footsteps even for a single night, should not lightly pass out of their possession. One of the writers of whom I have spoken, Josephus, says, that whenever the Romans entered an enemy's country they did not attempt to fight until they had constructed a camp, and that for this purpose they either chose a piece of level ground, or that if it were not so naturally they levelled it; that the camp was quadrangular in form, and that the army was accompanied by a number of workmen provided with tools for the work of construction (*Joseph. B. J.* iii., 3, 1). I shall have occasion to return to Josephus by and bye, but shall begin by endeavouring to give you a short statement of the minute description of a Roman Camp in what I have called its best days, viz., about 150 B.C., as given by Polybius (Book vi, 27—34). And first as to the men who occupied the camp. I must remind you that at this time and for many years later, the Legion was divided into three portions who in battle array were drawn up in three parallel lines, of which the one in front consisted of the *Hastati*, the men of younger standing, armed with spears; the second of men in the full vigour of life, called *Principes*; and the third, posted behind the others, consisting of veteran soldiers, called from their position *Triarii*, who were half as many in number as the *Principes* and *Hastati* respectively. In course of time the armament of the soldiers underwent considerable change, new names came into use, and the old ones, though not altogether disused, lost a great part of their original signification. Besides these, the main strength of the Legion, there were 1,000 light-armed troops (*Velites*) attached to the other divisions, and a force of cavalry. The number of men in the Legion varied at different times; in the time of Polybius it appears to have been 4,000, or sometimes 5,000, together with 300 cavalry (*Polyb.*, vi, 20), but in later times the numbers were increased. In addition to the Roman Legion there was a force of allies, of whom the infantry were about equal in number to those of the Legion, but having twice the number of cavalry. Thus, when two legions with allies were to be encamped, the whole number of men would amount in the time of Polybius to about 17,800 or 19,800. Each legion, exclusive of the *Velites*, was divided into ten cohorts, each cohort into three maniples (handfuls), and each maniple into two centuries, which, however, consisted not of 100, but of 70 to 80 men each. The *Velites* were distributed throughout the cohorts in the proportion of 100 to each of them. Thus there were altogether 30 maniples and 60 centuries, besides 10 troops of cavalry. The allies were divided in like manner, but the number of their cavalry was double that of the Legions, and out of these one-third was taken to serve as a special corps. According to Polybius, a consular army under one consul consisted of two legions with allies, and its camp was in shape an exact square. If two such armies were combined under two consuls, the square became a parallelogram. The camp was surmounted by a ditch and mound—vallum—(*Polyb.* vi., 32), and between this and the tents there was on every side of the camp an open space 200 feet wide, affording room for movement of the soldiers, and of animals, for de-

positing booty, and for avoiding missiles from without. I need hardly point out that the situation of a camp as regarded water and opportunity of getting forage was of the greatest importance, and was chosen beforehand by men appointed for the purpose. As regards the interior arrangements of a camp, although there are some points which Polybius does not mention, and there are some of which it is not quite easy to understand his meaning, there is no difficulty in obtaining a tolerably clear notion of the distribution of the ground. As he says, the whole space was divided into streets, like the streets of a town, all set at right angles to each other, and with a vacant space between the tents and the rampart. In the rampart, as we gather from Livy and other writers, there were four entrances but not at equal distances from each other. Entering the camp by the Prætorian gate, and proceeding straight forward as far as possible, we should find on our right and left the quarters assigned to what may be called casual allies and foreign troops, with a passage between them 50 feet wide. Emerging from this passage, we should come in front of the Prætorium, the headquarters of the Consul, with a square open space all round it of an acre in size. Right and left of this, which may be called the kernel, the *ὀμφαλός*, of the whole camp, were the market, and the establishment of the quæstor, the paymaster and chief of the commissariat, but on which side respectively is not stated by Polybius, nor perhaps were they always on the same side. Farther still to the right and left were the tents of the select troops, cavalry and infantry, chosen out of the allied forces, together with volunteers attached especially to the Consul, and who in conjunction with these allies acted as his body-guard.

Still going forward after skirting the Prætorium, we then cross a transverse passage 50 feet wide, and see in front of us the backs of the tents occupied by the 12 tribunes of the two legions, where baggage, horses, and baggage-animals occupied part of the space between the tribunes and the places allotted to the market and the commissariat department. In front of the tribunes ran right and left a broad street, 100 feet wide, running across the whole camp from right to left, and ending in an entrance on each side. The street was called *Principia*, and the entrance, or the right, looking from the Prætorium, was called *Porta Principalis dextera*, while the opposite one bore the name of *Porta Principalis sinistra*. We cross this street, and still going onwards, pass up an alley 50 feet wide, on either side of which are the quarters of the legionary cavalry, looking towards each other, arranged in five divisions, each containing a troop of about 30 men with horses and baggage, horses in front and men behind. At the back of these, *i.e.*, farther to the right or left, but in the same block of tents, were the tents of the *triarii*, in five maniples, each maniple consisting of 130 to 160 men. Their tents opened in a direction opposite to those of the cavalry, and were divided by a 50 feet alley from a similar block, in which looking towards them were quartered the *Principes*, and beyond them, looking in the opposite direction, the *Hastati*, arranged in maniples like the *Triarii*, but as they were more numerous than these, the *Triarii* occupied a smaller portion of their own block, of which the larger was occupied by cavalry. Thus each block was in two portions set back to back to each other, and opening on an alley dividing it from a farther block. The *Hastati*

were divided by another 50 feet alley from the quarters of the allies, of whom the cavalry were opposite to the Hastati, and the infantry beyond them, looking upon the rampart. We have thus, as we pass up the central alley, on each side of us three blocks of military quarters for men and horses, divided by two alleys in addition to the central one, *i.e.*, five in all, and we emerge on a transverse street 50 feet wide, running of course parallel with the Principia, called Via Quintana, because the troop or maniples quartered next to it, was in each case the fifth of its kind in the legion. We recognise the name under its French dress of *cantine*, and our own of canteen, though in a sense very different from that of the original, though probably connected with it. Crossing the Via Quintana, and following the central alley in the same direction as before, we find on each side an exact repetition of the same arrangement as before, *viz.* : on each side cavalry and infantry of the legions and of the allies in the same number of blocks, and ending, of course, with the 10th troop and 10th maniples of each arm of the force, from which cause the entrance at the further end on which we emerge bore the name of Porta Decumana, and which was exactly opposite to the Porta Prætoriana by which we entered the camp.

Supposing that the force consisted of two legions with allies, the whole space occupied would probably be about 92 or 93 acres of ground.

The camp, which I have attempted to describe, was an ordinary one of a temporary kind, and the soldiers' tents were of canvas; but when a longer stay in camp was intended, the shelter was of a more solid kind; tents covered with skins, or even huts of turf or stone were erected, roofed with thatch, which, on one occasion at least, as Cæsar describes, was turned into a means of serious annoyance and real danger to the defenders of a winter camp in Gaul, for the assailants, like the Zulus at Rorke's Drift, succeeded in setting the thatch on fire. Their stationary camps (*castra stativa*) sometimes developed into permanent stations, and even grew into towns, but the care taken by the Romans in the original construction of their camp has left their mark on many places on which no permanent buildings of Roman origin were subsequently, so far as we know, erected. Stationary camps were fortified in a more solid manner than those which were only temporary. Towers were placed at intervals with military engines between them, and these towers, Josephus tells us, were set on fire when the army broke up its quarters for departure.

Such was the Roman camp in its earlier form, but in later times many alterations were introduced, though some of the most important features of the original were preserved, and more attention appears to have been paid to the health and comfort of the soldiers, and spaces allotted for various purposes of which no mention is made in earlier times. In one most important point the later fell far short of the earlier, *viz.*, in the total space afforded to the troops, of whom a much larger number were assembled in a much smaller enclosure. A writer named Hyginus, by profession a Gromaticus, that is, a military surveyor, has given in very crabbed language a minute description of what it was in the time of Hadrian, that is, about A.D. 130. I shall not attempt to enter into any elucidation of his treatise, which would occupy too much time to accomplish, except

to remark upon the number of foreigners in the army, among whom were 500 Britons, and that instead of being encamped on the sides next the rampart, as had formerly been the case, the auxiliaries were placed in the centre while the legionary soldiers were camped round them, probably to prevent them from deserting.

A writer of still later date, Vegetius, who wrote about A.D. 366, but of whose accuracy grave doubts are entertained by modern critics, tells us that the shape of camps in his day was no longer regarded as essential, but they might be circular, triangular, or oblong, according to the nature of the ground and the exigencies of the case. It is plain that in Britain this relaxation of old precedent was very generally adopted, for I believe that the quadrangular form is the one of which fewest instances are found among our camp sites. We may well believe also that the numbers of soldiers engaged in the work of subjugating the Britons were smaller than in the Continental wars of the Romans, for the spaces of ground which appear to have been occupied in no case, I think, approach even those described by Hyginus, though in Scotland, where so many instances of camps are found, the army of Agricola is thought by General Roy to have consisted of about 26,000 men. But whether the numbers were larger or smaller, and whether the form of Roman Camps in Britain resembled more or less the one anciently in use, we are probably correct in supposing that the general principles of camp construction were not abandoned by the Romans; and thus, that some knowledge of those principles may be of use in considering the remains of their works which exist among us.

THE EXCEPTIONAL CHARACTER OF THE WINTER OF 1883—1884.

By Mr. H. SOUTHALL, F.R. Met. Soc.

THAT the winter of 1883—1884 has been an exceedingly warm one, may, perhaps, not require proof, for without reference to any instrumental records the fact is apparent. The great absence of frost and snow and of easterly winds up to the end of March, sufficiently demonstrate it. But while nothing is more wearisome and unnecessary than the attempt to prove self-evident propositions, or to argue in favour of foregone conclusions, the object of the present paper will be nevertheless to point out the special characteristics of the past season; to show in what respects it has been really remarkable; and also the degree of divergence from the average for corresponding periods in a series of years.

This, it may be seen clearly, can only be correctly estimated by carefully collating strictly comparative and accurate observations.

A much larger number of persons now possess good instruments than formerly, and yet it is surprising how seldom you find observations of any real value made except by professed meteorologists. Either the instruments are placed in situations too much exposed to the effects of radiation, or else in too sheltered positions. Sometimes the column of mercury gets broken up, and a small portion becoming detached causes the reading of the thermometer to be too low, and as regards 'spirit' thermometers, you often find two or three degrees of spirit at the end of the tube opposite to the bulb, causing the reading to be in error to that extent; and even when the instrument is a reliable one and correctly placed, it not unfrequently happens that it is not properly read by the observer for want of that training of the eye to exactness and precision, which is so necessary in scientific research. As regards the reliability of my own observations, I may state that my instruments which have been verified in the first instance, have since been several times tested and compared with standards by persons specially appointed by the Meteorological Society for the purpose. The thermometers are placed in a "Stevenson's" screen of regulation pattern. The barometer, a standard one, is at the height of 213 feet above sea level. The situation of the rain gauge has been approved. Further, the daily observations are regularly sent up to London, where they are carefully checked, and thus errors of any consequence would be quickly detected. As a matter of fact my thermometer readings are probably not in error more than one-tenth of a degree, nor the barometer more than one-thousandth of an inch. I mention this because the Club have already printed so many of my figures, the value of which depends entirely upon their truth. The question may however be asked—What necessity can exist for the publication of less authoritative local records, seeing that at Greenwich Observatory every phase of weather is noticed and recorded, and the results published regularly—what scientific value

can they possess for the Woolhope Field Club? In answer it may be said that the weather in Herefordshire, as regards rainfall and mean temperature, does not by any means always correspond with that in the neighbourhood of London. For instance, January in the present year was considerably warmer and wetter at Ross than in London, whereas, in January, 1881, the severity of the frost was greater here than in the south-eastern counties. As far as I can ascertain we have greater comparative cold during calm and clear, or foggy weather, and less in a strong easterly wind. Again, when cyclones are skirting Ireland, we come more under their influence than do districts further to the eastward—the warming effects of the S.W. wind producing a *higher* temperature here.

My last paper had reference almost entirely to summer, and as this one will be pretty much confined to winter, it may be as well to define at the outset what period of the year I consider the latter to embrace. November, December, and January, are sometimes considered the winter months. More often December, January, and February are reckoned; while astronomically, winter lasts from December 21st to March 20th, but neither of these intervals coincide with the period, which a reference to a scale of average mean temperature seems, in my opinion, to mark out clearly the real winter of the British Isles.

It is well known that vegetation makes no progress till the mean temperature exceeds 42° , and winter may be considered to prevail while this temperature is not exceeded.

Now the mean, which on the 1st of November is 47° , falls very rapidly, till on the 14th it descends to 42° —afterwards it gradually declines to 37.6° on the 5th of January. The three days January 5th to 7th being of the same temperature, and the coldest of the year. The temperature then rises very slowly till the 24th of March, when 42° is again reached, and then there is a rapid rise till April 4th to 46.4° , when it is checked for some time, in fact, in thirty-five days there is only the same increase as in the previous eleven.

I think, therefore, we may safely assume that, on the average, winter lasts from the 14th November to 24th March inclusive.

WINTER OF 1883—1884.

There was no night in October, 1883, when the temperature at four feet descended below 32° . On November 7th the minimum was 31.4° . There were three successive hoar-frosts on November 13th to 15th—on the latter day 20.4° was recorded, or nearly ten degrees of frost, while at Greenwich the lowest reading was 27.8° , or seven degrees warmer.

This proved to be the only cold spell during the whole winter, and the geraniums, and other tender garden plants, which had continued in full vigour up to this time, were suddenly cut down; but it is very unusual in this part of England to get through October without dahlias, etc., being blackened with frosts.

October and December were on the whole about the average temperature, a few short periods of cold weather counterbalancing the excess of the remaining portions of the Quarter.

November, notwithstanding the frost above alluded to, was more than one degree above the average temperature.

January, after the first day, which was four degrees below the average, was warm throughout. The only frosts occurred on the 1st and 2nd, and then the minimum showed $31^{\circ}6'$, or less than half a degree of frost. This is very remarkable, and since my observations commenced in 1859, I have had nothing at all to compare to it. The average number of frosty nights in January being 13.

In 1879 there were 28 frosts.

In 1861 there were 24 frosts.

In 1881 there were 22 frosts.

In 1871 there were 22 frosts.

In 1880 there were 20 frosts.

In 1884 there were 2 frosts.

In 1883 there were 4 frosts.

In 1882 there were 5 frosts.

In 1875 there were 5 frosts.

In 1877 there were 6 frosts.

Again, multiplying the degrees of frost each night by the number of nights on which it occurred, a comparison with the eight (omitting decimals) warmest and coldest years is curious.

		Degrees Frost			Degrees Frost
January, 1881	-	355	January, 1884	-	1
„ 1879	-	223	„ 1882	-	5
„ 1861	-	198	„ 1877	-	12
„ 1867	-	194	„ 1883	-	12½
„ 1871	-	156	„ 1863	-	14
„ 1880	-	142	„ 1862	-	17
„ 1865	-	132	„ 1866	-	25
„ 1864	-	121	„ 1875	-	25

The contrast between 1881 and 1884 is very striking, being 355 to 1. It will also be seen that whereas on the three successive Januaries of 1879, 1880, and 1881 we had 720 degrees of frost, or an average of 240 degrees per month, in the following three years we had only 18, or an average of six degrees per month. Before passing on to the month of February, it may be well to notice the extraordinary depression of the barometer which occurred on the 26th January.

The reading at Ross on that day at 5.15 p.m. was $28^{\circ}42'$, corrected for sea-level and temperature, 32° . At 9.45 p.m. the barometer at Ochertyre, near Crieff, Scotland, stood at $27^{\circ}332$.

From an examination of past records, there is no evidence of so low a reading as this in the British Islands previously. At London the lowest record is 27.93 on December 25th, 1821.

In the North of Scotland however, owing to the normal path of storm centres traversing that country, pressures are as a rule about 20 lower, and in the great storm of January 7th, 1839, the reading at Aberdeen was 27.70 .

At Stornoway (Isle of Lewis), a fall of an inch, in a little over four hours, occurred on last January 20th (1884), and this is said to be the greatest fall in so short a time recorded in the British Isles.

At Sandwich, in the Orkneys, the wind reached the greatest velocity known, namely, 92.3 miles an hour.

This storm first reached the north-west of Ireland about noon, and passing in

a north-east direction over the north of Ireland and across the middle of Scotland, reached Aberdeen at midnight. Its rate of progress (not the velocity of the wind,) being about 30 miles an hour.

The centre of the storm was probably about 400 miles to the north of us at the nearest point of passage. The gale however extended to the south of France, and Switzerland.

There were only four frosts in February against an average for 25 years of 9.4° , and none of them were at all severe, 27.4° on the 3rd being the minimum reading; the aggregate degrees of frost being 9° —average 41.4° .

In the three years, 1882-3-4 (February), 13 nights - - - 26.8°

In the three years, 1873-4-5 (February), 63 nights - - - 288.1°

In the year 1867, after very sharp frosts in January, there was no frost at all in February, although a severe snowy March followed. In 1872 there was again an entire absence of frost in this month. The mean temperature both at Greenwich and Ross was 41.9° — $2\frac{1}{4}$ degrees warmer than the average has been exceeded 20 times since 1771.

March was again an exceptional month, with a mean temperature of

Greenwich	-	-	-	-	44.47	} or three degrees in excess of usual heat.
Ross	-	-	-	-	44.27	

The week ending the 19th was the warmest in March since 1814, having a mean temperature at Greenwich of 53.3° , or 12 degrees in excess of average, with a maximum temperature of 68.8° at Greenwich, and 66.0° at Ross on the 16th.

WARM WEEKS IN MARCH.

1822, 14th to 20th	-	-	-	-	-	-	-	-	51.7°
1828, 12th to 18th	-	-	-	-	-	-	-	-	51.2°
1859, 1st to 7th	-	-	-	-	-	-	-	-	50.0°
1881, 5th to 11th	-	-	-	-	-	-	-	-	50.0°
1884, 13th to 19th	-	-	-	-	-	-	-	-	53.3°

As a contrast to these—

1845, 12th to 18th	-	-	-	-	-	-	-	-	26.7°
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On the 23rd, the wind, which had scarcely blown at all from a Polar quarter, shifted to north, and then to east, and continued from that quarter pretty much to the end of April; the last half of that month being cold in consequence.

RAINFALL.

There was a slight excess in all the months except December, which had a fall of only .64. The only other instance of so small an amount in December being in 1873, when .52 was recorded. In most instances a small fall in December coincides with frost, as in 1829, 1835, 1840, 1844, 1846, 1879, in each of which years we had very little rain and very intense frost: 1857 and 1883 being exceptions to the rule.

To sum up. The special feature of the winter is the great warmth of January, February, and March, 1884. January, with a mean at Ross of 44.76° , and at Greenwich of 43.88° , was the warmest since 1834, which was 44.0° ; 1846 coming next with 43.7° , and 1875— 43.4° .

The following table for three and five months respectively, ending March 31st, will perhaps be enough to establish the claim set up at the commencement of the paper for the exceptional character of the season.

MEAN TEMPERATURE FOR EIGHT COLD AND EIGHT WARM WINTERS,
1771—1884.

Average for Five Months ending March 31st.

1822—44·4.	Each month in considerable excess, specially November and March.
1846—43·7.	Each month in considerable excess, specially January.
1882—43·4.	Each month in considerable excess, specially November and March.
1884—42·9.	Each month in considerable excess, except December.
1779—42·9.	Each month in considerable excess, except January, specially February and March.
1834—42·9.	Each month in considerable excess, specially January.
1863—42·2.	Each month in considerable excess throughout.
1872—41·3.	All in excess except November, which was very cold.

Average for Three Months ending March 31st.

Warm Years.					Cold Years.				
1846	-	-	-	43·6	1814	-	-	-	32·6
1872	-	-	-	43·6	1855	-	-	-	33·9
1884	-	-	-	43·4	1838	-	-	-	34·4
1822	-	-	-	43·3	1845	-	-	-	35·5
1834	-	-	-	42·9	1829	-	-	-	36·4
1882	-	-	-	42·7	1886	-	-	-	36·5
1863	-	-	-	42·6	1823	-	-	-	36·6
1779	-	-	-	42·4	1820	-	-	-	36·6

LIST OF GARDEN PLANTS IN FLOWER.

DECEMBER 31ST, 1883—JANUARY 10TH, 1884.

I give a list of garden plants in flower from December 31st to 10th January ; also, of some wild ones observed at Symonds Yat on the 18th of March, which show the influence of weather on vegetation.

Common Furze	Christmas Rose
Blue mouse-ear	Fœtid Hellebore
Daisy (double) white and pink	Veronica, purple
Wallflower, single and double	Veronica rupestris
Purple Stock	Garrya elliptica
Virginia Stock	Erica vagans
Chrysanthemum, red and white	Erica ciliaris
Strawberry	Erica mediterranea
Primrose	Erica carnea
Cowslip	Potentilla alba

Polyanthus
 Periwinkle, large
 Periwinkle, small
 Marigold
 Pink
 Mignonette
 Laurustinus
 Fever-few
 Violets
 Violets, double
 Hepatica, blue and pink
 Auricula
 Pansy
 Fumitory
 Berberis, aquifolium
 Winter Aconite
 Anemone, white, pink, and purple
 Sweet William
 Fragrant Coltsfoot

Penstemon, Escallonia, and Snowdrop, in bud.

Potentilla opaca
 Pyrus japonica
 Corchorus japonicus
 Calendula officinalis
 Daphne mezereum
 Daphne Fioniana
 Lithospermum prostratum
 Aster bellidifolius
 Menziesia bicolor
 Erysimum pulchellum
 Omphalodes verna
 Anthemis tinctoria
 Symphytum caucasicum
 Arabis albida
 Alyssum saxatile
 Aubretia deltoidea
 Winter Jessamine
 Antirrhinum cymbalaria
 Limnanthes Douglasii

PLANTS IN FLOWER AT ROSS AND SYMONDS YAT ON MARCH 18TH, 1884.

Anchusa sempervirens
 Anemone nemorosa
 Bellis perennis
 Capsella bursa-pastoris
 Cardamine hirsuta
 Cardamine pratensis
 Caltha palustris
 Chærophylum sylvestre
 Chrysosplenium oppositifolium
 Corylus Avellana
 Daphne laureola
 Draba verna
 Euphorbia amygdaloides
 Galanthus nivalis
 Hutchinsia petraea
 Lamium album
 Lamium purpureum
 Lamium Galeobdolon
 Lathræa squamaria
 Leontodon taraxacum

Luzula campestris
 Mercurialis perennis
 Oxalis acetosella
 Poa annua
 Potentilla Fragariastrum
 Primula vulgaris
 Prunus spinosa
 Ranunculus ficaria
 Salix alba
 Saxifraga tridactyloides
 Senecio vulgaris
 Stellaria media
 Stellaria Holostea
 Tussilago farfara
 Ulex europæus
 Veronica Buxbaumii
 Vinca minor
 Viola odorata
 Viola sylvatica, var. Riviniana
 Viola hirta

OBSERVATIONS ON SUNSETS AT THE GRAIG, ROSS,
HEREFORDSHIRE,

FROM NOVEMBER 26TH TO DECEMBER 9TH, 1883.

213 feet above the sea-level.

Sunrise and sunset have been well observed at this station during the last fortnight. On Sunday evening, November 25th, after eleven days of very stormy weather, during which more than two inches of rain fell, with occasional heavy squalls, a fine rainbow appeared in the north-east, and after dark, the thunderstorm which was then affecting the south coast, was visible here in frequent flashes of distant lightning. On Monday evening, the 26th, we had the first, and perhaps the most striking, of the series of gorgeous sunsets and sunrises we have since been privileged to witness. The storm-clouds which, though rapidly clearing, were still passing over, served to bring out in strong contrast the vivid and varied hues of gold and pink, and green, which illuminated the more distant cirrus clouds, as well perhaps as the volcanic or other particles in the still higher regions of the atmosphere, if not indeed above its actual limits.

On the succeeding night the western sky was covered with a belt of mottled clouds which successively assumed almost every shade of colour from pink to intense carmine. This extended more than half-way to the zenith, and was faintly reflected in the eastern sky. On Tuesday, the 4th of December, after a glow of extreme brightness, which brought out to perfection the architectural features of the large perpendicular window in Leominster Church, and adjoining Norman gateway and tower, the moon presented a most unusual appearance through a slight haze. At one time it was a bright bluish green, and then became more of the colour of steel.

The twilight effects have been specially remarkable,—I speak as a close observer for more than forty years—not only on account of their splendid colouring, but from their unusual prolongation, and from their being seen in the “dark days” of early December.

Last summer, from the Trossacks end of Loch Katrine, I saw what I considered to be the finest pictorial effect of sunset I had ever previously witnessed—but the sunsets lately seen have a peculiar character which I cannot describe. I have seen very little *Aurora* during the period. I notice that one correspondent alludes to the autumn of 1870 as being remarkable for splendid skies and followed by intense frost. At that period there were some splendid exhibitions of *Aurora Borealis*.

Woolhope Naturalists' Field Club.

MAY 15TH, 1884.

THE BLACK MOUNTAIN AND CWM-YOY.

"In those vernal seasons of the year, when the air is calm and pleasant, it were an injury and sullenness against Nature not to go out and see her riches, and partake in her rejoicing in heaven and earth."—MILTON.

THE first field meeting of the year is always interesting. It is a practical recognition that all nature has awoke up from winter's rest and is once more in full activity. The naturalist throws aside his everyday work, and his books, and says to himself, now rather let us read

"The Living Page whose every character
Delights and gives us wisdom.

* * * * *

Not a tree

A plant, a leaf, a blossom, but contains
A folio volume. We may read and read
And read again, and still find something new;
Something to please, and something to instruct."

The Woolhope Club had invited the Malvern Club to meet them on this occasion, and together, from the Barr's Court station, the naturalists proceeded to Pandy. Here they were welcomed by General Gillespie, of Trewyn House, who had kindly undertaken to be the guide for the day, aided by that excellent Welsh scholar, the Rev. John Davies, of Pandy.

At the station, "orders" were given for the immediate assault of the camp situated on the brow of the first spur of the Black Mountain. The river Honddŷ was crossed, to Trewyn House, and on the road, some stones were pointed out as having probably rung to the clang of the Roman horses' hoofs some eighteen centuries since. At Trewyn House, Mrs. Gillespie joined the visitors, on horseback, and after a good three quarters of an hour's climb, at eleven o'clock, punctual to a minute, the camp was reached. Here, seated on the entrenchments, Dr. Bull read the following "Field Address":—

Ladies and Gentlemen of the Malvern and Woolhope Clubs,—We meet to-day in one of the most interesting localities of the county. In this district the summit of almost every hill is crowned by an entrenched camp—testifying clearly to the warlike character of the inhabitants; whilst in the plains below, at intervals, are large tumuli or barrows—"tumps," as they are locally called—which bear sad evidence to the thoughtful mind, of the fierce and bloody conflicts which have been fought near them. Almost every village has the remains of a castle. Kilpeck,

Ewyas Harold, Ewyas Lacy (Clodock or Longtown as it is now called), Grosmont, Skenfrith, and White Castle, are all within a short distance; whilst the abbeys of Llanthony and Dore, the churches of Kilpeck, Ewyas Harold, and Grosmont, possess, each one of them, features of remarkable interest. The archæologist, too, would easily discover remains of several priories, usually converted into farm buildings, in the immediate district, not to mention the interesting associations of Old Castle, or the fine old mansion of Alteryyns, the home of the Cecils, directly in front of us; nor yet the romantic legends that hover around the rocks and dingles of the Black Mountains. These can be merely named on the present occasion.

The pages of history throw no light on these particular vestiges of warfare, the camps and tumuli of the Marches of Wales. It is left for the imagination to picture from their situation, and from their physical characters, the object for which they were formed, and the hard, restless lives of their occupants. They indicate constant warfare, tribe against tribe; and it has been well said of the men who made them—

“The good old rule
Sufficeth them, the simple plan
That they should take who have the power,
And they should keep who can.”

The first gleam from real history relating to this district, comes from the Romans. Antoninus, in his 12th *Iter*, shows that the great Roman road, the *Via Orientalis*, from Isca Silurum (Caerleon), through Burrium (Usk), and Gobannium (Abergavenny), to Magna (Kenchester), and thence on to Bravinium (Leintwardine), Uriconium (Wroxeter), and on to Deva (Chester), must have been the road which we have just traversed by Trewyn House; but here the information stops. Nothing is said of the camps near it, nor of the means used for protecting this great Roman highway of communication between the Legion at Isca, and that at Deva; along which, moreover, must have passed the troops and supplies for the many years of constant warfare with the Silures in Herefordshire and Shropshire.

Mr. W. Thompson Watkin agrees with many other archæologists in thinking this camp of Roman construction. He says in his *Roman Herefordshire* (Journal of the Archæological Institute, p. 20):—“The original camp is rectangular—480 feet by 240 feet—(5 acres, 3 roods, 36 poles, 14 yards and 3 feet); but attached to its south-east side is a similar-sized camp of a semicircular shape, and having a double ditch and rampart.” One of our members, Mr. A. D. Berrington, of Pant-y-goitre, who knows the district well, has kindly sent the following remarks for this meeting:—“I am heretical enough to say that this camp is not Roman at all. The only Roman character that it has is that its sides are straight and not curved. The situation is British, not Roman. The curious covered way by which it is entered from the east, is decidedly British. The entrances are not central to the sides; the west rampart is totally unlike a Roman rampart; the soil shows nowhere any traces of prolonged occupation, and the straightness of its sides may be due to the form of the hill. Straight sides are to be seen in the British camp at Hollingbury, near Brighton; and the covered way reminds one, on a small scale, of Maiden Castle, near Dorchester.” As to the Roman road, Mr. Berrington

says:—"I have explored it nearly all, except the portion from Abbeydore to Alterynys. From Alterynys southwards, it seems to have run nearly in a straight line to the north-east corner of the park of Llanifhangel Crucorney, where some paving stones remain. From this point it is distinct to Llandilo Pertholey Church, which stands, contrary to the commoner rule, to the west of it. The road then goes on to Abergavenny, passing Saunder's Nursery Garden, where at least two Roman interments have been found. It would appear from the names Upper and Lower Staunton at the foot of the Cwm Yoy valley, and Taly-y-sarn at the head, that a branch Roman road ran past Llanthony to Hay."

"There are many circular pits which mark British dwellings to be seen within the camp on the hill south of Pandy camp, which separates the Llanthony and Grwyny valleys."

The last camp, named Twyn-y-Gaer, and another at Walterstone, about two miles north of this camp, are undoubtedly British. Mr. Berrington has shown conclusively that a part at least of this camp is British, if not the whole. Is it not reasonable to suppose that a British camp so directly commanding the Roman high road, should be taken by them, enlarged and used as a protection, and perhaps a signal station?

History is nearly silent for another six hundred years, until the Norman conquest, when the whole country was soon parcelled out in small estates under numerous barons. In Herefordshire, Roger de Lacy, whose castle was at Ewyas and Longtown, had the largest share. After this time most of the castles already named, with many others on the Welsh borders, were quickly built. Abbeys, churches, and priories soon followed, and the full tide of history sets in anent the Marches of Wales. On the present occasion only the first faint ray of this historic light will be alluded to, since it comes incidentally and supplies a record of the locality not written elsewhere. The *Romance of the Fitz Warines* is one of the very earliest narrative metrical poems. It was written in Anglo-Norman, probably by a minstrel attached to the family of the Fitz Warines, and before the middle of the 13th century. Those who heard the very interesting paper of Mr. Charles Fortey, at Caynham Camp, will remember that the history of the taking of Ludlow Castle and the siege of Caynham was derived from the *Romance of the Fitz Warines*. This poetical narrative of the adventures of the Fitz Warines was very popular for some centuries afterwards, as sung by the minstrels in the baronial halls. When Caynham Castle was taken by Jorwerth Drwyndwn (that is, Jorwerth of the broken nose), Fulke Fitz Warine cut his way through the besieging forces and fled to the Court. He was received by the King with great consideration, as a kinsman, and his wife, Hawyse, made a lady of the Queen's chamber. Fulke rose rapidly into favour. The King made him a grant of Ludlow Castle and the dependent honour of Corvedale, about the year 1176, and soon afterwards made him Lieutenant of the Marches, in which capacity he was very active in resisting the aggressions of the Welsh. Jorwerth had become very powerful, and during the latter part of Henry II.'s reign, ravaged the counties of Shropshire and Herefordshire. Fulke "defeated the Welsh princes in several combats, and particularly in a great battle at Wormislowe, near Hereford" (p. 32). After these active hos-

tilities had lasted for four years, a reconciliation was effected by, amongst other conditions, the betrothal of the King's daughter Joane to Lewis, Jorwerth's son. There is no other record of "the great battle of Wormislowe," and the name of Wormelow Tump alone remains to record its site (though the Tump itself is gone now). If these years of active warfare do not account for the tumuli at Pontrilas, at Madley, at Thruxton, and other places on the southern side of the county, history does not award to them any other origin. It must, however, be added, that this border district, the Marches of Wales, continued to be the scene of frequent hostilities for two or three centuries after the Norman conquest, when

"With many a stiff thwack, and many a bang,
Hard crab-tree with old iron rang."
Hudibras.

It may be stated also that the first blood shed in Herefordshire during the civil war was at Pontrilas, in the parish of Ewyas Harold. On November 12th, 1642, the Earl of Stamford sent Colonel Kyrle to surprise a party of Welsh cavaliers under Lord Herbert, who had been levying heavy contributions from the inhabitants. Kyrle, with his lieutenant and three privates in advance, came upon six Raglan soldiers at Pontrilas. "Who are you for?" was the challenge. "For the King, and the plague take the Parliament," was the answer; when both sides fired. The cavaliers all fell, and the Parliamentarians, unwounded, rushed into the village, where they killed 15 men, hung one on a tree, and, fearing an ambush, they returned to Hereford.—Webb's *Memorials of the Civil War in Herefordshire*; Vol. i., p. 197-198.

It is time now, with so many Saxon strangers present, to give such information as may be gleaned from the Cymric names in the locality. Welsh names are always descriptive, often historical, and sometimes highly poetical and suggestive. The station, Pandy, Ty-pany, where we arrived, means a fulling mill, which, doubtless, was placed on the river Honddû below. There is "Pandy" a few miles off, at Dorstone, and numerous other Pandys, where fulling mills formerly existed. The pleasant-looking little house on the knoll, as we left the station, is Ty-Derlwyn, the house in the oak-grove, a new abode with an old name. Crossing the Honddû, the old mansion in the valley, some half-mile to the right, is Alterynys, from *Allt*, a groove in the side of a hill, and *ynys*, the fertile land below. To the left is Trewyn, a mansion of many meanings, for Welsh philologists don't always agree. It is "Tygwyn," the White House, says one authority; it is Gwynn's house, says another, probably from the name of the man who built or owned it. A third says the word means persuasion, whilst Duncumb in the *History of Herefordshire*, says it signifies "the place of making peace," alluding probably to its having been the spot on which a cessation of hostilities was agreed to between some adverse chiefs (Vol. ii., p. 318). At the beginning of the last century, the Delahays occupied both Trewyn and Alterynys, and are said to have planted the avenue of fir-trees from one house to the other, of which you would observe a few still remaining trees as we passed by. In an old map of 1725 this avenue of fir-trees is represented as complete from one house to the other. The trees would scarcely seem to be so old, and it would

be interesting to saw through the trunk of the next victim to the west wind, and count the annual layers. It will be interesting to some present, perhaps, to know the rent paid for Trewyn at the beginning of last century. The Delahays held Trewyn of the Lords of Ewyas Lacy by (manorial fees) the yearly rent of fifteen pence suit of court, five shillings for horngeld, and five shillings for mises whenever they shall happen. (Horngeld means a payment for horned beast in a forest; and mises, law expenses in personal actions, or, sometimes, gifts from the Welsh to a prince on his accession). After the Delahays, Trewyn belonged to the Evershams, whose sole heiress married the late Mr. Jeremiah Rosher, in whose son's possession it still remains.

Trewyn House itself, is said by tradition to be built on a tumulus, or burial place, and this tradition was verified about 15 years ago. Some workmen were excavating the ground, and when at a depth of two or three feet below the stone floor of the house, they came on a cavity like an oven, containing charred bones and fragments of glass. This cavity was formed by a large stone, about four feet long, deeply hollowed out, so as to present on a section the shape of a flattened horse-shoe. At first they were heedlessly thrown into a heap, but some of the bones which were afterwards picked out were sent to London for examination, and were pronounced to be those of a young person about 15 years old. At the depth of 12 feet below this interment, and on a level with the present roadway, other places of sepulchre were found, and were covered up again before any archæological mind got cognizance of the discovery.

The house was built in the reign of Henry VII., by the Harleys—afterwards Earls of Oxford. Llanvihangel Court is also said to have been built by the Harleys about the same period, and this last house, curiously enough, is also said to have been built upon a tumulus. The situation and style of both houses are similar. The approach to the front entrance in each is by flights of broad stone steps, with intervening terraces, like some of the old French chateaux of the period, and unlike any other mansions in this part of England.

Trewyn House underwent very considerable alterations, A.D. 1694, the date cut in a stone in the front of the house, when a certain energetic "improving" lady, Eleanor Delahay, seems to have made great changes, which did not improve the house, archæologically speaking. "The house was formerly entered by a flight of steps from the road" (Mrs. Rosher). She divided the halls by cutting off the small oak room at the eastern end, and she it was also who probably removed the handsome ceiling from the drawing-room, of which there are still to be seen traces of wreaths and circles.

The house, however, still presents some interesting remains—one room, oak-painted, with rude carving of oak on the cornice and beams, is believed to be the earliest portion, and had a very early date on its outside walls, but this, unfortunately, has been obliterated. In this room and in another bedroom adjoining, are beautifully carved oak panels above the mantel-piece, with garlands of leaves and flowers, but these are of a later date than those just mentioned.

A small chapel standing in front of the house, and close to the present garden wall, was dedicated to St. Martin. "It was destroyed at the end of the last cen-

ture" (Mrs. Rosher). It had been long used as a stable, until about 15 years ago, when it was pulled down. Some of the stones are now in the conservatory, and bear carved fruits, supposed to be pomegranates—which seem thus to indicate the days of Catherine of Arragon. The ground on which it stood is still called the chapel meadow, and was also a burial ground, for many graves have been recently found with flat stones placed together so as to represent the ordinary coffin shape. There were not any large slabs found, nor inscriptions of any kind. It is not known when it ceased to be a burial ground. The Delahays placed their memorial stones in Walterstone Church from late in the 17th century. Tradition states that the altar-stone of the chapel was put into the present larder of the house, and that everything placed upon it turned sour. It is a fact that the larder is not a good keeping place, but all the stones there seem equally bad. A curious custom is observed at Trewyn, handed down from time immemorial: it is that of ringing the Angelus bell at 6 a.m., 12 noon, and 6 p.m. daily.

To return to the Cymric derivation of local names, the house hard by Trewyn is Trefedw, which no doubt means Bedoe's home. Neither this camp, nor the spur of the Black Mountain on which it stands, seems to have a Welsh name. The Welsh name you will have been charmed with on the programme, *Cyrau-r-Waun*, means the skirt or margin of the meadow, a morass, for *Waun*, on a common or mountain, always means a rough piece of wet land abounding with rushes. To come now, last of all, lest you should think your lesson in Welsh too long, to *Cwm Yoy*, where we hope soon to be. *Cwm*, all are agreed, means a valley whose sides are concave, or hollowed out, in contradistinction to *Glyn*, a valley whose sides are convex in form. The last syllable *Yoy* gives rise to a wide difference of opinion. One high authority thinks it derived from *iau*, a yoke, *Cwm-iau*, the valley of the yoke, and adds that it is an actual fact that the range of mountain and dingle has the exact shape of the old yoke used for coupling oxen. The other high authority thinks *yoy* must be *goy*, an old corrupted form of the Welsh word *coed*, a wood, *Cwm-goy*, the wooded valley. Then by changing the *g* into *y* for the sake of euphony, we have the present *Cwm-yoy*. Yet another derivation makes *Cwm-yoy* a corruption of *Cwm-yew*, the *yew* tree valley. So authorities differ! We have regained our breath, let us set off to judge between them. (A ground plan of the double camp was handed round for inspection.)

A complete inspection of the camp was then made under the guidance of General Gillespie, who pointed out the covered approaches by the hill-side to the eastern entrance which was not from the direction of the Roman road, another proof, if more were required, to show its British origin. The direct communication between the two divisions of the camp could not be clearly decided on, but the entrenchments for the square portion, particularly on its northern face, were very much bolder than elsewhere, and it seemed probable that it had been a means of exit at each corner of this end of the square camp. There is no water supply within the camp itself, but springs are abundant in the Black Mountains, and two springs exist about a hundred yards north of the camp, one on each side

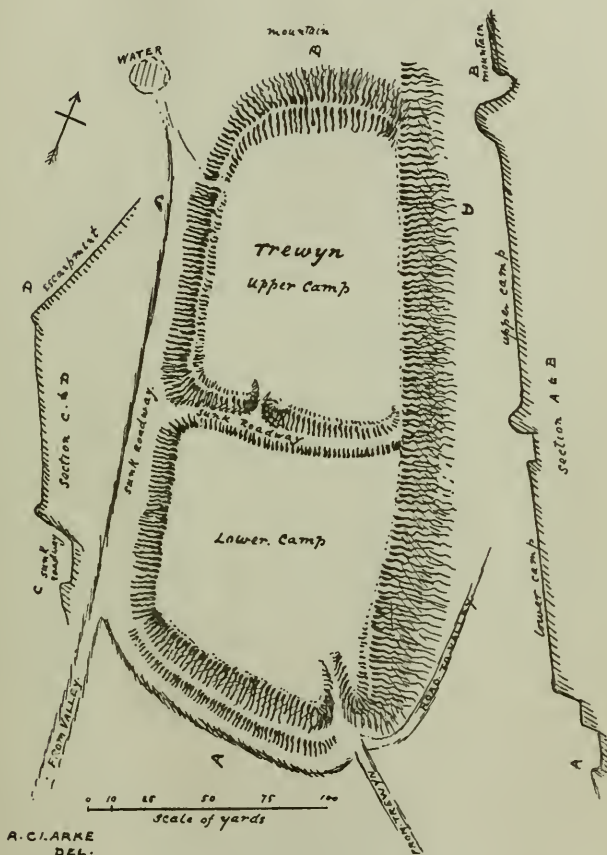
of the water-shed. The way was then taken along the summit of the mountain. This walk was very charming, for the views on every side were peculiarly rich. The Skirrid and the Sugar Loaf Mountains were in full view, and rendered almost purple by the state of the atmosphere. The sun was absent, but the sky-lights were very variable from the bright light clouds which were rapidly swept by the wind over the mountain summits to the deep gloomy tone of the heavy storm-cloud of rain at a distance. The wind became very boisterous at that time, and swept up the valley with a force that threatened to blow the visitors, not to mention their hats, into the valley below. One merry member parodying the sufferings of poor Ben the carpenter, said

“I’ve met with many a breeze before,
But never such a blow.”

Whilst another, more philosophical, was mathematically meditating how much pressure per square inch he had to contend with. At the head of the dingle *Cyrau-r-waun*, the opposite mountain gave some little protection, and it was here pointed out that the cattle yoke was represented by the general configuration of the whole valley, with the dingle here and another by Capel-y-ffin, beyond Llanthony, for the neck of the oxen. A sheep track path was then followed along the side of the hill, at a somewhat perilous angle of 45 degrees, where boots with nails in them were found very useful. On reaching the broken rocks of Cwm-yoy a viper, or adder, *Peliu Berus*, lay by the pathway, which had just been killed. It was twenty inches long, and so bright and clear in its markings that it had evidently but just changed its skin. The poison fangs looked painfully sharp. On the lower parts of the *débris*, but, high enough to look very perilous, a family of white goats were enjoying themselves with much seeming satisfaction.

The geological features of Cwm-yoy are not to be read easily in a cursory visit. The “Darens” as they are called, extend for a full mile in length. On the mountain side numerous strata of the Upper Old Red Sandstone are exposed horizontally, varying from a foot or two to twenty or thirty feet in thickness, and reach more or less precipitously to the top of the mountain. In the valley are numerous ridges, sometimes of considerable size, as is the one immediately above the village, a small mountain in itself, divided into two portions. The interstices between all these ridges are filled with rocks and boulders, often very massive and grand. Had two armies of Titans been contending persistently for ages with missiles of rock, they would not have left behind them so rugged a havoc as is there to be seen. The geological agencies, which have produced this succession of land-slips, would give rise to much discussion. Glacial action was looked for about the Cwm through which we had passed, but no structures on the surface, or other tangible proof could be seen of its having been hollowed out by glacial action—something which looked much like a moraine was observed, but time, and the perilous inclination of the path of observations, forbade a more careful examination. The Sandstone strata abound in springs, and water could be seen issuing from them in many places. It seems probable that by their gradual action the landslips have occurred. The Club might well spend another day in the

Hereford.
Woolhope: Trans.
1884.





attempt to unravel the mysteries of the past as presented at Cwm-yoy for the edification of the student of nature. It may perhaps be disappointing to a palæontologist to spend a whole day, and succeed only in finding what he imagines to be indications of a ripple-mark, or traces of a raindrop fixed in stone, but to the physical geologist it is plain enough, that the Black Mountains, with their parallel ranges, their Cwns and Glyns, and numerous streams, present a field which would well compensate him for a minute and careful investigation.

On leaving the scene of desolation for the village of Cwm-yoy, it seemed quite in character that nothing but bare walls remained of the first house we came to, and indeed a further inspection would almost lead one to suppose that a gradual slipping of all the village was taking place, the houses and walls were so full of cracks and some of them so tumbledown-looking. The solid square tower of the church seemed a little out of the perpendicular, and its roof was unmistakably shaky. Any elaborate architecture could scarcely be looked for in a parish so remote in olden times from the mother church, the distant Menevia, which looks over the billows of the Atlantic. Before the age of railways, telegraphs, and telephones, episcopal authority must have been exercised with difficulty from St. David's to take much effect in the Black Mountains, and conversely, a double visit from a Cwm-yoy devotee to the shrine of the Cambrian Saint might well have earned him the traditional credit of a journey to Rome. Traces of Norman work were visible here and there, somewhat obscured by age, and plaster, and high pews. Some curious slabs in the porch puzzled some ecclesiologists present, and some doubts were expressed as to whether they originally belonged to the church, or were removed there. The steps to the rood loft were in excellent preservation, though all traces of the loft itself had disappeared. A Hebrew Bible of the 17th century, minutely annotated by hand, testified to the erudition and industry of an incumbent. The rules relating to the duties of the churchwardens were also framed and hung up on the walls, so that the consciences of those good men must be tried, if anything that may be required to be done there is left undone. If any archidiaconal eye should fall upon them their dismay might be great, and they could make no answer.

Two epitaphs, amongst other curious ones, merit notice for their quaintness—one dated 1682—

“Thomas Price, he took his nap
In our common mother's lap;
Waiting to hear the trumpet say
Ay ! wake, my dear, and come away.”

and a second reads thus—

“Now all you folks who comes by we
Remember your eternity:
Return you shall to mother earth,
Be quick then all ! prepare for death.”

The font seems as old as the oldest part of the church, but neither this nor the bells could be examined, for the peremptory summons of the leader was heard, and there was nothing for it but to obey.

The very yew trees in the churchyard bore out the air of desolation that hangs on the place,—two were dead and bare, and the others, ragged and worn, seemed scarcely able to sustain their existence. The way was taken by them, and across the hill by the farm house, *Perthi crwn*, to a little upland district, between the Cwm-yoy valley and Trewyn, called *Croes Llwyd*, or the Grey Cross. A cross is said to have stood here in the 14th century, and a monk relates that when on a pilgrimage to the Abbey of Llanthony, as he laid down at the foot of the cross he heard the bells chime at the Abbey. Near where the old cross is supposed to have stood, some good charitable soul has erected an iron pump, covered with a small substantial building, to provide at once water and shelter for the benefit of the passer by. Would that an iron cup had also been chained to it, that he might not be forced to drink the excellent water from the palm of his hand. Above the entrance door a cross is carved on the stone with the words *Traws Llwyd*, meaning the “Grey Beam.” It should have been *Croes Llwyd*, the “Grey Cross.” The idea is so pretty and good that the word deserves to be altered to the correct Welsh. Near this is a very pretty narrow valley called *Bwlch*, which is a very common name in Wales. It always denotes a pass from one valley to another, and it here affords an excellent pass from the valley on Pandy side into the vale of Ewyas on the other side of Hatterel mountain.

ROMAN ANTIQUITIES.

On arrival at Trewyn the visitors were received with much kind and friendly hospitality. The house has many objects of interest in itself, as has already been stated, and it has been filled with many others by the present occupants. Some are so choice and rare as to demand immediate description. They consist of a couple of unique and very valuable Roman antiquities: the arm of a silver statue of Victory, and a gold seal. The silver arm is as well known as its possession is envied by all learned antiquaries. The following extract from *The History of the original Parish of Whalley and Honor of Clitheroe*, by T. D. Whittaker, LL.D., 1801, gives its history and description:—“About two miles N.E. from Rochdale, and near the line of the Roman road, was dug up in the year 1793 a very singular and noble remain of Roman antiquity. This was the right arm of a silver statue of Victory, of which the length was ten inches and its weight nearly six ounces. The hand was a cast and solid, and the arm hollowed and formed apparently by having been beaten on a model of wood; the anatomy and proportions are good, and on the inside of the thumb is a piece of solder which remained, and may be conjectured to have held a chaplet or palm branch. There was besides a loose ‘armilla’ about the wrist, and another united to the arm above the elbow, to the former of which was appended a plate of silver, with the following inscription, formed by the pointed strokes of a drill:—

VICTORIÆ
LEG VI VIO
VAL RVFVS
V.S.L.M.

The inscription is also given in Hübner's *Inscriptiones Latinæ*, published at Berlin in 1873. Written in full it would doubtless be this :—

Victoriae
Legionis Sextæ Victricis
(or Legio Sexta Victrix)
Valerius Rufus
Votum Solvit Libens (or Lætus) Merito.

And it means that Valerius Rufus, an officer or soldier of the corps, had willingly presented this statue in fulfilment of a vow to Victory."

Dr. Whittaker adds, "Valerius Rufus, whose name occurs nowhere else among the inscriptions of Roman Britain, may be supposed to have been an officer of rank in the Sixth Legion; and that the arm of this vote had in all probability been broken off and lost in one of their marches from York, their stated quarters, to Manchester, where the altar to Fortune proves them to have been occasionally stationed."

"These images of Victory were frequently of gold, and in great military processions were borne by a boy elevated on the shoulders of men. The statue to which this arm belonged must have been about two feet high, and therefore of a proper size for the purpose which has been described. Any misfortune which befel these palladia of the camp was held to be extremely ominous, and the loss of this arm and label must have spread consternation through the whole Legion to which it belonged."

The gold ring was found at Ribchester, and the same historian says of it :—
"I have a gold ring found here some years since set with a cornelian with many faces. It has a dove in the centre, and around it the words,

‘AVE MEA VIA,’

the present, as it would seem, of a lover to his mistress."

Both these valuable relics are now in the possession of General Gillespie, at Trewyn House, Abergavenny; they having descended to his wife, who is the historian's great grand-daughter.

A very curious piece of ancient glass, which is believed to be Roman, was also shown. It appears to be blue with a peacock lustre in places from reflected light, but on looking through it the colour was seen to be really of a light yellowish-green.

HEREFORD CASTLE AND APPURTENANCES.

Mr. James W. Lloyd, of Kington, then brought to the notice of the Club a series of most interesting papers relating to the "Ruinous Castle of Hereford, with its yards, ditches, trenches, herbage, &c.," one of the letters from Edward Harley being dated from Trewyn, which he occupied at that time. These papers showed that the Castle of Hereford and its appurtenances had been granted by King Charles to Gilbert North 2nd Oct. 5 Car. I. (1630). From Gilbert North it

was conveyed in December of the same year to William Page. From William Page it was again conveyed to John Birch, 1st Aug. 22 Car. I. (1646).

Mr. Lloyd then produced the actual Deed of Conveyance, dated 12th April 23 Car I. (1647) from John Birch to Sir Robert Harley, Edward Harley, Walter Kirle, Bennet Hoskins, Edmund Weaver, and William Crowther, Esquires, in consideration of £600 paid to John Birch, with interest at eight per cent :—"Bargained and sold, unto and for publique use and benefitt, and behoofe, and advantage of the countie of Hereford and the inhabitants thereof." This deed is signed by "Ro. Harley" and "John Birch."

Then came a survey of the "Scyte of the Ruinous Castle of Hereford, &c.," dated 14th December, 1652. It is estimated at "five acres and a half," and to be "worth £VI 10s.—grosse value £85." Other papers referred to orders of Hereford County Sessions, dated 1649, relating to a great sum of money due to the county for "disbanding Coll. Birch's Regiment of horse and foot." Other papers dated 1653—referred to Militia money—showed that "Great part of the store of the castle was disposed to the College of Hereford to build their new dining hall, and somme to the city of Hereford to build the Tolsey." "The gravell of the Castle Mount hath been disposed off by order of Sessions." "The county doth pay the rent of xxs yearly to the King reserved upon the patent of King Charles I. to Sir Gilbert North." "At the county charge there hath been, by order of Sessions, a house built upon the old gate of the Castle for the keeping of the records of the county." In 1668, Orders of Sessions relating to this deed. In 1682, in answer to the petition of a certain Griffith Reynolds (often referred to under the name of Africus), the Surveyor-General reports against it, and states "that the fee farm rent of xxs p. an. had been paid constantly to the sheriff of the said county of Hereford," &c.*

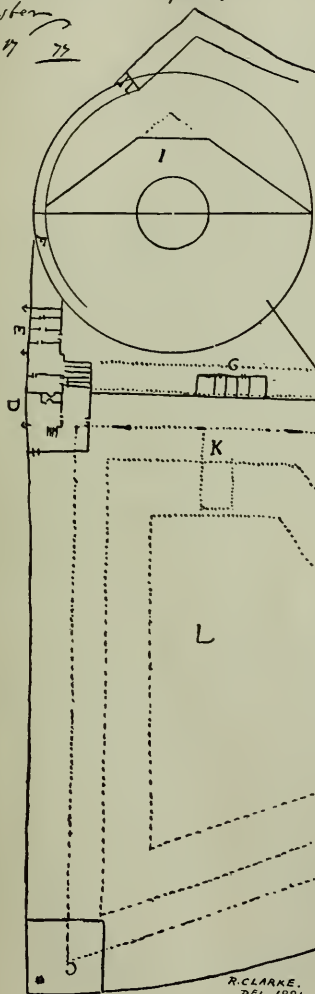
It would appear that Sir Robert Harley had himself advanced the £600 purchase money paid to John Birch, which sum, with 8 per cent. interest, remained unpaid up to the time of Edward, 3rd Earl of Oxford and Mortimer (1748), when his lordship "for and consideration of ye great regard and affection which he beareth to and for his native county, the said county of Hereford, and for diverse other good causes and considerations him thereunto moving, doth hereby exonerate and discharge, so far as in him lyeth, the said premises and every part thereof from the said £600 and all interest," granting the same to the Justices of the Peace for the county. Another paper referred to the sale by auction at the New Inn, Hereford, 25th September, 1800, of the old Bridewell, with garden and premises, &c., being part of and appurtenant to the old Castle of Hereford. It was sold for £500 to H. Hawkins. The Castle Green was for many years in the possession of an amusing society called "The Society of Tempers," as tenants under the county magistrates. This society was instituted in Hereford in the year 1752, for the promotion of amiability and good temper, and it was dissolved November 4th, 1831, in consequence of the non-renewal of the lease of the Castle Green. The

* See *Duncumb's History of Hereford, and the antiquities of the County*, Vol. I. pp. 286 to 288, where this Survey is printed in full, and for Plate of Castle from Speed's Map, see Vol. I., p. 229.

Woolhope: Trans
1884.

Hereford Castle
Designed by John
Silvester
Nov 27 75

Ground plot of $\frac{1}{2}$ Castle
of Hereford



A the old Gate house
B the mount next Mr. Bofworth
C the Great mount next way
D the dwelling house
E the part of $\frac{1}{2}$ House that was burnt
F the passage towards $\frac{1}{2}$ the hill
G a long building that Mr. Stallard
pulled down
H the passage into $\frac{1}{2}$ Castle front
I the figure of $\frac{1}{2}$ Hill
the great Garden is $\frac{1}{2}$ Compas of
the hill which $\frac{1}{2}$ Great tower stood on

the outer most wall line is a distance
for a front road from $\frac{1}{2}$ straight
front line
the second wall line for $\frac{1}{2}$ depth
of $\frac{1}{2}$ house
the wall is $\frac{1}{2}$ depth of $\frac{1}{2}$ gardens

K for a church
L if built round for a market
Grange

1 2 3 4 5 6 7 8 9 10
feet of 10 paces

Facsimile of an old plan
of Hereford Castle
showing alterations
proposed in 1677

R. CLARKE.
DEL 1896



dissolution was signed by Thomas Bird, 1795, Samuel Carless, 1795, John Duncombe, 1802, C. Holloway, 1808, and William Cooke, 1811, the dates being those of their respective admissions. There might be sufficient scope for the existence of such a society in these days.

The following notes are furnished by our member Mr. James W. Lloyd, of Kington, who has the minute book of the society in his possession.

“THE SOCIETY OF TEMPERS.”

This book (Vol. II.) commences with the following memorandum :—

“1786. December 20th.—Recd of Revd. Dr. Allen four shillings and sixpence for this book.
“Pd me W. PARKER.”

“Memor’dum.—The Society of Tempers was instituted in the year 1752. The first members were Dr. Campbell, Dr. Allen, Capt. Rodd, Mr. Coldbatch, Mr. Clark, Mr. Holland, Mr. Wild. Dr. Campbell admitted president, 28th November, 1770; treasurer, 14th Feb., 1760.” (Then follow a list of members, residents, and non-residents.)

The Society held their meetings up to 5th November, 1793, at the Bowling Green. An interval of 12 months appears to have then taken place, and at a general meeting held on Tuesday, the 4th day of November, 1794, it was resolved “that this Society be removed from the Bowling Green to the ‘Swan and Falcon,’ and that the meetings be there regularly held once in every month, instead of six weeks.” Between the 5th August and 9th September 1795, the name of the “Swan and Falcon” was changed to the “City Arms.” After 15th December, 1797, till 12th March, 1818, the meetings are described as being held sometimes at “The Hotel,” and sometimes at the “City Arms”; then at the “Aylstone Hill Coffee House.” and “The Sun.”

The following were the various officers of the Society, viz., president, vice-president, treasurer, secretary, chaplain, undertaker, recorder, bell ringer, champion, examiner, gamekeeper, English interpreter, remembrancer or admonisher, and stoker.

In addition to the original rules, a copy of which I append, various minor rules were adopted at different meetings, but as these mainly relate to fines for non-attendance, &c., they are of little interest.

The following extracts from different minutes, possess points of interest or curiosity :—

“5th November, 1789.—Resolved that this Society do annually dine together, upon the 5th November, in commemoration of the glorious revolution.” (The usual dinner consisted of a chine of beef, and fish, to be on the tables precisely at 3 o’clock.)

“4th November, 1795.—The Society being informed by letter from the Clerk of the Peace that it is the wish of the acting magistrates of this county to grant a lease of the Castle Green for 21 years to any three or more members, in trust for the whole, at the same rent that they now hold the same. It is resolved that the Secretary be desired to write to the Clerk of ye Peace, requesting that such leave be granted to Francis Campbell, their president, W. Allen, D.D., their vice-president, Richard Underwood, clerk, their examiner, and William Allen, jun., their secretary, in trust for the society and the citizens of Hereford.”

“9th December, 1801.—It was resolved that, in consequence of the high price of provisions, each member shall pay one shilling, who eats supper. At this meeting it was resolved that our President, Francis Campbell, M.D., be requested to sit for his portrait to be taken by Mr. Oliver, at the expense of this society; that underneath the portrait, upon a block in the frame, be written the words—‘Francis Campbell, M.D., President of the Tempers Society,’ and upon the canvas at the back of the portrait, be written—‘The Society of Tempers was instituted at Hereford, in the year 1752. Dr. Campbell was one of its first members. He was elected Treasurer in the year 1760, and President on the 28th November, 1770. At the request of this Society, as a mark of their particular esteem and regard, he sat for his portrait in the month of November, 1801, in the 77th year of his age.’” (It is to be hoped the loan of this portrait may be obtained for the projected exhibition of “Herefordshire Worthies.”)*

* With reference to Dr. Campbell, Mr. W. J. Humfrys gives the information that he lived at Holmer, and that his portrait, in oil, painted by A. J. Oliver, with the above inscription at the back, is now in excellent preservation, and in the possession of his great grandson, Mr. Bowle Evans, of Bylett’s, now residing at Cheltenham.

"25th January, 1804.—Mr. Remembrancer having reported to this Society the death of Dr. Campbell, their much respected President, it is ordered that a meeting of the Society be called for Wednesday, the 11th day of April next, for the purpose of appointing a proper person to succeed our late President."

"11th April, 1804.—The Society having received information that James Russell, the occupier of the Castle Mills, had lately cut down several of the trees on the side of the bank adjoining the Castle Mill pond, and cut the tops off several other trees growing upon land leased by Benjamin Fallows, Esq., late Clerk of the Peace for the county of Hereford, to Francis Campbell, Esq., and other members of this Society. It is resolved that Mr. W. Allen be employed to bring an action against the said James Russell, in the Court of King's Bench, and that the expenses thereof be borne out of the funds of this Society. Signed—William Allen, E. Lechmere, John Winston, James Wainwright, W. Allen, T. J. Bird, W. Ravenhill, jun., J. Griffiths, J. Duncomb, T. Gammon." "Resolved that Dr. Allen, who was proposed by Mr. Lechmere and seconded by Mr. Winston as a successor to our late worthy president, be elected president of this Society, and he is unanimously elected. Signed, Edwin Lechmere, John Winston, Jas. Wainwright, W. Allen, jun., T. J. Bird, J. Griffiths, John Duncomb, Thos. Gammon."

A meeting which was to have been called for Wednesday, 30th May, 1804, for the election of a vice-president in the room of Dr. Allen, elected president, could not be held, in consequence of "the greater part of the members of this Society being on military duty at Worcester and Gloucester."

"4th November, 1831.—At a meeting of Tempers, specially summoned, held at The Hotel (after an interval of nine years), when it appeared, in consequence of the non-renewal of the lease of the Castle Green, as suggested at the meeting held in the year 1822, that there does not exist any ostensible cause for continuing the meetings, the members present have therefore unanimously resolved that this Society be discontinued. They cannot, however, record this, their resolution, without adverting to certain facts, and recalling to their recollection the many agreeable days that they have uniformly experienced in carrying into effect the customs and rules of this Society—a Society which has existed in the city of Hereford during a period of fourscore years, and which has had the honour and satisfaction of enrolling amongst its members the names of the most remarkable and respectable inhabitants of the city and its neighbourhood. It is, moreover, thought expedient to record the names of the existing members of the Society, in addition to those who have thus assembled to subscribe the proceedings of the meeting. Signed, Thos. Bird, 1795, Saml. Carless, 1795, John Duncomb, 1802, C. Holloway, 1808 Wm. Cooke, 1811. Other members not present—James Wainwright, 1785, John Griffiths, 1795, John Sherburne, 1809, Wm. Symonds, jun., 1816, Edwin G. Wright, 1817, Fras. L. Bodenham, 1819.

It is to be hoped the publication of these notes may be the means of bringing to light the previous minute-book of "The Society of Tempers," whose rules, "to bear and forbear, avoid personal and malicious reflections, to put no forced, unkind, or false interpretations on what is said or done," might with very good reason be more generally observed in the present day.

RULES.

Rules to be observed by ye Society of Tempers—

Every member to bear and forbear. To avoid personal and malicious reflections, and to put no forced, unkind, or false interpretation on what is said or done to him. None of ye members shall on any pretence enter into controversy, or dispute about Party, on pain of expulsion, after admonition to ye contrary by the President or Vice-President.

No person who is not a member or a candidate can be admitted on a general meeting.

Every member to pay due respect to the President and Vice-President for the time being, as well as to all others officers of ye Society, and always, as far as is consistent with bis necessary avocations, to attend the President's summons, and duly regard bis verbal orders or censures, and industriously avoid altercations, and always to act as a true Temper and Gentleman.

In case of ye absence of ye President and Vice-President the senior member then present shall take ye chair, and be invested with ye same authority, sit covered and be called Mr. Vice.

That every new member be admitted according to the following form, after he has subscribed these rules, viz., The examiner shall conduct him to ye chair and desire that he might be admitted, then the President, Vice-President, or, in their absence, the senior member then present shall deliver to ye candidate a bumper of wine or punch which they are both to hold whilst the candidate repeats after ye secretary ye declaration following, all ye members standing uncovered.

"I, A. B. do promise and engage that I will not be offended at anything which the President, Vice-President, or anyone of this Society shall say to me. I will obey the President's summons, conform to and observe the Rules and Orders of this Society, their secrets keep, and in every other respect as a true Temper."

ORNITHOLOGY.

The ornithological observations of the day were singularly rich—and to ornithology the Club is turning this year with all its energy. On crossing the mountain, three nests with eggs were found of the titlark, or meadow pipit, *Anthus pratensis*. They were placed on the ground in the low tufts of heather, in which this bird delights to build. The Cwm-yoy rocks were well scanned for the rare birds that build there; some pigeons were quickly flying in and out, but the distance was too great to discern clearly whether they were the true rock dove (*Columba livia*) which is known to build there. Not a hawk was seen, nor was a raven visible. They both breed here, and a native said the ravens had done so this year, and he has seen the young birds many times. Not a croak, the unmistakable croak! could be heard, though, ill-omened as poets make it, it would have gladdened the hearts of some of the naturalists present to have heard it. A numerous colony of jackdaws were very busy with merry interjectional conversation. The ring ousel, *Turdus torquatus*, was also looked for in vain, but later in the day a nest with four eggs in it was exhibited by Mr. James W. Lloyd, which had been taken in the valley higher up. The construction of the nest itself and the size and colour of the eggs all closely resembled those of its congener, the common blackbird. This nest was taken from a rock above the bed of a stream, and it was pleasantly ornamented by some plants of the pretty sorrell, *Oxalis acetosella*, in full blossom by its side.

Another extremely interesting ornithological sight was the pigeon house, Trewyn. This is said to have been built by the Knights Templar, and to be similar to the one at Garway. In olden days it carried the manorial right of dovecot, the right which became so obnoxious in France as *le droit de colombier*. It is octagonal externally, but made round within, and has no less than 831 holes for the pigeons' nests—every one of which can be readily examined by means of a revolving ladder attached to an upright beam in the centre. The ladder is so well balanced that the whole circuit of the house can be made by anyone upon it, without the necessity of coming down.

 BOTANY.

The botanical discoveries of the day were not numerous. On one spot in the ascent to the camp, Dr. Wood met with several plants of the little "Bird's Foot," *Ornithopus perpusillus*, a local plant, and one not common in Herefordshire. The Crow-berry, *Empetrum nigrum*, was there, but like the Bilberry and Heather was not in flower. The wet places near the springs on the mountain were beautifully coloured by masses of the pretty mosses *Philonotis fontana*, and *Hypnum filicinum*, contrasting well with the deep green of the growing liverworts. Near Cwm-yoy, were many bushes of the Bird Cherry, *Prunus padus*, in blossom—a tree which should be grown in shrubberies much more frequently than it is.

"The light Bird Cherry hangs its flag,
In snowy splendour from the crag,"

Purple spotted orchis blossoms were abundant, and the green-winged *Orchis morio*, was very plentiful in three varieties of colour. The frog orchis, *Habenaria viridis*, was brought by a member later in the day. On the walls at Cwm-yoy, the Shining Crane's Bill, *Geranium lucidum*, and the Swallow-wort or Celandine, *Chelidonium majus*, with its acrid yellow juice, were observed in patches. The pretty fern, the Scaly Spleenwort, *Ceterach officinarum*, grew on the churchyard walls, and everywhere during the day's walk the elegant Maiden-hair Spleenwort, *Asplenium trichomanes*, was abundant, and nowhere more so than in the interstices of the long flight of stone steps leading to the front door of Trewyn Mansion, forming a natural fringe. The usual spring hedgerow plants were in great abundance in every lane or dingle. The steep banks were covered with fine primroses, late as it seemed for them.

"Lady of the springe,
The lovely flower that first doth show her face ;
Whose lovely prayse the pretty byrds do syng ;
Whose presence sweet the winter's cold doth chase."

The dinner took place at the Pandy Inn, and immediately after dinner the first of a series of papers on *The Birds of Herefordshire*, was read. The members of the Club are collecting together the observations of many years, in order to publish as complete a list as possible. We shall hope to publish these papers as they are read to the Club, and it need only be said that if the succeeding ones are equal to that read on this occasion, it will be very far removed from being the dry catalogue of names of which such lists very commonly consist.

Some very fine specimens of *Cephalaspis* and *Pteraspis* were kindly presented to the Club by the Rev. C. L. Eagles, who had obtained them from the Cornstone at Longtown.

The following gentlemen attended the meeting. The members of the Malvern Club present were—The President, Mr. Henry Wilson; Messrs. T. Bates, F. Burrow, W. H. Cook, Joseph Greaves, E. R. C. Hayes, R. Price Hill, T. Marsh Phillips, and G. A. Sheppard. The Woolhope members and visitors were—The President, the Rev. Charles Burrough; General and Mrs. Gillespie, and Miss Gassiot; Vice-President Mr. C. G. Martin; the Rev. Dr. Dixon; Drs. Bull and J. H. Wood; Revs. T. Bevan, William Bowell, J. Davies, C. L. Eagles, W. Elliot, E. J. Holloway, A. G. Jones, J. W. Lee, H. B. D. Marshall, S. Pelly, D. Price, T. A. Stoodley, F. S. Stooke Vaughan, and F. H. Tatham; Captain de Winton; Messrs. H. C. Beddoe, Robert Clarke, T. Davies Burlton, Charles Fortey, A. A. Hancock, J. W. Lloyd, T. C. Paris, E. J. Pilley, Henry VEVERS, and Theo. Lane.

Five new members were elected at the meeting, and three fresh ones proposed. Thus has passed away a very enjoyable meeting, and if the first field meeting present an augury of the future, the year will indeed prove very successful.

The paper read by Dr. Bull has elicited the following correspondence:—

SIR,—There are so many errors in the paper read by Dr. Bull before the above-named Club last week, that it seems a pity that they should go uncorrected.

Leaving the Pandly station midway between Pandly Inn and Trewyn Avenue we come to the Pandly, the old house from which the district is now called. Alt-ar-ynys (the homestead of the well-known John Rogers,) means "the hill side over the island." One of my friends, a good philologist, tells me that undoubtedly Trewyn—Tre-gwyn—means White House. On the other bank, Tre-fedw—Birch House, from the fact that the locality abounds in birch trees.

Cwmyoy is undoubtedly a corruption of Cwmyw—Yew-tree valley, which trees are plentifully scattered all over the valley. Many Welsh words in this district have been shamefully altered through the spite or ignorance of the English. Martyn Scudamore, Seneschal of John Arnold, Lord of the Manors of Cwmyoy, Llanthony, and Old Castle, whose Court Leet Rolls for a portion of the seventeenth century are in my possession, actually spells Capel-y-Fyn as Chaple-y-feene.

By-the-bye, the well, pump, and house at Croes Llwyd were constructed by Mrs. Rosher, late of Trewyn, now of Glanhonddu, and named by her Traws-Llwyd—Grey Cross—Croes Llwyd.

With respect to Trewyn, before the Delahays, the Manor of Trewyn, or Winstone, * was held by the Winstones, under the Lords of Abergavenny, Lords of the Welsh Marches. The rent mentioned in Dr. Bull's paper is merely the manorial fees. Trewyn became the property of the Rosher family, of Kent, by the marriage of Mr. Rosher, great-grandfather of the present Mr. J. Lilburn Rosher, with Mrs. Shaw, *née* Eversham, heiress of Trewyn and widow of Mr. Shaw, son of Capt. Shaw, of Pen-bidwal. About nine years ago a portion of a bone, discovered in an excavation at Trewyn, was taken to Dr. Smythe, of Abergavenny, who was of opinion that it was a portion of the hip bone of a child of twelve. The old chapel, dedicated to St. Martyn, and which stood about mid-way between the house and the lime-tree avenue, was destroyed during the end of last century. The old stables were pulled down about seven years ago. The Helena Delahay mentioned was a widow who lived in the first part of the seventeenth century. Originally the front door was entered by a flight of steps leading from the road by the side of the house wall to the door. About the end of the last century they were removed and placed in their present position.

EDWIN A. ELY, B.A.

Bwlch-Trewyn, Abergavenny, May 28th, 1884.

Reply to the above letter.

SIR,—As Dr. Bull said in the excellent paper read by him on the Black Mountain, on the 15th ult.: "Welsh names are always descriptive, often historical, and sometimes highly poetical and suggestive." Everyone who knows anything about Welsh place-names will most readily endorse the Doctor's remarks. The ancient Britons, when even in an uncivilised state, oftentimes gave both to localities and persons graphic and highly-poetical names, evidently originating in impressions made upon the eye and mind.

My friend and neighbour, the Rev. E. A. Ely, pointed out in last week's *Hereford Times* a few errors in Dr. Bull's paper. I am sorry I cannot accept more than one of Mr. Ely's corrections, as far as Welsh etymology is concerned.

There are several derivations given to Alteryynys, but I believe the right one is the one given by Mr. Ely. The component parts are correctly given, but I beg to differ from him as to the meaning of the word Allt (not Alt). Allt in South Wales invariably means a wood, or forest of trees; but in North Wales it often means a hill or an elevation. We have Allt sometimes used as a prefix, and sometimes as an affix, in the formation of Welsh place-names. "Allt-y-carn"—wood of the deer. "Dan-yr-allt"—below the wood. "Gwar-yr-allt" above or over the wood. "Pen-yr-allt"—the top of the wood. Allt-yr-ynys, or, to give the name in its uncontracted form, Allt-ar-yr-ynys, means undoubtedly the wood overlooking the island (ynys). It is probable that a portion of Alteryynys farm was, at one time, covered with trees, especially that part facing the river Monnow, while the land on the banks of the river, or near the river, was clear, forming a long island; hence the wood above this island was called "Allt-ar-ynys."

Trewyn, in my opinion does not mean white house. Tygwyn we always call a white house. "Tre," when applied to a homestead, is contracted from "Cartref,"—which means home—first into "tref" and again into "tre" when the word that follows begins with a consonant. "Tre," when applied to a homestead, never means a mere house or building, but it always implies an inhabitant—the home of some person or persons. My belief is that Trewyn means Wyn or Win's home, and Mr. Ely's letter has confirmed me in this belief. He says that a family of Winstones held Trewyn under the Lord of the Welsh Marches, before the Delahays. Now, the Welsh word for Winston is Trewin, or Trewyn, as the name is spelt now. I may be allowed to remark here that "i" and "y" were used interchangeably by old Welsh writers.

* In the old deeds the manor is called the Manor of Winstone, or Trewyn.

The manor of Winstone, or Trewyn, in the old deeds, means exactly the same thing. It would be interesting to know what was the name of Trewyn prior to the time the Winstones held it—whether they gave the name to the place or the place to them.

Persons have often taken their names from places which they or their ancestors owned or occupied. For instance, Sir John Oldcastle, the Lollard martyr, being a Welshman, had undoubtedly a Welsh name; but he adopted the cognomen of Oldcastle as his real name, from the old castellated mansion in which he was born, and by this name he was known till he became Lord Cobham.

We have numerous instances in this neighbourhood of places having derived their names from persons. Old Welsh people call Walterstone, to this day, Trewalter—Walter's home; and Rowlestone, Tre-Rowland.

Trefedw can hardly mean Birch House, as "Tre" is generally associated with the name of some person or persons. Houses associated with Birch are generally called by such names as "Ty-yn-y-Fedw"—house in the Birch; "Y Fedw"—the Birches. There are three or four bearing the last-mentioned name within a few miles of Pandy. The old Cwmry would hardly call a house the locality of which abounded with Birch, "Tre-fedw." When we bear in mind that the old Welsh form of Bedol was Bedw, we can easily see that "Tre-fedw"—Bedw's home—is quite in harmony with the laws according to which the old sons of Cambria found place-names.

The etymology of Cwmyoy, I must admit, is somewhat difficult, but I have never seen or heard Cwmyw suggested as its probable derivation. We must not be misled by the way in which it is spelt now (Cwmyoy). This way of spelling it is comparatively recent. In old manuscripts and ancient writings it is spelt sometimes "Cwm-ian" and sometimes "Cwm-ion." The Rev. Thomas Price (Carnhuanwc), the eminent Welsh historian, says in his history of the Cwmry that there has been much strife amongst philologists from time to time, as to the meaning of "Cwm-ion." "But," he says, "as it is the same Cwm as that of Ewas Lacy, I am strongly inclined to believe it has some connection with the word Ewas." But the meaning of Ewas again has greatly puzzled philologists. Mr. Price, who was an excellent Welsh scholar, could not suggest any meaning. Cwmyw could be easily retained; there is no room here for corruption to set in. As it is found in early writings "Cwm-ian"—the valley of the yoke—combined with the fact that the range of mountain and dingle had the exact shape of the old yoke used for coupling oxen, I am inclined to adopt one of the meanings suggested by Dr. Bull.

JOHN DAVIES.

Pandy, June 5th, 1884.

Woolhope Naturalists' Field Club.

JUNE 19TH, 1884.

THE BACH CAMP AND BERRINGTON.

"Ye field flowers ! the gardens eclipse you 'tis true,
Yet, wildings of nature, I doat upon you,
For ye waft me to summers of old ;
When the earth teemed around me with fairy delight,
And when daisies and buttercups gladden'd my sight
Like treasures of silver and gold."

CAMPBELL.

THE June meeting of the Naturalists' Field Club has always a special interest for the botanists. It is the meeting of the year for the abundance of wild flowers. Nature is in full luxuriance ; the meadows teem with blossoms that the scythe has not yet lowered, Daisies, Oxeyes, yellow and purple Trefoils and Clover, with now and again a gorgeous display of Buttercups, that tint the field with gold. The hedges have all the graceful irregularity of their fresh and unpruned spring growth, varied by the blossoms of the Dogwood and Guelder Rose, of the sweet Honey Suckle and the lovely sprays of the Dog Rose that hang so charmingly about. If a deeper colour is wanted, at intervals the

"Purple tassels of the tangling vetch
Hang elegant."

and give it in perfection ; indeed *Vicia cracca* would deserve special cultivation in our lane hedgerows, if the wild birds did not kindly sow the seed for us, to shame our carelessness. The arable fields have all the freshness of the growing crops, too, and the trees are all in full luxuriance and beauty.

A full attendance of members met at the Barrs Court Station, when the pleasure of meeting, and so fine a morning, put everyone in spirits. The first botanical observation was made at the Dinnore station, where the steep banks near the tunnel are occupied with a large growth of the Wood Vetch, *Vicia sylvatica*, with its drooping sprays of whitish blossoms, so beautifully veined and streaked with blue. Sir Walter Scott was very fond of it. He well describes this elegant climber, which for the beauty of its foliage, flowers, and general habit of growth is scarcely exceeded by any of our summer flowers—

"And where profuse, the Wood Vetch clings
Round ash and elm in verdant rings ;
Its pale and azured pencil flower
Should canopy Titania's bower."

The Wood Vetch happily ornaments many of our Herefordshire woods. On the present occasion it was quickly lost to sight by the train entering the tunnel.

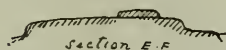
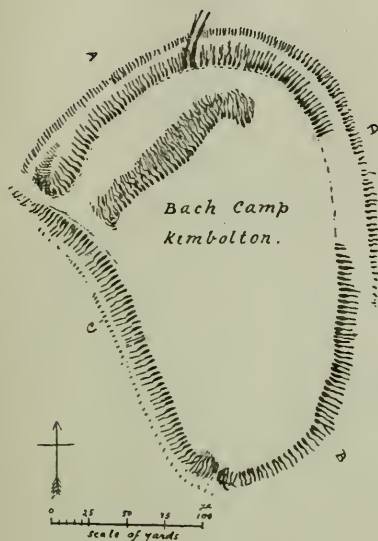
At Leominster the two large carriages waiting were insufficient to convey the members, and several gentlemen, in the exuberance of a youthful energy that overbalanced their patience, could not wait for others to be brought, and set off to walk the four miles to the Bach Camp. On the carriages the ride was very enjoyable, and as the high ground of the district in which the camp is placed was gained, the views were extensive on all sides.

THE BACH CAMP

(pronounced Bayche) is not on very high ground itself since it is commanded on two, if not on three sides, with still higher ground, within easy rifle range. It is oval in shape, with a double entrenchment of considerable strength, and occupies altogether a space of about eleven acres. It has three entrances, one on each of the southern and northern ends, and one on the western side. The position of the camp is most exposed towards the north, and here the embankments are very bold and strong; with a broad internal ditch which would hold many men or huts. The southern entrance is also well guarded and seems only to have admitted of approach in single file from each side, with a triangular vallum, hollowed out to receive special guardians of the entrance. The camp within has been cultivated as arable land and the inner embankment for two-thirds of its circumference ploughed down, but it is now laid down in grass. On the east and west sides, the small streams which flow through the valley have wet and boggy margins, which must have added greatly to the strength of the position. Tradition says there was a well within the camp, and it is quite possible that there may have been, but the western entrance with curved and well guarded sides would give a ready approach to the stream below and was probably used as a water gate. The more the strength of this position is considered, and the vast labour taken to fortify it, especially with the stockade in addition, the more probable it seems that it was occupied for some considerable time, and was rather a British fortified village or town than a simple encampment. It lies nearly two miles east of the Roman road from Blackwardine to Bravinium. The camp is entirely without history, and all that can be said of it must be gathered from its position and entrenchments. Within a mile and a half to the east there is a tumulus of some size, and another one still larger about four miles to the north, beyond Ashton Camp, which bears sad and silent testimony to the battles fought there.

The camp was occupied on the present occasion by the Rev. Thomas Hutchinson, with Mrs. and Miss Hutchinson and a large party of their friends, and the arrival of the Club was welcomed by butterfly nets waved in the act of moth-catching. Mr. Hutchinson was one of the earliest members of the Club, and to Mrs. Hutchinson the members were greatly indebted so far back as 1866, for a list of the Lepidoptera of Herefordshire, published in the volume of *Transactions* for that year. They gave the Club a hearty greeting on the present occasion.

Hereford
Woolhope: Trans.
1884.



A CLARKE
DEL.



After the transaction of some little business, the members dispersed to botanise, examine the entrenchments or admire the scenery, as severally pleased them. The first search was made for the flowering fern, *Botrychium lunaria*, Moonwort. It was soon found, growing sparsely within the camp on the eastern side, but with greater abundance in the field just outside the northern entrance. Here, too, the Rev. Augustin Ley gathered a frond of this fern with two panicles of blossom instead of one. The plants were smaller than they otherwise would have been in consequence of the dry weather during the last two months; but they were there, and every botanist present who had not gathered it before, will ever connect it with the Bach Camp, for none feels more forcibly the influence of local circumstances than plant lovers :

“Objects which least inspire delight
Take pleasing tints from thee,
And strangely satisfy our sight
From mere locality.”

In the field outside the north entrance too, the Adder's Tongue, *Ophioglossum vulgatum*, grew side by side with the Moonwort. Neither of these small flowering ferns is rare in the district, but they are often overlooked.

At the sound of the whistle the members and visitors assembled under the shadow of the trees on the inner entrenchment, to listen to the Woolhope Club's version of the Magpie, the Jackdaw, the Rook, and the Raven in Herefordshire. This paper we shall shortly present to our readers to speak for itself; but before the Bach Camp is left, the Badgers, for which it is noted, must be alluded to. Near the western entrance, a Badger's earth has been broken into, but whether by accident or design was not known. It was covered up by flat stones above it. Badgers are sometimes caught by putting a sack in their holes in the night time, when they are away, and driving them hurriedly home by dogs. If a sack had not been put in this earth it might have been, but it does not follow that it would catch the Badger, for this, the only English representative of the bear family, is a very clever knowing fellow, and is not to be caught easily in any other way than by following him home and digging him out. The Badger, *Meles vulgaris*, is a slow, clumsy animal. He walks on the soles of the feet, without using his long-clawed toes, and rolls so awkwardly in his gait that at dusk or evening he might easily be mistaken for a pig :

“Upon the plain he halts, but when he runs
On craggy rock, or sleepy hill, we see
None runs more swift and easier than he.”

From time immemorial Badgers have existed in this district, and “from information received” they exist here still. On the brow of the adjoining hill, within half-a-mile of the camp, its old Anglo-Saxon name of “Brock” is preserved in the hamlet of Brockmanton, and there is a mill of the same ilk on the stream below. Badgers are becoming more scarce in Herefordshire as they are elsewhere, but they still exist in some localities of the county. The following account of the capture of a pair this year in Herefordshire has been obligingly sent by Mrs. Ley, of Sellack, to the Club :—

CAPTURE OF BADGERS AT FOY.

In the beginning of February, 1884, Mr. G. Stock, of Carthage, succeeded in capturing alive a pair of very fine Badgers on the Underhill Farm, in the parish of Foy, near Ross. His attention was attracted by the large size of a burrow in one of the fields frequented by rabbits, and on looking at the hole closely he saw some dry grass, roots of trees, and other litter about the entrance. Knowing that badgers were about he at once concluded that he had found their home, and was quickly convinced that they were there by his fox-terrier. He sent for spades and a sack, and with the assistance of a man from the farm, he set to work to dig up the burrow, directed by the constant barking and efforts of the dog. After much labour, an exclamation, "Here he is; now for the bag!" was made, and the badger was induced with some little management, to enter it. The dog soon told them, to their surprise, that there was a second badger there. They had much more difficulty with this one, which was larger and more obstinate, but they succeeded, and both were turned loose into a paved stable. The entrance to this burrow measured eighteen inches in diameter; its greatest depth was six feet, and it gradually sloped upwards for a distance of eight yards until within two feet of the surface. The largest badger, when in the bag, was found to weigh 34 lbs. The badgers attracted much attention during the fortnight they occupied the stables. They were fed with lamb and potatoes (a very restricted diet for such an omnivorous animal) and had many visitors. The male was very shy and rude, refusing to exhibit himself, but the female was more amiable, and seemed as if she might easily be tamed. They were fine handsome animals, with the white markings on their heads clear and distinct. They were sent alive to a gentleman in Oxford. It is said that there are still many badgers in the Carey and Brockhampton woods, on the other side of the river Wye. Two Badgers have also been taken alive in the woods of Stoke Edith this spring.

The badgers of the Bach Camp could not be expected to exhibit themselves. The attention of the visitors was next called to a curious bronze circular bell, with a loose bullet inside to produce the vibration. This bell had been found a short time since at Stockton Court, and had been kindly brought for exhibition by Mr. Burgiss. It seemed to be an ox bell of a very uncommon and interesting form. There was also a basket of coarse Roman pottery, which was obtained from a neighbouring hill, and which from its character was probably manufactured on the spot.

It was time now to proceed, and under Mr. Hutchinson's guidance, the way was taken across the fields for the Upper Bach farm. Here was an example of an old Herefordshire square pigeon house, with four gables. It formed a cattle shed beneath, a hay loft in the middle, and a pigeon room above. A scramble through a thorny copse, and another short walk, brought the naturalists to Grantsfield. During the walk *Myosotis versicolor*, *Trifolium filiforme*, and *Polygonatum multiflorum* were gathered.

At Grantsfield the members met with a most kind and genial reception, and a whole day could well have been spent in examining the very fine collection of Lepidoptera and birds' eggs, both English and foreign. It had been intended to

give some short list of the rarities and novelties contained in them, but the task was too appalling. They were so numerous, and so beautiful, that it was found quite impossible to do justice to such collections in so cursory a manner. "I daren't look at them," said one of the entomologists present, "for if I began I could not tear myself away."

One novelty, however, must be noticed, and that is the new mode of preparing the skin of caterpillars, for which Lord Walsingham is so noted, and some of them, indeed, were actually prepared by his lordship. The method followed is to drop the caterpillar into spirits of wine, and allow it to remain there a sufficient time to harden the skin. The insect is then taken out, and by careful manipulation in flannel, the inside is removed, when it is simply blown up by air with a fine blowpipe, the fingers holding it, giving the insect its natural shape at the same time. It quickly dries, and the result is that the caterpillar seems moving before one in its most natural life-like appearance.

In the neighbourhood of Grantsfield, it must be mentioned, two plants of considerable interest grow, but they are extremely local. One is the Bee Orchis, *Ophrys Apifera*, which was not this year to be found, the sheep very possibly having grazed off every spike, as sometimes happens. The other local plant is *Convallaria Multiflora*, Solomon's Seal. This is one of those old-fashioned plants, more often to be met with in gardens than found wild. It has been cultivated for the many virtues formerly attributed to it, but which are now perhaps so completely forgotten that it will be a novelty to remind people that it was believed to have the power of "knitting together, soddering, or sealing broken bones." Gerard, in his grand work, goes so far as to assert, that "the roote of Solomon's Seale stamped while it is greene and applied, taketh away in one night, or two at most, any bruise, blacke or blew spots, gotten by falls, or woman's wilfulness, in stumbling upon their hastie husbands' fists, or such like" (p. 758). Let us hope that the need for the remedy has grown as much out of fashion as the herb itself.

At Grantsfield some very interesting stone implements had been sent for exhibition. 1. A neolithic axe-head of polished flint, six inches and three-quarters long, two inches and a quarter broad at the base, gradually tapering to nearly an inch; it was found on digging a drain on the Heath Farm at Leysters, and is a very fine specimen. 2. A stone ball, of about two inches and a quarter in diameter, rather irregularly round; it was found near a tumulus, supposed to be British, in a field near the church at Leysters; and 3 and 4 were arrow-heads of flint ploughed up there last year. They were all specimens of very great interest, and the neolithic axe is a remarkably fine one. It did not transpire to whom they belonged, or for what museum they may be destined, for such relics seem to demand public appreciation and care as Herefordshire specimens. They would be greatly treasured and well preserved in the glass cases of the museum at Hereford, if the liberty of making the suggestion at haphazard may be pardoned.

The attractions at Grantsfield had to be left, so with a parting look at the well-tended garden (there's a *Rosa tomentosa* there, with a stem considerably over a foot in circumference,) the way was taken for Berrington Ride and its noted plant *Pyrola minor* (the Lesser Winter Green it is called in English). It is very

frequent in Scotland and in the North, but is rare and local here. It was found growing freely in several clusters, and it was a great pleasure to see and to gather the elegant spikes of blossom rising from its pale green leaves. It is not unlike the Lily of the Valley in its inflorescence, but its flower stems are more upright, the individual blossoms more round, with a tint of the faintest possible rose colour, still more seen in the unopened buds. The family of Winter Greens, for there are several species of them, are often very abundant, and an oil is extracted from the plants, which is just now in great vogue for the manufacture of the great remedy for rheumatism—Salicylic Acid.

Another medical shrub grows in Berrington Ride, the Buckthorn, *Rhamnus catharticus*, a plant whose syrup is still in every-day use; *Viburnum lantana*, the wayfaring tree, or Wild Guelder Rose.

“Way-faring tree! what ancient claim
Hast thou to that right pleasant name;
Was it that some faint pilgrim came
Unhopedly to thee.”

Its white blossoms in spring and the rich crimson hue its leaves acquire in autumn, render it a favourite in plantations. *Fragaria elatior*, and some very fine spikes nearly two feet long of the Butterfly Orchis, *Habenaria chlorantha*, were also gathered there.

ASHTON CAMP

was the next point of interest to be visited. It is situated in the open field immediately behind Ashton farmhouse, the home pasture which the geese delight in, for they had left plenty of feathers behind them. It is a quadrangular camp with rounded corners, some 96 paces across it. At the upper corner within it is a square platform 25 paces across, raised a few feet higher than the rest. The embankments have all been levelled, but are still clearly defined, and a few large trees are growing at intervals upon them. It is evidently Roman, not only from its shape and construction, but also because it occupies the gentle eminence which they were fond of choosing to suit their cavalry. It was probably an outpost to protect the Roman road which runs below, and possibly also was used as a signal station. At the distance of half a mile from it is the “Castle Tump,” ominous in name, but equally with itself altogether beyond the pale of history.

The enthusiastic guide led on most of the members up the steep ridge of Brooches hill, a siliceous cornstone hill half a mile further on, in search of the camp, and the extra walk and fine views they met with, made a quiet rest at the Ashton Farm, and a glass of cider, which was given with much kindness and courtesy, very acceptable.

Berrington Hall, the seat of Lord Rodney, was next visited. It is over a hundred years now since the brave and gallant Admiral Rodney won that grand victory for his country, and introduced the new system of naval warfare called “breaking the line.” On April 12th, 1782, he met the French fleet, when about to attack Jamaica. With his own ship he dashed through the enemy’s line, and

by his activity and good seamanship, he surrounded half the French fleet, sunk one ship, blew up three, and captured four. The French admiral, Count de Grasse, was taken prisoner and sent to England. This victory was a critical one. It saved Jamaica, rejoiced the heart of his country, and deservedly won for him a barony, £2,000 a year pension, and a monument in St. Paul's.

If time and space permitted, it would be a pleasure to tell how in 1759 Admiral Rodney destroyed the boats and stores prepared at Hâvre for the invasion of England; how in 1780 he defeated the Spanish fleet off Cape St. Vincent, destroying four of their ships, taking four, and allowing only four to escape, whilst the Admiral Don Langara was also taken prisoner and sent to England; and how he did many another brave and gallant action: but it may not be. The pictures of the Admiral himself and his battles must be passed by, and all other pictures and objects of *virtu* there, and so too, must the two fine stuffed black bears which guard the inner door of the hall, or the skins and heads of the many deer, bison, and other animals that have fallen to the power of his successors—for local matters only must be dwelt upon by Woolhope men on excursions. The fine female white-tailed eagle, *Haliaëtus albicilla*, which was captured in the park seven or eight years ago, is quite within the scope of the Club. This magnificent bird was observed in the park for some days and was at length trapped. It is now well set up by Shaw, of Shrewsbury, in a glass case in the hall, and stands over three feet in height. In the hall too is another old Herefordshire memento, in the shape of a flag all green and gold, "Stretford, Cyder free from tax," the flag which was used doubtless in the general rejoicings through the county that took place when Mr. Velters Cornewall had succeeded in getting that tax taken off, and thus made himself so popular.

The four handsome long ten pounders on the lawn, highly ornamented Spanish guns, bearing on them the dates of 1754-5 and 1756 (2), were passed by and the way taken by the pine grove to the large pools. The park is very well undulated, has many fine trees about, and is very picturesque, but all the eyes of the botanists were quickly centred on the water plants on the pool, which were only too abundant. There was a fine patch of the white water lily, *Nymphæa alba*, in the full perfection of early bloom. Like the sacred lotos of the Nile, the flowers of the white water lily arise and expand as the sun gains ascendancy, close towards evening, and thus remain through the night reclining on the bosom of the water, or actually sink beneath its surface, till revived by the return of day, when again

"The water lily to the light
Her chalice rears of silver bright."
SCOTT.

And many pretty poetical fancies are built on this habit of the plant. The other plants noticed were *Myriophyllum spicatum*, *Ranunculus circinatus*, *Polygonum amphibium*, *Alisma Plantago*, *Potamogeton crispus* and *natans*, *Arundo phragmitis* and *Typha angustifolia*. Newman in his work on British ferns mentions Berrington Pool as a *habitat* of *Lastrea Thelypteris*, but this marsh fern was not observed, nor was there time to make any search for it.

The Heronry on the island created great interest, and some half-dozen of the

first to arrive at the boat-house had the privilege of landing there to look up at them. The keeper states that he counted 40 birds on their return this spring after the two or three months' absence, which they make every winter; and 28 of them have been seen fishing at the same time. The nests are built on the top of some very tall firs and beech trees. There were three upon one Scotch fir, but it was not possible to count the number of nests from the abundance of the foliage beneath. It is thought there are from 14 to 20 nests there. The only other heronry in Herefordshire at this time, so far as is known, is one of three nests in the horseshoe bend of the Wye near Letton Court. It was pleasant to hear that Lord Rodney has given special instructions for their preservation.

Mr. James W. Lloyd brought a box of very interesting Herefordshire birds' eggs. Two eggs of the Curlew, *Numenius arquata*, which were taken on the 12th of May from a nest of four eggs on Bradnor hill, within a mile and a half of the town of Kington. A nest of young curlews were hatched out last year on the same spot. Four eggs of the common Snipe *Gallinago caelestis*, were also shown which were taken from two nests near Kington by Mr. J. W. Lloyd, on April 18th, within a hundred yards of each other. Two Cuckoos' eggs, *Cuculus canorus*, were also in the box, taken successively from the same robin's nest on the 18th and 20th of May. And lastly, three eggs of the Hawfinch, *Coccothraustes vulgaris*, taken on June 8th from a nest in an apple tree.

Mr. J. B. Pilley also brought very fine specimens of a butterfly from Borneo, *Ornithoptera Brookiana*. Each wing was three inches and three-quarters in length, and had a succession of metallic markings in green, the size of the ordinary feathers of a bird.

The dinner took place at the Royal Oak Hotel, Leominster, and after dinner a very excellent practical paper was read by the Rev. Augustin Ley on "The Recent Additions to the Moss Flora of Herefordshire;" and this was followed by the completion of the paper on "The Birds of Herefordshire," which had been partly read at the Bach Camp in the morning. Thus ended a very enjoyable day.

The gentlemen who attended the meeting were the Rev. Charles Burrough (President), George H. Piper, F.G.S., J. Griffith Morris, the Revs. Wm. Bowell, E. R. Firmstone, Edward Hewitt, Thos. Hutchinson, W. R. Jenkins, Augustin Ley, H. B. D. Marshall, R. J. Palmer, Stanley Pelly, H. W. Phillott, Wm. P. Stanhope, J. R. G. Taylor, J. Tedman, T. W. Trumper, and R. H. Williams, Drs. Bull, Chapman, and J. H. Wood, Major Doughty, Captain du Boulay, R.E., Messrs. P. Renel Atkinson, F. Bainbridge, H. Barker, R. A. Billiard, J. Du Buisson, T. D. Burlton, D. R. Chapman, Robert Clarke, H. Gortneck, J. Greaves, W. H. Harrison, W. Hebb, J. Hewitt, T. Hutchinson, Lacon Lambe, Jas. W. Lloyd, J. Lloyd, J. Maynard, H. C. Moore, J. B. Pilley, A. J. Purchas, O. Sheldard, J. H. Southall, and T. Lane.

The following gentlemen were elected members at the meeting:—Rev. G. E. Ashley, Messrs. R. A. Billiard, A. A. Hancocks, and Rev. J. W. Lee, and two others were proposed.

A RARE ENTOMOLOGICAL COLLECTION.

BY A VISITOR TO THE WOOLHOPE CLUB.

It was my good fortune on Thursday last, June 19th, to inspect the cabinets of British Lepidoptera collected by Mrs. Hutchinson, of Grantsfield, near Leominster. That lady most kindly opened them for the inspection of the members of the Woolhope Club who visited the neighbourhood on that occasion. It would be impossible to give even an outline of the vast collection. Owing to the length of the day's programme, barely as many minutes were devoted to its inspection as hours would have been required. A few of the rarer species, however, were noticed by the writer, and a short account of them may be of interest to your entomological readers.

The Bath White (*Pieris Daphidice*).—This, one of the rarest of diurnal lepidoptera, was represented by several specimens. The collector may pass from youth to old age and never be so fortunate as to capture this insect in the British Isles. Here he had the opportunity of feasting his eyes upon several examples.

The Purple Emperor (*Apatura Iris*).—A long series of this splendid butterfly, which holds the highest place among the British species, and is the most difficult to capture. Some grand specimens of their imperial majesties were in the collection.

The Camberwell Beauty (*Vanessa Antiopa*).—This rarity, the capture of a specimen forming a red-letter day in the career of the entomologist, was a surprise to the collector, from the number of representatives. The first and second of the series were taken at one sweep of the net, and varied from the other examples by having the outer border of a yellow tint, thus approaching the European type. The other specimens were of the usual British character, nearly white, with a faint yellow tinge.

The Queen of Spain Fritillary (*Argynnis Lathonia*).—This beautiful species, which varies so much in shape from the other members of the family, was represented by several specimens, all very fine. Owing to its scarcity, it is not often seen in cabinets of British butterflies.

The Silver Cloud (*Xylomyges conspicularis*).—Here was a surprise for the entomologist, numerous examples of this exceedingly rare *noctua* meeting his astonished gaze; not a solitary specimen (as the collector considers himself fortunate in possessing), but varieties to be studied, so long was the series.

These are a few of the rarities noticed, and they will give an idea of the richness of the cabinets.

Woolhope Naturalists' Field Club.

JULY 15TH, 1884.

(LADIES' DAY.)

THE GORGE OF THE TEME AT DOWNTON.

ANOTHER pleasant day has been added to the Annals of the Woolhope Club; somewhat misty and dull it proved, and there was one shower, but no real inconvenience was caused by it, and all who were present seem to have enjoyed the day thoroughly. The gleams of sunshine were too few, but yet the mist and dullness in such lovely scenery had its own advantages and charms. Heavy rain in the morning prevented many members and their friends from venturing on the expedition, and when at the station, the crowds on their way to attend the Royal Agricultural Exhibition at Shrewsbury, quite prevented the recognition of the Woolhopeans. At Ludlow the carriages were waiting in readiness, and the party consisted of:—The President, the Rev. Chas. Burrough; the Vice-President, H. C. Beddoe, Esq., Miss Marion and Miss Kate Beddoe; Mrs. and Miss Armitage; Mr. Harold Brown and Miss Brown; the Revs. John Buckle and Godfrey Buckle, with two Misses Buckle; Dr. Bull, Mr. Ernest Bull, Miss Bull, Miss Maude and Miss Leila Bull; Mr. Du Buisson and Miss Du Buisson; Mr. A. A. Hancocks, Mrs. and Miss Hancocks; Mrs. Holden and Miss Stallard; Mr. J. W. Lloyd, Miss and Miss Mary E. Lloyd; Mr. Walter Shaw and two Misses Shaw; the Rev. R. H. Williams and two Misses Woodhouse; Miss Edith Symonds; the Revs. G. H. Clay and David Price; Messrs. F. Bainbridge, W. M. Clay, C.E., P. C. Cleasby, T. W. Fortey, C. Fortey, and J. Lambe; Mr. Theo. Lane, Mrs. Lane, and Miss Perkins.

The wild, wooded grounds in the narrow valley of the Teme, below the Castle, were as beautiful as they ever are at all times, and almost in all weathers; and there was on the present occasion ample time to enjoy the walk through them, and watch the trout and grayling in the rapid waters of the river below. A pleasant picnic luncheon was taken on the rocks—delicious bottled cider and perry got there somehow or other—not to mention other delectables, the Blue Ribbon notwithstanding. A shower came on just at this time, and thus there was possibly a more attentive audience than there otherwise perhaps might have been to listen to the papers under the shelter of the summer-house.

The President read an amusing paper, equally appropriate to the year and occasion, on "Bissextile: or some Legends connected with Leap Year." This was followed by a very interesting paper on "Herefordshire Tokens of the Seventeenth

Century: with Notes on the Issuers thereof"; by Mr. J. W. Lloyd, a paper which showed much study and research, and which was illustrated by lithographs. Another ten minutes was given to the continuation of the "Birds of Herefordshire," upon which the Woolhope Club is engaged at present. There was only time for the Owls, so the Hawks were taken as read, and a leisurely saunter was made to rejoin the carriages near the Castle.

The way back to Ludlow was very agreeably diversified by a drive through Oakley Park, where there is so much of interest in the trees ancient and modern, for the picturesque old oaks are there admirably contrasted with the varied foliage of the trees of the present century, planted with excellent judgment and taste.

On arrival at Ludlow the greater number of the visitors went over the very interesting ruins of the Castle, and went afterwards to see the fine Church, but the active members of the Club had other duties to perform.

The meeting for the transaction of the business of the Club was held in the Museum-room at Ludlow. The Revs. W. R. Jenkins and T. W. Walwyn Trumper were elected members. A communication was then made from the Rev. Augustin Ley, with reference to the publication of the *Flora of Herefordshire*. The printing of this work was begun twenty years since, but was not far proceeded with for reasons not necessary to enter into now. At that time the Rev. W. S. Symonds, M.A., F.G.S., &c., wrote the Geology of the fourteen botanical districts into which the county was divided, and he has again very kindly undertaken to revise this paper and bring it up to the present state of science.

The publication of the *Flora of Herefordshire* is one of the objects for which the Club was originally formed, and since the Rev. Augustin Ley is quite prepared with his MS. and offers to edit it, it was resolved to begin its publication as soon as the Central Committee could arrange to do so, in order that the volume may be completed next year.

The Museum at Ludlow was then cursorily examined with very great pleasure. Time did not admit of any long stay there, but enough was seen to secure a very cordial admiration of the excellent manner in which it is arranged. Its fossils are well known for their interest and rarity. The British birds, too, form a very fine collection, most beautifully prepared and arranged. One might wish, perhaps, that more space could be allotted to them, by banishing some of the foreign specimens; for good as they are, they have no business there. A local museum should be confined to local objects, to arrive at perfection; but it is ever the case that local human interests prevail and load the local cases with other objects than local ones. The Museum at Ludlow does the highest credit to those under whose care it is managed, and it is really an honour to the town, and an object of interest there, well worthy of a prolonged visit.

The Club were much indebted on this occasion, as has so often happened before, to the kindness and hospitality of the Messrs. Fortey, who spared no effort to make satisfactory arrangements for the meeting and to aid, in every possible way they could, to carry it off well. And they succeeded too, for, to finish as we began, in spite of dull and misty weather, a very enjoyable day was spent by all who had the good fortune to share in its adventures.

BISSEXTILE: OR LEGENDS CONNECTED WITH LEAP YEAR.

By the Rev. C. BURROUGH, M.A.

As the sun and moon were originally designed, not only to give light to the Earth, but to be “for signs, and for seasons, and years”; so the earliest records show that man distinguished between a solar and a lunar year—a year measured by the apparent course of the sun through the twelve zodiacal constellations, and a year divided according to the twelve periods of the moon’s rotation round her own axis.

At the time of the Flood, about B.C. 2349, the lunar year was divided into twelve months of thirty days each, or 360 days; and this year perfectly corresponds with the Egyptian Vague year, without the five intercalary days; that is to say, the lunar year was corrected by the solar year in each case. So Julius Caesar, whose name was given to this month, originally known by the Romans as Quinctilis, or the 5th, adapted the year in B.C. 46 to the sun’s course. But the Julian Calendar supposes the mean tropical year to be 365 days 6 hours, and this exceeds the real amount by 11 minutes and 12 seconds, the accumulation of which, year after year, caused at last considerable inconvenience. Accordingly in 1582 Pope Gregory XIII. again reformed the Calendar. The ten days by which the year had been unduly retarded were struck out by a regulation that the day after October 4th in that year should be called the 15th, and it was ordered that whereas hitherto an intercalary day had been inserted every four years, for the future three such intercalations should be omitted, viz., in those years which are divisible without remainder by 100, but not by 400. Thus, according to the Julian Calendar, the years 1600, 1700, 1800, 1900, and 2000 were to have been leap years, but by the regulation of Pope Gregory, the years 1700, 1800, 1900 were to receive no intercalation, while the years 1600 and 2000 were to be bissextile as before. The Bull which effected this change was issued February 24th, 1582. Even now the reckoning is not quite accurate, for in 3,600 years the excess will have amounted to 24 hours! It has been proposed, consequently, by the French astronomer Delambre, that 3,600, 7,200, 10,800, &c., shall not be leap years, and so the measurement of time will really be made exact for the future! The Gregorian Calendar was introduced in the greater part of Italy, as well as in Spain and Portugal, on the day named in the Bull. In France, two months after, by an edict of Henry III., the 9th December was followed by the 20th. The Roman Catholic parts of Switzerland, Germany, and the Low Countries adopted the correction in 1583, Poland in 1586, Hungary in 1587. In England the Gregorian Calendar was not adopted till 1752, and Russia still retains the “old style” or Julian year.

The first day of the Roman month was, you know, called the *Kalends*: the seventh of March, May, July, and October, and the fifth of the rest, was called the *Nones*; and eight days after the *Nones* came the *Ides*. The intermediate days

were reckoned backwards, counting both extremes. Now, as the ordinary Julian year was 365 days, and the actual year about $365\frac{1}{4}$ days, Julius Cæsar established the rule that at the end of every four years, immediately after the Terminalia, or Festival of Terminus, the God of Boundaries, which was celebrated on the 23rd February, the last day of the old Roman year, a single day should be intercalated. In such a year, then, February the 23rd would be called the 7th day before the Kalends of March, and February 26th would be called the 5th day before the Kalends of March. Consequently, both the 24th and the 25th were called the 6th, and hence the term "bissexum," applied to the intercalated day, February 24th. The 24th, though, was distinguished from the 25th by being called *Posteriorum*, and the latter *Priorum*. And so the 24th of February is always the Festival of St. Matthias—the added Apostle—according to the old rule.

"Posteriore die celebrantur Festa Mathiæ."

From the intercalated day being called Bissexum, Leap-year was named *Annus Bissexus*, and by the Venerable Bede *Annus Bissextilis*, whence the term "Bissextile."

The origin of the term "Leap-year" seems to have been that a day of the week is leaped over in consequence. For if in an ordinary year the first of March be on a Monday, the year following (not being leap-year) it will be on a Tuesday ; but in leap-year it will be on a Wednesday.

To find leap-year there is this old rule—

Divide by 4 ; what's left shall be
For leap-year—0 ; past—1, 2, 3.

I am sorry to say that I have been unable to find any legends connected especially with leap-year, and so the alternative title of this paper, thought appropriate for a Ladies' Day of our Club in such a year as this, is a witness to the truth of the old saying that certain "steps taken in haste are repented of at leisure." But, though I am not able to say when that very definite advance towards the universal enfranchisement of ladies was made, and they, once in every four years, for the space of 366 days were first allowed to take the matrimonial initiative, and command the affections and, it may be, restrain the liberty of the men of their choice,—or (I am very creditably informed) forfeit 12 pairs of gloves and a petticoat made of red flannel, I find that when William the Conqueror proposed to Matilda, daughter of Baldwin, Earl of Flanders, he was refused, because the lady was in love with the Saxon Earl Brihtric, ambassador of King Edward at her father's court, to whom (whether in leap-year or not is not chronicled) she had made repeated offers of marriage, which were as repeatedly refused ! Again history is silent whether or not the forfeit was exacted ! It is said, however, that William, who would not brook defeat either in love or war, went immediately and secretly to Bruges, where Matilda lived, and waited at the church door till she came out, when he seized her, "shook her not very tenderly," knocked her down with his fist, kicked her over and over in the mud, belaboured her most furiously, "overwhelming her with blows." Having concluded these delicate attentions,

he mounted his horse and rode away, without bestowing on her a single word. Matilda was picked up by her attendants, carried home, and put to bed. Whether she was fascinated with the Duke's mode of wooing, or feared a second offer of a similar character, does not appear; but while still confined to her bed, through the maltreatment she had received from her lover, she declared to her father, "that sick in health and dolorous of body from the blows she had received, she had firmly decided to marry no man but Duke William." On this intimation of his daughter's feelings, the Earl of Flanders withdrew his opposition to the match. Matilda was married to the "Conqueror" at the Chateau d'Eu; and, if we may rely on Madame Guizot, "held him most dear to the very day of her death." Her marriage afforded her, at least, one source of gratification. On the conquest of England, William offered to endow her with the lands of any Saxon noble she chose to select; and she immediately demanded and received the estates of her once loved Earl Brihtric. She also obtained possession of his person, and threw him into prison, where he died mysteriously.

In the days of our Anglo-Saxon forefathers nothing was more common, or deemed more honourable, than to acquire a wife by forcibly carrying off the sister or daughter of a public enemy, or private foe. The lady was said, in the rhyming laws our fathers loved, to be

"Legitime capta,
Non vi rapta!"

This was called "the Spartan form of marriage." But between the 5th and 10th century English women gradually obtained the right of disposing of *themselves* in marriage. At first both Church and State required the daughter to accept, without question or comment, whomsoever her father pleased. She obtained, however, at a very early period, the right of making an objection to a suitor for some grave and specified cause; but of the validity of this objection her father was sole judge. The money now paid to the bride's father was no longer called her "price," but "foster-lean,"—a kind of charge for "unexhausted improvements" in her education. So woman has advanced to her present proud position. No doubt, as February is the month in which the day is intercalated in Leap-year, and the month also of S. Valentine, some will suppose that there must be some hidden connection between the 14th and the 24th. Be that as it may, we have at least one instance of a lady selecting the 14th as an opportunity not to be missed on which to exercise her privilege. In Vol. III. of the *Paston Papers*, published by Professor Arber, we read that, early in 1477, there began to be entertained a marriage between Mistress Margery Brews and Mr. John Paston, and here is the very forward valentine the young lady addressed to her rather hesitating lover:—"Right, reverend and worshipful and my right well-beloved Valentine, I recommend me unto you, full heartily desiring to hear of your welfare, which I beseech Almighty God long for to procure unto His pleasure and your heart's desire. And, if it please you to hear of my welfare, I am not in good heal of body nor of heart, nor shall be till I hear from you."

HEREFORDSHIRE TOKENS OF THE SEVENTEENTH CENTURY, WITH NOTES ON THE ISSUERS THEREOF.

By Mr. JAMES W. LLOYD.

MR. President, Ladies, and Gentlemen,—It is with great diffidence and hesitation that I appear before you, fellow members and friends of the Woolhope Naturalists' Field Club, to speak on so dry a subject as "Tokens," one which is so far removed from the usual line of our pursuits.

Following, however, in the steps of some of our esteemed members, I venture to bring before you to-day a few notes on the earliest copper currency of the county, and on the issuers thereof—our forefathers—for the pieces I am about to describe, tell us nothing of kings and queens—but simply of the people; and by their means the names of many industrious and thriving tradesmen of our towns and villages, at one of the most interesting periods of our history, have been handed down to us; men who acquired fortunes and estates, and founded families, whose descendants still live among us distinguished in most of the higher walks of life. Before proceeding to describe the tokens which were issued in the city and county of Hereford, it will be desirable, for the benefit of my non-numismatic hearers, to give a brief outline of their origin.

From the earliest periods of our history, the small coinage of this country was of silver only, viz., the penny, halfpenny, and farthing; and these, from their small size, were of course troublesome, and easily lost. The need of a more useful and tangible currency was gradually increasing, and in the reign of Elizabeth efforts were made to supply the deficiency, but owing to the necessity for restoring the standard of the silver money, which had been greatly debased in the reign of her father, Henry VIII., nothing was done beyond striking pattern pieces for a copper currency, and the issue of a small number for circulation in Ireland. Authority was also granted by Elizabeth to the Mayor and Corporation of Bristol to issue a farthing token, but this was solely for the use of that city, and of no benefit to the country generally.

Lead tokens were then issued by the people, but they served only to show the increasing necessity for a general circulating medium.

James I., in the year 1613, granted a patent for the issue of farthings to John Baron Harington, and Charles I. renewed the patent on his accession.

These pieces, however, like their predecessors, the silver farthings, were extremely small, and of mere nominal value, and, being issued in great quantities, ultimately became an intolerable nuisance, and the source of great loss to the holders from the refusal of the patentees to re-change them. In consequence of the public dissatisfaction, these pieces were suppressed by order of the House of Commons in 1644, and it is supposed it was the intention of the Government to issue an authorised copper currency, as pattern pieces were struck, but owing to

the Civil War this was not carried out. The death of the king put an end to the exclusive right of coining, and the tokens which form the subject of this paper began to appear, a few being dated 1648, and in a few years increased to a great extent, until 1672, when they were put down by proclamation of King Charles II., who then established the regal copper currency, which has continued to our own day, by the issue of farthings and halfpennies, bearing on the reverse the well-known figure of Britannia.

The tokens were of the values of penny, halfpenny, and farthing, the Herefordshire series consisting principally of halfpennies, there being few farthings, and only one penny. They were struck both in brass and copper, round, octagonal, square, and heart-shaped, the two latter being least common. Our county series contains specimens of each shape. They usually bear round the circumference of obverse the name and trade of the issuer, and in centre either the arms of the trade, the arms of the issuer himself, or some device; and round the reverse the name of the town or place of issue, with the initials of the issuer and his wife in centre, the initial of surname being placed above those of the Christian names of the man and wife.

These interesting mementoes of our forefathers have had their historians. Snelling, in his *View of the copper coin and coinage of England* (1766), giving a very full account of their origin, and an interesting description of their character and peculiarities, with four plates illustrating 160 different pieces, including one of the city of Hereford.

The next work treating of the subject generally, entitled—*Tokens issued in the seventeenth century in England, Wales, and Ireland, by Corporations, Merchants, Tradesmen, &c., described and illustrated by William Boyne, F.S.A.*, published in 1858, is the accepted standard authority on this branch of numismatics, describing nearly ten thousand tokens, and illustrating a great many. Since the publication of Boyne's valuable work, great numbers of tokens have turned up, and it is by the separate publication of lists of the different counties that these are described, and much has been done in this way, but, so far as I know, no complete *Herefordshire* list has been published in a separate form.

Price, in his *History of Leominster*, published in 1795, gives a plate of six tokens of that town; and in his *History of Hereford* the same author gives a wood-cut of the Hereford Corporation token. Duncumb, in his history of the county, describes incorrectly three tokens of Hereford, but says nothing of those issued in other towns. The best list of the Hereford series is given by the late Richard Johnson, in his *Ancient Customs of the City of Hereford*, while in other local histories, viz., Parry's *Kington*, Townsend's *Leominster*, *The Ledbury Guide*, &c., appear short lists of the tokens issued in those places. In the Hereford Free Library, there are drawings of nineteen tokens made for the late Thomas Bird, Esq., Clerk of the Peace for the county, from specimens in the collection of the late John Allen, Esq.

Of local collections of these pieces, one of the best I know is that of Mrs. Johnson, The Steppes, Hereford. Boyne describes 41 tokens as belonging to this county, but one of these belongs to Essex, and another is a duplicate description,

probably from an imperfectly preserved token, leaving 39 as his total. The following list describes 72, of which 60 are in my own collection.

The plates exhibited are from drawings made from specimens in my cabinet some two years ago, and represent the tokens fairly, *as they are*, not as they were when fresh from the dies. I mention this as it has been suggested that the tokens should have been shown more clearly drawn, with sharper lines, but I consider these more faithful representations.

It now remains for me to render my best thanks to the various ladies and gentlemen who have kindly assisted me in the preparation of this paper, by lending specimens, or allowing me to inspect their collections; and to the different incumbents of the various parish churches, who have so cordially allowed me to inspect their parish registers to obtain notices of the births, marriages, and burials of the issuers and their families, a favour which in only a single instance was refused, and that, unfortunately for my paper, was in a parish whose registers would have afforded, perhaps, greater information than any other. In a few instances, I have been unable to make a personal examination of the registers, but in those cases I have been most ably assisted by the clergymen and others, who have made searches and sent me transcripts of the entries, notably the Rev. R. H. Cobbold, of Ross; the Rev. J. F. Crouch, of Pembridge; and the Rev. W. Martin, of Bromyard; and I am especially indebted to our late worthy President, Mr. Piper, who sent me most copious extracts from the Ledbury registers.

I must also acknowledge how much I have been indebted to the Rev. C. J. Robinson, one of our former Presidents, for much valuable information, both directly and by reference to his well-known work, *The Mansions and Manors of Herefordshire*. The Rev. F. T. Havergal's *Monumental Inscriptions of the Cathedral* has also been laid under contribution, with considerable advantage; lastly, my obligation to Justin Simpson, Esq., of Stamford, author of *A List of the Lincolnshire series of Tradesmen's Tokens and Town Pieces of the Seventeenth Century*, must not be passed over, for, at considerable outlay of time and trouble, he searched the Rolls of the Hearth Tax for this county at the Record Office, London, and sent me the interesting items of information therefrom, which will be quoted in the course of this paper.

I now proceed to describe the tokens of each town, following Boyne's plan of taking them alphabetically.

BROMYARD.

[The preceding letter "O" means the obverse of the coin, and the letter "R" the reverse.]

1. O. IOHN . BAMEHAM = Crest of the Baynham family, a bull's head couped or.
R. OF . BRAM-YARD = I . F . B ½
2. O. IOHN . BAYNHAM = Crest of the Baynham family, a bull's head couped or.
R. OF . BRAM-YARD = I . F . B ½
3. A variety from a different obverse die ½

The issuer of this token belonged to a family of importance and position in the town, but I have been unable to discover what trade he followed. The bull's

head on obverse is the crest of the Baynham, who bear gul. a chevron arg. between two bull's heads in chief caboshed or, and one in base arg. The names of John Baynham and his brother Anthony appear as two of the free burgesses to a form of election of a master to the Free Grammar School at Bromyard dated 27th June, 1661. Dunc. Vol. II., pp. 77, 78.

In the chancel of Bromyard Church is a marble tablet with the arms of the family and the following inscription:—"In this chancel were interred the bodies of John Baynham, Esquier, June 4, 1636, aged 70. Elizabeth his wife Feby 12, 1655, aged 66. Edward Baynham eldest son and heire Jann 10, 1652, aged 42. Mary his wife June 16, 1650, aged 30. John Baynham:* 6: son May 24, 1671, aged 52. Frances his wife: July 10, 1683. Anthony Baynham died Janna 23, '98."

King Charles I. on his second visit to this county in 1645, arrived at Bromyard, Wednesday, 3rd September, spending a night at Mrs. Baynham's, on his way to Hereford. This was no doubt the mother of the issuer of the token.

This token is incorrectly described by Boyne.

John Baynham, Gent., was assessed for eleven fire hearths in Bromyard, 18 Charles II. 1666.

Hearth Money was a tax established by 13 and 14 Car. II. c. 10, whereby a hereditary revenue of 2s. for every hearth or chimney in all houses paying church and poor rates was granted to the King. It was abolished upon the Revolution by the 1 W. and M. st. 1 c. 10.

HEREFORD.

4. O. HEREFORD. CITY. ARMS = Arms of the city with date 1662 above the shield.

R. HEN. IONES. SWORD. BERER = A sword erect between H. I (Plate 1, No. 1.) A woodcut of this token is given in Price's *Historical Account of the City of Hereford*, 1796, page 64 1/2

5. O. } Same as No. 3, but from different dies 1/2
R. }

6. Similar, dated 1663 1/2

7. O. HEREFORD. ARMES = Arms of the City, 1662.

R. H. IONES. SWORD. BERER = A sword erect between H. I 1/4

The Arms of the City as shown on these tokens are gules, three Lions passant gardant argent, with the augmentation granted by King Charles in 1645, in recognition of its loyalty, viz., on a border azure ten Saltiers or Scottish crosses argent.

The following is the patent under the hand and seal of Sir Edward Walker, Knight, Garter Principal King at Arms, dated the 16th day of September, 1645.

"To all and singular unto whom these presents shall come. Sir Edward Walker, Knight, Garter Principal King at Arms of Englishmen, sendeth greeting. Whereas it is most agreeable to justice and reason, that those persons, families, or cities, that have excelled in wisdom, fidelity, and eminent service to their

* The issuer of the token,

Prince and country in the time of peace, or in courage and magnanimity in the time of war, should have due rewards for such their worthy and valiant actions ; among which, as the multitude of barbarous rebels and their many and traitorous practices against his Majesty's sacred person, the religion, laws, and liberties of his Majesty's kingdoms, have exceeded the example of former ages, and have thereby rendered the duty, courage, and loyalty of those who have valiantly and faithfully adhered to his Majesty the more perspicuous and deserving esteem, so there hath not any city, since the beginning of this unnatural rebellion, expressed greater fidelity and courage than the City of Hereford, in continuing their allegiance, and resisting the many attempts of the rebels ; but the greatness of their loyalty, courage and undaunted resolution, did then most eminently appear, when, being strictly besieged for the space of five weeks by a powerful army of rebellious Scots, and having little hopes of relief, they joined with the garrison, and doing duty as soldiers, defended themselves, and repelled their fury and assaults with such singular constancy and resolution, and with so great destruction of the besiegers, as that they are thereby become the wonder of their neighbouring garrisons, and may be an example to all other cities ; and therefore do justly deserve such marks and characters of honour as may testify to posterity the singular value and regard that was had to such their exemplary constancy, fidelity, and valour. Know ye, therefore, that I, the said Sir Edward Walker, Knight, Garter Principal King at Arms of Englishmen, by the power and authority annexed to my office of Garter and confirmed unto me by his Majesty's letters patent under the Great Seal of England, and likewise by his Majesty's special direction and command, have devised and set forth such an addition of Arms, with crest, supporters, and motto, into and for the said City of Hereford, as may best express their courage on defending the said City, and by whom it was besieged, viz. : About the ancient Arms of that city (being gules, three lions passant gardant argent), on a border azure, ten saltiers or Scottish crosses argent, supported by two lions rampant gardant argent each collared azure, and on each collar three buckles or, in reference to the arms of the rebellious Scots, General Lessly, Earl of Leven ; and for the crest, on a helmet and torsel of the colours, mantled gules, doubled argent, a lion passant gardant argent, holding in his right paw a sword erected proper, hilted and pommeled or ; in a scroll underneath, this motto—INVICTE FIDELITATIS PREMIVM—which augmentation of arms, crest, supporters, and motto, I do hereby give, grant, and assign unto the now Mayor, Aldermen, and Corporation of the City of Hereford, to be by them and their successors, for ever, used in their common seal, and likewise to be borne and set forth by them upon all occasions as the proper Arms of this City and Corporation, without the let or interruption of any person whatsoever. In witness whereof, I have hereunto subscribed my name, and affixed the seal of my office, the sixteenth day of September, in the one and twentieth year of the reign of our Sovereign Lord Charles, by the grace of God, King of England, Scotland, France and Ireland, Defender of the Faith, &c., anno domini 1645.

EDWARD WALKER,
Knight, Garter, Principal King at Arms of Englishmen."

In the roll of the hearth tax for the City of Hereford for 1664, Henry Jones, glover, was assessed for two, and Henry Jones, sword bearer, for one hearth, both in Bysters Ward.

8. O. WILLIAM . BARNES = W . B in a diamond.

R. IN . HEREFORDE . 1661 = ob in a diamond

$\frac{1}{2}$

9. O. WILLIAM . BARNES = 1666.

R. IN . HEREFORD = W . B

$\frac{1}{2}$

A Mr. William Barnes was one of the prisoners 'of quality' taken at the final Siege of Hereford, in December, 1645.

William Barnes was assessed for one fire hearth in Bysters Ward.

The following entries appear in the Registers of the parish of All Saints :—

1691. Eliz. Barnes was Buryed ye first of March.

1692. William Barnes was buryed ye 21 of July.

10. O. HIS HALFE PENNY = ROGER BOVLCOT.

R. OF THE CITY OF HEREFORD = A fleur de lys

$\frac{1}{2}$

11. O. ROGER BOVLCOT = a fleur de lys.

R. OF HEREFORD = R . B

$\frac{1}{4}$

Roger Boulcot was a mercer, and no doubt one of the most well-to-do and important of the citizens at this period, able and willing to render substantial accommodation to the aristocracy of the neighbourhood, at same time supplying their domestic wants in holland and thread, as the following letter, original of which is here for inspection, will show—

“Honoured Sr,

I recd yors and as for the woll you shall have rome for it and I will Indeavor to sell it for you If you send yor lowest Ratte and yor gould shall be kept for you. If you have occation for returne I can score you for £500 or 1000£. I have given a checke to Mr. Carpender's Cash keper and you shall hereafter never have cause to come twise with any bill of mine so with my kind love and servis to you I rest

Yor Servant to my Power

Roger Boulcott.

Hereffd 18 of June 1666.

1 Ell ffine hollond at 0.3.4

ffine therd 0.0.2

0.3.6

Endorsed 'Thes ffor the Woorpll Sr John Scudamore prsentt.'"

Roger Boulcot married Theodosia daughter of Rob. Mynors of Treago, and from his daughter Theodosia who married Peter Rickards, of Evenjobb, co. Radnor, are descended the present opulent and respected families of Baskerville Mynors, who still hold the estates of Evenjobb and Treago.

Roger Boulcot who died 10th October, 1680, and was interred within the precincts of Hereford Cathedral, left a charity to the poor of the City, as follows,

from "An Alphabetical abstract of all the charities and benefactions given to this City of Hereford collected by Ja. Lane, Town Cler. Anno Dni, 1711.

"Boulcott Roger his gift by will of his House in Bye Street called the Scalding House* to ye Poor of ye Hospitall in Bewall Street to be equally divided between ym by ye Mayor and Justices at ye rent days or wthin 10 days after. Yearly rent 50s at Lammas and Candlemas."

He was also a benefactor to the library of Vicars Choral in the Cathedral.

Roger Boulcot was assessed for two fire hearths in Wigmarsh Ward, 14 Car. II.

The following inscriptions to members of the Boulcott family occur on two stones in the pavement of the Bishop's cloister of the Cathedral.

"Here lyeth ye body of Mr. Roger Boulcott, Mercer, departed this life —" stone broken and remainder of inscription illegible.

This no doubt was the father of the issuer of the token.

On a larger stone—

"Here lieth the body of Mr. Roger Boulcott, of this City, Mercer, one of the Common Council of the same City, who departed the 10th day of October, 1680."

"Also the body of Theodosia, the wife of Mr. Richard Witherstone, she being the eldest daughter of Robert Mynors, of Treago, Esq., deceased, and formerly the wife of the above Roger Boulcott, who was interred 6th day of December, 1700. She had nine children living at her death."

"Here also lyeth the body of Bohun, the youngest son of Mr. Richard Witherston and Theodosia his wife, who married Anne, the daughter of Sir John Hoskyns, of Harewood, Bart., and died the — day of February, 1717."

"Here lieth Margaret, the wife of Richard Waring, Clerk, the youngest daughter of Mr. Richard Witherston and Theodosia his wife, who died May 20th 173—?" Mon. In.

In the Registers of All Saints are the following entries relating to the Boulcott family:—

1674. Henry, the sonne of Roger Boulcott, gent., and Theodotia, his wife, was baptized the 29th of March. Wm. Allen, vicar; Mr. Roger Boulcott and John Sandford, churchwardens, 1674.

1675. Theodotia, the daughter of Mr. Roger Boulcott, and Theodotia, his wife, was baptised the 8th of June.

1676. Mary the wife of Joseph Boulcott was buried the nine and twentieth of March.

1677. Elizabeth, the daughter of Mr. Roger Boulcott and Theodotia his wife was baptized the thirteenth of May.

1678. Thomas ye son of Mr. Roger Boulcott and Theodosia his wife, was baptized the xxth of July.

1678. Joseph Boulcott buried ye 28th of November.

* The Scalding-house in Bye-street, now Commercial road, is now occupied by Dr. Smith I believe. I shall be glad to have any information as to origin of the term Scalding-house.

1680. Mary the daughter of Mr. Roger Boulcott and Theodosia his wife was baptized the 16th of September.

1680 Mr. Roger Boulcott was buried the 18th October.

In St. Peter's Register.

September 28th, 1680, was buried Mary, the daughter of Mr. Roger Boulcott.

12. O. THOMAS . ELLTON . 1666 = The Weavers' Arms,*

R. OF . THE . CITY . OF . HEREFORD = HIS . HALF - PENY 1
2

In the roll of assessment of the Hearth Tax on the inhabitants of the county,

- 14, Car. ii., "Thomas Ellton, St. Owen's Ward, hath in his house 3" (hearths).

Thomas Ellton was probably of the family of Eltons of Ledbury, one of whom was Archdeacon of Hereford, and founded certain fellowships at Brasenose College, Oxford.

The name does not appear in the Registers of either of the City Churches which I have been permitted to examine.

13. O. THO . HANCOX . IN . HEREFORD = A book.

R. CITY . BOOKESSELLER . 1668 = HIS . HALFE . PENY (Plate 1, No. 2.) 1
2

The name does not appear in the Hearth Tax Roll.

In the register of St. Peter's is a single entry relating to this issuer, viz. :—

1681. February 19th, baptized William, the son of Thomas Hancocks, and Penelope, his wife.

14. O. I . H . OF . HEREFORD = A rose.

R. THE MERCERS . ARMES = The Mercers' Arms † 1
4

15. O. IOHN . HILL . HEREFORD = $\frac{1}{2}$ d. in an oval.

R. HIS . HALFE . PENY . 57 = $\frac{1}{2}$ d. in an oval. 1
2

John Hill was Mayor of the City in 1659, and appears to have carried on business in Ross as well as Hereford, as a token of same type was issued there in 1666.

A John Hill was assessed for one fire hearth in St. Owen's Ward and in Wyebriidge Ward, "Jno. Hill hath in his house 5 and in a voide house in same ward 2" (hearths).

The name of John Hill appears in the list of benefactors to the Cathedral Library.

In the registers of St. Nicholas Church is the following interesting entry :—

"Buryed the 10th day of June, 1670, Mr. John Hill, alderman of this city, whose happiness it was in his tyme of mayoralty to p'clamyme (*sic*) King Charles ye Second King of England"

* The Weavers' Arms : on a chevron between three leopards' faces, as many roses. These arms are frequently represented on tokens without the chevron and not in a shield, the leopards' faces only.

† The Mercers' Arms : a demi virgin couped below the shoulders, issuing from clouds, crowned, hair dishevelled, all within a circle of clouds. The clouds are rarely seen on the tokens, frequently only the bust of the virgin.

In All Saints' Register.

1678. Joseph ye sonne of Mr. John Hill and Elizabeth, his wife, was baptized ye xxxth November.

The following entries relating to other members of the Hill families are in the registers of St. Nicholas:—

1685. Buried John, the sonne of John Hill, gt., 10 mo. the 28.

1686. 20. 9 mo. Baptized Bridget, ye daughter of Mr. John Hill and Margaret, his wife.

1690. March ye 8th, was Baptized, John, the sonne of John Hill, gent, and Margaret, his wife.

1691. November ye 22th, was Baptised Theophilus, the sonne of John Hill and Mary, his wife.

1692. Baptized July the 18th, Margaret, the daughter of John Hill, gt, and Margaret, his wife.

1693. January the 16th, was Baptized Bridgett, ye daughter of John Hill, gent, and Margaret, his wife.

1696. february the 11th, was Baptized James, ye son of John Hill and Mary, his wife.

1700. Mr. John Hill, Churchwarden.

16. O. GILES . HOVLDER = The Leathersellers' arms,* 1668.

R. GLOVER . IN HERRIFOR CITY HIS . HALFE PENY. (In five lines). (Plate 1, No. 3). ½

This interesting heart-shaped token is one of the rarest of the Herefordshire series; the only notice of it that has come under my observation being in a MSS. list of drawings of tokens, belonging to the late Thomas Bird, Esq., Clerk of the Peace for the county. The specimen represented on Plate 1, No. 3, has recently come into my possession.

The name of Houlder does not appear in the Hearth Rolls, and the only instance of the occurrence of the name in any contemporary records that I have met with is in the following entry in the Registers of All Saints':—

1697. Mary Houlder was Buryed January 8th.

17. O. EDMOND . HVCK = A rose and crown.

R. OF . HEREFORD = E . M . H ¼

This name is not in the Hearth Rolls. In the Registers of St. Peter's is the following entry: 1682, Nov. 9th, baptized Edmund, the son of Wm. Huck and Margery, his wife.

18. O. THOMAS . HVTCHINS = An anchor, 1668.

R. GLOVER . IN HEREFORD . CITY . HIS . HALFE . PENY. In five lines. (*Heart-shaped*). (Plate 1, No. 4). ½

It is curious that the only two heart-shaped tokens in the Herefordshire series were both issued by Glovers.

* The Leathersellers' Arms, also borne by Glovers, are three bucks trippant regardant.

Thomas Hutchins was assessed for two fire hearths in Wey-bridge ward, and Anthony Hutchins also for two in same ward.

In the Registers of St. Nicholas is the following entry :

1667. Bapt. Frances, the daughter of Thomas Hutchins and Margery, his wife, December the 15th.

And in St. Peter's Registers are several entries relating to other members of the Hutchins families, viz. :

1682. November 1st, baptized Ann, ye daughter of Samuell Hutchings and Ann, his wife.

February the first, 1684, Baptized Thomas, the son of Samuel Hutchins, and Ann, his wife.

1686. January 3, Baptized Saul, son of Samuel Hutchins and Ann, his wife.

1687. November 26, Married Anthony Hutchins and Martha Tucker, both of this parish.

1689. June 11, Baptized Samuel, son of Samuel Hutchings and Ann, his wife.

October 27, Buried Paul Hutchings.

October 28, Buried Samuel Hutchings.

1693. Sept. 5, Married Richard Bird and Joanna Hutchings, both of this parish.

1694. January 18, Buried Elizabeth Hutchins.

1699. March 9th, Buried Anne, ye wife of Samuel Hutchins, silk weaver.

19. O. BARNABY . JENKINS . OF . THE = The Leathersellers' Arms.

R. CITY . OF . HEREFORD . 1666 = HIS . HALF . PENY (Plate 1, No. 5.) $\frac{1}{2}$

A Francis Jenkins was assessed for 6 fire hearths in Wignarsh ward, 14 Car II; but Barnaby Jenkins's name does not appear.

20. O. IOHN LANE . IN . HEREFORD = A horse.

R. HIS . HALFE . PENNY . 1661 = 1 . L within a heart. $\frac{1}{2}$

John Lane was buried within the Cathedral precincts, the following inscriptions being recorded on a stone in centre of cloister area, 1859 :—" Here lyeth the body of Anne Watts, wife of Robert Watts, currier, of this city, who deceased December 2 (?), 16-6.

" Here lyeth the body of John Lane, of this city, gent, who dyed the 16th day of January. Anno D.ni 1687.

" John Lane, buried January 17th, 1687.

" Elizabeth, married second husband, Thomas Fowler, died a widow, buried October 19, 1707, in the Lady arbour." (*Monumental Inscriptions.*)

21. O. THOMAS MATHEWS = ob

R. IN HEREFORD . 1661 = T . M $\frac{1}{2}$

22. A variety from different dies. $\frac{1}{2}$

Thomas Matthews was Mayor in 1677, and was assessed for two fire hearths in Bysters Ward. 16 and 17 Chas. II.

The following entries appear in the registers of St. Peter's :—

1688. May 13, baptized Richard, son of Thomas Mathews, and Alice, his wife.

1690. Jan'y 18, baptized Henry, Sonn of Thomas Mathews, and Alice, his wife.

1691. Jan'y 19, baptized Edmond, son of Thomas Mathews, and Alice, his wife.
Feb'y 12, buried Edmond Mathews.

1692. Feb 14, baptized Hannah, daughter of Thomas Mathews, and Alice,
his wife.

1697. Jan 19, baptized Robert, son of Thomas Mathewes, and Alice, his
wife.

Thomas Mathewes signed the Registers of St. Peter's in 1681, as church-
warden.

In St. Owen's Register.

1681. September 18. Baptized Susanna, the daughter of Thomas Matthews,
and Alice, his wife.

23. O. ROGER MORGAN = A fleur de lis.

R. IN HERE FORD = R. M In four lines. (*Octagonal.*) (Plate 1, No. 6.) $\frac{1}{2}$

The following appears in St. Peter's Register :—

1685. Ap the 21, married Roger Morgan, of this parish, and Eleanor Skipp,
of the parish of St. John Bap.

R. Morgan signed the Register of St. Peter's in 1680, as churchwarden.

24. O. IOHN MOSS = a fleece.

R. OF HERRIFORD = I. I. M

$\frac{1}{4}$

A Jno Morse was assessed for four fire hearths in Wyebidge Ward. 16 and
17 Chas. II.

It is doubtful whether the following entries in the Registers of All Saints' re-
fer to this issuer or not, as besides the difference in spelling of the surname, the
wife's initial on the token is I.

1684. Edward, the Sone of Mr. John Morse and Elizabeth, his wife, was
baptized the 26th of October.

1687. Margaret, ye daughter of Mr. John Morse and Elizabeth, his wife, was
baptized 12 Junii.

25. O. THOMAS POWELL = Seven stars

R. IN HEREFORD. 1669 = HIS. HALF PENY

$\frac{1}{2}$

The issuer of this token was probably an innkeeper. The sign of the "Seven
Stars" still exists in the city.

26. O. HVGH. RODD. HIS. HALFE. PENNY = Arms of the City.

R. IN. HEREFORD = An Elephant with Castle on its back.

$\frac{1}{2}$

Boyne describes a token, No. 12 in his list, "HVGH LOW.," which is no doubt
intended for the above, as it corresponds in all respects besides the name, which is
one that does not occur in any records of the period.

27. *O. HUGH . RODD* = The Arms of the City.

R. OF . HERIFORD = An Elephant with Castle 1

Hugh Rodd was mayor in 1666 and part of 1673.

28. *O. JOHN . RODD . 1670* = A cavalier's hat.

R. Qy. (A square token.)

A specimen of this imperfectly-described token was exhibited in the local museum held in the Shire Hall in connection with the meeting of the Cambrian Archæological Association in 1867.

Hugh and John Rodd were brothers (sons of Hugh Rodd, of Wegnall, parish of Presteign), and belonged to the Rodds of The Rodd, a family seated there as far back as the 15th century. A younger branch of this family became owners of the Foxley estates in this county, which descended through an heiress to the ancestors of the late Sir Robert Price, Bart., M.P. for the county. Hugh and John Rodd were mercers, and the former was assessed for six fire hearths in Eigne Ward, 16 and 17 Chas. II., the latter, also in Eigne Ward, for two fire hearths, 14 Car. II. James Rodd, Esq. (probably an elder brother), was also assessed for eight fire hearths in St. Owen's Ward, and four in Wye Bridge Ward.

The following entries appear in the Registers of the different city parishes, viz. :—

St. Owen's.

1679. Jan'y 20 was baptized Anne, the daughter of Mr. Hugh Rodd and Anne, his wife.

All Saints'.

1670. Richard the sonne of Mr. Hugh Rodd and Anne his wife, was Baptized the 27th of March.

1671. Charles, the Sonne of Mr. Hugh Rodd and Anne, his wife was baptized the 12 of June.

1671. Anne, the daughter of Mr. John Rodd and Frances, his wife, was baptiz : 19 December.

1673. Thomas, ye Son of Mr. John Rodd and his wife was Baptized ye 20th day of December.

1674. Lewis, the Sonne of Hugh Rodd, Esq., Mayor, and Anne, his wife, was baptized the 9th of July.

1674. Anne, the daughter of William Rodd and Elizabeth, his wife, was baptized the 21st of July.

1675. William, the Sonne of Mr. James Rodd and Elizabeth, his wife, was baptized the 14th of October.

1675. James, the Sonne of Mr. John Rodd and Frances, his wife, was baptized the 7th of November.

1677. Thomas, the sonne of Mr. John Rodd and Frances, his wife, was baptized the xvth of January.

1678. James, ye son of Mr. Hugh Rod and Ann, his wife, was baptized ye 14th of Aprill. 1678 and 1679, John Rodd, Churchwarden.

1679. James sonne of Mr. John Rodd buried the 22nd of August.

1681. James, the son of Mr. John Rodd and ffrances his wife, was baptized the 14 of Aprill.

1691. Madam Rodd was buried ye 13th of March.

1698. Elizabeth, the daughter of Thomas Rodd and Elizabeth, his wife, was Baptized the 7th of Aprill.

1698. William, the son of William Rodd and Jane, his wife, was baptized the 26th of Aprill.

The following inscription formerly on a gravestone on south side of the Bishop's cloister, probably refers to the issuer of No. 28, "Here lyeth the body of John Rodd, Gent, of the Parish of Marden, who departed this life July 15, Anno Dom 1699. Etatis sue 68."—*Rawlinson's Hist. and Ant. of the City of Hereford*.

I have recently met with the following quaint advertisement in the *London Gazette* of 20th September, 1686, in which the name of one of these issuers is mentioned:—"Lost or Stolen near Marden in the county of Hereford, a bright bay mare 4 years old, with a white fleck on *his* forehead, black Mane, her Tail dockt, some white specks on the saddle-place, about 13 hands highe. Whoever gives Notice of the said Mare unto Mr. John Whiteing, at the Crown in Lawrence-lane, London, or to Mr. Hugh Rodd, Mercer in Hereford, shall have 40s. Reward."

29. O. SAMVELL SAVNDERS. IN == The Ironmonger's Arms.*

R. THE . CITY . OF . HEREFORD == HIS . HALF-PENY ½

In the Registers of All Saints' are the following entries relating to this family:—

1669. Mary, the daughter of Samuell Saunders and Elizabeth his wife, was baptized ye 22th of January.

1672. John, sonne of Samuell Saunders and Elizabeth his wife, was baptized the xxiiith of January.

1675. Samuell, the sonne of Samuell Saunders and Elizabeth his wife, was baptized ye 16th of March.

1677. James, the sonne of Mr. Samuel Saunders and Elizabeth his wife, was baptized the iii of November.

1683. Elizabeth, the daughter of Mr. Samuel Saunders and Elizabeth his wife, was baptized the third of May.

1687. Samll Saunders and Ann Knowles were married ye 3rd of July.

1688. Thomas, the sonne of Samuell Saunders and Anne his wife, was baptized the 27th of December.

1689. Elizabeth, daughter of Mr. Samuell Saunders buried ye 30th of September.

The following inscription was formerly on a gravestone in the area of the Bishop's cloister:—"Here lieth the body of Samuel Saunders, of this city, iron-

* The Ironmonger's Arms, on a chevron between three gads, as many swivels.

monger, who deceased the 12th day of March, 1700, in the 58th year of his age."

"Come here, my friend, and cast an eye,
Then go thy way, prepare to die;
Learn here thy Doom, and know thou must
One day like me be turned to dust."

—*Rawlinson's Hist. and Ant. of the City of Hereford.*

30. O. THOMAS SEABORNE = The Arms of the City.

R. IN . HEREFORD . 1652 = T. S

$\frac{1}{4}$

Thomas Seaborne was Mayor in 1649 and part of 1648, and was assessed for two fire-hearths in Wigmarsh Ward, 14 Car. II., and for one in Wyebridge Ward, 16 and 17 Car. II.

In All Saints' Register the following entries occur :—

1669. Thomas, the sonne of Thomas Seaborne and Elizabeth his wife, was baptized ye 10th of March.

1672. Hannah, daughter of Mr Thomas Seaborne and Elizabeth his wife, was baptized 4th of June.

1690. Francis Seaborn was Buried ye 21th of April. Mrs Ann Seaborn was Buried ye 8th of January.

1697. Thomas, the sonne of Thomas Seaborne and Elizabeth his wife, was baptized Oct. 17.

In St. Nicholas' Register.

1674. Bapt John, ye sonne of Thomas Seaborne and Elizabeth his wife, 22 November.

1678. Ye 12th of July, Baptized Sammuell, the sonne of Thomas Seaborne and Elizabeth his wife.

1679. Buried, the 2nd of July, Sammuell, the sonne of Thomas Seaborne and Elizabeth his wife.

1680. Married. Daniell Jeffries and Francis Seaborne were married Mar. 3rd.

31. O. LYSON . THOMAS . IN . HEREFORD . 1668.

R. = HIS . HALF-PENY

$\frac{1}{2}$

A specimen of this token was exhibited with No. 28 at the local museum, 1867. I shall be glad to learn in whose possession these two pieces now are, and to obtain complete descriptions of them.

Lyson Thomas was assessed for two fire-hearths in Eigne Ward, 16 and 17 Car. II.

In All Saints' Register.

1683. Mr Lyson Thomas was buried the 8th of September.

32. O. ROBERT . WATTS . OF = A lion rampant.

R. HEREFORD . CITY . 1667 = HIS . HALF-PENNY

$\frac{1}{2}$

On a stone formerly in centre of cloister area of the Cathedral was the following inscription :—"Here lyeth the body of Anne Watts, wife of Robert Watts, currier, of this city, who deceased December the 2—(?), 16-6. See No. 20.

33. O. HERIFORD . SILK . WEAVER = WILL WELCH . IN

R. HIS HALF-PENEY . 1663 = The Weavers' Arms.

$\frac{1}{2}$

"Attendance on Divine Service was a duty strictly enforced after the Reformation, and made obligatory by various statutes. Persons absenting themselves from Church for more than a month were liable to a penalty of twenty pounds, or a fine of one shilling for each Sunday of non-attendance without a reasonable excuse. At a Court of Frankpledge, held in this city, 1686, 'the grand inquest presented John Pye, gentleman, Blanche, his wife, Agnes Brott, spinster, and her sister Prudence, William Welsh, silk weaver, with many others, for that being above the age of sixteen, they had not repaired to their several parish churches and remained there during the time of Divine Service, for the space of one month.'"—*Johnson's Ancient Customs.*

In St. Peter's Registers is the following :—

1684. Jany 21, buried William Welch.

St. Nicholas.

1698. December the 15 was buried Alis Welsh, wid.

KINGTON.

34. O. IOHN BREYNTON . 1667 = A bell between I . B

R. MERCER IN KINGTON = HIS HALFE . PENNY. (Plate 1, No. 7.)

$\frac{1}{2}$

The following entries from the Registers of Kington relate to the family of this issuer, viz. :—

1667. November ? Richard ye sonne of Mr Richard Branton by Mary his wife was baptized.

1668. June 25. John ye sonne of Richard Brant. was baptized.

1669. April 10. Anne ye daughter of Mr John Braynton was buryed in ye church.

1670. April 4. Thomas ye son of Richard Brainton was baptized.

May 26. Margarette ye daughter of John Breynton was baptized.

1672. September 10. Thomas ye son of Richard Breinton was buried in ye church.

1673. August 2. Walter ye son of Richard Braynton was baptized.

1677. October 23. Mary ye daughter of Richard Braynton by Mary his wife was baptized.

1679. August 17. Timothy ye son of Richard Braynton by Mary his wife was baptized.

November 9. Timothy ye son of Richard Braynton by Mary his wife was Buried in ye church.

1681. March 12. Ralph ye son of Richard Braynton by Mary his wife was baptized.

1683. October 16. Ralph ye son of Richard Breynton by Mary his wife was Buryed.

1709. July 4. Richard Harris and Elizabeth Breynton were married by Licence.

1710. January 16. Mary Breynton widow was buried in ye church.

35. O. FRANCIS DAVIES . 1665 = The Drapers' Arms.*

R. OF KINGTON . MERCER = HIS HALFE . PENNY

$\frac{1}{2}$

Francis Davies was assessed for two fire-hearths.

There was another tradesman named Francis Davies, a glover, living in Kington at this time.

The following entries in the parish Register refer to the family of the issuer of above token :—

1668. April 4. Cassandra ye daughter of Mr Francis Davies by Cassandra his wife was baptized.

1672. November 12. Francis ye son of Francis Davies Mercer was Baptized.

1673. December 26. Margaret ye daughter of Francis Davies was baptized.

1692. April 23. Francis Davies ye Mercer was buried.

1699. July 21. Cassandra Davies widow was buried in ye chancel.

Cassandra Davies, daughter of Francis Davies, who died 18th January, 1748, and was buried in the chancel at Kington, by deed, dated the 27th day of March, 1744, duly enrolled in the High Court of Chancery, pursuant to the late Statute of Mortmaine, settled and directed the payment of £5 to be distributed by the Vicar, churchwardens, and overseers of this parish, to the most ancient, indigent, and necessitous parishioners thereof, upon the 26th day of March yearly, as a perpetual charity, payable out of an estate and lands called "The Broken Bank," in the parish of Gladestry, Co. Radnor.

36. O. EDWARD . GRONNOVS = The Mercers' Arms.

R. OF KINGTON . 1670 = HIS . HALFE . PENNY = E . E . G (Plate 1, No. 8.)

$\frac{1}{2}$

37. O. EDWARD GRONNOVS = A pair of gloves.

R. OF KINGTON = E . E . G

$\frac{1}{4}$

38. O. IAMES . GRONNOVS . MERCER . IN . KINGTON = HIS . HALF . PENNY (In six lines).

R. I . DOE . AS . I . WOVL D . BE . DONE . BY = 1669 (In six lines.)

$\frac{1}{2}$

In the roll of assessment of the hearth tax on the Inhabitants of this County, 14 Car. II. (1661 and 2)—"Edward Gronnouse hath in his house fflower fire-hearths."

The Gronnons family were connected with the neighbouring town of Presteign, Co. Radnor, where a Joseph Gronnons, a Grocer, issued a token; see list of *North and South Wales Tokens* for descriptions of this piece, and extracts from the Registers of that parish of numerous entries relating to the family, by means of which it is interesting to trace the gradual growth of this peculiar name into the more euphonious one of "Greenhouse," a name still existing in the district among families descended from these issuers.

* The Drapers' Arms: three triple crowns resting on clouds radiated in base.

The following are from Kington Registers :—

1669. April 6, Elizabeth ye daughter of Mr. Edward Gronous was buried.
 1669. August ? Mr. James Gronous and Dorcas Hargest were married.
 1669. October ? Mary ye daughter of Edward Gronous was baptised.
 1670. October 2 Dorcas ye wife of James Gronous was Buryed in ye chauncell.
 1670. March 5 James Gronous and Mary Bull were married by License.
 1671. December 14 Mary and Martha ye daughters of James Gronous were Baptized.
 1672. June 30 Sarah ye daughter of Edward Gronous was baptized.
 1672. December ? Anne ye daughter of James Gronous was Baptized.
 1673. March 31 Mary ye daughter of James Gronous was Buryed in Hergest Chancell.
 1674. November 8 James ye Posthumous son of James Gronous deceased by Mary his wife was baptised.
 1674. January 3 Anne ye daughter of Edward Gronous by Elizabeth his wife was baptized.
 1675. November 9 Anthony ye Son of Edward Gronous by Elizabeth his wife was buried in ye chancell.
 1676. April 6 Edward ye son of Edward Gronous by Elizabeth his wife baptized.
 1676. June 21 Edward ye son of Edward Gronous by Elizabeth his wife was buried in ye chancell.
 1676. October 20 Mary ye daughter of Joseph Gronous by Anne his wife was baptized.
 1677. October 7 Hugh ye son of Edward Gronous by Elizabeth his wife was Baptized.
 1678. November 21 James ye son of Joseph Gronous by Anne his wife was Baptized.
 1684. August 30 James ye son of Joseph Gronous by Anne his wife was Buryed in ye Church.
 1685. June 23 Richard ye son of Joseph Gronous by Anne his wife was Buryed in ye Church.
 1686. May 20 Charles Morgan and Anne Gronous of Norton were marryed with License.
 1686. July 20 Athanasius Watkins and Margaret Gronous were marryed with License.
 1686. August 23 Margaret ye daughter of Joseph Gronous and Anne his wife was Buryed in ye Church.
 Margaret ye daughter of ye above named Joseph and Anne was Baptized.
 December 10, Joseph Gronous was buried in ye church.
 1690. March 27th Elizabeth ye wife of Edward Gronous was buried in ye chancell.
 1693. June 11 Giles Lloyd and Mary Gronous were married with Licencse.

39. O. JAMES . LLOYD . MAESSER = The Mercers' Arms (without shield).

R. IN . KINGTON 1660 = I . M . L

$\frac{1}{4}$

The latest addition to the Herefordshire list, a specimen having been discovered since this paper was prepared.

40. O. JAMES LLOYD . 1664 = I . M . L

R. OF KINGTON . MERCER = HIS . HALF . PENNY (Plate 1, No. 9)

$\frac{1}{2}$

James Lloyd was assessed for three fire hearths 14 Car. II. (1661-2).

The name of James Lloyd appears as a witness to an Indenture of Lease of lands at Hergest, dated August 3, 1657, between the visitors and feoffees, appointed under the Will of Dame Margaret Hawkins, for the management of the Free Grammar School, founded by her in Kington, on the one part, and John Hergest, of West Hergest, Gent., of the other part.

In the year 1675 James Lloyd was appointed one of the trustees to carry out the provisions contained in the Will of John Walker, who in 1626 gave by deed certain houses and lands * to be leased out and the produce employed according to the Will of his brother Henry Walker, for the distribution of bread and corn to the poor of Kington. — (Parry's *History of Kington*. p. 181.)

One James Lloyd, of Kington (probably the issuer of this token), was High Sheriff of the County of Radnor in 1673.

In the recently published facsimile copy of *The Account of the official Progress of his Grace Henry, the First Duke of Beaufort (Lord President of the Council in Wales, and Lord Warden of the Marches), Through Wales in 1684*: by Thomas Dineley, is the following interesting record of the Duke's passing through Kington. "Teusday Augst 5, 1684, his Grace parted from thence (Presteigne) for Brecknockshire and passed through KINERON in the County of HEREFORD, where a banquet of sweetmeats was prepared and presented him by a loyall person of the Town — Lloyd Gent, one of his maties Justices of the Peace there: his Grace alighted not but having eat and drank marched on."

The following entries from the Registers relate to this issuer.

1667. August? Marabella ye daughter of Mr. James Lloyd, by m'triss Mary his wife, was baptized.

1669. August 12. Elinor, ye daughter of Mr. James Lloyd was buried.

1671. June 18. Rees Prees and Elinor Lloyd, ye Banns being published, were married.

March 19. Mary, ye wife of Mr. James Lloyd, was buried.

1685. April 7. Elizabeth ye daughter of James Lloyd by Elizabeth his wife, was baptized.

41. O. JOHN . ROWDON . 1664 = Arms of the Rowdon family.

R. IN . KINGTON . MERCER = HIS . HALFE . PENNY (Plate 1, No. 10.)

$\frac{1}{2}$

The issuer of this token was a member of a family of that name, seated at

* This property is described as being bound on the west part by lands of *Nicholas Voare*. See No. 44 for description of a token issued by Nicholas Voare, ironmonger.

Rowdon, near Bromyard, since the 13th century. The Rowdons were connected by marriage with many aristocratic families of this and the adjoining counties, and were distinguished for their attachment to Royalty. One Sir Thomas Rowdon, of Northleach, entertained King Charles at his house in 1643, and fought at Newbury at the head of a troop of horse which he had raised. The father of John Rowdon settled at Welson, in the adjoining parish of Eardisley, and his son was born there 2nd December, 1641.

The name does not appear in the Kington Registers. The arms are quarterly, 1 and 4 Sable, a Griffin segreant, or (*Rowdon*); 2, or six martlets, 3, 2 and 1, gules (*Le Moigne*); 3, Vert, on a bend cotised or, three stags heads caboshed, gules (*Helyon*).

See Robinson's *Mansions and Manors of Herefordshire* for a pedigree of the Rowdon family from the reign of Edward III. to the present generation.

It is interesting to note that this is the third instance in the Herefordshire series of Token issuers, of members of families of aristocratic connection being engaged in trade, viz.,—Boulcot and the Two Rodds of Hereford.

42. O. ANTHONY . SEARCH = The Grocers' Arms.*

R. IN . KINGTON MERCER = A . M . S

Anthony Search also issued a token at Tenbury, Co. Worcester, of which the following is a description :—

O. ANTHONY . SEARCH = plaine dealing is best $\frac{1}{2}$ D. (In four lines.)

R. IN . TENBURY 1670 = The Mercers' Arms $\frac{1}{2}$

In the Roll of the Hearth Tax for 14 Car. II. (1662) a Margaret Search, widow, hath in her house six fire hearths, and again Margaret Search, widow, hath in her house fflower fire hearths, showing she occupied two goodly-sized houses. This may have been the mother of the issuer Anthony.

A careful search in the Parish Registers of Kington only results in the following entries relating to this family, viz. :—

1670. October 25. Margrett Search widdow was buried in ye chauncell.

1676. October 7. Alice Search, a young mayd was buried in ye church.

I am informed by the Rev. T. Ayscough Smith, Vicar of Tenbury, who kindly searched his registers, that the name does not occur there.

The name of Anthony Search appears with three others, probably brothers, on the register book of scholars of Lady Hawkins' Grammar School, Kington, as "free," i.e., natives of the parish, in the years 1654-9.

43. O. RALPH . TURFORD . OF . 1668 = The Apothecaries' Arms.†

R. KEINGHTON . APOTHECARY = HIS . HALF . PENY (Plate 1, No. 11.) $\frac{1}{2}$

The following entries are found in the Registers :—

1669. June 30. Elizabeth ye wife of Mr. Ralph Turford was buried.

* The Grocers' Arms—A chevron between nine cloves, three, three, and three.

† The Apothecaries' Arms—Apollo holding a bow and arrow supplanting a serpent.

December 12. Elizabeth ye daughter of Ralph Turford was buried.

February 3. Ralph Turford and Katherine Baskerville were married with licence.

1670. December 24. Katherine ye daughter of Ralph Turford was baptized.

1684. January 29th. Thomas Havard and Martha Turford of Old Radnor were married with licence.

44. O. NICHOLAS . VORE = The Ironmongers' Arms.

R. IN . KEINGHTON . 1664 = HIS HALF PENY (Plate 1, No. 12.) $\frac{1}{2}$

45. O. RICHARD VOARE . OF . KEINGHTON . IRONMONGER = HIS . HALF PENY (In six lines)

R. The Ironmongers' Arms, 1668 = SQUARE . DEALING. (*A Square Token.*) $\frac{1}{2}$

This latter token is very rare, only one specimen being known, which is in the British Museum. Boyne gives an incorrect description of Richard Voare's token under Kingston-on-Thames, but through the courtesy of Reg. Stuart Pool, Esq., of the British Museum, who favoured me with a cast of the token, I am enabled to claim it for the Herefordshire series, Boyne having mistaken the "H" for "S" in KEINGHTON.* The following records in the Register of Kingston confirm the fact, moreover Richard Voare was assessed for three fire hearths in Kingston, 14 Car. II. (1661-2):—

1669. November 27. Richard ye son Nicholas Voar was Baptized.

1672. January 12. Nicholas ye son of Nicholas Voare was Baptized.

March 15. Ales ye wife of Richard Voare was buried.

1676. June 8. Hanna ye daughter of Nicholas Voare by Katherine his wife was Baptized.

1677. January 31. Hannah ye daughter of Nicholas Voar by Katherine his wife was buried in ye church.

April 28. Richard Voare an Ironmonger was buried.

1682. September 18. Anne ye daughter of Nicholas Voare by Katherine his wife was Baptized.

1686. July 2. Nicholas Voar, Ironmonger, was Buryed in ye church.

1695. December 4. Anne ye daughter of Richard Voar by Anne his wife was Baptized.

December 9. Richard ye son of Richard Voar was buried in ye church.

1698. May 23. Mary ye daughter of Richard Voar by Ann his wife was Baptized.

1700. September 27. Catherine ye daughter of Richard Voar Ironmonger by Anne his wife was Baptized.

1707. October 16. Richard Voar was Buried in ye church.

1712. January 28. Nicholas Voar was Buried in ye church.

* The spelling of names and places on these tokens varies considerably, the Herefordshire series affording ample evidence, for instance, Bramyard for Bromyard, Hereford spelt in four different ways, Kingston and Leominster in three, Ledbury and Ross in two.

1713. May 16, Catherine Voar widow was Buried in ye Church.
 1714. January 13. Anne Voar widow was Buried in ye church.
 1722. April 15. Richard Tombs and Catherine Voar were married by Licence.
 1726. April 12. Richard ye son of Richard Tombs by Catherine his wife was Baptized.

LEDBVRY.

46. O. WILLIAM . BERROW = The Grocers' Arms.

R. OF . LEDBVRY = W . E . B

$\frac{1}{4}$

The Registers afford the following :—

- Marriage. 1642. Wm Berrow Elizth Wilde.
 Baptism. 1643. Wm son of Wm and Elizth Berrow.
 Baptism. 1646. Sarah dau. of Wm and Elizth Berrow.
 Baptism. 1650. Thomas son of Thomas and Elizth Berrow.
 Burial. 1652. Thos Berrow Mercer.
 Baptism. 1668. Sarah dau. Wm and Elizth Berrow Mercer.
 1669. Wm son Mr Wm and Elizth Berrow Mercer.
 1672. Elizth dau Mr Wm and Elizth Berrow.
 1674. Charles son of Wm and Elizth Berrow.
 1675. Judith daur. of Wm and Elizth Berrow.
 Burial. 1696. Mr Wm Berrow.

47. O. WILLIAM . BROWNE = The Glaziers' Arms.*

R. OF LEDBVRY = W . I . B

$\frac{1}{4}$

William Browne was assessed for three fire hearths.

The Registers do not appear to furnish any records of this issuer.

48. O. RICHARD . COX = HIS HALF PENY.

R. IN . LEDBVRY . 1667 = R . A . C (Plate 2, No. 13.)

$\frac{1}{2}$

Richard Cox was assessed for four fire hearths in New Street.

Ledbury Registers.

- Baptism, 1633. Richard, son of Richard and Susan Coxe.
 Baptism, 1634. Richard, son of Thomas and Ann Cox.
 Married, 1642. Rd. Cox, gent. Ann Had.
 Baptism, 1651. Ann, daur. of Richard and Ann Cox, clothier.
 Buried, 1651. Ann, wife of Rd Cox, gent.
 Baptism, 1653-4. Francis, son of Richard Cox, gent.
 Birth, 1655. Elizabeth, daur. of Richard and Ann Cox, gent.
 Burial, 1656. Ann, dr. of Richard Cox, gent.
 Baptism, 1657. Mary, dar. of Richard and Ann Cox, gent.
 Burial, 1659. Jno., son of Richard Cox, gent.

* The Glaziers' Arms : Two grozing irons in Saltire, between four closing nails, on a Chief a Lion passant gardant. The chief is omitted on this token.

- Baptism, 1661. Margaret, daur. Mr Richard and Ann Cox.
 Baptism, 1662. Ann, daur. Richard and Ann Cox, clothier.
 Baptism, 1664. Francis, son Mr Richard and Ann Cox.
 Baptism, 1667. John, son Mr Richard and Ann Cox.
 Burial, 1667. Ann, wife of Mr Rd Cox.
 Burial, 1667. Mr Richard Cox, junr.
 Burial, 1669. Mr Richard Cox, clothier.

49. O. WILLIAM . MATTHEWES = An earthen jar.

R. IN . LEDBURY . 1653 = W . M . M

$\frac{1}{4}$

This token is in the Bodleian Library, Oxford.
 William Matthewes was assessed for four fire hearths.
 Burial, 1686. Mary, daur. of Mr Wm Mathews.
 Burial, 1706. Mary, wife of Mr Wm Mathews.
 Burial, 1708. Mr Wm Mathews, senr.
 Burial, 1712. Sarah, wife of Mr Wm Mathews.
 Burial, 1712. Mr Wm Mathews.

50. O. WILLIAM . HOOPER . 1667 = The Weavers' Arms.

R. THO . PAGE THEIR . $\frac{1}{2}$ PENY = IN . LVDBVRY (Plate 2, No. 14.)

$\frac{1}{2}$

The Hearth Tax Rolls furnish following :—

- 14 Car. II. (1662.) Thos Page, 3. William Whooper, 2.
 16 Car. II. (1664.) Wm Hooper, Southend Street, 1.
 17 Car. II. Lady Day (1665.) Wm Hooper, 2. Thos Page, Southend Street, 3.
 17 Car. II. Michs. Day. Thos Page 3, Ledbury floren. Thos Hooper, 9.
 17 Car. II. (1666.) Thos Page 5. Wm Hooper, late of Southend Street, 1.

Ledbury floren.

The name of William Hooper does not occur on the Registers. The following relate to Page :—

- Baptism, 1641. John, son of Thos and Elinor Page.
 Baptism, 1645. Thos, son of Thos Page.
 Baptism, 1648. Judith, daur. of Thos and Elinor Page.
 Marriage, 1668. Thos Page, Jane Gardner.
 Burial, 1680. Elinor, wife of Thos Page, senr.
 Burial, 1682. Thomas Page, junr.

51. O. REIGHNOLD . RANDOLPH = The Blacksmiths' Arms.

R. IN . LEDBVRY . 1668 = HIS . HALFE . PENNY (Plate 2, No. 15.)

$\frac{1}{2}$

Reighnald Randolph's name does not appear either on the Hearth Tax Rolls or the Parish Registers.

52. O. IO . STONE . OF . LEDBVRY = A sugar loaf.

R. HIS . HALFE . PENNY = I . H . S

$\frac{1}{2}$

John Stone was assessed for five fire hearths.

53. *O. SAMVELL . WILSON = IN . LED : BVRY.*

R. IOHN . WHITE . 1663 = THER - HALF PENY (Plate 2, No. 16.) ½

Samuel Wilson was assessed for seven fire hearths, and John White for two.

The Registers afford the following :—

Baptism, 1669-1670. Alice, daur Mr Samuel Wilson and Katherine Wilson.

Burial, 1670. Alice, daur of Mr Samuel Wilson.

LEOMINSTER.

54. *O. ELIZABETH BEDFORD = A sugar loaf.*

R. IN . LEMSTER . 1667 = HER . HALFE . PENNY . E . B ½

55. *O. IEROMY . CLARKE = The Mercers' Arms.*

R. IN LEMSTER . 1663 = I . T . C ¼

Jeromy Clarke was bailiff of the borough in 1675, and assessed for one fire hearth in High Street Ward.

James, the son of Jeremiah Clarke and Thomason, his wife, was baptized the first day Aprill, 1662. The sonne of Mr Jeremiah Clarke was buried the 11th September, 1662.

1663. Judeth, the Daur. of Jeremiah Clark and Thomason, his wife, was baptized the 10th May.

1666. Joyce, the daughter of Jeremiah Clarke, was baptized the 26th day.

1670. Jeremias, the son of Jeremias Clarke, mercer, and Thomason, his wife, was baptized the twenty-seventh day.

1673. Mary and Elianor, the daughters of Mr. Jeremy Clarke and Thomason, his wife, were baptised the xxth day of February.

56. *O. WILLIAM . CLENT . BOOK = 1666.*

R. SELLER . IN . LEOMINSTER = W . E . C ¼

William Clent was assessed for three fire hearths in High Street Ward.

1667. Mary, the daughter of William Clent and Elizabeth, his wife, was baptized the 29th day of March.

1668. Elizabeth Clent was buried the 27th day of Aprill.

57. *O. SAMPSON EDWARDES . OF = The Bakers' Arms.*

R. LEOMINSTER . HIS . HALPENY = S . K . E . 1668 (Plate 2, No. 17.) ½

Sampson Edwardes was Bailiff of the Borough, 1679. Neither the Hearth Tax Roll nor the Parish Registers afford any information about this issuer.

58. *O. THOMAS . FOORDE = The Mercers' Arms.*

R. IN . LEOMINSTER = T . S . F ¼

Thomas Foorde was Bailiff in 1646, and assessed for four fire hearths in High Street Ward, 17 Car. II.

1653. Elizabeth, the daughter of Thomas ffoord, gent, and Sara, his wife, was born the tenth day of July 1653, and baptized the — day of the same.

1656. Isaac, the sonn of Thomas ffoord, gent, and Sara, his wife, was borne the 23rd day of July, and baptized the last day of the same.

1658. Ann, the daughter of Thomas ffoord, gent, and Sara, his wife, was borne the fifth day of May, and baptized the sixteenth of the same.

1665. Aprill, Elizabeth ffoard was buried the 20th.

1665. May, Elizabeth ffoard, spinster, was buried the 20th day.

1668. Anne, the daughter of Thomas ffoord, gent, was buried the 30th day of May.

59. O. THO. HARDWICK. IVNIOR. IN = A hart lodged.

R. LEOMINSTER. HIS. HALFE. PENY = T. H with an interlaced flower between
(Plate 2, No. 18.) $\frac{1}{2}$

Tho. Hardwicke was Bailiff in 1661, and was assessed for three fire hearths in Crosse and Pinsley Ward.

1662. John Hardwicke was buried the 23rd August.

60. O. IOHN. NAISH. GLOVER = The Glovers' Arms.

R. IN. LEOMINSTER. 1669 = HIS. HALFE. PENY = I. M. N $\frac{1}{2}$

John Naish was assessed for two fire hearths in Nethermarsh Ward, 17 Car. II.

1663. Ffrancis the sonne of John Nashe and Mary his wife was baptized the 23rd Aprill.

61. O. FRAN. PERSE. LEMSTER. 1666 = The Mercers' Arms.

R. FOR. NECESSARY. CHANGE = HIS. HALFE. PENY (Plate 2, No. 18.) $\frac{1}{2}$

Fran Perse Bailiff in 1669 was assessed for four fire hearths in High Street Ward, 17 Car. II.

Francis Perse of Leominster in the county of Hereford Mercer and Mary Shoter of Leominster aforesail in the county aforesaid spincer were three severall Lords dayes published in the Parish Church of Leominster aforesaid According unto a late Acte of Parliament and were married by Edward Hay Esq. Justice of the Peace within the aforesaid Borough the Twenty and Eighth day of October 1655.

62. O. NATHANIELL. SMITH = HIS. HALFE PENNY.

R. OF. LEOMINSTER. 1667 = N. M. S $\frac{1}{2}$

Natha Smyth assessed for two fire hearths in High Street Ward.

63. O. IOHN STEAD = a shield.

R. IN LEOMINSTER = a shield.

From a description in Townsend's *History of Leominster*, p. 146.

"John Steade Bailiff in 1663 was assessed for four fire hearths in High St Ward, 17 Car. II. He was a solicitor and the first town clerk of the Borough, and was deputed by the Bailiff and Burgesses to proceed to London to superintend the arrangements preliminary to the renewal of their charter by Charles II. in 1665. His charges to the Corporation on this occasion amounted to the goodly sum of £125 10s., and on his return to Leominster the Bailiff and Burgesses

awaited his arrival from Worcester, at the end of Etnam Street and accompanied him, sitting on horseback, and carrying the charter opened on his breast, in full civic procession, with the maces and macebearers, to the Market Cross, where they publicly drank the King's health amidst the cheers and congratulations of the inhabitants."—Townsend's Hist., pp. 138-9.

Moorcourt in the Parish of Pembridge, the residence of the late Rev. James Davies, was the property of a John Stead in the 17th century, held by him in right of his wife, who was a Vaughan. He was buried at Dilwyn, 14th April, 1662, and may have been the father of the Bailiff of Leominster.

It is a curious circumstance for a solicitor to have issued a token, but it may have been a town piece issued by Stead in his capacity of bailiff. The token is not fully described by Townsend, and possibly the examination of a specimen may clear the matter up.

The following entries from the Registers of the Parish refer to this issuer.

1650. Rowland the sonne of John Steade and Johan his wife was baptised the seaventh day of January.

1655. John the sonne of John Steade Gentn and Joan his wife was baptised the 10th day of June.

1658. Edmund the sonne of Mr. John Steade and Joan his wife was baptised the 6th day of October.

1662. Francis the sonne of John Steade gent and Joan his wife was baptised the twentie seaventh daie of Aprill.

1674. Joan the wife of John Steade Town Clarke of this Burrough was buried the xxviith day.

PEMBRIDGE.

64. *O. THOMAS BENGVOGH = HIS HALF PENY.*

R. IN PEMBRIDGE. 1665. = T. P. B. (Plate 2, No. 20.)

$\frac{1}{2}$

The Bengoughs were considerable landowners in Pembridge at this period, and I am informed their descendants still hold property there. A Thomas Bengough was churchwarden in 1678, as shown by an inscription on the outer doors of the north porch of the church.

The Registers of Pembridge give the following entries:—

1662. James Son of Thomas and Phyllis Bengough baptized.

1664. Thomas Son of Thomas and Phyllis Bengough baptized.

ROSS.

65. *O. IAMES . FISHER . OF . ROSSE = The Mercer's Arms.*

R. HIS . HALFE PENNY . 1666 = I . F. (Plate 2, No. 21.)

$\frac{1}{2}$

James Fisher was assessed for two fire hearths, 14 Car. II.

The Register of Ross, which commences in 1671, gives the following:—

1671, July 16. James ye son of James Fisher and Susan his wife was baptized.

1675, Feby 19. Susanna ye wife of James Fisher was buried.

66. O. IOHN . HILL . OF . ROSS = In an oval between six stars $\frac{1}{2}$ D.
 R. HIS . HALFE PENNY . 66 = I . H in an oval. (Plate 2, No. 20.) $\frac{1}{2}$

67. O. IOHN . HILL . OF = I . E . H
 R. ROSS . MERCER = I . E . H $\frac{1}{4}$

The half-penny is of same type as John Hill's token issued at Hereford 1657, and probably by same issuer.

John Hill was assessed for three fire hearths, 14 Car. II.

1673. Sep 29. Joyce the daughter of John Hill was buried.

1674. Aug 15. Alice ye daughter of John Hill and Joyce his wife was baptised.

1675. Jan 29. John Hill Tayler was buried.

1676. Dec 16. Paul ye Son of John Hill and Joyce his wife was bapt.

It is doubtful if these entries relate to the issuer of the token, the initial letter of the wife's name being "E."

68. O. THOMAS MERRICK . ?
 R. ? = HIS PENNY 1680 1d.

This incomplete description is taken from *The continuation of Duncumb's Collections towards the Histories and Antiquities of the County of Hereford*, Vol. III., by William Henry Cooke, Esq., M.A., Q.C., F.S.A. If correctly described this token is specially interesting as the only *Penny* in the Herefordshire series.

69. O. IOHN . TAYLOR . CHANDLER = A man dipping candles.
 R. IN . ROSSE . 1667 = HIS HALF . PENY = I . T . T $\frac{1}{2}$
 Boyne describes a specimen of this token dated 1666.

70. O. THOMAS . TAYLOR = T . E . T
 R. OF ROSS = T . E . T 1656 $\frac{1}{4}$

This token is in the Bodleian Library, Oxford.

Thomas Taylor was assessed for six fire hearths, 17 Car. II.

The following entries from Ross Registers relate to the Taylors :—

1673. April 13. Thos son of Wm Tayler and Joan his wife bapt.

1673. Feb 6. Elinor ye daughter of Rich. Tayler and Eliz. his wife was bapt.

1673. Feby 28. Ursula, ye daughter of Thos Tayler and Ursula his wife was baptizd.

1673. March 14, John Tayler was buried.

Aug 12, Eliz. Tayler was buried.

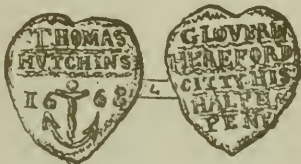
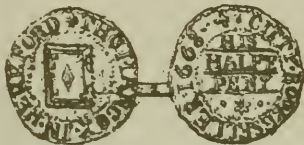
1674. Sept 20, Jonas, the son of Jonas Tayler and Eliz. his wife was bapt.

1675. Oct 19, Eliz. ye daughter of George Tayler and Eliz. his wife was bapt.

Oct 27, Debora ye daughter of Thos Tayler and Ursula his wife was baptizd.

1676. Sep 9, Elizabeth ye daughter of Richd Tayler and Ann his wife bapt.

Feby 6, Samuel son of William Tayler and Elinor his wife was baptizd.

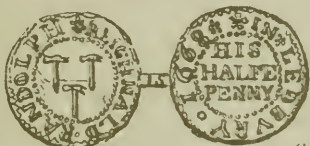


Hereford.



Kingston





Ledbury



Leominster

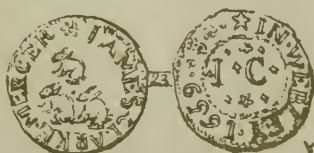


Leominster

Pembroke



Ross



Woolley



WEOBLEY.

71. *O.* JAMES . CLARKE . MERCER = Three rabbits.
R. IN . WEBLEY . 1659 = I . C (Plate 2, No. 23.) 1/2

72. *O.* RICHARD . CLARK . MERCER = A hand holding a bird.
R. IN . WEBLEY . HIS . HALF-PENY = R . C . 1667 (Plate 2, No. 24.) 1/2

The Rev. J. S. Crook, Vicar of Weobley, informs me he is unable to find the name of Clarke in the Registers at this period.

This concludes the Herefordshire list so far as known to me at present. I shall esteem it a favour if any lady or gentleman will communicate particulars of any tokens not mentioned, or furnish complete descriptions of such as are imperfectly described in this paper.

Woolhope Naturalists' Field Club.

AUGUST 25TH, 1884.

ROSS, FOR THE BRITISH CAMP ON LITTLE DOWARD AND KING ARTHUR'S CAVE.

"A sultry noon—not in the summer's prime,
When all is fresh with life, and youth and bloom,
But near its close, when vegetation stops,
And fruits mature stand ripening in the sun—
Soothes and enervates with its thousand charms,
Its images of silence and of rest,
The melancholy mind."

WILCOX.

THE intense heat of the last few weeks, was, happily, mitigated on Monday last, when the Woolhope Club made an excursion to explore the British Camp on the Little Doward Hill. At the Barrs Court Station the members and visitors of the Malvern Naturalists' Field Club were welcomed. On arrival at Ross, the church, churchyard, and the "Prospect" were, as now they ever must be, the first objects to attract the attention of visitors. John Kyrle, "the Man of Ross," whom Pope has rendered so celebrated in his *Moral Essay*, can never be forgotten at Ross; and he "deserves to be celebrated," says Warton, "beyond the heroes of Pindar, for he was the Howard of his age."

The Churchyard Elms are believed to have been planted by "the Man of Ross." Some think he planted these trees on the restoration of the monarchy when Charles II. was crowned (1660), and it is the fact that loyalty frequently took the form of elm-tree planting at that time. They are, however, more generally thought to have been planted about the year 1700. There is an archway in the "Prospect" bearing that date, and this would still be about 24 years before Kyrle's death. The Woolhope Club took a special note of these trees in 1868, and Mr. Henry Southall has now again had them all very accurately measured at five feet from the ground, that the growth of 16 years might be ascertained. There are but a dozen trees left, of the many which Kyrle planted; and beginning opposite the Rectory and going regularly round, the trees measured in

1868.		1884.		Increase.	
ft.	in.	ft.	in.		inches.
14	1	14	9	...	8
13	1	13	10	...	9
11	8½	12	0	...	3½
12	3	13	2	..	11

1868.		1884.		Increase.	
ft.	in.	ft.	in.	inches.	
13	8	...	14 5	...	9
12	0	...	12 11	...	11
14	10	...	15 9	...	11
14	8	...	15 3	...	7
12	11	...	13 9	...	10
12	0	...	12 7	...	7
12	7	...	13 5	...	10
9	7	...	10 6	...	11

Thus, while the average circumference in 1868 was 12 ft. 9 in., in 1884 it had increased to 13 ft. 6 in., giving the average increase of 9 inches to each tree during the sixteen years.

There is a noble avenue of elm trees at Hill Court, two miles from Ross, of which the Woolhope Club has the measurements in its *Transactions*. They are also believed to have been planted about the year 1700. Captain Kingsmill Manley Power has kindly sent the measurement of half-a dozen of the finest trees at the present time, to compare with those taken before. They are as follows:—

1868.		1884.		Increase.	
ft.	in.	ft.	in.	inches.	
15	6	...	16 5	...	11
14	2	...	15 0	...	10
15	2	...	16 4	...	14
14	8	...	15 2	...	6
12	2	...	14 8	...	30
13	7	...	15 0	..	17

The increase on the last two trees is so great for their ages that it is just possible that there may be some clerical error in the former account given of them. The roughness of the bark in elm trees, and their liability to the growth of lumps or excrescences make it difficult to make the measurements accurate to an inch or two.

The members who visited the church itself found that the two young elms in the church (see *Transactions* of 1878, with the illustration facing page 115), which had sprung up in the pew where, it is said, Kyrle was accustomed to sit, were dead. They died in 1882, and the poor dead sticks, which are still treasured, had a little greenery given to them by Virginian creepers growing from a box beneath. If a suggestion to the powers that be may be allowed, it is that a well-grown ivy plant, of a narrow-leaved variety should be procured and carefully trained up each tree. The ivy would not only be a more appropriate plant, neater and prettier in growth, but it would also be evergreen.

The hardy perennial flower garden of Mr. Henry Southall, at the Graig, was next visited by all who attended the meeting. This garden is so well arranged, so carefully tended, and has so great a variety of interesting plants growing in it that it afforded much pleasure. It is only possible to give a very brief account of the masses of blossom to be seen there at this time, of very uncommon plants.

Of the showy *Rudbeckias* there were five varieties, *Neumanii*, *Californica*, *digitata*, *lanceolata*, and *subtomentosa*; *Achillea ptarmica* and *Egyptiaca*; several varieties of *Helianthus*, *Clematis*, *Coreopsis*, *Zinnias*, *Enothera*, and other plants. The old-fashioned *Tigridia grandiflora*, carried many of the visitors back to the days of their childhood, for this brilliant flower, each blossom of only a day's duration, has had to give way to the monotonous system of bedding or colour planting. *Commelina caelestis* showed its lovely blue blossom. *Primula Cashmirciana* brought back pleasant memories of Indian passes to one gentleman present. The yellow *Anthemis tinctoria* was in great perfection. This plant is very interesting just now to the Woolhope Club, for that excellent botanist, Mr. Burton Watkins, has found it this year in a clover field on the Caradoc farm, in the parish of Sellack. It appears thus, for the first time, as a wilding in Herefordshire, introduced doubtless with the seeds of clover. *Cystus Florentinus*, with its lovely white flowers, was creeping in great luxuriance in the garden at the Graig. *Bocconia cordata*, *Cimicifuga spicata*, *Portulacca involucrata*, *Lilium tigrinum*, &c., were there. *Senecio pulchra*, the purple Siberian grousel, and some lovely little varieties of *Cyclamen* showed themselves here and there. The handsome *Gallardia grandiflora*, single Dahlias, Verbenas, Penstemons, &c., were scattered about, and many uncommon looking leaves denoted the presence of shrubs and plants that in their season would demand a tribute of admiration. Many varieties of *Sedum*, and other rock plants ornamented the conglomerate rock work. But here a sudden stop has to be made. The cry of "Forward!" must be attended to, and the pretty garden with the kind and hospitable reception at the Graig be left for pleasant recollection. The handiwork of ladies is there, the plants proclaim!

The "Prospect," with its wide extensive range of sight (and the views from it can seldom be more clearly seen), was passed through from the Royal Hotel, where the carriages had been ordered, and in a few minutes the beautiful ride, so well known, by Goodrich to Whitchurch and Ganarew, was commenced. Gleams of bright sunshine and a pleasant wind made it particularly enjoyable. The quantity of over-ripe and yet uncut corn was remarkable, after so long a period of good harvest weather; and the great beauty and abundance of the Traveller's Joy, *Clematis vitalba*, must also be noticed. It is peculiarly luxuriant and beautiful in this district, climbing the hedges and trees, and hanging down in festoons laden with blossom. Gerard gave it this English name in 1599, "*Travellers Joie*, as decking and adorning waies and hedges where people travell: *Virgin's Bower*, by reason of the goodly shadowe which they make with their thick bushing and climbing, as also for the beautie of the flowers and the pleasant scent, or savour of the same." By country people it is called also "Old Man's Beard," from the hoary appearance of the silky seed appendages.

At the Ganarew Lodge of the Leys Park, Mr. Brown, who has so often attended former explorers of the Doward rocks and caves, and camps, was in attendance to act as guide, and so too was the head keeper. The ascent of the hill was begun at once, and whilst many went round to see the fine scenery of rock and river under the keeper's leadership, the rest ascended more directly to the iron

tower on the summit. This tower is easy of ascent, and affords very fine views on all sides. It was intended to be twenty feet higher than it is, but the force of the wind upon it was too great, and the surrounding belt of beech trees had to be planted to protect it.

The entrenchments of the adjoining camp reached as far as the iron tower, but the late owner of the estate, Mr. Richard Blakemore, paid but little respect to them. He levelled the entrenchments and filled up the ditches to make a straight road into the centre of the camp, and thus destroyed its original configuration on this side.

The Little Doward Camp is of considerable size, including the whole summit of the hill. The northern position, irregularly oval in shape, with an area of fourteen acres, is enclosed by a single defence on the steep side towards the river, but with double embankments and ditches on the northern and western sides; towards the south the other portion of the camp exists, with an area of six acres, and this part has the natural protection of perpendicular rocks. Several mounds or tumuli are said to exist within and around the camp, and towards the higher portion is a large low square mound, but the whole surface is so irregular and so overgrown with bracken that it would require a much longer time than could then be given to examine them. If the young shoots or fronds of the bracken on the camp were but mown off in the spring after they have shot about a foot from the ground, and once again afterwards for a couple of years, several acres of good fresh herbage could be secured for the deer, and the camp itself would regain much of the interest which is now so sadly obscured.

Tradition states this camp to be originally British, one of the camps from which Caractacus was driven by the Romans, and that it afterwards became a Roman camp. It is very possible, and indeed probable, that both surmises are correct, but like most of the camps which occupy the hills of Herefordshire, the history of this one can only be surmised from tradition and from the extent and character of its own entrenchments. If the British occupied it, it was probably as a British town, secured from any sudden seizure by a stockade in addition. The Romans would certainly drive the Britons or anyone else from the camp, since it commanded not only the river below, but the road on the other side, which was their highway from Isca Silurum (Caerleon) through Blestium (Monmouth) to Ariconium beyond Ross, which last place may be said to have been the Merthyr Tydvil of the Romans. This road is described in the *Itinerary* of Antonine. It is very probable, too, that the high position of this camp may have been very useful to the Romans as a signal station, and the square mound may possibly have formed the base of the semaphore signal stand, since the views from it are wide and extensive, and in direct connection, for example, with Monmouth on the one side, and the Chase above Ross camp on the other. There is, however, one great obstacle to the possibility of continuous occupation of this camp by anybody, and that is the want of water. There is no spring on the hill, and therefore any occupation must depend on the supply of rain water, unless they could fetch fresh water from the valley. No Roman remains have ever been found in it.

On the opposite side of the river, on the high ground above the present

railway station, are two lines of entrenchment commanding the roads, which tradition states to have guarded a camp to which the Romans retreated after an engagement.

The following communication from the Rev. T. W. Webb has been kindly sent to the Secretary :—

“Hardwick Vicarage, Hay, R.S.O.,

“19th August, 1884.

“Dear Sir,—As I fear I cannot look forward to the pleasure of joining your party on the 25th instant, which would have been very interesting to me from old associations, as I was curate of Ganarew, and in continual sight of Little Doward, for three years, may I beg permission to send you a few remarks on the subject of the camp on that hill, in the hope that they may at any rate lead to some interesting inquiry and discussion.

“I went to live at Ganarew in the year 1851, and found that the then proprietor of the Leys (now called I think Wyastone), Mr. R. Blakemore, being entirely unacquainted with the antiquarian interest attached to his property, had been making such alterations in the entrenchments as at any rate elicited a feeling of thankfulness that his activity had not proceeded further in that direction. The enclosed extracts from a contemporary note-book of mine will give some idea of the extent of the mischief, to which is to be added that he had everywhere taken off the summit of the rampart to make a walk upon it—a fact which has to be allowed for in estimating the original strength of the position.

“I do not very well recollect the barrows, but my impression is that they were for the most part in the Little Bailey, and that they had not a sepulchral aspect, being flat and low. One in particular had a projection on one side, giving it a rude likeness to the letter T. If I recollect aright, they had narrow and shallow trenches round them.

“As to the story of the skeleton, I have since had a misgiving that I misinterpreted the word ‘joint’ employed by my informant, and that he really meant ‘giant.’

“And I do not feel sure that the story may not be a modified reproduction of an old account of the discovery of a huge skeleton, which is, I think, related in Heath’s book on the *Wye Tour*, to which I cannot at present refer, but hope that some member of the Club may be more fortunate in this respect.

“There is a passage in the *History of Geoffrey of Monmouth*, which, as far as I know, has not been adverted to in connection with this fortified summit, but which may possibly be thought worthy of some attention. He says, lib. viii., § 2, concerning Aurelius Ambrosius : ‘Convertit exercitum suum in Cambriam, oppidumque Genoreu petivit. Diffugerat enim eò Vortigernus, ut tutum refugium haberet. Erat autem oppidum illud in natione Hergin super fluvium Ganiæ, in monte qui Cloarius nuncupatur.’ Then follows an imaginary speech of Aurelius to Eidol, and at the close : ‘Nec mora, diversis machinaturibus incumbent, mœnia diruere nituntur. Postremo, cum cætera defecissent, ignem adhibuerunt : qui cum alimentum reparisset, non acquievit adjunctus, donec turrim et Vortigernum exarsit.’

A hand-drawn map of Little Doward Camp. The camp is an irregularly shaped area enclosed by a hatched boundary. Inside the camp, there are several small circular features labeled 'Tumulus'. Outside the camp, to the top left, is a larger circular feature labeled 'Iron Tower'. A dashed line representing a 'River Awe' flows along the bottom and left sides of the camp. A scale bar at the bottom left indicates distances in yards (0, 25, 50, 75, 100). A north arrow is located in the upper left corner. The map is signed 'A. CLARKE' at the bottom left.

A hand-drawn map of Little Doward Camp. The camp is an irregularly shaped area enclosed by a hatched boundary. Inside the camp, there are several small circular features with radiating lines, labeled 'Iron Tower' (top left), 'Tumulus' (middle right), and another unlabeled one (bottom left). A scale bar at the bottom left indicates distances in yards (0, 25, 50, 75, 100). A compass rose at the top left shows North (N) and South (S). A line labeled 'RIVER AWE' runs along the bottom left. The map is signed 'A. CLARKE' at the bottom left.



"Here there can be no question as to the meaning of the names Hergin (Ergyng) and Genoreu (Gan-y-rhiw), and it seems very possible that Ganiæ may be a clerical error for Ganiæ, or some such equivalent for Gwy, while those acquainted with ancient inaccuracies may perhaps think that in Cloarius we may find the trace of Doarius, and the expression 'oppidum' is in some sense borne out by the present name of the wood that clothes the south side of the hill, Dennis (Dinas) Grove. It is not unlikely, as it appears to me, that Geoffrey's acquaintance with so remarkable a hill fortress in his own immediate neighbourhood may have induced a wish to introduce it into his history, notwithstanding the received tradition that Vortigern met with his fate, and is buried, in Caernarvonshire.

"I hope that in venturing these remarks, on a subject of great interest to myself, I may not have seemed to trespass too much upon your time, or on the attention of the Woolhope Club, should you consider them worthy of being communicated to it; and I remain, dear Sir, yours faithfully,

"THOMAS WILLIAM WEBB."

LITTLE DOWARD.

(Extract from a MS. note-book, by the Rev. T. W. Webb, at that time curate of Ganarew, in which parish the camp is situated, dated June 27th, 1850.)

"Mr. Blakemore's man, Furber, who remembers the entrenchments before they were touched, told me that the large rampart is called the Great—the smaller one the Little—Bailey (Brili, a mound or court—Welsh). In order to build the iron tower, Mr. Blakemore levelled all the end of the outer rampart, throwing the earth and stones over on the side of the wood, not back into the camp—it was merely a continuous mound to the end of the hill where the tower stands, without any tumulus at the end. Mr. Blakemore also cut half through the rest of this entrenchment longitudinally. There was always an entrance at the junction of the two valla, and the great entrance farther on is unaltered; so is the entrance from the one enclosure to the other. The deep trench across which this last-mentioned interior entrance passes has always been interrupted in places as it is (it strikes me that this might have been to catch rain-water). He recollects and was present at the finding of a quantity of bones. They were three small hand-baskets full—more than a bushel in all—two skulls amongst them, but many appeared to be bones of sheep. They were found twenty yards deep, in what he called an old mine, which Mr. Blakemore cleared out, and where a windlass is still standing. In various other parts, where Mr. Blakemore is now making 'caves' on the side over the river, they are still meeting with bones. Somewhere near the entrenchment, Furber and others found a quantity of rusty iron, about six feet beneath the surface; it is, he thinks, at the front door at the Leys, but is much shorter now than when it was found. No coins have ever been found. (Thomas Dance told me some time ago that he had heard that John Ellaway had found coins formerly.) He thinks there are more than six barrows on the summit. (I counted six a short time ago—one in great measure destroyed.)"—T. W. W.

ANOTHER EXTRACT—Dated March 19 and 20, 1851.

"John Watkins, our gardener, showed me a blue and white bone, of very fine quality, which his father found, together with a quantity of gun-flints, many quite new, and many fragments of flint, as if they had been cut out on that spot, under about twelve feet of earth, in a part of the entrenchment removed by Mr. Blakemore beneath the Iron Tower. A skull was found in the same spot. Bones, he thinks, have been found in King Arthur's Hall—[perhaps sheep—T.W.W.] A whole skeleton was found in what he called a 'Roman joint' (which I believe means a fissure in the rocks supposed to contain ore), in the rocks round the E. end of the hill, above Mr. Blakemore's lime-kiln. It seemed to have been merely covered with leaves. It was suspected, however, to have been that of a man who was formerly murdered down by the Fish-house. An old woman, during his own recollection, walked over the Cat Rocks during the night, being of weak intellect, and was killed; it was two or three days before her body was found."

Dr. Bull said they were very much indebted to Mr. Webb for his interesting letter and extracts. The finding of the giant skeleton must be looked upon as traditional. Heath's book, *The Excursion Down the Wye from Ross to Monmouth*, was published in the year 1799, and the discovery of the skeleton is stated to have taken place in year 1700. Mr. Heath, who was a printer at Monmouth, gives the tale on the authority of a letter written by Mr. George White, of the New Weir, who admits it to have been "variously told." Mr. White's letter thus gives the incident: "A poor woman being in search of a goat that annually brought her two kids, meeting some woodcutters near the camp, enquired if they had seen her goat, and received information that it had been observed going into such a hole near the mouth of the camp, which being somewhat small, the woman desired her informers to break down part (of the rock) to let in more light. I don't know whether the goat was found, but in return something more surprising, by the additional light thrown in, presented itself to their view, which was the body of a man of very large stature upon the ledge of the rock, and covered over by a natural tomb, an arch of the same rock. He lay at his length, I think, upon his back, with a spear by his side. One of them ventured to touch the body of this once mighty man, and all sunk down in dust." The bones were carried down to Mr. George White. "'Tis said the wooden part of the spear had mouldered into dust, but the head, which was of brass, was carried down to the master." Various accounts are given of the size of the bones, some making the skeleton as much as 10 or 11 feet long. They were sent to Captain Scudamore, of Kentchurch, and eventually to a Mr. Pye, a surgeon of Bristol, who was on the point of sailing to Jamaica. He took the bones with him, when the ship was cast away and himself and the bones buried in the sea.

The way was now taken by the rocks where the bones were found over the park walls for King Arthur's cave, and whilst the descent is made it will be well to give a brief account of the botanical observations of the day. Close by the

stonework of the Iron Tower were found several specimens of the local plant *Monotropa Hypopitys*, yellow, or peach scented, bird's nest. It is parasitic, on the roots of the Beech tree. *Pyrus aria*, Whitebeam or White Wild Pear tree and its sub-species, *Pyrus rupicola*, with narrow leaves, grow freely on the rocks beside the Wye valley. The Belladonna plant, *Atropa Belladonna*, grew in great luxuriance on the loose stones and earth near the park wall. The Rev. Augustin Ley had gathered the Blue Fleabane, *Erigeron acris*, on the road side near old Marstow church. In Scudamore wood, Ganarew, he had gathered *Dipsacus pilosus*, the small Teasel, or Shepherd's Rod, and it grows also in the Doward woods. On the river beach at the Weir, *Solanum nigrum* was gathered, and on the banks grew several Polygonums, including the local and rare *Polygonum mite*. There were also several local mints (*Mentha paludosa*, *Wirtgeniana*, and *sub-glabra*); and any number of species of Bramble, including some rare ones, such as *Rubus Borreri*, new to the county, *pyramidalis* and *imbricatus*, which is also rare.

The *Rubus fruticosus* was well attended to, as one gentleman facetiously remarked, for its fruit, the blackberries, were very fine and ripe,

"Duly eager of the tempting store
Adventurous hands the thorny maze explore."

And very grateful they were in the long descent of the hill.

A wide growth of hemp agrimony, *Eupatorium cannabinum*, occupied the lower portion of the wood, an indication of very damp ground, for it is a plant that more frequently grows by the water side. The path leading to the limestone cliff, on the Great Doward, was soon gained. In this cliff are many fissures or caverns, which the explorations of the Rev. Wm. Symonds and Sir. Wm. Guise, some few years since proved beyond doubt to have been formerly the dens of wild beasts, which in past ages of the world must have occupied these regions (see *Woolhope Transactions* for 1874).

King Arthur's Cave is the largest of these caverns. It was found, nevertheless, with some difficulty, for its entrance was concealed by some trees and a fence, and as everybody on arriving entered the cave, the late comers passed by and found themselves alone in the wilderness, and wondered how the rest had suddenly disappeared. A look-out, however, was kept, and when all were assembled it was told how Mr. Symonds, at first in search of minerals, began to find bones, how he had the floor of the cave pecked up, and how beneath crusts of stalactite forming the floor, one or two feet in thickness, he found the bones of many extinct animals. Amongst the number were many specimens of the teeth of the cave lion (*Felis spelæa*), cave bear, and particularly of the cave hyæna, and the bones of their prey, such as those of the woolly-haired rhinoceros (*ticorhinus*), the mammoth elephant, the great Irish deer, and the reindeer. The bones of the rhinoceros were found to be far the most numerous, and many of them bore the marks upon them of the teeth of the hyæna and cave lion. One great forearm of the mammoth was dragged in partly gnawed and hidden in a chink of limestone rock for future gnawing. Beneath this stalactitic floor, sealed up for ages, flakes of flint and scrapers were found lying side by side with the bones of these extinct

animals. These flints must have been brought there by human agency, for there is none to be found within many miles of the district. From all the remains, and from the food the animals required, the prevalence of an arctic climate in these regions was essential; and Mr. Piper went on to observe that, though the present position of this cavern was some 300 feet above the level of the river Wye, the deposit of a silt, with Wye pebbles, in the floor of this cave, just like the pebbles and silt on the shore of the river at the present time, proves that in those ages long past the Wye in flood time flowed into this cavern. The greater part of our present land was covered with water, and if it is remembered too, that the extinct animals, whose bones have been sealed up in the cave, lived in the latter cold period of the glacial epoch, it was almost impossible to realize the difference as compared with the happier circumstances of the present day (applause).

On the outside of the cave in the wood is a large mound of *débris* which these explorations have caused to be taken out of the floor of the cave. It is now all green and moss-covered, but, said Mr. Brown, it is full of bone remains, and the truth of his words was soon proved by the discovery of a tooth unknown to the doctors present.

The way was taken through a pleasant path in the woods to visit the "Seven Sisters"—as these bold rocks abutting on the Wye valley are called—and as the visitors emerged from the sylvan recesses on the brow of one of these rocks, now and again, the peculiar beauty of the Wye scenery was very striking.

"Know ye not that lovely river?
Know ye not that smiling river?
Whose gentle flood,
By cliff and wood,
With wildering sound goes winding ever."

GERALD GRIFFIN.

A little further on, in the midst of the woods, on the slope of the Great Doward Hill, about a quarter of a mile from the river, is an oval space enclosed by a single entrenchment (an 8 feet ditch with an 8 feet embankment). The area inclosed is 65 yards by 40 yards, or about one-third of an acre. It is supposed to be an ancient British cattle keep—or very possibly a British residence. A timber track now passes through it, and there seems no other definite entrance.

The road was now taken to rejoin the carriages at Whitchurch, and by a pleasant change the ride back was made by the Kerne Bridge and Walford to Ross.

The dinner took place at the Royal Hotel, and your reporter is mistaken if the kind thoughtfulness at the Graig had not sent many of the lovely flowers that decorated the table, to be admired once more.

After dinner, an excellent paper on "Some changes noticed in the Natural History in the neighbourhood of Ross during the last Thirty Years," by Mr. Henry Southall, F.R. Met. Soc., was read; and another paper on "The search for Coal in Herefordshire," was commenced by Mr. Geo. H. Piper, F.G.S., but he had scarcely entered upon his subject when time rendered it necessary to start for the station, and a safe return was accomplished.

With such lovely weather, such charming scenery, and so many objects of interest to be appreciated, it is scarcely necessary to add that a very pleasant day was spent by all who had the good fortune to be present, and that another red-letter-day—of a deep dye—has been marked on the archives of the Woolhope Club.

The following gentlemen from the Woolhope Club took part in the day's proceedings :—The President, the Rev. Charles Burrough; Vice-Presidents, C. G. Martin and Geo. H. Piper, F.G.S.; Colonel Birch; Major Doughty; Captains Froude and Noyse; Drs. Bull, Chapman, and Wood; the Revs. J. Barker, W. Howell, E. R. Firmstone, E. J. Holloway, A. W. Horton, W. R. Jenkins, A. G. Jones, J. H. Lambert, A. Ley, H. B. D. Marshall, D. Price, F. S. Stooke-Vaughan, J. R. G. Taylor, and J. Tedman; Messrs. R. Atkins, A. St. John Attwood-Mathews, C. P. Bird, P. W. Howell, T. Brown, R. Clarke, P. C. Cleasby, C. W. Radcliffe Cooke, J. T. Owen Fowler, Lacon Lambe, H. C. Moore, E. Pilley, A. J. Purchas, M. Purchas, T. M. Skinner, H. Southall, Arthur Taylor, H. Vevers, B. Watkins, and Theo. Lane.

The Malvern Club were represented by the President, Mr. H. Wilson; Fraulein Gotzsch; the Rev. W. Hill and two Misses Hill; Dr. Carrington; the Rev. G. Thompson; and Messrs. R. P. Hill and Poulton.

SOME CHANGES IN THE NATURAL HISTORY OF THE NEIGHBOURHOOD OF ROSS DURING THE PAST THIRTY YEARS.

By Mr. HENRY SOUTHALL, F.R. Met. Soc.

“What exhibitions various hath the world
Witness'd of mutability, in all
That we account most durable below !
Change is the diet on which all subsist,
Created changeable, and change at last
Destroys them. Skies uncertain, now the heat
Transmitting cloudless, and the solar beam
Now quenching in a boundless sea of clouds—
Calm and alternate storm, moisture and drought,
Invigorate by turns the springs of life
In all that live, plant, animal, and man,
And in conclusion mar them. Nature's threads,
Fine passing thought e'en in her coarsest works,
Delight in agitation, yet sustain
The force that agitates, not unimpair'd ;
But, worn by frequent impulse, to the cause
Of their best tone their dissolution owe.”

COWPER.

The life-time of a generation is undoubtedly too brief a period to exhibit much evidence of change in the natural world, and yet it may be interesting to inquire if such evidence exists, and to what extent it has been noted. The absence of correct data for comparison often presents an obstacle not easily overcome, and mere hearsay or tradition is unreliable, since comparatively few are to be trusted as regards memory or accuracy.

It may be well at the outset to consider what are the principal causes of change in the general features of a district, and also in the development of animal and vegetable life within its borders, and then to consider how far any of these causes have affected our own district. Perhaps these may be classified under the following heads :—

- 1.—The extension of buildings and manufacture in towns and villages.
- 2.—The pulling down of old walls and buildings.
- 3.—The making of railroads and other highways.
- 4.—The filling up of canals.
- 5.—The clearing or cutting down of woods.
- 6.—The drainage of bogs and pools.
- 7.—The reclamation of waste lands and enclosure of commons.
- 8.—Other changes in the cultivation of lands, such as removal of hedges and ditches, &c.
- 9.—The preservation of game leading to the destruction of many wild animals birds, &c.

10.—The irruption of tourists, and especially the ravages of fern and orchid collectors.

11.—The wilful and wanton destruction of life for mere amusement or mischief.

Perhaps as regards its general aspect, there is not very much alteration which would strike a visitor to Ross, after a lapse of 30 years. If he stood on the Prospect, or on Wilton Bridge, Wilton Castle would present much the same appearance as of old. The old oak in the centre of the Oak meadow, in 1849 a flourishing tree, measuring 29 feet at 3 feet from the ground, is now a ruin, having been burnt in the winter of 1849-50, and in its present state the lines addressed to the Yardley oak might seem appropriate:—

“ Time made thee what thou wast, king of the woods ;
And Time hath made thee what thou art—a cave
For owls to roost on. Once thy spreading boughs
O’erhung the champaign ; and the num’rous flocks
That grazed it stood beneath that ample cope
Uncrowded, yet safe shelter’d from the storm.
No flock frequents thee now. Thou hast outliv’d
Thy popularity, and art become
(Unless verse rescue thee awhile) a thing
Forgotten, as the foliage of thy youth.”

COWPER.

The magnificent old poplars by the side of the rope-walk and old Wilton Road are still in good preservation. The largest measures 14 ft. 10 in. in circumference at five feet from the ground, and possibly few, if any, finer specimens of these trees exist in England.

Many of the elms in adjoining meadows have been blown down, eleven in the night of February 21, 1861; but the growth of younger trees has since then, to some extent, replaced them.

A perceptible alteration in the course of the river Wye, still rapidly going on, has probably brought the stream some 17 yards nearer Ross than it was in 1851. Considerable attention was paid to this subject by Mr. Richardson, engineer, in 1857. It appears, from an old survey made by John Green, in 1756, that the old oak was 52 yards further from the bank of the river in 1857 than it was in 1756—so that it is supposed that in the reign of Henry VIII. the tree was a sapling on the bank of the river, and still further back, that it flowed past the whole length of the castle walls, having originally formed one of the defences of the fortress.

On looking the other way, our visitor would miss the row of 13 fine Lombardy poplars in the Old Maids’ Walk, adjoining the rectory garden. The vitality of these trees was so sapped by the three cold winters, 1879-81, that after two of their number had been blown down, it was thought safer to remove the rest, and with them a conspicuous object and landmark for miles around. The elms in the churchyard would appear much dilapidated, for although they have probably increased some 18 inches in girth, or at the rate of rather more than half-an-inch per year, many of the boughs have been broken off in severe gales, and others have been lopped as a matter of precaution. They are still, however, many of them, very handsome trees. None of them appear to have been struck with lightning. The spire of the church was so injured by the great thunder-storm of July 6th, 1852,

that 60 feet had to be taken down and rebuilt, and the conductor then fixed to it has probably since protected both the church and surrounding objects.

The town of Ross has extended in the direction of the railway station, and on the Walford Road the suburbs of Ashfield and Tudorville have both sprung up within the last 30 years. The Hereford, Ross, and Gloucester Railway, and the Ross and Monmouth Railways, have been made in the same period, and instead of six four-horse mails, and about a score of other coaches, passing through the town daily, we have now the constant clatter of railway trains.

The bog at Coughton Marsh, and also at Ailmarsh, have both been drained, but no common or waste land has been enclosed, and otherwise there has been no important change in the character of the neighbourhood, except the thinning of the population in many of the rural parishes. There has been but little change in the preservation of game, except at Little Doward, which is much more strictly looked after than formerly.

There has been a great increase of tourists, and ferns and other plants are now sold freely at our railway stations. We will now notice some botanical changes. A few plants have become quite extinct, as far as is known. The pretty lilac butterwort (*Pinguicula vulgaris*), from the drainage of Coughton Marsh; *Erodium maritimum*, from the taking down of an old wall at Brampton Abbots; *Sparganium minimum* and *Scirpus lacustris*, from the filling up of a pool; *Equisetum hyemale* also from drainage; *Cynoglossum montanum*, or the wood Hound's Tongue, probably from overgrowth of underwood; *Erodium moschatum* has also, I understand, disappeared from its locality of Hoarwithy; *Campanula rapunculoides*, which was formerly found in the neighbourhood, has not turned up in recent years; and the following, which may be considered as stray or doubtfully native plants, are not now to be found: *Smyrniolobos olusatrum* (Alexanders), *Ornithogalum nutans* and *umbellatum* (Star of Bethlehem), *Muscari racemosum*, *Lolium temulentum* (Drunken Darnel).

On the other hand, there have been large additions to the flora to compensate for these losses. Amongst the plants which are become much more scarce of late may be mentioned—*Hutchinsia petrea*, which appears to be rapidly disappearing; *Helleborus fatidus*, formerly very plentiful on Great Doward, is now very seldom met with on the banks of the river, where it was, one time, not uncommon. Another plant, which at one time was found in some luxuriance, but now scarcely met with except in the Forest of Dean, is the Henbane (*Hyoscyamus niger*). *Cystopteris fragilis* appears to be exterminated by fern-hunters; and the Bee and Fly Orchis, as well as the *Cephalanthera grandiflora* and *ensifolia*, are probably nearly lost, from continued uprooting. The *Atropa belladonna*, on the contrary, has considerably increased, and sprang up in great luxuriance on the making of embankments on the Ross and Monmouth railway.

The alteration of a fence appears to have extinguished a good locality for *Doronicum pardalianches*, probably only a garden escape. On the cutting of the undergrowth in our woods, which usually takes place once in twenty years, there is generally for a year a great abundance of foxglove, hemlock, and some other plants which had remained dormant, *Cardamine impatiens*, a somewhat rare plant,

among the number. On the whole, perhaps, we have not so much change in our flora here as in many other places, and yet we cannot but regret that some of our varieties should be exterminated by ruthless hands.

My knowledge of entomology is too limited to say much about insects. I have noticed, however, that the Cockchafer has been much less numerous of late years than I remember it to have been, and for several years past, and, if I am not mistaken, there has been a comparative scarcity of butterflies; and even this year the abundance of sunshine and fine weather has not caused them to be plentiful. Perhaps the most remarkable thing to record is the large number of Clouded Yellows which appeared in 1878. In some of our roads they seemed almost to swarm.

The supply of fish in the river Wye is reported to be, both in kind and quantity, much the same as it used to be, with the exception of the small fish, the Gudgeon, which is now seldom or never caught.*

Through the kindness of Mr. E. Purchas, and Mr. W. Blake, some very interesting notes on our wild birds will be attached to this paper, but since they make no allusion to the Raven, I may express my regret that he is so rapidly disappearing. At Symonds Yat he was regularly to be seen thirty years since, and at one time built on the Chimney Rock, in an apparently inaccessible position. Mr. David Lucas, and one or two more then employed in the construction of the Gloucester railway, determined to get the nest, and by flying a kite and then passing a rope over the summit, succeeded in scaling the fortress and obtaining their prize, but what good they did, except in destroying an interesting locality for a rare bird, I am at a loss to know.

BIRD NOTES.

Concerning the larger birds of prey, the gamekeeper war has resulted in all becoming rare during the present century, and some few being rendered almost, if not quite, extinct in the county.

The noble Peregrine has been well-nigh outlawed, and is of very rare occurrence.

The ignoble Common Buzzard is now no longer common. Still, it is of regular occurrence in suitable parts of the county, and breeds when unmolested. A pair nested on Doward Hill woods a few years ago. In 1883, a fine specimen was trapped on the Leys Estate, and its partner was seen in the neighbourhood. It has been noticed almost annually at Bishopswood, more rarely still in Penyard. One was obtained near Peterchurch a few weeks ago.

The regal Kite, though formerly plentiful, is only seen at intervals.

The Honey Buzzard, though perhaps never plentiful, is regarded as occurring more frequently of late throughout England. A few years back, one was trapped on the Goodrich Court Estate, and, more recently still, another in the Queen's Wood, Marcle. Its spouse was also seen in the neighbourhood.

* On the authority of Mr. George Horne, of Hereford, the Gudgeon have again (1889) much increased both near Hereford, and also higher up the river.—Ed.

The Rough-legged Buzzard is "wanting" in recent lists of county birds.*

As to the smaller hawks, they are annually thinned out, the Kestrel and Sparrowhawk alone being regarded as common.

The handsome Hobby, and whatever "hold" it formerly had with us, has become almost as rare as its prototype, the Peregrine. Still it bred near Hereford a few years ago.

That miniature falcon, the Merlin, must now also pass into the list as a *rara avis*. Nevertheless, a pair were trapped last year (1883) on the Bishopswood Estate, even to the regret of the gamekeeper himself!

The Harriers, forming a connecting link between the nocturnal and diurnal birds of prey, were probably never plentiful in Herefordshire, owing to the absence of flat, open, marshy, or gorse-covered land. Recently they have not been observed. The Marsh Harrier is a desideratum. There have been two Hen Harriers killed within the last twenty years, and possibly others not recorded.

Of Owls, I do not think any of the now rare species ever occupied a very prominent place. The brown or Wood Owl, and the white or Barn Owl, are nearly as numerous as formerly. The latter perhaps rather less so, thanks to the mistaken zeal of some farmers. The long and short eared owls are still less plentiful.

The second order, viz., Insectores (or perchers) contains by far the most numerous species. Through the untiring efforts of the Rev. F. O. Morris, our songsters, and others useful in many ways, have Government protection. Hence they are on the increase, and for their comfort and convenience perhaps no county is more eligible than our own.

The Nightingale is not more common than of old. To hear him to perfection, you should seek the depths of our woods in the early days of May. The males arrive about the 20th April; the females a week or ten days later. During the pairing, nest-building, and egg-laying period, the male sings lustily on fine nights, and in a desultory manner during afternoons. If a second male be in the neighbourhood, a rivalry is created and one bird will try to out-sing the other. Directly the young are hatched, all song, worthy of being so called, ceases until the youngsters are fully fledged, when, before leaving our country, a few rudimentary lessons in music are given by the parents. The reason why they sing so much less here than in Monmouthshire, Surrey, or Kent, may possibly be due to the absence of the excitement caused by the rivalry of others singing round them. The birds are much more shy here, too, than they are when they are more abundant. Many species formerly judged uncommon are now thought to be less so. Possibly the increased number of observers may in a measure account for this.

Among such, is the interesting Dipper (met with more especially on the Garron); the awkward-looking Hawfinch, which regularly breeds with us; the Grasshopper-warbler, with its cricket note. The handsome Cirl Bunting also has come more under observation of late, and often passes for its congener, the Yellow Bunting.

* It has since occurred.

As to climbers (who suffer less from gun danger than other families), we have the Greater and Lesser Spotted Woodpeckers in most of our woods, and even that rarity, the Great Black Woodpecker, has been, with a good degree of certainty, observed on three occasions. Then *Picus Viridis*, though scarce in the north, is abundant here. The skilful Nuthatch is common, and the note of the shy Wryneck often heard; while the tiny Creeper, with its mouse-like movements, may be found upon the tree-trunks of almost any orchard or copse.

Order 3.—Rasores or scratchers come next, headed by the Dove family. There is reason to believe that their numbers will multiply with the advance of cultivation, grain and cereals forming their staple food. The Ring-dove is very abundant; the Stock-dove common; while the gentle Turtle-dove is far from rare. I do not think the Rock-dove can be made out to be more than an occasional visitant.

The Pheasant and Partridge hold their own well, even when beyond the precincts of strictly preserved lands. The Red-legged Partridge is on the increase in Gloucestershire, and instances have been more frequent of late of its presence in this county. It would seem the Lapwing is even more abundant than formerly. Flocks of several hundreds are to be met with in the early autumn within a mile of Ross. They may generally be observed on the left of the Gloucester road, hovering over the Rudhall valley, and also in other districts. The increase is remarkable, because the only pieces of common land, Ailmars and Coughton Marsh, have been drained and cultivated. Truly useful birds they are, the Lapwings, and very good for the table also.

With Grallatores (or waders) we are not over-stocked. The great majority of this fourth order are shore birds. Those we possess are less plentiful than formerly, owing to the multiplication of sportsmen, the drainage of land, and the general encroachment of civilization. These forces are destined to advance at the expense of the extinction of some species.

The Common Heron is still among us, thanks to preservation in some quarters. The Sandpiper, or Summer Snipe, is perhaps more plentiful than formerly. Concerning this species there is a curious circumstance to note. Visiting us in April (its arrival being somewhat ruled by the height of the river), it remains throughout May—then disappears. The bird may be looked for in vain until about the middle of July, when they turn up again with reinforcements. It is clear they retired to breed, but where to is the question. Is it to the coast northwards, or to some secluded parts of the Wye? The latter supposition is extremely doubtful; the former not satisfactory.* The returning ones remain with us in small flocks until late in the autumn.

In winter we get the Dunlin, seeming to occur more frequently than formerly, though by no means common.

* More recent observation and information proves their spring visit is merely a *passing* one, *en route* for secluded breeding-places in the upper reaches of the Wye, and possibly its tributary rivulets. Mr. George Horne, of Hereford, informs us that the Summer Snipe most certainly is abundant up the Wye, that he has taken an egg from a nest at Glasbury, and that he saw several of these birds there so recently as May, 1889.—ED.

With regard to the fifth order, viz., *Natatores*, including both divers and swimmers, the water-fowl on the river are more plentiful, but the severity of our winters rules their frequency. Before the opening of the railway from Ross to Hereford, 29 years ago, there was a considerable barge traffic, and the bargees considered a fowling-piece a necessary portion of furniture of a barge, and this disturbance has now ceased. Small flocks of Geese still favour us with a visit, chiefly Brent and White-fronted species. The Sheldrake also occurs. The Mallard or Wild Duck is common, a few of which remain in the county throughout the year, and breed with us. The Teal and Wigeon come next as to scarcity. Between them and the occasional occurrence of the Pochard, Golden Eye, and Tufted Duck, is a wide break in point of frequency.

As to Divers, the Cormorant, Gannet, Great-crested and Red-necked Grebes, are of more rare occurrence than in past years. Likewise the Goosander and the Red-throated Diver. The Grey Phalarope has been once taken.

It only remains to speak of Terns, Gulls, and Petrels, all of which must be regarded as occasional or accidental visitors. Driven here by American gales, they are visitors by accident in two ways—for if they ever have the good fortune to get back it is by accident also. They are generally knocked down as soon as they “turn up.” Among the regular occurrences, are the Kittiwake and Common Gulls, and Common Tern. In the more rare list is recorded the Sandwich Tern, Lesser Tern, Black-headed Gull, Great Black-backed Gull, and Pomerine Skua. Among Petrels, we have the Manx Shearwater, Stormy Petrel, the Fork-tailed Petrel, and Fulmar.

As to the future, in spite of the forces that militate against our feathered friends, they have more laws for their protection than of yore. If gamekeepers would but save their powder, the majestic Kite and graceful Peregrine might again be seen sailing over our woods. Our Finches and Sylviadae are on the increase, thanks to Acts of Parliament. If sportsmen and collectors would but spare the rarer species when seen, they might once more grace our landscape and heighten the interest of our rural walks.

Woolhope Naturalists' Field Club.

THE HEREFORDSHIRE APPLES IN NORMANDY.

THE GREAT APPLE CONGRESS IN ROUEN.

[SPECIAL REPORT.]

ROUEN, October 8th, 1884.

A GENERAL Congress of the Pomological Societies of France is now being held here. The "Association Pomologique de l'Ouest," has its centre of operation in the capital of Normandy; and the present Congress is held with the co-operation of the "Société Pomologique de France," the "Société Nationale et Centrale de France," the Societies of Horticulture and Agriculture "de la Ville de Rouen," et "des Départements de la Manche, d'Ile et Vilaine, et de la Seine Inférieure." The union of all these societies has necessarily produced a very large meeting, attended by all the leading pomologists of France, and a very extensive and important exhibition of apples, pears, and other fruits, with cider presses and all other mechanical contrivances for the manufacture of cider.

The Woolhope Club heard last year of the appointment of this grand Congress, and decided to send a deputation to attend it, in order to make a comparison between the apples and pears of Normandy and those of Herefordshire. The gentlemen who were named in the spring for this purpose were Dr. Bull, of Hereford, Dr. Hogg, of London, and Mr. Piper, of Ledbury, and it was left to them to take such steps as they thought advisable on behalf of the Club. These gentlemen did not fail to make every preparation worthy of so grand and important an occasion. They resolved that the Herefordshire apples and pears of all kinds should be fully represented, together with samples of Herefordshire cider and perry. The gardens of Stoke Edith, of Holme Lacy, of Thing-hill, and other smaller places were freely placed at the disposal of the Woolhope Club, and an excellent display of fruit was selected. Four large boxes of fruit, containing 238 different varieties, with seven fruits of almost each variety, were very carefully packed by Mr. Illman and his assistants, from King's Acre, and two other boxes, containing six varieties of the best kinds of cider and two of the best perry, were also sent. These boxes were sent the week before, and the deputation were very glad to find them all safely there on their arrival. The exhibition of table fruit was held in the Great Hall of the Hôtel des Sociétés Savantes, and an excellent

position on one of the central tables was set aside for the Woolhope exhibition. It was no easy task to unpack and unwrap above 1,600 different fruits, and arrange them all on the tables, but the same energy which got them there accomplished the work in some five or six hours. The number of plates exhibited is stated to be about 6,000.

The morning after the arrival of the members of the deputation, M. Héron, the President of the Société d' Horticulture de Rouen, with M. Lechartier, the Vice-President, most politely called upon them and invited them to the opening meeting of the Congress, and to all the successive meetings held daily. They also invited the members to the grand opening banquet to be given the next day at the Hôtel d'Albion. This banquet was attended by all the Presidents and Vice-Presidents of their several Societies. In the speaking afterwards many compliments amongst themselves passed as a matter of course—we have only to relate what concerns the Hereford deputation. Very high places were fixed for them at the table, and the President, M. Héron, was so complimentary to them, that in his turn Dr. Bull had to rise and answer him. This he did in a speech which created quite a sensation and great applause. He had no sooner finished than there was a great shaking of hands, from the President downwards, and a successive clinking of champagne glasses. It was of course highly complimentary, and he was pressed on all sides to supply a copy for the *Transactions* of the Congress. To return to the Exhibition,—a good place on a centre table, as we have said, had been reserved for the Woolhope Club's exhibition, and after the great labour of putting out the fruit, it was very evident how fine the collection was. The apples and pears from Stoke Edith, Holme Lacy, Thing-hill, and other places, were really magnificent. They had travelled well, and though there were many other plates of very fine fruit, it was quite clear that for general beauty, for form, size, and colour, there was no other collection amongst the 6,000 plates that equalled the Herefordshire fruit. The plates were not large enough to hold the required number of six, one had to be taken from each, and then the table was covered with them. The Herefordshire grapes (Black Alicante), from Mr. Coleman, of Eastnor Castle, were also very fine. This exhibition of the Société Centrale d'Horticulture de France is not strictly competitive. Like our own Royal Society in London, they only award prizes for special merit. The Council had been round before the banquet, and afterwards Dr. Bull was informed that a gold medal had been awarded to the Herefordshire fruit; that a large silver medal had been given to the Herefordshire grapes; and that although it was unusual for the Society to notice publications, it was impossible to pass over the magnificent work, *The Herefordshire Pomona*, without awarding to it the highest honour in their power, and they had therefore awarded to Dr. Bull, on behalf of the Woolhope Club, a *Diplôme d' Honneur*. Again and again the President requested Dr. Bull to give a copy of his address for publication, and it was impossible any longer to decline it. The Exhibition of the Association Pomologique de l'Ouest, which takes in the orchard fruits and cider and perry, did not open until Monday, the 6th. The Hereford collection of cider apples, except as regards the so-called Norman fruits, is not large, for some of those who had promised cider apples did

not send them in time to be sent over; but the collection of perry pears (from Mr. Piper) is extensive and fine. The Woolhope Club exhibits also six varieties of cider and two varieties of perry, of the highest quality they could procure, and it will be curious to notice how they suit the Norman palates. The great success of the Woolhope Club exhibits will compel the deputation to remain at Rouen until to-morrow, when the prizes will be awarded with much ceremony.

[BY TELEGRAPH.]

ROUEN, October 10, 1884.

The following is the official list of awards in connection with the Herefordshire exhibits:—

- (1) Gold medal for collection of table apples and pears.
 - (2) Large silver medal for grapes.
 - (3) Gold medal to Dr. Hogg for his life-work in pomology.
 - (4) Silver gilt medal for cider made from mixed fruits.
 - (5) Silver medal for Foxwhelp cider.
 - (6) Bronze medal for cider and perry fruits.
 - (7) Diploma of honour for *The Herefordshire Pomona*, from two Societies.
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[We have been favoured with the text of the speech delivered by Dr. Bull at the grand banquet given by the Société centrale d' Horticulture de la Seine-Inférieure at Rouen to all the leading pomologists attending the Congress. It took place at the Hôtel d' Albion, on October 2nd, 1884.]

Monsieur le Président et Messieurs,—Je voudrais m' adresser à vous en anglais, mais je sais bien qu' il y a des personnes dans cette assemblée si distinguée qui ne comprennent pas notre langue si difficile et si excentrique, quoique si chère à nos cœurs.

C'est bien dommage, parce que, moi-même, je ne parle français qu'à la mode anglaise; cependant, si je puis me faire comprendre, sans trop vous gêner, j'en serai content, car je suis bien assuré d'avance de votre complaisance, et de votre bienveillante considération. Si je ne puis pas vous dire de choses intéressantes, au moins entendrez-vous des erreurs amusantes.

Dans nos vergers de Herefordshire, en ce moment les pommiers dits normands sont tout à fait à la mode. Si on cherche des pommiers de pressoir, ou si on plante un verger, le cultivateur ne serait pas content, s'il ne s'y trouvait un certain nombre de ces espèces; la cause n'est pas loin à chercher, c'est qu' elles sont très robustes, très fécondes, et que leur fruit fait un très bon cidre. Il y a, à peu près, une vingtaine de ces espèces, et leur fruits se trouvent en ce moment sur la table, là-bas, à l'Exposition.

Mes confrères et moi nous avons été délégués pour faire une comparaison

entre ces fruits et les vraies pommes de Normandie. C'est pour nous aussi un devoir de choisir, avec le secours de votre bonté, environ six ou sept variétés de pommes de pressoir, des meilleures espèces, franchement normandes, pour les remporter chez nous. Nous apportons aussi quelques échantillons de cidre et de poiré, afin de pousser plus loin la comparaison de nos produits. En outre, nous sommes délégués, avec pleins pouvoirs, pour rapporter autant de nouvelles idées que nos pauvres cervelles pourront en retenir. Tout le monde sait parfaitement que s'il s'agit de trouver des cultivateurs de fruit des plus habiles et des plus soigneux, on ne peut les chercher dans un endroit plus fertile que dans la France, en général, et dans la Normandie, en particulier. Les arbres fruitiers eux-mêmes, à ce qu'il paraît, semblent reconnaître leur maître; taillés très sévèrement, ils prennent la forme qu'il désire, et à son ordre deviennent très productifs et lui rapportent de beaux fruits.

Il faut l'avouer, Messieurs, nos vergers, en Angleterre, sont en général très négligés, et si je dois croire ce qu'on me dit, il en est de même ici. Ne semblerait-il pas que le niveau intellectuel des personnes qui travaillent continuellement à la terre s'abaisse graduellement? Leur santé peut s'améliorer et leur corps devient plus robuste, mais l'esprit s'alourdit, il devient lent à mesure que les épaules s'arrondissent; le préjugé agricole a horreur du changement. Il pratique le "laissez aller" à un degré presque incroyable. N'est-ce pas à cet esprit de routine qu'il faut attribuer la persistance à planter encore des arbres, dont les noms figurent dans les classes "lilas," "saumonnée," ou même "blanche," de l'admirable *Catalogue des fruits à pressoir*, de la Société centrale d'Horticulture, qui marque d'une manière si précise et si commode la valeur relative de ces diverses espèces. Ne pourrait-on pas choisir exclusivement la liste "jaune"?

Nous regardons ce *Catalogue*, il faut l'avouer, avec beaucoup d'envie. Le gouvernement, chez nous, ne s'occupe aucunement de nos vergers; et je crois bien que si l'on osait demander son aide, il dirait, comme il le dit en effet: "Si vous voulez de bons pommiers, cherchez-les. Si vous voulez planter des vergers, plantez-les. Si vous voulez des analyses, adressez-vous aux analystes les plus habiles." Le gouvernement anglais ne nous aide en aucune manière, tandis que le vôtre vous seconde largement, en prenant à sa charge les dépenses d'analyses et en présentant aux cultivateurs d'aussi beaux ouvrages que *Le Cidre*, de M.M. de Boutteville et Hauchecorne, et le *Catologue* de la Société centrale d'Horticulture, dont j'ai parlé. Je vous assure, Messieurs, que *Le Cidre*, ouvrage si excellent, a beaucoup contribué à animer nos efforts pour la publication de, *The Herefordshire Pomona*, que vous nous avez fait l'honneur de couvrir de vos louanges.

Messieurs, nos cultivateurs, en général, possèdent, l'esprit agricole; ils suivent les mêmes procédés qu'on a pratiqués de siècle en siècle, et que leurs aïeux ont suivis. Ils sont un peu comme ce bon M. Jourdain, dans la comédie inimitable de Molière; ils pratiquent de certains procédés et le cidre en résulte; mais comment cela peut arriver, ils n'y ont pas pensé du tout. Il n'y a que très peu d'années, tout le monde était à peu près dans le même cas; ils ne pouvaient pas comprendre, par exemple, le procédé de la fermentation. Les analystes ont parlé de l'oxygène, et des changements qu'il produit dans les matières inorganiques;

mais l'explication n'expliquait rien. C'étaient des mots qu'on employait pour cacher l'ignorance. Il n'a fallu qu'une touche de baguette du vrai génie pour changer tout cela. La baguette de M. Pasteur l'a fait. Il a travaillé avec une persévérance indomptable et avec un succès admirable. Il a démontré que la fermentation résulte tout simplement de la croissance de plantes microscopiques, les saccharomyces, comme maintenant tout le monde l'admet. M. Pasteur travaille continuellement, et, dans ces dernières années, il s'occupe à combattre les maladies les plus affreuses, et la force de son génie a jeté sur ces maladies une lumière de la plus haute importance pour tout le monde. Un si beau travail, un succès si brillant, est merveilleux ! Vraiment, M. Pasteur est un héros scientifique de notre siècle ! Il a acquis grand honneur à lui-même, gloire à sa patrie, et on peut dire guérison à la race humaine.

Il y a des philosophes qui disent que le génie n'est que la persévérance bien dirigée ; mais, Messieurs, c'est encore jouer avec les mots. C'est le génie qui entraîne la persévérance ; il appartient au génie de voir à l'avance les beaux résultats de tous ses travaux. Il me semble que, de nos jours, le vrai génie reste de ce côté de la Manche. Nous avons en Angleterre, de temps en temps, des étincelles de génie, et nous avons, presque toujours, beaucoup d'énergie et de persévérance ; ces belles qualités nous ont gagné nos grandes possessions, notamment dans les Indes, mais il a fallu le génie d'un M. de Lesseps pour nous en indiquer la route, et de plus il a fallu la confiance des Français dans son génie, pour ouvrir cette route, avant que nous (insulaires entêtés que nous sommes quelquefois), puissions y croire.

Mais, revenons à nos pommes !

Dans nos recherches sur l'histoire des vergers, nous avons rencontré un fait pomologique très ancien et très curieux. Il se rapporte à la Bretagne.

Pendant le vi^e siècle, les Saxons ayant conquis l'Ouest de l'Angleterre, en chassèrent les moines et toutes les familles chrétiennes, hommes, femmes et enfants. Ces gens se réfugièrent dans le pays de Galles, à Llandaff, où les deux évêques, saint Teilo et saint Samson, accablés par leur charge, se procurèrent des bateaux, et, se mettant à la tête de quatre-vingts moines et d'une nombreuse population, s'enfuirent jusqu'à la côte du Nord de la France, alors appelée "Armorique," et qui, par suite de cette émigration, reçut le nom de "Bretagne," nom qu'elle a conservé jusqu'à nos jours.

Les réfugiés importèrent leurs pommiers. Ce fait est cité dans un très ancien manuscrit, le *Liber Llandavensis*, un registre, ou cartulaire, de la cathédrale de Llandaff. On y lit, dans un manuscrit qui raconte la vie de saint Teilo (chapitre III., p. 346) : "Saint Teilo laissa un autre témoignage de sa présence en Armorique "en plantant, avec l'aide de son condisciple et confrère saint Samson, un énorme "bocage d'arbres fruitiers, qui s'étendait de Dol jusqu'à Cai ; un bosquet qui, de "nos jours, porte encore le nom de Bocage de Saint-Teilo et Saint-Samson." Le *Liber Llandavensis* fut écrit au commencement du xii^e siècle ; ainsi ce grand bocage existait déjà depuis des centaines d'années.

Ce fait est avéré aussi par des autorités françaises. M. le Comte de Montalembert en fait mention dans son ouvrage sur *Les Moines d'Occident*. "Les

“Saxons,” dit-il, “avaient depuis longtemps envahi et saccagé la Grande-Bretagne. Pour échapper à leur joug sanglant, une armée de religieux bretons, servant de guide à une population entière d’hommes et de femmes, de libres et d’esclaves, se jetant dans des barques, non de bois, mais de peaux cousues ensemble, chantant, ou plutôt hurlant, sous leurs voiles déployées, les lamentations du Psalmiste, était venue chercher un asile dans l’Armorique et s’y refaire une patrie. Cette émigration dura plus d’un siècle et versa toute une population nouvelle, mais de race également celtique, dans la partie de la Gaule . . . où le vieux culte celtique avait conservé le plus de vie.” (*Les Moines d’Occident*, liv. vi., tome ii., p. 274.)

M. de Montalembert traduit ainsi un passage de “la Vie de saint Brieux” par le chanoine de la Devison (1627). “Quand saint Brieux et ses quatre-vingts religieux arrivent de la Grande-Bretagne, débarquent en Armorique, et reconnaissent le site, où s’est élevée depuis la ville qui porte son nom, ils procèdent tout comme les soldats de César dans les forêts sacrées des Druides. Ils parcourent d’abord, dit la Chronique, avec curiosité, les immenses futaies; ils fouillent de tous les côtés ces ombrages séculaires. Ils arrivent enfin dans une vallée qui se bifurque, dont les flancs sont partout recouverts de frais ombrages, dont le fond est creusé par une source d’eau transparente. Tous se mettent à l’ouvrage; ils abattent les grands arbres; ils rasant les taillis; ils coupent les halliers et les broussailles; bientôt ils ont créé une plaine ouverte où il n’y avait qu’un impénétrable fourré. Cela fait, ils ont recours à la bêche et à la houe; ils défoncent; ils sarclent; ils l’ameublissent avec un soin minutieux, et le mettent ainsi en état de produire d’abondantes récoltes. Souvent ils remplaçaient les arbres forestiers par des arbres à fruits, comme ce Teilo, moine breton, qui planta de ses propres mains, avec l’aide de saint Samson, un immense verger, ou, comme dit la légende, une vraie forêt d’arbres fruitiers ayant trois milles de long, dans les environs de Dol. C’est à lui qu’on fait remonter l’introduction du pommier en Armorique où le cidre est resté la boisson nationale.” (*Les Moines d’Occident*, tome ii., liv. iv., p. 394.)

Selon le chanoine de la Devison (1627), ce verger existait encore dans la xii^e siècle sous le nom de “Arboretum Teliavi et Samsonis.” Peut-être par “Cai” dans le *Liber Llandavensis* veut-on dire Saint-Quay petit village (plutôt que ville), près de Pontrieux, Côtes-du-Nord, et où les vergers abondent.

A deux kilomètres de Saint-Quay, il existe encore, me dit-on, une petite église extrêmement ancienne, dédiée à saint Brieux et à saint Marc, qui indique, à ce que l’on pense, le lieu où ces deux saints débarquèrent en Armorique. La grande antiquité de cette petite église en empêche l’usage fréquent, mais, une fois par an, on y célèbre la messe en l’honneur de ces deux saints. Saint Teilo et saint Samson sont décédés vers la fin du vi^e siècle.

S’il faut en croire la tradition la plus accréditée, ce n’est qu’à partir de l’époque où fut planté ce verger que naquit la fabrication du cidre en Normandie; et le fait est que ce ne fut que bien longtemps après cet événement, que le cidre de Normandie gagna la célébrité dont il jouit à présent.

Il est fait mention du cidre dans les temps les plus reculés, mais il n’existe pas d’histoire des vergers des fruits à pressoir en Herefordshire ou en Angleterre, avant la fin du xiv^e siècle. J’ignore s’il en existe un des vergers en Normandie.

Monsieur le Président et Messieurs, il ne me reste plus qu'à vous remercier très sincèrement de la patience avec laquelle vous m'avez écouté, et de vous exprimer, au nom de mes confrères et au mien. . . . mais la reconnaissance ne doit pas être balbutiante et hésitante; je demande la parole en anglais pour quelques instants:

Mr. President and Gentlemen,—You have received my friends and myself so very kindly, that I prefer to express in English how deeply sensible we are of the honour you pay us.

We have come to you in the interest of Pomology, to gain information that may be useful in our orchards, and to our fruit-growers; you give us an opportunity of acquiring it by your fine exhibition of fruit, and by admitting us so freely and pleasantly to your interesting and instructive meetings. We have come to you as strangers, you receive us as friends, and have to-day most cordially admitted us to this handsome entertainment. I will only add that we reciprocate your very kind feelings towards us with great sincerity.

Oui, Monsieur le Président et Messieurs, mes confrères et moi nous sentons vivement le gracieux accueil que vous nous avez fait. Nous vous remercions du fond de nos cœurs.

Je demande encore une faveur, c'est la permission d'exprimer un sentiment, ou, si vous voulez, une prière de la part de mes confrères, et je vous assure que les Anglais en général y prendraient part avec une cordialité sincère, c'est que :

Dieu bénisse la France.

(The speech was received with much applause, and is printed in the Transactions of the Society at Rouen.)

ANOTHER REPORT.

There could be no question that the collection of apples and pears from Herefordshire formed the chief attraction at the grand fruit show which was held last week in the Hall of the Hotel des Sociétés Savantes, Rue St. Lô, Rouen. The French visitors crowded around the table, and on Sunday, when the attendance was large, they created quite an obstruction. The exhibition of table fruits was held in the rooms of the Société centrale d'Horticulture de la Seine-Inférieure. There was no real competition in this class, for the French Society, like our own Royal Horticultural Society in London, only awards "merits." There were but three gold medals given on the present occasion, and it was very gratifying to know that one of them was awarded to Herefordshire fruit, and this in the very centre of Normandy.

The Woolhope Club was very ably represented by Dr. Hogg, the great pomologist, whose fame may be said to be widespread, and by Dr. Bull, of Hereford, and Mr. Piper, of Ledbury. Besides this beautiful collection of fine fruit, they carried with them *The Herefordshire Pomona*, a work which did not fail to create

great admiration; and thus altogether their presence gave quite an international character to the exhibition. They were received with the most marked kindness and attention. The President and Vice-President called upon them the morning after their arrival, and invited them to all their meetings and to a grand banquet given by the Central Society to welcome all the other societies and leading pomologists who had come to attend the Congress. The banquet was held the following morning, and here again the representatives of this Club were so warmly received that Dr. Bull had to rise and respond to their kindness. This he was fortunately able to do in such a manner as to create a very lively satisfaction to their French entertainers, who received his remarks with much applause and shaking of hands.

In the evening of the same day, the President and those of the chief authorities of the Council waited on Dr. Hogg, and presented him personally with a medal, as a mark of their high estimation of his life-long work as a pomologist.

It is not necessary to give the names of the apples and pears in the Herefordshire collection, because they have been so often seen at our show. It will suffice to say that the first plate in the whole show was that of Peasgood's Nonsuch, grown by Mr. Edwards, gardener to Henry Higgins, Esq., of Thing-hill. This was admirably supported by fruit of the finest character from the gardens of Stoke Edith, of Holme Lacy, of Bryngwyn, of Wessington Court, with several dishes from other places, in which the Woolhope Club know where to seek them. On all sides this bold and successful effort met with the kindest assistance: Lady Emily Foley, Earl Chesterfield, Mr. Higgins, Mr. Rankin, and everyone indeed from whom fruit was asked gave of their very best, with the greatest readiness and interest. The victory is due to this cordiality, for the Club was thus enabled to place fruit of the highest character on every plate, and for shape, size, freshness, and beauty of colour that pervaded them throughout, they were quite unsurpassable, and it was said the gold medal was awarded them without hesitation.

The exhibition of cider fruits, cider presses, and every mechanical contrivance for orchard management and cider making, was under the control of the Association Pomologique de l'Ouest. Here everything was in strict competition, and the number of exhibitors very large. There was a whole room full of cider, for example, dozens of bottles of all sorts and sizes, small barrels, queer jars and jugs of the oddest shapes. It was quite clear that the jury would have a very difficult task before them. It did take them nearly three days to accomplish it, and it is to be hoped that they kept their heads clear to the end. It was said that some of the Herefordshire ciders were passed by, as having brandy put into them, and though this was scarcely likely to be the case, if it were so, it was a just cause for their disqualification.

In the end, however, a second prize, which consisted of a silver gilt medal, was given to the Herefordshire cider made from mixed varieties of fruit; and a third prize, consisting of a silver medal, was awarded to the Herefordshire cider made from a single variety of apple, viz., the Foxwhelp. It was also said that some of the Herefordshire cider was not so bright and clear as it should have been to obtain an award, and this was very probably owing to the long journey it had

recently undergone. A fourth prize, consisting of a bronze medal, was also given to the collection of Herefordshire cider apples and perry pears. The Association also awarded a "Diplôme d'Honneur" to the *Pomona* for its representations of cider and perry fruit.

A very great ceremony was made of the presentation of prizes. This did not take place until Thursday, the 9th, and the representatives of the Woolhope Club were obliged to remain for it. It was held at the Hôtel de Ville, and a large military band was in attendance. The Mayor of Rouen took the chair, and after some little speechmaking by the leading authorities, the successful competitors were successively called to the table and presented with a certificate on large paper, in addition to what other distinction they might have acquired. M. Hoche-corne, (the joint writer of the work entitled *Le Cidre*,) a very old man, and highly esteemed, received a medal and monetary prize for the most successful essay, and he received perhaps the greatest ovation; but second only to this, when the President handed the gold medal to the representatives of the Woolhope Club, was the applause awarded. The band struck up, and a sort of international ovation occurred. With this ceremony the Pomological Congress was brought to a close. The Woolhope Club has become recognised in France, and the Normandy fruit-growers and cider-makers have become aware that good apples can be grown in Herefordshire, and good cider made there.

Another correspondent writes:—The publication of the beautiful *Herefordshire Pomona*, and the apple shows which have been held at the city of Hereford on several occasions during the last few years, have attracted much attention to the growth of apples and pears, for the full development of which the county of Hereford is so eminently capable. It was announced last year that a great exhibition of fruit would take place at Rouen, the ancient capital of Normandy, from the 3rd to the 12th of the present month of October, under the auspices, and with the co-operation, of the undermentioned learned societies of France, viz:—The Société Pomologique de France, the Association Pomologique de l'Ouest, the Société Centrale d'Horticulture of the City of Rouen, and the Société Centrale d'Agriculture et des Départements de la Manche, d'Ile-et-Vilaine et de la Seine-Inférieure. When this became known, the Woolhope Club, with that spirit of enterprise for which it has become so conspicuous, resolved to be represented at the great Conference, and for that purpose nominated as a deputation Dr. Bull, of Hereford; Dr. Hogg, of London; and Mr. G. H. Piper, of Ledbury; who undertook the trouble and responsibility of collecting and forwarding the beautiful fruits of our county for exhibition at the meeting. Some of the objects of inquiry were to ascertain whether the numerous family of bitter-sweet apples, generally known here as Normans, really came from France, or whether they were not, in fact, English seedlings; and to find out what apples were most prized in France for vintage purposes. On the deputation reaching Rouen, they were waited upon, at their hotel, by M. M. Héron and Lechartier, the President and Vice-President of the Société d'Horticulture de la Seine-Inférieure, and invited to attend a *séance* at the Hôtel des Sociétés Savantes on the 1st October, and the opening ceremony on the following morning: they also received formal invitations,

as guests of the associated Societies, to a banquet on the same day, at the Hotel d' Albion, to commemorate the holding at Rouen of the 26th Session of the Pomological Society of France. Between 50 and 60 of the most eminent pomologists of France assembled on the occasion, and partook of a very *recherché* entertainment.

In answer to the health of the delegates, who were seated in the highest places, Dr. Bull returned thanks in a long and able speech in the French language, which met with the most enthusiastic reception. The Frenchmen rose and cheered again and again, and such a clinking of glasses has rarely been heard. Dr. Bull, under much pressure, was compelled to promise that a copy of the speech should be supplied for publication in the transactions of the Societies. The whole proceeding was highly interesting and enlivening. The English dessert and culinary apples and pears were set out in the Central Hall of the Hôtel des Sociétés Savantes, and made a most imposing appearance. Those of France were placed on a corresponding table, but in very many instances one or two apples only were shown on a plate, whereas the English plates were laden with the large and exquisitely coloured products of Herefordshire, from the gardens of Stoke Edith Park, Holme Lacy, Thing-hill, and many other places. From the moment they were exposed the result was beyond doubt, and the reward made by the judges of a gold medal—the highest prize they could offer—was a satisfactory recognition of the excellence of the collection. Of the grapes, from Mr. Coleman, of Eastnor, it is enough to say they were in his customary form, and took the highest prize awarded for produce of the vine—a large silver medal. They were shown in the best possible condition, without the removal of a particle of bloom.

The French were stronger in vintage fruits than in the other classes. One exhibitor showed 200 varieties, and others 150, 130, and so on. Here the Herefordshire exhibit was smaller than it should have been, in consequence of the fruit having been sent late, but the apples and pears shown were of the choicest quality and the judges could not but be aware of their special value. Very few perry pears were exhibited, and those not alone, but in conjunction with apples. The English perry pears were immeasurably superior to their Norman sisters. There were forty of the very best varieties, and cleaner, better grown examples, were never seen. The choicest of these were produced by Mr. William Smith, of Much Marcle, comprising Squash pear, Oldfield, Moorcroft, Longland, Barland, and other varieties, in prime condition. Messrs. John and William Pope, of Marcle, also sent valuable contributions. Mr. George Best, of Hill Top, Ledbury, provided several choice sorts, and amongst them the "Rock Pear," which originated at Pendock, in Worcestershire, nearly 100 years ago, but has only recently been brought into general notice by means of *The Herefordshire Pomona*. Grafts of this special variety were obtained last year from Pendock and "The Berrow," in the belief that it had never before been cultivated on the western side of the Malvern Range, but those who are curious on the subject may rely with safety upon grafts obtained from the Hill Top. Persons old enough to remember Mr. Samuel Higgins, who owned and occupied that farm 50 years ago, will give him the credit of having first brought this peculiar and valuable variety into Herefordshire. Mr. W. S. Lane, of Bosbury Farm, produced fine examples. Dymock

sent Thurston's Red, Winnall's Longland, Sack, and many others; and the Worcestershire orchards of Berrow, Castlemorton, Newbridge, Yoking House, and Pendock, were ransacked for Rock pear, before it was known Mr. Best possessed it. But for the marked excellence of the perry pears, Herefordshire would not have scored in the vintage competition; as it was, a handsome bronze medal was awarded. Second and third prizes were given for bottled cider, but the French standard of excellence evidently differs from our own. The English cider was not light and bright enough to suit French palates. The cider of France has a thin watery flavour, and carries with it the suspicion of dilution. It is beyond doubt that watered cider can be fined more readily than pure apple juice, and it is believed that therein lies the secret of the clear bright cider of Normandy. If this be not so, means must be taken to learn the French method. The *Diplôme d'Honneur* awarded to Dr. Bull for his admirable *Pomona* was well deserved, and the journey will probably be the means of adding another plate to that valuable authority, for the purpose of bringing into notice some of the best cider apples of France. A gold medal was awarded to Dr. Hogg for his life-long services in furtherance of Pomological Science. It is generally interesting to know what others say about us, and in a long article in the *Journal de Rouen*, of the 4th October, the Editor writes:—"See this appetising fruit sent from England, is it not splendid? Ripened under fog, this beautiful fruit! Does it taste as well as ours? We do not know. But for size, freshness, and colour, these English apples can take a place in the first class. The Normandy apple is not more rosy or finer." The ceremony of presenting the prizes at the Hôtel de Ville was very imposing, and the assistance of an admirable brass band was freely used.

The distinction paid to the representatives of the Woolhope Club at Rouen was partly due, no doubt, to the influence exerted by friends to make their reception as pleasant to them as possible. The magnificent work of the Club, *The Herefordshire Pomona*, which was very greatly admired, and the fine collection of fruit strongly supported their favourable reception, but there was yet another cause which was soon made known. At the close of the banquet the President, M. Héron, made rather a mysterious announcement. He said that the Council had decided in the morning to take an exceptional course at this Congress, and give a gold medal to a gentleman who had done more than any one else to promote the cultivation of fruit trees in general, and pomology in particular. He did not mention any name, but in the evening he called at the Hôtel du Nord, with three of his colleagues high in office, to present the gold medal to Dr. Hogg. This compliment is the very highest that could be paid to any one. It was well deserved, and gave great satisfaction to all the representatives of the Woolhope Club, and fully explained the high respect and attention paid to them. Indeed, it may fairly be said that the great extent of the exhibitions of the Club, and the well-known name of Dr. Hogg as one of the deputation, gave an international character to the Congress, which was alluded to on several occasions.

When the exhibition was complete, and all the fruits arranged, there could be no doubt that the Herefordshire collections of apples and pears formed its most attractive feature, and on Sunday, when many people visited the Exhibition, they crowded round the table on which the fruit was exhibited. The collection consisted of 57 varieties of culinary apples, 57 varieties of dessert apples, and 36 varieties of pears. The finest dish on the table was one of Peasgood's Nonsuch, from Mr. Higgins's garden at Thing-hill; but there were noble specimens of Warner's King, Gloria Mundi, Lord Derby, Lord Suffield, Tower of Glamis, Stirling Castle, Cox's Pomona, Cellini, Catshead, Costard, Alfriston, Lord Grosvenor, Yorkshire Beauty, Blenheim Orange (very fine), Annie Elizabeth, Lane's Prince Albert, Emperor Alexander, Mére de Menage, Ecklinville Seedling, Pott's Seedling, Hawthornden, &c., &c. "The dessert collection," says the *Journal of Horticulture*, "was also very fine, and exhibited several varieties in their true character. They had evidently been selected with great judgment, and were spoiled neither by their excessive size, nor by being too small." Among these were fine examples of the true old Golden Pippin, Red and Yellow Ingestrie, Cockle's Pippin, Pomeroy, Fearn's Pippin, Ribston Pippin (remarkably well shown), Golden Reinette, Cox's Orange Pippin, Braddick's Nonpareil, Adam's Pearmain, Lord Burghley, Rosemary Russet, Scarlet Nonpareil, Pearson's Plate, Old Nonpareil, Margil (very fine), Kerry Pippin, Crimson Queening, Sam's Crab, Herefordshire Pearmain, Cornish Gilliflower (very fine and characteristic, but quite unripe), Irish Peach Apple, Court Pendû Plat, &c. The pears also were very attractive. Marie Louise (exceptionally fine), Triomphe de Jodoigne (also very good), Général Todtleben, Beurré Hardy, Duchesse d'Angoulême, Thompson's (very fine), Durandean, Van Mons (Leon de Clerc), Buerré Bosc, and many others. They were, however, with the exception of a few of the plates, neither so fine nor so large as those exhibited for the Horticultural Society of Rennes by Brother Henry (a lay brother of the Monastery there, whose ability equals his modesty of demeanour). The Herefordshire collection was derived from the gardens of Stoke Edith, Holme Lacy, Thing-hill, Bryngwyn, Wessington Court, and some other smaller gardens. It quite surpassed any others exhibited, and so highly did the Society appreciate it that they awarded a gold medal to it. Another gold medal was awarded to Brother Henry's pears from Rennes, and was richly deserved, for they were exceptionally fine and well grown, without a failing dish in the whole collection. It is Brother Henry who has written a very able work on fruit-growing, and to him is due a new mode of grafting walnut trees on the roots of the young plants, which has proved most successful, and is very important for the south of France where the walnut is so much grown.

The next most striking feature in the great Hall of the Hôtel des Sociétés Savantes, and perhaps the one which stood first in the eyes of the representatives of the Woolhope Club, was a very beautiful collection of grapes, all ripened in the open air. They were grown by M. Marc, at Notre Dame de Vaudreuil, in the Department of Eure. "It consisted," says the *Journal of Horticulture*, "of 100 varieties, among which we observed some of those grown in this country, but they were chiefly of the small dessert grapes, like the various varieties of Chasselas, the

small Frontignans, and generally of the many varieties that are cultivated in the gardens in the south of France, and which, though not unknown to the initiated in this country, are not in general cultivation." The mode of exhibiting the grapes was excellent, and very ornamental. Long vine stems were cut, and springing up from the wall were carried along about two feet above the tables, and upon them were fixed the bunches of grapes. They were very carefully and correctly named, and M. Marc rightly deserved the gold medal which was awarded to him, for the attention he gives to their culture. These were the only gold medals awarded by the Société Centrale d' Horticulture du Département de la Seine Inférieure. There were other silver-gilt and silver medals awarded for collections of fruits and grapes, but with one exception they do not concern the Woolhope Club. The exception was the large silver medal awarded to a bunch of Herefordshire Black Alicante grapes exhibited by the Club, and grown by Mr. Coleman, at Eastnor Castle.

The only novelty in the way of fruit were several varieties of the Japanese Diospyros Kaki, whose names also present so much that is peculiar as to be worth giving. These were Toyama, Tsouroukaki, Torokoukaki, Kiarakaki, Ochirakaki, Tiodemon, Hatchiya, Matchimistan, Yakoumi, Mazzeli and Guiboki. "These might be easily cultivated in an orchard house," the *Journal of Horticulture* says, "and when ripe are delicious." So happy owners of orchard houses take your choice, and write your orders forthwith to M. Audibert Pépiniériste, La Cran (Var.). "There were some ripe specimens of Diospyros Virginiana very well ripened, and of excellent flavour."

The Exhibition of Apples and Pears for the press, for cider, and all the implements of cider-making, was held under the auspices of the Association Pomologique de l'Ouest, and was purely competitive. It was very extensive, and the competition in almost all the classes was very severe. It will only be interesting to keep strictly to what concerns the Woolhope Club, and with reference to the cider and perry fruits we have to record the award of a bronze medal to the Herefordshire collection. There was evidently great difficulty in determining the awards for cider. A large room was filled with bottles, small barrels, and jars of all sorts and sizes, and how the judges could get through their task and keep their heads clear seems marvellous. They were two or three days about it. In the end, again the star of the Woolhope Club was in the ascendant, the second prize for cider made from mixed varieties, a silver-gilt medal, was awarded to Herefordshire cider; and a third prize, a silver medal was also given, for cider made from a single variety of apple, to the Foxwhelp cider. There were no prizes offered for perry and none were given. It was said that the jury thought some of the Hereford cider exhibited was "chargé," that is to say, mixed with alcohol in some form or other, which would at once, and very properly, exclude it from competition; but whether this really was their opinion or not, the representatives of the Club had no opportunity of ascertaining.

It was one great object of the deputation to place the so-called Norman apples of the Herefordshire orchards upon the tables in Normandy, so that a direct comparison could be made between them. This was done with great care. Several of the leading fruit growers in Normandy and several Norman nurserymen

examined them very kindly with much care. The Woolhope representatives also went through the whole exhibition, and it was no light task, for there were said to be two thousand plates staged; but the unanimous verdict was that they were dissimilar, though in one or two instances there was a close resemblance. Last year it will be remembered that a large collection of cider apples was sent from Normandy to Hereford, and not one resembled those of Herefordshire. Thus our so-called Normans are not Normans at all, but most probably Herefordshire Seedlings, to which, having no name of their own, the fashionable one of Norman has been given.

On Thursday there was a grand "*cérémonie solennelle*," which means a full dress ceremony of state, held in the Hôtel de Ville, to distribute the prizes. There was first a reception in the Council Chamber, and a grand procession of all the leading pomologists present to the great hall of the Hôtel de Ville; a military band, and a full attendance of people. Some speeches were made, and the winners of the prizes successively called to the front to receive them, with more or less applause as the case might be. The representatives of the Woolhope Club found the kindness which had surrounded them from their arrival continued to the end, and were exceedingly well received. A bold attempt has thus been very successful, and the name of the Woolhope Club, the beauty of the Herefordshire fruit, and the fame of Herefordshire cider and perry, have become more widely extended.

Woolhope Naturalists' Field Club.

OCTOBER, 1884.

THE FUNGUS FORAYS.

THE Fungus Forays of the Club for the present year took place as follows: On Tuesday, October 14th, Croft Ambery and the surrounding woods were examined; on Wednesday, the rich ground of Haywood Forest was visited; on Thursday, October 16th, when the General Annual Fungus Foray was held, the woods of Dinmore-hill were searched; and on Friday a foray was made to Eastnor Park. The very dry summer and autumn have not been very favourable for mycelial growth, and funguses have not, therefore, been plentiful anywhere. Many interesting plants, however, were found, and a very considerable variety were to be seen on the tables in the Museum-room at the Free Library. The weather throughout the week has been very fine and beautiful. The autumnal tints were never to be seen in greater perfection, and the beautiful scenery in the localities visited has made the week a very pleasant and enjoyable one.

The General Meeting of the members of the Club was held on Thursday, after the excursion to Dinmore, when the following officers were elected for the ensuing year: *President*—Mr. C. G. Martin, Broad Street, Hereford. *Vice-Presidents*—The Rev. Charles Burrough, The Rectory, Eaton Bishop; Mr. John Lambe, Bridge Street, Hereford; Mr. H. Cecil Moore, Broad Street, Hereford; Mr. Henry Vevers, St. Owen Street, Hereford. *Central Committee*—The President; H. G. Bull, M.D., J.P., St. John Street, Hereford; Mr. Joseph Carless, jun., St. John Street, Hereford; Mr. J. G. Morris, J.P., St. Owen Street, Hereford; Mr. O. Shellard, J.P., Barton Manor House, Hereford. *Editorial Committee*—H. G. Bull, M.D., J.P.; Dr. Chapman, Burghill; Mr. J. Griffith Morris, J.P. *Treasurer*—Mr. Thomas Cam, J.P., St. Owen Street, Hereford. *Auditors*—Mr. James Davies, Broomy Hill, Hereford; Mr. J. T. Owen Fowler, St. John Street, Hereford. *Secretary*—Mr. Theophilus Lane, Broomy Hill, Hereford.

The President of the Club, the Rev. Charles Burrough, gave an evening reception to the gentlemen present, in the Woolhope Room at the Free Library. The "certificates" and "diplomas of honour" were hung on the walls of the room, and the five medals gained at Rouen were exhibited in a small glass-case, and were much admired. In the centre was the gold medal awarded to the Herefordshire apples and pears; and on one side was the silver-gilt medal for the cider made from mixed varieties of fruit, and the large silver medal given for the Herefordshire grapes; whilst on the other side was the silver medal for cider made from a single variety of fruit, and the bronze medal for cider apples and perry pears.

When the teacups had been set aside, and a pause had occurred in the discussion of some of the funguses discovered, the reading of scientific papers began again, for they had occupied the two previous evenings also. The following papers were read at one or other of the evening meetings during the week :—

“Notes on the Edible Fungi of North Italy”: by Mr. A. S. BICKNELL.

“On Colour Nomenclature in Fungi”: by Mr. HENRY T. WHARTON, M.A., &c., Oxon.

“The British Species of *Nidularia*”: by Mr. WM. PHILLIPS, F.L.S., &c.

“On the Spermogonia of the Uredines”: by Mr. CHARLES B. PLOWRIGHT.

“Researches into the Oospores of some Fungi”: by the Rev. JOHN E. VIZE, M.A.

“On Bunt (*Tilletia Caries*)”: by Mr. CHARLES B. PLOWRIGHT.

“On Gigantic Fungi”: by Dr. M. C. COOKE, M.A., &c.

“Some Recent Additions to our Mycological Flora”: by Mr. WM. PHILLIPS, F.L.S.

And the subject of “Trinomorphism in Zoology” was introduced by Mr. HENRY T. WHARTON, M.A., Oxon, &c.

Several of these papers elicited discussion, but as, perhaps, both the papers and the observations upon them are of a high order of science, their names must suffice. There is no saying how much people lose for want of due appreciation. Many of them, however, are destined for publication in the works devoted to Mycological studies.

The following gentlemen took part in the proceedings of the week:—The Rev. Charles Burrough, M.A., President; the Rev. H. B. D. Marshall, Mr. J. Griffith Morris, and Mr. G. H. Piper, F.G.S., Vice-Presidents; Dr. Bull; Dr. Carlyle, of Carlisle; Dr. M. C. Cooke, F.L.S., &c., London; Dr. Chapman, of Burghill; and Dr. Glendinning, of Abergavenny; Canon J. M. Du Port, Matreshall, Norfolk; Revs. J. S. Clarke, Goudhurst, Staplehurst; C. H. Bulmer, Credenhill; E. Cunningham, Marnham, Nottinghamshire; J. E. Grasett, Allensmore; E. J. Holloway, Clehonger; W. Houghton, F.L.S., &c., Preston Rectory, Salop; W. H. Lambert, Stoke Edith; Augustin Ley, St. Weonards; H. W. Phillott, Staunton; T. A. Stoodley, County College; F. S. Stooke-Vaughan, Wellington Heath; and J. E. Vize, Welshpool; Major Doughty and the Rev. G. Doughty; Messrs. T. Bennion Acton, Wrexham; F. Bainbridge, Hampton Park; A. S. Bicknell, South Kensington; Cedric Bucknall, Clifton; C. P. Bird; C. E. Broome, F.R.S., F.L.S., &c., Bath; J. Carless; G. C. Churchill, F.L.S., &c., Clifton; James Davies and Gilbert Davies, Hereford; C. Fortey, Ludlow; J. Greaves, Malvern; A. A. Hancocks, Hereford; W. H. Harrison; Edward Houghton, Salop; W. H. Jones, Malvern; J. Lambe, and C. G. Martin, Hereford; G. Massee, Scarborough; H. C. Moore, Hereford; Wm. Phillips, F.L.S., &c., Shrewsbury; C. B. Plowright, King's Lynn, Norfolk; O. Shellard, Hereford; H. Southall, Ross; Henry T. Wharton, M.A., Oxon, &c., London; and Theo. Lane, Secretary.

ANNUAL FUNGUS DINNER OF THE WOOLHOPE CLUB.

THE annual fungus dinner of the Woolhope Club was held at the Green Dragon Hotel, Hereford, on Thursday evening, and was largely attended. The Rev. Charles Burrough presided. The *Hydnum repandum* (the vegetable oyster), and *Cantharellus cibarius* (the Chanterelle), were served up at the dinner in white sauce with cream, and were thought delicious.

The President, having submitted the toast of "The Queen," called upon Dr. Bull to give his welcome to the visitors.

Dr. Bull, who was warmly received, said that, in the first place, he wished to make several official announcements. A book on "the diseases of field and garden crops" had been published by Mr. Worthington Smith, and had been dedicated to the Woolhope Club. He looked upon the dedication of the book to the Club as a great honour to them, because it was a most useful and valuable work. The book was exceedingly well illustrated, and it promised to be extremely useful in the garden and vegetable world. The second announcement was in connection with the Caradoc Field Club, which was an offspring of their's. At one of their meetings, the President of the Caradoc Field Club (the Rev. J. D. La Touche) said he was induced to establish it through having attended the meetings of the Woolhope Club. The President of the Caradoc Field Club proposed to publish a manual of the Geology of Shropshire, and the work could not be otherwise than of peculiar interest to Herefordshire. There were no less than 823 lithographed figures in the book. The fossils represented belonged to the Silurian system which prevailed so extensively in Herefordshire. That work had occupied Mr. La Touche a considerable time. The next thing he had to notice, by the request of the Rev. John Stevenson, author of *Mycologia Scotica*, was the publication of *Flora of British Fungi*. The fourth announcement he made with a great deal of pleasure—that one of their active members (Mr. Plowright) was engaged on a work on *The Uredines and the Ustilaginii, their Morphology and Physiology, with a description of all the British species* (applause). The next thing touched them more closely—the *Pomona*. They had come to the last part of the *Pomona*, but he did not think that it would be out for two or three months, as the engraver was behind with the plates, owing to the illness of some of his artists. The visit of the representatives of the Woolhope Club to Rouen had been so exceedingly profitable that they would have to add a sixteenth plate (applause). That was a much larger number than they anticipated when they first started the *Pomona*. By this time next year the *Pomona* would become a matter of history. After a good deal of consideration, the *Pomona* Committee thought it advisable that the book should be bound in two volumes—that was to say, the introductory part in one volume, and the plates, with a description of them, in the other volume. He hoped the volumes would be on their shelves long before this time next year. This was the time that

they should express some feelings of thankfulness to those who had so kindly supplied them with fruit. Letters had been received from Lady Emily Foley, and the Earl of Chesterfield, the latter of whom had been compelled to decline the invitation to attend on account of his health. The *Pomona* had rested almost mainly on the very extensive gardens of Stoke Edith House and Holme Lacy, which had always been open to them. He required some pears of a particular kind this year, and he went to Holme Lacy. There were, however, only six or seven of the kind he wanted on the trees, and he really had not the face to take them. The following day the Earl of Chesterfield arrived home, and went through the list which he had prepared. His lordship saw that he had not taken these particular pears, and directed that they should be sent to him. That circumstance showed how kindly and freely the gardens of the Earl of Chesterfield and Lady Emily Foley had been open to them. Lady Emily Foley had written a letter to him, saying what an extreme pleasure it had been to her to send fruit for so excellent a work as the *Pomona*. They were also greatly indebted to Mr. Higgins, Thing-hill, Mr. Rankin, M.P., and a great many other people. Wherever they had known of good fruit they had only had to ask for it. Mr. Arkwright, the Rev. Sir George Cornewall, and Lord Bateman, had sent fruit, but their gardens had not been so well looked after as those of Stoke Edith and Holme Lacy. Their greatest thanks were due to all those who had so kindly thrown their gardens completely open to the Pomona Committee (applause). At times they had been rather criticised in saying that the *Pomona* was not entirely a scientific work. He did not say that it was, but they were the only people who could take it up, and he thought they had done it well (applause). They had already commenced *The Flora of Herefordshire*, which, he hoped, would be the book for next year. *The Birds of Herefordshire* would be the work for the following year. They had already gone into this question. The last thing on the list in his hand was *The Fungi of Herefordshire*. He had now to perform the pleasing duty of welcoming the visitors (applause). If the Club had depended on the Woolhope people, he did not think they should have gone on so far as they had. In connection with the visitors, he asked them to drink the health of Mr. Broome (applause).

Mr. Broome replied.

The Chairman said he had the pleasure of calling upon Dr. Bull to give his report of the Rouen Exhibition (applause).

Dr. Bull said it would be difficult to name, in a few words, all the adventures with which he and Mr. Piper met, during the few days they were upon the continent in the service of the Club. In Herefordshire there were upwards of twenty kinds of so-called Norman apples. They could hardly finish the *Pomona* with satisfaction without knowing something of these apples. Last year, eighty-five varieties of apples were sent by some of the best growers in Normandy, to the Pomona exhibition at Hereford. Not one of them resembled the Herefordshire apples; therefore it became a question whether they should place their so-called Norman apples alongside the Norman apples to be exhibited in Normandy, and thus decide whether the Herefordshire apples were really Norman or otherwise. In the spring of this year, he, Dr. Hogg, and Mr. Piper, were appointed a depu-

tation to represent the Woolhope Club at the general Congress of the Pomological Societies of France, to be held in Normandy. They took what steps they deemed necessary to represent the Club, and took good care to obtain the best collection of apples they could procure. They sent to the exhibition about 1600 specimens, embracing 238 varieties. They could picture the trouble which it took to keep all those apples distinct. They knew they should make a creditable appearance, but they never expected to win. They also sent some grapes; the vines in Normandy are not cultivated under glass as in England, and consequently the English grapes are of a finer quality. With regard to the apples, the plates were not large enough to hold the required number of six, and one had to be taken off each plate; then the plates were covered. He did not think that he ever saw a more beautiful collection than the Herefordshire apples. They were at once the attraction of the exhibition, visitors inspecting them for a very long time. Close by the Herefordshire apples, was the best collection of pears that he ever saw. The Association Pomologique de l'Ouest, under whose auspices the exhibition was held, did not offer prizes for competition, but simply awarded medals according to the merit of the exhibits. The Herefordshire apples at once had the gold medal (applause). He must say that in several of the Norman collections apples were shown quite as good as the Herefordshire apples, but the Norman exhibitors had only four or five varieties in the collection, while they had 140 varieties, each one of which was a study in itself. At a grand banquet, a rather mysterious announcement was made by the President, that they should depart from the general rule, and give a gold medal to the gentleman who had done more than anyone else to promote pomology. No name was mentioned, but in the evening the President called at the Hôtel du Nord, and presented the medal to Dr. Hogg (applause). On the morning after their arrival in Normandy, the President and Vice-President of the Association waited upon them and invited them to all of the Society's meetings. The first thing they saw at the exhibition was the *Pomona* being examined with delight (applause). Accompanied by Dr. Hogg, whose repute as a Pomologist was certainly European, and carrying with them such a magnificent display of fruit, and such a splendid work as the *Pomona* was, they were received with an amount of dignity and consideration which he assured them was very agreeable (laughter). He now came to the cider fruit, which was the real object of their visit to Normandy. This fruit was shown under the auspices of a different Society, who offered a general schedule of prizes. The competition was very great, and it was said that in the table and cider fruit departments no less than 6,000 apples were shown. The cider fruit was an admirable collection. The Herefordshire cider fruit was deficient in numbers altogether, through some of their friends not keeping their promises. Here they relied on the fruit sent by Mr. Watkins, of Pomona Farm, and Lady Emily Foley. What redeemed their display of cider fruit was an excellent show of perry pears which Mr. Piper took with him at great inconvenience. The display of pears, together with their fine apples, secured for Herefordshire the large bronze medal. They took over six varieties of cider and two of perry. They were very anxious to know the result of this show, but as they were competing they could not be present during any of the judging. He

was afraid that the judges would not keep their heads clear to give them a prize (a laugh), but on their return they found that they had been awarded a silver-gilt medal for mixed cider, a silver medal for Foxwhelp cider, and a bronze medal for cider and perry fruits (applause). It was thought that the Herefordshire cider was stronger than the other, and that it was charged with alcohol or something else. For his own part, he thought that the strength existed in the fruit, and that the cider was not charged. If they could have stayed a few days longer, they might have tasted the opposition cider and compared it with their's. The distribution of the awards took place at a grand "cérémonie solennelle." The chief thing they wished to ascertain was, whether their so-called Norman apples were the real apples of Normandy or not. The result of a careful comparison was that they were not, but that they really were Herefordshire seedlings, to which the fashionable name of Norman had been given. Last year it will be remembered that a fine collection of cider apples, consisting of eighty-five varieties, was sent from Normandy to Hereford, not one of which was the same as ours. This rendered it still more necessary to place our so-called Norman apples on the tables in Normandy, in order to make the comparison. This has now been done with much more care, but the Herefordshire apples were none of them recognized by the Norman nurserymen and fruit growers, nor could the representatives of the Woolhope Club find any of them amongst the 2,000 plates shown at Rouen. There was one exception, and that is scarcely a cider apple. The Foley Norman, said to have been introduced by the late Mr. Edward Foley, at the early part of the present century, was closely similar in size, colour, taste, and shape, to the *Blanc Doux* exhibited there. It has thus become clear that the so-called Norman apples of the Herefordshire orchards are not really Normans. They are probably Herefordshire seedlings from the farm nurseries, which, in the long century of neglect that has passed over our orchards, got planted out, and, having no name of their own, have received the fashionable name of Norman. Thus, the Norman Bitter-sweet will become the Hereford Bitter-sweet; the Red, Yellow, and Black Normans will be called for the future Red, Yellow, and Black Herefords; and so on, the name Hereford supplying the place of Norman. The other half of your representatives' work was to select some six or seven of the very best varieties of real Norman apples for introduction into Herefordshire. Four kinds had already been decided upon, and the editor of a Pomological publication would assist them in deciding upon the others (applause). It was interesting to know what others thought, and in a long article in the *Journal de Rouen*, of the 4th of October, the editor wrote:—"See this appetising fruit sent from England, is it not splendid? Ripened under fog, this beautiful fruit! (laughter). Does it taste as well as ours? We do not know. But for size, freshness, and colour these English apples can take a place in the first class. The Normandy apple is not more rosy or finer" (applause). Leaving to his companion, Mr. Piper, to make observations on the Normandy orchards in general, he would only say that their peregrinations led them to the great centre of Normandy orchards—Yvetôt. It was a rich, beautiful country. Yvetôt was a town of some 10,000 inhabitants, and its burlesque Royalty had been immortalized by Béranger in one of his most popular

songs. There was a tradition that Clotaire, the son of Clovis, having slain Gualtier, Lord of Yvetôt, before the altar of Soissons, made atonement by conferring the title of king on the heirs of the murdered man. Certain it was that the land around was held free from servitude for a long time before the year 1370. In 1592 the league of the Huguenots was overthrown by King Henry IV., near Yvetôt, who after the action cried out, "If I lose the Kingdom of France I am assured of that of Yvetôt;" and the same king, as all the world knew, when Marie de Medicis was crowned said, "I wish all honour should be shown to my little King of Yvetôt, according to the rank he ought to possess." The Roi d'Yvetôt was said to live in a thatched cottage, to ride an ass through his dominions, and to make pleasure his only code. Béranger thus playfully describes him :—

"Il était un roi d'Yvetôt
 Peu connu dans l'histoire
 Se levant tard, se couchant tôt,
 Dormant fort bien sans gloire,
 Et couronné par Jeanotton
 D'un simple bonnet de coton."
 Oh, oh, oh, oh ! Ah, ah, ah, ah !
 Quel bon petit roi c'était là,
 La la la la la la la

(laughter and applause).

Mr. Piper remarked that he particularly noticed the beautiful apple trees of Normandy, their wonderful crops of fruit, and the large number of trees which had lately been planted. For every acre of land which had been planted with fruit trees in England during the last ten years, 40 acres had been planted in Normandy. The fruit trees in Normandy seemed to be more healthy than in England, and cropped more heavily. About four miles from Rouen there was an orchard about 200 acres in extent. There was nothing like that in England. The cultivation of the land in Normandy was excellent. A person might see more bad farming between Hereford and Worcester, passing through Ledbury, than they saw in their peregrinations in Normandy, which was a wonderful country, and which he advised them to visit (applause).

The Chairman congratulated the Club, Herefordshire, and England on the success of the labours of the deputation, to whom they were greatly indebted. He proposed the health of the deputation (applause).

Dr. Bull, in response, said the deputation bestowed on the matter an amount of zeal which could not possibly be exceeded. At the same time they enjoyed themselves very much.

Mr. Piper also responded, saying that although they had brought honours from Normandy, he should not advise the Woolhope Club to exhibit again next year. If the same energy had been exhibited in Normandy, where the fruit was really beautiful, as had been displayed on this side of the water, they should certainly not have won a prize.

Dr. Cooke read an amusing paper on "The Whitlings of the Woolhope Club," for which he was accorded a cordial vote of thanks, and the proceedings ended.

NOTES ON THE EDIBLE FUNGI OF ITALY.

By A. S. BICKNELL, F.L.S.

It is an admitted fact that Achilles sometimes laid aside his armour; I trust, therefore, that it may be a relaxation to the members of the Woolhope Club for once to quit their wonted scientific labours in fungology, to follow the less intricate path in which I wish to lead them.

Some of you tax your eyesight by peering through microscopes at spores or cells as difficult to examine as the almost invisible microbe of the celebrated Dr. Koch; others, less curious, but equally zealous, study the giant fungi of our own Woolhopean Dr. Koch,—for Koch and Cooke, as you well know, are synonymous—co-equals in fame. Some of you are learned in *öosphores*, *urédines*, or perhaps British *nidularia*; truly it may be said that nothing is too minute, nothing too gigantic, for such enthusiastic scientists, and that you touch nothing which you do not adorn. What then is there for the humble visitor to do who would fain add his quota to the general lore? I think there may yet be corners of the fungological domain where greater light may fall, and one of these I hope to show.

In every science there is a department strictly scientific, usually abstruse, and there is generally another in which all with average observant faculties may, as it were, stroll and render service. In fungology it has certainly always been so. For years the popular statements concerning fungi, with their terrors and their superstitions, were almost all we had to read, and as fungological studies assumed their proper botanical position, through our better knowledge of structure and classification, fascinated by scientific discoveries, we somewhat neglected to rectify the popular beliefs of our forefathers; the wondrous stories of hecatombs of poisoned families still circulated, ill contradicted, in the autumn papers, and the credulous public to this day believe that a couple of grammes (say 1–15th of an ounce,) of any toadstool for breakfast, will be followed by delirium, coma, and death, which no injection of stramonium or of atropine can avert.

We, of course, have long grown out of this early creed, but, in my opinion, there is still too much romance remaining; from author to author the same wild inaccuracies are passed on, till, from being printed so often, they become stereotyped by bare assertion. It struck me then that it would not be wholly waste of time if I were to revise the hallowed statements concerning the sale and commercial value of fungi in Italy, and correct to modern date the antique and omnivorous assertions of the enthusiastic Badham.

I propose to tell you what species are at present authorised by law to be sold in the public markets of the great cities of the peninsula; what species I have seen in them; and, inasmuch as what has been said concerning these edible Italian fungi rests almost exclusively on the text of Vittadini, dressed up in English by Badham, I shall confine my remarks to those authors, first reminding you that Dr. Vittadini published his excellent book at Milan in 1835, and that

the second edition of Dr. Badham's *Esculent Funguses* appeared in 1863, after he had spent some time at the baths of Lucca, a comparatively obscure watering-place, in a region remote from the great markets of the country. As I like order, I will take the chief edible species according to their botanical sequence, giving you a brief running commentary as I proceed.

1. *Amanita vaginata* was excluded from the markets in Vittadini's time, but I saw it at Bologna, September 29th.

2. *Amanita Cæsarea*. Vittadini is right in saying that, with *Boletus edulis*, it forms almost the only branch of commerce in fungi. It may have been the *Boletus* of the ancients, but we have no right to assert, as Badham does, that it was. It is now universally called *Vovolo*, and is in the markets of Milan, Bergamo, Brescia, Verona, Cremona, Bologna, and other Lombard cities, from the middle of September to the middle of October. At the commencement of the season it fetches about 1s. a pound. It was usually given me cut up and stewed, or fried in batter. *Amanita muscaria*, which, when washed by rain, so much resembles it, I may here remark is uncommon in Italy, and though described by Vittadini as "one of the most dangerous fungi known, enclosing a deadly poison," and by all other writers in equally impressive language, yet I doubt if it fully deserves to be so characterised. The peasantry about Nice and Savoy are reported, by a writer in the *Field*, to use it. Bulliard certainly says he killed dogs and cats in six to nine hours; but they might well have died from indigestion, after such unnatural food, for he himself ate two ounces and felt nothing, and I have lately made the same innocuous experiment; therefore, Berkeley's statement that in small doses it produces intoxication and delirium is not warranted by facts.

3. Concerning *Lepiota procerus* Badham gives no authority for his assertion that "it is in equal request in Italy with *Amanita Cæsarea*." Vittadini does not say it is sold, and I have never seen it.

4. *Agaricus caudicinus*, Badham says, "grows on the head of *Populus nigra* (var. *Neapolitana*), which it is usual to remove as soon as the vintage is over, and that it makes the greatest show in many Italian markets." Vittadini tells us it has been confused with *Armillaria melleus*, and in "Fries" it becomes our old friend *Pholiota mutabilis*. I have never seen any of these fungi for sale, neither do I expect I shall, because the poplar heads are very rarely amputated.

One of the delicacies of an Italian market should be *Clitopilus prunulus* (the *Mouceron* of France), worth 15d. a pound in Rome, according to Badham, and 10s. to 12s. when dried. Its season being March and April, it ought to have been in Rome when I passed the entire spring there this year, but it was only conspicuous by its absence.

Perhaps the most startling statement to be found in Badham's sensational book is the passage where he says, that almost the *only* fungus condemned as poisonous in Rome is our

6. *Common Mushroom*: the words of Professor Sanguinetti, his authority, are—"The sale is absolutely prohibited of the so-called *Prateroli*." Evidently the question turns upon whether *pratiolo* means *Agaricus campestris*. In Bologna, long a Pontifical town, I saw mushrooms selling in the market for 40c. the kilo-

gramme (less than 2d. per lb.), but they are not abundant in Italy, for there are few meadows. Vittadini says—"They are common round Milan, but never seen in the Milan or Pavia market, though allowed to be sold," and then he adds the strange sentence—"They are found under elms, planes, on gravel, or in the little ditches through which the rain runs away," and further, he quotes the well-known passage in Horace—

"Pratensibus optima fungis natura est,"

assuming—I do not see why—that it refers to mushrooms.

7. *Coprinus comatus*, "largely eaten," according to Badham, "about Lucca," and,

8. *Lactarius piperatus*, described by him with delightful vagueness, as "extensively used on the Continent," are not mentioned by Vittadini, nor have they been seen by me. But

9. *Lactarius deliciosus*, which Badham had not noticed abroad, sometimes is sold. Near Spezia, on the 15th October, there were plenty, and I have met with it not only by the sea, but on the 19th August, growing under spruce firs on Mont Blanc.

10. Amongst the fungi in the markets I have often looked for *Russula heterophylla*, because Vittadini says—"The villagers round Milan and Pavia gather indiscriminately every sort of *Russula*, and he had never heard of an accident from their use," but hitherto, like Badham, I have not found it.

11. In Mantua, on one occasion, I saw an immense basket of *Cantharellus cibarius* sold to the hotel for 1 franc 50 centimes (14d). It is called Gallinaccio (Turkey cock), and they are very plentiful in the spruce forests of the Alps.

12. The fungus, however, which is by far the most commonly sold in Italy is *Boletus edulis*. It goes by the name of Porcino (Piggy) or Ferré. In the market of Bergamo it was 40c. per lb., and was selling with large frogs and small tench. At Brescia it was 10c. dearer, and at Verona 40c., the stall there being set out with robins and thrushes, for game. In Florence and at Parma there was no other fungus. The usual method of cooking is frying with bread crumbs; and it may be bought dried in almost any grocer's. Vittadini declares that occasionally other boleti are mixed with it, but I cannot say I ever saw another species in the heaps I have examined. I may add that throughout France this boletus, known by the name of Cêpe or Ceps, is considered a delicacy by all classes.

13. *Boletus scaber* is almost as common in the markets as *Edulis*, but not in the same quantity, and I am surprised that Badham appears never to have seen it there; they call it Porcinello (little piggy-wiggy) or Albarello.

15. Both *Polyporus frondosus* (or *intybaceus*)

16. And *Hydnum repandum* are said to be sold in Italy, but neither Badham nor I have come across them.

16. *Clavaria coralloides*, however, I saw at Bologna on September 29th, priced at 40c. per lb. On September 21st of the present year, 1884, a specimen of this last, vulgarly called Fungo barbino (little beard fungus), was found near Bellano, Lake of Como, weighing no less than 62 lb.; it may, however, have been *Hydnum Erinaceum*.

17. In the Roman Market *Morchella esculenta* is said by Badham to fetch 4d. to 5d. per lb., but he had not seen it there, nor at Covent Garden, where he also believed it to be sold. Truffles, however, which neither Badham nor Vattadini mention as being in Italy, I have often noticed, especially,

18. *Tuber æstivum* and another species called *Tartufo bianco* (white truffle), the latter being 4fr. per lb. at Bologna, and described by the *chef* of the chief hotel as very good, though despised in France; it is not the Tuber Album of Sowerby, but Tuber Magnatum, a truffle hitherto undiscovered in England.

The above-mentioned eighteen Fungi are no doubt the principal edible species of the Italian Kingdom, but a list of those commonly sold would comprise only the following eight: 1, *Agaricus vaginatus*; 2, *Agaricus Cæsareus*; 3, *Agaricus campestris*; 4, *Lactarius deliciosus*; 5, *Boletus edulis*; 6, *Boletus scaber*; 7, *Clavaria coralloides*; 8, *Tuber æstivum*. The impression derived from reading Badham's book, however, would be that the species sold were far more numerous. Badham did good service in his day, but his enthusiasm sometimes coloured his facts; and, as an instance of his carelessness and exaggeration, we may take his account of the *Pietra funghaia*, which he declares comes next to the mushroom in successful cultivation, and that it may be gathered six times a year from naked stone; he has even misused the words "*Pietra funghaia*," which are the name of the stone, and only indirectly of the fungus. Whenever his *Treatise on Esculent Funguses* is re-edited, perhaps the oft repeated fable that *Agaricus Personatus* is sold in Covent Garden, and that *Lycoperdon Bovista* is served on state occasions at Freemason's Tavern, may disappear.

It is true that the Italians are ahead of us in their appreciation of edible fungi, but their market list is after all a modest one. At Bergamo they said they only eat five species in autumn, and one or two in spring; and that would be a fair number for the other cities; the edible species unknown to us are also very few, excepting *Amanita Cæsarea*, and *Clitocybe Marzuolus*, the favourite at Florence; I cannot call to mind another.

One word on the inspection of fungi, and I will not detain you longer. In the different cities the supervision is of varying strictness; at Bologna an excellent printed paper, with both the vernacular and Latin names of the fungi, and various columns of particulars and regulations is compulsorily exhibited by every seller. At Venice all fungi must be taken to the office of the municipality, where they are examined, and a written certificate is given for such as are passed, which must be fastened conspicuously on the basket; whereas at Milan they have adopted a French sheet of vile illustrations and wooden painted models to guide their inspectors, which may account for their circumstantial stories of poisoned households.

I had hoped to have been able to have shown you the various lists and authorisations, and I should have produced them only the cholera has stopped the usual sale of fungi, and I regret to say that *Amanita Cæsarea*, and other specimens for which I wrote, are still retarded in transit by dread of *Phylloxera*, or lost; therefore, as those illustrations which might have enlivened my remarks are absent, I can only thank you all the more for your kind patience and indulgence in listening to me.

ON FRIES' NOMENCLATURE OF COLOURS:

An examination of the epithets used by him in describing the coloration of the Agaricini.

By HENRY THORNTON WHARTON, M.A.

THE subject of colour-names is so vast and intricate that in the following paper I have confined myself to the consideration of those only which occur in Fries' description of the *Agaricini* in his *Hymenomycetes Europaei*. Even in this restricted field I have found nearly 200 names of colours, although, with one or two exceptions, I have avoided reference to compound names; if I had considered the complete list that I originally made I should have had to describe about 840. Perhaps I have omitted some few as it is, for I have had to go over some 20,000 lines of concisely-written Latin to find those that I have gathered together for examination here.

In so long a list of names it is fortunate that not every one requires separate consideration. I have enumerated not only the colour-names used for descriptive purposes by Fries himself, but also most of those used as specific. And in making specific names there is a natural tendency to use a colour-name absolutely synonymous with another, simply from the fact of the most obvious one having been already used. For instance, a describer wishes to name a white species *Agaricus albus*; but when he finds that name is preoccupied, he names his species *Ag. candidus*. Still we need not conclude that he had the strict classical Latin differences of the two words in his mind's eye: he probably never thought that *Ag. albus* was so named because it was of a dead white, nor in speaking of *Ag. candidus* need he have meant to imply that it was of a glistening white, as Cicero might have done. This exigency has burdened the list of colour-names with a good deal of useless lumber, but the principle is one that, in the interpretation of specific names, must never be forgotten.

Another difficulty that constantly presents itself is the indefiniteness with which colour-names were used in classical times. In trying to make out what Fries intended to describe, we are continually hampered by a divergence from the ancient use of the very words he uses; and although the knowledge of each usage is necessary to a complete understanding of the subject, it is my endeavour here to make out the idea in Fries' mind, and only to that end to use the light that can be thrown on the subject from classical sources. Perhaps the best instance of the vague way in which the ancient Romans used the names of colours is to be found in a line by Albinovānus, a Latin poet contemporary with, and a friend of Ovid, who flourished about A.D. 28; he describes a woman's arms as whiter than the "purple" snow:

"Brachia purpureâ candidiora nive."

Of course, "purple" here only means "glistening" or "dazzling," but such a use of words does not accord with modern ideas.

Much of the difficulty that surrounds the nomenclature of colours is also due to there being no authoritative code. In each branch of art or knowledge at the present day different names are used for the same colours. The "purple" of the cardinal is crimson; the "pink" of the huntsman is scarlet. An artist calls his colours by the names under which he buys them of his colour-man. But a milliner wants to invent a fresh name with each change of fashion, and the words we get from the fashionable journals are veritable marvels; *couleur de crapaud mort*, *eau de Nile*, *elephant-grey*, *London smoke*, *mushroom-colour*, being specimens. Fortunately "they have their day, and cease to be." An amusing instance was given me lately by an omnibus-driver. One of his passengers had been much struck by a pair of horses he had been driving, a dun and a strawberry-roan, in the horsey-man's language; the passenger, a tailor, described the one as "drab," and the other as a "claret-mixture."

Consequently mycologists must be a law unto themselves, and if we are willing to hold the illustrious Fries as our law-giver, we must study, not so much what colour-names *should* mean, as in what sense he used them.

Perhaps the only wonder is that there is such a limited number of colour-names after all. If we have a clear idea of a dozen colours, we must remember that we can get 479,001,600 permutations out of them, by mixing each with every other, even in similar proportions. For our names to be of any use we must group around each one those shades which most closely assimilate to the named type, and indicate their differences as far as we can by compound words, or qualifying adjectives, or suffixes, or affixes. We all have an idea of the colour of gold, for example, but look at a sovereign, together with a dozen pieces of jewellery made at various times and places, and you will soon see what a very comprehensive, or, as the logicians say, extended, signification such a colour-name may have. And if a bright and definite colour may be so varied, how much more variable may a less pronounced one be?

Much has been written on the science of colours, but I know no book that deals at all exhaustively with their nomenclature. Field's *Chromatography* has a wide reputation among artists, but it is of little use to us. Neither is the classical work of Chevreul, the oldest professor in the world, who still, in his ninety-ninth year, lectures on chemistry in Paris.

We need not be much troubled about classification, for a very simple method is sufficient for our purposes. But it is as well to know how chromatographers ordinarily classify colours; and to this end I copy the following from one of the many editions of Field's book.

Neutral colours	.	.	.	.	white, black.
Primary	„	.	.	.	yellow, red, blue.
Secondary	„	.	.	.	orange, green, purple.
Tertiary	„	.	.	.	citrine, russet, olive.
Semi-neutral	„	.	.	.	brown, maroon, grey.

I propose to group the whites and blacks with the greys that come between

them ; to range the oranges, citrines, and browns after the yellows ; to include the russets and maroons as subordinate to the reds ; to take the purples as variations of the blues ; and to comprehend the olives under the greens. Sombre colours dominate so conspicuously among Fungi that we understand their coloration best by regarding their lowly hues as variants from types that owe their names to their very brilliancy. Their complications are so great that it is often difficult, even as it is, to refer them to their proper types ; a trouble that was ever present to me when I preliminarily essayed to classify them.

I would begin with the whites and the blacks, and their intermediate greys ; I at once discard the trammels that the chromatographers lay down for our deception, when they say that these, in their extremes, are no colours at all.

And first, of the *whites*. My list shows nineteen distinct terms for these. But most of them are made up on the principle that I have already laid down as of constant occurrence, viz., that they owe their appearance to the natural and obvious terms having been already used. The classical distinction of *albus* meaning a dead white, and *candidus* a shining white, has little prominence in Fries' description. To Fries, *albus* is white, and perfect whiteness admits of no qualification. If *albus*, as a specific name, is preoccupied, *albellus*, *albescens*, *albidior*, *albidus*, and *albincus* can only express the idea of whiteness, but seem used rather for "whitish." *Albicans* and *candicans* should strictly mean "becoming white." *Argentus* and *argyraceus*, are a silvery white, silvered. *Dealbatus*, white-washed or plastered, *cerussatus*, coloured with white-lead, and *argillaceus*, like white clay, seem to connote texture or surface along with whiteness. *Eburneus*, ivory-white, *ermineus*, ermine-white, *niveus*, snow-white, and *virgineus*, virgin or pure white, have no more distinction than the English terms by which they are naturally translated.

Between the extremes of white and black there can be great varieties of greys, and the pure greys run into the blues and browns, so that they are best studied in three groups. Of the pure greys *canus* and *incanus* are the nearest to white ; just as we call white hair or a white horse "grey." *Cinereus* is the grey of wood-ashes, *cinerascens* is becoming such a grey ; *griscus* seems to be a little darker, and *livivius* is darker still and inclining to brown. *Cretaceo-pallidus* is a pale chalky grey. *Nigrascens* and *nigricans* do not mean so much dark grey as a grey that turns black with age.

Of greys that incline to blue, *caesius* is the palest ; it was the classical term for the blue-grey of the eye. *Glaucus* is a grey that inclines to green, and *glaucescens* denotes a paler shade of the same colour. *Livens* and *lividus* are bluish or leaden-grey, much like *molybdus* and *plumbus*. *Ardosiaceus* is a dull lead-colour. *Ag. (Collybia) tylicolor* and *Ag. (Omphalia) oniscus* seem to owe their specific names to their likeness in colour to a kind of Cod-fish known as *oniscus*, and so mean rather a light grey, and not the dark slate-grey of the woodlouse we describe under the name of *Oniscus*. *Chalybaeus* is a steel or iron-grey ; Fries, under *Cortinarius sciophyllus*, explains it as *caeruleo-fuscus*, dusky blue.

Of the brown-greys, *murinus*, mouse-colour, is the palest (cf. *Paxillus ex-*

tenuatus, Fries, p. 402). *Myochrous* should have the same signification, but is used by Fries for a dusky umber. *Argillaceus* is a light brownish ash-colour. *Fuscus*, dusky, is rather a vague term, but it is almost too brown to be classed under the greys at all; *fuscescens* means becoming dusky. *Ravidus* is a dark grey. *Fumosus*, *fuliginous*, and *fuliginosus* are best translated smoky, and not, as the latter might be, sooty black.

Pure blacks fortunately do not admit of much variation, although since an absolute black is rarely seen, several terms occur. *Ater* is strictly a lustreless black, and *niger* is a glistening black; *piceo-ater*, black as pitch, and *furvus*, swarthy, come into the former category; *coracinus*, raven-black, with a tinge of blue, into the latter. *Atratus* and *pullatus* mean simply "clothed in black." *Denigratus*, "blackened," is used for a dark dusky brown, and not black at all. *Nigerrimus*, "black as black can be," seems rather pleonastic, but Fries uses it in his descriptions (*Ag. Panaeolus hypomelas*, p. 313).

The next group, the yellows, under which I range the oranges, citrines, and browns, presents the greatest difficulties of all, and it is hard to get them into satisfactory order. Canon Du Port, in the interesting paper which we had the pleasure of hearing him read last year, cleared up many doubtful points, but his range was more limited than that which I set myself here

The type of pale yellow seems to be *luteus*, like the flowers of the plant woad (*Isatis tinctoria*). Paler than this are *luteolus* and *sulphureus*, sulphur-yellow. *Stramineus*, straw-coloured, denotes a paler and less pure yellow, Naples yellow, of which a deeper, duller shade is *citrinus*; *croceus*, saffron-yellow, being a fuller shade. *Citrinus* is our lemon-yellow, yellow of wax.

The type of full yellow is *flavus*, gamboge-yellow, which at its fullest brilliancy is *flavissimus*. *Flavidus* is a paler yellow, purer and richer than *luteus*. *Vitellinus*, like the yolk of an egg, is used by Fries, as the Canon reminded us last year, to describe the Chantarelle (*Cantharellus cibarius*). Not far off *flavus* is *aureus*, gold-coloured, which seems to me most like the Cadmium yellow of artists; its diminutive, *aureolus*, does not seem to be a very different shade. *Galbanus*, the colour of the gum galbanum, is a greenish yellow.

The orange-yellows, made up of yellow and red, not brown, are typically two; *aurantius* being a full orange, Cadmium orange, and *aurantiacus*, a paler orange, containing less red. *Igneus* and *flammeolus*, denoting the colour of flame, and *fulmineus*, that of lightning, come in this place, but seem to have no very certain application.

Persicinus and *Persicolor*, are difficult to describe more intelligibly than by peach-colour. *Armeniacus*, apricot-coloured, is explained by Fries as tawny-cinnamon (*fulvo-cinnamomeus*) or yellowish tan (*helvolo-alutaceus*).

The browns are as extensive as the greys, and comprise every tint between impure yellow and the deepest burnt-umber. Their distinctions are best understood by grouping them into yellow-browns, red-browns, and true-browns.

Of the yellow-browns *cinnamomeus*, cinnamon, a light yellowish brown, is the palest and most familiar. *Gilvus* is a yellower shade; *Ag. (Clitocybe) splendens* may be taken in illustrating the type of the colour, a yellowish tan, as it was

formerly known as *Ag. gilvus*; classically, *gilvus* was an epithet of a dun or cream-coloured horse. *Alutaccus* has rather a wide signification, but it seems best translated by buff or tan. When it is lighter and yellower it is *helvolus*, the epithet of "white" wine and "white" grapes in Pliny: in describing *Cortinarius iliopodius*, Fries explains *helvolus* by *alutaccus*, but there must have been some distinction in his mind between the two terms, for he uses the compound, *helvolo-alutaccus* as "dusky cinnamon," a fact which appears to show that even Fries himself was not so clear in the application of colour-names as we should like to be. *Crustulinus* seems to be the colour of toast, much darker and warmer than that of a cracknel-biscuit. *Ochraccus* is yellow-ochre, and *melleus*, honey-yellow, is dingier and less yellow; *luridus*, sallow or wan, is still paler and less yellow, almost like that which builders call "stone-colour." *Rhabarbarinus* is the light brownish-yellow of Turkey rhubarb. *Isabellinus* is a light brownish-yellow or dirty cream-colour. The word has a history, and was first used of unwashed linen. The Infanta of Spain, daughter of Philip II., made a vow in 1601 that she would not change her linen until her husband had taken Ostend; as that city did not fall till three years after, she must have saved her washing-bill at the price of some discomfort.

Fawn-colour does not fall very conspicuously into any of my three divisions of browns, but most of us know the hue so denoted; *cervicolor*, *cervinus*, and *hinnuleus* all seem to mean much the same. *Cervinus* is applied to the darkest shade, and Fries explains *hinnuleus* as a tawny-cinnamon (p. 380).

The brownish ochrey yellow colour known to artists as "gallstone," only with an inclination to a dirty green, is denoted by *ictericus* or *icterinus*.

The brightest of the red-browns is *lateritius*, the colour of old red tiles; its paler shade, that of *Ag. (Hypholoma) sublateritius* is familiar to us all. *Testaceus*, brick-coloured, is a reddish brown or rusty bay, almost Venetian red. *Fulvus* is tawny, the colour of a lion, and is also known as *leoninus* or *leochromus*; *fulvellus* seems to be paler and redder, and very like that which gives its name to *Ag. (Collybia) nitellinus*, dormouse-colour. *Helvus* is a light bay or "cow-colour," like *vaccinus*. *Badius* is a reddish-brown, the colour of a "bay" horse; *spadiceus*, date-brown, is a duller and darker shade. *Hepaticus*, liver-coloured, is a darker and redder brown than bay. *Ustalis* denotes a warm reddish bay, between red-ochre and brown-madder.

Of the true browns, the type is *brunneus*, Vandyke-brown. *Coffeatus*, like roasted Coffee, is very similar. *Ligneo-brunneus* is a lighter or wood-brown. The apparently extinct *Ag. (Lepiota) Paulletii* is described by Fries as *colore* "de noisette," which must mean a light nut-brown or hazel. *Umbrinus* is a dark brown, brown umber, the colour of a "brown" horse; indeed, the scale of colours used in describing horses, from dun through chestnut, bay, and brown to black, shows how, in ordinary language, the name of a colour is always taken as of a very extensive connotation, because it is hard to decide where one colour ends and another begins.

We now come to the reds and their varieties. The palest is *carneus*, with *carneolus* and *incarnatus*, flesh-coloured. *Hygginus* is a more distinctly red flesh-

colour. *Roseus* and *rosaceus* imply a rosy pink ; *rosellus* seems to mean inclined to pink. There must be some difference between the shades of scarlet or vermillion distinguished as *cinnabarinus* and *miniatus*, because each is compounded with the other as *cinnabarino-miniatus*, but I have not succeeded in finding out what the difference is. *Coccineus*, cochineal red, is a deeper scarlet, carmine. *Sanguineus*, blood-red, is nearly similar. *Rufus*, *ruber*, and *russus* are less pure reds. *Rubescens* is merely becoming red. *Rubellus*, *rufidulus*, and *rufulus* are reddish. *Rubens* is a brick-red ; *rutilus*, *rutilans* a purplish brick-red. *Vinaceus* is reddish rather than claret-coloured, but it does not seem to be ever used in descriptions. Less pure reds are *castaneus*, chestnut ; *ferrugineus* and *rubiginosus*, rust-red ; and *puniceus*, which is an almost purple red.

Blues are so rare among Fungi that very few names are required for them. *Ceruleus* is a pale blue, azure ; *ceruleus* is becoming blue. *Azureus*, *lazulinus*, and *cyaneus* are rather ultramarine. *Cyanellus* is almost sky-blue. *Purpureus* is a bluish purple ; *violaceus*, violet, is a reddish purple ; *lilacinus* is lilac or mauve. *Ianthinus* and *ionides* alike refer to a violet colour. *Porphyroleucus* should mean purplish-white, but *Ag. (Tricholoma) porphyroleucus*, Bulliard, is described by Fries as "sooty or dusky, becoming red."

The type of the greens is *viridis*, but it is of no definite hue ; *virescens* and *viridans* mean turning green. *Aerugineus* and *aeruginosus* refer to a verdigris or rather bluish-green. *Olivaceus* is olive-green, *olivascens* denoting the preliminary stage of becoming green. *Pausiäcus* describes precisely the same green, from *pausëa* or *pausia*, a variety of olive ; for Fries says of *Ag. (Clitocybe) pausiäcus* that the gills are olivaceous.

Before I had made the attempt, of which you now have the outcome, to elucidate Fries' use of the names of colours, I was unwilling to ask for much of your indulgence. But now that I have done my best, and feel how poor my best has been, I must ask you to look on my essay, not as a final determination, but as a framework about which can be arranged the experience of others. No invention is ever so valuable to its inventor as it is to those who can bring it to perfect use. May what I have tried to accomplish here be at least the opening of the door for the truth that must in the end prevail.

THE BRITISH SPECIES OF NIDULARIA.

By Mr. WM. PHILLIPS, F.L.S., &c.

THE genus *Nidularia*, Fr., is represented in this country by a single species, *Nidularia pisiformis*, Tul., described and figured by the late Mr. Fredrick Currey in a Paper read before the Linnean Society, June 18th, 1863, which appeared in Vol. xxiv. of the Transactions of that Society. The specimen was found at St. George's Hill, Weybridge. I will reproduce the whole of Currey's description, which is very complete, and serves to fix satisfactorily the character of the species.

"Peridium subrotund, slightly flattened, varying in different specimens from one-twelfth to one-fourth of an inch across, brown or brownish-white, woolly, tuberculate when ripe, from the pressure outwards of the sporangia; indehiscent, opening by irregular fissures; sporangia enveloped in jelly, subrotund or disc-shaped, their outline forming a broad ellipse (almost a circle) with a major axis of about one-twentieth of an inch, shining, of a rich dark brown colour, sometimes hollowed inwards on one side, but not umbilicate, and showing no trace of any elastic cord, such as exists in *Cyathus*. Sporidia colourless, slightly varying in shape, globose, pear-shaped or elliptical, produced on sterigmata, 0·0002 to 0·0003 inch across."

"On pine-chips, St. George's Hill, Weybridge, May and October, 1862."

"I was at first inclined to consider this a new species; but after discussing it with Mr. Berkeley, we came to the conclusion that it could not be separated from *Nidularia pisiformis*, Tul. *N. pisiformis* is described as gregarious, and is said to have grown on clayey ground mixed with wood shavings. Tulasne does not figure *N. pisiformis*, not having seen it, but only adopts Usteri's account, describes and figures it in his *Annalen der Botanik* (Vol. i., tab. 1, fig. 1), under the name of *Granularia pisiformis*. Usteri's description does not very well accord with his figure, but the latter is so rough and imperfect as to be hardly intelligible. All the specimens of the plant above-described were solitary, and they grew only on fir-chips and fir-leaves, not on the ground. When the sporangia and the enveloping jelly are dispersed, a hollow skinny cup remains attached to the place of growth. The number of the sterigmata appears to vary from one to four. Upon the basidium, which is figured, I could only make out two. This species does not appear to have been noticed since Usteri's publication of it, now a great many years ago."

Accompanying this full and satisfactory description are figures of the species, showing a single individual the natural size, the same magnified, and one basidium having two spicules bearing spores at their apices.

In September last, the Rev. Dr. Keith, of Forres, N.B., was good enough to send me a specimen of *Nidularia*, which he found growing on a wet decayed stick of pine-wood, and which presented such differences from the above as led me to suspect that it was new to our Flora.

The peridia are confluent, or very rarely separate, nearly globose when young, afterwards subtrubinate, from one-eighth to one-fourth of an inch across, adhering to the wood by a broadish base, pale brown, or fawn-coloured, clothed on the exterior with a matted filamentous coat, the filaments of which are thickened towards their extremities and furnished with divaricate or deflexed spines; the peridia dehisce more or less irregularly at the top, exposing a mass of sporangia embedded in a tenacious pale transparent jelly. The sporangia are disc-shaped, at first dirty-white, afterwards shining dark chestnut-brown, somewhat rugose. A transverse section of the sporangium exhibits three distinct layers of tissue; the exterior thin, tough, fibroso-cartilaginous, which is underlaid by a fibroso-cellular sub-gelatinous layer, from which arises the third, or hymenial layer, consisting of upright closely-packed clavate or cylindrical cells—the basidia—which have on their summits 1, 2, to 3 spicules, on the points of which are produced the almost spherical spores. Intermixed with the basidia there occur at distant intervals cystidia, which are ventricose cells with an elongated narrow neck, truncate at the summit, resembling a Florence flask, except that the base is narrowed into a stem. These cystidia are twice the length of the basidia, and have usually fine granular matter collected in a little heap at their summits, similar to what we often see in the *Agaricini*, and to which, as you know, Mr. Worthington Smith attributes very important functions. I may venture to say that these cystidia have never been previously observed in the hymenium of a *Nidularia*. I have carefully compared this specimen with *N. pisiformis*, a specimen of which was lent me by Mr. C. E. Broome, and it differs in the following particulars:—The receptacles are confluent, the exterior is not tuberculate, there are cystidia in the hymenium, and the spores are smaller than in *N. pisiformis*.

If then my examination and comparison of these plants be correct, we have in Dr. Keith's Scottish specimen a second species added to our British list, namely, *Nidularia confluens*, Fries et Nordh. The description of this species is as follows:—

Rootless, peridium subglobose, even, villous, sporangia orbicular, wrinkled, brown.—Fries et Nordh.

On fragments of wood, growing in company with *Crucibulum vulgare*. Autumn.

Nidularia confluens, Fries et Nordh, *Symb. Gast.*, p. 3; Tulasne, *Ann. Sc. Nat.*, 1884, p. 96. *Nidularia farcta (confluens)*, Fries, *Sys. Myc.*, ii., p. 301.

Habit nearly the same as *Cyathus scutellaris*, Roth. Without roots. Sporangia (peridia) nearly round, aggregate, somewhat confluent, extremely irregular, villous, almost even, persistent, twice the size of a pea, dirty white, glabrous inside, at length broad, and ruptured in a lacerated manner. No epiphragmium indeed, but above the sporangium is composed as it were of a double membrane which however is obsolete. Sporangiola (sporangia of Tul.) orbicular, lentiform, altogether destitute of an umbilicus, about one line broad, wrinkled, glabrous (fixed by a slender thread at the margin?). Nucleus thin, black.—Fries et Nordh.

There is a third species, which, for some reason unknown to me, has been

dropped in the fifth vol. of *English Flora*, by Mr. Berkeley, as well as in his *Outlines of Fungology*. Nor is it to be found in Dr. Cooke's Handbook. I allude to *Nidularia dentata*, of Withering, described by him in the 3rd edition of *An Arrangement of British Plants* (Vol. iv., p. 357,—1796), as follows:—

“Turban-shaped; pale buff; rather woolly; segments or teeth at the edge, broad, spear-shaped, regular. Membrane tough, whitish. Seeds, or capsules reddish brown.”

“Several growing together on rotten twigs near the grate at Edgbaston Pool.”

Tulasne in his important Monograph of the Order *Nidulariaceæ* accepts this species with the remark *non vidimus*. It is true the description of Withering is very inadequate, no mention being made of the presence or absence of a *funiculus* on the *sporangium*, nor the presence or absence of an *epiphragmium*, which are the characters by which to distinguish *Nidularia* from the allied genera *Cyathus* and *Crucibulum*, and probably it is on this ground the species has been dropped.

The mode of dehiscence, however, is so remarkable, “segments or teeth at the edge broad, spear-shaped, regular,” that it will be well for Mycologists to keep the characters before their minds while in search of these plants, for I know of few more interesting results of our labours than the recognition and restoration to our flora of a long overlooked or neglected species of the older botanists of our country.

RESEARCHES INTO THE OOSPORES OF SOME FUNGI.

By the Rev. J. E. VIZE, M.A., F.R.M.S., &c.

A CONTROVERSY so hot and strong has long been going on about the resting spores of *Peronospora infestans*, that these atoms in creation have assumed a gigantic proportion. With this idea in mind I have, during the past season, been paying attention to the resting spores of various plants, besides those of the potatoe disease, and shall hope to work at them as opportunities offer. Except with the genus *Cystopus* they are not very easily found, which circumstance arises, I imagine, from the fact that *Cystopus* develops its oospores very soon after its conidia are visible, whilst *Peronospora* does not, at all events not so transparently as the other genus, nor is their locality so easily ascertained.

I will proceed at once with those species in *Peronospora* which I have detected.

With regard to *Peronospora Schleideniana* (De By.). I remembered last summer having obtained some onions with this fungus in the acrospore state, and therefore determined to go and obtain, if possible, some specimens to examine for the resting spore. Fortunately, the garden was as a rule neglected, so much so indeed, that the onions, to my great relief, had not been disturbed. I found them in every state, from healthy onions to very rotten ones. Taking them home for examination, I saw a great number of the ubiquitous *Sphaeria herbarum*, and after much search, especially in the most decayed portions, found, very sparingly scattered indeed amongst the material, a few genuine oospores. All traces of the raphides of the onion had gone—so had all the chlorophyll; the oospores were in the brown putrid magma, composed, I believe, of the oil cells of onion. That I expected to meet with a good deal of trouble in getting the oospores was a fact, because the *Peronospora* in its summer state was very scarce in the onion bed. One thing struck me as being singular, namely, the small size of the oospore compared with the large size of the acrospore, which is the largest acrospore I know. The date on which the winter spore was found by me was the 29th of February.

My opinion as to the rarity of meeting with the oospore of this fungus was confirmed by the fact, that towards the end of August this year, I could not find any trace of the same in the decayed leaves, although some weeks previously they had been prolific in the acrospores.

Whilst searching for the Onion *Peronospora*, I recollected that the same garden had grown a plentiful crop of *Peronospora gangliformis* on lettuce. The dead stems were lying on the ground, and when I looked for the oospores they were to be found in immense numbers. Their exact place was very regularly marked. The stem of the lettuce plants I cut up with a knife. In its interior are parallel columns of spiral vessels, forming very beautiful objects for the micro-

scope. Directly under these spirals, and between them and the outward cuticle of the plant, the oospores abounded; there was no difficulty in procuring them, they were unmistakable, and were as numerous, comparatively, as the Onion oospores were scarce. I was glad to obtain these, having heard some years since that they had only been found on Groundsel. On Groundsel I had found them with comparative ease during the previous autumn, in a neglected potatoe bed.

The oospores of *Peronospora parasitica* (Tul.) I found in enormous numbers in the decaying stumps of cabbages in my garden. Our friend, Mr. W. G. Smith, sent me some turnips which were supposed to have them in great abundance, even as he had himself found them. In those which reached me I could not find one, although I spent some two or three hours at them. Knowing, however, that Turnips and Cabbages were both of the Order Cruciferae, I went to my cabbage plants, and found on living cabbages sparingly scattered, in the conidial form, the *Peronospora*, whilst on those whose heads were consumed for table, and whose stumps remained in the ground and were rotting, the oospore was most abundant, but nowhere except in the most putrid spots, which could be detected by a yellow colour. That these were the vegetable resting spores seems to me settled, from their exact correspondence with De Bary's figures, and also because I could not detect on the living cabbages any other species of the order Mucedines. Their locality corresponded very much with *P. gangliiformis*.

Knowing that the *Peronospora* on the *Ranunculus* was to be had in several spots, I watched very carefully for the oospores of it, and after several gatherings of leaves infected with the acrospores, was fortunate enough to obtain some resting spores, on the 29th of April. My suspicions of their being likely to be found on the leaves of the *Ranunculus* itself were obtained from the fact, that a leaf of some unknown plant had been sent to me the previous year full of resting spores; the leaf was very dead, dry, and brown. This leaf was a clue to my finding the spores of *Peronospora ficariae*, for I took home with me, on the above date, some decaying leaves, and on one or two of them the oospores were visible. One thing was essential to their presence, namely, the decay of the stalk bearing the leaf. Unless this were dying, and for a little distance downwards were brown from death, not an oospore could be discovered. I anticipate, after realizing this fact, that there will be no great difficulty in getting the resting spores of other plants in a similar way.

Mr. Phillips was fortunate enough lately to find *Peronospora alta* (Fekl.), for the first time on record, I believe, in England. I had searched over and over again unsuccessfully for it, and am satisfied that I have found plants infected with it, but which, owing to the locality not being suitable for developing it, would not grow it. This *Peronospora* grows on plantain, a plant which takes to itself an unusual time in drying, as is known by its local title of "Jack set the rick on fire," because the moisture in the leaf does not escape, and therefore ferments, and ultimately, if very abundant, burns the rick. In one or two leaves sent to me there are some very dark spots, which I feel sure contain the oospores; as yet they are not ripe enough to be seen under the microscope. I have little doubt that they will be discovered there by and bye.

Peronospora arenariæ (De By), which, though considered rare, seems to be locally plentiful, has too succulent a host plant to let the resting spores be easily discovered. I tried to produce some artificially, but to no purpose.

Other species I have endeavoured to get, but signally failed—failed, probably, to make me persevere all the more in working to find them.

Since the above was written I have examined Professor Farlow's paper on the *Enumeration of the Peronosporæ of the United States*. He gives descriptions of 26 species of *Peronospora* with the oospores of all of them, naming their measurements. He then gives five more species, as "species whose oospores are unknown." *P. sordida* (Berk.) and *P. sparsa* (Berk.) are however the only two British ones enumerated in these five.

Cystopus spinulosus (De By.) is a plant recorded, to the best of my knowledge, only in Norfolk, and in the neighbourhood where I live. I imagine it is tolerably frequent, however, judging by the abundance of it when it is found at Forden. It grows on the common thistle by the sides of the high road, close to the grassy banks where the grass and the road unite, but the most prolific spot of all is where the stones are cast which are to be used for repairing the road. I have noticed year after year how very favourable to the luxuriance and development of the *Cystopus* this sort of place is. The conidia, when once found, are a tolerably sure clue to the oospores, for the conidia retain their place as a centre, and as they ripen the mycelium extends from them into the parent host on all sides. The result of this is, that the nourishment of the thistle in that place is absorbed by the fungus, which thus finds a suitable nidus for its oospores. A brown patch on the decaying leaf of thistle is an almost sure index to the resting spores, and of course the more lifeless the leaf looks the surer of success the searcher for the oospores will be. The oospores are so fine, and so large, that by soaking in water for a short time they can be seen with an ordinary pocket lens *in situ*. It took me some time to find these plants in the oospore state last August, but when once discovered they are easy enough to find afterwards.

Cystopus cubicus (Str.) I have had no opportunity of examining alive. *Cystopus candidus* (Lev.) seems to follow a similar life history in developing its winter state that *C. spinulosus* does. I believe, however, that when it grows on certain plants, horse-radish, for instance, the tissue of the host plant is so thin, that the ripening of the oospores takes place considerably on the ground, and therefore is not so easy to find. You can easily see, even in a few days, what ravages the fungus has made in the conidial state by the holes formed in the horse-radish itself. On Shepherd's Purse the oospores are much more easily traced than in the above plant, owing to the thickness of the plant on which they mature.

Cystopus lepigoni (De By.) has recently been sent to me by Mr. Plowright. The oospores are plainly enough to be seen, but will be much better as to ripeness in a short time.

GIGANTIC FUNGI.

By M. C. COOKE, L.L.D., M.A., F.L.S., &c., &c.

THE subject selected for this paper belongs to an unfortunate class, for it is liable to fail in two directions. Either the verdict may be that there is nothing in it, for everybody may have seen specimens as big. Or, on the other hand, if they have not, or fancy they have not, then the whole thing will be condemned at once as an exaggeration. In order to avoid the latter, which I consider the worse alternative, I have been careful to include nothing, on my own authority, which has not been measured carefully, and in most cases drawn to measurement. Species inserted on the authority of others, are supported by quoting the authority. If there is "nothing in it" that will not be a novelty sufficient to occasion surprise. *Agaricus (Amanita) virosus*, Fr.

Fries says that the stem in this species is from 4 to 6 inches long, and the pileus from 3 to 4 inches broad. I have never found it but once, and then three or four specimens were growing together in a plantation near Bungay. The largest of these was 10 inches high, stem $1\frac{3}{4}$ inches thick at the base, and the expanded pileus had a diameter of $7\frac{1}{2}$ inches. In grandeur of appearance and pungency of odour it was a species never to be forgotten. Although found in August of 1865, its memory is not obliterated, but revived whenever a good juicy *Phallus* presents itself. Filtered through the mists of twenty years this odour is not sweetened yet, and probably will remain, not "too much beautiful, for ever."

Agaricus (Amanita) excelsus, Fr.

Fries gives as the dimensions of this species, "stem 4 to 6 inches long, pileus 4 to 5 inches broad." Two specimens found by us near Watford in 1883 considerably exceeded these dimensions, one of them being 10 inches high with a diameter of $7\frac{1}{2}$ inches. The base of the stem was 2 inches thick.

Agaricus (Lepiota) procerus, Scop.

It is very probable that this species will attain a considerable size under favourable conditions, as its growth is undoubtedly rapid. The *Monographia* states that it will reach 4 to 8 inches or more in diameter of pileus, and Berkeley says from 3 to 7 inches broad with a stem from 8 to 12 inches high. One specimen obtained in Kew Gardens on the 16th October, 1883, was nearly 10 inches high, with a pileus of upwards of $7\frac{1}{2}$ inches diameter. This really deserved the name of "Parasol" mushroom, but it has been exceeded, for I measured on one occasion an old pileus, going to decay, of which the stem could nowhere be seen, and it was a little over 8 inches in diameter. Specimens more than 6 inches are not uncommon amongst the undisturbed masses of dead leaves in some sheltered nooks of the grounds attached to Kew Gardens.

Agaricus (Lep.) rachodes, Vitt.

Mr. W. G. Smith records specimen from Wilton, October 12th, 1884, exactly $10\frac{1}{2}$ inches high.

Agaricus (Armillaria) melleus, Flor. Dan.

Although this is an exceedingly variable species, I find no records of its attaining any extreme size, beyond the intimation by the Rev. M. J. Berkeley that it attains a diameter of 7 inches with a stem 8 inches long. Fries stated 6 inches as the extreme diameter. In 1861 I found specimens at the foot of an elm 6½ inches in diameter at Hampstead, and at Watford, two years ago, I collected specimens exceeding this by an inch, but the stem, although nearly an inch thick, was not so long as the diameter of the pileus. The species is so common, and mycologists usually treat it with such contempt, that they do not take the trouble to measure specimens, hardly to look at them, save to warrant the exclamation "Bah! its only *melleus*!"

Agaricus (Armillaria) mucidus, Fr.

I have preserved no record of dimensions attained by this species from my own knowledge; Berkeley gives 1½ inches as the usual diameter of the pileus, with a stem of 3 inches, but this is certainly far below the maximum. Dr. Bull has figured the section of a specimen quite 7 inches in diameter, with a stem nearly as long. It is by no means unusual for it to exceed about 4 inches, which appears to be something like the maximum of ordinary specimens. One extenuating circumstance may be urged in favour of this species, which is analogous amongst Agarics to the Bream amongst fishes, for its sliminess, that it is a most delicate species when prepared for the table, and here the analogy with the "Bream" ceases.

Agaricus (Tricholoma) nudus, Bull.

According to Berkeley this species should have a pileus of about 2 inches in diameter, with a stem 2 inches high and from 3 to 4 inches thick, whilst Fries allows a diameter of 3 inches for the pileus, and 3 inches for the length of the stem, with a diameter of half an inch. During the month of November, 1881, large masses of this species were found in two or three localities in the Pleasure Grounds, and Queen's Cottage Grounds, of Kew Gardens. Many of the specimens, at least 20 or 30, were 5 inches in height, with a thickness of stem at the base of from 1½ to 2 inches, the expanded pileus varied from 5 to 6 inches in diameter. The stems were of a beautiful violet colour, but the pileus of a bright rufous. Even these large specimens were firm and sound, and when cooked were quite equal to, perhaps rather better than the smaller forms. It is one of the medium-sized specimens which is figured on plate 133 of the *Illustrations*.

Agaricus (Clitocybe) nebularis, Batsch.

I should hesitate to limit the capabilities of this species, it certainly is "one of great capabilities," although the pileus is limited by Fries to a diameter of 3 to 5 inches, with a stem of 3 in length, and an inch in diameter. In October, 1861, I met with a colony large enough to fill a full-sized wheelbarrow, growing upon dead leaves at Dufferin Lodge, Highgate. Amongst these were at least 20 specimens not less than 7 inches in diameter of pileus with stems 4 inches long, and 1½ inch in thickness. Since then I have seen them nearly as large in the Pleasure Grounds at Kew. Six inches is not by any means an uncommon diameter for sound, and uninhabited specimens. I have found them growing in precisely the same spot for several years in succession, and it is in such established localities

that the largest specimens are found. When they first make their appearance in a new spot I have observed that they are comparatively small.

Agaricus (Pleurotus) salignus, Pers.

This must be a species capable of most extraordinary development, although I have no personal experience of any but small specimens. Fries gives the size of the flabelliform pileus as 6 inches, but one of Dr. Bull's characteristic sketches gives a section of 8 inches, with an intimation that the original specimen was six times that size. If it were intended that this should be interpreted as six times the diameter, it would give no less than 48 inches as the expanse of these saddle flaps. It may truly be said that "there were gaints in those days." Probably the smallest pinch of salt is required to tone down this monster.

Agaricus (Pleurotus) ulmarius, Fr.

I cannot pretend to any knowledge of extraordinary specimens of this splendid species, never having handled one with an expanse of more than 10 or 12 inches, but often of 7 or 8, with a thickness of 2 inches of solid white flesh with somewhat of the pleasant flavour of a fresh filbert, and when fried, possessing a mild but decidedly appetising flavour, and not in the least tough. In all respects preferable to *Agaricus ostreatus*, which has, I fancy, been lauded above its merits.

Agaricus (Pleurotus) revolutus, Kickx.

This is another large species. The only specimen I yet know of as British, had a pileus 12 inches in length. It was found by Mr. Ralfs, at Penzance.

Agaricus (Volvaria) bombycinus, Schœff.

Fries allows for this species a height of stem of from 3 to 6 inches, and a diameter of pileus of from 3 to 8 inches. In this country I fancy they seldom reach such a size. The largest I have any record of, is a specimen sent me by the Rev. Canon Du Port, which had a pileus, unexpanded 7 inches high, and probably this would when fully opened have been nearly 12 inches. The stem was 7 inches high, with a diameter of $2\frac{1}{2}$ inches at the base. This was found growing on Elm, in Norfolk, in July 1881. A few are seen almost annually in some part of Kew Gardens, but these seldom exceed a diameter of about 4 inches.

[Subsequent to the reading of this paper, a specimen was found in Kew Gardens (in 1886) with the pileus 14 inches in diameter; stem 8 inches long, and 2 inches thick; gills $1\frac{1}{2}$ inches broad; and total weight $2\frac{3}{4}$ pounds.]

Agaricus (Flammula) carbonarius, Fr.

Under ordinary circumstances this is a small, unpretending species, as Fries says, with a pileus of an inch or a little more in diameter, and a stem of from 1 to $1\frac{1}{2}$ inches long. It was growing, with not more than two or three months interruption, during the driest part of the summer, or under the snow, for three years in Kew Gardens. At its maximum of luxuriance I found and measured specimens $5\frac{1}{2}$ inches long in the stem, with an expanded pileus of $4\frac{3}{4}$ inches; and I imagine that this is the largest size to which this species has ever been known to attain. Ultimately, the charred ground became over-run with docks and nettles, when the struggle for existence terminated fatally for the fungi, and they have not been seen for eighteen months.

Boletus Satanas, Lenz.

Fries gives no dimensions for this species in his *Hymenomyces*, but Berkeley says it is sometimes 8 inches across; from which it may be inferred that 8 inches is considered to be a maximum. The largest specimens we have met with were at one of the Woolhope Excursions, in which the pileus measured $9\frac{1}{2}$ inches, and the total height was $7\frac{1}{2}$ inches, of which $4\frac{1}{2}$ was occupied by a stem, 4 inches in diameter at the base. At the time and place alluded to there were some dozen large specimens, but this was the finest. It is an attractive species when young, but when old and bruised, has very little to save it from being kicked aside with contempt. Presumably it is in that stage it merits the application of its specific name "Get thee behind me Satan!"

Sparassis crispa, Fries.

Mr. Worthington Smith exhibited at one of the Epping Forays, two or three years ago, the largest individual of this species it has been my privilege to see. I have quite forgotten its dimensions save the characteristic description given by its exhibitor, that it was so large he had to bring it in two baskets. I think it was somewhere about half a yard in diameter, and occupied a table to itself. A portion only of the smallest half was brought to Hereford for exhibition, and that was equal to a full-sized cauliflower.*

Lycoperdon giganteum, Fl. Dan.

A good-sized specimen was reported to me by Mr. W. Southall, of Birmingham (August 5th, 1884). He described it as 2 feet 9 inches in circumference, and was then full grown (after nine days) and still white. It was somewhat of the shape of a flattened man's skull, with much brains behind.†

This is nevertheless a dwarf compared with one stated to have been found in the United States. Professor Bessey says it was of an oval outline, and measured 5 feet 4 inches in its longest diameter, and 4 feet 6 inches in its smallest diameter, whilst its height was but $9\frac{1}{2}$ inches. Professor Call says of it, that it was much larger than the largest washtub we had at home. Only imagine a slice from such a Puff-ball fried for breakfast—only a yard and a half long. In the *Freaks of Plant Life* I stated, that the largest Puff-ball was not so big as a somnolent sheep, but here is one as large as a good fat sheep, and not unlike in form.

Morchella Smithiana, Cooke.

This is naturally a gigantic species, as compared with the common Morel; and any dimensions we might record should not be regarded as more than the average size of the species, but in speaking of gigantic Fungi it could not justifiably be excluded.

* The large *Sparassis* came from Mr. Malcolm McLean, gardener to J. Whatman, Esq., Vinter's Park, Maidstone. It was found at the base of Scotch Firs. It took two men to carry the deal box in which it was packed, and the box afterwards became a spacious rabbit-hutch. The *Sparassis* was very compact, solid, and heavy; 3 feet 6 inches round; 10 inches high above the ground; with solid heavy base of Mycelium for *six inches* beneath the surface. It was divided and carried by two persons to Loughton in two fish baskets, one basket being sufficiently heavy for one person to carry with convenience.—ED.

† A large *Lycoperdon giganteum*, 5 feet 4 inches in circumference, is described in *The Gardeners' Chronicle*, September 20th, 1884.—ED.

Mr. Smith described his original specimen as 12 inches in height and 7 inches in diameter. The pileus was 6 inches high, and the stem $3\frac{1}{2}$ inches thick at the base. Two or three specimens were sent from Yorkshire, in May, 1884, nearly of these dimensions, but they were said to be the smallest specimens, for some boys having found them had broken up the largest, and scattered the fragments over the road. *Morchella gigas* does not attain to an equal size.

Helvella lacunosa, Fr.

The usual size of this species is about $3\frac{1}{2}$ inches high, with a pileus $1\frac{1}{2}$ inches high and about an inch broad, with a stem from $\frac{1}{2}$ to $\frac{3}{4}$ inch in thickness. It is often smaller. A year or two since I found a number of specimens in Monk's Wood, Epping Forest, which were five inches high, with a pileus of $3\frac{1}{2}$ inches by $2\frac{3}{4}$ in diameter, with a short stem $1\frac{3}{4}$ inches thick. Two or three years since I collected similar specimens at Penicuik, near Edinburgh, so that it is probable these dimensions will yet be exceeded.

This brings me to the end of my present list, which might have been extended considerably at the risk of becoming tedious. Perhaps it is not of much practical utility, except as an insinuation that size must be accepted with great caution as an element in the discrimination of species. Two or three instances have been produced in which large individuals of particular species have been found in places known to have been occupied by the same species for consecutive years. Can it be concluded from this that the growth of a species on a definite spot becomes more vigorous in proportion to the period of its occupation? and if so, why? It may not be altogether absurd to keep this enquiry in view, and to repeat the observations.

ON TRINOMIALISM IN ZOOLOGY.

By H. T. WHARTON, M.A., F.Z.S., &c.

THE burning question of nomenclature among zoologists at the present moment is that which is called "trinomialism." It is one that has lately been strongly taken up by American ornithologists; and they are concerned with such a vast extent of territory, and their influence, born of their energy and scientific attainments, is so great, that its consideration in Europe cannot be long delayed. Having been already adopted by Mr. P. L. Selater in his "Review of the Species of the Family Icteridæ" in recent numbers of the *Ibis*, its acceptance probably by the whole scientific world is merely a question of time. So that the sooner we ponder the faith that we shall inevitably embrace, the better it will be for us.

The question, as it stands at present, is a tolerably simple one. We might have adopted it in Europe long ago, if we had only understood it better. The presence among us now of the well-known American ornithologist, Dr. Elliott Coues, makes its consideration at the present time the more desirable.

Before the epoch of Linnæus it had been the practice of writers on that which was vaguely called "natural history" to use names for species in the same indefinite way as they are popularly employed at present; where, that is, they did not use the still more objectionable method of denoting a species by a whole cumbersome descriptive sentence. For instance, the name "sparrow," as applied to the familiar bird of the streets of London, refers, and is referred in London and by Londoners, to a single definite species (*Passer domesticus*); but in country parts of England the name connotes another species also (*Passer montanus*), not to mention that which is generally distinguished as the hedge-sparrow (*Accentor modularis*); and in other countries its connotation becomes still wider. Hence an author, describing the birds of the world, must limit the name "sparrow" to a certain individual form which can easily be described and identified.

This difficulty became conspicuously apparent to Linnæus when he attempted to systematise the description and appellation of every known form of animal and vegetable life. And he solved the question by giving every species two names—a family, or generic name, and a subordinate or specific name, just as we might say Smith, John, or Smith, William, for brief distinction's sake. That was "binomialism."

Linnæus's practice was found so convenient by his successors that it became almost an article of faith among them. Instead of one vague name, or a sentence which was simply a more or less short description, naturalists were agreed to call every kind of animal or vegetable by a combined generic and specific name. And in doing so they established a valuable principle, for they showed that names were not essentially in any way descriptive words, but simply a convenient means of making possible the indexing of a connotation of attributes. Similarly, in real life, there are many John Smiths, but Linnæus would describe only one as the

typical John Smith, and then, by simply knowing his name, we could easily find out his address and all that was known about him. Any other John Smith would have a different specific name, so that all confusion would be thenceforth avoided.

The practice was so simple, and has long worked so well, that the scientific world is unwilling, even after the lapse of more than a century, to depart from it. But we must remember that in Linnæus's day the doctrine of special creation was simply universal; men thought that species remained unchanged for all time. Only now the schoolmaster has been abroad, and we have learnt that every species, to become a species, has continually undergone, and is still undergoing, some modification, however slight that modification be, or however long it take to become apparent. Indeed, the difficulty now is to determine the question, What is a species? I do not propose to vie with the logicians in finding a satisfactory solution of this query, but it is enough to note that a species is considered to be a species when it is not connected with any other (however intimately allied) species by intermediate forms; that it and its nearest allies are never, in the greatest series of specimens, confused by the existence of individuals referable to either form; that is, that in the course of ages it has become entirely differentiated, in some important particular or particulars, from every other form.

Now, when those best capable, from experience, of forming a correct opinion have determined what may rightly be considered a true species, we find that in different countries, or under different conditions, individuals of the same species vary in a more or less conspicuous degree. These are allowed the rank of sub-species, and the intergrading forms are grouped and named according to the most marked types that they present; and if forms vary when they occur in countries far distant from one another, a very slight difference is allowed sub-specific rank.

Here it is that "trinomialism" steps in to help us. We discard the old interpolations: "var." "subsp.," &c. We keep the old generic name, we keep the old specific name, and we add a third name to indicate the sub-species. A species having a third name is by that very fact relegated to the species indicated by its second name; but it is thereby degraded from the typical species, because, different though it may essentially seem, intermediate forms are found to occur. A species, indeed, stands as such, because, to use the words of Dr. Coues, "its differentiation is accomplished;" a sub-species stands as such because the links connecting it with allied forms are existent still. The whole is but a question of time and circumstance; the sub-species of to-day may become, when the connecting links are lost, the species of to-morrow. We are only concerned with what we see and know. Names but indicate the pigeon-holes where, for a time, we may stow whatever knowledge we can gather about the titles we choose to put upon them; the titles matter nothing so long as we can find the required pigeon-holes, and to this orderly arrangement all science tends, or its result is chaos. Numbers, indeed, would do as well as names, if we knew all existing or possible species; only this we can never know, and, moreover, names we can arrange as we please, whereas numbers insist upon

arranging themselves. All that trinomialism promises is, besides giving the name or number distinguishing the given form, to show the subordinate arrangement ; not only, to continue our former metaphor, to indicate the pigeon-holes where the record of our knowledge lies, but also to show in what compartment of a given pigeon-hole our special information may be found.

So far as I see at present, there is no valid objection to trinomialism save aversion to change from established usage. But surely convenience ranks above conservatism. If science progresses, so must its usages. As knowledge becomes enlarged, and finds itself bound to observe more minute differences, it is also bound to adopt means to keep its discoveries more easy of reference. And this is the *raison d'être* of trinomialism.

It is perhaps in the employment of the principles of trinomialism that the greatest bar to its adoption will be found ; and in this regard I cannot do better than quote the words in which Dr. Cones has formulated "the definite principle and rule of action in the application of trinomials." He says (*Zoologist*, July, 1884, p. 243) : "The third term of the technical name is given to climatic or geographical races, varying according to known conditions, as latitude, elevation, temperature, moisture, and conditions of all sorts. The practice, therefore, has a logical basis, a consistent possibility of strict scientific application. It appears to me," he goes on, "to be a simple, natural and easy way of disposing of a large number of intermediate forms which have not become specifically distinct from their respective nearest allies. It is quite true that the recognition of this result of climatic conditions is largely a matter of tact and judgment, and that it is not always possible to say whether a given organism is or is not 'specifically' distinct from another." If, indeed, a right use of trinomials be not made, of course the adoption of the practice will be a greater evil than the very confusion which it has been introduced to remedy ; so true is the old monkish adage, *Corruptio optimi est pessima*.

The chief question to my mind is, whether trinomialism, as at present understood, goes far enough. Science extends her empire so rapidly that even this device may hereafter prove insufficient. But it is undoubtedly a step in the right direction, and it behoves us all to look forward as well as back ; and as a ready means of catalogning discoveries already made, I think we ought to hail it, not with cavilling, but with delight. It is too late now to refuse trinomialism a trial ; if it fails to stand the ordeal through which it must pass, let it fail through its own insufficiency, and not from our temporary antagonism.

The changes that may come after the definite adoption of the doctrine of trinomialism I dare not prophesy. But it seems to me to be only logical that, when we have admitted subspecies, we should also admit subgenera ; as botanists have long done, to the infinite elucidation of their department of biology. And then, again, we shall have to acknowledge varieties, or minutely differentiated forms, below the rank even of subspecies. Nor is the power of man to produce alteration of very obvious characteristics to be neglected ; for instance, the domestic fowl and pigeon have been so varied from their respective prototypes that the actual wild form of each is not quite beyond the province of conjecture ;

just as the wheat we live upon, and the mignonette we love, have no archetypes among any of the wild plants that we know. Such artificially created types as these cannot be ignored by the Linnæus of the future. And the indubitable occurrence of hybrids between different species in a wild state, and the power of these hybrids to transmit their characteristics to a posterity to which "reversion" is practically unknown, may necessitate some measure, in the days to come, for recognising and recording them. As the sphere of knowledge is extended, the range of scientific methods must be extended also. That which satisfied Aristotle and Pliny and their followers did not satisfy Linnæus: why then should we hold the best that Linnæus could devise incapable of improvement now? The sooner we face the facts, the more intelligibly shall we be able to hand down our conquests of the Unconditioned to those who will come after us. Observations are every day becoming useless, for no other reason than that the forms to which they referred were insufficiently identified. The more a science grows, the more minute must be the subdivision of its records.

I have shown that binomialism was a gradual, an inevitable, and a useful growth. I believe that a very short time will show that trinomialism is its inevitable outcome and successor.

Woolhope Naturalists' Field Club.

1885.

THE Annual Meeting of this Club was held on Thursday in the Club-room at the Free Library, Hereford. The following meetings were fixed upon for the present year:—

Tuesday, May 19th.—Llanvihangel, for Patricio and Gaer Camp.

Thursday, June 18th.—Hereford, for Aconbury Camp and Priory.

Thursday, July 9th (The Ladies' Day).—Abergavenny, for the Sugar-Loaf Mountain and the Castle Grounds.

Thursday, August 27th.—Leominster, for Blackwardine and Risbury Camp.

Thursday, October 8th.—Hereford, for the Fungus Foray.

The general financial statements of the Club, and of the *Herefordshire Pomona*, were laid before the meeting, and the ordinary business of the Club transacted.

The Rev. W. H. Lambert, of Stoke Edith, and Mr. C. P. Bird, of Drybridge House, Hereford, were elected as members.

The following gentlemen attended the meeting:—The Rev. C. Burrough, President; Mr. C. G. Martin, President elect; Mr. H. Cecil Moore, Vice-President; Mr. Henry Wilson, President of the Malvern Club; Drs. Bull and Chapman; the Revs. W. Horton and H. B. D. Marshall; Messrs. F. Bainbridge, J. Carless, jun., J. Docking, G. H. Piper, C. Rootes, O. Shellard, and Theophilus Lane, Secretary.

THE FINANCIAL STATEMENT OF THE HEREFORDSHIRE POMONA.

In the original prospectus of *The Herefordshire Pomona*, the Woolhope Club announced that "it was not intended to make any profit from the work. The "whole money subscribed would be spent on the publication, and, therefore, the "greater number of subscribers there were, the more valuable could each Part be "made by additional plates." This promise has been faithfully kept, and there is thus no want of delicacy in giving some details as to its actual cost. The work has grown so much in size in the course of its production that it has greatly exceeded the original ideas of the promoters. The first part contained six coloured plates, and in the succeeding parts the number advanced to eight, ten, twelve, twelve, thirteen, and in the present concluding part the number given is sixteen. There is a corresponding increase in the letter-press; and as a matter of course a proportionate increase in the cost of production. No trouble has been spared, nor any expense necessary, to produce the work in an accurate and artistic style. With such rapid increase in size, and so well brought out, it could not be expected to be remunerative at the price at which it has been issued, and it has not been so.

The following Financial Statement will render this evident :—

RECEIPTS.						EXPENDITURE.						
Parts	Club Grants	Subscriptions	Sales	Donations	Total	Parts.	Coloured Plates	Sections and Wood-cuts	Analysis	Advertising, &c.	Printing, &c.	Total
I.	£ s. d. 80 0 0	£ s. d. 109 2 0	£ s. d. 88 6 0	£ s. d. 2 8 6	£ s. d. 279 16 6	I.	£ s. d. 111 0 0	£ s. d. 21 2 0	£ s. d. 6 2 6	£ s. d. 17 5 5	£ s. d. 59 18 9	£ s. d. 215 8 8
II.	60 0 0	119 9 6	69 13 0	16 5 0	265 7 6	II.	148 12 0	39 13 0	6 1 0	0 6 0	81 0 0	275 12 0
III.	60 0 0	99 4 0	58 5 0	5 5 0	222 14 0	III.	185 12 0	20 0 0	6 10 0	0 10 0	66 4 1	278 16 1
IV.	60 0 0	69 19 0	85 15 0	5 0 0	220 14 0	IV.	220 12 0	31 10 0	5 15 0	0 2 6	78 5 3	336 4 9
V.	60 0 0	84 11 6	149 5 0	5 0 0	298 16 6	V.	220 12 0	52 13 6	5 15 0	2 5 11	68 6 1	349 12 6
VI.	60 0 0	135 13 0	119 12 0	38 7 4	353 12 4	VI.	238 19 0	42 0 0	5 15 0	0 4 4	74 2 10	361 1 2
VII.	60 0 0	*120 0 0	*130 0 0	5 0 0	315 0 0	VII.	288 0 0	27 10 0	...	1 0 0	*100 0 0	416 10 0
Totals	440 0 0	737 19 0	700 16 0	77 5 10	1956 0 10	Totals	1413 7 0	234 8	635 18	621 14	2 527 17	2233 5 2
Less (loss by failure of the London Agent) ...						Total Receipts						
						72 12 11						
Total Receipts						1883 7 11						
						£						
						Deficiency to present date						
						£ 349 17 3						

* Estimates.

J. REGINALD SYMONDS, *Treasurer.*

March, 1885.

This deficiency will be somewhat lessened by the sale of the few remaining copies. It would have been greater but for some generous donations, which it is very pleasant to record. Mr. Arthur Hutchinson has given donations as the parts appeared, amounting together to £30; and Mr. Thos. Walker, F.L.S., of Tunbridge Wells, sent a cheque for £20 with the kind request "that he might assist the Woolhope Club by contributing towards a work of such national importance." These thoughtful gifts have been highly esteemed, quite apart from their value, since they show so kind and generous an appreciation of the work itself.

The Herefordshire Pomona has been printed by Messrs. Jakeman and Carver, of Hereford, under the immediate superintendence of the Committee. The number of copies has been confined to six hundred, and the low price at which they have been issued, when compared with the cost of production, has not left much margin for the usual trade profits. The Woolhope Club are therefore the more indebted to the Editors of the *Gardeners' Chronicle*, *Journal of Horticulture*, *The Gardeners' Magazine*, and other horticultural publications for their early and repeated notices of the work, which have from the first, been unanimous in its praise. For greater reasons still, the Club is deeply indebted to the Editors of the *Saturday Review*, *Blackwood's Magazine*, and the *Edinburgh Quarterly Review*, for the very full and generous notices they have given of the work, which have not only greatly encouraged the Committee, but have aided materially in the sale of the *Pomona*.

HENRY G. BULL.
THOMAS CAM.
J. GRIFFITH MORRIS.

April, 1885

LLANVIHANGEL FOR PARTRICIO AND GAER CAMP.

MAY 19TH, 1885.

"O'th gav, yr Hâv, i'th awr harz,
 A'th geindwr, a'th egindarz ;
 Dy hinon yn dirion dwg
 Aur-genad i Vorganwg.
 Tesog vore, gwna'r lle'n llon ;
 Ag anerc y tai gwynion
 Rho dwr, rho gynnhwv gwanwyn :
 A cynnull dy wull i dwyn ;
 Tywyna'n valç ar galç gaer
 Yn luglawn, yn oleuglaer."

So sings the bard, David ab Gwilym, the Welsh Ovid, who flourished about the middle of the fourteenth century under the peculiar patronage of Ivor the Generous, an ancestor of the Tredegar Family. He continues, moreover, his "Invocation for the Summer to greet Morganwy," in a happy succession of eloquent verses, which those only can appreciate who understand fully the beauty and harmony of the Welsh language. It is to be feared that the members of the Woolhope Club generally have not this happiness. In mercy to them is given this bald translation of the lines quoted :—

If I obtain thee, O Summer, in thy splendid
 Hour, with thy fair growth, and thy shooting
 Gems ; thy serenity pleasantly bear, thou
 Golden messenger, to Morganoc. With
 Sunshine morn gladden thou the place ;
 And greet the whitened houses ; give growth,
 Give the first fruits of the spring, and collect
 Thy blossoms to the bush ; shine proudly
 On the wall of time, full of life and gaily bright.

For more than five hundred years the cottages of Monmouthshire, and the same may be said of Glamorganshire, have been whitewashed. The white walls point out the situation of the cottages in the beautiful valleys visited by the Woolhope Club to-day as clearly and brightly as they are described by the poet in the middle of the fourteenth century.

The first field meeting of the year took place at Llanvihangel Station, and Mr. Lane, the Secretary, took the following list of the gentlemen who attended it :—Mr. C. G. Martin, the president of the Woolhope Club ; Mr. H. C. Moore, vice-president ; Mr. Henry Wilson, president of the Malvern Field Club ; Sir George H. Cornewall, Bart. ; Sir Herbert Croft, Bart. ; the Hon. and Rev. Berkeley L. Scudamore Stanhope ; the Hon. and Rev. Wm. Scudamore Stanhope ; Drs. Bull, Chapman, and J. H. Wood ; General Gillespie ; Major Doughty ; Captain Campbell ; the Revs. T. Beavan, W. Bowell, G. H. Clay, C. L. Eagles, E. A. Ely, H. B. D. Marshall, S. Stooke-Vaughan, J. Tedman, and H. W. Tweed ; Mr. F. R. Kempson, F.R.I.B.A. ; Messrs. J. A. Bradney, Arthur Bowell,

T. D. Burlton, J. Carless, R. Clarke, James Davies, A. B. Donaldson, Howorth Greenly, W. H. Harrison, J. W. Lloyd, W. Pilley, H. A. Purchas, and J. Riley.

The way was first taken to the old manor house of Pen-y-clawdd (the head of the moat), which possesses features of very great interest. The house itself is not very ancient (a manor house of the 17th century) but it is still old enough to be very picturesque with its stone walls and its square-headed windows. It probably occupies the site of one still more old, which was then entirely surrounded by the moat, which is now only complete on the north side. The road passing the house is enclosed by an artificial embankment, which once probably formed part of the moat. At the present time, a few yards from the house, is a flat circular mound some fifty paces in diameter, surrounded by a wide grass-covered ditch, and this again is enclosed by a very steep artificial embankment, still higher than the circular mound, around which ran the moat. This moat was supplied with water from a stream from the mountain side, diverted for the purpose. The stream now takes its natural channel, and the water in the portion of moat remaining is stagnant. This may have been the house of some Saxon proprietor, rich in beeves, who had his cattle driven within his entrenchments by night, and protected himself and them from any sudden surprise by treacherous enemies. Or it is open still to such other suggestions of the imagination as its strong fortifications may indicate, for they could not be made without an amount of time and labour that proves how great the perils were to require them.

The circular mound was occupied botanically, not only by a large oak and some other trees, but growing over a considerable surface of the ground was *Narcissus biflorus*, the Pale daffodil, or Primrose peerless, by no means a common plant. Did some Saxon damosels plant the first bulbs, from which the ground has been covered? As the visitors clustered upon the mound a photograph was taken, the said imaginary fair Saxons being represented on this occasion by Mrs. and Miss Gillespie, the former mounted on her favourite black cob, far more handsome and useful than could have existed in Saxon days.

From the Pen-y-clawdd the members proceeded along the side of the Brynarw hill, from "bryn," a hill, and "garw," rugged, it was said, (but this can scarcely be right, for it is a round-backed hill now, as it ever must have been). On its side grew a large patch of the common Yellow daffodil, *Narcissus pseudo-Narcissus*, in a double form; and on some of the boggy spring heads the president gathered *Montia fontana*, the Water chickweed, or blinks, as it is sometimes called, because it seldom opens its small flowers. The northern slopes of the Brynarw hill road led along the side of the Cwm-coed-y-cerrig, the dingle, or valley, of woods and rock, which separates this hill from the Gaer, on whose summit could be seen the encampment that was shortly to be visited. Extremely pretty the valley is. Its rocks could not be seen, for the road was above them; but its varied woods of oak and fir, its detached whitewashed cottages, each surrounded by its enclosure of gardens and fields, were looked down upon very pleasantly. This portion of the Brynarw hill is called the Forest Coal Pit hill, and the first house on the descent is called Coal Pit, and many inquiries were made as to whether the vain attempt had been made here to get coal beneath the Old Red Sandstone rocks, of which this whole

range of hills is composed. The attempt has several times been made in Herefordshire, and the money of many industrious people been lost, whereas if there is truth in geology, the real coal measures have all been washed off the surface of the Old Red Sandstone, and Murchison ridiculed the vain attempt by saying "they should rather go up in a balloon to seek it." There does not seem to have been any real coal pit here. The man who lived in the Coal Pit house knew nothing of it, and the tradition, kindly gleaned for the Club by the Rev. John Davies, of Pandy, is probably right—that the pits here were charcoal pits, where the wood from the neighbouring valleys was converted into charcoal, to be conveyed to the Forest of Dean for smelting the iron ore. It is an additional misnomer for the hill, for it should have been the Charcoal Pit hill.

The road runs through the Forest hamlet, and by the side of the beautiful river Grwyne (*Anglice*, Groiney), to Pont Esgob, or the Bishop's Bridge (another name absurdly transmogrified into Pont Yspig). This bridge over the Grwyne Fawr was built either by, or in commemoration of, Baldwyn, Archbishop of Canterbury, who is said to have passed over the river at this spot when, accompanied by Giraldus Cambrensis in their tour through Wales in 1188, he was engaged in preaching the Crusades through this district. The Grwyne Fawr is a beautiful river, and it flows through a lovely valley. It is occupied by a tribe of trout fishes, as beautiful as they are bold. It is such a stream as this that delights the soul of a fisherman. To have fished the Grwyne for a few days is an era—an Elysium—in life never to be forgotten. It is happy for these brave fish that they are protected by many overhanging trees. The ardour of the sportsman is thus beguiled by nature (or bothered by the boughs), whilst the fish ensconce themselves in safety in the rocky hollows beneath the thick bushes.

The path led through sandy corn fields and narrow lanes, where were gathered the Lamb's lettuce, *Fedia olitoria*, and the *Veronica buxbaumii*, a plant introduced with seed corn of late years; and where the walls teemed with pretty plants—the shining Crane's bill, *Geranium lucidum* on the top, whilst the crevices between the stones abounded with Wall pennywort, *Cotyledon umbilicus* (how soothing its hollow fleshy leaves are to aching corns!), and those beautiful ferns, *Ceterach officinale*, *Asplenium trichomanes*, *Adiantum nigrum*. The hedges, or rocky divisions of the fields here, were plentifully ornamented with the Bird cherry, *Prunus padus*, in the full perfection of bloom.

The light bird cherry hangs its flag
In snowy splendour from the crag.

The walk up the valley was very diversified and very pleasant, though sometimes rather steep in the short cuts. The house of Ty-yn-y-llwyn, one of the many "Houses in the Grove" that Wales rejoices in, was soon reached. This was formerly the mansion of the Herberts. Charles Herbert died here in 1703, and the family afterwards removed to Crickhowell. From the lane just beyond, the Church of Partricio comes in sight. The key had been procured from the hands of the clerk, who had reached the patriarchal age of 93, and had only failed for the last year or two in the full performance of his duties.

The church of the holy Saint Ishaw is situated on the left bank of the little rivulet Nant Mair, or Mary's Brook, a name which he probably gave to it in honour of the Blessed Virgin. One spring which issues from the ground near the bridge to join its waters is called "Ffynnon Ishaw," the holy spring of St. Ishaw. It is walled in, and small square spaces are left in the walls seemingly for votive offerings. The water was deliciously cool and pure, and the wild flowers around, and within it even, very pretty and appropriate. A nightingale was singing in a little cluster of low bushes by the Nant Mair, and the members halted to listen to its varied notes.

The visitors were received at the church by the Rev. T. Jones, the rector of Llanbedr and Partricio, with great kindness and courtesy. Mr. Jones brought with him some MSS. and other books of the highest antiquarian interest. They formerly belonged to, and were written or collected by, that celebrated antiquary, Archdeacon Payne, who was rector of the parish at the end of the last and beginning of the present century. The only regret was that a day or two could not be spent there to properly examine them.

The visitors examined for themselves all the many objects of interest—the font, the rood loft, the several altar stones, and the grimi skeleton on the walls within the church; and without, the yew tree of many centuries, half dead, with a vigorous young mountain ash growing from its hollow centre, about six feet from the ground; and the shaft of the cross of the 15th century, on the north side of which a strong oak beam was cramped with iron to the upper step, the object of which was a complete puzzle. The following paper was then read:—

ON THE CHURCH OF PARTRICIO OR MERTHYR ISHEW, (OR ISHEW THE MARTYR).

By MR. F. R. KEMPSON, F.R.I.B.A.

SINCE the President asked me to describe the very interesting little church of Partrishaw to the Woolhope Club, I have consulted Jones's *History of Breconshire*, *The Cambrian Archaeologia*, *The Ecclesiologist*, *Liber Llandavensis*, and an interesting paper by Mr. John Davies, who is well known as an antiquary living in the neighbourhood. I have not been able to see Professor Westwood's paper published in the *Archæologia Cambrensis*, 1856, but in his *Lapidarium Walliæ*, 1876 to 1879, he refers to his former paper. Mr. Nash Stephenson wrote a short account some years ago of "Partricio," together with his history of Llanthony and other places of interest in the neighbourhood. These are the sources from which I have gleaned my information, but I have not even learned the name of the church.

Name.—It is commonly spelt "Partricio," but frequently "Partrishow" or "Patrishow," and sometimes "Partrishaw." The name, many people think, is a corruption of "Parthan-y-Ishow," the parcel or territory of "Ishow." *Liber Llandavensis* states, that Herwald or Herewald, Bishop of Llandaff at the time of the Conquest, consecrated the church as the church of "Methur Issur." St. Patrick has been named as the patron saint, I do not know on what authority, except that the church is known sometimes as the church of "St. Patricio" or "Partricio." Mr. Prek. Phillott has suggested to me that the name may be a corruption from "Peter Issui," a combination of the name of the patron saint of the parish and mother church of "Llambeder" or "Llanpeter," with that of "Issui" or "Ishaw," the hermit who became a martyr. I think, however, that such an authority as the *Liber Llandavensis* should be trusted until another can be found to be more worthy of credence.

The Well.—The well near the church is a holy well, dedicated to "St. Ishaw," and so called to this day.

Date.—Partrishaw has, I believe, always been described as a late church,* Bloxam says not earlier than the latter part of the 15th century, or reign of Henry VII.; but when speaking of a little chapel, or Bettws, in a mountain district, it is, I think, by no means safe to say that it must be a late one simply because no early architectural features have yet been acknowledged to exist in the main structure. Such features are, in little churches among the mountains, not infrequently conspicuous by their absence, or lie hid for centuries. Many such churches and chapels—built, I believe, at quite an early date—possess no mouldings or architectural features in the main structure from which the date can be

* Mr. Matthew Holbeche Bloxam contributed a short paper to the *Archæologia Cambrensis* of 1874.

definitely determined. Such early churches had mere slits in the walls for light, and these have been enlarged and made into windows. I see nothing here to prove that the nave, at least, is not Norman, with late windows introduced, and I am inclined to think it is so. The nave has very remarkably fine stone quoins; the one on the south-west angle batters inwards on both faces, and the wall has a fine "spur base." These features are quite characteristic of very early work. On the south side of the nave is a small square-headed window, set high to light the rood loft. The chamfered head of this window is rounded off into the jamb in an unusual manner, as is also the sill. It is worth examination. The jambs may have been those of an earlier window. In the west wall of the nave, to the north of the western chapel, is another square-headed labelled window, with jambs of a hollow section; this is a late window. There is an ugly square-headed window in the south wall of the nave to the west of the porch, the head of which should be examined; it looks as if it might have been the head of an early two-light window, from which the mullion and centre part has been cut away. The large three-light window on the south side of the nave is characteristic of the same period as the rood screen and loft, as is also the window with two lights in the east end of the chancel, which has carved terminations to the hood mould. There are two square-headed windows and a priest's door in the south wall of the chancel, and two brackets in the east wall, which are very small and low, for figures—they may be the corbels that carried a credence slab.

Porch.—The porch, which is on the south side of the nave, is very plain and rather large. There is a stoup by the door, the head of which seems to have been the head of a 13th century window. There are stone seats on either side; there is also a stone seat against the outside of the south wall of the nave, as well as another, at a higher level, against the south wall of the chancel.

Bell Cot.—The bell cot is a stone gable with a pent-house behind it; it is constructed for two bells, and is erected on the west gable of the nave.

Roofs.—The roof of the nave was probably reconstructed early in the 16th century; it is coved to an irregular curve with moulded ribs, and there have been bosses at the intersections. The cornice, which is very deep, is moulded with a number of roll mouldings, but projects very slightly. The section of the mouldings suggests that the introduction of carved enrichments was contemplated between the rolls. The chancel roof is flat and ugly; it is not improbable that it is fixed under the rafters of an earlier roof.

Entrance to Rood Loft.—The entrance to the rood loft is from the nave, on the north side, by stone stairs built in the wall. The little window which lights the stairs is perhaps formed out of the jambs of a 13th century window.

Rood Screen and Loft.—The rood screen and loft form the grandest feature in the church. It was erected probably quite early in the 16th century, and is certainly one of the finest specimens of the kind in the country. There are many fine oak screens in Breconshire and the adjoining counties, most of which have been mutilated or have fallen into decay, so that what remains of them is, as a rule, very fragmentary. Few of these screens were as beautiful as the one at Partrishaw, with its elaborate courses of carved foliage and ornament in its

moulded beams, of which there are two on the head of the screen itself, four on the lower beam of the rood loft, and two on the beam above the seventeen panels of open tracery, which are fixed between moulded mullions and form the front of the rood loft. The beam over these panels has large holes cut in its top at almost regular intervals, which indicate that there probably was another enrichment over it. Except the screen at Llangwm, near Usk, I have not seen anything to compare with the one at Partrishaw. Such skill is a lasting memento of the persevering skill and conscientious workmanship of our pious forefathers, who loved their Christian art so well as to labour to produce such work to the glory of God, and to the edification of worshippers at His altar. There was, no doubt, a cove with moulded ribs and carving between the head of the screen itself and the enriched beam under the rood loft, as at Llangwm, but more flat. The screen and rood loft at Partrishaw, when carefully repaired, will be very similar to the one at Llangwm.

Altars.—There are two original stone altars against the western face of the rood screen, near the north and south walls; some of the crosses may still be distinguished on them.

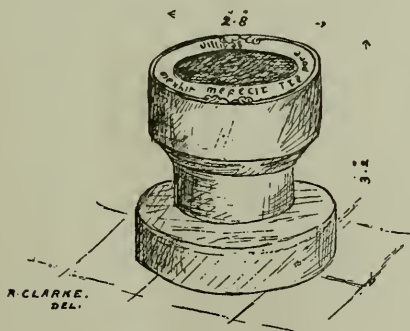
Font.—The curious font has been fully described by Professor Westwood. It is large and circular, with a narrowed circular base of rough masonry plastered over, which stands on a broader circular base, also of rough masonry, covered with thin slabs. Westwood describes this as a circular block. The upper part of the font measures 34 inches in its external diameter, the basin being 20 inches in diameter, with an excavated drain. The outside of the body of the font is quite plain, but upon the flat ridge of the top of the font is the inscription “Menhir me fecit i(n) te(m)pore genillin,” consisting of rudely formed letters of irregular size, being for the most part Anglo-Saxon minuscules. On either side are two holes for the staples for the cover, and also two semi-foliated ornaments, extending into a line which runs all round within the outer edge, and encloses the inscription. From Jones’ *Breconshire*, we learn that Cynhyllyn, or Genyllin Voel, the only son and heir of Rhys Goch, was lord of Ystradyw (the name of this district) as well as Prince of Powis, in the middle of the 11th century, and that the church itself was consecrated by Herewald, who was consecrated Bishop of Llandaff in 1056, under the name of Methur Issur, evidently corrupted from Merthyr Ishaw, or St. Ishaw the Martyr. Hence we learn that the font is coeval with the dedication of the church in the year 1060, and this is of considerable importance, as we have in this inscription round its top a very different style of letters either from the debased Roman capitals of Paulinus, and the other earlier stones, or the Hiberno-Saxon characters of the Llantwit and other similar monuments. The system of contracting the words, wherever possible, had also commenced. The foliated ornament on the rim has suggested a later date to the font, but Westwood has cited many instances of similar foliated ornamentation in the Anglo-Saxon MSS. at the end of the 10th and of the 11th centuries. The Rev. F. T. Havergal has kindly sent a note to state, that “the letters on the rim of the font are certainly such as were in general use in the 10th century”; a very important point, which has sometimes been called in question.

Patricio Church
Antient inscribed Font

Hereford
Woolhope. Trans
1885.



MENHIR ME FECIT I(N) TE(M)PORE GENILLIN





Commandments.—The Commandments, the Creed, Lord's Prayer, and Texts of Scripture, are painted in "black letter" on the walls of nave and chancel.

The Old Bible.—The "Black-lettered" Welsh Bible of the year 1620, printed by Ioan and Bill, London, is a rare edition, and is worth examination.

Chest.—There is a large singular old chest in the church, hewn out of a solid tree.

Mural Decoration.—On the west wall of the nave is painted the full-sized figure of a skeleton, in red, holding a dagger in the right hand, an hour-glass in the left, and scales suspended from the left arm.

The Western Chapel.—The western chapel, or reclusorium, is not, I think, coeval with the church, but built at a later date, *i.e.*, in the 13th century, with subsequent alterations. It is built against the west end of the church, without being bonded into it, its south wall being in line with the south wall of the nave. There is a stone altar at the east end of the chapel, the south end of which abuts against its south wall. Upon examination, it will be found that the altar slab most probably occupied another position before it was erected here. The base of the altar is of rough stone walling, plastered over. There is no indication of its having been added to at any time, but the top of the altar is formed by an altar slab which is not nearly as large as the present altar, the extra space being made out by a second stone on the south end, and a little plaster to make it good up to the south wall. The original altar slab has the usual five crosses upon it; it has also a sixth cross towards its north end, which has all the appearance of being original, but I have never met with a case like this before. When this altar was arranged as it now stands, the square opening over it was probably cut to bring the high altar of the church in view from the chapel. The head of this opening is rounded off into the jambs like the head of the window which lights the rood loft. In the east wall of the chapel, north of the altar, is a cinquefoil niche for a figure, and there are two steps in front of it, the lower step, which is in line with the altar, being about 14 inches high; this is a pretty clear indication that there was a foot pace all across the chapel in front both of the altar and the niche. The entrance to the chapel is by a plain pointed door in the south wall; there is a small window in the west end, now walled up for a modern fire-place and chimney. I wish to call particular attention to it, for it has been described as a 15th century window. I am clearly of opinion, however, that it is of 13th century date. In the south wall, east of the doorway, there is a very good 14th century single-light window well cusped, and there is a modern window west of the doorway. There is a good plain roof to this building, which is frequently called a Reclusorium; but it is, I think, a chapel, and I see nothing to justify its being called anything else. The position is certainly unusual, but it would have been difficult to add a chapel of such a size to the old church in any other position, for the ground on the north side of the nave has been excavated out of the side of the mountain, and deposited on the south side. A chapel could therefore not have been added towards the north or south without great trouble and expense; indeed, on the south side I think it would be hardly possible to make a secure foundation on the "made ground."

Churchyard Cross.—In the churchyard there is a part of the shaft of a cross, 6 feet 3 inches high with a fine base, resting on three steps; and in the churchyard wall may be seen a fragment of late tracery and an old apex stone. I believe we have at Partrishaw some remains of a Norman nave. We certainly have a Norman font which we know was in the church that was dedicated to St. Ishaw in 1060. Alterations were made, I think, in the 13th century, and it was then, I believe, that the chancel, the western chapel, and the south porch, were added, the single-light window to the east of the doorway of the western chapel being inserted in the 14th century; then, when the rood loft and screen were erected, which was probably soon after the year 1500, the east and south windows of chancel, the priest's door, the three-light window of nave, the doorway leading from porch to nave, and the stairs for the rood loft, were introduced. It was then also, in my opinion, that the present arrangement of the altar in the western chapel was effected, the opening cut over it, and the niche for the figure introduced.

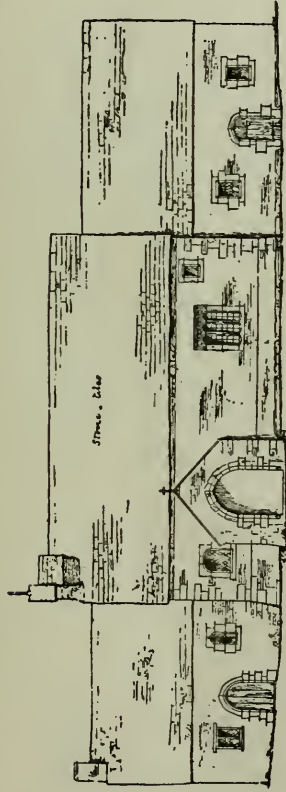
Repairs.—The repair of the church, which is so full of interest to archæologists, is, I believe, contemplated, and I understand that it is to receive such careful conservative treatment that we may rest content it will stand for many a long day to interest future generations, and show them what care has been bestowed upon it, not only by those who built and enriched it in mediæval times, but by those too, who, in this 19th century have, and will have, the responsibility of maintaining it with all its interesting details, telling its own history to them as it does to us.

The paper was well illustrated with drawings by Mr. Kempson, and a careful rubbing from the font by Mr. Robert Clarke.

On its conclusion, the Rev. Thomas Jones, the Rector of the parish, again expressed the pleasure he had in seeing the Club there, and thanked Mr. Kempson for his interesting and instructive paper.

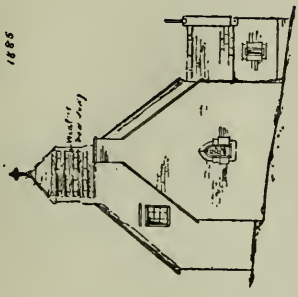
The Rev. John Davies, of Pandy, had written to express his great regret that he was unable to be present, and he very kindly sent the following paper, which was then read—

Patricio Church

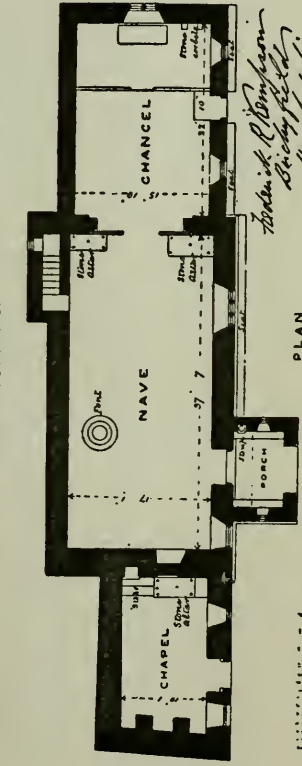


SOUTH ELEVATION

Hereford
Woolhope Trans.
1885



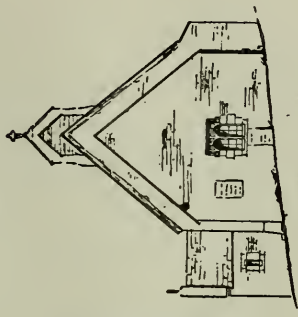
WEST ELEVATION



PLAN

John & R. Thompson
St. Mary's Field
H. Rogers & Co.

Scale of feet

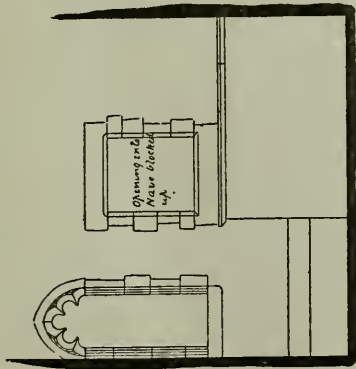


EAST ELEVATION

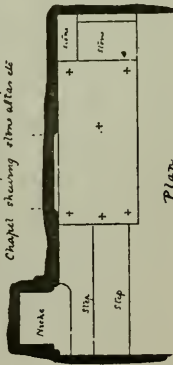


Patricio Church

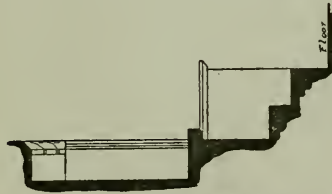
Hereford
Woolhope Trans:
1865



Elevation of east end of Chapel showing stone altar etc



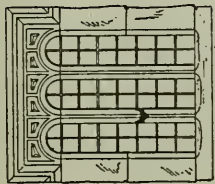
Plan



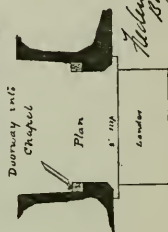
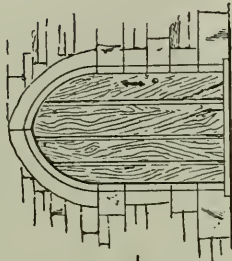
Section of East end of Chapel



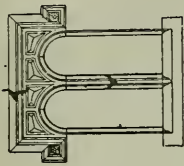
Plan and Elevation of Stone Altar



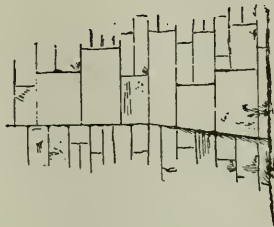
Three light windows in South wall of Nave



Doornway into Chapel



East window of Chancel



Sketch showing abutment of Chapel against Nave

Woolhope
Buckley Hill
H. P. M. L. H.



THE MURAL FIGURE AT THE WEST END OF PARTRICIO CHURCH.

By the Rev. JOHN DAVIES, of Pandy.

WHILE a mason was engaged lately in doing some repairs at the west end of the church, he discovered some red paint under a thickness of whitewash. He informed the vicar, the Rev. T. Jones, Llanbeder, of what he had seen, who ordered the wash to be scraped down. This having been done, the delineation on the wall of a human skeleton, full size, was brought to light, which had never before been seen by the oldest living inhabitant of the parish. While at Partricio the other day (April 25th, 1881,) at a funeral, the service being over, the vicar called my attention to the newly-discovered figure, and asked my opinion as to what it represented, and to what period it belonged. The skeleton is drawn on the wall at the west end of the church by an artistic hand. It holds in the right hand a dagger, with a spade hanging from the left arm, the left hand grasping something similar to a bowl. The object in the left hand cannot well be made out, as it has been a little mutilated in the clearing away of the wash that covered it. A lady who was present suggested that the figure was the representation of the murderer of St. Ishaw, who, according to tradition, was the patron saint of the church, and who is said to have been slain on the banks of St. Mary's Brook, in close proximity to the church. There is, perhaps, something to be said in favour of this suggestion, though history is itself against it, as it is extremely doubtful whether St. Ishaw was the real patron of the church. After consulting the history of mural paintings in ecclesiastical buildings, I have no doubt that the skeleton newly brought to light on the wall at the west end of Partricio church, was intended to be the representation of Death. The representation of Death among nations in their early stages, depends upon the ideas which they formed of the state of man after this life. In this aspect the study of the representation is very interesting. It is somewhat remarkable, that the Greeks, whose conceptions of an after-life were so gloomy, represented Death as a pleasing, gentle being—a beautiful youth—while Christians, whose religion teaches them to consider death as a release from bondage, a change from misery to happiness, give him the most repulsive, and even the most disgusting shapes. The Greeks, as a nation, worshipped the beautiful, and were in the habit of beautifying every object, down even to the commonest. This, perhaps, accounts for the beautiful representation they gave to Death, notwithstanding their gloomy conceptions of an after-life. The Christians, it may be, represented Death as a skeleton armed with weapons, because the call to repentance is a prominent feature in the Christian religion, and the notion of Death with terrors may have been supposed to give weight to the summons.

During the most flourishing period of the arts, Death was represented as a

friendly genius with an inverted torch, and holding a wreath in his hand, or as a sleeping child, winged, with an inverted torch resting on his wreath. According to an idea originating in the East, Death was ascribed to Jupiter, if it was occasioned by lightning; to the water nymphs, if the individual was drowned; to Aurora, if death happened in the morning; to Selene, if at night; &c. These representations were more adapted to relieve the minds of surviving friends than the pictures of horror drawn by subsequent poets and artists. The later Roman poets represented Death under horrible forms—gnashing his teeth, and marking his victims with nails, &c. The disgusting representations of Death, common among Christians, originated in the 14th century. From that period to the 17th century Death is often represented as a skeleton, sometimes with a scythe in his right hand, and sometimes with a dagger. This was the style in which Death was represented when Partricio Church was built. This mural figure confirms the opinion that I formed before as to the state of the present Church of Partricio. Similar representations are to be seen in other churches of the same period. In recent times, again, Death is represented as a beautiful youth. It is thus represented in the monument by Canova, which George IV. erected in honour of the Stuarts in St. Peter's at Rome.

Sir Geo. H. Cornwall, in thanking Mr. Davies for his paper, thought that the figure of the skeleton was often represented on church walls. At Moccas church there was one, done in black outlines, beneath the whitewash, but the architect, Mr. Scott, Sir Gilbert Scott's son, did not think it worth preserving. There were also skeletons at St. Margaret's, and some other churches in the district. He thought also that there were many remains of rood lofts left in the churches of this district, such as are shown by the transverse oak beams and the stone steps in the wall now leading up to nothing.

It was also stated that the drawing of a skeleton, and some other fresco paintings had recently been discovered beneath the whitewash in the parish church of Clodock.

The time had now arrived to continue the walk. The gravestones in the little churchyard did not show the interest they might have done, for the sandstone of the district is evidently very perishable, and only a single stone was observed to bear the date of the last century. "Forward" was heard, and the visitors filed down the church path to the Tabernacle footbridge over this tempting river, and the ascent of Twyn-y-Gaer, or the hill of the fortress or encampment, was commenced.

In the meadow at the foot of the Ffwddog, on Herefordshire soil, the globe flower *Trollius europæus*, grows freely, but it was only as yet beginning to throw up its flower stems. The paths were lined with the elegant little flower, *Oxalis acetosella*, Wood sorrel, or Cuckoo bread. Its beautiful white drooping flowers, with the petals so delicately pencilled with faint lilac streaks, and its trefoil leaves so often red underneath themselves, and reflected on the red stems, are very graceful and interesting. The juice of this plant is gratefully acid. It contains the

oxalic acid, so often used in a concentrated form under the name of "Essential Salts of Lemon," to take iron-mould stains out of linen. So save your money in future, O happy inhabitants of the lovely valley of Grwyney! Get a handful of leaves of the wood-sorrel growing at your doors, crush them with a rolling-pin, and the acid pulp will remove your iron-moulds. The pretty plant, too, has another use that deserves to be known. If boiling water is poured upon a handful of bruised wood-sorrel leaves, and allowed to get cold, it will form a grateful and pleasant drink to allay the thirst of fever.

Another plant, not very common in Herefordshire, was very abundant by the path-sides of the Ffwddog, the Tuberous moscatel, *Adoxa moschatellina*; and many of the plants were attacked with the microscopic fungus, *Puccinia adoxæ*, so curious under the microscope. It was interesting to notice how sensible the plants seemed to the poison of the fungus, how distorted and how swollen they grew in the vigorous efforts to overcome the parasite.

In one spot of this valley two very rare ferns grow, *Lastrea thelypteris* and *Osmunda regalis*. It is the only Herefordshire locality for *Thelypteris*, and there is only one other, near Kington, for the *Osmunda*.

The *Geranium sylvaticum* also grows here, and in one small meadow near the head of the valley, *Gymnadenia albida* grows pretty freely.

The scenery of the ascent became more and more lovely as every turn was made in the path. It had become misty, with falling drops of rain; and that had advantages, although sunshine would have been preferred. The district, too, has points in its history of high local interest. It was formerly part of the great Forest of Moel, or Moyle, the liberties of which were granted by Jasper, Duke of Bedford, as Lord of Abergavenny, to the inhabitants of Llandeilo and Llanwenarth. In the times of feudal barbarism this vale witnessed the massacre of Richard, Earl of Clare, when passing from his castle of Usk to his territories in Breconshire. Giraldus Cambrensis gives this account of it. Brien Fitz Count,* lord of Abergavenny, escorted the Earl of Clare to the skirts of the forest, and wished to continue, but the Earl imprudently dismissed his guard in spite of the remonstrances of his friendly conductor. He continued his route with his usual attendants, preceded by two minstrels, who piped and sang alternately as if to throw all prudence at defiance. In a narrow pass, Jowerth, of Caerleon, and a numerous body of Welshmen, suddenly rushed from the thickets and slew the Earl of Clare and all his suite.

Nearly at the top of the hill, within some 300 yards of the camp, was a fine spring of water; and two other springs, it is said, are within enclosures close at hand. In the watery waste beneath the spring the little Ivy-leaved crowfoot, *Ranunculus hederaceus*, was growing freely. It is rare on lower ground, and the travellers, getting weary and short of breath, were glad of its presence to comment upon it and breathe awhile.

The Gaer Camp forms the summit of the Ffwddog on its southern end. It stands out alone, surrounded by lower ground, and commanding two reaches of

* He was also called Brian of Wallingford and Brien de Insula.—ED.

the Grwyney Valley towards the source, and towards Crickhowell, and also the Honddu Valley towards Llanthony, thus opening out the Black Mountains to their very centre—in short, it may be said of its situation with Thomson—

Where the broken landscape, by degrees
Ascending, roughens into rigid hills;
O'er which, the Cambrian Mountains, like fair clouds
That skirt the blue horizon, dusky rise.

—*Spring.*

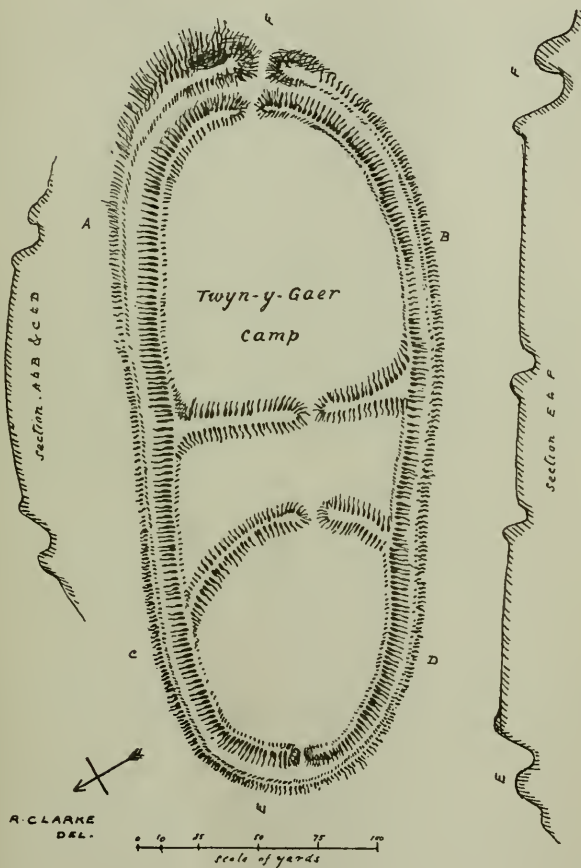
Here a whole string of well-known names could be given, but sooth to say a strong wind and heavy rain set in, and the mountainous outline could only be seen in a deep mist.

The Gaer Camp, however, was closely inspected. It is a very fine example of a strongly fortified British camp. It is of a long oval shape divided into three compartments, and altogether inclosing an area of four acres and a half. The main entrance is approached by a sunken road from the west, it is on the southern side, in the direction of the springs of water on the hill. It is strongly protected by a double embankment and a twisting entrance. It is remarkable that here, as at the Gaer ditches, above Chapel Lawn, four miles behind Coxwall Knoll, where Caractacus was taken, the entrenchments are equally steep and bold, and at the entrance they are made more wide, and hollowed out so as to receive defenders who would protect the entrance at close quarters; "bow-and-arrow pits" they might be called, instead of rifle pits. The general character of both these encampments is closely similar in their size, their shape, and their defensive arrangements. The lower camp here is the largest of the three, and one of its inner ditches has been hollowed out for water. The only springs are on the shoulder of the mountain, some 260 or 300 yards distant. This Gaer Camp forms one of a line of British encampments in direct signal communication with Trewyn Camp to the east, and with the Camp above Crickhowell to the west; and the history of them all offers a fine scope for imaginative minds, for in themselves they are prehistoric. Another point of modern import to be noticed is that the division between the counties of Herefordshire and Monmouthshire runs through the centre of the camp longitudinally.

The Rev. H. B. D. Marshall, who had brought his barometer, made the height of the shoulder of the Brynarw hill to be 684 feet above sea level; at Partricio Church, the height was 886 feet; and the height of the cairn in the upper portion of the Gaer Camp was 1,199 feet above sea level.

The wind got stronger and stronger, and the rain became ice-like, so there was nothing for it but to descend at once by the Rhiw-y-meirch, "the steep way for the horses," which was undoubtedly the original approach to the camp from the east. The Pont Rhys Powell was crossed; some fine specimens of *Lycopodium celatum*, the rough Puffball, were gathered in the meadow beyond. The Croes Llwyd was passed, and the hospitable attractions of Trewyn were resisted, in favour of the comfortable inn at Pandy, where clothes could be dried, and the outer weather forgotten. It rained more and more, and it became cold, and more cold, until Hood's lines on a cold ungenial spring came to mind:—

Hereford
Woolhope: Trans
1885





"Let others eulogise her floral shows,
 From me they cannot win a stanza,
 I know her blooms are in full blow, and so's
 The influenza.

Her cowslip stocks and lilies of the vale,
 Her honey blossoms that you hear the bees at,
 Her pansies, daffodils, and primrose pale
 Are the things I sneeze at."

A good wash and a good dinner wonderfully changed the aspect of affairs. After the transaction of the business of the Club and the proposal of several new members, a paper was read on "The Birds of Herefordshire," in continuation. The President read a very interesting letter from Mr. E. W. Colt-Williams, speaking pleasantly of a nest of the forked-tailed kite, and a double family of young ravens on the immediate border of the county. He then gave the following extracts from the Churchwardens' accounts at Stretton Grandison:—

	s.	d.
"1725—Paid twenty crows.....		10
Thirteen hedgehogs	3	3
One fitcher (polecat).....		2
1741—Paid for crows, sparrows, kites and chatterpies (magpies)	1	7

Inasmuch as these sums were paid out of the Church rate, the ratepayers presumably thought they had a right to have obnoxious *feræ naturæ* destroyed at the common expense. From the fact that threepence was paid for each dead hedgehog, and twopence only for a polecat, may we suppose that in 1725 polecats were more common than hedgehogs, or are we to think that the supposed crime of sucking Herefordshire cows was considered more heinous than the certainty of destruction among Herefordshire rabbits and chickens?"

So has passed the day into history.

REMARKS BY MR. JAMES DAVIES,
 OF HEREFORD,

Secretary for Herefordshire of the Cambrian Archaeological Society.

THE statement of the dedication of the Church to St. Ishaw, is somewhat at variance with the name of the Patron Saint as given in Ecton's *Thesaurus*; indeed, if the principle of nomenclature be followed, the name of Patricio or Patrick would seem more reconcilable than that of St. Ishaw, which, according to the usual Welsh appellative, would have handed down the name as Llanishaw, or Capel Ishaw.

Near the Church is an ancient well, known as "Ffynnon Ishaw," or the well of St. Ishaw, who, according to local tradition, was martyred on the banks of the little brook which flows into the river Grwynne Fawr. This brook is called "Nant Mair," or "St. Mary's Brook"; another incident which connects this locality with early Ecclesiastical record.

From an analysis of the nomenclature, the reasonable conclusion to be drawn is, that there was in early British times a Church dedicated to St. Patrick, and that upon the rebuilding of the edifice in the 11th century in honour of St. Ishaw, the Church consecrated by Bishop Herewald became the Church of St. Patrick and Ishaw, as it was very usual to dedicate churches to several saints. There are churches in Wales under the name of "Llantrissant," or "The Church of the three Saints," from this circumstance. Indeed, Hereford Cathedral is itself an illustration, being dedicated to St. Mary and St. Ethelbert, the name of the latter saint having, no doubt, been added upon the rebuilding by Offa, in expiation of the murder of Ethelbert.

In the *Thesaurus Rerum Ecclesiasticarum* of John Ecton, revised by Browne Willis, published in 1754, Patricio appears as a Chapel attached to the Rectory of Llanbedr, as its Mother Church. The entry is as follows:—"Llanbedr R. (cum Patriceo Capella. St. Patricius) St. Peter, Duke of Beaufort, Patron"; i.e., the Rectory of Llanbedr with the Chapel of St. Patricius, under the patronage of the Duke of Beaufort. The Living was valued at £16 17s. 6d. in the King's books, with yearly tenths of £1 13s. 2d.

It may be observed that, in the Catalogue of Cambro-British Saints, there are two persons named Patrick. The first, who lived in the 5th century, is recorded in Hughes' *Hore Britannicæ* as having been born at Llŵchwr in Carmarthenshire, and to have been Principal of the College of Ilutut, or Iltyd, at Llantwit Major, in Glamorgan. He was a companion of Germanus, Bishop of Auxerre, who came over to assist in the suppression of Pelagianism, which was then spreading throughout the ancient British Church. He ultimately removed to Ireland, to assist in the spread of Christianity in that island, and became the Patron Saint of Ireland.

The second Patrick lived about the latter end of the 7th century, and is mentioned in *The Pedigrees of the Saints* as the son of Alfred, the son of Gronwy, of Wareddawg, in Arvon, or Carnarvonshire.

It is probable, that the Patrick or Patricius to whom this Church was dedicated, was the Irish Patrick, from his connection with South Wales, and this circumstance marks the great antiquity of the spot in its dedication to Christian worship.

We must not forget that the early Britons possessed a complete Ecclesiastical system for centuries anterior to the mission of the younger Augustine and Theodore of Tarsus to the Anglo-Saxon people, and that this district formed a portion of that included in the Archiepiscopal Province of Caerleon upon Usk, extending over the ancient Roman division of Britannia Secunda, i.e., westward of the rivers Severn and Dee, and comprising within its jurisdiction the Bishopric of Hereford, Llandaff, St. David, Llanbadarn, St. Asaph, Bangor, and probably Llandewi Brevi and Margam, both of which were Collegiate Churches of considerable note.

There are two other Churches under the invocation of St. Patrick, in Wales, viz. :-Pencarreg, in Carmarthenshire, and Llanbadrig, in the Isle of Anglesea.

This Church of Patricio, as has been already observed, lies upon the route of

Archbishop Baldwin on his itinerary through Wales to preach the crusades, in A.D. 1188. Commencing at Hereford, the Archbishop proceeded, via Kington, to New Radnor, thence to Old Radnor, Hay, and Glasbury, to Llanddew, near Brecon, where resided Giraldus de Barri, Archdeacon of Brecon, who accompanied him on his tour through the Principality. From Llanddew they proceeded by Talgarth to Llanthony, and thence, crossing the mountain at Coed Grwyney, passed by Patricio Church through the Grwynne Fawr valley to Abergavenny.

Sir Richard Colt Hoare in his annotations on the fourth chapter of the *Itinerary of Archbishop Baldwin*, describes this road as emerging from the deep recess of Coed Grono or Cwm Gronwy (the vale of the river Gronwy), and crossing the river at a place called Pont Escob, or the Bishop's Bridge (probably so called from the circumstance of its having been passed by the Archbishop and his suite), then continued its course until it joined the Hereford Road about two miles from Abergavenny. The author adds, that this formidable defile is at least nine miles in length.

ACONBURY CAMP, PRIORY, AND CHURCH.

JUNE 18TH, 1885.

When the sun brightly shines in the sky overhead,
 The soft emerald turf of the meads *we* will tread ;
 Where the cowslip erects its pale fairy fleck'd bells,
 While beside it the orchis in calm beauty dwells ;
 Where the crowfoot displays its bright beakers of gold,
 And the daisies their purple-tipp'd petals unfold.

JOHN BRADFORD.

NONE can love better the rural scenes visited by the Club to-day than the rural poet who wrote these lines, and knows the district so well. A botanist might think his cowslip late, or his orchis early, for science is exacting, but the charming sentiment of mid-June hangs in the measured lines. The foliage then has all its freshness ; and the hawthorn blossom has not quite left the luxuriant hedges, and the sprays of the wild rose are coming out in perfection. The scythe has not yet invaded the country meadows, and every field is a flower garden of varied richness and beauty. The June meeting of the Club this year was on a beautiful day of sunshine and clouds, with a freshness in the air that rendered it very enjoyable. The expedition was made in carriages, and very pleasant it was to walk up the steeper parts of Callow Hill and botanise its banks. The Germander speedwell, *Veronica chamædrys*, which only opens its blossoms freely in fine weather, showed fully the white centre of its bright blue flowers, "the celestial bird's eye blossoms," as Phillips happily terms them. Then there was the countryman's clock, *Tragopogon pratensis*, goat's beard, or "go-to-bed-at-noon," as he terms it. He goes to his dinner as it closes its petals—

Broad o'er her imbricated cup,
 The goatsbeard spreads its golden rays ;
 But shuts its cautious petals up,
 Retreating from the noon-tide blaze.

And especially pretty too were the clusters of *Polygala vulgaris*, in its varieties of blue and pink and white. It is as pretty as it is frequent on dry banks and commons, and gets its English name of "Milkwort" from the belief that it increases the flow of milk in cows and other animals. This plant might be grown with great advantage on rock work, and with excellent effect too.

The carriages were left at the footpath leading up to the camp ; and in the woods by its side, too shady for grass to grow, several specimens of the bird's nest orchis, *Neottia nidus avis*, were quickly found. It is a curious plant, without leaves, but with its stems some eight or ten inches high, crowded with light-brown flowers. It takes its name from its fleshy roots clustering together in rude resemblance to a bird's nest, and has the advantage of rarity to increase its interest. The butterfly orchis, *Habenaria bifolia*, was there also, whose greenish-white blossoms are so sweetly scented at night. The spotted orchis (*O. maculata*)

grew there in abundance, and so also the curious tway-blade, some beautiful vetches, the woodruff, and many other wild flowers. In remembrance of youthful days one gentleman set to work to dig up the tubers of the common Earth nut, *Bunium flexuosum*, which were very fine there. Pigs are very fond of them; and it is said to be in searching for these nuts by their scent that they root up the grass so freely, and have to be "ringed" to prevent them from doing so.

The outer camp was soon reached, and, passing through its rush-grown damp woods, the entrenchments of the camp proper, which are of a much more decided character, were crossed. It required some energy to get through the masses of underwood to examine the agger properly, and truth to say very few did it. They preferred admiring the splendid views between the trees of the distant hills, or gathering some of the many flowers around them, the masses of deep red Campion, *Lychnis diurna*; the splendid tufts of *Aira cœspitosa*, Hassocks, or Rough caps, as country people call them; or the fine growth of Wood Spurge, *Euphorbia amygdaloides*, with whose acrid milky juice one or two "bit their tongues." The botanists who did go to the northern agger were charmed with the masses of the beautiful Wood vetch, *Vicia sylvatica*, with its elegant thickly clustered spikes of faint purplish white, with darker veins. Scott says of it—

And where profuse the Wood vetch clings
Round ash and elm in verdant rings,
Its pale and azure-pencilled flower
Should canopy Titania's bower.

The wild Raspberry, *Rubus idæus*, was very luxuriant in both the inner and outer camp; and a ripe Strawberry, *Fragaria vesca*, was presented to the President, of a size almost worthy of a garden. A tall Hawthorn bush was a picture from its masses of beautiful blossom; the Moneywort, the Wood rushes, and other wild flowers grow in abundance.

Long work it were,
Here to account the endlesse progeny
Of all the Weeds that bud, a blossom there;
But so much as doth need must needs be counted here.

SPENSER.

The trysting point was the tall pole of the Ordnance Survey, raised on the summit of the camp; and after examining the bold entrenchment, at the eastern end of the camp nearly straight, here at half-past twelve the members clustered around to listen to the following paper:—

ACONBURY CAMP.

Aconbury, or Acornbury as it is spelt in old maps and deeds, by facile philology means the Acorn Camp, an entrenched hill camp surrounded by oak forests, a very natural description of this camp. It occupies the summit of the hill, and its height above sea level Mr. Isbell found to be 916 feet—*Woolhope Transactions*, 1871. The camp is very large. Mr. Robert Clarke has been kind enough to measure it roughly for the Club. He reports it as about 660 yards long, with a width varying from 130 to 220 yards broad—a long oval containing about

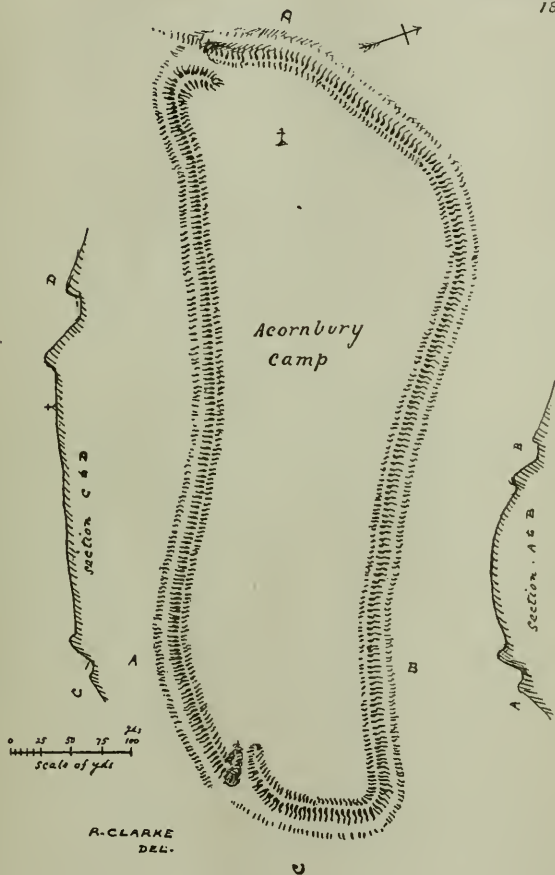
20 acres in its area—and in addition to the Camp proper, a still larger surface of the hill is entrenched around, and was probably stockaded for cattle.

Around the embankments stones are observed, and on the north side there is a complete wall for a few feet. It is quite modern in construction, and looks very much as if it had formed part of a shed for the protection of the animals grazing on the hill before it was turned into the wood it is now.

The commanding position of Aconbury Camp in the very centre of the county must ever have rendered it a place of importance in troublous times; not only from its own strength and from the fact of its overhanging the central roads through the county, but as a post of observation and as a signal station. The prospect from it is very extensive. It ranges from the Cleve Hills in Shropshire, and the High Vinnals near Ludlow, on the north, to the Monmouthshire Hills, headed by the Sugar Loaf Mountain to the south; and from the Malvern Hills on the east to the Hatterel Hills and Black Mountains on the west. It overlooks the broad valley of the Wye, with the city of Hereford in its midst; and in times of warfare would be within easy reach by private messenger or signal communication of many of the leading entrenchments of the county, as Dinedor, Caplar, Dormington, Sutton Walls, Credenhill, not to mention more distant camps, and the many smaller British and Roman stations scattered through the district.

The early prehistoric history of this camp can only be gleaned from the configuration of the entrenchments still remaining so visible on its surface; and these, as if to leave the imagination at more perfect liberty, are rounded on the western side, with an approach to a rectangular shape towards the eastern end. An observer, therefore, with British predilections may well consider it as a British camp, and picture to himself its occupation by Cynobeline, his sons Caractacus and Togodumnus, and their successors, who so bravely and persistently withstood the Legions of Rome. Should the student of history have mental proclivities towards the Roman conquerors of Britain, he may regard it as a summer camp of Ostorius Scapula, (from whom Dinedor takes the traditional name of Oyster Hill,) of Didius Gallus, or of Julius Fontanus. Again a picture might be drawn of the occupation of Aconbury at a later period by that fierce Mercian Chieftain, Crida, who from his principal camp at Credenhill burnt and destroyed all the Roman camps and stations in this and the neighbouring counties. Or yet, once again, he might well imagine the occupation of this hill by Elyston Glodrydd, the last of the Royal Tribes of Wales, who presided over this part of the frontier of Ereinwg, the fertile land, or the district between the Severn and the Wye. He is said to have derived his appellation from his godfather Athelstan, and has given his name to Ayleston, Athelstone, or Addlestone Wood in Little Birch, a mile and a half to the south of us; as well as to Aylestone Hill at Hereford. Indeed it is highly probable that all these suppositions would be right, for a large camp possessing such advantages as this one does, would be seized naturally enough by any ruling power that required it for temporary use. There is no proof of its ever having been fought for or even held for any time on the defensive; and indeed there are no traces to be found either in the local names of adjoining places, or by the existence of tumuli, of any serious warfare or bloodshed having taken place here.

Hereford.
Woolhope Trans
1885.





Its fortifications were made rather as a protection against a sudden attack, than for prolonged defence. In times of comparative peace Britons might live here during the summer months, supplying themselves with water from the springs below, and driving in their cattle by night ; or the Romans might equally use it as a summer camp and a signal station.

Many excellent springs of water issue from the northern slopes of Aconbury Hill, such as the spring of St. Ann, and the Lady Well, and others unnamed which unite to form the "Wall Brook," which flows past the Priory, and formerly supplied the fish ponds formerly surrounding the Church Nunnery and buildings on three sides. The name of this brook is believed to designate the Roman occupation of the camp, for "wall" is believed to be derived from "Vallum." There are many instances of its use in Herefordshire, as "Sutton Walls," "Wall Hills," &c., &c. The camp itself, and particularly the outer camp, is very wet and boggy, so that water must be close at hand.

Aconbury Camp first appears in real history as a beacon station. Amongst the Scudamore MSS. is one document, endorsed, "Things belonging to Aconbury Beacon in Kydley's hands, 1625" ; and within, "Things belonging to the beacon appointed by Sir James Scudamor, Knight, to the custody of me, Richard Kidley.

ffirst, one Iron Potte
Itm, Piche and Rosen
Itm, Tallowe and Towe.

It appears from sundry accounts in the Scudamore MSS. that the "beacon money" was collected by assessment, and brought into the muster-master's account, with the repairing of bridges and billeting of soldiers. (Webb's *Memoirals of the Civil War in Herefordshire*, p. 34.)

There is no record of this beacon having been fired, as was the case with the Caermarthenshire and Pembrokeshire Beacons, in September, 1643, when the rebels threatened to besiege Tenby, and those in Anglesey, when the Island rose for the King in 1648.

In the civil wars Aconbury Camp was occupied for short periods on two occasions at least. In the autumn of 1642, when Lord Stamford held Hereford on behalf of the Parliament, Lord Herbert, who was raising forces for the King, pushed his way from Raglan Castle into Herefordshire, foraging in all directions, as far as Aconbury Camp, from whence he looked down upon his enemies. He quickly retired, however, probably as soon as his presence was detected from Hereford.

A second time the camp was held for military purposes by Leslie, the Earl of Leven, who had brought down his Scotch troops to besiege Hereford, in August, 1645, and soon took possession of Dinedor Camp and Aconbury, and strengthened their entrenchments. The Earl began the siege of Hereford with great energy, and kept his men fully occupied with the spade, as the entrenchments of the "Scottish row ditch," 800 yards long, on the south side of the city, still bear witness. He was a strict disciplinarian, and forbade all foraging on pain of death ; but he could get no pay for his men, and he was compelled to separate his troops the better to maintain

them. "They were left to their own shift," says a military writer. "and constrained to eat fruit and the cornes growing upon their ground—apples, pease, and green wheat." The Earl of Leven sent a special complaint of the straits he was put to to the House of Lords, dated August 12, 1645, and said, "The common soldiers began to be sicke with eating of fruite"; as well they might be if they ate cider apples in August.

The general himself took up his quarters in Aconbury Camp. His own tent was on the very summit of the hill. It commanded the road from Monmouth to Hereford, by which the king's forces might be expected if they came to relieve the city. It looked down also upon the Mynde, the fortified mansion of that noted loyalist Sir Robert Pye, and enabled that also to be closely watched. The royal garrison had retired from the Mynde on the approach of the Earl of Leven, and had removed the military stores, but any activity displayed here would be one of the first signs of the king's approach, and an advantageous opportunity might occur for attacking them. Meantime foraging went on in the valley of the Worm, all round the Mynde. Cattle and sheep were seized and slaughtered at Wormilow Tump for the Earl's forces. "Herefordshire felt every day more and more," says Mr. Webb, "how disastrous was the presence of ill-fed, unpaid, unrestrained soldiers in actual warfare. Three years before, as we have seen, the poor farmers in this district had been harassed by troops sent from the Monmouthshire border, who carried off all their cattle and stores, and at that time sent an urgent complaint to the King and Parliament against that dangerous papist, the son of Lord Herbert" (p. 194). The graphic description of the terrible evils of actual warfare is well given in Mr. Webb's valuable work, which should be read by all interested in the county.

The Earl of Leven did not remain many days at Aconbury. The news arrived suddenly that the King and his forces were close at hand. A panic seized his troops, and the same night, in the words of the brave Governor, Barnabas Scudamore, "the Scottish mist began to disperse, and the next morning vanished out of sight." So ended the remarkable siege of Hereford.

Peace has reigned since this period on Aconbury Hill, and it has been devoted to agricultural purposes, in one way or other—of late years the hill has all been planted with timber, and in the recesses of its northern steep sides the fox and the badger find a home.

In 1884, the Royal Engineers took possession of the camp. They invaded it, as their predecessors had done, to take advantage of its central commanding position, but unlike them, for the peaceful object of the Ordnance Survey. To-day, the Woolhope Naturalist Field Club comes to enjoy the extensive prospect from its summit; to search, amidst its luxuriant vegetation, for the many wild flowers that grow here, and thus to meditate on its history.

The Rev. J. Tedman, in thanking Dr. Bull for his excellent paper, would venture to give a few further particulars respecting the neighbourhood which might, perhaps, prove interesting. "The hill, it will be observed, follows the general law of hills in the district, having on one side, the north-west, a short and

steep ascent ; on the other, the south-east, a long and gentle slope. It is situated chiefly in the four parishes of Aconbury, Much Birch, Little Birch, and Much Dewchurch. The wood which now crowns the summit and is obstructive to the view is of modern origin, having been planted about 50 years ago by the owners—the Governors of Guy's Hospital—on land formerly occupied as a farm ; the inner camp, however, having been surrounded by a wall for a rabbit warren,—a fact still indicated by the name of a farm close at hand called “The Warren.” On the south slope of the hill in past time there was an extensive common, on which were built many cottages, with large gardens enclosed from the waste. The common itself was enclosed by Act of Parliament in the early part of the present century. King's Thorn Common, on the west slope of the hill, still remains, and is celebrated in the annals of the neighbourhood as a meeting place where the inhabitants have listened at different times to the teachers of the Primitive Methodists and of the Salvation Army, to the delegates of the Labourers' Union, and to candidates for the House of Commons. The cottagers of Aconbury Hill are a thrifty race, and from their well-cultivated gardens a good store of flowers, vegetables, strawberries, and other fruits are produced for the Hereford market. The women and children collect in their season mosses and wild flowers for decoration, elderberries and cowslips for wine, nuts, chestnuts, &c., selling them in Hereford market, thus turning an honest penny to supply household wants. Of the surplus population, not a few of the “young men” enter the militia, while the “maidens” find in household service the means of earning an honest livelihood. The people of Aconbury Hill may not have much book learning, but I have never met with any labouring people who have learned better than they have how to earn a frugal living by honest thrifty labour.”

The Rev. R. A. Chudleigh then referred to the conjecture that hill-top entrenchments were constructed for purposes not exclusively military, but were meant to serve also as “agricultural camps,” or places of security to which tribes that existed in a state of border warfare could betake themselves and their cattle, for safety during the night, against the depredations of their neighbours. He further remarked that whereas many of the theories concerning fortresses of the Aconbury type rest on little else than their own inherent probability, it can be said in favour of the idea that they were agricultural camps, that just such camps exist for just such purposes in some parts of the world at the present day. He told how some New Zealand colonists on being shown an ancient earthwork in the south of England at once recognised and indicated its likeness to a Maori pah, with its winding slope leading up from the pasture below to the stockaded enclosure above, which afforded nightly protection to the tribes and their cattle. The introduction of fire-arms and other causes are now rendering these elevated paks less desirable than heretofore for either peace or war, and the Maories are selecting less elevated positions. Similar changes have operated elsewhere in the same direction, so that Aconbury itself is no longer the populous and important place that it probably used to be. Still, it can scarcely be doubted that these positions of natural strength would in time of war be of great importance ; for no general could afford to leave them unoccupied, or risk their falling into the hands of the enemy.

Mr. W. E. Lewis then said that it was quite correct that the camp was a grazing farm and then a rabbit warren, before it was planted for timber by the Governors of Guy's Hospital. He believed the large holes in the ground in several parts of the camp were stone quarries, from which the stone was procured to build the walls made to inclose the rabbits; and he thought there was no doubt that the portions of walls still remaining were built for this purpose.

After some further general conversation, Dr. J. H. Wood exhibited some rare orchidaceous plants that he had gathered in the parish of Canon Frome. The most rare was the *Cephalanthera grandiflora*, the large White Flowered Helleborine, which he found growing under beech trees, as it is apt to do. Only one other locality is known in the county for this plant. Dr. Wood brought also *Orchis pyramidalis*, the Pyramidal orchis, and the Bee orchis, both plants from a limestone soil. Of much greater interest, however, for the day and for the locality, the President found three fine specimens of the same Bee orchis, *Ophrys apifera*, on one of the cornstone slopes of Aconbury Hill. The Bee orchis had not been noted before as occurring in the central botanical district of the county, so the "find" was good. The extraordinary resemblance of the broad lower petal of this flower to a humble-bee, which seems to be sucking the nectar from the centre of the blossom, always attracts general admiration. It would seem as if the bee was caught and held there, and it has given rise to the following stanza:—

Perhaps his fragrant load may bind
His limbs; we'll set the captive free;
I sought the living bee to find,
And found the picture of a bee.

The President also brought some very good specimens of the Fragrant or Aromatic orchis, *Gymnadenia conopsea*, which he had gathered in the meadows below. It is a very pretty flower and beautifully scented; nor is it very common.

The descent of the hill on its northern side was more steep than the ascent from the south, but a zigzag made it easy, and brought the explorers into the excellent path from the high ground of Birch into the Wall Brook Valley, which presents, as it emerges from the wood, such a picturesque view of the Church and the Priory. The President made a slight divergence here to gather another limestone plant, *Aquilegia vulgaris*, the columbine, so long a favourite with cottagers, and which has of late, in the many elegant forms it has been made to assume, become so fashionable and attractive in the London horticultural shows. His quick eyes also detected many plants of the broad-leaved Helleborine, *Epipactis latifolia*, not yet in flower.

A visit was paid to St. Ann's Well, and its pure waters were very refreshing. Its legend is lost, as is many another, from the much more frequent changes of abode by the agricultural labourers in these days. Further up in the same field is the Lady Well; and here, said Mr. Lewis, a lady is said to have committed suicide. Nobody goes for its waters as they do to St. Ann's, but happily the place seems not to be haunted. The water is taken from St. Ann's Well to the Court, and on the way there, St. Ann's Pool is passed.

The neighbourhood of the ruins, a famous preserve of Religious Houses, is always searched with great interest by botanists, since it frequently yields plants formerly cultivated for their virtues, and which struggled through neglect and have become naturalised. Dame Isabella Gardiner, who grew her saffron at Blackmarston to flavour her cakes and sweetmeats, would not fail to grow also medical herbs for the use of the house—one plant grows wild there in abundance which was formerly held in much esteem, *Sambucus ebulus*, dwarf elder, Danewort, deathwort, or Dane blood. The Welsh call it, *Llysan gwaed gwyr*, or the plant of the blood of man. It is said only to grow where blood has been shed, and Aubrey thinks it got its name Danewort from growing abundantly in the neighbourhood of Slaughterford, Wilts, where there was once a stout battle fought with the Danes. The superstition holds chiefly in connection with the Danes, where they fought and bled; there the dwarf elder, or Danewort, will spring up and flourish. Parkinson however thinks it got the name Danewort, because it would cause a flux named "the Danes" at that time, or the "Gripes" as would now be said, and Parkinson is probably right. The worthy prioress knew its virtues; a dram and a half of the root is a strong cathartic; the leaves boiled in oil yield a powerful liniment; and by gentle distillation a valuable lotion is obtained. The berries, too, give out a violet colour, and were formerly used to dye a blue colour. The fresh leaves have a powerful odour, neither cows, horses, sheep, goats, nor swine will eat them; and, when scattered over granaries or placed in mole runs, their scent will drive away the mice and the moles. One Martin Blockwitz composed a volume in its praise, entitled "*Anatomia Sambuci*." However, the black elder has of late years usurped its place; though the plant will yield an elder-flower water of equal efficiency—Mother Isabella Gardiner doubtless planted it here.

Fuller's teasel, *Dipsacus sylvestris*, was growing luxuriantly also, and docks of such size and abundance as would supply leaves for all the butter made in the county; but there were not any other plants observed that could be referred to the care of the successive mother prioresses.

At Aconbury Court the Club was received with much kindness by Mr. and Mrs. Flower, who did all they could to facilitate the inquiries of the members, and were themselves very much interested in them. The church was carefully and minutely inspected. The enthusiasm of two gentlemen engaged in taking rubbings of some richly-carved tombstones was delightful to witness.

In the shade of the ancient yew tree, Dr. Bull read a paper on "Fragments of the History of Aconbury Priory and Church." It was commented on by the Rev. F. T. Havergal, and admirably illustrated by rubbings from the stones, made by Mr. Robert Clarke. The Rev. H. P. Marriott Dodington, the incumbent of the parish, brought a print of the church and priory, which appeared in the *Gentleman's Magazine* in 1787, from a drawing by that well-known Hereford character of the period, Mr. James Wathen.

The carriages were now taken for the return home, and in the evening "The Birds of Herefordshire" papers were continued by a paper on "Swans, Geese, and Ducks."

The following gentlemen took part in the day's proceedings :—Mr. C. G. Martin, president ; Mr. H. Cecil Moore, vice-president ; Drs. Bull, Chapman, Gardiner (London), and J. H. Wood ; Major Malony, Major Doughty, Captain de Winton ; the Revs. D. Cameron, R. A. Chudleigh, H. P. Marriott Dodington, F. T. Havergal, E. J. Holloway, A. G. Jones, W. H. Lambert, H. B. D. Marshall, Stanley Pelly, D. Price, and J. Tedman ; Messrs. F. Bainbridge, H. C. Beddoe, John Bradford, Robert Clarke, James Davies, J. T. Owen Fowler, J. Greaves, W. H. Harrison, E. Havergal, John Lambe, W. E. Lewis, B. St. John Mathews, J. Griffith Morris, E. Pilley, J. Riley, J. E. Riley, H. Ververs, and Theo. Lane.

FRAGMENTS OF THE HISTORY OF ACONBURY PRIORY AND CHURCH.

By DR. BULL.

THE Priory of Acornbury, Cornebury, Accornebury, Akernebury, or Akarnebury,* as it is variously spelt in old Deeds, has lost in modern times the "r" from its name, and the place is now called Aconbury. The Priory was founded by Lady Margery, wife of William de Lacy, during the reign of King John (1199-1216). The precise date is not known, but the period is certain from an Inquisition held at Ledbury, by precept of the King, 49 Henry III. (1264). The Inquisitors were G. de Leukenoure, Galfridus de Morton, Hen. de Munemue (Monmouth), Rog. Tirel, Will. de Bray, Rog. Walensis, and John de Sudelegh, &c. King John at first gave three carucates of land to be "assarted," that is, grubbed up, for the making or creating a certain Religious House. This grant was afterwards confirmed and much extended by his son, Henry III., who released and freed the said nuns from all wast, regards, and jurisdiction of the ministers, or officers of the Forest, 17 Henry III. (1232).

In the account of the Commission, it is stated that King John granted the whole of the Forest of Acornbury, with the exception of Adelstone, or Elstanewod Wood, which belonged to William de Cantilupe and Hugo de Kilpec, the Forester, in fee, and then to Hubert de Burg, at that time Lord Justiciar of England, to Margery, wife of William de Lacy, in order that she might found there a nunnery, which she did on a spot about three miles south of Hereford, and dedicated it to the Holy Cross, and her husband confirmed the same. The Priory was founded for the good of the souls of William de Braos, father of Margery de Lacy, and Matilda his wife, and William their son, the brother of the foundress; and dedicated to St. John the Baptist (MS. St. Michael's Priory).

Hubert de Burg was removed from his office, and Ayleston Wood, thus falling into the hands of King Henry, was also handed over to the Priory. It was then worth 6 marcs and 5 shillings annually.

Dugdale states it to have been an Austin Nunnery; Speed terms it a House for White Nuns dedicated to St. Catherine; but according to Prynne, *Papal Usurpations*, Vol. III., the inhabitants were first of the Order of St. John of Jerusalem, but were absolved from that Order, and reduced to that of St. Austin, by Otho, the Pope's Legate, about A.D. 1237. In the List of the Possessions of the Knights' Hospitallers of St. John in Herefordshire, there is no mention made of Aconbury, and it is therefore extremely doubtful whether there was ever any relation between them.

* In the deed whereby King Pebiau (grandfather of St. Dubricius) gives to the See of Llandaff the mansion of Junabui (Llandinabo), distant about four miles, amongst the witnesses to the deed there appears the name of a layman, Aircon. (*Liber Landavensis*, p. 317). Airconbury may have been the original form of the word. (EDIT.)

Catherine de Lacy, daughter of the foundress, gave land to the Priory to find a Chaplain to say Mass daily for the souls of her ancestors, and if they failed to perform this the Bishop of Hereford was to compel them to do it.

William de Braos gave to the Priory ten houses (naming their occupants) and land, in his village of Tetbury, in Gloucestershire. Catherine de Lacy gave a grant of land in Corsham, with Vernhale Wood, held by Walter de Clifford in service of her, who afterwards confirmed this grant, and further added to the same. In 1260, Margaret, widow of Walter de Clifford, left her heart to the Priory of Aconbury, with fifteen marks sterling for the proper burial thereof. Sybella de Ewyas gave tithes from Ethon to the Priory, and it was afterwards enriched by many other donations, as will presently appear.

Many documents and deeds relating to Aconbury Priory are still extant. Many conventual leases and grants, with the ledger book of the house, are now in the Augmentation Office. The Episcopal Registers give incidental notices relating to it. The Bodleian Library at Oxford contains the charter of Walter de Clifford, with some other papers. The Harleian MSS. contain many original papers and transcriptions, the former probably requisitioned by Colonel Taylor, the real founder of the collection, during his residence in Herefordshire. The Close and Patent Rolls in the Record Office also contain many deeds relating to Aconbury Priory; amongst them is one of the 9th Edward I. (1280), in which the Church of Bridge Solars (called Brugge Solars) is given to the Priory; another, dated the following year (1281), gives the Church of Wolferlow; and in a third, 1st Edward III. (1327), the Church of Malmeshall Lacy is similarly given. There are also scattered MSS. in the Hereford Free Library, the library at St. Michael's Priory, at Whitfield, and possibly at other places in the county.

Dugdale's *Monasticon* mentions only two of the Prioresses of the Foundation, viz., Agnes King and Joan Ledebury; but in the Episcopal Registers, and from the MS. abstract of the *Leases and Grants to the several religious houses in the county of Hereford*, dated 1763, now in the Free Library, several others are mentioned. The dates of appointment, or of the deeds executed by the Prioresses, with their names, are as follows:—

1280.—BEATRICE DE GAMAGES.—(*Reg. Thom. Cantilupe.*)

1288 and 1326.—CATHERINE DE GENEVYLE or GEYNVILL.—*Reg. Ric. Swin and Deed.*

1346-48-53 and 58.—MATILDA DE GRANDISON.—(*On five Deeds.*)

1415-17-21-22-25-26-37 and 46.—ANN BARRY.—(*On eight Deeds.*)

1452-65.—AGNES KING.—(*On two Deeds.*)

1474.—JOAN DRAPER.—(*On one Deed.*)

1481.—CECILY MASON.—(*On one Deed.*)

1489-91 to 1534.—ISABELLA GARDINER.—(*Chart Antique I. 26 and on twelve Deeds.*)

And the last Prioress was JOANNA SCUDAMORE, who was allowed a pension of £9 at the dissolution of the Priory.

Very little is known of these several Mother Prioresses. Bishop Cantilupe confirms Beatrice de Gamage, 16th January, 1280, in her appointment as Prioress.

Her family may have given the name to Mansel Gamage.* Bishop Swinfield confirms the appointment of Catherine de Genevyle at Bosbury, 5th October, 1288. This lady held office for at least 38 years. A dispute arose between this Prioress and others against John de Gamel and others, about a right of common in Bishopstone, 19 Ed. II., 1325 (MSS. at St. Michael's), and it is stated there also that Matilda and Beatrice, daughters of Peter de Genevyle, probably her nieces, died in the nunnery. Matilda de Grandison was sister of Sir Otto de Grandison. The family held estates at Ashperton, and other places in the county, and gave the distinctive name to Stretton Grandison. Isabella Gardiner, who presided for at least 45 years over the community, was confirmed as Prioress by Bishop Milling, at Wytborne, 20th March, 1489. (*Chart Antiqua I.*, 26.)

The Rev. C. Hartshorn's "Illustrations of Domestic Manners," *British Archaeological Journal*, Vol. xviii., gives the following notes:—"Saturday, February, 1297. Feast of the Purification. The Lady Joanna de Valentia, Countess of Pembroke, entertained guests at Goodrich Castle. The Lady of Bicknor, the Lady of Raglan, the Prioress of Aconbury, with many others." This Prioress was Catherine de Genevyle.† "On Monday," the notes go on, "Gilbert, Earl of Clare, and others of his family came; others came to breakfast on Tuesday; on Wednesday came the Earl and Countess of Gloucester, &c., and February 25th the Prioress took her departure." On the Sunday after Easter, John de Hastings, the Prioress of Aconbury, and Dominus John de Barry were there. The Prioress of Acornbie was again on a visit to the Countess two days after the Feast of the Invention of the Holy Cross.

In 1354 the Bishop of Hereford gives a dispensation to Joanna Blount, nun of the Priory of Aconbury, respecting her defect of birth, she being illegitimate, which would otherwise have interfered with her religious profession. (*Ex Reg. Trellec.*)

The MS. abstract in the Hereford Free Library of the Deeds in the Augmentation Office, extracted in 1763, points out much of the property which belonged to Aconbury Priory, and the full list is given in Dugdale's *Monasticon* for the Computation Rolls 28, Henry VIII. (1536). It was principally situated in the county of Hereford. Besides the demesne and lands immediately surrounding the Priory, the churches of Brugge Solars, WolfreLOW, and Malmeshull Lacy,‡ already mentioned, with adjoining lands and mill, the following properties are named:—

* Godfrey de Gamaches (from Gamaches in Normandy) held, under Lacy, two Knight's Fees in the Barony of de Lacy (1165), hence the distinction between Mansel Lacy and Mansel Gamage. After the separation of England and Normandy, the head of the family (eldest son of above Godfrey) lost his English possessions, and returned to Normandy. William, the younger brother, got Mansel Gamage, and died before 1240; and was probably the father of the Princess Beatrice de Gamage. Godfrey succeeded him, and left three daughters, who married three Pembriggs (see *Robinson's Manors*.) John de Gamachus, Prior of Hereford, was made Abbot of Gloucester (1284), a contemporary of Beatrice, "the most noble man in the elegance of his manners and splendour of his birth" (*Annals of Worcester*). "He died in 1307, on the Sunday on which is sung 'Misericordia Domini' in the morning. Dominical letter, B." (THOS. BLASHILL.)

† Godfrey de Geneville, or Joinville, was one of the French favourites of Henry III., and married the heiress of the De Lacy's. Catherine may possibly have been their daughter. (THOS. BLASHILL.)

‡ The grants of livings and of land in the parishes of Bridge Sollars, Mansel Lacy, Bishopstone and Bunshill, point to the association of the Priory with the family of the foundress, with whom the Gamaches family was closely connected. (THOS. BLASHILL.)

The Manor of Bunshill, or Bonshill, and appurtenances; lands at Caldycote; tenements and parcells of land in the city of Hereford and its suburbs; land at Myryvale Hill; land, buildings, and mill, at Rolveston, or Rolston; the Acre Meadow at Stoke Edyth, and lands at Weston-juxta-Stoke Edith; a close at Shokenhill, with other properties at Much Byrche, Pembridge, Peterchurch, Stokeblys, and Vowchurch, within the county. Beyond Herefordshire the Priory was possessed of the church and tythes of Penalley, or Pennalee, in Pembrokeshire; land and Manor of Bourley, and at Ludlow, Salop; tenements at Monmouth, land at Kempsey, and tenements and garden at Tettebury, in Gloucestershire.

The Deeds with reference to property in the city of Hereford have a local interest from the names in use in olden times. In 1399, the Mother Prioress, Joan Ledbury, leases a curtilage, with appurtenances, in the suburbs of Hereford, in a street called "Aboveyeyne." In 1425, Dame Ann Barry, the Prioress, signs a lease of a house in le Vyshams Rowe; in 1437, a lease from Elizabeth (surname not given), the Prioress, gives to John Herbert, mercer, a certain third part of a house lying in the city of Hereford, in le Gebyn Rowe, opposite Good Knaves Inn, for 41 years; in 1474, Joan Draper, the Prioress, assigns, for 80 years, "a messuage situate in Rangia Piscator," between the house of John Barre, Knight, and the house of Henry Chippenham; in 1517 an arbitrement is given relating to certain tenements lying within the city of Hereford, by St. Owen's Gate, in a street there, called "Hungrei-street," some time "Moneywards," otherwise called "Wilton's Ynne"; in 1506, and again in 1528, the Prioress, Isabella Gardiner, leases a garden at Blackmason "well set with saforne." In 1530, Thomas Gebons, mercer, very politely leases to Isabella Gardiner, Prioress, "a stabull set and lying in the street called 'Wroughthale,'" for 99 years, under the annual rent of a red rose on the Feast of St. John Baptist, if the said rose be lawfully demanded; and forasmuch as the seal of the said Thomas Gebons to divers persons is unknown, therefore the seal of the Mairaltie of the city of Hereford is fixed thereunto. The same Prioress leases a close at Shokenhull, under the annual rent of four shillings, a rose, and a potill of Wynne, to be paid on the feast of All Saints only.

The saffron grown at Blackmarston was the Saffron crocus, *Crocus sativus*, of which the pistil and part of the style from the centre of the flower only was used, so that it took six crocus blossoms to produce a single grain of dried saffron. It is a cordial, and aromatic both to smell and taste, and gives a rich yellow or orange colour to sweetmeats and cakes. It was used very much formerly; and to this day the saffron cake always forms part of family festivities throughout Cornwall, and is even used very frequently to give its yellow colour to ordinary buns.

An impression in red wax of the Common Seal of Aconbury Priory of the date of 1447 is extant in the Augmentation Office, and a copy privately printed (1768) is now in St. Michael's Priory with Mr. R. B. Phillips' MS. notes. It represents a Prioress with a cross* in her hand. The legend is "SIGILL: CONVENTUS DE CORNEBURIA" (*Dugdale*).

* The Cross may be accounted for by the fact of the Priory having been originally dedicated to The Holy Cross. (EDIT.)

At the General Dissolution of the Religious Houses (1534-9) the total value of Aconbury Priory and its estates was £75 7s. 6d., but deducting the reprise of £7 14s. 3d., the net annual value was made to be £67 13s. 3d.

Gibson, in his "Churches of Dore, Holme Lacy, and Hempstead," says "*Joanna Scudamore* was the last Prioress of this House; and *Aylston Wood* was granted to *John Scudamore*, of *Holme Lacy*, Esq., when the said Nunnery was dissolved. The Property and Right to the Tithe of this wood descending together with the wood itself to *John Lord Viscount Scudamcre*, his Lordship by *Act of Parliament* gave to the Parson of *Little Birch*, the *Tithe of all the Wood and Wood-ground in Aylston or Adelston Wood*, containing by estimation *one hundred and twenty acres*." (p.p. 133-4).

From letters of this John Scudamore, it also appears that in 1541, the repair of the chancel of Wolverlow Church was charged upon the confiscated revenues of Aconbury Priory. The Rev. C. J. Robinson, who notices this fact in the "Mansions and Manors of Herefordshire," gives the following account of the descent of the property of the Priory:—"By Letters Patent, 34 Henry VIII. (1542) the site with the tithes and other property" (the Manor, Rectory, Tithes, and Land, &c., in Aconbury, with the Manor of Rolston, (*MS. at St. Michael's Priory*), but doubtless excluding Aylston Wood) "was sold to the Mayor and Burgesses of Gloucester, but it does not appear that they held the property long, as within a few years it was in the hands of Hugh ap Harry, or Parry (a younger son of Thomas Parry, of Poston). His grand-daughter and heiress, Elizabeth Parry, married John Pearle—1600, 8th January—(*Par. Reg. Dewsall*), a member of a family long connected with Aconbury and Dewsall. Mary Pearle, the daughter and heiress, married in 1627 Sir John Brydges, Bart. (son of Sir Giles Brydges, of Wilton Castle, and ancestor of the Duke of Chandos), who about the year 1730 sold Aconbury to the trustees of Thomas Guy, the founder of Guy's Hospital. It was probably by James Pearle that the Conventual Buildings were converted into a Mansion House, which was sufficiently commodious to form the occasional residence of the Lords of Chandos" (p. 4.) "The said John Brydges was father of James Lord Chandos, by whose death the manor came to James Earl of Carnarvon" (*MS. of Mr. Biddulph Phillips, at St. Michael's Priory*).

In Mr. Gilbert's return of the poor rates (1776), the estate of Aconbury Priory rendered £6 13s. The property still belongs to Guy's Hospital.

A note on the MS. at St. Michael's Priory says:—

" Ab anno 1558 ad an. 1573
John Yongor, Minister.
Do. 1616 William Higges, Curate
on to the Rebellion."

The Priory, Church, Buildings, and Grounds, are said to have been moated, and this probably was so on three sides, but could scarcely have been so towards the west; for the site is formed by a projecting shoulder from the hill above. There are the traces of three fish-ponds up the valley, and these, with the water near the priory buildings on three sides, would provide an ample supply of fish for the weekly and other fast days of the Church.

ACONBURY CHURCH.

This Church, which formed part of the priory buildings, is dedicated to St. Catherine. It is thought to have been built by the foundress of the priory, Margery de Lacy, in the very early years of the 13th century. It is remarkable for its excellent proportions and its simplicity, with other points of interest about to be noticed. It consists of a nave and chancel of equal width and height, and is without a chancel arch. The walls are very thick, and the internal measurements are 56 feet 5 inches long, by 27 feet wide. The lower part of the nave is Norman, with later additions. At the west end is an early English doorway, with a fine triple-lighted window above it, under a pointed arch, with graceful tracery on the stone work at the sides. Above are two heads, supposed to represent the foundress and her husband. The head of an effigy from Aconbury, possibly of the Prioress, is placed in the wall of the north-east transept of Hereford Cathedral.

Mr. Hill (*MSS. 1715 to 1727*) observed at the western end an image, somewhat decayed, of the Blessed Virgin, with The Holy Infant in her arms, of excellent workmanship, but this seems to have disappeared (*MS. at St. Michael's Priory.*)

At the western door is an ancient wooden perpendicular porch of considerable interest. A wooden figure on each side of the centre pillar, holds an escutcheon. Mr. Flavell Edmunds states that these figures formed part of a cupboard in a cottage on Aconbury Hill up to the year 1843, and were then removed, and, he suggests, they formed part of the priory itself.

At the east end is the usual simple tracery window common to the county. In the north wall are two double lancet windows, and a single lancet window for the chancel.

On the south side where the conventual buildings joined the church are still to be seen, on the outer walls, some springs of the stone arches and corbels inserted in the walls to carry the different floors or cloisters. Placed high in the wall near the western end is an archway, having a square squint looking into the church, which tradition states to have been from the Mother Prioress's room. It is more probable that this hagioscope was intended for invalids unable to attend the service, and communicated with the infirmary of the priory. On looking into it from the church, by means of a long ladder, a stone seat fronting the east is seen in the thickness of the wall, and was probably extended into a room beyond.

Two early doorways, now walled up, gave access to the church from this side, one to the nave and the other to the extreme end of the chancel. On this side two lancet windows light the chancel.

In the interior of the church there is a trefoil-headed piscina of early date in the south wall of the church. In the north wall of the nave is an Early English tomb, arched and recessed, which may have contained the mutilated effigy seen in the last century and stated by tradition to have represented "one of the Mortimers;" the Mortimers, whose tombs are never to be found where they are most naturally looked for, and are only very occasionally met with elsewhere.

There are six early incised and carved coffin lids within the church. The one in front of the recessed tomb on the north side of the nave has a rich floriated cross with two shields, one checky, a fesse for Clifford, and the other a lion

rampant and around the edge is an inscription in Norman-French, deeply cut, which offers an antiquarian puzzle. Some of the letters seemed to be turned the wrong way, as if the carver did not know the language he was using. The Rev. F. T. Havergal, after again studying the careful rubbing made by Mr. Robert Clarke, finds that the whole difficulty of the inscription has arisen from the curious mistake of the early mason, who laid his paper copy down on the stone *wrong side up*. If it is read from behind through the rubbing, all the inscription that is not effaced by time becomes clear, and this is it—

CI GIST DAME MAHAVD DE GORNEYE
COMPA(GNE) SIRE ROGER DE CLIFFORD
PRIEZ POVR L'ÂME

Here lies Dame Maud de Gorneye
Partner of Sir Roger de Clifford
Pray for her soul.

The maiden name of this lady is given in Burke's Peerage as Isabel, eldest daughter and co-heir of Roger de Vipont, Lord of Westmoreland. Mr. Arthur Armitage was present when this vault was opened, and therein was found a large skeleton and beside it a smaller skull, but neither were disturbed, and it was all closed up again immediately.

On the chancel floor is an early slab—though cut short at the foot—with a floriated cross, and along the centre of the shaft is the following Norman-French inscription :—

ICI : GIT : IOHANA : PAVNCEV.
Here lies Johanna Paunce (foot).

Another early slab here appears to have been used in the 18th century as a grave-stone with modern letters. A black marble records the death of Sir Henry Barnard, Knt., 25 April, 1680, in ye 65 year of his age; and on other common small stones in the chancel are recorded the deaths of John and William Brydges, 1672; of Barnard Brydges, 1676; and Dame Mary Powell, 1682. In the body of the church a stone records the death of Ben. Mallow, M.A., at 80, Rector of the parishes of Dinedor and Birch, 1692.

The present floors of the nave and chancel are about two feet above the original levels, the western end having steps to descend, as at Llandaff Cathedral and some other places. Under the chancel a large vault was built by James, Lord Chandos, when he repaired the church, added the altar rails, and put on a new roof, removing the old wooden roof to the barn. He was buried here in October, 1714, near the remains of Sir Henry Barnard (*Hill MSS.*). The barn existing now is a new one, and the roof, if removed there, is gone.

The vault is now walled up, but when last opened it contained three lead coffins, holding remains of members of the Chandos family. Mr. Bird's MS. mentions four coffins, one being that of Lady Elizabeth Chandos, 1719. A stone on the interior of the south wall states that the vault was repaired in 1826 by Ann Eliza, Duchess of Buckingham and Chandos.

The *Topographer* for 1789 states that the following shields were visible at that time on an arch in the Nuns' Chapel at Aconbury :—Barney of 10 pieces, Argent

and Gules charged with 10 martlets sable, 4, 3, 2, and 1; and another shield, Gules 3 lions passant or, and over all a bend blue for Henry Plantagenet, Lord and Baron of Monmouth, who, after his eldest brother's decease, was Earl of Lancaster and Derby, and who married Maud, the sole daughter and heiress of Patrick de Caducis, of Charlworth, Kent. They had a daughter Isabel, whom many writers called Abbess Almesbury.

The last restoration of the church was made by Sir Gilbert Scott, in 1863, at an expense of £756, chiefly at the cost of the Governors of Guy's Hospital. Mr. Thos. Turner, their then treasurer, provided the shingle belt turret himself; and the late incumbent of Birch and Aconbury, the Rev. Stephen Thackwell, gave £125.

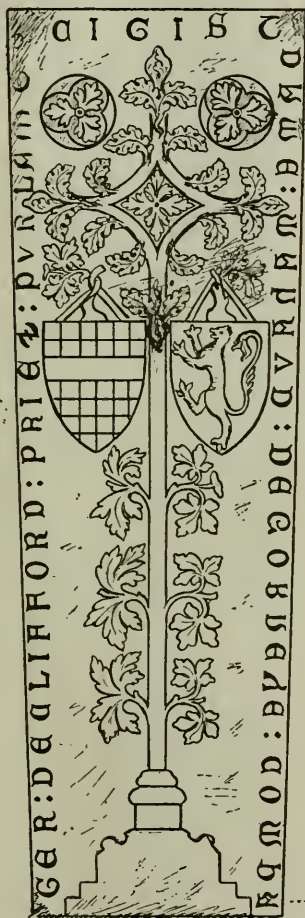
This paper was illustrated by some very careful rubbings of the memorial stones by Mr. Robert Clarke.

The Rev. F. T. Havergal said he had listened with very great pleasure to the excellent paper Dr. Bull had read to them. It contained an amount of information that could not have been gained without much research. Dr. Bull had asked him to write it, and he should have been glad to have done so if he could, but he could not have done it so well. He had been interested in this church for a great many years. He was here when the vault was opened, and he was here again with the late Mr. Bloxam, who was the very highest and best authority on memorial stones. Together they examined the Clifford stone, which Mr. Clarke had rubbed so carefully for them to-day, and with reference to the inscription, which was and still is so difficult to interpret, they came to the conclusion which Dr. Bull had read to them. The practice of cutting inscriptions on monumental stones was at that time in its infancy. There are very few earlier stones than this one in the county; only that of Bishop Swinfield's father at Bosbury, so that although the masons at that period could cut magnificent incised stones, they could not manage inscriptions with the same excellence. The difficulty in reading is caused, as has been stated above, by the fact of the paper copy from which the mason worked being placed upside down. With this idea, and looked at through the paper, it becomes clear. So little had been done in Herefordshire with reference to memorial stones, that there was scarcely a notice of any Herefordshire slabs in any authentic work on the subject. He was convinced, however, from his own experience, that many most interesting memorial stones existed in this county, and if not of the very highest character of work, they were still so good as to make it most desirable that they should be thoroughly repaired and reported upon. Herefordshire had been much neglected. It was an out of the way county, but it had much greater treasures than people were aware of, and the meeting of the Woolhope Club here to-day would be very useful in calling attention to these stones. Mr. Havergal again expressed the pleasure it had given him to be able to come and see them once again, and to listen to the very interesting paper that had been read to them.

Some further discussion took place, and the carriages were then regained for the return to Hereford.

*Hereford
Woolhope: Trans:
1885.*

-CI GIST DAME MAHAVID DEGOANEYE.COM PA(GNE) SIRE ROGER DE CLIFFORD PRIEZ PVR L'AME...



D R M A : M A H V D : D A G O R R A Y A : A O M P A
inscription reversed

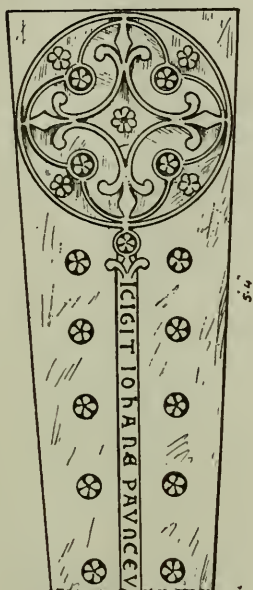
inscription. reversed

R. CLARKE,
DEL.



Acornbury Church

Hereford.
Woolhope: Trans:
1884



Slab to Johane Pauncefort



Seal of Acornbury Priory
1447.

R. CLARKE
DEL.



Woolhope Naturalists' Field Club.

JULY 10TH, 1885.

ABERGAVENNY — THE SUGAR LOAF MOUNTAIN ; THE ANCIENT MONUMENTS IN PRIORY CHURCH ; AND THE CASTLE GROUNDS.

“ Mountains are the beginning and the end of all natural scenery.”
RUSKIN.—“ *The true and beautiful.*”

THE Ladies' Day of the Woolhope Club has passed off very successfully. Lovely weather, a tempting programme, and the widespread interest in the pursuits of the Club, brought together a goodly company, and all went well. The following ladies and gentlemen took part in the day's proceedings :—The President, Mr. C. G. Martin ; Sir Herbert Croft, Bart. ; Mr. G. H. Piper, F.G.S. ; Dr. Bull, Mr. Ernest Bull, Miss Bull, and Miss Leila Bull ; Miss Edith and Miss Beatrice Symonds ; the Rev. F. T. Havergal ; Mrs E. E. Edwards and Miss Bayliss ; Dr. S. R. Matthews ; the Rev. Prebendary Bury Capel ; the Revs. W. Bagnall-Oakeley and Mrs. Bagnall-Oakeley, W. Howell, G. H. Clay, J. Davies, E. A. Ely, W. Elliot, J. E. Grasett and Miss Grasett, Michael Hopton and Mrs. Hopton, A. W. Horton and Mrs. Horton, R. W. Hunt, A. G. Jones and Miss Jones, H. B. D. Marshall and Mrs. Marshall, V. T. T. Orgill, Mrs. Long and Miss Lewis, D. Price, J. R. Reece, W. R. Shepherd and Mrs. Shepherd, T. A. Stoodley, R. H. Williams, Mrs. Woodhouse, Miss and Miss E. D. Woodhouse ; Capt. and Mrs. Noyes ; Messrs. F. Bainbridge and Miss C. Bainbridge, E. J. Baker and Miss Mackenzie, H. C. Beddoe, Alfred and Miss Kate Beddoe, F. Billiald, Miss Harding and Miss Lee, C. P. Bird and Miss J. Cole, J. Carless, Miss Carless and Miss E. Carless, Robert Clarke, Gilbert Davies, Hubert Davies and Richard Davies, Charles Fortey, J. T. Owen Fowler and Mrs. Fowler, J. Greaves, Miss Ida Lay, Miss Clara Raymond and Miss Elizabeth Smith, A. A. Hancocks, Mrs. and Miss Hancocks, T. Hutchinson and Mrs. Hutchinson, F. L. Jones, Arthur Levason, Mrs. Levason, Miss Levason and Miss Blackburn, T. Llanwarne, J. W. Lloyd and Miss Lloyd, H. C. Moore, Mrs. Baker and Miss Rhind, J. Griffith Morris, H. Nesbitt, Miss Nesbitt and Miss E. Nesbitt, T. C. Paris, Elmes Y. Steele, Mrs. Elmes Steele and Miss J. Steele, H. Southall and Burton Watkins, and Mr. Theophilus Lane, the secretary, with some few others whose names did not transpire.

The town of Abergavenny in itself is full of interest. It stands at the junction

of the little river Gavenny, or Kenvy as it is called, with the river Usk, and thus gets its name. It is a bright and pleasant town, and its situation is excellent. It has the Pen-y-Vale hills to the north—as that range of the Black Mountains is called—the massive Blorenges to the west, the Scyrrid Mountains to the east, and before it, the opening valley of the Usk. It has considerable remains of its Castle and town walls, its Priory and Priory Church, with so fine a series of monumental effigies as to delight the heart of an archæologist. It has, moreover a history that few towns can equal, and more ancient than all these remains. Its existence, indeed, is prehistoric, for tradition tells of a British town and fortress before the Romans came. That Abergavenny was the Roman station Gobannium is beyond doubt; for though it seems that but few Roman remains have been found, its name and locality are clearly pointed out in the 12th journey of Antonine from Silurum (Caerleon) to Uriconium (Wroxeter), called by Sir Richard Colt Hoare the Via Orientalis of Antonine. The distance from Burrium (Usk) to Gobannium (Abergavenny) is there marked 12 miles; and from Gobannium to Magnis (Kenchester, five miles from Hereford,) the distance is 22 miles. There exists here also very curious evidence of the Roman occupation of Abergavenny and its district, in the names of two neighbouring villages. The parish of Llanwenarth is divided by the river Usk, and the portion on the left bank of the river, nearest to Abergavenny, still bears the distinctive Roman appellation Llanwenarth *citra*, whilst the portion of the parish on the far side of the river retains the name of Llanwenarth *ultra*. The parish of Llandeilo Bertholly, similarly divided by the river Gavenny, has also its two portions distinguished by the same Latin terms, *citra* and *ultra*.

Abergavenny was one of the early baronies created after the Norman Conquest. Hameline, the son of Dru de Baladun, or Belun, one of the great Norman chieftains, is stated to have subdued Overwent, and to have built a fortress at Abergavenny, and founded there a Priory of Benedictine monks. He died without issue in 1090, and left the Castle to his nephew Brien de Wallingford, or de l'Isle. This gives the date of the first building of the castle, and the foundation of the priory, and here may be said to begin the real history of Abergavenny. It becomes more clear in the lives and deeds of the great lords and barons represented by the effigies in the church, but it would require a volume to enter into it. At the present time we will only add that, like all other history, it is made up of a tissue of successes and reverses, and that the spirit of its residents has ever been marked by a sturdy independence that has borne the one and the other with equanimity.

Abergavenny three centuries since was perhaps a place of greater trade and importance than it is at the present time. Leland called it “a faire waulled town, meately well inhabited.” It was a corporate town, too, up to the beginning of the reign of William III. (c. 1690), when the charter was forfeited in consequence of the disaffection of its inhabitants to the new Government, as shown by violent tumults at the election of a bailiff. From this time it began to decline in importance. Its inhabitants took up successively and successfully the manufacture of flannel, of longcloth, and of shoes; but as roads opened up the country, and

machinery became more used, these efforts failed. An Abergavenny genius discovered a method of bleaching hair, which enriched the place, so long as the enormous periwigs remained in fashion, for Abergavenny wigs became quite the fashion, and were worth from £40 to £50 each; but that went by. Then the beauty of the scenery and the mildness and salubrity of the air were widely proclaimed, and consumptive patients were invited there to get cured by drinking goat's whey, but the road was weary, and patients ceased to come. The ironworks in the district gave the next important help to the trade of the town, and very prosperous they made it, but after some years that source failed, and is now being happily compensated for by increased railway facilities and railway works—a population of some 2,000 has thus become nearly 8,000 within the present century, and visitors find it a cheerful thriving town, with new buildings, new streets, new houses, or fresh planted sites for them on all sides.

The Woolhope Club brought their fair visitors to the Brecon Road Station for the ascent of the Sugar-Loaf. Here carriages and a few ponies were waiting for those who wished for such help, but the majority set off on foot for the mountain. Dry and tedious are the beginnings of all great undertakings, and the first mile or two of roads and lanes to the foot of the Rholben were hot, and dusty too. By the side of the lane leading up to it was a very remarkable laurel. It was no longer a shrub but a veritable tree, whose stem at 5 feet from the ground measured 4ft. 11in. in circumference, and afterwards divided into two trunks. It might fairly be adduced as practical evidence of the general mildness of the climate there.

The steep grassy slopes of the Rholben offered by no means "an easy ascent," for the dry weather had made the grass very slippery, and the seats, so considerably placed there, were very welcome resting places to enjoy a few strawberries, and meditate on the grandeur of the Bloreng, with its broad bare summit, and its sides so richly clothed with timber. It forms a fine background to the town over which it seems to hang. Another scramble, and at another seat the little Scyrrid comes well into view, on whose slopes are the fields which William de Braos granted to Talley Abbey in Carmarthenshire, and strawberries again were very refreshing. The walking now becomes easy and pleasant, the mountain air invigorating, and the views on every side fine. The mountain to the east, which gives such character to the Abergavenny scenery by its rugged bipartite top, is the Great Scyrrid, Scyrrid Fawr, or Holy Mountain.

Craggy Skirrid, sacred soil,
Oft trod by pilgrim foot o'er the smooth swell
Of Derry.

SOTHEY.

There was formerly at the top of this hill a Roman Catholic Chapel, dedicated to St. Michael, a patron saint of sailors, of which a few vestiges still remain. The remembrance of the site, however, is preserved by a hollow space, said to be formed by superstitious devotees, who resorting here on Michaelmas Eve, carry away the soil to strew over the graves of their friends. The religious veneration

attaching to this mountain (the name "Scyrrid" itself being a corruption of "sacred") has doubtless given rise to the legend that the chasm in the side was occasioned by an earthquake at the Crucifixion of our Saviour. The hill is a mere ridge, with landslips on its western side. It is marked on the Ordnance map as 1,601 feet above sea level.

On each side of the Rholben on which the path so pleasantly goes are the Derri Hill to the right and the Llanwenarth Hills to the left, separated by narrow dingles, but uniting higher up to form the cone of the mountain, Pen-y-Fal, or summit of the peak, or as it is termed in homely phrase the Sugar-Loaf. The dingle between the Derri and the Rholben was formerly the park belonging to the Priory, and to this day its boundaries are shown by a trench and bank fence running along part of both these hills and across the bottom of the Sugar-Loaf, some four or five miles in length. In modern times the vale is more useful still, for the Afon Cibi, and other springs rising there, with the surface waterfall, forms the river Kibby, which gives to the town of Abergavenny its excellent supply of water.

The carriages were now seen winding over the brow of the Derri, and yes! there are the scientific seniors climbing the very cone itself on their ponies, and seeming at the sky line to be on a perilous incline. They wind round the hill out of sight, to re-appear in some few minutes on the very summit itself, the envy of the long straggling party who still have the steep ascent before them.

The summit of the Sugar-Loaf is an undulating ridge some 240 paces long, and from 10 to 20 broad, with rocks projecting here and there. Its elevation is given on the Ordnance map as 1,954 feet above the sea level. It is not so high as its fellow, Pen-y-Gader-Fawr, which is 2,630 feet above the sea; but the view from it is infinitely more varied and more extensive. It commands land in the counties not only of Monmouth, Hereford, and Brecon, but also of Glamorgan, Radnor, Salop, Worcester, Gloucester, Somerset, and Wilts. At least it would command this extent of view in clear weather, but on the present occasion it was too hazy to see very far. The nearer views in some respects were improved, and it was pleasant to hear how delighted they were who had never experienced before the pleasure given by the grand panorama this mountain affords. The poet Bloomfield visited the Black Mountains in 1807, and, reaching the summit, exclaims—

Good Heavens! must scenes like these expand—
Scenes so magnificently grand—
And millions breathe and pass away
Unblessed throughout their little day
With one short glimpse?

The Woolhope Club and their friends for the most part had this bliss. The summit was crowded with visitors and three of the ponies. After a sufficient time had been left for rest and refreshment, and for the examination of the scenery a photograph was taken of the group by one of the members, as they clustered together to listen to the following address:—

ON THE "OLD RED SANDSTONE," AS SEEN FROM
THE SUGAR-LOAF MOUNTAIN, IN THE COUNTY
OF MONMOUTH, ON THE 10TH JULY, 1885.

By G. H. PIPER, F.G.S.

I HAVE been asked by our President to address you on the features of the district; and, inasmuch as we are on the top of a mountain of Old Red Sandstone, and all that is near enough to us to be distinguishable is of the same geological structure, the natural consequence is that I must discourse upon that very ancient and highly interesting formation. It may be taken for granted that you all know that the Coal Measures are a sort of middle formation, lying beneath the New Red Sandstone and above the Old Red, and although these terms are too general for the purposes of science, they are still sufficiently distinctive, and have the advantage of being easily remembered. The Old Red Sandstone embraces the whole series of strata which lie between the Silurian system below the Old Red, and the Carboniferous system above it. The Old Red Sandstone, or Devonian, for the latter term is now generally employed as synonymous with the earlier and more descriptive one, is one of the most remarkable and clearly defined on the surface of the globe. Characterised on its lower margin by strata containing the remains of cephalaspidean fishes, which have been found in considerable numbers in the lowest beds of the Old Red at Ledbury, and in the passage beds there which form a line of separation between it and the underlying Silurian, and defined, on its upper margin, by the rarity of that vegetation which enters so profusely into the composition of the carboniferous rocks, there can, in general, be no difficulty in determining the limits of the Old Red formation. Hugh Miller asserted in his admirably written treatise on the Old Red Sandstone, that no trace of the curious ichtyolite, *Cephalaspis* is found among the fossils of the lower Old Red Sandstone. He says: "Neither in England nor in Scotland is it to be found in the Tilestone formation, or its equivalent. It is exclusively a medal of the Middle Empire." Subsequent researches have shown this statement to be incorrect. My collection of *Cephalaspides* was obtained almost entirely from the base of the Old Red, and amongst them I have bodies of the very rare *Auchenaspis Egertonii*—head plates of this curious little fish are seldom found, and I believe no body, or fragment of a body, is to be seen outside of my museum. The Old Red system is manifestly arenaceous, the great bulk of it is made up of sandstones and conglomerates with subordinate strata of shales and concretionary limestones. This statement is capable of immediate proof, for the fine dust upon which I now stand is part of the mountain disintegrated by the slow action of frosts, rains, and other atmospheric influences, and although the particles are so minute as to be severally almost imperceptible, yet you will find by the aid of a microscope that most of these insignificant atoms are blocks of pure quartz.

Looking at the whole system, both in point of time and composition, we are positively reminded of marine conditions—of sea shores whose sands formed sandstones, and of beaches whose gravel was consolidated into conglomerates and pudding-stone—of receding tides that produced ripple-marks, and of showers that left their impressions on the half-dried silt of muddy estuaries. My collection has several slabs with ripple marks, and stones showing spots of rain which fell countless ages before even the Coal Measures were deposited. The reddish colour which pervades the whole strata shows that the waters of deposit must have been largely impregnated with iron, in all probability derived from the earlier granitic and metamorphic rocks, whose degradation supplied the sands and gravel of the system. If, on the other hand, we investigate the fossil remains, we are reminded of placid waters where zoöphites and mollusca swarmed in profusion; of disturbances which entombed whole shoals of fishes in marine sediment; of marshes and river-banks which gave birth to a scanty growth of ferns, reeds, and rush-like vegetables; and of sedgy margins where, perhaps, a few lowly reptiles enjoyed the necessary conditions of amphibious existence.

The Old Red Sandstone imbeds obscure plant-remains, apparently of aquatic origin, and numerous fishes and crustacea, but no trace of coral, or unquestionably marine organism, has been detected, so that, as far as fossil evidence goes, the Old Red of Herefordshire and Scotland may be of fresh water origin, but the more general belief is that portions of it were deposited in Lagoons of great area. On the other hand, while plant-life is almost wanting in Devonian strata, they abound in corals, echinoderms, trilobites, and mollusca of undoubtedly marine habitat—thus proving their deposition under oceanic conditions.

The Old Red Sandstone passes insensibly in places into the Silurian Rocks below. The passage beds called Downton Sandstones and Ledbury Shales have been assumed to belong as much to one system as to the other, but my experience of the latter formation enables me to say that it partakes much more of the Old Red than of the Silurian Rocks.

In order to gain some idea of the importance of this great geological system, it will be well to consider the large area which it occupies. It extends from the neighbourhood of Bridgnorth past Ludlow, Tenbury, Leominster, and Hereford, and practically embraces the whole of that county and very much of Monmouthshire. It nearly surrounds the coal fields of South Wales, and surrounds entirely those of the Forest of Dean, which is an outlier of the former, and extends away due west into Pembrokeshire and to Milford Haven, with a slight break only near to the latter place. In travelling to-day from Ledbury to this spot I have never been off the Old Red. The maximum thickness may be taken at 10,000 or 11,000 feet, but in many places it would not exceed half that estimate. Examples of the passage of the Old Red into the Silurian may be seen between the town of Ludlow and the Clee Hills, and thence all along the eastern edge of the Upper Silurian Rocks in Hereford, Radnor, and Brecon; in many places round the outside of the valley of Woolhope, but nowhere better, or indeed as well as at Ledbury, where the whole of the Passage Beds are exposed on the surface. And perhaps there is no other spot in the whole world where the same advantages

occur ; but those interested in the subject should make an early inspection, for the lines of demarcation are fast becoming obliterated. The grandest exhibitions of the Old Red Sandstone in England and Wales appear in the escarpments of the Black Mountain, near Hay, and in the Vans of Brecon and Carmarthen, the loftiest mountains of South Wales, the one 2,860 and the other 2,590 feet above the sea level.

Now of the particular spot whereon we stand. The whole of this mountain, from its base to its summit, is of Old Red Sandstone. Every valley and hill and mountain within sight is of the same formation, and their beautifully-rounded contours tell in the plainest language that their present forms have been assumed under the mighty influences of ice and water. This mountain is a fine example of denudation. The mill-stone grit, mountain limestone, and mountain limestone shales, have all been washed away, but they may be seen on the outlier of Pencerrig Calch, to the westward, and on the Blorengé over the Usk. The upper cornstone group rises into the hills named the Derri and Rholben, below us, and again in the wooded escarpments that lie below the Blorengé. The Brownstones occur above the upper cornstones and sandstones of the Derri and the Rholben, and these constitute the higher strata of the Sugar Loaf and the Scyrrid Fawr. The accomplished and eminent geologist, Mr. Symonds, in his *Records of the Rocks*, tells us that the Brownstones of the Blorengé are overlaid by the uppermost rocks of the Old Red, namely, the Old Red Conglomerates, and the yellow and grey sandstones, these again being capped by the Carboniferous limestone and Millstone grit. The Sugar Loaf mountain has no fossils, but head-plates and fish-spines may be found in the Lower Flag-stones, near the town of Abergavenny.

On the Scyrrid Fawr is a down-throw from the Sugar Loaf series, and the escarpment of Brownstones laid open by the great slips deserve minute inspection. The height of the Sugar Loaf has been ascertained to be 1,868 feet above the sea, and Mr. Lloyd has been good enough this morning to ascertain, by stepping, that the length of the mountain top is about 240 yards, and the width varies from half-a-dozen yards to perhaps 20 yards in the widest part.

Reclining on the tufts of whortleberries and heather, which grow on the very ridge of the mountain, the party listened to this lecture with much pleasure. The enjoyment was heightened by the admirable forethought of the President. His hospitality was not to be checked by the steep ascent of the Sugar Loaf. He had caused to be conveyed there a good supply of ice, of soda water, and of sparkling Moselle, and whilst the address was going on "a cup" was made, so deliciously refreshing as to give general satisfaction. Was ever a Moselle cup so good before?

The visitors remained some hour and a half at the top, and afterwards, by a leisurely descent, were able to enjoy the beautiful scenery around them, ever the same, yet ever varied by the changes of light and shade. A curious scene was witnessed by some of the party, in a hayfield at the foot of the Rholben. The wind had been gentle throughout the day—unusually gentle on the summit of the

mountain—and yet all at once a whirlwind gathered together a quantity of hay from the field, raised it in a column, and tossed it up into the air hundreds of feet, to be distributed in all directions.

The Priory Church was visited a little before four o'clock, when the visitors were kindly met by the Rev. Prebendary Capel, the vicar, and Mr. Reece, the curate. The Rev. F. T. Havergal read a very interesting account of each one of the monumental effigies in succession, extracted from Mr. Octavius Morgan's work, with comments of his own, and the Vicar then very kindly gave an account of the restoration of the Church, carried out by Mr. Nicholson, of Hereford, with a gentle hint in conclusion that some £8,000 was still required to complete the work.

The visitors next went to the Castle Grounds, where the considerable ruins that still remain have been well cared for, and the grounds well laid out for public enjoyment. The place is surrounded with interest, but if information about the Castle ruins is required, it must be brought there by the visitors. To those who have superintended the grounds, may it be suggested that a short history be printed in 8vo. (not 12mo., or small quarto, which are lost of necessity) and be sold for a few pence. If this were done, and the names of the several parts of the ruins printed up over the doors, as is done at Ludlow Castle and other places, it would greatly increase the interest of visitors, and they could be able to carry off much information as well as pleasant recollections of these beautiful pleasure grounds.

The visitors were well catered for by Mr. Jones, and after a tea dinner they adjourned to a shady court adjoining, to listen to an excellent paper on "Herefordshire Orchidaceous Plants," by the President, and another on "Herefordshire Doves." The way was now taken to rejoin the train at the Brecon-road Station for the return home, and thus ended a very pleasant day. A few words must be added to express the regret of the Committee that Dr. Steele, who was to have given the address from the Sugar Loaf on "The Remarkable Features of the District," should have been prevented from doing so. With some members present, also, a shade of gloom pervaded the day, from time to time, by the frequent remembrances called forth of two gentlemen who were formerly such energetic members of the Club, the late Dr. McCullough and Mr. Elmes Y. Steele. The feeling, however, was purely personal, for at Abergavenny they live in their good deeds. Much of the spirited progress of the place has been due to the ability and energy of the late Mr. Elmes Y. Steele; and the size and renown of the great Lunatic Asylum bears testimony to its successful superintendence and management by Dr. McCullough. Their kind and genial presence was missed, as was the cordial welcome they would have given to the Club to-day; but it was very pleasant to hear them spoken of by influential residents in terms of loving appreciation and regret.

"REQUIESCANT IN PACE!"

THE MONUMENTS IN THE PRIORY CHURCH OF ABERGAVENNY.

(Abstracts from the work of Octavius Morgan, Esq., M.P., F.R.S., &c., &c.,
published at Newport in 1872, with remarks by the Rev. F. T. Havergal).

Though castle here through tracts of tyme is worne,
A church remains that worthie is of note ;
Where worthie men that hath bene nobly borne
Were layd in tounbe, which els had been forgot.

CHURCHYARD.

THE Honor, or Lordship of Abergavenny, is one of the most ancient baronies, and was probably granted very soon after the Conquest.

St. Mary's Church belonged to the Priory of Benedictine, or Black Monks, founded in the reign of Henry I. (1100-1135), by Hameline de Belun, or Baladun, the first Norman Lord of Abergavenny. The ancient Parish Church of St. John stood within the walls; the Priory and this Church without, by the east gate. After the dissolution of the monasteries in 1543, Henry VIII. founded the Grammar School on the site of the old Parish Church of St. John's, and the parish appears then to have taken the Church of the Priory in place of St. John's.

The Priory consisted of a prior and four monks at the time of the dissolution; and the estates, which were estimated at the value of £80 yearly, were granted to James Gunter, of Breconshire, and have since passed by marriage through the families of the Milbournes, Harleys, Swinnertons, to the Kemeys Tynte family.

The monumental effigies in this Church have been noticed from an early date. Thomas Churchyard, in his poem on "The Worthiness of Wales," published in 1587, gives a long description of them, when they were in a perfect condition, and when the windows contained the arms, in coloured glass, of the families and Lords of Abergavenny. Mr. Richard Symond's "Diary of the Marchings of the Royal Army in 1645," printed by the Camden Society in 1859, gives a still more detailed account of the monuments, windows, and their heraldic bearings, at that time still undisturbed. Gough, in his edition of Camden, shows that they remained in the same condition the following year 1646, but from this date there is no authentic record, either as to when they were mutilated, or when they were repaired. It is probable that they were mutilated during the Rebellion, and restored in Charles II.'s reign.

The monumental effigies form a very instructive series from the 13th to the 17th centuries, showing the characteristic changes of four centuries in arms, armour, and costumes. They are of wood, stone, and alabaster, and all of remarkably good type and character, and possess much historical interest, both local and general. Mr. Octavius Morgan describes them in the following order, as represented by photographs :—

No. I.—GEORGE DE CANTELUPE (c. 1275).

This figure, carved in oak, is the most ancient, and one of the most interesting of these knightly effigies. It is about 5ft. 4in. in length, and represents a young man in armour, of slender and graceful frame and handsome countenance. The head rests on two cushions, the upper being placed diagonally on the lower one; the left leg is crossed over the right; the feet, still perfect, resting on a lion, whose head has long since been wanting. The effigy is supposed to have been originally painted and gilt. The details of the chain armour and other portions would thus be delineated instead of being carved in relief. From the style of the armour, the date has been fixed as about 1275, or the latter part of the 13th century, that is a century earlier than the Church it now lies in. The figure and bed on which it lies are formed from a block of wood hollow throughout, originally made so with a view of better preservation and to avoid cracking, and without doubt it was coloured. It is one of the very finest of the few remaining wooden effigies. The one at Gloucester to the Conqueror's son is not so perfect. The one at Marcle is very bare, and that at Haywood is of an ecclesiastic of much less interest.*

The effigy, from its date, is supposed to represent George de Cantelupe, the son of William de Cantelupe and Eva, the daughter of William de Braose, and heiress in her own right of the Lordship of Abergavenny. He was born at Abergavenny on Good Friday, 1253, and died on St. Mark's Day, the 25th April, 1273. He married a daughter of Edmund Lacy, Earl of Lincoln, but left no issue, and was the last of the line of Cantelupe, who held the Lordship of Abergavenny.

No. II.—SIR WILLIAM HASTINGS? (1349).

An effigy, carved in freestone, which is believed to have been brought from the Dundry Quarries, near Bristol, and apparently undisturbed. It represents a knight in armour of the 14th century style. It lies in a recess under a window. It is about 6 feet long. The head rests on a cushion. Part of the body and right arm have been broken away, probably removing the shield mentioned in Churchyard's poem:—

His shield of black he bears on brest,
A white crosse plain thereon,
A raggid sleeve in top and crest
All wrought in goodly stone.

The right-hand grasps the end of his dagger; a sword is at his left side; and the right leg passes over the left. The small semi-octagonal pedestal is stated by Symonds to have held the helmet of the knight; but, if so, it must have been a very small one. The effigy seems to have been a likeness, and to have represented a man of at least thirty years of age, with fat swollen features, and an unpleasant expression.

* There is also in Clifford Church, near Hay, an ancient effigy of an ecclesiastic, carved out of a block of oak, hollowed out posteriorly, in an excellent state of preservation. (EDIT.)

There is much difficulty in identifying this monument. Mr. Octavius Morgan attributes it to Sir William Hastings, an illegitimate son of John Lord Hastings, and a half-brother of Lawrence Hastings, Lord of Abergavenny. He died unmarried in 1349.

No. III.—LAWRENCE DE HASTINGS (Aug. 13, 1348).

An altar tomb of freestone in excellent state. The effigy represents a knight in armour of the 14th century. It represents a powerful man, about 6 feet in length, upwards of 30 years of age. His head rests on his helmet, his feet on a bull, the hands being raised over the breast in the attitude of prayer. A shield of the heater shape hangs on the left side. One small military figure remains in the lower part of the tomb. The monument has been mutilated, and much encroached upon by another tomb at a much later period.

The identification is somewhat doubtful, but it is believed to represent Lawrence de Hastings, who died in 1348, aged 30. He was the last of the Lords of Abergavenny buried in the Priory Church. His son and grandson were buried at Grey Friars, in London; and on the failure of the male line of Hastings, the Barony passed to other noble families who did not live at Abergavenny.

Nos. IV. AND V.—SIR WILLIAM AP THOMAS (1446) AND LADY GWLADYS, HIS WIFE, DAUGHTER OF SIR DAVID GAM (1454).

An altar tomb in alabaster, with two recumbent effigies, a knight and a lady at his right side, in the style of 1450. The monument has been sadly mutilated. The length of the figure of the knight is 6 ft. 4 in., and around his neck is a collar of S.S., having a lozenge-shaped jewel attached. The head rests on a helmet; the feet on a lion. The feet of the lady rest on two small dogs, who hold the ends of the mantle in their mouths. The sword is broken away from the knight; the dagger is on the right side. The carved alabaster base on either side has numerous small effigies, in very rich work. All the heads of the figures remain, but slightly injured. The eastern lower panel, representing the B.V. Mary, has some ancient colour remaining on it, and is a fine piece of work.

The two canopies with some of the panels forming the lower part of the tomb are supposed to have belonged to the reredos of the Priory, and not originally to the tomb.

The effigies represent Sir William ap Thomas and his second wife Gwladys, by whom he had Sir William Herbert, the first created Earl of Pembroke of that family, Sir Richard Herbert, of Coldbrook, and three daughters.

Nos. VI. AND VII.—SIR RICHARD HERBERT, OF COLDBROOK (c. 1470), SON OF SIR WILLIAM AP THOMAS, AND HIS WIFE MARGARET, DAUGHTER OF THOMAS AP GRYFFYD.

A 14th century altar tomb in alabaster, once rich and beautiful, but now much disfigured and mutilated. The effigy of the knight is 6 ft. 4 in. in length,

in armour. The head rests on the helmet, which is surmounted by his crest, on a wreath, viz., a sheath of arrows, the points downwards. He is bare-headed, without bascinet, and his hair cut short and square across the forehead. Round his neck he wears a collar, composed of alternate single roses and suns, two of the badges of the House of York, and to this is appended, as a jewel, a lion sejant. The sword is broken away from the left side; on the right the remains of a dagger are seen. His feet rest on a lion. The whole figure is spare and thin for so tall and powerful a man.

The effigy of the Lady Margaret is of the same length as her husband (6ft. 4in.), and proportionally stout; which, if correct, represents her as a woman of colossal stature and prodigious power. Her dress is close-fitting, with tight sleeves, and cuffs at the wrists; a mantle overall. The feet rest on two small dogs, wearing collars with bells on them, and holding the corners of the mantle in their mouths.

The sides of the tomb are filled up with projecting crocketed gables and pinnacles over niches. They are very fine, and quite as perfect as could be expected. On the north side are nine niches, eight containing angels holding shields, whose coloured heraldry has altogether vanished, and the ninth a small knight in armour. The south side is irregularly filled up with angels and two figures in armour—the wider panels probably formed the ends of the tomb. The canopies at the head are supposed to have formed part of the old reredos.

NO. VIII.—SIR RICHARD HERBERT, OF EWYAS.

An alabaster effigy of a knight in armour (6ft. 6in. long), under a recessed arch with crocket pinnacles. The figure is bare-headed; the hands being clasped in prayer; the head rests on a helmet; a sword at his right side; a lion at his feet. He wears a large collar of SS., with a crop patée as a pendant. Around the edge of the tomb is this inscription:—

“Hic Jacet Richardus Herbert, de Ewyas, miles qui obiit nono die. . . .
Anno Regni Regis Henrici Octavi 2d Cujus A~ia Propitiatur Jes.—Amen.”

The first part of this inscription is modern, but the latter half is original. The lower part of the tomb is filled up with angels holding shields, and saints with books. The arms of Sir Richard are given in the triangular space above the arch. The carving at the back of the recess does not belong to the tomb.

NO. IX.—EVA DE BRAOSE (? 1246).

An altar tomb of freestone, with a recumbent female figure, 4ft. 6in. long, much mutilated: older than the Church, and certainly not in its original position. The head is uncovered, and rests on two cushions, the lower one square, with a tassel at each corner, the upper one long, with a tassel at each end. The dress is a close-fitting kirtle, closed with a single row of small flat buttons closely set to the waist, and then becoming more full. The feet rest on an animal, probably a dog. The right hand lies across the body at the waist, and the left hand held something,

said by Churchyard to have been a squirrel, but now broken away. It seems to have been attached by a chain, which passes over the body with a sweep, and terminates in a wide slit or pocket in the side of the kirtle.

This monument is supposed to represent Eva, daughter of William Marshall, Earl of Pembroke, and wife of William de Braose, the last Lord of Abergavenny of that name. She died in 1246. Churchyard says, the story handed down was, that the lady had a pet squirrel which escaped, and she, in trying to recover it, overbalanced herself, fell from the Castle wall, and so lost her life.

They say her squirrel lept away,
And toward it she run;
And as from fall she sought to stay
The little pretie bun,
Right down from top of wall she fell
And tooke her death thereby.
CHURCHYARD.

The animal is supposed to have been represented on her tomb in commemoration of the event.

This effigy has certainly no characteristic whatever of the 13th century. Its true date is about 1300 to 1320, and, therefore, if it represents Eva de Braose, it must have been made long after her death.

No. X.—EVA DE CANTELUPE (1257).

This is by far the most interesting and remarkable effigy in the Church. It is an excellent specimen of sculpture, and all its details are rich and beautiful. The coarse masonry beneath detracts greatly from its fine appearance. It is an altar tomb of hard gritstone, with a recumbent female figure 4 ft. 3 in. in length. The face has been much injured. The head rests on an oblong cushion, dressed in a whimple with a veil hanging down behind. The figure wears a state mantle; the hands are raised upon the breast in prayer, holding a heart between them. The feet rest on a dog. The most interesting circumstance is, that the body of the figure below the hands is covered with a long heater shield, 23 in. by 17 in., with the Cantelupe arms, covered in relief by three very large fleur-de-lis, two and one. This is supposed to be the earliest representation of a shield on a female figure, and it enables the monument to be identified as that of Eva de Cantelupe, daughter and co-heiress of William de Braose, Lord of Abergavenny; she married William de Cantelupe, who in right of his wife became Lord of Abergavenny. He died in 1256, and left his widow Baroness in her own right. She died in 1257, leaving one son, George de Cantelupe, represented by the effigy in oak, in this Church, already described. This lady must have been a near relative of the Bishops Cantelupe, of Worcester and Hereford. St. Thomas de Cantelupe, Bishop of Hereford, bore three fleur-de-lis, which appear at the present time as the arms of the see of Hereford.

There is an effigy of diminutive size, but of surpassing beauty, in Castle Frome Church, which represents a knight holding a heart in his hand.

No. XI.—JUDGE POWELL AND HIS WIFE MARGARET (1635).

An altar tomb much mutilated, with two recumbent figures of a gentleman and lady, in the costumes of James I. and Charles I. The figures represent Andrew Powell, a judge on the Welsh Circuit for the counties of Glamorgan, Brecon, and Radnor, 1615—1635, and his wife Margaret, daughter of Matthew Herbert, grandson of Sir Richard Herbert, Coldbrook.

The general decadence in art is too plainly apparent in this pair of effigies.

No. XII.—DR. DAVID LEWIS (1585).

An altar tomb of freestone, representing Dr. David Lewis, judge of the High Court of Admiralty in the reign of Queen Elizabeth. A monument of high interest, and unique, and bearing decorations having reference both to the individual, and to the office he held. It is believed to have been made during his life-time under his own personal directions. The figure represents the judge in his robes of office. The head rests on a small clasped book, beneath which is a very large one, and under this a cushion. On his head is the flat round cap of a Doctor of Civil Law of Oxford. He is habited in a doublet, with a ruff round the neck and at the wrists. His hands are raised in prayer, and his feet rest on something too mutilated to be made out, possibly a sort of state slipper—perhaps trimmed with ermine. The lower part of the altar tomb presents a deeply moulded base and slab. It contains several curious emblems connected with the Admiralty. Dr. Lewis died unmarried, April 27th, 1584. This tomb has been well preserved, and the three front panels are boldly designed.

No. XIII.—FIGURE OF JESSE (CARVED IN OAK).

The remains of a grand example of a "Jesse Tree," perhaps the finest now to be found. It is not monumental, but is supposed to have formed part of the reredos of the High Altar, between the Choir and the Lady Chapel. The Tree of Jesse is an emblematical representation of the genealogy of our Saviour from David, formed by a tree growing out of the body of Jesse, the father of David, who lies asleep (Isaiah, chap. xi). It was often met with at the close of the 12th century. The "*Iconographie Chretienne*" thus describes a Jesse Tree, "Jesse asleep serves in some sort as the root of the mysterious stem, which issues sometimes from his breast, sometimes from his mouth, and sometimes from his brain. Branches diverge from the stem, and bear on their extremities one of the ancestors of our Saviour; at the summit one full blown flower serves as the throne of Mary, sometimes alone, at other times holding in her arms the divine Child."

This figure is the colossal statue of a man representing Jesse lying asleep, and reclining on his right side. The head, which has a long flowing beard, is covered with a cap, and reposes on a cushion, supported by an angel; the body and legs being clothed with folds of drapery. From the left side of the body issues the stem of the tree, a vine, grouped and supported by the left hand of the

figure. Above this it is cut short off, and no further portions remain. It is supposed to have been pulled down and destroyed at the Reformation, and the figure placed in its present position in 1820, during the alterations made in the Church at that time.

These Jesse Trees are by no means common. They were originally made to form a reredos of an altar, as was probably the case here, but are more usually represented in windows. Such an altar existed formerly at St. Cuthbert's Wells; another is now remaining at Christ Church, Hampshire. There is a fine Jesse Window in the chapel of Winchester College, of modern glass, copied from the old, and a very celebrated one in Dorchester Church, Oxfordshire; and also in St. George's, Hanover Square. There are several instances on the Continent.*

The monuments, now in this Church, when surrounded by all the knightly elements of grandeur, coats of arms, display of heraldry in coloured glass and on shields, the banners and other military accoutrements, must have produced a rich and solemn effect, that can only be supplied by the imagination, for they are gone altogether.

Many other memorials exist on the walls of the Priory Church to the Gunters, Milbournes, and others, which are worthy of being carefully preserved. The present floor of the Church is much above its original level, and it is probable that other slabs may exist beneath it.

Such memorials of the inevitable departure from this life, which awaits us all, give the old warning, so familiar as to become commonplace, ever seen, but seldom heeded. Churchyard thus quaintly begins the moral lesson he draws from their consideration —

O Lord (quoth I) we all must dye,
 No lawe, nor learning's lore,
 No judgment deepe, nor knowledge hye,
 No riches lesse, or more;
 No office, place, nor calling great,
 No worldly pomp at all,
 Can keep us from the mortall threat
 Of death, when God doth call.

And he goes on to draw the moral at considerable length, which each one of us may draw equally well, and perchance with greater profit, for himself.

* There is a fine Jesse Window in St. Mary's Church, Shrewsbury. (EDIT.)

THE ORCHIDACEOUS PLANTS OF HEREFORDSHIRE.

By C. G. MARTIN, Esq., President.

REMARKABLE as our county is for many natural products, it cannot be said that the Orchidaceæ, particularly the rarer species, are so abundant as they are in some other counties in England. It is a defect which need not be regretted, except perhaps by an enthusiastic botanist. A very slight consideration will show that it may be regarded not only with equanimity, but with cheerful resignation. Orchids are seldom found upon the best soils. Where they abound, the land is almost certain to be of an inferior quality, or indifferently cultivated. On poor, hungry, water-logged pastures, in wet woods and bogs, or upon thin chalky downs, or bare limestone ranges, the Orchids will be generally found growing most plentifully and luxuriantly. The construction of a large proportion of them would lead us to expect this. Plants which have thick, fleshy, bulbous roots and succulent stems, require excessive moisture; a large proportion of the Orchidaceous group are of such a nature. Instances are known of pastures that once abounded with Orchids which have altogether disappeared, as the result of thorough drainage and better cultivation. We have no bogs in Herefordshire. We have not a wide extent of comparatively useless moorland. We have no chalk-downs. Our limestone ranges are too argillaceous, and too poor in carbonate of lime, to satisfy the fastidious requirements of the higher classes of Orchids. In the British Flora the Orchidaceæ comprise sixteen genera, and thirty-nine species. In our county we have nine genera, and twenty-one species, with possibly four varieties which are disputable. Some of these are very rare, but, so far as I know, many of the most refined, the most highly specialized of the Orchids, have never been found in Herefordshire. My own knowledge of the county is very much limited to the district immediately around our city, but I am greatly indebted to the Rev. Augustin Ley, for much generous and helpful information, as to the habitats of Orchids in other localities to which I have never had access. Of the twenty-one species recorded for the whole county I have found fifteen in our own neighbourhood.

I will not weary you with any scientific description or technical details of the Orchid family. You can find them in any "Handbook of the British Flora." I shall endeavour to give a general outline of each plant, and the locality where it has been found, together with anything of special interest in connection with it.

1. *Epipactis latifolia*, or Broad-leaved Helleborine, is common in woods and shady places, and blossoms between July and September. The flowers vary somewhat in colour from purplish-green to deep purple. I have found them in Aconbury Wood, Haugh Wood, and Rotherwas Woods. Mr. Ley reports them from every district into which our county has been divided. There is a very curious feature connected with this flower which deserves recognition. Sir John Lubbock says, "This flower has special attractions for wasps;" and he quotes

Darwin as saying that, "if wasps were to become extinct in any district so would *E. latifolia*."

[Var. *E. media*, or Intermediate Helleborine. Var. *E. ovalis*. Var. *E. purpurata*. Babington considers these varieties the same as *E. latifolia*, the differences being so trifling as not worthy of being classed as separate species.]

2. *Epipactis palustris*, or Marsh Helleborine. This is a beautiful flower. The florets are few, whitish, tinged with crimson, somewhat drooping, and they grow in a lax spike. It is rare; flowers in July and August; and grows in wet meadows and marshes. In our county it has been found at Ridgway Cross, Cradley, and I have found it in the Checkley Valley, Mordiford. Lees, in his "Botany of Malvern," says "it is plentiful at Tedstone, on the banks of the Sapey brook." It has also been gathered on the rough moors, Mansel Gamage, at Burghope, and on the Moseley Common, Pembridge.

3. *Cephalanthera grandiflora*, or Large White Helleborine, is a rare and handsome plant. The flowers grow in a distant spike, and appear during May and June. They are of large size, sometimes as pure as snow, sometimes greenish-white, but more frequently delicately cream-coloured, with a small yellow lip marked with raised lines. The leaves are broad and bright-green. Until recently it was reported from only two localities in Herefordshire, Huntsham Wood, and Lord's Wood, on the Great Doward. But at our last field meeting, Dr. Wood, of Tarrington, brought some fine specimens which he found in the parish of Canon Frome.

4. *Cephalanthera ensifolia*, or Narrow-leaved White Helleborine. This is a rare plant of mountainous woods on limestone. The Rev. Frank Merewether brought me three or four plants in 1865, to ask me its name. The next day, by arrangement with him, I went to Woolhope, and he took me to the spot in Haugh Wood where he found it. Every year since, about the end of May or the beginning of June, I have gone to the same place and found it growing pretty plentifully. The only other place in Herefordshire where it has been gathered is Huntsham Wood. (Miss Lewis, of Ludlow, informs me to-day she has found it at Bringe Wood, near Ludlow, within the county of Hereford). It is a very elegant plant, blossoms somewhat spiked, white, the lip with slightly elevated lines on the disk, and a yellow spot in front.

5. *Listera ovata*, or the Common Tway-Blade. This, though inconspicuous, is one of the commonest of our Orchidaceous plants. (Specimens produced). It is readily distinguished by its two broad, glossy, ovate leaves, sometimes from three to four inches long, about half-way up the stem. It varies in height, according to the locality where it grows, from six to eighteen inches. The flowers are green, and they form a long loose spike, quite unattractive in appearance. But though it has so modest a bearing, there are few of our Orchids that are more interesting, and none of them show more contrivance and design in their structure. Hooker, Darwin, Sprengel, Sir John Lubbock, Dr. Müller, and others have spent hours at a time in watching its mechanism; and Darwin devotes no less than thirteen pages ("Fertilization of Orchids by Insects," p.p. 139—152) to his description and diagrams of it, and remarks upon it. It has great attractions for insects.

6. *Neottia nidus-avis*, or Bird's Nest Orchis. This most remarkable plant, in appearance more like one of the Orobanches, has its stem, leaves (or rather scales), and flowers all of a dingy-brown hue. It is rather rare, but is well represented in Herefordshire. It is said to have received its old name of "Bird's Nest" from its peculiar root, which consists of very numerous tufted, cylindrical, fleshy fibres, and are supposed to remind one of the sticks used by some birds in the construction of their nests. This Orchis has been found in every district in our county. The members of the Club gathered them abundantly at our last Field meeting, in Aconbury Woods, on the 18th of last month. They have been unusually abundant this year, in other counties as well as our own.

7. *Epipogum aphyllum*, the Yellow-flowered Leafless Orchis. This might almost be called the Herefordshire Orchis. It is fully described by Mr. Edwin Lees in his "Botany of Malvern." His description is from a specimen sent to him by the Rev. Gregory Smith, and was gathered in a copse called "The Paradise," close to Sapey Brook, at Tedstone Delamere, in 1854. It was discovered and gathered by Mrs. Anderton Smith. It was dug up and placed in the Rectory Garden. No other specimen has been since discovered, though carefully sought for. It has been found twice in a wood near Ludlow by Miss Lloyd in 1876, and by Miss Peel in 1878. It is, without doubt, an extremely rare plant. It is known on the Continent, but even there it is most rare. Miss Lewis, of Ludlow, says that she saw the plants found in 1876 and 1878. There were three or four distant florets on the stem, similar to the Bee Orchis, but they were filmy and semi-transparent in appearance. As it has been twice found within the last decade on the borders, if not within our county, we may hope that it will be seen amongst us again; and if it should be, I venture to express the hope that it may be permitted to grow and seed, and have every chance of reproduction.

8. *Spiranthes autumnalis*, or Lady's Tresses, is a somewhat rare plant, but may be found in certain districts of our county, about the end of August and during September. It is reported from Lyston, Orcop, and St. Weonard's, from Coughton Marsh and Coppet Wood Hill, also between Hoarwithy and Carey. Mr. Ley found it at Hole-in-the-Wall, Mrs. Armitage at Dadnor, and it has been gathered in Gorstley Quarries. In central Herefordshire it is known to grow on the south side of Bishopstone Hill, and the Rev. R. H. Williams says that it grows plentifully at Byford. Mr. Crouch reports it from his district in the north-west, Mr. Lingwood from Llanthony, and I found it at Cublington, in the parish of Madley. The flowers are white, with a sweet, though not powerful, scent of almonds. They are spirally arranged, the florets all pointing one way, sometimes from right to left, sometimes from left to right. It is an especial favourite with humble bees. They begin with the lowest floret on the stem, and climb to the top, extracting the nectar from each, "in the same manner as a woodpecker climbs up the bark of a tree in search of insects" (DARWIN).

9. *Orchis mascula*, or Early Purple Orchis, the "Cuckoo flowers" of our childhood and the "long purples" of Shakespeare, is probably the commonest of our native Orchises. It is a beautiful plant with spotted leaves, and richly dyed petals, and is well known as the earliest of the class. I have often found it in

March, and in April it is pretty general on indifferent pastures, in wet woods, in shady lanes, and even on the roadside. Bishop Mant wrote of it :

In that broad field of springing grass,
First of his lip and horned class,
The early-flowering Orchis show'd
His smooth and spotted leaves ; and glow'd,
With spiky stalk elate, and head
Of spiral blossoms, purple red.

It is generally admitted that the *O. mascula* is the flower referred to by Shakespeare in Hamlet, Act iv., Scene 7, at the meeting of the Queen and Laertes, when she tells him of the death of Ophelia.

Queen : "Your sister's drowned, Laertes !"

Laertes : "Drowned ! O, where ?"

Queen : "There is a willow grows ascaunt the brook,
That shows his hoar leaves in the glassy stream.
There, with fantastic garlands, did she come,
Of crow flowers, nettles, daisies, and long-purples,
That liberal shepherds give a grosser name,
But our cold maids do *dead men's fingers* call them."

The name which Shakespeare delicately hints at, and the other name which he cites, have both been preserved in old herbals. They are unquestionably Orchids. They could not apply to any other class in the floral world. The identity of the "long purples" with the Orchis family has thus been fixed by Shakespeare himself.* He did not write with the precision of a botanist, but with the freedom of a poet. It is probable that he did not know the scientific distinction between one species and another. He looked upon flowers as "charming factors in the general loveliness of nature," and he did not hesitate to use their common well-known popular names. "Dead men's fingers" was the vulgar name applied to *O. maculata*, *O. latifolia*, and *Gymnadenia conopsea*, because of their peculiarly-shaped, pale, palmate tubers (specimens shown), which are supposed to bear certain resemblances to the human hand. There is a touching old ballad that tells of the sorrows of a maiden who had lost her lover by death, and this name, with a slight variation, occurs in one of the stanzas :

Then round the meddowes did she walke,
Catching each flower by the stalke,
Such as within the meddowes grew,
As *Dead man's thumb* and Harebell blew ;
And as she pluckt them, still cried she,
'Alas ! there's none e'er loved like me.'

—*Roxburghe Ballads.*

10. *Orchis Morio*. Green-winged Meadow Orchis. In our county this is perhaps almost as universal and common as the preceding. It used to be called the "Fool's Orchis" in my boyhood, because heedless and unobservant people were

* Warburton, who wrote about a century ago, says "'Long purples' is the vulgar appellation for a beautiful species of wild flowers. Their botanical name is Orchis."

supposed not to discriminate between it and *O. mascula*. The flowers form a loose spike, and may be readily distinguished by their sepals, which, whatever the colour of the florets, are marked with green veins, and curved upwards so as to form a kind of helmet over the rest of the blossom. I have gathered them in damp meadows near to Hereford, of every shade of colour, from white to deep purple, and sometimes richly variegated.

11. *Orchis maculata*, or Spotted Palmate Orchis, is as common as both the foregoing. It is a very elegant plant. The flowers are a delicate lilac, and sometimes almost white. They are spotted more or less with purple. So also are their leaves. They grow abundantly in our woods, lanes, and pastures.

12. *Orchis ustulata*. Dwarf Dark-winged Orchis. I have gathered this pretty peculiar little plant frequently on the chalk hills of Surrey, but never in Herefordshire. It is not unknown in our county, though, unquestionably, it is very rare. Mr. Lingwood found one specimen in 1859 in the meadows by the Wye at the foot of Coppet Wood Hill, and he also found it in one other locality. It has been reported to be growing "in plenty" in a meadow near Colwall, and Mr. Lees received some specimens in 1868 from limestone slopes at Mathon.

13. *Orchis latifolia* or Broad-leaved Marsh Orchis, is more widely distributed, but is not common. It is described as a tall and somewhat slender plant, the flowers usually deeper coloured and less variegated than *O. maculata*, with a hollow stem, and leaves remarkably erect and pointed. Mr. Lingwood found it at Orcop; Mr. Purchas in a damp meadow near the Castle Brook, Bill Mill; Mr. Ley at Ashe, at Hoarwithy, at Sollershope, and at Eaton Bishop. It has been reported from Bosbury, Egleton, and Widemarsh, Hereford.

[Var. *Orchis incarnata* is very rare. Bentham does not note this as a separate species. Mr. Ley found it growing "in some plenty" in June, 1880, in a marsh at Pont Esgob.]

14. *Orchis pyramidalis*, or Pyramidal Orchis, is one of the most beautiful of the class. Its dense, compact pyramid of exquisite blossoms of a rich deep pink or crimson purple are unmistakable. It is not common in our county. It has been found at Marcle Hill and at Mordiford. Mr. Purchas, Mr. Ley, and Dr. Bull have gathered it at Fownhope. Mr. Ley reports it from Oldbury Hill. It has been gathered at Cradley, at Whitbourne, at Castle Frome, and the Mill Copse, Cowleigh Park. I found it growing plentifully last year on the Ridgeway, Eastnor Park. Specimens have been gathered in a quarry near Kimbolton, and on the roadside near Berrington Tunnel. It is said to have been found in the western districts of our county, but the only locality given is Bredwardine Hill. At our last Field Meeting at Aconbury Camp, Dr. Wood brought some plants which he found at Canon Frome. Our veteran member, Mr. Edwin Lees, poetically observes, "when in July the elegant marbled butterfly is fluttering about these beautiful Orchids the picture is very exciting to a lover of nature's harmonies." Professor Darwin has written perhaps more enthusiastically of this Orchis than of any other. He says it is "one of the most highly organized species which I have examined." After a very minute description of its several parts, he continues "in no other plant, nor indeed in hardly any animal, can adaptations

of one part to another, and of the whole to other organized beings widely remote in the scale of nature, be named more perfect than those presented by this Orchis. As the flowers are visited both by day-and night-flying Lepidoptera, I do not think that it is fanciful to believe that the bright purple tint (whether or not specially developed for this purpose) attracts the day fliers, and the strong foxy odour the night fliers." One feels while reading his remarks about *O. pyramidalis* that he is describing a complicated, delicate, and exquisite piece of machinery rather than an English wild flower, commonly in many districts regarded as a wayside weed. Douglas Allport has written some pleasing verses upon this lovely flower, only one stanza of which I will quote :—

Thus, when within my sunless room,
Heartsick and worn with Mammon's leaven,
Thy *pyramids of purple bloom*,
Blush through its loneliness and gloom,
The spirit bursts its living tomb,
And basks beneath the open heaven.

15. *Gymnadenia conopsea*, or Fragrant Orchis. This charming flower may be found pretty plentifully within a few miles of Hereford. It is known readily by its rose pink colour and its strong delicious perfume. I have for many years gathered it in a damp meadow near Aconbury Hill. It may be found, very sparingly, in most parts of our county during June and July, though it is singularly little known and appreciated. Some of the localities named for it are the Great Doward, Llanwarne, St. Weonard's, Orcop, Fownhope, and Tedstone Delamere. Mr. Lees found it at Colwall and West Malvern. Mr. Ley reports it to grow in a meadow at Tram Inn, and Sir George Cornewall told me, some years ago, that it grows at Moccas. It has also been found in the Olchon Dingle, and the head of Crasswall Valley. The Rev. R. H. Williams informs me that it is common at Byford.

16. *Gymnadenia albida* is extremely rare in this part of England, though it is not infrequent in grassy mountain pastures, especially in the north. Its flowers are very fragrant and cream-coloured. They grow in a somewhat dense spike, and the stem is rather shorter than *G. conopsea*. Mr. Ley found about 30 specimens in a single spot in June, 1880, growing in company with *Habenaria bifolia*, in a hill-side meadow at the head of the Grwynne Valley. I found one specimen only in June, 1868, in a meadow near Aconbury Hill, growing in company with *G. conopsea*. I have often searched for it since in the same place, but have not found it again. I showed it to the late Mr. Flavell Edmunds, who called it *Habenaria albida*, or small White Butterfly Orchis. Bentham gives it the same name.

17. *Habenaria chlorantha*, or Great Butterfly Orchis, is a singularly handsome plant. It has a long loose spike of greenish-white flowers, is well-known, and is generally found in damp woods throughout the county. It is reported from every district. The larger nocturnal Lepidoptera are much attracted by its strong sweet odour, and the abundance of nectar which it yields.

18. *Habenaria bifolia*, or Lesser Butterfly Orchis, is similar in outward

appearance to the last, though smaller. Bentham and some other botanists regard them as varieties of each other. But a close examination reveals many permanent differences, and Mr. Darwin observes, "I cannot doubt that the larger and lesser Butterfly Orchids are distinct species, masked by close external similarity." It is found throughout our county, and it is needless to particularise localities. Neither of these plants suggests the idea of a butterfly, and it is difficult to understand how they ever became so designated.

19. *Habenaria viridis*. Frog Orchis. There appears to be even less reason for calling this the Frog Orchis than there is for naming the two last-mentioned flowers the "Butterfly." It is a small plant, and is very inconspicuous. Its stem is six or eight inches high. Each floret has a green helmet, and a greenish brown lip. It is not uncommon on pastures, chiefly in hilly districts, but probably its colour prevents its being readily observed. It has been reported from almost every district in our county.

20. *Ophrys apifera*. Bee Orchis. There is no mistaking this charmingly pretty flower. The stem varies from six to twelve inches in height, and generally bears a few distant florets. The ovate sepals, which resemble wings, are generally of a delicate lilac tint; the petals are small and narrow, sometimes the same colour as the sepals, and sometimes greenish-white; the lip, which looks so like the body of a bee, is brown, variegated with yellow, and is soft and velvety.

The Orchis race with varied beauty charm
And mock the exploring bee, or fly's aerial form.

This plant is not common in our county, and, unfortunately, where it grows it is in danger of being exterminated by too-zealous or too-selfish collectors. Hence it is undesirable to mention the localities where it may be found. It may be looked for on limestone and cornstone pastures and banks, especially the latter. It grows in great abundance on the chalk downs of our southern and eastern counties. It is a noteworthy circumstance, and deserves special recognition, that *O. apifera* has been, during this season of 1885, abnormally abundant, and has been found in several new localities in our county. From one place alone more than fifty plants were brought to me, and the gentleman who found them said he "could have gathered more than a hundred flowers in a space not more than five yards square." (Numerous specimens were produced.)

21. *Ophrys muscifera*. Fly Orchis. This plant is much rarer than the Bee Orchis. It has been found on the Great Doward both by Mr. Purchas and Mr. Ley. It was found in 1850 upon the Little Doward. Mr. Ley discovered it in 1880 on Coppet Hill, and again in 1883. Mr. Watkins has picked several flowers on the Great Doward this year. There are no other well authenticated localities for this pretty Orchis in our county. I have gathered it frequently, year after year, in Surrey at the end of May and the beginning of June. Its florets are about the size of a common house fly. The greenish sepals resemble the wings, and its slender lateral inner sepals are not unlike the antennæ of an insect; while the narrow brownish-purple lip, which is two-lobed at its extremity, has a pale-blue spot in the centre.

These are, so far as I know, all the Orchidaceous plants known in our county. I have seen it stated in a botanical work that "*O. militaris* is common in Buckinghamshire, Oxfordshire, and Herefordshire." I think that is an error so far as our county is concerned. Neither Mr. Purchas, Mr. Lees, Mr. Lingwood, nor Mr. Ley have any record of it, and the geological formations of the other counties named differ widely from ours.

That the Orchidaceæ are the most interesting of all our native wild flowers is almost a truism. No other class has elicited so much study and research. None others show so much contrivance and design: such adaptations of means to ends. Some of them are extremely sensitive—even the touch of a human hair is enough to cause an immediate response. Wordsworth, "The Poet of Nature," might have been watching an insect visiting a *Listera ovata*, or an *O. pyramidalis* when he wrote the well-known lines—

It is my faith that every flower
Enjoys the air it breathes.

There are peculiarities in the structure of Orchids which distinguish them from all other classes in the floral kingdom. The quaint and curious mimicry of natural objects—from which so many of them take their names—enhances their singularity, and adds not a little to the zest with which the lover of nature searches for them. The most distinguished naturalist of the present century, Professor Darwin, after twenty years of close, sustained, patient study of them, wrote one of his most fascinating books about them. The Duke of Argyll, in his "Reign of Law," commenting upon Darwin's discoveries among the Orchids, observes, "the complication and ingenuity of these contrivances almost exceed belief. 'Moth-traps and spring guns set upon these grounds,' might be the motto of these Orchids. There are baits to tempt the nectar-loving Lepidoptera with rich odours exhaled at night, and lustrous colours to shine by day; there are channels of approach along which they are surely guided so as to compel them to pass by certain spots; there are adhesive plasters nicely adjusted to fit their probosces or to catch their brows; there are hair-triggers carefully set in their necessary path, communicating with explosive shells, which project their pollen-stalks with unerring aim upon their bodies. There are, in short, an infinitude of adjustments, for an idea of which I must refer my readers to Mr. Darwin's inimitable powers of observation and description."

But the Orchidaceæ present mysteries as well as wonders. Most of the species which comprise the genus "*Orchis*" exhibit a most curious and, as yet, unexplained anomaly. They all possess well-developed spur-like nectaries, which seem to imply the secretion of nectar, yet in none of them has the smallest bead of nectar ever been found, even under the microscope. They are favourites with insects, especially the Lepidoptera. Darwin gives a list of twenty-three of these beautiful creatures which he had observed visiting various Orchids. Why then do insects visit them so freely? What is the attraction? Sprengel, knowing the absolute absence of nectar, calls these Orchids, "*Scheinsaftblumen*," or Sham-honey flowers. That is, he believes that these plants exist by an organized system

of deception. Darwin vigorously combats such a theory, and retorts, "he who believes in this doctrine must rank very low the instinctive knowledge of many kinds of moths" (p. 46). He himself suggested an explanation, but his severely-accurate mind was not quite satisfied with it. It remains a subject of much interest, and worthy of the study of our entomologists.

Thus it is not only botanists who are interested in our Orchidaceous plants. They possess almost as many attractions for entomologists. Even the most casual observer can scarcely fail to be charmed by their beauty; and those to whom mental effort is a pleasure may find the richest delight in investigating their wondrous mechanism, and trying to solve the mysteries which environ them. But to every lover of nature, and that includes every member of the Woolhope Naturalists' Field Club, they illustrate and emphasize the truth so finely expressed by Pope—

All are but parts of one stupendous whole,
Whose body Nature is, and God the Soul.

* * *

All nature is but art unknown to thee,
All chance, direction which thou canst not see;
All discord, harmony, not understood,
All seeming evil, universal good.

Woolhope Naturalists' Field Club.

AUGUST 27TH, 1885.

RISBURY CAMP AND BLACKWARDINE.

THURSDAY morning was a glorious day for the thirsty soil—all vegetation rejoiced in the pouring rain that had set in during the night, and gave every promise of continuing for the day. The brown fields would soon be green again, and the turnips would swell rapidly. Scarcely a shower had fallen for two months, and all true naturalists could not but rejoice in so beneficial a refreshment of nature. The members of the Woolhope Club did so, though the great majority of them preferred to acknowledge their feelings in the comforts of home. Those who did come deserve immediate mention. In the absence of the President, Mr. H. C. Moore, a vice-president, took his place for the day; there were present also Major Doughty; Dr. Bull, the Revs. W. H. Lambert, Augustin Ley and David Price; Messrs. H. C. Beddoe, Ernest Bull, T. Davies Burlton, Robert Clarke, — Madeley, H. Vevers, and Theo. Lane, the secretary. Carriages were waiting at Leominster station, and set them down at Wickset, where the old Roman road leaves the one in ordinary use to-day. Risbury Camp was in full view on the other side of the valley, but the visitors took the old Roman Road across some fields over the brow of the hill for about a mile, to Hill Hole. It boots not to tell of the fine views this walk commands, the numerous camps and distant hills, for the rain that was so happily reviving the turnips hid them all. A sight very unusual in Herefordshire, however, was seen, and that was, fields divided by stone walls.

From Hill Hole the way was taken up the dingle back to Risbury Camp, and beautiful it would have been if the gleams of sunshine had prevailed instead of the mists of rain. Some interesting plants grow here, whose discovery enlivened the walk. The green Hellebore, *Helleborus viridis*, grows on both sides of the brook from Hill Hole to Humber. This locality for the plant was pointed out by the Rev. T. Hutchinson many years ago. He thought it a true native here, and certainly it appears to be so. The Rosy Willow herb, *Epilobium roseum*, a very local plant, was very plentiful on the stream margins, at Hill Hole, Humber, and afterwards on the Lugg at Leominster. The Umbellate Hawkweed, *Hieracium umbellatum*, a rare species in Herefordshire, grew in a hedge at Hill Hole, and so too did *Arctium majus*, the Greater Burr.

Leaving the brookside near the interesting arches of the old bridge Risbury Camp was soon gained. Its massive entrenchments were examined on all sides

with critical scrutiny, and attention was called to its more interesting features—its entrances, and the construction of the great inner vallum. The rain still continued, and it was thought advisable to adjourn to the Court Farm, where Mr. Lambert very kindly received the visitors, and where the following paper was read :—

RISBURY CAMP.

This Camp is one of the strongest and most perfect fortifications in Herefordshire, and yet, from its remote situation, it is very seldom visited, and it is the one about which perhaps the least is known. History is absolutely silent about it, and tradition even fails to give any clue towards the discovery of its makers, or its occupants. The sole source of information is to be gained therefore from the plan and structure of the camp itself. A careful examination gave the following results : the inner space, or the camp proper, is usually called oblong, but it is rather an irregular parallelogram, with the corners rounded off. It is 342 yards long, and 134 yards across the middle, and measures fully $8\frac{1}{2}$ acres in extent. It is nearly, but not quite north and south, though it may be spoken of as such for convenience. This inner space is level, and enclosed by a very remarkable vallum. From the inside it presents a rampart from 12 to 15 feet high, where it has not been opened for stone, and an external escarpment of 55 feet, at the steep angle of about 60° . This embankment, when last opened on the west side, was found to have a dry built stone wall, faced externally. From some 20 yards in extent “hundreds of loads of stone” have been taken. This high vallum contains very much more material than could have been taken from the wide trench that surrounds it, which leads to the inference that the earth and stones were obtained by levelling the inside space.

There are two entrances to the inner camp, one on the eastern and the other on the western side, not quite in the middle but at a distance of about 151 yards from the southern end. These are simply cut straight through the foss and embankment, without any special earthwork protection. They are not quite opposite each other, the western end being about 10 yards nearer to the south than the other.

The outer area incloses a ground space of some 25 acres. It presents a triple entrenchment on the east and south side, and double on the north and west, where the Holywell brook and Humber brook form the outer defence. The entrenchments without the great vallum—now much levelled down—enclose a space 80 yards wide. It is less wide on the south side, and still less on the west and north sides. The outer escarpment is about 40 feet deep, the present roadway occupying the trench on the south and eastern sides. There is an entrance from this roadway on the eastern side through the outer escarpment, but it is not quite opposite the eastern entrance to the camp, being further to the south. This also is a simple direct entrance without any earthwork protection. There is no water supply within the camp at the present time, but there is a guarded approach to the brook which flows at the foot of the entrenchments at the north-east corner. There may very readily have been a well within it for the trouble of sinking some 30 or 40 feet. There is a depression of the ground towards the southern end of

the inner camp, which the natives absurdly call "the Queen's kitchen." This perhaps may show the position of the quarry from which stone was procured, or of the well, or both. The hops always grew with great luxuriance on this spot, Mr. Lambert, the tenant, says.

Such are the features now presented to the student of history at Risbury Camp. They have been interpreted very differently by different observers. It is generally considered to be an early British camp: "one of the line of British encampments commencing at the Malvern Hills, by which Caractacus and the ancient British chieftains opposed the Romans." The objections to this view are overwhelming. Risbury Camp differs altogether in situation and mode of construction from the British camps which are so plentiful in Herefordshire.

1. It is situated in a valley instead of on a hill summit naturally difficult of approach.

2. It is rather an irregular parallelogram, than oval, in shape.

3. Its inner surface has been levelled.

4. The largest vallum is within the foss, and supported by a central stone wall.

5. The outer entrenchments are much less strong than the inner one, and are widely separated from each other on the east side.

6. The entrances to British camps are invariably curved, sometimes letter S-shaped, to aid the defence; and, in addition to this, are strongly protected by embankments, prolonged within and without.

7. The entrance to British camps is most frequently at the narrowest end, where the embankments approach each other and thus aid the defence.

It may also be added that an early British camp would scarcely be required in this situation, with the Bache Camp $3\frac{1}{2}$ miles to the north, and Ivington Camp about 4 miles to the west, both in positions of greater natural strength.

A second view supposes Risbury to be "a late British camp, erected by the British against the Saxons, long after the departure of the Romans." Mr. Flavell Edmunds took this view. When the club visited Risbury in 1868, Mr. Edmunds read a clever paper on the Camp, which was published in the transactions for that year.* Mr. Edmunds thought that Risbury Camp gave evidence of a comparatively advanced state of civilization, from its triple line of defence, its skilful plan, the elevated rampart around the inner camp, and the construction of its chief approach on the eastern side. He thought that, like the Herefordshire Beacon entrenchments, those at Risbury were erected by the British against the Saxons at perhaps as late a period as the 9th or beginning of the 10th century, which opinion, he thinks, is strengthened by the facts that the camp has no British or Roman name, and that the names of all the neighbouring places are purely Saxon. The arguments against this view are—

1. That the British were not likely to possess the skill to make such elaborate fortifications.

2. If they had the skill, they would neither have had the men nor the

* *Woolhope Transactions*, 1868, p. 19.

time to make them ; nor would they have been allowed to do so by the Saxons.

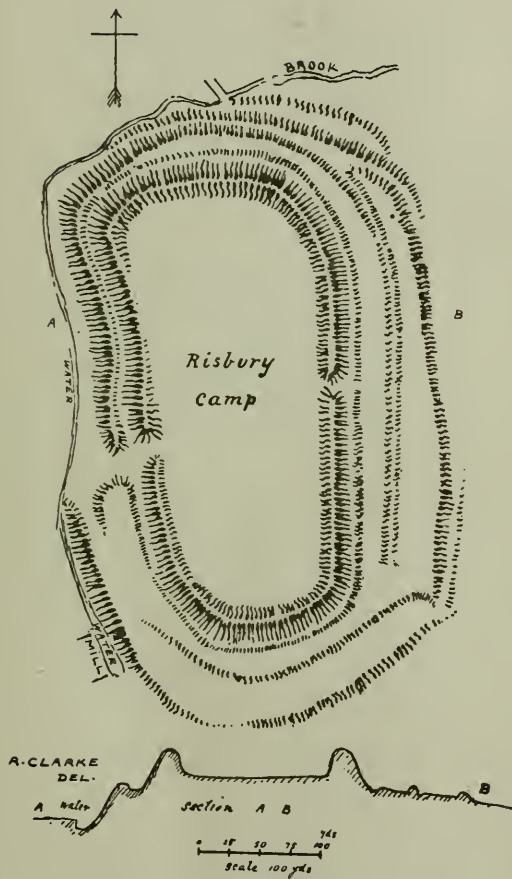
3. There are no signs of warfare in the immediate neighbourhood.

Mr. H. H. Lines, of Worcester, who has made the plans of Roman and British entrenchments a life study, states that it is highly probable that the British tribes after the departure of the Romans, did not retain the practice of Roman fortification ; with a newly awakened sense of former independence they relapsed into their old Celtic habits of misrule, and were in no condition to throw up such gigantic earthworks as their ancestors had formerly done. They doubtless occupied their former strongholds, which they found standing, and which still stand to the present day, simply because it would not pay to destroy them, for this is the true secret of their preservation. Mr. Lines is thus of opinion that such a camp as Risbury was not likely to have been formed after the departure of the Romans.

The more the situation and scientific construction of Risbury Camp are considered with reference to the well-known principles of Roman castrametation, the more clearly does it become evident that it is of Roman origin and design. The arguments in proof of this supposition may be thus briefly stated :—

1. The situation of the camp is in the valley and close to the Roman road.
2. Its immediate proximity to the Roman town, situated at Blackwardine, which was apparently unfortified.
3. Its elaborate construction and remarkable strength, such as it was the pride and glory of the Roman engineers to produce.
4. Its shape as an irregular parallelogram with rounded corners, but still admitting the Polybian arrangements of the camp.
5. The great strength of the inner vallum, and possibly its construction with a central wall of stone covered with earth.
6. The position of this large central vallum within the surrounding foss, and the protection afforded by its high rampart.
7. The fact of the entrances being cut straight through the foss and ramparts at right angles, as is the case with all Roman camps, of which an example precisely similar to Risbury exists at Brandon ; (and the Roman formation and occupation of Brandon Camp has never been questioned).
8. The two entrances into the middle of the camp are opposite to each other.
9. The broad space between the outer embankments admitted also of the proper disposition of the cavalry without the inner camp, which was reserved for infantry.
10. The size of a Roman camp was always adapted to the number of troops it was required to hold, and this number also regulated the number of entrances. It was unnecessary here, from its size and situation, to make entrances at the ends of the camp.
11. The position of the camp at Risbury with reference to the Roman occupation of this county is precisely that on which a Roman fortified post would be required. The length of a day's march for Roman soldiers was considered to be 14 miles. It is 14 miles from Magna (Kenchester), the centre of Roman power here ; it is 14 miles from Bravinium (Leintwardine), the second Roman town of

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importance ; it is 12 miles from the camp at Backbury Hill, in the direction of Ariconium (at Weston-under-Penyard, near Ross) ; 13 miles from the camp at Fownhope ; 15 from Caplar ; and 15 miles from Wall Hills, near Ledbury. Moreover, the protection of a fortified post would be required here for the town of Blackwardine, which seems to have been unfortified, or more probably was simply stockaded.

Lastly, 12. It may be stated that the absence of any tumuli, or other signs of warfare in the immediate neighbourhood, leads to the inference that it was too strong to be attacked, and eventually was quietly deserted.

For all these reasons there seems but little doubt that the camp at Risbury is of Roman origin and construction. The loss of its Roman name it shares with the town close by at Blackwardine, with Wall Hills, and many other places. The fact that Roman remains have never been found within the camp seems at first sight to militate strongly against the supposition of its being Roman ; but this, however, is remarkably the case at Credenhill Camp, and also at Brandon, an undoubted camp of Roman construction and occupation. It would almost seem as if the soldiers' rations were prepared in the adjoining towns, and that the men received and spent their pay there also. It is, however, more probable that they were only occupied as a temporary refuge when circumstances rendered it necessary or politic to do so.

The Woolhope Club visited the camp at Risbury in 1868. The entrenchments at that time were covered with a dense growth of trees and underwood ; and the inner camp was a hop-yard, planted also with young orchard trees. The camp then seemed to be what it is represented on the old Ordnance map—a simple elongated oval—and was considered to be British in structure. Now that the embankments have been happily cleared, it is evident that its form is a parallelogram somewhat irregular in outline, as you will see clearly represented in the tracing now shown of the new Ordnance Survey. The great strength and scientific construction of the earthworks is now well shown, and it has become one of the most interesting camps in the county to visit and study. Belonging to the Silurian series are many British camps unaltered by the occupation of others, as the Bache Camp, Croft Ambery, Thornbury, Herefordshire Beacon, Coxwall Knoll, Gaer Camp, Caplar Camp. British camps afterwards occupied and altered by the Roman troops are not rare, as at Ivington Camp, Sutton Walls, Wall Hills, Wapley Camp, Credenhill Camp, and probably others also. But of camps originally constructed by Romans in Herefordshire, Brandon Camp, opposite Coxwall Knoll, and Risbury Camp, are the best examples, with Dinedor, Backbury, Haffield, Fownhope, and some other smaller posts for temporary occupation.

Some little discussion then took place on the papers, for this camp has always been considered before to be British, and admitting it to be Roman, it was thought it could not have been used as a garrison station, but only as a temporary refuge, since if it had been permanently occupied, some traces of a residence there must have appeared during its cultivation.

The noticeable plants found on the great vallum were a rare variety of the Hawkweed *Picris* called *arvalis*, and on its Western side a patch of that curious plant the Stinking Iris, *Iris fetidissima*. The way was now taken for Humber Church, which was reached just in time to afford shelter from a heavy storm. The Church consists of a nave, chancel, and ancient oak porch on the south side, with a tower at the west end covered with a shingle spire. The chancel is unusually long compared with the nave. There is a modern transept on the north side with an ancient door now walled up, and a priest's doorway south of the chancel. At the east end are two Early lights with a circular one above. Between the two lights is a very large projecting stone corbel, probably used for a statue in early days. There is also a piscina, or aumbry, in the south chancel wall. The upper part of the font is Norman, which it was stated had been found by the present incumbent, the Rev. H. V. Bacon, in a neighbouring garden, and had been remounted and replaced for the service of the church. It is worthy of remark also that several blocks of Travertine stone were observed in the walls of the Norman and Early English portion of the church, a proof of the existence of springs depositing lime—petrifying springs as they are called—existing in the immediate district. The church has been thoroughly restored inside and out, the last addition being the shingle spire, in memory of the late Rev. Philip H. Scudamore Stanhope, Rector of the parish.

The rain still came down heavily, so the time was utilized by reading the paper on the discoveries at Blackwardine, which Mr. T. Davies Burlton had been kind enough to prepare for the Club, which was illustrated by his own photographs, and a collection of Roman pottery, red and black, which had been kindly brought by Mr. Wadeley, of Stoke Prior. Some of the pottery was thick and coarse, portions of large jars, with a mouth 11 and 13 inches wide; but other portions were much finer, Samian ware, and turned. There were also several Roman coins, which are specially noticed in Mr. Burlton's paper.

Blackwardine lies close to Humber, on the other side of the brook, and the footpath was taken under Mr. Wadeley's guidance just over the bridge. He pointed out the fields in which most of the remains had been found—indeed broken pieces of pottery were thickly scattered about—and in one part of the railway cutting, near the surface, some 40 or 50 yards of charred material 18 inches thick were observed. A sharp look-out was kept for any traces of defence to the old town. There is a steep escarpment towards the brook for some distance, and the border of the two fields containing the remains is some three or four feet higher than the adjoining ground, which, whether natural or artificial, could easily have been stockaded. The rain however was relentless, and although an enthusiastic botanist went through some ten or twelve yards of some high clover to gather the Clover Dodder, *Cuscuta trifolii*, there was a limit, the archaeologists thought, to investigation under such circumstances, so the way was taken across a turnip field—how fresh and happy the turnips looked, holding up the great drops of water they had been so long drooping for!—and it was decided to walk on at once by the line to Stoke Prior on the return to Leominster.

The church at Stoke Prior is quite modern. It was built in 1862-3 on the

site of the old church, which is said to have been Norman in style. The old roof is replaced, said to have been originally erected during the protectorate of Cromwell (1658), but the Church has lost such early architectural features as it may have had. Some interesting old Priory buildings exist at Stoke Prior, now used as farm buildings. They belonged probably to the Priory Church of Leominster, to which this church was a chapel of ease, and the living is still in the gift of the Vicar.

The members had a good hour to spare at Leominster. The majority went to see the ancient and beautiful Priory Church, under the guidance of Mr. Robert Clarke. One had the pleasure of visiting the most interesting collection of plants in the county, in the gardens of Mr. Henry Newman; but the palm for perseverance in the Club's work of the day must be awarded to the Rev. Augustin Ley, who employed the time happily in botanizing the ditches in the Lugg Meadows and the banks of the river. He brought back some treasures. Many forms of roses and brambles had been met with during the day, but in the Lugg Meadows at Leominster, Mr. Ley gathered the bramble *Rubus cœsius pseudo-idaeus*, the first time it has been found in Herefordshire. The *Polygonum maculatum* was very fine on the Lugg here; and in one ditch he found the very local species *Schrophularia Ehrharti*, Ehrhart's Figwort, growing plentifully. It is a plant that has been long known in the Leominster district. It grows, too, at Croft, and near Hereford. The most interesting plant Mr. Ley found, however, was a species of Burr-reed, to which attention was first called by Mr. Beeby, as new to science, in the "Journal of Botany" for July, 1885. He has named it *Sparganium neglectum*; and well he might, for it is curious how so large a plant could have been so long overlooked. It differs very distinctly in the form of its fruit, as well as in the structure of its epicarp, from the ordinary Branched Burr-reed, *Sparganium ramosum*. It has been found in several counties, Salop and Worcester amongst the number. It was gathered at Moccas Pool ten days since by the Rev. J. H. Thompson, and it is believed that it will be found to be one of the commonest forms of the Branched Burr-reed in Herefordshire.

The damp of the day was dispersed at the Royal Oak Hotel, and after dinner two very interesting papers were read; one on "The Botany of the Honddu and Grwynne Valleys," and the other on "The Pheasant," in continuation of "The Birds of Herefordshire."

SOME TRACES OF ROMAN AND SAXON OCCUPATION OF THE DISTRICT OF RISBURY.

By T. DAVIES BURLTON, Esq.

THIS paper, which has been undertaken at the request of the Committee of our Club with some diffidence, merely aims at placing on record some local facts that have been observed, which, as time goes on, it might be more difficult to collect, but to which now perhaps persons present may be able to add.

The early history of England up to the period of its complete subjection to Egghbert in the beginning of the ninth century (A.D. 829) is involved in much obscurity, as is shown by Mr. Green in "*The Making of England.*" It is nevertheless of the highest interest and importance, for "it forms," he says, "the period during which our fathers conquered and settled over the soil of Britain, and the age in which their political and social life took the form which it still retains."

The Romans had occupied the country as aliens and conquerors, as the English have occupied India; neither killing nor driving off such natives as would live peaceably under their rule, but encouraging their presence, giving them the blessings of security and peace, and introducing amongst them their own high civilization; incorporating them as much as possible with themselves, and sending them to fight for the Empire in other parts of the world, as the natives of Thrace, Gaul, and Africa, fought the Roman battles here.

After an occupation of some four centuries the Roman military and official classes were withdrawn from Britain (A.D. 411), owing to the difficulties brought upon the Empire by the advance of the Barbarians on Rome. The succeeding four centuries, of which the written record is so slight, are those with which our discoveries have to do, and in connection with which Mr. Green says:—"Archæological researches on the sites of villas and towns, or along the line of road, or dyke, often furnish evidence more trustworthy than written chronicle; while the ground itself, where we can read the information it affords, is, whether in the account of the conquest, or that of the settlement of Britain, the fullest and most certain of documents."

There can be no question from its direct course on the map, and also from its structure, as ascertained in several places, that the road is Roman which leads from Bowley's Field by Patty's Cross, Stretford, Shuttock's Field, Broadstone, Blackwardine, Hollywall, Hill Hole, Bowley, Bodenham, Preston Wynne, past Lugwardine, and so on by Mordiford to Ariconium, near Ross—which was the Merthyr Tydvil of the Romans. This road is named in the Itinerary of Antonine, and was probably formed at a later period. It passed through the town now to be considered.

Blackwardine is the only name that history gives to the place on which tradition has ever stated that a town formerly existed. Its remains still blacken

the soil, and the number of Roman coins and pieces of pottery that have been turned up by the plough fully bear out the tradition.

The Rev. Jonathan Williams, in a book (*Leominster Guide*), published in 1808, says (page 337) :—"About a mile and a half from Eaton on the Bromyard road is a spacious tract of land, formerly common but now enclosed, called Black-caer-dun, on which, as tradition reports, formerly stood a populous and flourishing town; and some attestations, more solid and important than a vague report, can be adduced in favour of the tradition. Several Roman coins of Romulus and Remus suckled by a wolf, of Augustus, Cæsar,* Trajan, Constantine, &c., cast in silver, copper, and gold; numerous pieces of pottery, bones of men and animals, and numberless other relics have been found upon the spot; its soil is of a much darker hue than that of which the adjoining fields are composed, and justifies the epithet black." Mr. Williams supposes that he has found the derivation of the word of Blackwardine in Black-caer-dun. Probably no one now does.

The Leominster and Bromyard Railway was carried through Blackwardine in 1881. In the cutting made a large number of Roman remains were discovered, though, as no one acquainted with such things was present at the time, most of them have been destroyed or taken out of the neighbourhood, and the information which might have been gained, from the way or position in which they were found, hopelessly lost. Men who were at work in this cutting reported that a "navvy," who had then left the district, found a gold bracelet and ring—that a great many human bodies were discovered buried—and quantities of coins, which the finders sold to anyone who would buy them. A considerable purchaser was a gentleman who wanted some to take back with him to New Zealand!

It was said that the skeletons found were all buried doubled up in a sitting posture at different distances from the surface—one grave was as much as thirteen feet below the present face of the ground, but most were much less. Mr. Wadeley, grocer, Stoke Prior, who was present at some of the disinterments has since told me that this was not so.

On enquiring how and where the coins were mainly found, a workman replied that when they came to a skull they began to look out for coins, and they usually found them when they had dug down to the place where the man's *pocket* would be (a navvy's idea of money being intimately associated with his breeches pocket.)

A hypocaust, or kiln, was found (described as "like about 30 ovens, full of ashes") built of worked stones, which were broken up and used in a drain beside the railway, or "tipped up" on the embankment below.

The workmen met with quantities of coarse red and yellow ware; also some of blue and black colour, and a little fine red Samian; several querns, or hand-millstones, numerous bones, and cartloads of oyster-shells.

* With reference to the coins found of "Augustus, Cæsar," we are of opinion that this is a mistake on the part of either Mr. Williams or of his informant. Coins of Julius Cæsar and of Augustus are very rare in England, but searchers who read AUG or CAES on a coin, often put it down to Augustus or to Cæsar, of course wrongly. After Diocletian's reforms (A.D. 292) the titles *Augustus* and *Cæsar* had different values. According to Diocletian's scheme the Roman Empire was to be ruled by two *Augusti* and two inferior Emperors styled *Cæsares*. The scheme in its entirety did not last long, but the meanings attached to the two titles survived to the end of the Empire. (EDD.)

Some twelve coins from Blackwardine were pronounced by Mr. Ready, of the coin and jewellery department of the British Museum (in 1883), to be all very late Roman. Amongst them were—Constantine Urbs Roma, Agrippina s.c. (2nd brass), Crispus Cæsar,* Honorius, Constantine III., Tetricus, &c.

Other coins in the possession of Mr. Wadeley, grocer, Stoke Prior, were identified by Mr. Ready, jun., at the British Museum on June 10th, 1884, as: silver, Denarius of Vespasian; copper, Constans. Two Constantinus iun (ior) Nob (ilis) C(æsar), and others were too much injured to decipher.

Mr. Franks, M.A., F.R.S., F.S.A., F.G.S., F.R.G.S., &c., of the British Museum, at the same time remarked upon the unusual shape of a flower-pot-like piece of pottery with a handle, which he sketched. I have since seen examples from Uriconium in the Shrewsbury Museum exactly similar. Mr. Franks also copied the inscription, or potter's mark, on the handle of the Amphora:—

Q I C S E G,

as he thought it was unrecorded†; and he suggested that the large jar in the photo-sketch exhibited must have been made upon the spot, as the neck is imperfect—i.e., has fallen in, and is not straight round the top, like perfect Roman pottery, and therefore would not have been considered worth transport; and he thought the “thirty ovens” discovered were probably for baking the pottery, and not a hypocaust. He also remarked upon an Annulet of Kimmeridge coal from Blackwardine.

Dr. Bull, in his paper on Credenhill Camp, draws the inference that after the battle of Deorham (577) and the taking of Uriconium by Ceawlin (583), the West Saxons, under Crida, or Creoda (583 to 606), destroyed the Roman towns in Herefordshire. The Mercians, we are told, were here in 658, when Merewald, brother of Wulphere (whose name the hundred we are now in still bears) and son of Penda, founded a monastery at Leominster, and lived at Cwin fort—vulgarly at Comfort, there—as I hope we may do now.

* Crispus, eldest son of Constantine the Great, was given the title of Cæsar in 317 A.D. at the same time as his brother Constantine (afterwards the Second), and was put to death 326 A.D.

† This mark is unrecorded in the British Volume of the *Corpus Inscriptionum Latinarum*. (EDD.)

THE BOTANY OF THE HONDDU AND GRWYNE VALLEYS.

By the REV. AUGUSTIN LET, M.A.

THE extreme south-west district comprehended in the "Herefordshire Flora" consists of hill and valley, which possess a higher average level than any other district of the county. The hills form a rudely lozenge-shaped parallelogram, and consist of ranges having a general direction of S.E. and N.W. These ranges are all connected into a single plateau of high ground at their N.W. extremity, where they suddenly cease, giving place to the valley of the Wye as it flows for five miles N.E. from Three Cocks to Hay; and to that of the smaller stream, the Llynfi, which drains Llangorse Lake, and joins the Wye at Glasbury. The flank thus formed is the finest and most abrupt in all the hills; and the bold bluffs, alternating with shallow depressions on "cols," when viewed from the neighbourhood of the Three Cocks or Hay, give a very fine effect indeed, especially upon a winter's day, when tipped or eyebrowed with snow.

The shallow "cols" alluded to indicate the heads of the valleys, which, parallel like the ranges of hills, all take their rise in the N.W. boundary of the high ground, whence their streams flow S.E. until they reach the S.E. boundary of the mountains, when they turn abruptly, two of them (the Grwyne fawr and Grwyne fechan) S.W. to join the Usk; two (the Honddu and Monnow) N.E. to join the Dore from its Val d'Or, or "Golden Valley," and flow down to Monmouth under the joint name of the Monnow. These valleys are all (at least all that I know, for the valley of the Grwyne fechan I do not know) very similar in geological structure, in outward features, and in their Flora and Fauna. I suspect the latter as well as the former to be full of interest—indeed, as far as the birds are concerned, I know it to be so; but I must leave that subject to be handled another day by some one more competent than myself, and limit myself now to the flowering plants and ferns only of the two interior of these valleys, the Honddu and the Grwyne fawr, including the intervening ridge of the Ffwdog.

To compare for a moment these two valleys: that of the Honddu (Afon ddu, the Black Stream) is the larger, the longer, the deeper, but not the wider. Its length from Bwlch-y-fingel, the col at which its N. branch rises, to Llanvihangel-crug-corney, where it turns N.E., is about $10\frac{1}{2}$ miles as the crow flies. The average breadth of both it and the Grwyne fawr is, from edge to edge of the hill, about 1 mile. It is cultivated up to its division into two heads at Capel-y-ffin, or about $8\frac{1}{2}$ of its $10\frac{1}{2}$ miles of length; and above this also much of the land is enclosed, so that the actual moorland in the valley forms an insignificant proportion of its surface. The valley of the Grwyne fawr, the signification of which name I must leave to Welsh scholars to elucidate, is somewhat shorter and much shallower, though of nearly equal breadth. Its length from Blaen Grwyne, its N.W. col, to

Ponty-y-spig (or rather Pont-Esgob, the Bishop's Bridge), the point where it turns S.W. to join the Usk, is not quite $9\frac{1}{2}$ miles. The average breadth of the intervening hill is, in a straight line from stream to stream, $1\frac{1}{2}$ miles; but it varies much, being nearly 3 miles in the extreme measurement at the N.W. *col*, and diminishing at one point called Dial Garreg, near the bottom, to a little over half-a-mile, and again somewhat widening. Of cultivation proper in the Grwyne Valley there can scarcely be said to be any at the present time, though a few oatfields and patches of potato land occur about Partricio, and perhaps for a mile or two further up. I say *at the present time*, because the whole valley was in the recent past clearly far more densely populated than now. Ruined cottages are thickly strewn in its lower parts. The land is enclosed for 5 miles up from Pont-Esgob; the remaining 4 miles which lie above this limit consist of unenclosed moorland.

The botany of these two valleys is varied and interesting—decidedly more so, I think, than that of ordinary hill valleys possessing the same outward features and extent—and Herefordshire naturalists owe a debt of thanks to the ancient Lords of Ewias that they discerned (it may be) the merits of the Grwyne Valley as a hunting ground, and added it to their manor, and thereby to the county of Hereford. Mr. Purchas, in laying out the scheme of the Herefordshire Flora, took in also the Honddu Valley, so far as it lay in Monmouthshire, so that now a great deal of the riches of both these valleys goes to adorn the pages of your forthcoming Flora.

I do not find that the fact of the two valleys belonging respectively to the watershed of the Wye and Usk makes any observable difference between their Flora. Differences there are of course, some of which will be noted further on; but not such as can with any confidence be attributed to this circumstance.

I now proceed to a few botanical notes. One of the plants most likely to strike the eye during a walk into this district in spring is the Bird Cherry, *Prunus padus*, with its long pendant racemes of white blossom. In the lowlands of Herefordshire it is a rare shrub, lingering only in a few neglected spots; but in the Llanthony district it adorns most of the hedges, growing in great luxuriance up to the limit of about a thousand feet, but scarcely higher. The Mountain Ash too, *Pyrus Aucuparia*, another tree belonging to the same natural order, is common throughout the district, and is a great ornament, whether in spring or autumn. This is not so common in the hedges of the cultivated land as at a higher level, where it fills the glens, and clings to the rocky sides of the hills, up to at least 1,800 feet, probably higher. One of the prettiest of these glens, Cwm Bwchel, opens out immediately opposite Llanthony Abbey; and it was here, in the mossy recesses with their miniature waterfalls and pools overtopped by berry-laden Mountain Ashes, that love of mountain scenery was first awakened in me, when a boy of six. The fruit of this tree is the favourite fruit of the Ring Ouzel; so much so, that it is said a Mountain Ash tree, planted in a lowland garden, will attract the Ring Ouzel to make a sojourn there during their migration: and the frequency of this rare bird in the Honddu Valley may well be connected with the frequency and luxuriance there of this tree.

Of common trees, the Lowland, or Common, Elm, *Ulmus suberosa* and

campestris, is, as in all hill districts, conspicuous by its absence ; while the Mountain, or Wych, Elm, *Ulmus montana*, the Oak, and the Ash, flourish well ; the latter attaining the largest size. The Holly, *Ilex aquifolium*, is a shrub which is very partial to the hill-side woods in these valleys, growing luxuriantly, and becoming a small tree ; and in some places forming woods almost to the exclusion of every other species. It goes without saying that the beautiful Birch silvers the hill-sides everywhere. The variety, however, is here (at least most of it) the rigid upright one with rhomboid leaves, *Betula glutinosa*, not the more graceful Birch with pendent branches, *B. verrucosa*, which is usually planted.

The hills during the months of August and September are rendered beautiful by the Ling, *Calluna vulgaris*, and the Cross-leaved Heath, *Erica tetralix*. It is curious that the more common species of Heath, the Fine-leaved Heath, *Erica cinerea*, is totally absent from these hills, though it is the only one which occurs in the rest of Herefordshire. Parts of the Ffwddog are preserved for grouse, and in consequence the heath is taken care of. The effect of this is that there are as fine and extensive beds of Ling upon the Ffwddog as on any hills of South Wales. The Crowberry, *Empetrum nigrum*, and the Bilberry, *Vaccinium Myrtillus*, are very abundant ; the Red Whortleberry, *V. Vitis-idaea*, somewhat less so. The Bilberry is extensively collected by women and children during July and August for the sake of pies and preserves : the Whortleberry used to be collected in this way also, 30 years ago, but it appears to be now much rarer upon the hills. At this season of the year also the Sweet Mountain Fern, *Nephrodium Oreopteris* and Borrer's Fern, *Nephrodium Filix-mas*, *Borreri*, abound, and are a great ornament to the hills. Both these ferns grow in tufts, many fronds springing in a ring from one root ; while the latter is conspicuous for the dense clothing on its stipe of shaggy golden scales, which contrast finely with the light-green of its stiff fronds. Another fern which must perhaps be placed among common plants in Herefordshire, though rare in many counties, the Scaly Hart's Tongue, *Ceterach officinarum*, reaches a very fine development in these valleys, and will be found on walls at Llanthony Abbey and elsewhere in large quantity and beautiful growth. The Shining Crane's-bill, *Geranium lucidum*, is also a great ornament to the old walls in both these valleys ; and the Fox-glove, *Digitalis purpurea*, and Golden Rod, *Solidago Virga-aurea*, to the hanging woods and blanks.

The Honddu Valley will afford the naturalist a sight of not a few species, local and rare in Herefordshire. The cliffs and their *débris* are covered with the Mossy Saxifrage, *Saxifraga hypnoides*, and *sponhemica*, while among the loose stones of the *débris* the three ferns—Oak, Beech, and Limestone Fern, *Polypodium Dryopteris*, *Phegopteris*, and *Robertianum*, grow in some places in abundance. The crannies of the mossy walls, as well as those of the cliffs themselves, teem with Brittle Fern in various forms (*Cystopteris fragilis*, probably also *dentata*), and they also produce many varieties of the Prickly Shield Fern, *Aspidium aculeatum*, some of which have deceived many a happy botanist into the idea that he had found the veritable Holly Fern. But *Aspidium Lonchitis* is not to be met with, it appears, south of Carnarvonshire ; here we can only aspire to *lonchitidioides* ! In the valley, along the damp shady lanes and river banks the

Alternate-leaved Golden Saxifrage, *Chrysosplenium alternifolium*, is abundant and very fine; and the Narrow-leaved Marsh Willow-herb, *Epilobium palustre*, which is quite rare in most districts of Herefordshire, is common in damp spots, both, I believe, in the valley and on the hill-sides.

The mountain meadows in the spring are bright with the Meadow Orchis, *Orchis Morio*. This plant, though existing all through Herefordshire, attains its greatest beauty in the hill districts; and in the Grwyne Valley the corner of a meadow will be met with filled with the rarer Globe Flower, *Trollius europæus*; while in both valleys the Water Avens, *Geum rivale*, will be occasionally found, often in company with the Globe Flower. In the Grwyne Valley, too, the Smaller Butterfly Orchis, *Habenaria bifolia*, will be found. This is quite a different plant in its habits and distribution in Herefordshire from its near congener the Larger Butterfly Orchis, *Habenaria chlorantha*. This latter is a lowland plant inhabiting woods; the former an inhabitant of hill-meadows and banks, and is the rarer of the two in our county. I need only glance at the rare Orchid *Habenaria albida* which was found in one spot in the Grwyne Valley a few years ago. Neither the Globe Flower nor the Lesser Butterfly Orchis are known to occur in the Honddu Valley; though, since both are plentiful in the Craswall and Olchon as well as the Grwyne Valleys, it is most probable that they really occur in that which lies between them.

The tops of the hills are the only places in our county where the Little Club-rush, *Scirpus cæspitosus*, is found; while the short turf consists in large measure of the tough springy Grass, *Nardus stricta*, and the equally springy Rush, *Juncus squarrosus*, which contribute greatly to its elasticity underfoot. The boggy parts produce the Cotton-grasses in abundance, *Eriophorum vaginatum* and *angustifolium* and *latifolium*, also, but more sparingly; and the spring heads are full of a Water Crowfoot, *Ranunculus Lenormandi*, which does not occur elsewhere in Herefordshire. Here too, in spring, the Butterwort, *Pinguicula vulgaris*, spreads its flat greasy leaves, and lifts its beautiful violet-like blooms, while at a later season of the year the same spots are carpeted with the Creeping Forget-me-not, *Myosotis repens*, distinguished from all others of its tribe by the intense azure blue of its flowers. The rare fern, the Green-stalked Maiden's-hair, *Asplenium viride*, has been long known to be an inhabitant of Taren'r-Esgob. Here it existed some years ago in large quantity and greater luxuriance than I remember to have seen it anywhere else. It is still to be found both there and at other less known stations in these hills, in fair, though I am sorry to say, diminishing abundance.

In a marsh at the bottom of the Grwyne Valley two ferns exist which are both of them great rarities in Herefordshire—the Royal Fern, *Osmunda regalis*, and the Marsh Fern, *Nephrodium Thelypteris*. This is the sole station which we possess for the latter, and almost the sole station for the former; and I should have refrained from speaking of them to-day, but that on visiting them last year I found that both had been sadly pillaged. Indeed, of the Marsh Fern there was scarcely anything left, and a year or two will ensure its extinction. It is a great pity that the Woolhope Club can do nothing to prevent this culpable waste of the botanical treasures of Herefordshire.

In this same marsh several other rare plants are to be found. The Marsh Violet, *Viola palustris*, which is a great rarity in our county, occurs here in small quantity. The Marsh Thistle, *Carduus pratensis*, the rarer of the two Marsh Orchises, *Orchis incarnata*, and the Bog Bean, *Menyanthes trifoliata*, abound in this marsh; and a Sedge, *Carex levigata*, which has not been found elsewhere in Herefordshire, inhabits the wet thickets.

Along the banks of the stream in the Grwyne Valley grows a rare Umbellifer, which I am inclined to believe a true Native in this valley—the Sweet Cicely, *Myrrhis odorata*. This plant at once reveals itself as distinct from all others of its numerous and puzzling order, by the enormously large seeds, and by the strong spicy odour of its crushed leaves. In all its other Herefordshire habitats, it is nearly certainly an outcast, or owes its existence in some way to former cultivation. It occurs thus in the Honddu, and again in the Craswall, Valley, in single clumps near ruined cottages. But in the Grwyne Valley its aspect is quite different. There it fills the small thickets, along the course of the stream, for some miles; and though, of course, it still remains possible that it may have been originally introduced, yet one only has to compare its perfectly different aspect in this retired valley to that which it bears at other stations, to feel that its presence in the Grwyne valley is due to a different cause.

One only plant exists in the Honddu Valley the presence of which we can with assurance attribute to the religious house of Llanthony, the Green Hellebore, *Helleborus viridis*. This plant existed some years back in a hedge in close proximity to the Abbey, but the hedge has been since destroyed; and the plant has, I fear, disappeared with it.

In the small grain, or potato, patches of this district, the botanist will meet with a *Brassica*, which was a good deal talked of a few years ago among botanists. This is an annual form of the common Wild Navew, *Brassica sylvestris*, which was first found by Mr. Archer Briggs near Plymouth, and was named after him *Brassica Briggsii*. It springs up in potato patches, or similar cultivated ground, in early summer, and has the peculiarity (connected no doubt with its annual growth) of retaining its rough grass-green root leaves together with the glaucous blue-green stem leaves, and heads of golden blossom, which belong to the common riverside form. This is, I believe, a true Native, not a degenerate turnip; and it is not uncommon in the hilly districts of Radnor, Brecon, and Hereford, though almost, if not quite, absent from the lowlands of Herefordshire. I know not whether it has turned up elsewhere, except in the neighbourhood of Plymouth.

A plant which is suprisingly rare in the Black Mountain District is the Mountain Pansy, *Viola lutea*. This beautiful pansy is common in many hill districts, for example on Radnor Forest; but on the Black Mountain area it is most rare. Once only in my life I have met with a single patch of it—on the hills just above Hay (in Breconshire). Still there is ample testimony that it does exist in other places. It is mentioned in one of the volumes of "*The Transactions*" (1871-3, p. 3) as having been found at Twyn-y-bedau in the Cusop dingle; and a lady friend of mine, Miss DuBuisson, found it on the Hatterel range; while a

scrap exists in the herbarium of the late Mr. Davies labelled "Llanthony" which is probably this pansy.

Another plant which we should look for abundantly in this district is the Common Club-moss, *Lycopodium clavatum*. But it is most rare. The single example I have ever seen was gathered by myself this year in Cwm Bwchel, near Llanthony. Two other Club-mosses exist, but in a hardly less degree of rarity—the Fir Club-moss, *Lycopodium Selago*, is the least rare, and occurs sparingly at one or two spots on the rocky hill sides, both in the Llanthony valley and again in the Olchon dingle; the Savin-leaved Club-moss, *Lycopodium alpinum*, is again limited to a single tuft, which I found many years ago on the steep escarpment of the hills over-looking Hay.

Again, a plant we should look for commonly in this district is the Sundew, *Drosera rotundifolia*, yet it is quite rare. The hills seem too dry to produce it, except in very small quantity, though it does occur both in the Grwyne and Honddu Valleys; the other species, *Drosera intermedia* and *anglica*, are absent. Again a fern which the naturalist would expect to find freely growing in their mountain glens is the Filmy Fern, *Hymenophyllum Wilsoni*, but lucky will he be if he stumble upon a morsel of it, though it grows abundantly in the Brecon Beacon range. It does exist in the Honddu Valley, but this is all that can be said.

Two or three more plants, which are interesting on account of their rarity, must bring this paper to a close. One is the Field Gentian, *Gentiana campestris*, specimens of which were sent to me by Miss Edith Gee, who found them in Cwn Bwchel, near Llanthony. The only other habitat for it in our county is at Stoke Edith, where it grows in abundance at one spot in the park. Another is the Wood Cranesbill, *Geranium sylvaticum*. This fine plant is confined to a single locality in the Honddu Valley, and another single locality in the Grwyne Valley. One of their stations is in Breconshire, the other in Herefordshire. A single locality is also known for it in Radnorshire; and thus this plant is represented by a single station in each of the three counties. Northwards in Shropshire it seems (see Leighton's *Flora of Shropshire*, p. 328) to become more plentiful. We lie upon the extreme south limits of this plant, which has not been observed in Britain anywhere south of Herefordshire. The Welsh Poppy, *Meconopsis cambrica*, is another interesting plant of the Honddu Valley. It grows at a single spot in the middle of a damp cliff, in a position which precludes any doubt of its being an indigenous plant. The Welsh Poppy has a very restricted range in Britain, being limited as a native plant to the Welsh counties with their borders, and the West of Yorkshire. It is found in the Grwyne Valley as well as the Honddu; but in the former it is in rocks and walls by the river side, where there may be some doubt whether it is not a "stray."

The last plant I will mention, which is limited to a single locality in these valleys, is the Rough-leaved Hawkweed, *Hieracium prenanthoides*, which occurs along with the *Geranium sylvaticum*, at a single spot on one of the cliffs in the Honddu Valley. Here, however, it exists in great abundance, making some few yards of the cliff quite yellow with its golden blossoms when in full flower. Along

with these two occurs also a Rose, *Rosa spinosissima*, confined to this single spot. This spot is close to the most favourite of the eyries, one of which is chosen annually by a pair of ravens for their nidification; and it would be curious to know whether the occurrence of *three* rare plants at this single spot, two of them absolutely confined to it, has any connection with the birds. The *Rosa spinosissima* might, as its name suggests, have been easily brought by the far-wandering bird, as a defence for its nest, from some distant sea-side cliff or sand dune. Were the Hawkweed and the Cranesbill also brought by it, from the fells of the Lake district, where both abound? It would open a novel principle of plant distribution, if it were so.

No account, however short, of the Flora of a district is complete without the mention of those plants, which might be expected to occur in it, but do not. One of these "absences," the most striking of all perhaps, in the district we have in hand to-day, has been alluded to—the absence of the Cross-leaved Heath, *Erica cinerea*. Of this I have never seen a single specimen from the whole of the Llanthony district. Again there is no Cloudberry, *Rubus Chamaemorus*, no Cranberry, *Vaccinium Oxycoccus*, on the Llanthony Hills, but these are rare plants as far as my experience goes in all South Wales. There is no Scottish Asphodel, *Narthecium ossifragum*, no Sweet Gale, *Myrica Gale*, no Parsley Fern, *Cryptogramme crispa*, no Mountain Tway Blade, *Listera cordata*, no Wood Stitchwort, *Stellaria nemorum*, no Lesser Skullcap, *Scutellaria minor*, no Mountain Cudweed *Gnaphalium dioicum*, no Marsh St John's Wort, *Hypericum elodes*, no *Suberect rubi*, no *Caltha minor*, no *Thalictrum montanum*, no *Sedum Forsterianum*, no *Carum verticillatum*, no *Carex dioica*, and lastly no Poppies have as yet been reported from all the district. Some of these "absences" are due, it will be observed, to the absence of bog; others cannot be accounted for on any known principle. Several of the rarer of the absent plants grow freely in the similar and adjoining mountain district of the Brecon Beacons; and we are still in hopes that a more careful search will disclose them here.

Subjoined are several lists which it is thought will be of interest to the naturalist.

LIST I.

Plants common in the Honddu and Grwyne Valleys, as hill districts, but rare or absent in the lowlands of Herefordshire.

Prunus Padus	Trigloclin palustre
Pyrus Aucuparia	Juncus squarrosus
Vaccinium Vitis-idaea	„ supinus
„ Myrtillus	Luzula multiflora
Erica Tetralix	Scirpus caespitosus
Calluna vulgaris	Eriophorum vaginatum
Pinguicula vulgaris	„ angustifolium
Empetrum nigrum	Carex vulgaris
Potamogeton polygonifolius	

LIST I. (CONTINUED.)

<i>Nardus stricta</i>	<i>Nephrodium Oreopteris</i>
<i>Ceterach officinarum</i>	<i>Polypodium Phegopteris</i>
<i>Cystopteris fragilis</i>	„ <i>Dryopteris</i>
<i>Nephrodium Borreri</i>	

LIST II.

Plants more rare and local than the foregoing, found in the district of the Honddu and Grwyne.

<i>Ranunculus Lenormandi</i>	<i>Chrysosplenium alternifolium</i>
<i>Meconopsis cambrica</i>	<i>Valeriana dioica</i>
<i>Brassica Briggsii</i>	<i>Jasione montana</i>
<i>Viola lutea</i>	<i>Myosotis repens</i>
<i>Drosera rotundifolia</i>	<i>Eriophorum latifolium</i>
<i>Geranium sylvaticum</i>	<i>Carex binervis</i>
<i>Rubus umbrosus</i>	„ <i>speirostachys</i>
<i>Geum rivale</i>	„ <i>var. sterilis</i>
<i>Rosa mollissima</i>	„ <i>eu-flava</i>
<i>Epilobium palustre</i>	<i>Cystopteris dentata</i>
<i>Callitriche hamulata</i>	

LIST III.

Plants found in the Honddu Valley, but absent from that of the Grwyne.

<i>Helleborus viridis</i>	<i>Hymenophyllum Wilsoni</i>
<i>Erodium moschatum</i>	<i>Asplenium viride</i>
<i>Ornithopus perpusillus</i>	<i>Aspidium aculeatum (var. lonchitidioides)</i>
<i>Pyrus rupicola</i>	<i>Polypodium Robertianum</i>
<i>Saxifraga hypnoides</i>	<i>Lycopodium clavatum</i>
„ <i>sponhemica</i>	„ <i>alpinum</i>
<i>Hieracium prenanthoides</i>	„ <i>Selago</i>
<i>Gentiana campestris</i>	<i>Equisetum maximum</i>
<i>Melampyrum pratense (var. montanum)</i>	

LIST IV.

Plants found in the Grwyne Valley, but absent from that of the Honddu.

<i>Trollius europæus</i>	<i>Rubus Borreri</i>
<i>Viola palustris</i>	<i>Myrrhis odorata</i>
<i>Galium uliginosum</i>	<i>Carex lævigata</i>
<i>Carduus pratensis</i>	„ <i>paludosa</i>
<i>Hieracium tridentatum</i>	„ <i>ampullacea</i>
<i>Menyanthes trifoliata</i>	„ <i>vesicaria</i>
<i>Pedicularis palustris</i>	<i>Molinia cœrulea</i>
<i>Orchis incarnata</i>	<i>Festuca sylvatica</i>
<i>Gymnadenia conopsea</i>	<i>Nephrodium Thelypteris</i>
„ <i>albida</i>	<i>Osmunda regalis</i>
<i>Habenaria bifolia</i>	

LIST V.

Plants remarkable for their absence from the Black Mountain group.

NAME.	NEAREST STATION AT WHICH THEY ARE FOUND.
<i>Thalictrum minus</i> , montanum	Brecon Beacons
<i>Caltha palustris</i> , minor	Brecon Beacons
<i>Papavera</i>	Lowlands of Herefordshire
<i>Corydalis claviculata</i>	Breconshire and Radnorshire
<i>Drosera intermedia</i>	Forest of Dean
„ <i>anglica</i>	Forest of Dean
<i>Mönchia erecta</i>	Meerbach, Golden Valley
<i>Alsine verna</i>	Brecon Beacons
<i>Sagina saxatilis</i>	Brecon Beacons
„ <i>nodosa</i>	Cusop Hill
<i>Stellaria nemorum</i>	Moccas Park
<i>Hypericum elodes</i>	Rhosgoch, Radnorshire
<i>Rubus suberectus</i>	Brecon Beacons
„ <i>fissus</i>	Rhosgoch, Radnorshire
„ <i>plicatus</i>	Brecon Beacons
„ <i>saxatilis</i>	Pen wyllt, Breconshire
„ <i>Chamæmorus</i>	Merionethshire
<i>Rosa coriifolia</i>	Brecon
„ <i>Watsoni</i>	Hay, Breconshire
<i>Circæa alpina</i> (and intermediate)	Erwood, Breconshire, and Radnorshire
<i>Sedum Rhodiola</i>	Brecon Beacons
„ <i>Telephium</i>	Aberdw, Radnorshire
„ <i>anglicum</i>	Erwood, Breconshire
„ <i>Forsterianum</i> , <i>virescens</i>	Brecon Beacons
<i>Saxifraga stellaris</i>	Merionethshire
„ <i>granulata</i>	Brecon
<i>Carum verticillatum</i>	Brecon Beacons
<i>Gnaphalium dioicum</i>	Brecon Beacons
<i>Crepis paludosa</i>	Glamorganshire and Merionethshire
<i>Wahlenbergia hederacea</i>	Moccas Park, Erwood, Radnorshire
<i>Vaccinium Oxycoccus</i>	Breconshire
<i>Erica cinerea</i>	Breconshire, Lowlands of Herefordshire
<i>Scutellaria minor</i>	Rhosgoch, Radnorshire
<i>Utricularia vulgaris</i>	Moccas Park, Rhosgoch, Radnorshire
„ <i>minor</i>	Rhosgoch, Radnorshire
<i>Ulmus suberosa</i>	Lowlands of Herefordshire
<i>Listera cordata</i>	Merionethshire
<i>Narthecium ossifragum</i>	Brecon Beacons, Rhosgoch, Radnorshire
<i>Carex dioica</i>	Brecon Beacons
<i>Cryptogramme crispa</i>	Near Brecon
<i>Botrychium Lunaria</i>	Arthur's Stone, Golden Valley

Woolhope Naturalists' Field Club.

1885.

THE FUNGUS FORAYS.

At the annual Fungus Forays of the Woolhope Club this October, the woods at Pontrilas and Dinmore Hill, Hampton Court Park, and Haywood Forest were searched, and many very interesting varieties discovered. The leading mycological authorities who attended this year were:—Messrs. C. E. Broome, F.R.S., F.L.S., &c., G. F. Inman, F.L.S., from Bath; M. C. Cooke, L.L.D. and George Massee, from London; C. B. Plowright, F.L.S., from King's Lynn; Edwin Lees, F.L.S., F.G.S., from Worcester; Dr. Carlyle, from Carlisle; Wm. Phillips, F.L.S., from Shrewsbury; the Rev. J. E. Vize, M.A., from Fordon, Welshpool; the Rev. Canon Du Port, from Denver Rectory, Norfolk; Cedric Bucknall, Muc. Bac., from Clifton; T. Bennion Acton, from Wrexham; and the Rev. E. Cunningham, from Marnham, Notts. The public Club day was held on Thursday, the 8th inst., and, in addition, was attended by Mr. C. G. Martin, President of the Club; Mr. Henry Wilson, President of the Malvern Field Club; Mr. George H. Piper, F.G.S., President-elect; E. Cambridge Phillips, F.L.S., from Brecon; Drs. Bull and Chapman; Colonel Lucas, Majors Doughty and Owen; Captain Campbell; the Revs. T. M. Beavan, W. Elliot, E. J. Holloway, Augustin Ley, Morgan G. Watkins, F. S. Stooke-Vaughan, H. P. S. Strong, and H. W. Tweed; Messrs. Anthony, B. St. John Attwood-Mathews, F. Bainbridge, J. Carless, James Davies, Gilbert Davies, E. Firth, Charles Fortey, J. Greaves, W. H. Jones, H. C. Moore, J. G. Morris, T. C. Paris, O. Shellard, J. F. Symonds, W. Wadeley, Burton Watkins, and T. B. Yates. Mrs. and Miss Woodhouse, and Miss Maud Bull also joined the excursion, and Mr. Theo. Lane, the Secretary.

It had not been anticipated from the dry summer that it would be a good season for Funguses, but it turned out much better than was expected, and several very rare plants were met with.

The business of this meeting is always important, for the officers for the approaching year are selected. The gentlemen appointed are as follows:—President for 1886, Mr. Geo. H. Piper, F.G.S.; Vice-Presidents, Messrs. C. G. Martin, Major Doughty, the Rev. F. T. Havergal, and the Rev. David Price. Two new members were elected, and others proposed for election at the annual meeting in the spring.

At one or other of the meetings during the week, the following papers and subjects were read and discussed :—

A humorous poem, entitled “ *Flamen Pomonalis*,” was read by M. C. COOKE, L.L.D., &c.

“ *The Origin of Domestic Poultry* ” : by E. CAMBRIDGE PHILLIPS, F.L.S.

“ *The Cock of the Second Century* ” : by E. CAMBRIDGE PHILLIPS, F.L.S.

“ *The Dog of Sacred History* ” : by E. CAMBRIDGE PHILLIPS, F.L.S.

“ *The Effect of Fungus Growth in Destroying Tree Life*,” introduced by Dr. BULL.

“ *On Pestalozzia* ” (De Not) : by the Rev. J. E. VIZE, M.A., F.R.M.S.

“ *On Polycistina* ” (Ehr) : by the Rev. J. E. VIZE, M.A., F.R.M.S.

“ *Some Notes on British Puffballs*,” illustrated with diagrams : by WM. PHILLIPS, F.L.S.

“ *Brefeld's Researches on the Ustilaginei* ” : by CHARLES B. PLOWRIGHT, F.L.S., &c.

“ *The Solution of a New Zealand Botanical Mystery* ” : by Dr. BULL.

ON THE ORIGIN OF THE DOMESTIC COCK.*

By E. CAMBRIDGE PHILLIPS, F.L.S., M.B.I.O.U., &c.

IT is universally admitted that the English game fowl has been carefully bred in this country and kept in its purity for many centuries. Introduced here by the Cæsars (a favourite pastime of the Romans being cock-fighting, and copied by them from the Greeks, who most probably obtained their fighting birds originally from the far East), the English game fowl stands alone in its great antiquity, its beauty, and marvellous courage, far above all other breeds of our domestic poultry.

During the past twenty-five years I have kept at various times all the different varieties of game fowl, and more particularly the pure white bird with yellow legs and bill. I purpose therefore recording the following experiences I have had in crossing White game with Black-red game and other poultry, the results in each case being so surprising, and so very different to my expectations, that I venture to hope they may be found of some interest to naturalists and ornithologists in throwing some faint light upon the origin of the domestic cock, the subject of this paper.

As this will probably be read out of England,† it may not be out of place to state shortly the various breeds of game fowl alluded to in this paper, with a short description of each.

First is the "Black-red game," the oldest breed of all, and I think the purest. The cock has the head bright orange in colour; comb, single, serrated, and red; eyes, bright red; face, red; hackle, bright orange, without any markings; back, dark rich red; shoulders and shoulder-coverts, red; wing-butt, black; bow, red; greater and lesser coverts, brilliant lustrous black, forming a distinct bar; primaries, black; secondaries, outer web bay, black inner web; saddle, red; tail, black; breast, black; legs, either willow, blue, olive, or yellow; one very old breed, however, which is very scarce, called the Derby red, has, as its distinctive mark, white legs, and occasionally a white feather in its tail, which last feature in all other black-reds is considered a sign of the greatest impurity.

Black-red hen.—Eyes, bright red; neck-hackle, golden, with black stripes; back and shoulder coverts, wing-bow, shoulder, and coverts, partridge-colour; tail, black and brown; breast and thighs, salmon-colour; legs, as in cock.

"White game."—Plumage, entirely white; comb, red; legs, orange-yellow; eye, red (this applies to both cock and hen).

"Piles," or "Pied game," are common enough in the British Islands, and were originally obtained by crossing White game with Black-red game.

* From experiments made in crossing some of the different varieties of pure English game fowls with each other, and also in crossing game fowls with common domestic poultry.

† This paper was read before the Ornithological Congress at Vienna, in April, 1834.

The cock may be very shortly described as being the same colour as a Black-red cock, but where the Black-red is black the Pile is white.

The Pile hen has comb, face, and eyes, red ; neck, golden ; breast, salmon-colour ; tail, white ; rest of plumage white, with yellow or red ; legs, yellow or willow.

"Blue game" are now very scarce ; they are marked, both cocks and hens, the same as Piles, except that where a Pile is white a Blue is of a dull-blue colour ; legs, dark blue.

"Cuckoo game" are still rarer, and I have seen but very few in this country ; they are marked something like the breast of a Cuckoo, *Cuculus canorus*, from whence they take their name, their entire plumage being a light bluish grey, each feather being barred with bands of a darker grey, *no red* ; legs, in the few I have seen, yellow.

I need hardly add that the comb in all game fowls should be single, small and serrated, wattles small, with red deaf ear ; their whole plumage very hard and short, and their general appearance elegant, fearless, and defiant.

There are several other varieties of pure game fowl common here, besides those I have mentioned ; but as they are only very briefly alluded to in this paper it is hardly worth while describing them. I may, however, add that they are principally Brown-reds, Duck-wings, Blacks, Birchens, Ginger-reds, and Hennies, this last variety having the tails of the cocks exactly the same as in the hens, hence their name. In all these varieties, even in pure Black, the black metallic bar on the wing is distinctly visible or traceable (except perhaps in Whites and Piles) ; and this may also be said of most of the common farmyard poultry of the country. In many of the Black-red cocks, especially when permitted to have a wide range of ground, and wood-covers to roam over, there is often a tendency to droop the tail, but I think the contrary is the case amongst birds constantly exhibited or much confined.

Being possessed of a very old breed of White game, I determined, about sixteen years ago, to breed some Piles, and for this purpose I procured a very well-bred Black-red game hen with willow legs, to which I put an excellent White game cock, a prize-winner. From these I obtained a hatch of chickens, out of which only one turned out an indifferent Pile hen, whilst the rest were all Blues ; these showed such high breeding that I kept the best of them, and, not being able to obtain any other Blues in order to introduce fresh blood, I bred from brother and sister. To my great astonishment they bred true Blues, very good birds, with not the slightest trace of white among them, the only perceptible difference being that the red in both the cocks and hens so bred was more abundant than in the parent Blues, and I have no doubt but that in a few more generations they would have relapsed into common red fowls—that is, red cocks and brown hens, with more or less of the elegance of the game fowl. On the other hand, had fresh blue blood been introduced, a permanent breed of great beauty might have been established. I omitted to say their legs were blue. I was unable to carry on the cross further, a game-fancier having been so struck with them on seeing them that he bought them at a high price.

Having afterwards bred from the White cock above mentioned and a pure White game hen, some excellent Whites, and having among them a very troublesome young White cock that annoyed everyone with his fighting propensities, I placed him at my stables, some little distance away in the village, where I then resided. Close to this stable lived a farmer, who had a fine breed of Dorkings and other common farmyard poultry, of which he kept a number. The first thing that happened :—My young White cock (in spite of everything) killed all the farmer's cocks that would stand up to him (he was the most determined fighter I ever saw), and then possessed himself of all the hens, and as he was a fine bird he was allowed to remain with them, some large table-birds being expected from the cross. A great many chickens were the result, but all small, and all Blues, showing no white, and being in colour like Blue game, all with single combs and dark legs, and with some of the elegance of the game fowl in their appearance. I afterwards disposed of this White game cockerel, and his progeny, the Blue farmyard cross, were allowed to breed with each other. In about three seasons all trace of blue colour had disappeared, and they had relapsed into common Red single-combed cocks, more or less barred on the wing, whilst the hens appeared common Brown single-combed birds, scarcely, if at all, distinguishable from the common Barn-door fowl of the country.

Some years after this, thinking to obtain some more Blues, as their scarcity made them valuable, I again obtained a good Black-red hen, to which I put a pure White game cock of the same strain as the White cock first mentioned, but, alas, "Tis not in mortals to command success." The chickens turned out all Cuckoo game of the purest type, both cockerels and pullets, without red, most regularly barred over the entire body and very beautiful. I parted with them to a friend of mine who is a game-fancier, and he bred from them. The result was exactly the same as in the Blues, the birds got smaller, the consequence probably of breeding from brother and sister, whilst over them, especially in the cock, red feathers were sprinkled. They were afterwards sold, and I have never seen any Cuckoo game since, but I have little doubt that if their descendants had been permitted to breed with each other they would have developed ultimately into cocks, more or less red, and hens brown or partridge-coloured; whilst on the other hand, as in the Blues, the introduction of fresh Cuckoo game blood, and a little care in breeding, would have established a permanent breed of this variety.

From the above it will be seen that although birds of a marked different variety were bred from, namely, Black-reds and Whites, producing birds of two other very pronounced varieties, namely, Blues and Cuckoos; yet directly these were allowed to breed *inter se* (among themselves), or to cross with common poultry, as in the case of the White cock with the farmyard poultry, they all, although retaining their different colours for some length of time, gradually relapsed into Red cocks and Brown hens. In fact there seemed a strong determination, both in the Blues and Cuckoos, to throw back to Red cocks and Dark-brown hens. I find also that in breeding pure Whites, as well as with pure Black game (a very beautiful variety) constant introduction of fresh blood is needed to keep out the red colour, which without it is almost certain to reappear in each successive brood.

In nearly all farmyards in this country where the poultry are not carefully looked after, and are allowed to breed as they like, one invariably sees a common Red cock sometimes with a black breast, but in all cases with a distinct bar more or less strongly marked on the wing, and hens of various shades of brown.

This bar on the wing, like the double wing bar so strongly marked on the Wild Rock Dove, *Columba livia*, and in the numerous varieties of its tame descendants, seems to be the principal and permanent distinguishing mark that has come down, through a long course of years, from the original stock of our domestic poultry; and so strongly does it reassert itself that I have remarked that in instances where a Buff Cochins cock has been turned down in a farmyard with the intention of improving and enlarging the breed of common farmyard poultry, yet directly the descendants of this cross were allowed to breed among themselves what has been the result? First, the bar on the wing made its appearance in a greater or less degree. Next, the cocks became red and the hens brown, and both showed only a slight trace of their Cochins ancestor in their fluffy sterns, and somewhat shorter tails. Gradually even these evidences of Cochins blood disappeared, and in a very few generations the cocks relapsed into the common Red, and the hens into the common Brown, birds of the country.

The result is also precisely the same where a Black Polish cock with a large crest (a breed of some antiquity) has been mated with common poultry, and their progeny allowed to breed together. The colour of the Polish cock is the first to disappear, getting redder and redder, then the crest gets smaller and smaller in each successive generation, until it gradually dies out altogether and no trace of it remains, except a few feathers on the head, almost an apology for a crest, which very occasionally re-appear from time to time.

When we consider the enormous care and length of time it must have taken to produce birds of so essentially different types as Cochins and Polish, and when we see how quickly these types disappear altogether when interbred with common poultry, I think this and the results above mentioned may be taken as some evidence of at least the colour of the original stock of our domestic poultry.

With regard to comb, I have never among the numbers of game fowls I have bred during the past twenty-five years ever seen a single instance of anything but a single serrated comb, and even when game is crossed with the Malay the pea comb of the latter bird entirely disappears after the fifth generation. On the other hand, I have often seen the single comb appear among such carefully bred birds as Sebrights and Black Bantams, both of which varieties have exceedingly well defined double combs.

I have also occasionally observed it in the various varieties of the Hamburg fowl, all of which have very large double combs.

Although the origin of the domestic cock is lost in the obscurity of ages, yet it may possibly be gleaned from the above experiences that originally the domestic cock sprang from a bird somewhat resembling the Black-red game cock in colour, although probably with some slight mottling on the breast, and with a greater metallic brilliancy of plumage, with a red eye, small wattles, and single serrated comb, dark or dark blue coloured legs of medium length, with a rather drooping

tail, and that its general appearance was a little heavier than in the present highly bred English game fowl ; that the hen was brown, marked something like a Black-red game hen, with a very small single serrated comb, resembling the cock in general contour, and colour of leg and eye, but darker than the present Black-red game hen, and probably more inclining to grouse colour than to partridge.

Here follows a copy of a letter to the *Field*, in answer to Mr. Tegetmeier, who stated therein that Cochins had a different origin from the rest of domestic poultry, and was written some time after my Vienna paper.

“ I have been waiting in the hopes of seeing some further letters on this subject which has recently been discussed in the *Field* newspaper, and which certainly deserves a more lengthened investigation than that which has already taken place. I may say I cannot agree with Mr. Tegetmeier in believing that Cochins, however distinct their shape and type, have a different origin from the rest of our domestic poultry. In a paper which was read on the above subject at the International Ornithological Congress at Vienna last year, I went very fully into this, and remarked about Cochins, that in instances where a Buff Cochin cock had been turned down in a farm yard with the intention of enlarging the common farm poultry, yet directly the descendants of this cross were allowed to breed among themselves, what had been the result? First the bar on the wing made its appearance in a greater or less degree, next the cocks became red and the hens brown or yellowish brown, and both showed only a slight trace of their Cochin ancestor in their fluffy sterns, and somewhat shorter tails. Gradually even these evidences of Cochin blood disappeared, and in a very few generations the cocks relapsed into the common red, and the hens into the common brown birds of the country. Now, I am sure Mr. Tegetmeier must have often noticed this, and I think he will agree with me that if the Buff Cochin had a different origin to the domestic poultry, its unusually distinctive type would not so easily disappear and revert to what must have been the colour, and probably the shape, of its original ancestor, viz., a black-breasted Red.

“ Take another instance, where a Black Polish cock with a white crest, a breed of great antiquity, and of quite as pronounced a type as a Cochin, has been turned down with common barn-door hens. What is the result when the progeny are allowed to breed *inter se*? The colour of the Polish cock goes first, getting redder and redder, then the crest gets smaller until it gradually dies out altogether, and no trace of it remains. To quote an example, in which it disappeared in the very first cross, a beautiful and well-bred Black Polish cock with a white crest was put down to some common barn-door hens, to whom no other cock could possibly get access. The chickens of the first cross were plentiful and strong, but, singular to say, not a cock, except one or two, showed any sign of a crest. Only one cock was black, with a double comb, no crest, and much like a Black Hamburgh, whilst several were common black-breasted red birds, single combed, and distinctly barred on the wing, without a particle of crest or anything to denote the slightest trace of their Polish parent.

"The above occurred under my immediate observation, but, of course, is not conclusive, as other Polish cocks may have the power of transmitting their colour and crest for a longer period, although I have no doubt the result would be ultimately the same. I may add that I think the Buff Cochins generally, in crosses, transmits its colour and fluff for a longer period to its descendants than in the above case of the Black Polish cock, it being probably an older established breed, but in the end both colour and fluff disappear.

"If we look at the great difference that exists in Polish and Buff Cochins, and if we consider the wonderful care and the great length of time it must have taken to have produced them, and when we see how quickly they disappear altogether when interbred with common poultry, and how their descendants persistently return to Red cocks and Brown hens when allowed to continue breeding together, surely we cannot be blind to the fact that they are striving to return to the natural colour and type of their common ancestor. A glance at that very interesting case of poultry in the Natural History Museum in the Cromwell Road, will, I think, convince the most sceptical. These birds are domestic poultry—killed on the island of Taviuni—that have reverted to the wild state, and are the descendants of poultry, most probably ordinary barn-door fowls, turned out by the early settlers more than a century since. One cock is a most beautiful black-breasted red bird, elegant in shape and drooping in tail, and in size somewhat between a Black-red Bantam and a large Black-red Game cock. Another cock is a most interesting example of a duckwing cock, reverting to the black-red colour; the hens are small and yellowish-brown.

"From the above it will be seen that in my opinion, based principally on experiments in crossing the various breeds of Game fowl with each other, and with common poultry, and for the reasons above quoted, all fowls are descended from one original wild ancestor, many celebrated naturalists think, *Gallus Bankiva*, but that our early poultry existed for centuries on this earth in the shape of small Black-reds with drooping tails and single combs, and in no other form, until in process of time, owing to careful selection in crossing and breeding, and taking advantage of various sports, and especially owing to variations occasioned by climate, they very gradually developed into the different breeds of poultry which exist at the present day."

THE COCK OF THE SECOND CENTURY.

By E. CAMBRIDGE PHILLIPS, F.L.S., &c.

THROUGH the kindness of the Rev. P. H. S. Strong of the Woolhope Naturalists' Field Club, I send you an impression of a curious antique bloodstone or Gnostic gem, found by him at a place called Hillah, near Baghdad, almost on the ruins of Babylon, where Hillah, a small town, is situated. This gem is figured in Mr. King's *Handbook of Engraved Gems*, p. 97, and is almost identical with the above, except that this one faces towards the west, and I think the head of the cock is more distinct, whilst those in the handbook referred to face towards the east, and the heads there somewhat resemble that of an eagle's, except in that numbered 3.

In the one before us the head of the cock is unmistakable, and it will be interesting to those who take an interest in the origin and subsequent history of domestic poultry, as pointing out the prevalent type of poultry at this time viz., the second century. This, I think, we may fairly accept, assuming—and I fear assumption must go some way—that the engraver copied his bird's head from the ordinary domestic cock of the country.

The cock's head in this instance is plainly single-combed, somewhat serrated, with the hackle plainly distinguishable, and with rather pendulous wattles—the last a probable sign of domestication. I think, on the whole, we may consider the head resembling that of the Game breed, and that this was probably the representative fowl of the East at this date. It is worth while remarking that the double comb, as well as the pea-comb, seems to have been unknown at this time—the former being, I believe, a development of the latter within the last three centuries. I have never observed it either in paintings by Hondécouter or any of the old masters, although I have occasionally seen the leaf-like comb of the Houdan depicted in birds much resembling those of the present day.

Into the meaning and further description of the above gem I will not now enter, but merely refer my readers to the excellent account of it in King's *Handbook of Engraved Gems*.



THE DOG OF SACRED HISTORY.

By E. CAMBRIDGE PHILLIPS, F.L.S., &c.

IN the able and interesting article on "Dogs, Ancient and Modern," published in *The Zoologist*, of October, 1884, the author, quoting Canon Tristram on the subject, infers that the dog, being unclean to the Israelites, was regarded and tolerated by them simply as a scavenger, and that domestic breeds were almost unknown.

I have thought it worth while, therefore, to offer the following observations, in which I have been assisted, as regards the Hebrew, by one of our best Hebrew scholars, the Rev. F. S. Stooke Vaughan of the Woolhope Naturalists' Field Club, and I venture to hope that the remarks I have to make may cause the dog of sacred history to be looked at in a very different light to that in which it is usually regarded.

Exception may be taken to the statement (p. 399) that the earliest record of the dog in sacred history is in connection with the sojourn of the children of Israel in Egypt. In Gen. x., 9, as also Gen. xxv., 27, the word "hunter," signifies "one who lays snares"; but the Septuagint version, in Greek from the Hebrew, renders the word *κυνηγος*, *i.e.*, "dog-leading." The inference is fairly plain that dogs were led in slips and used for coursing various kinds of game, and probably also for driving it into snares or nets; or possibly to follow up and course animals wounded with the arrow, as in Gen. xxvii., 3, where Isaac says to Esau, "Take, I pray thee, thy weapons, thy quiver, and thy bow, and go out to the field and take (Hebrew, 'hunt') me some venison," though it by no means follows that this was the usual way of killing game at that time, the commands of the patriarch, and the particular mention of the weapons to be employed, seeming to indicate extreme haste.

That there were shepherd dogs at a very early date is evidenced from Job xxx., 1 (probably the most ancient book extant, supposed by many to be even before the time of Abraham), in which the "dogs of my flock" are specially mentioned. In Proverbs xxx., 31, and after the exodus of the children of Israel from Egypt, occurs also that curious text, "A greyhound; an he-goat also; and a king, against whom there is no rising up." Unfortunately the word "greyhound" is a mis-translation, the Hebrew being "one girt about the loins." Some refer it to the horse. Both German editions of the Bible, however, render the word, "dog," and as such the fact is worth recording. How the word "greyhound" has crept into our version I am unable to explain; it being the only passage in the Bible wherein a special breed of dog is mentioned. I allude to it, however, in order to show that the text has not escaped my observation.

The words in Isaiah lvi., 10, "They are all dumb dogs, they cannot bark," would seem to show that at that time dogs were used as a watch for houses,

especially when taken in conjunction with the preceding words, "His watchmen are blind." This was certainly the case later on, in the time of our Saviour, the words, "Yet the dogs eat of the crumbs that fall from their master's table" (Matt. xv., 27), showing unquestionably that dogs were then allowed not only in the house, but at the best table, *i.e.*, the master's, the article (*τοῖς κυνᾶριοις*) implying the presence of dogs, or rather little dogs or puppies.

It is to be regretted that there is no Hebrew version of the Book of Tobit, or possibly the breed of dog there referred to may have been mentioned. As it is, the word in both texts (Tobit v., 16; xi., 4) is simply *κυνν*. Assuming the genuineness of the book, and up to the present time no valid reason has been shown to the contrary, the information contained in these texts is valuable, as showing that the dog was at that time known as the friend and companion of man.

It would seem, also, that although the dog was unclean to the Jews, yet it had a certain value in their eyes, and that it was placed before other unclean animals, for the Talmud says "Dogs may be fed on the Sabbath day, but not swine"; and we learn from Josephus that Herod kept a regular hunting establishment as well as a huntsman, following up the sport in a country abounding with stags and other wild animals.

The words of the text (2 Kings viii., 13), "Is thy servant a dog (or more correctly, *the* dog), that he should do this great thing?" is commonly quoted, with the omission of the word "great," to show the very low estimation in which dogs were held by the Jews, whereas it may very possibly allude to the power of the dog in Hazael doing this "great" and terrible thing, or has reference only to the pariah.

Although the Hebrews were not, as a rule, much given to field sports, lions being taken in pitfalls (2 Sam. xxiii., 20), as at the present day by the Arabs, and birds in traps or snares (Amos iii., 5; Ecc. ix., 12), which may possibly account for the few occasions on which dogs are mentioned in the Scriptures, yet I think it may be inferred, from the various texts I have quoted, that several breeds of dogs were known to the Israelites, differing from the miserable pariah, the scavenger of the East; such, for example, as shepherd dogs, watch dogs, house dogs, companionable dogs, and dogs used for the chase; and certainly dogs of far higher grade than the dog of sacred history is popularly supposed to have occupied.

THE GENUS *PESTALOZZIA*.

By the REV. J. E. VIZE, M.A., F.R.M.S., &c.

No mycologist can deny that according to the standard he sets voluntarily or involuntarily for himself, he prefers some species of the larger fungi to others. Beauty of colour, elegance of growth, or perhaps extreme rarity may cause him to come to the conclusion that he prefers A to B or B to C. So also with those who study the microscopical forms of fungi, we do feel more interested in some species than others. One friend of mine scarcely believed any fungi could approach the order Mucedines, he gloried in a *Peronospora* or an *Oidium*. Another satiated himself in the *Æcidia*, he wanted any number of them. He began with them, worked well at them for two or three years, then stopped, and to the best of my knowledge never worked at any other fungus.

Now, to-night, I ask you to hear a little about the genus *Pestalozzia*, which to my mind is a very pretty and interesting fungus. It is a genus named by Dr. Notaris, and is very appropriately placed under the family Melanconieæ. This family has several genera, noted for the fact that from the host plant a black mass, very much like black Japan or olive-black, oozes out. You can make your fingers as black as a sweep's hand if you wish, from *Melanconium bicolor* (Nees) on birch, or *M. magnum* (Berk) on walnut, or *Stegonosporium cellulosum* (Corda) on beech. This black stuff is always worth examining, and especially so when it happens to be *Pestalozzia*, because it consists of septate brown spores with hyaline portions above and below. The lower part forms the pedicel, the upper part is crested and has appendages of different numbers which swell out under water, and then assume an altered position to what they do when dry. You have therefore a brown body as the spore with transparent attachments above and below.

The number of species of course increases, in common with all other species of fungi. In fact one begins to think that the sooner students of cryptogamic plants begin, the better for them. Cooke's handbook could be considerably enlarged if reprinted. What will Professor Saccardo's *Sylloge Fungorum* be when complete? What will be the size and cost of future books if carried out upon his world-wide knowledge, if written 20, 50 years hence?

But about the *Pestalozzia*—there are several of them. America, Africa, Asia, Europe, have all contributed to swell the lists of them. They have been found on various substances—hops, apples, pears, seeds of water-melons, have supplied them. So have junipers, cypresses, oaks, hollies, camellia leaves, ferns such as *pteris aquilina*, the leaves of cocoa-nut palm, vines, willow, &c. In England, to the best of my knowledge, only five are known, they are *Pestalozzia Guepini* (Desm), growing on the leaves of camellia plants, by no means difficult to obtain, because the leaf when affected by the fungus assumes an ivory patch of considerable size, becoming shaded or dirty as it matures, and having in the patch small pustules of the *Pestalozzia*.

The second species is *Pestal: funerea*, another of Desm: plants, which grows on the twigs and branches of cypress, and which I have found in fair abundance at Stratford-on-Avon on thuja.

The third is *P. lignicola* (Cooke), growing on chips, known to the Woolhope Club, inasmuch as Mr. Griffith Morris has met with it more than once.

The fourth is *P. truncatula* (Fckl). which I found in May, 1876, on willow twigs at Forden.

And the fifth is *P. stellata* (B. & Curtis), which was obtained by myself on the leaves of holly at Hermitage, in Berks, in September, 1879. There were several bundles of holly tied up, evidently to be carried away for burning; they had been cut when green, and had become quite dead. It was on these dead leaves the fungus grew.

These two last species have never been recorded as British up to the present night.

But about those beautifully hyaline appendages on the crest of the spores of *Pestalozzia*, what purpose do they serve? They cannot be useless, or they would not have been created. They remind us somewhat of the splendid arrangements we find on some of the composite plants in phanerogamic botany—the goat's beard, the colt's foot, the common dandelion. Their parachute heads are most useful in conveying the seeds, when they leave the parent plant, to a distance, so that thereby they get fresh soil on which to grow, and they are also of great service in depositing the seed itself heels downwards in the ground. Still, useful as these appendages are in the *Compositæ*, we can scarcely imagine it likely that the *Pestalozzia* would need to be transferred in this way, especially when *P. monochate* has only one hyaline appendage, the other species having three, four, or five of them. They certainly are analogous in fungi to the flowering plants, to which reference has been made. But beyond their being made for the pleasure of the Great Creator, we are not able to supply any specific cause for them.

Are they not very short lived? I mean the appendages of the *Pestalozzia*! I mention this in the hope that some of the veterans, who have studied the most minute forms of fungi, may confirm my idea that they may aid in attaching the spore to the place where it begins its vegetation until maturity—that in process of time the appendages die away, and leave the spore with unmistakable proof that they have been present, and that still further on they are not to be distinguished at all from the genus *Stilbospora*. I remember examining some spores in various stages and found them from a true *Pestalozzia*, to an equally true *Stilbospora*.

As regards the life-history of the *Pestalozzia*, after the appendages have ceased to do their work, I am not aware that any attempt has ever been made to trace it, but that they are only forms of fungi which will eventually be resolved in process of development into higher forms, I have no doubt. That they are not autonomous we may feel certain. But what do they become?

POLYCISTINA OF BARBADOS.

By the REV. J. E. VIZE, M.A., F.R.M.S., &c.

I MUST commence by a short apology for the introduction of this subject—so foreign to the study of mycology or even botany in any shape. It is introduced because Dr. Bull has expressed a desire for it, and upon the grounds of the Woolhope Club not being sectional, or in any ways limited in its scope of subjects.

The *Polycistina* are very beautiful and very various in shape. They have been found more abundantly in the Island of Barbados than anywhere else, where they existed formerly in very vast numbers, so much so that their skeletons have formed a considerable amount of rockwork. I was told some time since that their numbers were very much reduced, and consequently the possession of the original material is valuable.

They are singular creatures, for fortunately, old though the Barbados rocks are, they have living representatives in the Mediterranean. From them therefore we learn their life history, and to a certain extent their classification. They are creatures of low animal life, furnished with skeletons, it is said, of silica of wondrous beauty and variety as to shape. As to this silica I may refer again presently.

The skeletons are perforated with holes of various shapes, and have been formed of web-like deposits which the living Polycistin has woven for itself, external to its body which is really sarcode. This sarcode has projections which it protrudes through the perforations; they are pseudo-podia, and are most useful not only for motion from place to place, but also for collecting food of the minutest kind, such as *diatomaceæ*, small microscopic forms of algæ, sponges, &c., which they draw inside them, retaining the nutritive part and rejecting the remainder.

They are different to the *diatomaceæ*, *desmidiæ*, and other microscopical forms in one respect, namely, that they are very variable in their growth, in this respect resembling *Agaricus melleus*. So irregular are they, that it would scarcely be unfair to call species of the same kind polymorphous.

This is one reason which I cannot think they are siliceous. Take the skeletons of diatoms and desmids, you find them very constant as to size, shape, &c., so much so that one often wonders how it is that you never find them varying. Desmids seem all to be born, as it were, on the same birthday, and to attain full size, colour, and perfection the very time of birth. They are wonderful in this respect, and are silica because indestructible in nitric acid.

Now *Polycistina* are destroyed at once in nitric acid. An old and much valued friend of mine, the Rev. T. Furlong, of Bath, was the first to discover the way by which the *Polycistina* were separable one from the other. He told me how he managed to do them, and also communicated to the Bath Microscopical

Society the results of his experiments. They were : 1st—Nitric Acid ; 2nd—Strong Soda ; 3rd—Plain Washing Soda.

To Mr. Furlong I am indebted for the rough material you see.

Since Mr. Furlong died, the *Polycistina* have been made even more beautiful for the microscope. They are separated by the soda process, then put on a platinum plate, calcined by excessive heat, the result being that instead of the somewhat glassy appearance of the specimens, they are made into china, and are very superb as dark-ground illuminated objects.

THE VEGETABLE CATERPILLAR.

(CORDYCEPS ROBERTSII).

AMONGST the promised papers, one with the title "The Solution of a New Zealand Botanical Mystery," by Dr. Bull, elicited much curiosity.

Dr. Bull exhibited a curious horned caterpillar-like object forwarded from New Zealand which had been sent to him with the following amusing description:—"Two or three inches long, dark brown body, not unlike dried leather—"legs, feet, eyes, and mouth, perfect, as if the insect had been carefully stuffed "and preserved. From the tail end there shoots out the thin stem of a plant six "to eight inches long, perfectly rounded and the same colour as the caterpillar. "It is clear that the grub, when alive, eats the seed of some unknown plant or "tree, which, germinating inside the insect (when it buries itself in the ground "before changing into a chrysalis) gradually kills it as it grows and feeds upon it. "The most remarkable feature is not that the grub eats the seed, nor that the "seed germinates within its body, but that the process should go on whilst the "outward form of the grub remains intact. The grub is found in this state "underground, with the plant growing above the surface. The plant has neither "branches nor leaves, but partakes of the nature of a creeping vine. Some of the "natives say that it is the seed of the *rata* which the grub eats in this way."

Dr. Bull explained that this peculiarly nourished Fungus, with its elongated stem of brownish-black colour, about five inches in length, belonged to the order of *Sphæriacci*, of which several grew in this parasitical way on substances living or dead; this peculiar species being remarkable for being taller than other species of the same family.

There was an analogous British form which we occasionally find in our autumn Fungus Forays which is called Red Torrubia or *Torrubia militaris*, distinguished by its fleshy orange-red club-shaped appearance; it grows upon the larvæ and pupæ of insects.

The *Sphæria Robertsii* grows from the head of the caterpillar of *Hepialus virescens*, a kind of moth, when it buries itself in the ground preparatory to undergoing its metamorphosis. The grub instead of developing into a beautiful moth is replaced by a Fungus which nourishes itself upon the tissues of the caterpillar.

Thus a vegetable takes the place of this species of ichneumon fly.

This Fungus is described in *Illustrated Natural History*, by Rev. J. G. Wood, Vol. III., p. 530, under the name of *Cordyceps Robertsii*. An illustration and a note on the subject of *Sphæria sinensis* brought home by Mr. Moseley, the naturalist to the "CHALLENGER" Expedition, is described in the *Gardener's Chronicle* for March 6th, 1875, also for January 18th, 1879, p. 89.

Readers are referred to a full description of a fine specimen of *Cordyceps Taylori*, deposited in the Department of Botany, British Museum, which will be found in the *Gardener's Chronicle* for February 26th, 1887, p. 288. The spores of

the Fungus attack the living caterpillar whilst it is burrowing in the ground, and the usual seat of attack is the joint at the back of the neck, this being the most vulnerable point for assault, the joint being constantly laid open, and the skin distended during the process of burrowing. The mycelium or spawn from the spores, feeding upon the tissues of the caterpillar, replaces the whole interior substance enveloped by its skin, and the growth of the Fungus emerges from the original point of attack, assuming, after it passes the ground line, antler-like form upon which the spores are borne in closed ovoid cases, pouches, or perithecia. The illustration accompanying the description there given exhibits three of these antler-like growths growing from three contorted branches.

Sphaeria sinensis is sold in bundles in Chinese markets, where it is eaten, and highly esteemed, as stuffing for turkeys.

There are a few good specimens of *Cordyceps Robertsii* to be seen in the Museum at Ludlow. The native name there given to it is said to be Hotete. (EDIT., 1889).

THE SPECIAL REPORT OF THE FUNGUS FORAYS, 1885.

FOR sixteen successive years has the writer found himself in the city of Hereford during that week in autumn which the Woolhope Club devotes to the study of mycology. In these sixteen years many old faces have passed away, many new ones have appeared, but still, this re-union of kindred spirits continues to be looked forward to by all those fungologists who have once been initiated into a personal participation of the fungus foray as one of the red-letter days or weeks of the year. The *habitués* began to muster from north, south, east, and west, on the evening of Monday, October 5th; mutual felicitations were indulged in, and amongst genial hand-shaking the prospects of the morrow were discussed.

The morning of Tuesday, October 6th, broke bright and sunny, so the party of eighteen gentlemen who assembled at the Hereford station were in high spirits. New ground was to be hunted in the woods at Pontrilas. The party included the President of the Woolhope Club, Mr. C. G. Martin, Mr. H. Cecil Moore (Vice-President), Dr. Bull, Dr. Carlyle, Rev. Canon Du Port, Messrs. Cunningham, Vize, C. E. Broome, W. Phillips, G. Massee, C. Bucknall, J. G. Morris, Edwin Lees, C. B. Plowright, and others.

Just as the start from Pontrilas station was made, under the guidance of Dr. Bull, a few drops of rain fell, but too few to disturb the equanimity of the fungus-hunters. One by one, however, the umbrellas went up as the rain-drops came down slowly and surely, increasing in frequency and volume. A belt of trees yielded several interesting species, amongst which was a *Tricholoma*, very much like *A. terreus*, but turning red when injured, for which character it was first assigned to *A. inodorus* (Fr.), but subsequently to *A. atro-squamosus* (Chev.) Having the habit and odour of *A. terreus*, it more resembles the figure of *A. guttatus*, Schæffer, in Cooke's *Illustrations*. Mr. Bucknall produced some fine specimens of the new *Boletus tenuipes*, a plant with the habit of *B. piperatus*, but abundantly distinct. The rain now settled into a steady downpour—

“The land was water, and the sky was lead.”

Such a soaking the mycologists had not had since the memorable days, in years gone by, at Whitfield and at Cabalva. The party were entertained to luncheon by Mr. Attwood-Mathews, of Pontrilas.

It is not too much to say the tables were loaded with fungi. The would-be mycophagists were, however, at first taken aback, by observing amongst these *A. muscaria* and several other beautiful but poisonous species. Confidence was, however, soon restored, when word was passed round that these were not intended for consumption, but were models skilfully constructed for artistic effect in honour of the assembled company. The luncheon came in due course, and was peculiarly grateful to the sodden fungologists. The party returned in the afternoon to

Hereford, when a general rush for dry clothes took place. In the evening a reception was held at "The Haven," when the Rev. J. E. Vize read a paper on "Polycystina," and exhibited specimens. Dr. Bull made a few observations "On the Solution of a New Zealand Botanical Mystery," and showed specimens of *Torrubia Robertsii* in fine fruit.

On Wednesday, October 7th, the mycologists being joined by Dr. M. C. Cooke, made an excursion to Dinmore Hill. Special instructions had been given to search for and to find two species which had not previously been met with in these Herefordshire forays, viz., *Boletus purpurascens* and *Cortinarius dibaphus*. The former was soon found—two specimens only, and they somewhat *passé*, but still characteristic—the latter in abundance in all stages and in excellent condition. This remarkable *Cortinarius* has certainly during the past sixteen years never previously put in an appearance at Hereford. So large and so well marked a plant could not have been overlooked, with its brownish-yellow, *viscid pileus* surrounded by a purple margin, its lemon-yellow gills and stem, with its marginate bulb, all of which characters render it a fungus once seen never to be forgotten. One point about it, however, is not quite clear. Fries placed it in the third group of the *Seauri*, "with ferruginous yellow or fulvous gills"; but in his description he speaks of the gills as being *purpurascenti-ferrugineus*, yet he quotes Saunders and Smith, t. 10, but which figure, like our Hereford specimens, is devoid of any purple tint about the gills. The inference is that the *purpurascenti* must be a clerical error. Dinmore yielded its usual crop of good things, which have so often before been enumerated, including *Thelephora clavularis*, *Hygrophorus arbustivus*, and a *Peziza* that puzzled Mr. Phillips. In the evening the mycologists were entertained at dinner by Mr. C. G. Martin, the President of the Woolhope Club, after which Mr. Phillips read in the Woolhope Club-room his very interesting paper on "Puffballs," illustrated with drawings of many species. He expressed his opinion that *Lycoperdon perlatum* was undoubtedly British, and that under *L. saccatum* we include a good species, *L. excipuliforme*, the spores of *L. saccatum* being larger, and have a peculiar outline. They are often spoken of as *echinulate*, but this is hardly the case, as these are not so much covered by spines as surrounded by a paler irregularly pointed outline. It is to be hoped Mr. Phillips will publish his paper *in extenso*, with figures of the spores of the different species.

On Club-day, Thursday, October 8th, a strong muster of members, including four ladies, assembled at the station and took train for Leominster, in spite of threatening weather, which developed into a sharp rain on our arrival at the last-named place. Nothing daunted, carriages were taken, and a start made for Risbury Camp. During the ride the clouds broke, the blue sky became visible, and the sun shone out. Unversed as the present writer is in the mysteries of archæology, his impressions of the camp are worth but little, but it seemed to be protected by very muddy approaches, to produce few fungi, and to be full of apples! The party now gracefully slid down the grassy slopes of the camp, and made for Hell Hole Dingle, through which we were to walk to Hampton Court. But across the Dingle ran a stream, over which the party had to cross on a weir. To effect this comfortably the order was given for the young and able-bodied each

to carry a stone. This was of course done for something under a mile, but—oh, cruel fate!—only to find, after the portage had been made, that a rustic bridge spanned the stream a few hundred yards above the weir. Lamentations over wasted labour were, however, soon dispelled when the rare *Agaricus Badhami*, was found in fine condition under some Fir trees. The walk through the Dingle—the length of which was variously estimated from a half to four miles—was productive of many interesting fungi, and in due course Hampton Court came into view, with its Gipsy Oak, ancient Cedars, and spacious lawn. Mr. Arkwright regaled as many as were disposed with refreshment, while the others hunted over the lawn. Under one of the Cedars Mr. W. B. Grove, of Birmingham, soon discovered a Geaster, probably *G. Bryantii*.

As the time was passing away, the order "Forward" was given, and Dinmore Hill was ascended. The general who led his 10,000 men up a hill and down again has long been held up to ridicule in rhyme, but to lead an army of mycologists, not only up a hill, but through a wood, is by no means so easy a feat. Somebody blundered; the wrong turn was taken; and, instead of coming out at the station, we came out somewhere—on the wrong side of the hill. Train time was drawing near, rain began to fall, legs began to ache, baskets to feel heavy; nobody seemed to know exactly where we were, nor which way we should go till the order "Forward" was again given. Now, in point of fact, this was really "backward," but Woolhopeans, unlike ropemakers, do not as a rule progress backwards; so on we went, not without trepidation, however, lest we should find ourselves the next time we emerged from the wood worse off than before. The rumble of a railway train at the junction sounded ominously in our ears. Under such circumstances how eagerly every one is on the look out for a landmark, a sign-post, a windmill, or well-known church steeple, for instance, but no such landmark cheered our gaze. At last one of the party sighted a particular clump of trees. All right now: here is where *A. atro-punctatus* grows. Take the path to the left, and we shall be all right. Still some were a little dubious about plunging once more into brushwood in which you could not see ten yards in front of you, but soon other landmarks presented themselves—first the places where *Boletus purpurascens* was found, then the habitat of *Cortinarius dibaphus*, which, of course, settled the whole affair; and within ten minutes we were safely landed at the station, and in due course arrived at Hereford.

There is a great similarity amongst all dinners, even if they be the Woolhope dinners, but they are for all that necessary, and by no means unpleasant, events. After dinner Dr. Cooke read a humorous poem, entitled "Flamen Pomonalis," in which the Editor of the *Pomona* figured largely. This was followed by a very interesting paper on "The Origin of Domestic Poultry," by Mr. E. C. Phillips.

In the evening the company assembled in the Woolhope Club-room. The writer gave an account of Brefeld's researches on the *Ustilaginei*, in which he pointed out Brefeld's method of cultivating these spores in "Kammern," so that they are exposed to the air, and yet the culture is not spoiled by *Bacteria*, although the nourishing fluid employed is a highly putrescible one, namely a decoction of the excreta of herbivorous animals. He also pointed out the absurdity of the

statement which has been made about Brefeld, namely, that he has attempted to show that yeast (*Saccharomyces*) originates from the *Ustilaginei*, whereas his investigations show that the conidia of the *Ustilaginci* reproduce themselves by budding (just as yeast-cells do), not in saccharine solutions, but in the excreta of various vegetable-feeding animals.

A discussion followed, opened by Dr. Bull, on "The Effect of Fungus Growth in Destroying Tree Life," in which several members took part.

Dr. Cooke exhibited a specimen of *Agaricus melleus*, originating from the threads of *Rhizomorpha*, from Epping Forest, as a case in point, showing that *A. melleus* was a true tree-destroying fungus. The researches of Hartig were referred to by one of the members, and the general wish expressed that the subject should be taken up more fully next year.

The last day was spent in Haywood Forest, where, as usual, *Cortinarius sebacus* and *C. triumphans* were found, together with several other species of more or less interest. In the evening Mr. Vize read his paper on "*Pestalozzia*," alluding, among other species, to the *P. Guepeni*, which plays such havoc on *Camellia* leaves.

During the week the following were amongst the more important and interesting species met with:—

Agaricus Badhami, pantherinus, metulæsporus, carcharias, mucidus, sejunctus, albo-brunneus, atro-squamosus, sulphureus, carneus, clavipes, odoratus, phyllophilus, fumosus, vertirugis, rancidus, purus, filipes, roridus, rusticus, phlebophorus, lividus, inodorus, orcella, pisciodorus, variabilis, radicosus, pudicus, pyriodorus, glutinosus, sinapizans, carbonarius, alnicola, erinaceus, squamosus, pyrotrichus, semivestitus.

Coprinus comatus, fuscescens.

Cortinarius triumphans, balteatus, sebaceus, varius, varicolor, infractus, glaucopus, purpurascens, dibaphus, fulgens, papulosus, collinitus, mucifluus, elatior, vibratilis, albo-violaceus, anomalus, torvus, evernius, hinnuleus, incisus, privignus, saturninus, decipiens.

Hygrophorus cossus, arbustivus, olivaceo-albus.

Lactarius torminosus, turpis, hyginus, flexuosus, pyrogalus, glyciosmus, mitissimus.

Russula furcata, rosacea, fella, vesca.

Nyctalis parasitica.

Marasmius foetidus, Hudsoni.

Boletus tenuipes, badius, piperatus, purpureus, edulis, versipellis, scaber, felleus, laricinus.

Polyporus rufescens, giganteus.

Tremella foliacea, mesenterica.

Hirneola auricula-Judæ.

Geaster fimbriatus, Bryantii.

Tuber æstivum.

And so the happy week ended. One more Woolhope week is over; may we all meet again next year. *Charles B. Plowright*.—*Gardners' Chronicle*, Oct. 17th, 1885.

In Memoriam.

H. G. BULL, M.D.

THE *Transactions* for the year 1885 would be singularly incomplete without something more than a mere passing notice of the great and lamentable loss which the Woolhope Club has sustained by the death of Dr. Bull—without indeed the most sincere expression of its deep regret, and payment of the full tribute of its affectionate remembrance. The disorder which, unsuspected until a few short weeks before its fatal termination, removed our old and well-tryed friend from amongst us on the 31st of October, has inflicted that loss indeed, not only on the Woolhope Club, but on the City in which for so many years he was prominent in every good work, and on a still wider circle of attached friends both in Herefordshire and throughout the whole country. And it is a loss which it will be very difficult, if not impossible, to repair.

A native of Northamptonshire, Dr. Bull came to Hereford in 1841, and established himself in practice there as a physician very shortly after the close of his medical education in Paris and at the University of Edinburgh. This is perhaps hardly the place in which to say much of the general and grateful estimation accorded to him in his professional capacity. The remark however may be allowed that such estimation owed its origin scarcely more to the skill with which he exercised his profession, or to his assiduous attention to its duties, than to the sympathy of his nature, the charm of his cheerful, kindly, manner, and very markedly to his abundant charity towards the suffering poor.

It is rather as a public man, if one would (as indeed in any memoir of him, however brief, one ought to) go beyond the thought of his connexion with our Club, that he claims our first notice.

Primarily probably in this respect he will be remembered by his 21 years' services to the General Infirmary, the staff of which he joined in 1864. Nor were these services marked only by his punctual attendances, and the careful interest which he took in the patients that came under his hands; but the arrangement of the house itself, and the laying out of the grounds around it, remain to attest how even minor details of what might conduce to the welfare of that noble institution occupied his mind. He had become connected with the Dispensary at a much earlier period, in 1842, and as he recognised how it might be made subservient to the moral as well as to the physical well-being of the poor, it was to his action that the foundation of the Provident Branch of that Charity was due.

The improvement indeed of his fellow citizens in every way, especially of those who were dependent upon the help of others for the means of such improvement, was one of the main objects of his life. Hence the Herefordshire

Friendly Society (one of the most well-ordered of existing Benefit Clubs), found in him a zealous and energetic supporter. Similarly he worked heartily, in co-operation with the Rev. John Venn, and others, to establish the Hereford Society for Aiding the Industrious. And he was associated with the Trustees of the City Charities. Thus also when the question was one of intellectual, no less than of moral, advancement. No one more warmly accepted the offer made by Mr. Rankin to erect the building in which the Free Library and News-room have their present home, or exerted himself more strenuously to extend the benefits of these institutions, sitting as Chairman of their Committee for many years.

And the Permanent Library likewise commanded no small share of his interest and time.

Such a remarkable record of philanthropic energy it is given to few men to leave behind them. Particularly when it is borne in mind how necessarily extensive were the claims which a large private practice made upon his time and thoughts, and that, in the case of each and any of these works which he undertook, it was no mere perfunctory or intermittent attention that he gave to it, but thorough enquiry into its needs, and the whole bending of his vigorous, business-like, habit of mind to the regulation of its affairs. The sight that was witnessed in the City on the day of his burial in Breinton Churchyard testified, as few things could have more adequately testified, to the keen appreciation by all classes of what that record meant.

But besides all this, there was a large, and that a very important, side of Dr. Bull's life and character which it is for us more particularly here to recall. That was his intense devotion to natural science, and especially as this devotion was expressed in his labours for the welfare of the Woolhope Club. To say that he was "versatile" in his grasp of various branches of such science is possibly to convey a wrong impression as of superficiality of knowledge, and a quickness of apprehension seizing only here and there the most striking points of each subject of study. This was by no means the characteristic of his mind. And yet what word more expressive than versatility can give any idea of the breadth of thought to which botany, mycology, ornithology, horticulture, to a certain extent geology, and again mediæval and antiquarian lore, were all almost equally familiar, which could get down scientifically to the secrets of each, and which could furnish him with readiness and clearness of exposition, when either or all came under discussion? To the Members of the Club, in whose memories the sight of the cheery presence, the sound of the aptly chosen and incisive words wherewith he conversed on the varying topics that their excursions suggested, still lingers, and must long linger, there is perhaps but less necessity to dilate on that ardent love of nature which displayed itself in all his words and actions. And yet one is compelled to dwell upon all that he was to us. What indeed was he *not* to us?

He was never President but once, in the year 1866. But official status was a minor matter. For all the years from then till now he was in a very true sense "the life and soul" of the Club; the energizing spirit of all that it did or achieved, whether in the conspicuous successes of its Field Meetings, or in the less noticeable

ways in which it has fostered love for science, or helped the progress of scientific knowledge, or given to the world by its publications the results of scientific observation.

Certainly Dr. Bull was an example of the truth of the axiom, or the paradox, that the busiest man is the man of most leisure. One might have thought, for the greater portion of the year at all events, that he had little else to do than attend to the Club and its proceedings, so infinitely full of detail, so complete in all the pains that he took to enrich it, was the labour that he expended upon it.

To take one instance. It occurs perhaps to very few, save of those who have experienced it, to think how much work of a somewhat anxious kind is needed in the preparation for any given excursion, the fitting in of every arrangement so that there may be no confusion, and that the maximum of the day's instruction or amusement or enjoyment may be gained. It may sound odd to speak of this as onerous; but it is onerous notwithstanding, even in the minute attention to apparently insignificant details which it involves. Regularly, consistently, and successfully—how successfully the memories of most of us bear witness—Dr. Bull took all this on his own shoulders. And the Club accepted it as a matter of course that all would go well because "it was left to" him.

Then again who can forget him in the course of any of those excursions, of which he rarely, if ever, missed a single one? The dullest, the most inauspicious, day could not quench his eager spirits, the zest with which he saw, or descanted on, any phenomenon of nature, the liveliness with which he led his party from point to point of the projected route. And as we turn over the pages of the published *Transactions* of past years it seems little less than wonderful how on such a great variety of subjects as have come under the Club's observation there never was, there never needed to be, any fear or doubt of coming short of a paper or address that might illustrate them; for, be they almost what they might, Dr. Bull was always ready, always prepared at the shortest notice to write something that should be thoughtful, instructive, going into the very heart of the matter, full of interest.

Nor were the subjects of these papers and addresses merely taken up at random. There was a systematic pursuit of some end, something that he wanted to round off, and exhaust information about so far as he might. Witness, for example, the descriptive series of remarkable trees of Herefordshire; and again, more lately, the investigations which he prosecuted and aided into the history of the many camps, Roman and British, traces of which remain in the county. Indeed this also was remarkable in him how his love for his adopted county went step by step along with his zeal for science, so that to him the greatest enjoyment was to make the latter serviceable towards elucidating the wealth of natural production, or throwing light on the story of the past days, of Herefordshire.

Of this feature of his mind the two greatest works that, in connexion with the Woolhope Club, will cause his name to live may be taken as examples. We allude to the establishment of the now celebrated "Fungus Forays" of the Club, and the recent publication of "*The Herefordshire Pomona*."

It is a matter of notoriety that the action of the Woolhope Club has

contributed no little towards the development of that study of mycology which of late years has been so pronounced. The Woolhope Forays are known throughout England, and beyond England, in France and on the continent of Europe, to all who are interested in the study of fungi. And they were due entirely to the conception and to the patient work of Dr. Bull who inaugurated them in the year 1867. Year by year he attracted to Hereford as the autumn days drew on the most noteworthy authorities in this department of natural history, exercising always himself the most unbounded hospitality, stimulating many to what (if his own attainments had not been so varied) might have seemed his favourite and special line of study, and giving a lasting impetus to research into the wonders of cryptogamic botany. It was but a few days before he succumbed to his last illness that he succeeded in personally carrying through the eighteenth in succession of these interesting and enjoyable gatherings. And the cherished wish of his heart, and one which he had expressed to many, was that he might be spared to compile, or to assist in compiling, a list and description of the fungi in which the woods of Herefordshire are so prolific.

This, unhappily, he was not permitted to accomplish, he has left it for some who may be imbued with a like spirit to his own to undertake. But his life was long enough to enable him to see the completion of "*The Herefordshire Pomona*." Had this work alone remained as the evidence of what he was capable of, of his much learning, of his accurate observation, of his indomitable energy in carrying out his purposes, it is not too much to say that it would have made his name famous amongst us. For it deservedly takes rank as a standard, and exhaustive, work on the subject of which it treats. Impressed by the economic value of the apple and the pear, for the culture of which Herefordshire is both distinguished and naturally adapted, he threw his heart, as in other things, into the idea of improving that culture, and increasing that value, by the diffusion of the best procurable information as to the various kinds of these fruits, and the methods of their growth. And the result was the well-known and important book referred to.

But it is time to bring this notice to a close. Enough has been said if we have helped to place on record not only the sketch of a singularly benevolent and useful life, but also the regretful sense with which we Woolhopeans especially deplore the departure from amongst us of one so loyal to the interests of our Club, so indefatigable in the promotion of its aims, so genial and so kindly-hearted, so honoured and so valued by us all, as was he whose speaking likeness forms the frontispiece of the present volume.

QUIS DESIDERIO SIT PUDOR, AUT MODUS,
TAM CARI CAPITIS?

Pres?
1 NOV. 90



