

PROCEEDINGS

OF THE

DORSET NATURAL HISTORY

AND

ANTIQUARIAN FIELD CLUB.

EDITED BY

NELSON M. RICHARDSON, B.A., F.E.S.

Hon. Secretary.

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 Shearman, John, Esq.
 Shephard, Colonel C. S.
 Shepheard, T., Esq.
 Sherren, J. A., Esq.
 Simpson, Jas., Esq.
 Simpson, Miss
 Sivewright, Robert, Esq.
 Slater, Robert, Esq., F.G.S.
 Smith, Howard Lyon, Esq.,
 L.R.C.P.
 Snook, S. P., Esq., M.R.C.S.
 Engld., L.R.C.P., Lond.
 Solly, Rev. H. S.

 Dunmore, Rodwell, Weymouth
 Alberta, Weymouth
 Hyde, Wareham
 Buckland Newton Vicarage, Dorchester
 Rutland Gate, London, W.
 Hallow Dene, Parkstone
 Milborne Port, Sherborne
 Bridport

 Montevideo, Chickerell, near Weymouth
 Wellington Lodge, Weymouth
 Markham House, Wyke Regis, Weymouth
 East Hill, Charminster, Dorchester
 Staverton Vicarage, Trowbridge

 Rushmore, Salisbury
 Alfoxton Park, Holford, Bridgwater
 Woodleigh, Parkstone
 Redlynch House, Downton, Salisbury
 Newton Manor, Swanage
 Parnham, Beaminster
 Chardstock House, Chard
 Pen Selwood, Bournemouth
 Westbury, Sherborne
 Clavinia, Weymouth
 Kinson House, Wimborne
 Thornilow, Bridport
 Purbeck College, Swanage
 Vicarage, West Lulworth
 Wilts and Dorset Banking Company, South-
 ampton
 Peveril House, Swanage
 Southcot, Charminster, Dorchester
 Kingsley, Bournemouth
 Weymouth
 Minterne Grange, Parkstone
 12, Greenhill, Weymouth
 Eastbrook House, Upwey, Dorchester
 Waverley, Swanage
 Buckland House, Buckland Newton, Dor-
 chester

 20, Trinity Road, Weymouth
 Bridport

- Sowter, Rev. F. B., the Ven.
Archdeacon of Dorset
- Sparks, W., Esq.
- Stephens, R. Darrell, Esq., F.G.S.,
F.L.S., F.Z.S.
- Stilwell, Mrs.
- Stone, Walter Boswell, Esq.
- Stroud, Rev. J.
- Stuart-Gray, Colonel Hon. Jas.
- Stuart, Hon. Morton G. (*Vice-
President*)
- Sturdy, Leonard, Esq.
- Sturdy, Philip, Esq.
- Sturt, General C. S.
- Sturt, W. Neville, Esq.
- Suttill, H. S., Esq.
- Swift, B. R., Esq.
- Sydenham, David, Esq.
- Sykes, Ernest R., Esq.
- Symes, G. P., Esq.
- Taylor, J. Herbert, Esq.
- Tennant, Major-General
- Thompson, J. Roberts, Esq., M.D.
- Thompson, Rev. G.
- Thurlow, Rev. Alfred R.
- Todd, Mrs.
- Trew, Rev. C. O.
- Troyte-Bullock, Captain E. G.
(late the Royal Dragoons)
- Troyte-Bullock, Mrs.
- Tucker, Mrs.
- Turner, W., Esq.
- Udal, the Hon. J. S.
- Usher, Rev. R., F.L.S.
- Usherwood, Rev. Canon T. E.
- Vawdrey, Mrs.
- Vosper-Thomas, Rev. A. F. C.
- Vosper-Thomas, Rev. S.
- Walker, Dr. A. McNamnee
- Walker, Rev. S. A.
- Ward, Rev. J. H.
- Warre, Rev. Canon F.
- Clevedon Lodge, Wimborne
Crewkerne
- Trewornan, Wadebridge
- Steepleton Manor, Dorchester
- 47, Wickham Road, Beckenham, Kent
- South Perrott, Crewkerne
- Kinfauns, Perthshire
- 2, Belford Park, Edinburgh
- Trigon, Wareham
- Branksome, near Bournemouth
- The Dinedors, Weymouth
- India Office, London, S.W.
- Pymore, Bridport
- 45, South-street, Dorchester
- Bournemouth
- 3, Gray's Inn Place, Gray's Inn, London,
W.C.
- 11, Victoria Terrace, Weymouth
- Grayriggs, Parkstone
- 8, Belvedere, Weymouth
- Monkchester, Bournemouth
- Highbury, Bodorgan Road, Bournemouth
- Hilton Vicarage, Blandford
- Keynston Lodge, Blandford
- Alvediston Vicarage, Salisbury
- North Coker, Yeovil
- North Coker, Yeovil
- Treverbyn, Weymouth
- High Street, Poole
- c/o Lovell, Son, and Pitfield, 3, Gray's Inn
Square, London
- East Lulworth Vicarage, Wareham
- Rossmore, Parkstone
- Dorchester Road, Weymouth
- St. Luke's, Bilston, Staffordshire
- Moxley, Wednesbury, Staffordshire
- Tower House, Parkstone
- Spetisbury Rectory, Blandford
- Silverton Rectory, near Exeter, Devon
- Bemerton Rectory, Salisbury

Watson, Rev. C. O.	The Vicarage, Bothenhampton, near Bridport
Watts, Rev. Canon R. R., R.D.	Stourpaine Rectory, Blandford
Waugh, Rev. W. R., F.R.A.S.	The Observatory, Portland
Weaver, Rev. F. W.	Milton Vicarage, Evercreech, Somerset
Webb, E. Doran, Esq.	Mitre House, Salisbury
West, Rev. G. H., D.D.	St. Christopher's, Eastbourne, Sussex
Whitby, Joseph, Esq.	Frome St. Quintin House, Cattistock, Dorset
White, Dr. Gregory	West Knoll, Bournemouth
Wilcox, B. A., Esq.	28, Portman Square, London, W.
Williams, E. W., Esq.	Herrington, Dorchester
Williams, Miss	Osmington House, Weymouth
Williams, Robert, Esq., M.P.	Bridehead, Dorchester
Williams, Mrs.	Bridehead, Dorchester
Wilton, Dr. John Pleydell	Pulteney Buildings, Weymouth
Wilton, E. H., Esq.	32, High Street, Evesham, Worcestershire
Woodhouse, Miss	Chilmore, Ansty, Dorchester
Workman, J. Reece, Esq.	Windermere, Spa Road, Weymouth
Wright, H. E., Esq.	Southend House, Wickwar, Gloucestershire
Yeatman, Mrs.	Park Place, Blandford
Young, E. W., Esq.	Dorchester

The above list includes the New Members elected up to and on
December 19th, 1899.



New Members Elected since the Publication of Vol. xix.

—

The names of the Proposer and Seconder are given in brackets opposite to the name of the new Member. The addresses may be seen in the general list of Members.

—

ELECTED AT DORCHESTER DECEMBER 15TH, 1898.

Henry Arthur Pope Genge, Esq.	{ S. R. Baskett, Esq. { Rev. C. R. Baskett
H. S. Suttill, Esq.	{ W. Colfox, Esq. { T. A. Colfox, Esq.
W. H. Bond, Esq.	{ Hon. Treasurer { President

ELECTED AT DORCHESTER MARCH 9TH, 1899.

Colonel Bowles	{ Hon. Secretary { Captain Payne-Gallwey
Vincent Robinson, Esq.	{ Hon. Secretary { W. Colfox, Esq.
Captain Arthur Rickards	{ G. G. Morrice, Esq., M.D. { Miss Edwards
Rev. J. C. Mansel-Pleydell	{ President { Hon. Secretary
H. Le Jeune, Esq.	{ Wilfrid Curtis, Esq. { Hon. Treasurer

ELECTED AT DORCHESTER MAY 10TH, 1899.

Mrs. Selina Aldridge	{ Sir R. Howard { W. V. Lush, Esq., M.D.
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PROPOSED JUNE 19TH ; ELECTED AT DORCHESTER DECEMBER 19TH, 1899.

Geo. Douglas Kettlewell, Esq.	{ Dr. Crespi { Decimus Curme, Esq.
Rev. John Lynes	{ Dr. Crespi { Rev. R. Jeffcoat
Howard Lyon Smith, Esq., L.R.C.P.	{ Dr. Crespi { Rev. Canon Ravenhill
Mrs. Acton	{ Rev. Sir T. Baker { Hon. Secretary

PROPOSED JULY 19TH ; ELECTED DECEMBER 19TH, 1899.

Mrs. Henry Reeve	{ W. Colfox, Esq.
	{ Miss Colfox
Hugh D. Badcock, Esq.	{ Hon. Secretary
	{ Rev. O. Mansel

PROPOSED SEPTEMBER 14TH ; ELECTED DECEMBER 19TH, 1899.

W. F. Rendell, Esq.	{ Rev. Canon T. E. Usherwood
	{ Henry Forde, Esq.



The Proceedings
OF THE
Dorset Natural History & Antiquarian
Field Club
DURING THE SEASON 1898-9.

By **NELSON M. RICHARDSON, B.A., F.E.S.**

The work of the Club during the season 1898-9 has comprised two Indoor Meetings at the County Museum, Dorchester, on Thursday, December 15th, 1898, and Thursday, March 9th, 1899; the Annual Business Meeting at the County Museum on Wednesday, May 10th, 1899; and Field Meetings at Southampton and Romsey on Monday, June 19th; at Eggardon and elsewhere in the neighbourhood of Bridport on Wednesday, July 19th; in the neighbourhood East of Dorchester on Wednesday, August 9th; and at Mere and elsewhere in its neighbourhood on Thursday, September 4th, 1899.

Volume XIX. of the "Proceedings" was issued during the winter.

THE FIRST WINTER MEETING was held in the Reading Room of the Dorset County Museum on Thursday, December 15th, 1898, the President being in the chair. About 40 members were present.

NEW MEMBERS.—Three were elected.

PRINTED RULES.—Due notice having been given it was resolved on the motion of Dr. MACDONALD, seconded by Mr. H. J. MOULE, "That it is desirable to draw up a set of Rules for the use of the Field Club, and that a Committee be appointed to prepare a draft of such Rules for the approval of the members at their next Indoor Meeting." Certain Rules had been always acted upon by the Club which had been supplemented from time to time by resolutions passed at meetings when occasion required, but no code of rules had ever been printed.

A committee was appointed in accordance with the resolution, consisting of the President, Treasurer and Secretary ex-officio, Mr. A. Bankes, Rev. W. M. Barnes, Mr. G. W. Floyer, Dr. Macdonald, Dr. Colley March, and Mr. A. Pope.

GENERAL BUSINESS.—It was resolved to print in Volume XIX. of the Proceedings the reports of the Summer Meetings of 1898 and the papers read at them, so that in future the Volumes might be brought more up to date. Thus the volume issued in the winter would contain the work of the Club up to and including the last Summer Meeting, which usually took place in September, instead of, as hitherto, ending with that of the preceding May.

The last number of the "Proceedings" of the Bristol Natural History Society received in exchange, and an Index to Archæological papers of various Societies, presented by the Society of Antiquaries, was laid on the table and presented by the Club to the Museum Library.

DORSET IN THE NINETEENTH CENTURY.—THE PHOTOGRAPHIC RECORD.—The Rev. W. M. BARNES read the following circular :—"A collection is being made of photographs of places and objects of interest in the county. It will embrace views of towns and villages, mansions, houses, churches, and antiques of all kinds, and pictures illustrating the social and industrial life of the county, so as to present a complete photographic record of Dorset at the close of the nineteenth century. The photographs will be permanent (platinotype or carbon), mounted on strong manilla boards, bound in convenient-sized volumes, and presented to the Dorset County Museum. Some of the principal photographers in the county have promised their aid. It is believed that the collection when complete will contain not fewer than 3,000 photographs. The nucleus of the collection has been already formed by the gift of 100 mounted pictures, which are now in the Dorset County Museum. (These, the HON. SEC. informed the meeting, were entirely from Mr. Barnes.) Permanent photographs of objects and places of interest in the county, and donations towards the expenses (which will be large) will be very acceptable."

DONATION TO THE MUSEUM.—Rev. OWEN MANSEL stated that after the winding up of the Corfe Castle Museum there was a balance in hand of £6, which it had been decided to present to the Dorset County Museum, and he wished to take this opportunity of handing over a cheque for that sum. The gift was suitably acknowledged by the Hon. Secretary of the Museum, who referred to the valuable collection of fossils already received from the Corfe Castle Museum and incorporated with those formerly in the Dorset County Museum.

EXHIBITS.

BY REV. W. R. WAUGH :

1. A specimen of *Plagiostoma* from the Lower Lias. Presented to the Museum.

BY DR. H. COLLEY MARCH :

2. Scratched flints from the neighbourhood of Portisham, believed by him to indicate glacial action. In regard to them he spoke as follows :—

A few months ago I brought some polished stones from the Blagdon Hill in order to show that there was some evidence, however slight, of a glacial condition of things south of the Thames. That has been denied by the best authorities ; but in a paper I read here I maintained that there was nothing in the condition

of things that made it impossible that there was a glaciation south of the Thames. Since then I think I have been able to find evidence that is conclusive; and I believe that now one may go a step further and say that there was a glaciation of Dorset. The stones I brought last time had no very marked striation, but they were principally polished stones. Since then I have been able to discover a number of local stones that are not only polished, but striated, and also two more large masses of chalk in the gravel. The striated and polished stones proved that there was dynamic pressure, that is to say, pressure with movement. The presence of masses of chalk shows that there was intense cold at the time, for they must have been frozen as hard as flint, or else they would clearly have been ground into powder by the dynamic pressure. These striated stones are found under and around these masses of chalk. They are embedded in a stiff clay. You pick the stones out and put them into a bag, and you do not know whether they are striated or not until you take them home and wash them; and they are so embedded in the clay that it requires hours, indeed some days, to wash the clay off. It is exactly as you get in the stones from the boulder clays of Norway. If a glacial period is to be proved for Dorset I think that this society ought to have the doing of it and the credit of it. It will be proper in the course of a few months, when there is a convenient opportunity, to put on paper the fresh lines of argument, and to state what are the conditions—the unusual conditions—of a glaciation upon the chalk, because the conditions must necessarily be different from those that occur in other places on hard rock. That, Mr. President (showing stones), is an example of a polished surface. This is an example of grooving and striation. This is an example of what often occurs where the pressure has been so extreme as to produce that form of fracture from a large piece. If the stone that is crushed happens to be a pebble it is broken into those curious splinters—I will bring some next time—that pervade the whole of the gravel, and the explanation of which has never yet been given. And when the pebbles are crushed they are splintered rather than striated, although I can produce some striated ones. In other cases the flint is crushed into this form, and on this form there are also striations. This is a much striated pebble. Here is one that has almost a grooving rather than a striation. There is no limit to them—now that I know where to find them.

The PRESIDENT said that it would certainly be of great account if, through the agency of a member of their club, it could be shown, what no geologist has ever yet shown, that the ice-cap once pervaded any part of England south of the Thames. At a meeting of the Geological Society that very month Mr. Marr described the occurrence of a conglomerate deposit of palæozoic days, made up of clays and pebbles. The pebbles are striated, and showed glacial marks very much like those now seen. But Sir Archibald Geikie, who took part in the discussion, thought that these striations were not brought about by actual glacial action, but by earth movement, in which the conglomerate pebbles struck against one another and thus became grooved. Professor Watts said it was difficult to conceive how any conglomerate which had passed through earth movement could

escape having its pebbles striated. However, the President added, the chalk in Dorset was covered by the flint and clay bed, and that must be the one brought into action under the conditions that Dr. March brought before them.

Dr. MARCH admitted that the scratches only showed dynamic pressure; but the presence of massive chalk boulders among the stones pointed to intense cold.

BY MR. E. CUNNINGTON :

3. Some interesting worked Flints.

BY THE HON. SECRETARY :

4. A fine and well-preserved fossil coral from the Coral Rag, Osmington, found by him. It is believed to belong to the genus *Isastræa*, and is somewhat mushroom shaped and about $9\frac{1}{2}$ inches in diameter.

5. "Hyginii poeticon Astronomicon," one of the earliest books on Astronomy, dated June 7th, 1488, and printed at Venice by "Thomas de Blavis de Alexandria." It contains 47 quaint woodcuts of the constellations, the sun, and planets, &c. It is a small quarto volume in Latin, printed in Roman type with floriated woodcut capital letters, and is of great interest as shewing something of the state of Astronomical (not Astrological) knowledge more than 400 years ago. The woodcut below is a slightly reduced facsimile (4-5ths) of that representing the constellation "Auriga," also here called "Heniochus."

Auriga



FACSIMILE OF THE WOODCUT IN "HYGINII POETICON ASTRONOMICON"
REPRESENTING THE CONSTELLATION "AURIGA."

About 4-5ths of original size.

BY MR. ROBERT SLATER :

6. A piece of *Itacolomite*—a flexible sandstone found near Delhi. The cause of the flexibility is the mica it contains which is itself flexible. Diamonds sometimes occur in the stone, which has also been found elsewhere. Presented to the Museum.

BY MR. A. POPE :

7. Rubbings of the inscriptions on the bells of Stratton Church.

BY THE HON. TREASURER :

8. A box of Lepidoptera for the Museum Cabinet.

The following papers were then read, of which Nos. 1, 3, and 4 will be found in full and No. 5 in part in the present volume.

(1) "A contribution to the History of Dorchester" by Rev. W. Miles Barnes.

Mr. Moule stated that in going through the documents belonging to the Corporation of Dorchester he had found Dorchester Castle described as "*Castellum Fratrum Minorum*," which confirmed Mr. Barnes' statement as to its possession in its dismantled state by the Friars Minor.

(2) "The Tide at Upwey" by Mr. H. J. Moule.

(3) "The November Meteors" by Rev. W. R. Waugh, F.R.A.S.

(4) "On the Inquisitiones post mortem for Dorset from Henry VIII. to Charles I." by Mr. E. A. Fry.

(5) "Roman Wareham" by Mr. Geo. J. Bennett.

Mr. Bennett's paper was illustrated by photographs and by a large number of pieces of pottery and other Roman remains found actually within the walls of Wareham, an illustration of some of which is given with this paper.

The meeting broke up at about 5.0 p.m.

THE SECOND WINTER MEETING OF THE CLUB was held in the Reading Room of the Dorset County Museum on Thursday, March 9th, 1899, at noon, the President being in the chair, and about 45 members present.

NEW MEMBERS.—Six were elected.

GENERAL BUSINESS.

ETHNOGRAPHICAL SURVEY.—THE HON. SECRETARY read the following portion of the Report of the British Association, Bristol, 1898.

"At the time of the last report the Committee had appointed Dr. Colley March as special observer in Dorsetshire.

Dr. Colley March devoted some weeks of the autumn last year to inquiries and observations in Dorsetshire. His preliminary report on the folklore of the district had been received. In addition to this, he measured and took photographs of a number of typical inhabitants. Dr. March has kindly undertaken to proceed with his inquiries, and it is hoped that, if the Committee be re-appointed, a further and fuller report may be made next year. Meanwhile, the physical

measurements and photographs are postponed, to be dealt with when his inquiries in the district are completed. Dr. March has also forwarded a sketch and photographs of the famous Giant of Cerne Abbas."

Dr. March, who represented the Club at the Bristol Meeting of the British Association in September, 1898, then read the following report:—

Having attended the sixty-eighth meeting of the British Association, which took place last year at Bristol, as a substitute for your Secretary, who was unable to be present, perhaps it is now incumbent upon me to make a brief statement.

The delegates of societies mustered in full force, and their chief concern was about the wasting of our shores. Our associate, Mr. Vaughan Cornish, who had investigated the grading of the shingle on the Chesil Bank, and had read important papers to the Royal Geographical Society on banks, beaches, and sand-dunes in general, joined in the discussion, together with Mr. W. H. Wheeler, of Boston, who afterwards made a communication to the Geological Section on the action of waves and tides on the movement of material on the sea coasts. It is needless to say that these and other authorities were not in full agreement on all points; but the opinion was unanimous that the Admiralty would do good service to the country by obtaining from the coastguards specimens of sand and shingle and other products of erosion, together with observations on the rate and degree of coastal changes. The Section of Zoology was much occupied with the fundamental questions of heredity and variability, and Mr. Galton's theories, supported as they were by Professor Pearson, found ready acceptance. Our Treasurer would have been delighted with a paper by Mr. Pocock on "Musical Organs in Spiders."

Of the Geological Section our associate, Mr. Hudleston, was president. In his address he drew special attention to Mr. Buckland's correlation of the Cotteswold deposits with those of this county, and he shared that observer's opinions—first, that Dundry Hill is an outlier of the inferior oolite of Dorset, since it has closer lithological and palæontological affinities to the beds of Sherborne than to those of the Cotteswolds, and second, that in the Inferior Oolite period, the land between Sherborne and Dundry was occupied by a continuous sea.

Here is a map, prepared in Bristol and presented to members of the British Association, which gives "reputed glacial scratches" near Taunton. A collection of geological photographs and slides will be lent by Professor W. W. Watts, to the Secretary of any affiliated Society. In the Anthropological Section it was remarked that, if truth is stranger than fiction, De Rougemont is stranger than either. On the occasion of his performance, the depressing cellar where Section H. met was changed for the exhilarating atmosphere of the Prince's Theatre, which was filled from floor to ceiling. His paper has not been fully published, but I possess a copy of it, which I shall be glad to lend to anyone who will undertake to return it.

A party of the Association visited Glastonbury, where Mr. Bulleid, who had prepared a Report of the excavations carried on during the preceding year, explained, as he had previously done to us, the wonders of the Lake Dwellings.

Mr. Arthur Evans, in reading a Paper on the Place of the Lake Village of Glastonbury in *British Archæology*, pointed out that the Celtic name of the locality was *Ynys Wytrin*, "the island of glass," and reminded us that glass had actually been found there. Accordingly he avowed his belief that the Lake Village was the site of prehistoric glass-works, and that the name Glastonbury was merely a translation of the British term into the Saxon tongue. Whereupon Professor Dawkins declared that he had no doubt whatever of the correctness of this etymology.

Loyalty to truth requires that this opinion should be refuted. The Saxon Chronicle mentions the name ten times between the years 688 and 1083, and in each instance it is spelt *Glaestinga-byrig*, which means the stockade of the *Glastings*, the clan or following of *Glaste*. This is not now a common patronymic, but there was certainly a family called *Glaste* living on the Borders in 1590 (vide *Arch.* xxii. 169).

In a number of Latin charters relating to the Abbey between the years 702 and 975, the name of the place is written *Glastingaburge*; and the like occurs in subsequent charters in Anglo-Saxon. Many of the earlier deeds, as is often the case with monastic documents, are known to be forgeries, but this does not weaken the evidence as to how the word was originally spelt. One example has the phrase "in monasterio *Glastingentium*."

Moreover, in *Domesday Book* the word is written *Glastingberi*. And it should be noted that whilst the words *ton* or *tun*, "the enclosure," and *bury* or *byrig*, "the stockade," are each frequent enough as a suffix separately, they are never used jointly. *Glass-ton-bury* would be a monstrosity. It is sufficiently obvious that *Glastonbury* is an abraded form of *Glaestinga-byrig*, and has nothing to do with glass.

The person responsible for the statement that the Britons called the place *Ynis Wytrin* is not Mr. Arthur Evans, but William of Malmesbury, who first says that the conquering Saxons translated *Ynis wytrin* into "*Glastynbirg*," which is not a translation at all; and then suggests that one *Glasteing*, an early settler, having found a sow of his under an apple tree close to the old church, called the place *insula Avallonia*, because apples were rare in that country. But William forgot that *Glasteing* is a Saxon word and *Avalon* a Celtic. William died in 1142, and therefore wrote 450 years after the earliest extant spelling *Glaestinga-byrig*. Without doubt, however, the original name of the place was *Avalon*; and since the British *aballo* and the Breton *avallen* signify an orchard, whilst *aval* means fruit in general, *Insula Avallonia* is "the fruitful island." *Wytrin*, too, (*gwydr*) means "green" as well as "glass."

The explanation seems to be that the name *Glaestinga-byrig* was translated "backwards" into Celtic by those who wrongly thought that it meant glass-town in order to improve the archæological character of the locality when documents were prepared for the satisfaction of Norman inspectors.

In making out a grant of the land, it was desirable to show that its title came from a pre-Saxon source. The donor selected was an unnamed King of

Damnonia, of Cornwall and Devon, and the deed, under date 601, begins "Rex Damnoniæ terram, quæ appellatur Yneswitrin, ad ecclesiam vetustam (!) concessit quæ ibi sita est;" and the signatories are Bishop Mawron and Abbot Worgret, head of five houses. A further charter, which purports to be an Authorisation, given in 675, of Leutherius, Bishop of Dorchester, to Aldhelm, a priest, to build a monastery, is easily recognised as a flagrant forgery. Indeed, William of Malmesbury and his fellow monks were possessed of a lively imagination, and their accounts associate with Glastonbury the actual presence not only of St. Patrick, but of Aristobulus mentioned in St. Paul's Epistle to the Romans, and of Joseph of Arimathea.

Lastly, what evidence is there that the so-called Ynys Wytrin was the site of a manufacture of glass? This is a substance that is practically indestructible. Has it, then, been discovered in overwhelming quantities during the seven years of exploration? On the contrary; for in 1896 Mr. Bulleid reported that he had found, of glass—only "parts of two blue beads," and by last year his total find, "of rings, beads, and fragments of glass" amounted to no more than eighteen; and these of course may have been imported. Of jet, he had found one, and of amber, two complete beads; and of Kimmeridge shale, 18 fragments of rings and armlets; and these were necessarily imported. Whereas of worked bone there were 320 pieces; of horn, 255; of pottery, several thousand; of bronze, 165; of iron, 80; and so on.

No single sign of glass-working has been brought to light except a fused piece of that material no bigger than a woman's thimble, which counts for nothing when it is remembered that the common fate of a pile-dwelling was to perish by fire.

So that the inverted pyramid of Mr. Evans's argument rests on this diminutive apex.

It may be said, in conclusion, and this is the first public statement of the fact, that Mr. Bulleid has lately found in this Lake Village, some "pigmy" flint implements, or to speak precisely, one and a-half.

THE PROPOSED PRINTED RULES.—A draft code of rules had been prepared by the Committee elected for that purpose at the last Meeting. These rules were read out by the Hon. Secretary, but it was resolved, after some discussion, that they should be printed and a copy sent to each Member, the final discussion and decision with regard to them being reserved for the Annual Meeting in May.

EXHIBITS AND NOTES.

BY THE PRESIDENT :

(1) A section of a discoid pebble containing faint impressions of lithistid sponge structure, but only occasionally are portions of spicules visible. There are also in it some very minute circular bodies with finely perforate walls and in one instance with a quadrate partition. The nature of these bodies is uncertain, they may be one-celled *Foraminifera* or perhaps *Radiolaria*.

By MR. W. COLFOX :

(2) Two iron horse-shoes (Roman ?) found on Nov. 15th, 1898, in the main road outside the lodge at Westmead, Bridport, 11 feet from the edge of the pathway and at a depth of about 18 inches, the upper 12in. being recent road metalling, the lower 6in. pebbles and earth. Mr. Moule stated that these horse shoes were smaller, broader in proportion and much less convex, than those classed as Roman in the Museum. He commented upon the comparatively unruined state of the iron and thought that, though probably some centuries old, they were much later than Roman times.

(3) An Elizabethan sixpence (date 1592) found at Westmead in an old agricultural drain about 18in. below the surface.

By REV. H. SHAEN SOLLY :

(4) A specimen of *Pleurotomaria Cassisiana* from the Chloritic Marl, Eggardon Hill, Bridport. Only casts of this shell are usually found, the present one being a good specimen of the shell itself. It has not yet been figured in any English publication.

Presented to the Dorset County Museum.

By THE HON. SECRETARY :

(5) A series of crystals of selenite of unusual size and forms from the Oxford Clay of Chickerell. Small crystals are common in the clay but such large ones are rarely met with. They were found in some numbers near together. The chief forms are the more usual diamond-shaped ones up to $3\frac{1}{2}$ in. long, and six-sided prisms up to 8in. long and some $1\frac{3}{4}$ in. in diameter. One specimen has several of these prisms radiating from a common centre. Sometimes these long crystals are composed of a series of thin flat crystals side by side, and in other cases these thin crystals are quite irregularly placed. The prisms have sometimes the diamond shaped crystals imbedded in them. One of the long crystals weighs about $\frac{3}{4}$ lb.

A portion of the exhibit was presented to the Museum.

By REV. W. R. WAUGH :

(6) A specimen of *Ammonites communis* showing a portion of the operculum from the Lias at Lyme Regis.—Probably found in the Conglomerate lying between the Greensand and Lias.

Presented to the Dorset County Museum.

(7) Note on the Zodiacal Light.

The Zodiacal Light was seen from Portland Beach on March 1st and 2nd at about 8.30 p.m. The Apex reached ν Ceti. The Lenticular outline was too diffuse to indicate its precise position. The Angle at which its axis stood to the horizon was $+45^{\circ}$

NOTE BY MR. F. J. BECKFORD.

On the occurrence of Crossbills in the neighbourhood of Parkstone. He had observed 8 in October, 1897. In October, 1898, he saw three, and one again

recently. He had never before observed them during the 10 years during which he had lived at Parkstone. They ate the Scotch fir Cones but did not touch those of the Bournemouth pine.

PAPERS.—The following papers were read and discussed, and Nos. 3 and 4, together with Mr. Whitaker's address, will be found printed in full in the present volume. No. 2 was communicated to the Club on the understanding that it should only be read and not published, but it is of much interest to Dorset and will be printed elsewhere. No. 1 will be found at page 109 of Vol. XIX. of the Proceedings.

1. "*Clausilia Rolphii*, a land snail," by The President.
 2. "Journal of Sir Joseph Banks relating to a tor in this County" by The President.
 3. "Notes on British Spiders in 1897 and 1898" by the Hon. Treasurer (Illustrated by drawings).
 4. "Notes on a fossil Crocodile (*Steneosaurus*, sp.), from Chickerell" by R. Lydekker F.R.S. (Illustrated by portions of the skeleton and by drawings).
 5. An address by W. Whitaker, F.R.S., on "Coast Changes."
- The meeting broke up at about 5.0 p.m.

THE ANNUAL BUSINESS MEETING of the Club was held in the Reading Room of the County Museum, Dorchester, on Wednesday, May 10th, 1899, the President being in the chair and about 35 members being present.

NEW MEMBERS.—One was elected.

PRESIDENT'S ADDRESS.—The PRESIDENT delivered an address, which will be found later in the present volume. At its conclusion a vote of thanks to him was passed on the motion of REV. CANON RAVENHILL and Captain G. R. ELWES.

FINANCIAL REPORT OF THE HON. TREASURER.—The Hon. Treasurer (the Rev. O. P.-Cambridge) stated that, owing to the delay in the issue of the volume of Proceedings caused by the inclusion in it of the account of the 1898 field meetings, he was not yet able to submit his financial report; but he made a statement as to the membership. The losses by death and resignation which had taken place during the past year numbered 40, and the new members elected 37. The number now on the list of members was 348. Of this number eight were four years in arrear in regard to payment of their subscriptions, 12 three years, 15 two years, and 48 one year. The total amount of the arrears due was £73. Of the eight who were four years in arrear he had reason to believe that there were some who had not the slightest intention either of paying their subscriptions or of leaving the club. It was decided that the customary notice should be sent to the eight defaulters that if they did not pay their arrears their names would be struck off the roll.

REPORT ON THE ADDITIONS TO THE MUSEUM DURING THE PAST YEAR.—Mr. H. J. MOULE, the Curator of the County Museum, read the following report on the additions to the collections made during the year:—

This paper may rightly begin with a word of respectful exhortation. It is thought that the Dorset County Museum suffers from a not uncommon habit of miscalling it the Dorchester Museum. This may seem a trifle, but it is feared that, like some other small influences, it has no small effect. In a distant part of the county something crops up which deserves to figure in a museum. "Dorchester is a long way off," says the owner, "there is no reason in giving it to the Dorchester Museum," and it wanders off elsewhere. The members of the Field Club might do a great deal to discredit the misnomer in question. Owing partly, perhaps, to the influence of that same wrong name, the Dorset specimens acquired of late, whether connected with antiquities or natural science, have not been many. The best are of the latter kind, including some good fossils. Mr. Cunnington, to whom the Dorset Museum has been so often indebted, has given several, for instance a fine *Ostrea deltoidea* from the Coral Rag at Sandsfoot. From Mr. A. Wallis we have received a piece of stone studded with minute shells; from the Rev. W. R. N. Waugh and the Rev. H. S. Solly three valuable fossils, viz., a fine *Dapedius* and an Ammonite retaining the operculum from the former, and the very rare *Pleurotomaria cassisiana* from the latter. Mr. Prideaux has given a good Echinoderm imbedded in chalk. Fine specimens in the inorganic geological departments have been received from the Hon. Sec. They are very large Selenite crystals from the Oxford clay at Chickerell. In the recent natural history class we have acquired a few specimens. Mr. G. Wallis has given a fine *Harelda glacialis*, and Mr. Andrews has lent a Baillon's Crake, believed to be the only Dorset example. From our friend, Mr. M. H. Tilley, the bee master, we have a specimen of the cells of the Mason Bee, and from Mr. Cooper a fine addition to our group of wasps' nests. Major Shephard and Mrs. Hoff gave several specimens of *Sphinx convolvuli*. We have received a cabinet containing the late Miss Payne's herbarium, in which there are some rarities. On the antiquarian side the record will be deplorably short. Indeed it is almost nil as regards ancient times. Of modern antiques, besides a curious Planisphere, from Captain Acland, we have received several specimens, increasing our group of implements, &c., recently gone out of use, and bringing near to us the need of a special case for such things. Further additions to this group would be welcome. For instance, an upright churn and a flail would be much in place in the Museum. Some of our acquisitions and the givers may be named as they come. Lace made here about 90 years ago from the late Miss Bishop, per Mrs. G. Symonds; a helmet belonging to the uniform of the Dorset Rangers from the Misses Furnedge; a quaint jar, found full of sovereigns at Puddlehinton, from Mr. Lovelace; a rush-light stand lent by Mr. Middleton; a gold mourning ring, dated 1756, from the late Miss Payne; a pair of snuffers from Miss Coombs; and a token of J. Stuckie, Sherborne, from Mr. Clist. Then there are one or two things belonging to the Middle Ages. Mr. Crane has given the remnants of a curious 15th century stone chimney piece which was in the long-vanished rectory of Tolpuddle, and Mr. Warren a Safe Conduct to W. Pires, of Portland, dated 1406. Then, to be perhaps classed as mediæval, is a jug or handled jar,

given by Dr. Pridham. The ware and general shape look Roman, but the shape of the handle inclines Mr. Cunnington to give it a later date. From Roman and pre-Roman times we have received little enough. Coins, of course, have been brought, but none of any rarity. And several Dorchester found ones have been given. For instance, Mr. Martin has given a denarius of Trajan, and Mr. S. Wills a third brass of Macrinus. From the Rev. S. E. V. Filleul we received a rude mortar and an ancient key. Miss Hinxman and our constant benefactor, Mr. Cunnington, have increased our collection of worked flints. Of non-Dorset gifts we may name a specimen of the curious flexible Indian sandstone from Mr. Slater, and some wooden fish-hooks, such as are still used on the Essex coast, from Mr. Lovett. Mr. Beckford has seen like ones at the Lago di Como. Mrs. Graham has presented a very beautiful model of a ship. It has always been believed to represent Drake's ship; but some think that the build is of more recent date. While the acquisitions to the Museum during the year have been the fewest on record, the work done in it has not been small. A descriptive catalogue of the Celtic, and another of the Roman pottery has been made, and the bronze relics are in hand. This last catalogue, however, was in abeyance for three months, as will be explained. Turning to the library we have a different tale to tell. It has been very materially increased during the last twelve months, and many of the additions are books of much value. In the first place the Field Club has continued its praiseworthy custom of giving us the "British Association Journal" and numbers of several publications of antiquarian, &c., societies. Mr. Hansford has added several books to his munificent gift. All are welcome acquisitions, *e.g.*, Matthew of Westminster's Chronicle and Munro's standard book on Lake Dwellings. Mr. Sime has given three books, including Holland's Translation of Camden's Britannia. From General Pitt-Rivers we have his noble fourth volume of "Excavations;" from Mr. Alexander five books, among which are the Lusiad and a very fine copy of Lacroix's great work on the arts of the Middle Ages; from Mr. Stone, among other gifts, a transcript of the description of Dorset in the travels of the Grand Duke Cosmo III.; from Dr. March, a fine set of the *Archæologia*, vols. 28 to 45; from Sir R. G. Glyn five volumes, issued by the committee of the Egypt Exploration Fund; from Mr. Floyer and Mr. Colfox, the last new guides to Corfe Castle and Bridport; from Mr. Cree, a 17th century copy of Dryden's folio translation of Virgil; from the Trustees of the British Museum, three volumes of their fine catalogue, including Vol. XXVI., of that of birds; and from Mr. Hayward a dilapidated, but, from its remnants of wooden binding, not uninteresting, copy of a 17th century edition of Fox's Martyrs. Last, not least, has come a gift of six standard Natural History books from our late friend, Miss Payne. Among them are Bewick's Birds, Yarrell's Birds, and Bree's Birds of Europe. Such, taken roughly as the gifts arrived, is the great enrichment of the library shelves during the last year. But, besides books, the library has received other additions. The safe conduct, already named, may perhaps find its home in this room. Apart from that, Mr. J. Foster has added to his important

gift of framed engravings of Dorset worthies. General Pitt-Rivers, the Rev. W. R. Waugh, and the Rev. T. Perkins have given photographs, intended as a contribution to the Photographic Survey of Dorset. But to the promoter of this desirable scheme for the benefit of ourselves and our descendants in Dorset—to the Rev. W. M. Barnes—this hurried notice can do no manner of justice. In a word, he has given more than a hundred platinotype Dorset photographs, and has, most thoughtfully and ably, arranged and mounted them and others ready for binding. It is impossible to overrate our friend's persevering energy in pushing this quite invaluable work. The collection, it should be noted, is not yet actually presented to the Museum. We have just bought a large portfolio and stand, much needed for safe keeping and inspection of the facsimiles of the Bayeux tapestry and other prints. Lastly, we must mention a noteworthy gift which hangs in the reading-room. It is a brass of the Arms of Dorchester, worked and given by Mr. Ulett in reverence for the memory of a very old subscriber to the Museum, the late Rev. Canon Smith. The many library acquisitions of themselves mean a good deal of work. But, apart from this, a very important and long-needed task has been at length achieved. Ever since the new book-case was set up the books had been in chaos and the catalogue useless. Last year the Hon. Sec. devoted several days' hard work to a classification of the books, a most difficult labour. Then the Curator, giving up for the time his bronze catalogue, bestowed nearly all his duty hours during January, February, and March to lettering and numbering each volume, and, having done this, to altering and completing the catalogue to agree therewith. Thus ends one of the best records for the Library, and the worst for the Museum since this building was set up. Our friends of the Field Club have much in their power in influencing the right gravitation of Dorset relics to the Dorset collection. This report ends, as it began, with a respectful entreaty that such influence may be exerted.

SUMMER MEETING.—The HON. SEC. announced that an invitation had been received from Mr. Vincent Robinson to visit Parnham and take tea there, also a similar one from Mr. de Lafontaine to Athelhampton, both of which were accepted with thanks. After discussion it was decided that the sites should be (1) Eggardon, Parnham, &c. (2) Puddletown, Athelhampton, Woodsford Castle, &c. (3) Mere, &c. (4) Southampton and Romsey.

THE PROPOSED PRINTED RULES.—In accordance with a resolution passed at the last meeting a copy of the draft rules drawn up by the Committee had been sent to every Member of the Club and these Rules were now passed with slight alterations, in most cases after considerable discussion, in the form in which they are printed at the commencement of Vol. xix. of the Proceedings.

The Secretary stated that Mr. E. R. Sykes had most kindly offered to present a ballot box to the Club, so that they would be put to no expense in that respect.

GENERAL BUSINESS.—The Proceedings of the Hull Scientific and Field Naturalists' Club, lately received, was laid on the table and presented to the Museum Library.

RE-ELECTION OF OFFICERS.—On the motion of Mr. G. GALPIN, seconded by Mr. H. J. MOULE, the President, Treasurer, and Secretary were unanimously re-elected.

EXHIBITS AND NOTES.

BY THE PRESIDENT :

1. Some flints imbedded in the root of an elm tree through its growth around them.
2. A cluster of five cones of *Pinus Pinaster*.

BY CAPTAIN RICKARDS :

3. A Bronze Weight dug up on the site of the "old burnt house" at Drayton Manor House, 7 miles from Windsor. This house was a Religious House and under the administration of the Bishop of London. It was said to have been the largest house in the county of Middlesex, and was destroyed by fire in the sixteenth century.

Professor Drury, of the Edinburgh Museum, writes thus of this weight :—

"I think the bronze specimen an excellent sample of a very early practice, the desire to keep current weights up to the standard value ; in our time this is done by dropping lead into a hollow left in the underside of the weight. This may have been a standard of weight in use over a wide area belonging to the distinguished families whose 'bearings' are represented on it. These are four in number. The 'Lions' are not Scottish, the other two, the 'double headed Eagle' and the three 'Leopards,' are not, if I remember right, confined to England. The ornamentation is interesting as having been current in the 13th century."

4. An example of the Roman (bronze) Sword, found at either Burgh Castle or Colchester, I am not quite certain which, and bought at the famous sale of Sir Edwin Smith's collection. (Sir E. S. was founder and first President of the Linnæan Society.)

BY REV. R. USHER :

5. A robin's nest built inside an old metal teapot which had been thrown away and lay at the foot of a briar-bush.

BY MR. R. SLATER :

6. *Clypeaster Aegyptiacus*—a fossil sea urchin—found in the Libyan Desert in a sandstone deposit, some twelve miles south-west of Cairo.

Presented to the Museum.

BY REV. W. R. WAUGH :

7. A black letter New Testament translated into English by Theodore Beza with expositions and concordance. Date 1583. In the original binding re-backed.

BY MR. E. CUNNINGTON :

8. An old engraving of Mr. John Love, "the fatest and heaviest man ever known in England."

Mr. Moule mentioned the fact that Mr. Love fell asleep whilst King George III. was talking to him.

BY MR. A. POPE :

An indenture made on January 20th in the 26th year of the reign of King Henry VIII. between John Norman, "by God's guidance Abbot of the Monastery of the Blessed Mary the Virgin of Bindon in the county of Dorset and the convent of the same place of the one part, and Roger Clavell, of Dernaston Osyth of the other part," letting to Roger Clavell the manor of Langton and lands in Winfrith Newbrow. The special interest of the indenture to the Field Club was the fact that Roger Clavell was an ancestor of the President, who still bears the name Clavell.

Owing to the long discussion on the Rules the time proved very short for the above Exhibits. The meeting broke up about 5.30 p.m.

SOUTHAMPTON AND ROMSEY MEETING.—This, the first Summer Field Meeting of the Club was held on Monday, June 19th, 1899, at Southampton and Romsey, and was attended by about 40 members and friends. The President being absent, his place was filled by Rev. Sir Talbot Baker. The day was fine and the party reached Southampton West Station at 10.19 a.m. and were met at the Bar Gate by Rev. Geo. W. Minns, F.S.A., who had kindly undertaken to act as Guide to the principal parts of interest in the town. There are two Chambers over the Ancient Gateway, the Court Room and a smaller room, used for hearing minor cases. The latter contains two very old carved shields, one of which bears the arms of the Diocese of Winchester, together with those of Bishop Fox, the other the arms of Henry VII. and those of England and France. There is also a large old painting of King Solomon directing the cutting in two of the child which two women claimed as their own.

Directly over the central arch of the Bargate is the Court Room, which has been used as such since the time of Queen Elizabeth, who granted arms to the borough. These ancient arms are of a somewhat elaborate description ; they are carved, and include amongst other things the arms of the borough, the scales and sword of justice and mercy, and two ships. This coat of arms occupies a place over the judge's seat. It is dated 1574. The hall contains some old stained glass windows, the top portions of which are filled with the arms of Henry I., the borough crest, the arms of several other of the kings and Philip of Spain, who landed at this port and passed through the town on his way to Winchester. The walls of the court bear two very ancient pictures which formerly occupied positions outside the gate ; they are representations of Beavois and his squire Ascupart. There are many other things of interest not only to antiquarians but the general public in this old Guildhall, which is well worth a visit.

Mr. Minns next took up his position in the street, and then, beneath the central arch of the gate, he explained that originally there was only one arch—the central and Norman arch—the two side arches being added since. The town

originally was situated on the low-lying part and below the Bar, or north gate, which was the most important, and was enclosed by walls a mile and a-quarter in length, in which were seven gates. On the outer face of this gate are eleven escutcheons bearing the arms or crests of some of the kings and most notable persons connected with the history of the borough.

Many portions of the ancient wall have been pulled down and much of the old building destroyed to make room for modern improvements.

From the Bargate a short walk enabled the party to reach the Arundel Tower, which formed the north-western corner of the wall. A large portion of the remains of this tower, however, has been quite shut off from public view from the street by the erection recently of a red brick building, of which the ancient wall forms the back. From this point nearly to the Royal Pier the old wall was traced, and the many interesting historical features of it described by the well-informed guide. In days of old the sea washed the foundations of the wall, in which there was a water gate, which is still very clearly defined. A beautifully-built and commodious chamber or vault is also entered through a doorway in this wall, this communicating originally with the water gate by means of a passage which ran to the ancient castle situated inside the walls on rising ground.

Having viewed Biddlesgate, a visit was paid to Simnel Street, in which are situated ancient cellars, the vaulting and bosses in one of which are of 13th century work. Some old houses have been pulled down at Biddlesgate, and there is a large gap in the wall at this place.

Continuing in the direction of the pier, however, the wall is less broken and of a more ornamental character, containing as it does eighteen arches with a wall behind them, placed no doubt about 1340 in consequence of the incursions of the French, who previously burnt a portion of the town and plundered the King's house. Behind this wall is a remarkably fine old Norman house which has been purchased by Mr. Spranger in order that it might be preserved as an antiquity. The crude timber roof in the upper chamber of this building is most curious. Mr. Spranger has placed a number of old relics in this room, which is of much interest to lovers of English history.

Sir TALBOT BAKER, on behalf of the Club, proposed a vote of thanks to Mr. Spranger, for the service he had rendered in thus preserving such an ancient feature of bygone history.

In describing the Bugle Tower almost at the end of the existing wall, Mr. MINNS drew attention to a very old wooden shed, and suggested that it would be a good thing to form one into a borough museum, whilst the tower rooms would be suitable for a caretaker.

French Street was also visited and Canute's House, and the little church of St. Julien and the almshouse were also inspected. In this church is a tablet recording the trial and execution of Lord Scrope and Earl Grey—who were buried near this spot—for conspiring to murder Henry V. in the town of Southampton. A very handsome brass culverin presented by Henry VIII,

having been duly scrutinised, St. Michael's Church was visited. It is a beautiful old Norman edifice, on the tower of which was erected a spire in 1720 as a landmark for incoming ships. The interior of the church is remarkable for some very ancient and curious relics besides its architectural beauties, which are somewhat detracted from by the rugged state in which portions of the lower walls have been left. Close to this, the most remarkable church in the borough, is a fine specimen of a Tudor house which has also been purchased by Mr. Spranger and is said to have been used by Henry VIII.

Luncheon was then partaken of at 1.0 p.m. at Dartnall's Restaurant, and, Mr. Minns having been thanked for his kind and valuable help, the members adjourned to the Hartley Institute for about half an hour, and inspected the varied contents of the Museum.

At 2.15 the party drove 9 miles to Romsey Abbey, where they were received by the Rev. E. L. Berthon, formerly the Vicar, who had spent much time and money in restoring the decayed portions of the Church to their original character, and who now gave an address on the building, of which the following is a summary :—

The Abbey is dedicated to SS. Mary and Ethelflæda, and the dual character of this is maintained throughout in the most ancient portions of the church, which might be said to be unique in the amount of pure Norman work which it contains. The Abbey was founded about 907 and re-built about 1115. There is a relic of the former building, which is built into the wall just outside the abbess's door on the south side of the church, and it dates no doubt not later than the 11th century. Another relic in the shape of a carved stone tablet in high relief was found built into a wall of the church. It represents the Crucifixion and has been let into the wall of the apse at the east end of the south chancel aisle (and over the altar), which is used for daily service. This relic is believed to be of Saxon workmanship. Standing in the middle of the nave and looking east the visitor sees a perfect Norman church with two exceptions. The original windows and triforium at the east end have been removed and replaced by two beautiful Early English windows, and the flat wooden ceiling replaced by Early English barrel roofing. Otherwise nothing but Norman work of the best example is seen looking eastward. The Norman clerestory has been allowed to remain unaltered. The west end of the nave is of later date. After the Reformation, the Nunnery having been dissolved by Henry VIII., the people of Romsey came forward and bought this grand building from the King for £100 for the purpose of using it as their parish church. The original deed of the sale, with the great seal, &c., has been framed and mounted, and occupies a conspicuous place in the vestry. In ancient times "the public" were only allowed to worship in the north aisle, which was screened off from the nave. Portions of this screen, dating from William of Wykeham's time (1372), were found by Mr. Berthon, and have now been worked into a choir screen. There are representations of the heads of various kings, queens, and bishops, who were benefactors to the Abbey. The stained glass windows are all modern; the east windows are to the memory of Lord Mount

Temple, and the great west window in memory of Lord Palmerston. There is an ambulatory behind the central altar, and this, no doubt, was the lady chapel. There are several interesting relics in the church, amongst them being a knot of lady's hair, found outside the church in a leaden coffin, and dating, no doubt, as early as the Roman occupation. It is braided into a simple plait. For nearly 50 years the vicars and townspeople have gone on steadily restoring what was decayed and destroyed in this noble church, but still much remains to be done. The rubbish which blocked up many of the arches and chancel was stupendous, over 500 cartloads being removed from the chancel alone.

The members were then conducted round the Abbey, and the chief objects of interest pointed out to them.

Mr. Berthon's name is well-known in connection with his invention of collapsible boats, and the party proceeded to the boat works close by, where they were shewn the arrangements for storing and launching these boats, which may be described as consisting of a framework of a few long ribs hinged at each end and covered with a waterproof material like canvas. When folded together they form a long flat package which takes up comparatively little room, and can be expanded, fixed, and launched in a very few minutes. The boats are made of all sizes, some capable of holding a hundred or more people. The thanks of the Club having been offered to Mr. Berthon, the party adjourned to tea at a restaurant close by, and drove to Southampton West Station to catch the 6.44 train.

NEW MEMBERS.—By the new rules of the Club a candidate (Rule 7) may be proposed at any meeting, but shall not be elected until the first following winter meeting, when he shall be elected by ballot. Four candidates were proposed.

EGGARDON, POWERSTOCK, MAPPERTON AND PARNHAM MEETING.—This, the second summer field meeting was held on Wednesday, July 19th, 1899, and was attended by about 70 members and their friends. The Hon. Secretary being the only Vice-President present, and, having numerous other duties to perform, asked Mr. A. Bankes to take the place of the President, who was absent. A distinguished visitor present on this occasion was Rev. Canon Greenwell, F.R.S. The party met at Powerstock Station at 11.21 a.m., and walked up the very steep ascent of Eggardon Hill, under the guidance of Rev. H. S. Solly, the day being exceedingly hot. On reaching the top the Hon. Secretary, after stating his regret at the unavoidable absence of the President, reminded those present of the fact that Mr. and Mrs. Mansel-Pleydell celebrated their golden wedding on June 21st last, and said that he thought that the present would be a suitable occasion on which to offer them their congratulations and good wishes. It was unanimously resolved "That the members of the Dorset Field Club desire to convey to their President and Mrs. Mansel-Pleydell their most hearty congratulations on the celebration of their golden wedding on the 21st of June last, and their best wishes for their happiness and prosperity for many years to come."

A paper was then read by Rev. H. S. Solly "On the Camp and Geology of Eggardon Hill," which will be found printed in full in the present volume.

The members then walked for some distance along the earthworks and inspected an octagonal earthwork enclosure which Mr. Suttill pointed out. There were also holes believed to be hut-dwellings, but without an extensive use of the spade, little certain knowledge could be obtained.

The party then walked down by the road to Powerstock Castle, now quite demolished, and consisting of little but grass-covered mounds. Here they were met by Rev. R. W. H. Dalison, who read some notes on the subject, which, together with a paper on Powerstock Church, will be found in full later on in this volume. The party then proceeded a short distance to Powerstock Church, where Mr. Dalison read the rest of his paper relating to it, after which they drove in breaks past Melplash to Mapperton Manor House, where they were hospitably entertained with tea by Mrs. Compton, the Rev. Paulet Compton being unfortunately absent from home. The description of the house and adjoining chapel had been kindly undertaken by Rev. Canon Gildea, who conducted the party through the various rooms, some of which contained very beautiful and elaborate ceilings and other attractions. His paper will be found later on in this volume.

The last place visited was Parnham, situated about a mile South of Beaminster, where the Club had been invited to tea by Mr. Vincent Robinson and Miss Robinson.

Tea having been partaken of, Mr. Robinson gave a short address and observed that his acquaintance with Parnham was quite recent. He supposed all of them knew Hutchins' work quite well, and therefore they must know the history, as far it went, of Parnham. What Hutchins said was that there was a certain Robert Strode in 1628 who wrote a short history of his possessions, and Parnham was one of them. He merely went on to say that Parnham was enlarged and re-edified by Sir John Strode in the time of Henry VIII. Now what part of it was restored there were no documents to prove. There was a print in Hutchins' history of the house, but there had been several external additions since that print was made. Mr. Robinson pointed out how the original appearance of the hall had been altered by the removal of the chimney from one side to the other, thus lighting the great hall from one side only. The moment he first entered the hall he knew it was not lighted as it originally was. Hutchins said there was a gatehouse near the mansion, but there were no remains of it, and there was no evidence as to when it had been pulled down. Hutchins also stated that John Strode in the reign of Henry VIII. built a school house, but there were no remains of this or any traces of the fish ponds mentioned by the Dorset historian. Mr. Robinson then alluded to the manner in which Nash altered the style of architecture of the mansion on the south side. He pulled about certain parts in a most unjustifiable manner, putting in mock Gothic and destroying the style of the south and west also. On going into the hall Mr. Robinson pointed out the Vandalism of the past, alluding particularly to the removal of the

chimney and the style of the ceiling, which he described as a most contemptible ceiling for a hall of that character. He did not know what the ceiling could have been before Nash touched it. He found traces of the windows on the side to which the chimney had been removed, and to which Nash added another room. In the windows of the hall were to be seen the fine heraldic glass of the Strodes, also several German Scriptural subjects, a splendid oak screen of the time of Henry VIII., placed there by Mr. Robinson, together with some beautiful armour, several valuable antique figures from one of the churches at Seville, and many curios, which were examined with great interest by the members. The library was next visited, containing a piece of Persian frieze from the mosque at Meshed, Mr. Robinson remarking that there was only one other piece in England, and that was in South Kensington. A rose-water sprinkler of the 16th century and many other things were pointed out as of rare antiquity. Going through the dining hall Mr. Robinson drew attention to one of the windows which he had alluded to as originally giving light to the hall, and showing that the pointing of the arches was different to that of those in the library where they had been altered by Nash. He said he had been reproached with putting Italian stalls into an English room, and his reply was that the room was not part of the original house. It was placed by Nash, and he was trying to "denationalise" it.

The thanks of the Members having been offered to Mr. and Miss Robinson, a start was made in order to catch the 7.12 train at Bridport.

NEW MEMBERS.—Two were proposed.

WOODSFORD CASTLE, WOOL, BERE REGIS, ATHELHAMPTON, AND PUDDLETOWN MEETING.—This, the third Summer Field Meeting of the Club, was held on Wednesday, August 9th, 1899, about 80 members and friends being present, the day being fine and hot. The Hon. Secretary was the only Vice-President present, and acted as President until the arrival at Bere Regis, after which the Hon. Treasurer, who then joined the party, undertook this duty. The start was made from Dorchester station on the arrival of the S.W. train due at 10.7 a.m., but, the train being very late, did not take place until nearly 11.0. The first place visited was Woodsford Castle, by kind permission of Mr. Lee, the occupier. This is a picturesque ancient building much overgrown with creepers, the greater part of which is habitable and used as a dwellinghouse, through the various rooms of which the members were conducted. A paper on the Castle was read by Mr. H. J. Moule, and will be found in full in the present volume. A break containing several Members from Blandford joined the meeting at this point.

At about 11.45 the party drove on 7 miles through Moreton to Wool Church, where they were received by Rev. A. C. B. Dobie, the Vicar, who gave a short history and description of the building, and drew attention to its most interesting features. There was evidence that the present building was not the first on that site, for in 1865, when workmen were engaged in digging the foundations

for the south aisle, they came upon the foundation of an earlier church. The earlier church, according to Hutchins, consisted only of a nave, for the chancel and tower were added later, about 1450. Wool church was a parochial chapel belonging to Coombe Keynes. During the 13th century it was rebuilt. In 1384 it was decreed that Wool chapel should be dedicated for the third time, and since then, with its mother church at Coombe, it had been dedicated to Holy Rood. From the middle of the 15th century till 1865 the church consisted of a small chancel, nave, tower, and north arcade. In 1865 a faculty was issued to pull down the body and the chancel, with the exception of the tower and north and east walls of the nave, and to build a south aisle. The result was the church as we see it now. This extension included the old burial place of the Turbervilles, of Wool Bridge. Where the organ now stands there was a small chapel called Bindon Chapel. The special feature of Wool church is undoubtedly the triple chancel arch, or rather the chancel arch tri-sected, the effect of which is pleasing and almost unique. It appears to be a stone screen with three equal bays, the arches being supported by two slender columns. The tympanum is plain, with no trace of sculpture or fresco.

The screen dates from the middle of the 13th century. Mr. Dobie added that he hoped some day to have the heavy stone pulpit removed and replaced by a light wooden one, more to the side of the church, to allow the screen to be seen better. The font is an excellent specimen of 15th century work. The two old arches on the north of the nave, about 1250 in date, have been much admired. There are four bells, and it is popularly believed, according to the doggerel couplet, that they were stolen from Bindon Abbey at the time of the Dissolution of the Monasteries. It is said that Bindon Abbey had twelve bells, and that eight were taken to Fordington St. George Church by "Fordington rogues" and the other four hung in Wool church tower. But Mr. Dobie pointed out that the two earliest bells of the four bear dates 60 years later than the Dissolution. If it was suggested to meet this difficulty that the bells were re-cast he would reply that it was strange that they should have been re-cast at different dates, instead of all at one time. He preferred to think that the bells were given from time to time by pious parishioners who recognised the need of the church and wished to supply it.

Mr. Dobie had brought out the Communion silver for the Club to see. There is a silver Elizabethan chalice with the cover engraved with the date 1571. This cover also served as a paten. Another interesting silver chalice, of pre-Reformation date (figured in "Cripps' Old English Plate"), belonged to the church at Coombe. He also called attention to a cresset stone placed by the font, made of Purbeck marble, rectangular in shape, and pierced with four holes. This, he said, was in almost as good condition as when finished by mediæval workmen. In conclusion Mr. Dobie observed that they had revived the old-fashioned custom of going up to the mother church at Coombe Keynes once a year, and on the afternoon of the Fourth Sunday in Lent a large body of pilgrims made their way thither.

Thanks having been offered by the Hon. Secretary to Mr. Dobie for his interesting paper, the members partook of a hurried luncheon and the drive was continued to Bere Regis Church (6 miles), where an address was given by Rev. W. Farrer, the Vicar, who pointed out the parts referred to as he proceeded. He observed that the font was the oldest object in the church. It bore the date 1130. The arches and the carved heads on the capitals were of about the same date, or later, and also the dog-tooth moulding. With regard to the carved heads, he dispelled any idea which the visitors might have that they were merely freaks of fantastic fancy on the part of the workmen, with as little meaning as beauty. The mouth which was being opened by two hands reached down from above plainly signified the giving of utterance; the eye with the eyelid drawn back the giving of spiritual vision. A scene of bear-baiting was represented on another capital. The wooden roof, with its carved and painted figures, was put up in the reign of Henry VII. by Cardinal Morton, who was born at Bere. The figures, Mr. Farrer continued, were said to represent the Twelve Apostles. If that was correct the one next to the chancel on one side holding a bag would be Judas Iscariot. But would Judas be placed in such a position? He preferred to think that the figure might be meant to represent an almoner. The original church was very small. It may have been cruciform, or a short church with a tower. He pointed out the Turberville aisle, in which members of that family, for many generations lords of the manor, were buried. Here are two altar tombs, and a beautiful painted window with the arms of the successive holders of the manor exquisitely tintured. Mr. Farrer then drew attention to one of the chief rarities of the church—the stone altar. At the time of the Reformation, when all stone altars were ordered to be taken down, this one was buried under the floor. It was restored in 1875 by Mr. Hibbs, churchwarden. There was an interesting monument to a former Vicar named Fisher, whose humility and earnestness found expression in the brevity of the inscription, "*Verbum non amplius Fisher,*" as if he only wished to be remembered as a fisher of men. Finally Mr. Farrer invited anyone to inspect the old Churchwardens' book, which dated from 1682, and contained many quaint entries, *e.g.*, that the village of "Benjamin" was paid in 1728 for cleaning and oiling the Apostles—the carved and painted wooden effigies in the roof above.

Mr. Farrer having been duly thanked for his address, the Members drove to Athelhampton (5 miles), where they had been kindly invited to tea by Mr. A. C. de Lafontaine, who, on their arrival, read a paper on the house and its contents, which will be found in full later on in this volume. He then conducted the members over the house and grounds, where there were many objects of interest besides those mentioned in his paper. Tea having been partaken of, and the Hon. Treasurer having expressed the thanks of the Club to the host, Puddletown Church, the last feature in the programme, was visited. It will be remembered that on the occasion of the visit to this interesting church of the Royal Archæological Institute in 1897, a paper on the Martin Monument was read by their President, Lord Dillon, which was at his suggestion printed in Vol. XIX.

of the Club's Proceedings, and illustrated by two excellent plates of the effigy, presented by him to the Club.

A paper on the Church was read by Mr. E. Doran Webb.

In thanking him, the Hon. Treasurer mentioned that there was some idea of restoring the church, and a hope was expressed that its many antique characteristics would be carefully preserved.

At 6.30 p.m., the party drove to Dorchester to catch the 6.57 and other trains, having made altogether a circuit of nearly 30 miles.

MERE, STOURTON, AND STAVORDALE MEETING.—This, the fourth and last Summer Field Meeting of the Club was held on Thursday, September 14th, 1899. The President and two Vice-Presidents attended the Meeting and about 40 Members and their friends. In anticipation of his probable absence from home the Hon. Secretary had delegated his post to Mr. E. Doran Webb, who kindly acted as Secretary, and also gave an immense amount of information about the various places visited.

The party started in breaks from Gillingham Station on the arrival of the 9.33 a.m. train, and drove first to Woodlands House (4 miles) which was inspected by permission of the tenants.

This house, Mr. Doran Webb explained, belonged to the Dodington family, who during the civil war were active supporters of the King, and once attempted to cut off troops from Wardour Castle. For their loyalty to the Crown the Dodingtons had to pay heavy fines. They compounded for their estates, and it was their ruin. The oldest part of the house remaining is a 14th century chapel, the rest being of later date. The house is surrounded by a moat, which is now dry, but picturesquely fringed with trees. Mr. Doran Webb led the way up the old worn stone steps to the chapel, passing under archways with ornamented spandrels. He called attention to a massive wooden door with the original iron strap-hinges and bolt. The chapel is now used as a cheese store. There is a window in the east end, and two in the north wall, one with rather elaborate reticulated tracery. In the wall on the other side is a piscina. Mr. Doran Webb said that access to the chapel was obtained by an outside staircase, of which there were traces. At a later date the chapel was turned into a room of the dwellinghouse, and the ornamental Jacobean chimney-piece was then put in at the west end. Four or five years ago it was proposed to make extensive alterations, but a representation made to the owner preserved the chapel from being touched. The waggon-headed roof is original, and the wooden ribs are in good condition. The dining hall downstairs was once cut in half. The party entered the surviving half and inspected the mullioned windows, the carved mantelpiece, with fluted pilasters and over it the arms of Dodington impaling those of Zouche, and the plaster ceiling, which Mr. Webb observed to be a good specimen of Elizabethan moulded plaster work.

A drive of less than a mile brought the party into Mere, which lies under the shelter of towering chalk downs, and has a population of just under 3,000. The carriages drew up at the church. Walking down the pleasant avenue of pollard limes, with closely interlacing branches, the party entered the church, and were welcomed by the Vicar (the Rev. J. A. Lloyd), who enumerated the chief features of the fine building. The tower is 90 feet in height to the battlements, and at each corner is a large spire-like pinnacle. It is much like St. Peter's tower, Marlborough. The greater part of the church, Mr. Lloyd said, was built in the 15th century, being finished in 1463. One of the chief features of the church is a splendid rood screen in carved woodwork. All is original work except the parapet of the rood loft, which has been added in recent years at the expense of Mrs. Morrison; but the panels fit into the original mortices. In the panels originally were pictures of the Twelve Apostles, but they were washed over in 1561. Mr. Lloyd said that to his mind the most interesting part of the church was the piece of stone over the tower arch, which they believed to be a part of the wall plate of the original church burnt in 1220. The dimensions were not Norman, but pre-Norman, and therefore they took it to be a Saxon piece of wall. In this theory some of the experts present could not concur. Mr. Lloyd next called attention to the beautiful woodwork of the roof, with angels with outstretched wings doing duty as corbels. This was hidden by plaster; but the plaster was removed in 1893, and the woodwork was found in such good condition that it was only needful to restore some of the bosses. At the sides of the chancel are also some exquisite wooden screens, the proportions and carving of which are in every way admirable, and which have the merit of being untouched original work. A beam in the screen work in the north side is pierced with a hagioscope or squint. Indeed, Mere church is exceptionally rich in ancient and beautiful carved woodwork. The elaborate wooden roof of the baptistry is said to be the finest specimen of wood-carving in Wiltshire. The wooden pews were made at Maiden Bradley in 1625, and are also of excellent workmanship. Besides the woodwork the church was also noted at one time for its stained glass. In 1645 the Vicar was so severely kicked by Cromwell's soldiers that he died a fortnight later, and all the beautiful glass in the windows was knocked in by the soldiers with the butt ends of their muskets. Some fragments of the old broken glass have lately been found. The Vicar sounded a note on the Sanctus bell in the rood loft. It is not the original bell, but it was recast out of the metal of the original bell. It was discovered, singularly, in a coalhole in the house where his junior curate lived and thus restored to the church. There are three altars in the church, dedicated to St. Thomas, the Virgin Mary, and St. Mary Magdalene. In the chancel are six stools with *miserere* seats, but the carvings under them are not of the usual grotesque type. There is also a recess for the Easter sepulchre, the Vicar explaining that all churches which adopted the Sarum use had to have this among other things. There are also two piscinæ. The club inspected the nucleus of a museum of relics which the Vicar has got together. Among the

curiosities of the church are an old Dutch bound Bible and a Dutch lantern. The churchwardens' book contains in faded ink on yellow leaves, a voluminous record of disbursements dating from 1556. In the Bettesthorpe Chapel, which lies to the south of the chancel, being divided from it by the wooden screens already mentioned, are two monumental brasses of great beauty and antiquity let into the pavement. They date from 1398. One, which has had both legs amputated where it lies close to the altar, is of Sir John Berkeley. He is encased in plate armour, and this is said to be the only occurrence of plate armour in Wiltshire. The other is of the Bettesthorpe who founded the chapel. His armour is camail. In the date of his death is inserted the dominical letter to denote the day of the week. This is a rarity. In a Latin inscription the moral of mortality was pointed in the not uncommon words: *Es quod eram, et eris quod sum*—"Thou art what I was, and thou shalt be what I am."

An old house close by built in the year 1470 as a dwelling for four chantry priests, was next visited. The chantry rents are still paid and amount to £13 a year.

Some fine old twisted iron work on the sign of the Ship Inn was admired in passing. The party then drove to Stourton where they lunched at the Spread Eagle Inn. The PRESIDENT referred to the discovery of a fine Roman pavement at Dorchester by Mr. A. C. Higgs, and expressed a hope that it might be secured for the county.

The Church was then visited and on it Mr. Doran Webb said a few words.

The Church consists of nave, north and south aisles, western tower, a chancel which has been rebuilt, a vestry, and chancel aisle. The earliest part of the building belongs to the transition period, between the Romanesque and Early English styles. The Church is principally famous for a beautiful series of monuments of the Stourton family, who owned the Stourhead property from the earliest time. Eleven or twelve Lord Stourtons lie buried here. Mr. Doran Webb pointed out a sham helmet, made of tin for show, placed on the most beautiful monument in the Church, with its recumbent effigies of a Lord and Lady Stourton. It did not open, in fact such helmets were made for the mediæval undertakers, to be placed on the tomb. The real helmet of the buried knight was perhaps the one found by him in the coal hole, which the clerk used as a coal scoop. He took it away, and Sir Henry Hoare now had it preserved in the hall at Stourhead. The church was primitively lighted by a row of candles stuck in a narrow strip of board. On two brass tablets let into the wall are engraved the names of the Rectors of Stourton, a long list of 41 names, beginning with John de Weston in 1316. It is a coincidence that Weston was the maiden name of the present Lady Hoare.

By the kind permission of Sir Henry Hoare, Bart., the members strolled about the beautiful grounds of Stourhead House. The river Stour rises from some springs up the valley and its waters widen out into five successive lakes, with a considerable fall between each. There is much fine timber and many rare trees and shrubs. Alexander Pope is associated with Stourhead, and in a grotto where

one of the springs of the Stour rises the following lines by him are carved beneath the sculptured sleeping nymph of the spring :—

Nymph of the grot, these sacred springs I keep,
And to the murmur of these waters sleep.
O, spare my slumbers, gently tread the cave,
And drink in silence or in silence lave.

At a short distance is a model of the Pantheon of Rome adorned with sculptured panels by Rysbræck, and with statues. A "Temple of the Sun" is another building in these grounds. The Bristol Cross was also visited. This was erected about the time of Edward IV., on College Green, Bristol, whence it was removed for want of space, and brought by a former Sir Henry Hoare to Stourhead. The niches in it, formerly occupied by saints, now contain statues of kings.

On the way to Stavordale, Stourton Tower, which forms a landmark on top of a hill, was passed. It is dedicated to Alfred the Great, and bears his statue. It is 160 feet in height and triangular in shape, built of red brick.

By the leave of the owner of Stavordale Priory, the Rev. L. R. M. Leir, rector of Charlton Musgrove, the club inspected this interesting building, which is now used as a dairy house. The party were received by Mr. Sweetman, of Wincanton, a local antiquary, who had brought photographs for exhibition. He led the way into what was the church of the Priory, which was built in 1440 by John, Lord Stourton. Only the nave can be seen, and it is now occupied by hay and a cider press. The fine arch leading into the choir and chapel is filled up with a wall. In the nave there is a piscina in the south, and in the north wall an aumbry, or cupboard-like niche for keeping the holy vessels. Mr. Sweetman afterwards conducted the party into the chapel, which has been intersected by both walls and floors to form a number of rooms, one of which, like the chapel at Woodlands, is used as a cheese store. The beautifully moulded groined vaulting tells of past magnificence. Mr. Sweetman stated the chapel was erected a short time later than 1440, the date of the Priory church, offertories having been made for the purpose throughout the diocese. The floors and walls undoubtedly ought to be taken away, to show the original size of the chapel. Leaving Stavordale Priory the party drove through Wincanton and Horsington Park to Templecombe to catch the 5.57 p.m. and other trains.

NEW MEMBER.—One was proposed.



Dorset Natural History and Antiquarian Field Club.

DR.

RECEIPTS and EXPENDITURE from May 9th, 1898, to August 1st, 1899.

CR.

RECEIPTS.	£	s.	d.		EXPENDITURE.	£	s.	d.
Balance from last year			1 1 4		June 6th—Sime and Co., Balance of Bill, 1898, for Vol. XVIII.			16 3 0
Subscriptions and Arrears			208 4 0		Engraving Plates—			
Sale of "Proceedings"			3 11 0		Meisenbach Company			8 11 7
Ditto "Spiders of Dorset"			3 10 0		H. Grönveld			1 10 0
Ditto "Phalangidea and Chernetidea"			0 8 6		A. T. Hollick			0 15 0
Donations to Plate Fund—					Werner and Winter			17 2 0
Mrs. Forrester			0 5 0		Miss Case, Litho. Paper			0 6 11
R. S. Clarke, Esq.			0 11 0		McFarlane and Erskine			3 16 6
From Secretary —			0 16 0		Bank Charges, 1898 and 1899			32 2 0
Surplus from Incidental Expenses at Field Meetings					Cheque Book			0 5 0
Fund			5 0 0		Messrs. Bright for Proc., Vols. I. to III.			0 2 0
					John Weldon for Proc., Vol. I.			1 1 4
					1899. Treasurer, Stamps			0 8 6
					July 31st—Sime and Co.'s Bill, May, 1898, to August 1st, 1899—			2 2 6
					Advertising and Programmes of Eight			
					Meetings			14 4 6
					Printing various Forms, Notices, &c.			7 10 0
					Printing Authors' Copies of Papers			7 7 6
					Postage, &c., of Vol. XIX. to Members			5 15 7
					Printing, &c., 400 Copies of Vol. XIX.			119 19 5
					Balance in hand August 1st, 1899			154 17 0
								15 9 6
								£222 10 10

Dorset Natural History and Antiquarian Field Club.

DR. CR.
HON. SECRETARY'S ACCOUNT from May 1st, 1898, to May 1st, 1899.

RECEIPTS.

1898.		£ s. d.
May 1st—Balance from last Account	.. .. .	0 14 7
By Balance from Incidental Expenses at Meetings at Dudsbury, Glastonbury, and Hod Hill .. .. .	.. .. .	10 9 4
		£11 3 11

EXPENDITURE.

1898-99—H. Voss, for Meetings on May 9th, Dec. 15th, and March 9th		£ s. d.
Hon. Sec., Postages, &c. .. .. .	.. .. .	0 15 0
Portion of Surplus paid to Treasurer .. .. .	.. .. .	3 6 11
Balance in hand .. .. .	.. .. .	5 0 0
		2 2 0
		£11 3 11

DR. CR.
GENERAL STATEMENT, August 1st, 1899.

RECEIPTS.

By Arrears of Subscriptions due—		£ s. d.
From 12 Members, 3 years .. .. .	.. .. .	18 0 0
" 12 ditto, 2 years .. .. .	.. .. .	12 0 0
" 27 ditto, 1 year .. .. .	.. .. .	13 10 0
" 226 ditto for current year .. .. .	.. .. .	113 0 0
		156 10 0
" Cash Balance in hand from last year .. .. .	.. .. .	15 9 6
		£171 19 6

EXPENDITURE.

Balance in favour of Club		£ s. d.
		171 19 6

SPECIAL DONATIONS OF PLATES, PRINTING, &c.,
TOWARDS VOL. XX.

From HENRY STORKS EATON, Esq.

The Cost of Printing his Report on Returns of Rainfall in Dorset in 1898.

From A. C. DE LAFONTAINE, Esq.

The Plate shewing the Old Gatehouse and Dovecote at Athelhampton.

From N. M. RICHARDSON, Esq., Hon. Sec.

The Illustration from "Hyginii Poeticon Astronomicon."

DONATIONS TO PLATE FUND.

		£	s.	d.
Mrs. Forrester	0	5	0	
R. S. Clarke, Esq.	0	11	0	
Total ..	£0	16	0	

The Club also desires to thank those who have given their time and skill in making the original drawings and photographs for the plates contained in the present volume.



Anniversary Address of the President.

(Read May 10th, 1899.)



FOREMOST among those whose removal by death from amongst us we have this year to deplore is Professor George James Allman, who died on November 24th, at the advanced age of 86. In him zoological science has lost a renowned and accomplished worker. From his early days he devoted himself to the study of organic nature, and so highly was he esteemed that during the year of his graduation in the University of Dublin in 1847 he was appointed Regius Professor of Botany, a position which ten years later he resigned for that of Regius Professor of Natural History in the University of Edinburgh, which he held till 1870, when he retired into private life. As a worker Allman was untiring, and between the years 1835 and 1873, apart from his monographs, which alone are monumental, he produced considerably over 100 papers. Allman's first paper was a botanical one on "The Mathematical Relations of Forms of Cells of Plants." His great reputation rests upon his investigations into the classification and morphology of Coelenterata and Polyzoa, upon which he has left a mark for all time. On the appearance of perhaps his greatest work, "The Gymnoblastic or Tubularian Hydroids,"

commenced an epoch in the history of the scientific investigation of the Cœlenterata. This work, pre-eminent among the Monographs of the Ray Society, came as a revelation to the zoologists at the time. In 1854 he was elected a Fellow of the Royal Society, and in 1873 received the Royal Society's Royal Medal. In 1877 he was awarded the Brisbane Gold Medal of the Royal Society of Edinburgh, and in 1878 the Cunningham Gold Medal of the Royal Irish Academy, while in 1896 he received the Gold Medal of the Linnæan Society he had served so well. On his retirement into private life he settled in this county, at Parkstone, where his genial friend, Dr. Alfred Russel Wallace, also lives, who I hope will be elected by the members as his successor to the vacancy Dr. Allman's death has made in the list of our Honorary Members, which has been hitherto filled by eminent scientific men.

Life is a mystery, we can mark its manifestations, but we can never trace its source. We observe that an animal or plant lives, but we cannot tell what keeps the blood or the sap coursing through the veins of the one and the tissues of the other without a pause. We are able to read the poet's lines and look at the artist's pictures and hear the musician's songs, but we know nothing of the inner mental life that produced the poem, the pictures, and the songs. It is a hidden life. Since its first introduction on the globe, life has gone on advancing, diversifying and rising to higher and higher levels. This progress and change have been unceasing and gradual, though not at a uniform rate. New forms of plants and animals originated in some area, and spread in all directions until stopped by some obstacle of climate, or of topography, which they were unable to surmount. The diffusion of new forms often occasioned the extinction of the old which were not so well fitted for survival. Ancient types may have occasionally lingered in certain localities long after they had elsewhere become extinct. The remarkable climatal changes through which various parts of the earth have passed are indicated by fossils. With the exception of glacial marks and ice-formed deposits they offer the most trustworthy evidence available as to changes of climate. Thus when we find

in the rocks of Greenland the remains of extensive forests, consisting of trees, which now grow in temperate regions, the only possible inference is that Greenland has now a far colder climate than when these forests existed. A similar conclusion follows from the presence of Palm leaves and other sub-tropical plants preserved in the cliffs of Bournemouth, which now only live in warm regions. Before, however, any conclusions with regard to climatal changes can be regarded as firmly established, we should have the testimony of species before us.

The materials of the physical world are manufactured or created products, and the progress of their development is the result of the properties and laws impressed upon them at first, and regulated by their Creator to a definite end. Here we shall not find any analogy in the origin and development of life; but although all this is necessary to life, we require something more, namely, the substance protoplasm, which does not exist in dead nature, and which thus far has baffled all attempts to construct it artificially from its elements. In addition to this, we require some form of an organism, which must be present with protoplasm before life can manifest itself. We know nothing of protoplasm, organism, and life except as existing together. All three are beyond our power to produce, and we have never witnessed their production spontaneously nor by artificial means. Protoplasm is physical in the sense of being material and existing in nature, but it is not physical in the sense of being procurable under ordinary physical conditions. If fertilised it has in it a living and organised germ, also protoplasmic, and this germ can grow and assimilate the remainder of the protoplasm and produce out of it all the parts of an animal or plant. Protoplasm is a highly complex substance, consisting of carbon or charcoal, combined with three gases, oxygen, hydrogen and nitrogen, and with minute quantities of sulphur and phosphorus. But protoplasm alone immediately decays, and is resolved into ordinary inorganic compounds. Only as part of a living organism can it be in any sense a basis or supporter of life, and remain as an energy which will actuate organised and proto-

plasmic matter. The red snow plant (*Protococcus nivalis*), which covers large tracts of melting snow on the Greenland coast, often penetrates to some depth. Parry tells us that on taking a bucketful of this snow on board the ship, and allowing it to settle, the water was seen to contain a delicate gelatinous matter, full of minute grains, which, under the microscope resolved themselves into globular cells with a thin transparent outer wall, containing a colourless liquid sap, within which was a central protoplasmic mass of a deep red colour, and often divided into still more minute globules believed to be reproductive organs. Each of these bodies, only one twelve-thousandth of an inch in diameter, is a perfect plant, capable of performing all the functions of vegetable life, and of multiplying in an astonishing manner, at a temperature scarcely above the freezing point, and supplied with nourishment and energy by the snow-water, and by the solar light and heat. It uses, in short, the form of solar light and heat to enable it to decompose the small amount of carbon-dioxide and ammonia in the melting snow, and to construct from these materials and from water the protoplasmic gelatinous colouring matter; thus it grows in magnitude and when mature produces microscopic germs, which after being disengaged from the parent-sac spread themselves on the snow, till from one single germ, miles of this are filled with these tiny organisms. We find then here germs, each one possessing powers of a most extraordinary character, that of decomposing carbon-dioxide at a low temperature, and with the help only of solar radiation, a feat impossible for any chemist. This is also the case in the union of the nascent carbon with the other substances to form the mucilage and protoplasm of the sap and the red colouring-matter.

The group of Algæ is one of peculiar interest. It shows an almost continuous succession, connecting these simplest members of the vegetable kingdom with plants of a considerable degree of complexity, and shadows forth the organs of the higher plants. The lowest forms include a conglomeration of cells, each of which may be regarded as a distinct individual, living and growing

independently. Many of these simple cellular plants have their cell-walls strengthened by siliceous matter, as is the case with various forms of *Diatomaceæ* and *Desmidiæ*, whose propagation appears to be carried out in two ways, in one, the original structure is repeated by budding, and in the other, by conjugation.

The distinctive characteristics of the Phanerogamia, or flowering plants, do not necessarily consist in bearing flowers, for they may be reduced to a condition scarcely distinguishable from the fructification of the Cryptogamia, such as the Coniferæ in which the floral envelopes are absent. The growth of each plant is accomplished by a continued extension of the axis, which from time to time puts forth leaves at the internodes. Annuals survive one year only, biennials two, perennials shed their leaves and flowers at the end of every season, while the axis preserves its vitality. The venation of the leaves of Monocotyledonous plants is parallel, that of Dicotyledonous (which have two cotyledons) shows a higher development of the axis. The stem of a Dicotyledon, if cut across, shows a distinct division between the pith, wood, and bark, the first forms the centre; the wood is intermediate between the two. The pith is surrounded by a membrane, termed the medullary sheath. In the course of a year or more the woody structure has a more or less distinct appearance of division into concentric rings, varying in thickness. The number of the layers is usually considered to correspond with the number of years during which the stem has been growing; this is not strictly true, it would be more correct to say that each layer indicates an epoch of vegetation, which is in temperate climates, usually, but not invariably, a year. In tropical climates the epoch is much less. The rings are seen in the transverse sections, traversed by lines radiating from the centre to the circumference; these are the medullary rays, which connect the cellular tissue of the pith with that of the bark, and consist of three layers; that nearest the medullary rays is termed the *liber*, and is separated from the *wood* by the *cambium*, a layer made up of very delicate cells from which the new growth originates. It is remarkable that in their early developed state, the stems of

Exogens, like those of Endogens, consist only of cellular tissue, and as soon as the leaves have fulfilled their functions, a circle of fibro-vascular bundles is interposed between the pith and the bark. At this stage the pith, wood, bark, and medullary rays are seen in the stems of Exogenous herbaceous plants. The veins of the leaves of Dicotyledonous plants are reticulated, the sub-veins form a net-work throughout the entire substance of the leaf, which affords it a degree of strength and firmness, and an indisposition to split up or tear, an advantage which the leaves of Monocotyledons do not possess.

As we trace the history of mankind back to very ancient times, we find that the records become more and more scanty and less intelligible, until history fades into myth and tradition. Similarly, among geological records the earliest are in such excessive confusion, that they are very difficult to understand, and there must have been an inconceivably long time earlier than the most ancient fossil-records to which inference can be the only resource. It is an unfortunate circumstance that historical geology should have to begin with the most obscure part of the whole subject, and the chronology be most difficult to trace intelligibly. The ordinary criteria of stratigraphical succession and the comparison of fossils fail us entirely, as the Archæan rocks, which are the most ancient have yielded no evidences of life. Their antiquity is best assured when they are separated by thick series of sedimentary or metamorphic rocks from the Lower Cambrian which can be identified by their fossils. There is a conflict of opinion as to the origin of these primitive rocks, but that they are igneous there is no doubt. Taking into consideration the foldings and crushings which the earth's crust has undergone, it is not surprising that they should have acquired such a complex and intricate structure, and have been so completely metamorphosed, that these transformed sediments have possibly had all traces of their fossils entirely obliterated.

The Palæozoic is the oldest of the three main groups into which the fossiliferous strata are divided. The thickness of this group in Europe is 100,000 feet. The beds appear to have been

in a large measure laid down in shallow water, and in the neighbourhood of land. Their great thickness indicates the enormous denudation which the land areas underwent. Geikie says that the lower half of the Palæozoic group represents the waste of a plateau cut down to a level 5,000 feet. The Palæozoic fauna is largely made up of marine invertebrates, in its earlier periods it was entirely so, as far as our knowledge goes, though land-life certainly began before the earliest records which have been as yet discovered. Corals, Echinoderms, Brachiopods, Mollusca, especially the Nautiloid Cephalopods, and the Crustacean group of Trilobites, are the most abundant and characteristic types of animal life. The Cambrian rocks contain no fossil vertebrates, but towards the latter part of the period, Insects, Centipedes, and Spiders were abundant. These appeared somewhat later; for long ages they were confined to fishes and certain low types allied to them. At the end of the Devonian, and in the Carboniferous period the Amphibia appeared, followed by the true Reptiles in the Permian age. A very large majority of the Palæozoic species, and even genera failed to pass over into the Mesozoic. An almost entire change occurred in the larger groups which survived, so that the Corals, Echinoderms, and Fishes are markedly distinct from those which succeeded them. Their difference mainly consists in the greater primitiveness of structure of the older forms. Palæozoic types stand somewhat in the same relation to succeeding types, as the embryo does to the adult. We may be certain that no living being could have existed when the surface of the earth's crust was glowing hot, or the seas boiling under the enormous atmospheric pressure, which accompanied their first condensation. These pre-Cambrian rocks are remarkable for their wealth of valuable minerals, and being the foundation, upon which the oldest fossiliferous sediments were laid down. They indicate that vast periods of time had elapsed before the clearly recorded portion of the earth's history began, a time probably longer than all the subsequent periods taken together.

The Laurentian beds consist of limestones, and iron-ores, and deposits of carbon in a state of graphite or plumbago, indicating

that there was plant-life at the time of their deposition. Limestones are made up of the calcareous skeletons of marine animals, and the primitive limestones are in some places thousands of feet thick. The seas of that period held in solution, no doubt more lime and magnesia than they do at present. In the original molten state of the world there was probably a quantity of carbon dioxide present in the atmosphere in a gaseous form. Nothing now can decompose this compound, and reduce it to ordinary carbon, except living plants. Peat beds are composed of the remains of plants which took their carbon from the atmosphere; and the beds of iron-ore owe their origin to the solvent action of acids produced by vegetable decay. When we take into consideration the immense thickness of the graphic-limestones and iron-ore deposits of the Laurentian beds, and admit the organic origin of the limestones and graphite, we may be prepared to believe that life at that early period was largely developed, though it might have existed in low forms. Fossils were until very recently viewed as characteristics of the beds which contained them. The science of Biology has now found for them another use, by which the unity of the plan of organic creation is illustrated, and an ancestral relationship with living forms confirmed, to which those from the most recent beds show a greater affinity than those of an earlier date. For instance the Pliocene Crags of Norfolk and Suffolk contain 6 per cent. of the mollusca now living, while the later Pliocenes of Italy contain from 90 to 94 per cent.

The principal fossilizing forces are the decomposition of the less enduring parts of an animal or plant, or an alteration by chemical action, by which its texture is changed, and converted into stone or other mineral. Peat, lignite, and coal are different stages of plants more or less carbonized. Animal remains are only exceptionally carbonized, such as *graptolites* and *insects* in amber, which is an organic medium of petrification, and according to Gœppart, it is the mineralized exudation of extinct conifers. The insects enclosed within it are mainly, if not all, of extinct species, they appear to have been entangled in the thin

viscous substance while alive, and in many cases to have struggled hard to escape, as is evident from the legs and wings which are frequently found separated from the bodies to which they once belonged.

The development of many types of the Animal Kingdom is progressive, the most simple appearing first. Thus the earliest Vertebrates were Fish. Batrachians and Reptiles appeared on the stage of life next in succession, and Birds were followed by the Mammalia. This was equally the case with the Invertebrates. The Crustacean is inferior to all the other sections of the Order Arthropoda, which includes the *Arachnida* and *Insects*. The Trilobites are the most remarkable of the Order. After their first appearance in the Palæozoic age they soon broke up into a multitude of genera (no less than 140), but not a single representative survived to the Mesozoic age. The insects whose metamorphosis was incomplete, preceded that which was complete, and thus had advanced a step. The *Lingulæ* and *Discinæ* have remained without any sensible modification since Palæozoic times, the *Terebratulæ* of the present day scarcely differ from those of the chalk. Crustaceans are now found in the profound depths of the seas which recall to mind the Jurassic *Eryon*, beautiful examples of which are found in the Lithographic beds of Solenhofen (Kimmeridge). Representatives of this interesting family are met with as early as the Trias. Thus every fresh discovery tends to corroborate the view that animals with which we are familiar have been gradually modified from pre-existing forms, following each other in a regular sequence and showing that the progress usually is from the general to the special. Some of the highly specialised forms even of the early periods became extinct, having reached the limits of further development.

Faunas and Floras have passed on in succession from one geological age to another, and the beds in which they are entombed can be classified on a plan corresponding to those changes. In each some new species and genera appear for the first time, which did not exist in the preceding one. This

classification is represented by three principal groups, each one of considerable duration. The Palæozoic, which includes the oldest fossiliferous beds, the Mesozoic, and the Cainozoic. To these three divisions a fourth of more ancient date may be added, comprising the Crystalline and Metamorphic rocks, known as Azoic. These are of considerable thickness and are destitute of fossils.

In comparing the organisation of the Vertebrates with that of inferior forms, we are struck with the complication and diversity of their organs, and how specially they are adapted for their varied modes of life. Compare a man with his complicated brain, and the superiority of his intellectual faculties with all other Vertebrates, how superior the Mammalia are to Birds and these to Reptiles, Batrachians and Fishes in succession, superior too in their organs of respiration, nutrition, and locomotion. In plant-life the *Algæ*, and *Fungi*, which are very inferior in their organisation to the tree or shrub whose roots, stem, leaves, flowers, and fruit have their special means for fulfilling their rôle of life. That they appeared in Palæozoic times is evidenced by fragments of thallus, with bladder-like swellings, found in the tissues of *Lepidodendron*. There are some groups whose relations to present forms can be determined with more or less certainty. The Diatomaceæ, whose siliceous valves occur in the Tertiary and Quaternary deposits, are entirely free from association with any other material, and form layers several feet thick, consisting of a loose white substance, known as Tripoli powder. Ehrenburg, to whom we are indebted for the most searching investigations of fossil Diatoms, shows that many as late as the Cretaceous age belong to living genera, and some are identical with recent species. The Diatom beds appear to have been laid down equally in fresh or salt-water.

The *Characæ* are represented in the Tertiary and Quaternary beds by a considerable number of species, which appear to correspond with recent forms. A number of species are found in the Lower Chalk of the Canton of Neuchatel in Switzerland, and in the Middle Oolites of France. With few exceptions little is known of their palæontological history. Of the Bryozoa,

which include the *Mosses* and *Liverworts*, the latter differ from the former in the absence of true leaves, and the underside of the plant having a different organisation to the upperside which is exposed to the light. The Pteridophyta have fibro-vascular bundles, and are furnished with a distinct epidermis ; they propagate their species by an alternation of generation, in which the spore on germination produces a new organism, unlike that of the parent, and this can be traced more or less clearly in all vascular plants (Pteridophyta and Phanerogamæ). The *Filices*, *Equisetaceæ* and *Lycopodiaceæ* produce only one kind of spore. On germination the sexual spore produces a small inconspicuous organism, consisting of cellular tissues on which the sexual reproductive organs are borne, and the Oospore thus produced by fertilisation brings out a well developed plant furnished with stem, leaf, and root. The Devonian beds are rich in well characterised Filicidæ. There is no satisfactory evidence of any Fern in the Silurian beds, Dawson records more than 30 species from the Devonians of Canada. *Palæopteris* occurs in the Upper Devonian and the Lower Carboniferous beds of Europe and North America. *Palæopteris hibernica*, which has been found in the Devonian beds of Ireland, is one of the most beautiful of the family of Ferns, its large luxuriant fronds bearing broad ovate pinnules. When Brongniart founded his classification of fossil Ferns on their venation, scarcely anything of the fructification was known ; even at the present time our knowledge of the Palæozoic and Mesozoic forms is very imperfect, for there are many species of which the fructification is unknown, on account of their imperfect state of preservation. To Stur must be given the credit for laying down the principles of a rational classification of fossil Ferns. Those from the Upper Cretaceous and Tertiary beds, appear to be allied to living species. Fern-stems have only been preserved in the form of casts, and consequently possess small interest to the botanist. When the inner structure can be distinguished it is found that it does not differ essentially from that of the living Fern.

There were considerable changes in the geographical conditions of our globe towards the close of the Palæozoic Age, when the Carboniferous beds were thrown into abrupt folds. Such was the case with the coal-fields of Belgium, of Pas de Calais, and of Somersetshire. The Fauna and Flora of the Permians had died out, and were replaced by new types during the deposition of the Trias beds, which are the earliest of the Mesozoic Period. Both the Trias and the Permian beds were laid down under conditions of marked physical disturbances. Great Reptilians, the precursors of the Mammalia, appeared at the close of the Permian Age and the earlier portion of the Trias. The old floras were replaced by others scarcely more advanced in structure. These mainly consisted of *Conifers*, *Cycads*, *Ferns*, and gigantic *Equisetaceæ*. Comparatively few Palæozoic *Cycads* are known. They were world-wide in the Mesozoic age, and grew as far north as Greenland; now they are limited to the warmer temperate regions. They were tolerably numerous in the Greensand; after that period the group diminished greatly in importance, but survived in the south of Europe during the Tertiary. *Cycads* are Exogens, and from the shortness of their stems it is probable they contributed to the undergrowth of the ancient forests. The date of their first appearance is not absolutely free from doubt. They have been referred to the Coal measures; the Rhætic beds of Schönen contain them without any doubt. Trunks of *Conifers* (*Araucaria*, &c.) are found frequently in the Purbeck beds of Dorsetshire associated with *Cycads*; the Greensand supplies *Pinæa* (Stone-pine). The *Abietinæ* are the most abundant of the *Conifers* in the Tertiary and Cretaceous beds. As a rule they can only be determined by their cones, the Pines by their needle-bearing branches. A few cones have been found in the lowest Cretaceous beds of Hainault in Belgium; their winged-seeds recall to mind the recent *Strobis* and *Cembra*.

The present distribution of *Pinus*, north of the tropic of Cancer, extends over both hemispheres in one wide zone from the Philippines to the west and north-west coasts of America,

but does not reach to the Equator. Several grow on the elevated parts of Guatemala. *Pinaster*, *Picea*, and *Abies* grow from Siberia to the north-west of America. *Pseudostrobus* is restricted to the countries between California and Guatemala. *Cedrus*, which is represented at the present day by only three species, *P. Cedrus*, *P. Deodar*, and *P. atlantica* of the Lebanon, the Himalayas, the Taurus and Algeria, occurs in the Upper Cretaceous beds of Great Britain and Belgium. How wide then must have been its distribution in former geological ages; *Larix*, too, had a considerable range; seven species grew in Central Europe, Northern Asia, the Himalayas, Northern China, Japan, Oregon, North America from the Potomac River to Hudson's Bay, and California. *Strobus* grows now, in the eastern part of North America, from Lat. N. 50°, to Georgia and the Valley of the Mississippi. Its first appearance cannot be fixed with any certainty before the Jurassic age. It is found in the Jurassics of the British Islands, Belgium, and Spitzbergen, and through the Cretaceous and Tertiary beds to the present day. Owing to climatal changes in the Miocene age the floras of the world experienced great modifications, many genera disappeared before the end of the Pliocene age, and were succeeded by others.

Mr. W. Carruthers has described several cones of the *Abietinae* from the Wealden, and an indubitable cone of *Cedrus* from the Greensand of the Isle of Wight. Mr. J. Starkie Gardner has figured a series of cones from the English Eocene formation. There are proofs that *Pinus* with tufts of two, three, and five needles lived in Europe during the Miocene period, and that all with the exception of *Cembra* and *Pinus canariensis* have maintained themselves to the present day. The type *Araucaria* is known to us in its entire cones and cone-scales from the Jurassic strata. The foliage, which varies much, as we know, in recent forms, can only be certainly determined when it is found in actual connection with the cones. *Araucaria sphaerocarpa*, Carr, from the Great Oolite of Stonesfield is preserved in the Geological Department of the British Museum, showing the characteristic single seed on a detached scale. The *Arau-*

carias from the English Eocenes, described by Mr. J. Starkie Gardner, are determined by their leafy branches. *Sequoias* appeared in the Cretaceous beds of Portugal, one belonging to the type *S. gigantea* (Wellingtonia), and another to *S. sempervirens*. These giants of the Conifers, after spreading over the whole of the northern hemisphere, and being represented by more than twenty species, are now reduced to two, and only to a limited region in America. These are *Seq. sempervirens*, with erect leaves arranged in two rows and bearing round cones, the other *Seq. gigantea*, which bears smaller leaves, crowded together, their cones large and egg-shaped. The family *Cupressus*, represented in the present day by twelve species, grows in Asia, North Western and Central America. Fossil remains of it are frequently found in the Tertiaries. Zittel admits the first appearance of the *Cupressineæ* to have been in the Jurassic age, since that period it has preserved an unbroken link to the present day.

Towards the termination of the Mesozoic age, there was an increase of land in the Northern Hemisphere, and the climate became less uniform. A warm temperate period, however, prevailed, extending as far north as Greenland. There was then a circumpolar belt which protected the Atlantic and Pacific basins from floating ice, and favoured the temperate type of flora, which prevailed as far north as Greenland.

During the Eocene and Pliocene ages, the Continents began to assume their present portions; at first they were divided up into islands and by degrees became consolidated. There was a submergence of land in the Eocene age, which did not affect Great Britain. Then the great Nummulite limestones were laid down in lake basins. At its close there were great disturbances, by which the earth's crust was fractured and folded, accompanied with the final elevation of the Alps and the Pyrenees, and the permanent moulding and modifications of the Continents as they now stand.

There is no evidence that the cold interfered seriously with plant-life during the Cretaceous and Eocene ages. At this period, genera simultaneously appeared in great numbers, accom-

panied with a rapid multiplication of species. During the succeeding Miocene and Pliocene ages the land continued to increase in the Northern Hemisphere. A gradual diminution of heat was brought about towards the close, accompanied with a less equable climate and a subsidence of land in the temperate regions. The summers were cooler, the winters longer, and more severe, which brought about the destruction of many delicate plants, which removed off to southern regions. The Arctic plants, which had widely distributed themselves retreated to the mountain tops, or to their northern homes when a temperate climate returned. As Great Britain belongs to the European Continent it has no endemic plants, her flora consists mainly of Germanic types and species which migrated during the post-glacial age, when the North Sea was dry land and there was a free communication with the Continent.

Plants reached their full development long before the appearance of the placental Mammalia, the most advanced group of the Animal Kingdom. They appeared for the first time in the early Eocene age. We have seen above that the Dicotyledonous Angiosperms appeared at the close of the Lower Cretaceous Age, when a decline of the Monocotyledons and Cycads had set in.

Saporta, who was a strong evolutionist, observing the sudden appearance of so many highly differentiated Dicotyledonous plants, attributed it to their having passed the early stage of evolution in some undiscovered isolated region, or having been produced by an unusual multiplication of flower-haunting insects, and sums up by saying "Whatever hypothesis we may prefer, the fact of the rapid multiplication of Dicotyledons, and their simultaneous appearance in a great number of places in the northern hemisphere at the commencement of the Lower Cretaceous age, cannot be disputed." The most remarkable beds connected with the flora of the world are those of the Dakota group, which is well developed in the Kansas, Nebraska, Arkansas, and the Minnesota States of America. They are all lacustrine and rest on the Trias. This vast region, which extends from the Missouri to the Rocky Mountains, after its

emergence, produced an abundant vegetation. Later on, it was again submerged, when fluvio-marine conditions prevailed. These fossil Dicotyledonous plants were not confined to America. Bohemia, Moravia, Harz, Saxony, Westphalia, Aix-la-Chapelle, and Toulon and its neighbourhood have furnished rich series from the Middle Cretaceous beds, in which Nordenskiöld found them also in the Arctic regions. Among the most noteworthy genera of the Dakota-flora, Lesquereux catalogues *Liquidambar*, the Sweet Gum, which grows both in Europe and America, the *Poplar* which made its appearance very early in Greenland, increasing in number of species throughout the Cretaceous and Tertiary period. The *Willow* followed a little later, and was followed by the *Beech*, *Oak*, and *Chestnut* (*Castanea*). The *Plane Tree*, of which Europe has now only one species, is largely represented in the Cretaceous beds. The *Tulip Tree* is the sole survivor of a genus which had several species at that period. *Magnolia*, which was well represented in the Cretaceous age, is equally so in America at the present day, as is also the Walnut family. The Tertiary flora has affinities with the Cretaceous on the one hand, and with the modern on the other. The Lamarie series, which is Tertiary, occupies two extensive areas in Canada, separated by a tract of older Cretaceous rocks, over which it is likely they extended, and subsequently were removed by denudation. The eastern part extends along the United States boundary for some distance. The western is overlaid by Miocene deposits, containing Mammalian remains. This series is determined by the passage-beds between the Cretaceous and Tertiary beds, and may be divided into two groups, the upper and the lower, the former are wholly argillaceous, the latter partly arenaceous and partly argillaceous. They contain no Mammalian remains. Two Ferns of the upper group are remarkable proofs of the persistence of species; they were discovered side by side in the Upper Cretaceous beds of the west of the Red River. One of these, *Onoclea sensibilis*, or the sensitive fern of Eastern America, has apparently continued in America until the present day. It occurs

as a fossil in the Eocene beds of the Isle of Mull, but is extinct in Europe. The other, *Davilia tenuifolia*, a delicate little plant, is a genus, not now represented in America, and having only one species in Asia. Such instances of specific persistence, accompanied by great changes of habitat, are very instructive as to the permanence of species. These Lamarie beds contain several Conifers *Glyptostrobus*, *Taxodium*, and *Taxus*. The Ginko tree *Salisburia* appeared in the Jurassic age. The Lamarie beds were laid down when the climate was equable and temperate, the land-area extensive, and a uniform flora existed from the Arctic Seas, through the central plateau of America, far to the south, and along the western coast of Europe.

Persistency of species is not confined to plants, but extends to animals as well. The earliest are the Protozoa, very simple in their organisation, and small in size ; some are destitute of any external covering, others are protected by a shell, or a less solid enduement. Rhizopods and Infusoria are typical Protozoa. There are intermediate and inferior organisms, which, like animals, have freedom of movement, and appear at the same time to have affinities to plants. Haeckel proposed for them a new order, that of *Protists*, which cannot be referred with any certainty either to animals or plants. He placed the Infusoria without any reserve, as well characterised animals. Certain groups of Rhizopods occupied an important place in the Primitive beds, in which their remains are well preserved ; on the contrary Infusoria are very little known in a fossil state, no traces of the past existence of *Monera* and *Amœba* have yet been obtained, and from their soft-bodied nature, they are never likely to be. Foraminifera, however, occur in the earliest Palæozoic beds. *Dentalina* and *Lagena* have passed through all the geological ages from the Silurian to the present time, with an extraordinary persistency of form. The claim for *Sponges* to a place in the Animal Kingdom had been long canvassed, but of this there is now no doubt. The *Sea-anemone* was once considered a flower, and the *Actinizoa* found on living Corals were thought to be the blossoms of an *Anthozoan Zoophyte*. Among the Anthozoa, the Madreporidæ

are the most interesting to the palæontologist ; they are prominent from the Silurian to the present day, and have contributed largely to the calcareous beds of every formation. They appeared suddenly in great numbers in the Middle and Upper Silurian beds, and continued right through to the Tertiaries, and uninterruptedly to our own times. The Chalk-beds contain two typical deep-sea Corals, *Bathycapus* and *Caryophyllia*, similar to those now living. *Caryophyllia cylindrica* is now found in our seas without any modification. During the Eocene age, *Corals* were largely represented north of the Pyrenees, in Switzerland, Bavaria, the Maritime Alps, the Crimea, Egypt, Syria, Arabia, and the West Indies. Owing to changes of climate during the Pliocene Age they became of less importance in Europe and gradually moved southward. *Corals* are marine, usually frequenting shallow-water, near the shore, and among the *Algæ*, they are found usually in the Laminarian and Coralline zones. The extinct palæozoic *Graptolite*, a sub-class of the Hydrozoa had a nearly universal distribution. With the exception of the *Hydra* (the fresh-water Polype) and *Cordylophora*, all the *Hydroids* are marine and like the *Corals*, live among the rich vegetation of *Algæ* near the shore. Next in order are the *Medusæ*, characterised by their discoidal forms, and the mode by which they propel themselves through the sea. The body is of a soft jelly-texture, no skeleton, external or internal. The delicacy of their structure and facility to decompose prevented fossilization, but impressions of them have been preserved in the Lithographic beds of Solenhofen (Kimmeridge). Many closely allied forms are taken in the seas at the present day. The disc is umbrella-shaped, mouth on the under-side surrounded by radiating canals or pockets.

Echinodermata, the next in succession, comprises the *Sea-Urchins*, the *Star-Fishes*, the *Brittle-Stars*, the *Sea-Cucumbers*, &c. They are furnished with an exoskeleton of carbonate of lime, and are well preserved in a fossil state. " Each plate, spine, and joint are mineralogically and optically, as it were, made out of a single crystal of calcite, having its principal axis perpendicular to the plane of the plate, or parallel to the axis of

a spine or joint, the growth being from first to last in perfect crystalline continuity." (Sorby.) It is divided into seven primary groups, of which *Cystoidea* and *Blastoidea* are extinct, *Crinoidea* nearly so. All have jointed calcareous stalks, by which they can attach themselves to any support. The *Echinoids*, *Asteroids*, *Ophiurids*, and *Holothuroids* are not stalked during any part of their lives. The *Cystoidea* are intermediate between the *Echinoids* and *Asteroids* on the one hand, and between the *Crinoidea* and *Ophiuroidea* on the other; they appear to have become extinct before the appearance of its sub-family *Pentacrinus*, and combine some of the distinctive characters of each of the groups.

Pentacrinus appeared for the first time in the Trias beds. *P. Caput-Medusæ* lives now in the West Indian Seas, and is the only survival of this multitudinous family. It passes its whole life attached to some object; probably it had the power of detaching itself, and moving from place to place in search of a safer and more appropriate support. It is abundant in the Lias, and now reduced. The *Encrinites* have no living representatives; they appear in many respects to have been of a lower organisation, and connected with the true *Zoophytes*, through the *Echinodermata*. The *Asteroidea* or *Star-Fish*, represented by *Palæaster* in the early Cambrians passes successively through all the geological beds to the present day. The *Holothuroidea* or *Sea-Cucumbers* which have no exoskeleton are furnished with isolated plates, distributed throughout the epidermis, which is soft, and capable of extension and contraction. The disconnection of these plates allows the utmost freedom of motion.

The Molluscan Order is divided into two branches, the *Molluscoidea* and *Mollusca*; the former includes the *Tunicata*, the *Bryozoa* and the *Brachiopoda*. These three are sufficiently distinct to separate them from the true *Mollusca*. They are all aquatic, and to a great extent marine. The *Bryozoa*, the lowest of the group, strongly resemble the *Zoophytes*, both in general structure and habits of life, so much so, that until lately they were considered to belong to that Order. The propagation of

the *Molluscoidea*, like that of the Zoophytes, is effected by gemmation, as well as by the true generative process. The gemmæ are sometimes detached so as to be able to make their way freely through the water; frequently they remain connected with the parent-structure, and with each other, so as to form aggregate families and in this respect resemble Zoophytes. In the lowest group, the generative apparatus is united in the same individual, but in the highest the sexes are completely distinct. Again a considerable number of individuals of the lower group are fixed to one spot excepting during the early periods of their existence, their food is conveyed to them by ciliary currents, and they pass an inactive life like that of plants.

The Tunicata hold a place intermediate between the Bryozoa and the Brachiopoda. The lower sections of the Order are allied to Bryozoa in their tendency to increase by gemmation, they are more inactive in their habits, exhibiting scarcely anything like the rapid movements of retraction and expansion which are so interesting to watch in the Bryozoa. The higher forms lead a solitary life, the gemmæ becoming detached before their development is far advanced. It is among them we find an approximation in general structure to the type of the Bivalve.

The body of the *Ascidians*, one of the principal divisions of Tunicata, is usually completely enclosed within a general integument, or tunic, having two orifices, a mouth and a vent; it is tough, leathery, or even cartilaginous, and made all the more resisting by the agglutination of sand, small gravel, &c., which almost takes the place of a shell. The young in the early stage of life have the power of locomotion, and after swimming about for a time, attach themselves to some object, and after passing through various phases, assume the adult form.

The Brachiopoda, the highest of the group, receive the name from the long arms, fringed with filaments, springing from either side of the mouth, and occupying a considerable portion of the cavity of the shell; they do not appear to have any organs of prehension in the living Brachiopoda; they are incapable of extension. It is possible their special purpose is to create

currents of water by the agency of the cilia for the conveyance of food to the mouth. Except during the early stages of life they are fixed to one spot by means of a peduncle attached to one of the valves, which passes through a hole in the beak-shaped prolongation of the other. The valves of these, and indeed of all Bivalves are kept in place one against the other, sometimes by muscles, and sometimes by two cardinal teeth on the posterior border of the right valve, fitting into two corresponding pits in the left; there is also a process between the two teeth for the insertion of the muscles attached to the left valve; by this means the displacement of the valves is impossible and they cannot be opened entirely without fracturing the rim. Little is known of the habits of living Brachiopods, as they frequent great depths, their classification having been studied more by palæontologists than by zoologists. Owing to an uninterrupted duration through geological ages, and their good preservation, they are better known than any other Mollusca.

The next in order are the *Lamellibranchiata*, chiefly distinguished by the presence of special respiratory organs, or branchiæ. The variety of forms in this class is considerable, and their habits and modes of life are no less dissimilar. Some of them, as the Oyster, are fixed by the adhesion of their valves, during the greater period of their lives; some, as the Pinna and the Mussel, are attached to solid bodies by a byssus; others, as the Pecten, propel themselves by a flapping movement of their valves; while the Cockle can move by jumps over hard surfaces; the Mya, Solen, &c., bore into the sand or mud, and live in the excavations they have made; the Teredo and Pholas make their way into wood and even stone. We find the *Lamellibranchiata* advancing in several particulars towards the higher types of the Order. The next in succession are the *Gasteropoda*. A large proportion of these possess a shell within which the body can be retracted. Its typical form may be considered to be a cone, with a broad base, as in the *Limpet*. In the *Pileopsis* the point of the cone is prolonged and somewhat turned to one side, presenting the rudiment of a convolution. The increase of tendency to deflexion in the axis

of the cone, produces a complete spiral shell, such as that of the Planorbis, in which all the convolutions are on the same plane. The substance of univalve shells generally contains less animal matter than the Bivalves, and it is frequently found porcellaneous. Several of the Gasteropods have an accurately fitted cover (*operculum*) to the mouth, and so attached to the body that when withdrawn it is completely shut in. Only two British land-shells have an *operculum*; some construct a temporary one by a secretion, which hardens, and includes a bubble of air. Many Gasteropods are either naked or shell-less; this is the case with the Slugs. The Testacella has a very small shell upon its tail. There is one marine Order, the Nudibranchiata, whose respiratory apparatus extends over so large a part of the external surface, that the investment of the body in a shell would obstruct its functions. The most remarkable departure from the general type of the shell's conformation is the Chiton; this animal is more closely allied to the Limpet than to any other Gasteropod, while the shell, instead of being cone-shaped, is composed of a number of pieces jointed to each other.

The highest group of Molluscs represented in the seas of the present day is the Cephalopods, approximating to a certain degree to the Vertebrates; at the same time the lowest are only slightly removed from the Gasteropods. The feet, which are disposed in a radiating form around the mouth, must be regarded as highly developed tentacula, and have nothing in common with the locomotive organs of other animals. Some have shelly internal supports, and one genus, the Argonaut, or Paper Nautilus, has an external protective shell. The Nautiloids appear suddenly in the Lower Silurians; from the Devonian period they gradually diminish, and in the Mesozoic they are considerably predominated by the Ammonites. These are remarkable for the ornate markings on the surfaces of their shells, and for the waved edges of the partitions, which, besides giving a support to each section, contributed greatly by the union of lightness and strength to the buoyancy of the shell. These

animals, unknown in the Palæozoic age, appear in numerous species, in the early Mesozoic, and culminate in hundreds of species, disappearing completely at its close, and leaving no successors. The Nautilus, one of the oldest and least improved of the order, however, survived and still testifies to the wonderful contrivances with which the genus is endowed. The Cuttle-fish and Squids stand the highest in the group of Cephalopods. Owing to the absence of external shells they are little known in a fossil state. They appear abundantly in the Mesozoic, where they are represented principally by the Belemnites, which became extinct at the end of the Mesozoic.

In leaving the Molluscan type I may add that although there is an individual resemblance to the corresponding organs of the lower Vertebrata, there is an absence of any general approximation. Although we find the arrangement of the cephalic ganglia, the centres of the organs of sense, approaching the lower forms of the brain in Fishes, and the instruments of sight, hearing, smell, and taste, have a similar approximation to those of Vertebrates, yet no such resemblance exists between the ganglia connected with the locomotive apparatus of Cephalopods and the spinal cord of even the lowest Vertebrata. The muscles, which move the various parts of the body and arms, have no fixed points of attachment and no levers to act upon, as with the Vertebrata, neither is there a trace of a series of ganglionic centres which forms the gangliated cord in the higher developed Articulata, or the spinal cord of the Vertebrata. On the whole it may be said that the group of Cephalopoda presents as close an approximation to the Vertebrate sub-kingdom as it could well do, without a departure from the general Molluscan type.

My Address will be incomplete if I do not notice General Pitt Rivers' fourth volume of his magnificent illustrated series of his Excavations in Cranborne Chase, near Rushmore, including his address to the members of the Archæological Institute of Great Britain and Ireland at Dorchester in 1898. The Volume gives a description of his Excavations at the South Lodge Camp, Rushmore Park, at Handley Hill Entrenchment, the Stone and Bronze

Age Barrows and Camp on Handley Down, and Martin Down Camp, &c. In his Address, General Pitt Rivers referred to his discovery of Palæolithic flint-flakes and cores *in situ* in the stratified gravels of the Nile Valley, at Korneh, near Thebes, in which the ancient Egyptians cut their tombs, and which "must have been deposited long previously to the hardening of the gravels, the erosion of the channel, and the excavation of the tombs, on the sides of which some of the flakes were chiselled out."

General Pitt Rivers then referred to his examination of the South Lodge Camp, an entrenchment of about half an acre in extent, of the Bronze Age, succeeded either by a Roman occupation or British during the Roman period. The ditch is $6\frac{1}{2}$ feet deep, its lower half appears to have been silted up before the Roman occupation occurred. The relics found in the rampart of the Camp were of the Bronze Age, and contemporary pottery: The General considered the Handley Hill entrenchment to be also of the Bronze Age or early Roman. His description of the excavation of Wor-Barrow and ditch is, perhaps, the most instructive and valuable part of the volume. After the removal of the material of the Barrow, which covered the old surface-line, an oblong trench was exposed, cut into the solid chalk, and enclosing an area 93 feet long by 34 feet wide, with traces of wooden piles, which appeared to have fixed into the ground, before the ditch had been dug, and soil thrown over the primary interments, which were six in number, covered by a low mound of earth, in an oblong space 8 feet long by $3\frac{1}{2}$ feet wide; three of them were crouched, the other three were put in together without sequence, the long bones being laid out parallel one to the other by the sides of the skulls. General Pitt Rivers suggests they were the bones of relatives, exhumed and re-interred together. Although no relics were found to determine the period of these primary skeletons, the bones afford sufficient evidence that they were Long-Barrow people of the Stone Age. Of the six skeletons four were of the stature of 4ft. 10'2in., 4ft. 11in., 5ft. 0'7in., and 5ft. 1'9in. The other two were comparatively tall people, being 5ft. 7'2in. and 5ft. 9'4in.

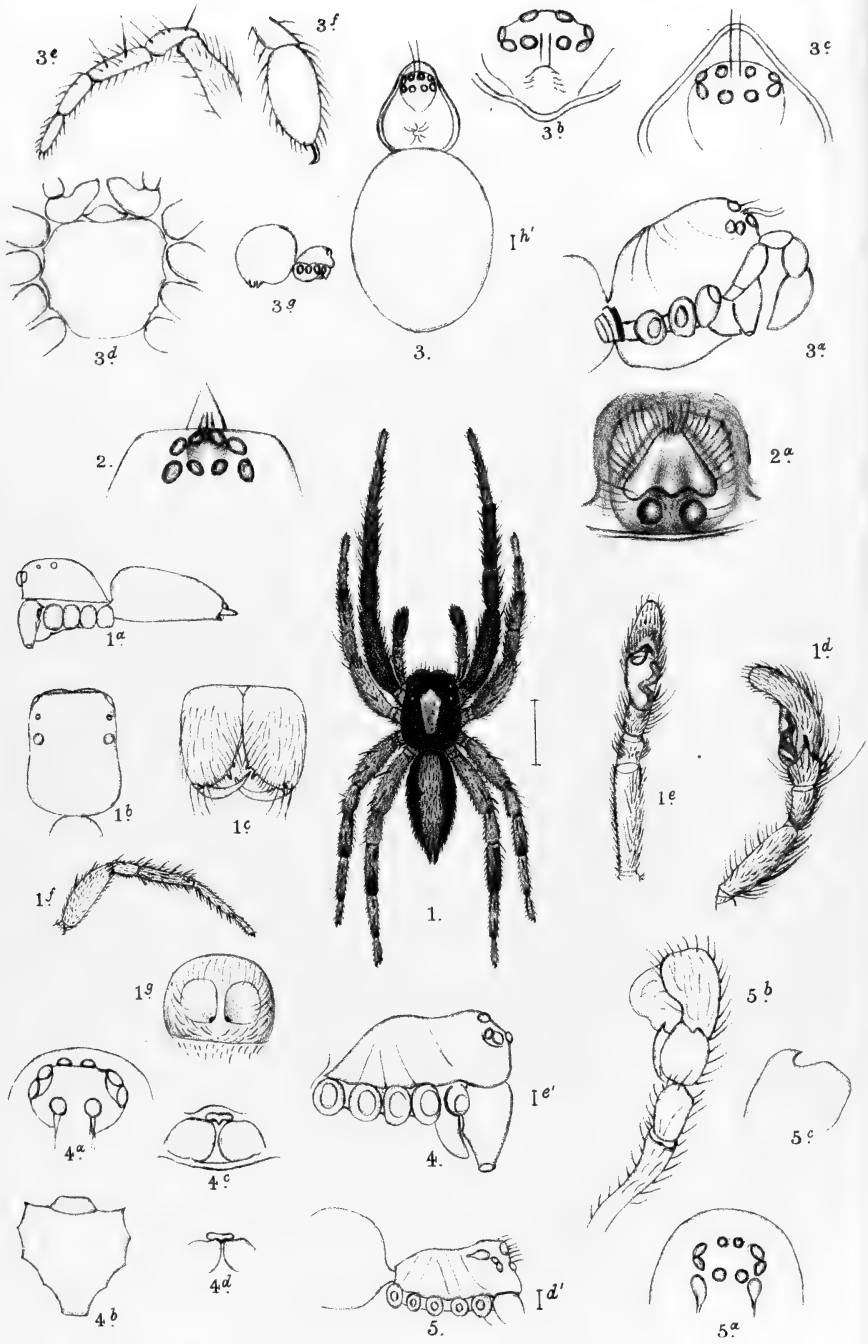
The volume includes the description of a craniometer for measuring the profile of skulls, and living heads, invented by General Pitt Rivers.

Mr. Aubrey Strahan's recently-published Memoir on the Geology of Purbeck and Weymouth is a most valuable contribution to the Geological History of this County. Another memoir by Mr. Clement Reid on the Grits of the south-western part of Hampshire and the south-east of Dorset will shortly follow. The maps are already published, the letter press is in the hands of the printer. Mr. Strahan considers that "the district includes a length of coast which is hardly surpassed in interest in any other part of England. This interest may be said to culminate in the various coves, &c., about Lulworth, which furnish an example of coast-erosion which cannot be easily matched elsewhere. The coast here has been so thoroughly intersected by the fractures of the rocks and the inroads of the sea, that its stratigraphical structure is elaborately exposed. This will not be so always, for as time goes on the erosion which has favoured this present state of things will have passed away, and the evidences of disturbances which have affected this part of the coast will have disappeared, and nothing be left but the chalk-cliffs to be eroded by the sea." The Wealden, which is fluviatile, has scarcely any calcareous deposit; it is 2,000ft. thick in Purbeck, and composed of sands, grits, and red or mottled-clays, thinning out very rapidly westward. The deposition of the Weald was by river action, by which clay, sand, and gravel were irregularly and locally distributed in a subsiding area. There are some shales at the top of the Weald at Punfield containing an estuarian fauna. Mr. Strahan shows that the Portland and Purbeck beds have a distinct division. This is not the case with the overlying Wealden, either palæontologically or stratigraphically. During the deposition of the Purbeck beds, which were laid down under lacustrine conditions, the area was liable to incursions of the sea, causing a temporary semi-marine fauna. Mr. Strahan attributes the "broken bands" to the falling in of an underlying mass of decaying vegetation after solidification.

This theory is supported by the presence of an abundance of fossil trees where the brecciation is most intense. He agrees with Mr. Clement Reid that the outliers at Bincombe and Portisham belong to the Bagshots and not to the Reading beds as marked in the map of the Geological Survey, nor to plateau gravels as supposed by Sir Joseph Prestwich. Mr. Strahan groups two sets of disturbances—one post Cretaceous, the other inter Cretaceous. The first includes the Isle of Purbeck fault, the second the anticline, which extends from Ballard Point to the coast, near West Lulworth, where it passes out to sea. There are three others—the Ringstead fold, the Ridgway fault, and Anticline, which includes the Chaldon anticline and the Litton Cheney fault, extending about a mile on either side of that village. In the Isle of Purbeck, the disturbance has not only bent the rocks, but faulted them in a remarkable manner. From the fault, southwards to Ballard Point the strata are vertical, or nearly so. The horizontal strata as they approach the vertical, turn upwards in a great curve. The bedding of the strata shows signs of pressure; the flints are not only broken to fragments, but the fragments are more or less separated from each other, and the entire mass of chalk hardened to the consistency of limestone. The chalk above the curve is but little changed. The whole of the chalk has been more or less broken and re-consolidated, so that much of it may be described as fault-breccia, which ruptured the chalk.

The effects of the Intra-Cretaceous disturbances are not observable in Purbeck, but they may be inferred by the erosion at the base of the Gault, near Lulworth; they are better displayed at White Nose and in the cliff near Osmington Mills. The Bibliographical Appendix of twenty-five pages on the Geology, Mineralogy, and Palæontology of Dorset, indicates the interest eminent men have taken in this corner of England, whose names shine in the pages of the highest national scientific works.





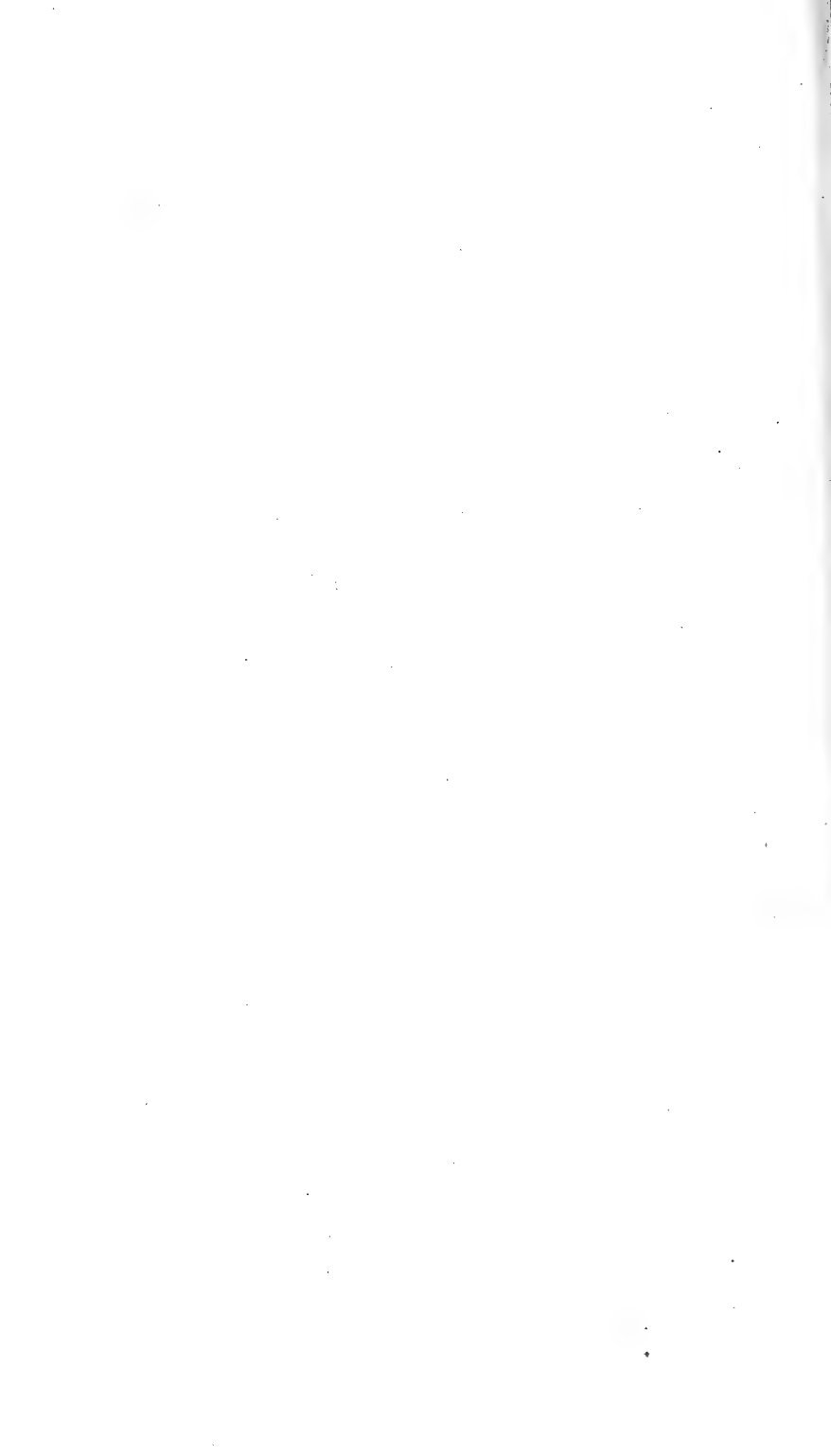
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& A. T. Hollick, del.

NEW SPIDERS.

McFarlane & Erskine, Lith. Edin.

EXPLANATION OF PLATE A.

- Fig. 1.—*Hasarius Nicholsonii*, s.p. n. 1*a*, profile ; 1*b*, cephalothorax from above and behind ; 1*c*, falces from in front ; 1*d* and 1*e*, palpus (male) in two positions ; 1*f*, leg of first pair ; 1*g*, genital aperture (female).
- „ 2.—*Prothesima electa*, C. L. Koch. Female, eyes from above and behind ; 2*a*, genital aperture.
- „ 3.—*Melos bicolor*, s.p. n. 3*a*, profile of cephalothorax ; 3*b*, eyes from in front ; 3*c*, eyes from above and behind ; 3*d*, maxillæ, labium and sternum ; 3*e*, leg of first pair ; 3*f*, digital joint of palpus ; 3*g*, profile of spider ; *h'*, nat. length of spider.
- „ 4.—*Diplocephalus speciosus*, Cambr. Female, profile of cephalothorax ; 4*a*, eyes from above and behind ; 4*b*, sternum and labium ; 4*c* and 4*d*, genital aperture ; *e'*, nat. length of spider.
- „ 5.—*Cnephalocotes fuscus*, s.p. n. Profile ; 5*a*, eyes from above and behind ; 5*b*, palpus ; 5*c*, radial joint ; *d'*, natural length of spider.





Notes on British Spiders
Observed or Captured in 1898.

By Rev. O. PICKARD-CAMBRIDGE, M.A., F.R.S., &c.

Read March 9th, 1899.

[PLATE A.]



THE past year—1898—has been more prolific in the production of materials for record than the previous year, 1897, when (as I remarked to our Club at its meeting on 21st March, 1898) there was not, owing to various circumstances, sufficient to justify my usual annual pronouncement on the spiders of the foregoing season. I would remark here that the materials for the present record are mainly due to the exertions and kindness of several friends. Being year by year less able to face the fatigues of regular field-work, it is naturally a source of much gratification to find others, younger ones, coming on and taking up the running which I am getting too old and “rheumatically” to keep up. In one respect, however, I confess to disappointment, and that is that, “charm I never so wisely,” I have never yet succeeded in

imbuing *anyone in the County of Dorset* with a love of the spider tribes ; and consequently, although I look with the eye of faith on many a likely spot in our fair county, and know that there are probably lurking there unknown and unimagined forms, yet the former "finger of instinct" is wanting in myself, and the coming worker is yet to come !

Among those who in the past year have kindly sent me spiders are *Mr. William Evans*, of Edinburgh, to whom I am indebted for several rare forms, and *Mr. George Nicholson*, Curator of the Royal Gardens at Kew, who has collected for me innumerable specimens, among them being some not only rare, but two new to science. I should remark, however, that any new species coming from *Kew*, where there is a constant importation of plants from foreign lands, must be looked upon as at least likely to have been originally also so imported ; still that need not necessarily be the case. It is probably so in respect to one of the new species mentioned, *Hasarius Nicholsonii*, a fine and distinct salticid spider, which appears to be naturalised in one of the large plant houses. It occurs there in abundance in all stages of growth, forming its nests in the folded leaves of Bromeliad plants, and was most likely at first introduced with some of these plants from Brazil. The other new species, *Melos bicolor*, has nothing exotic-looking about it ; it belongs to a very numerous-represented group in Britain, and was found in the open grounds, and may, therefore, very probably be indigenous. Another species received from Kew is *Dictyna viridissima*, Walck. This has only once before been found in the British Islands (at Boxhill in Surrey). I may also here note two other rare British spiders from Kew, *Agroeca inopina* Cambr. (hitherto only found at Lulworth and Bloxworth) and *Tetragnatha nigrita*, Lendl. Perhaps this last may be commoner than at present suspected, being a very near ally of one of our most abundant spiders, *Tetragnatha extensa*, Linn. Another conspicuous, and no doubt at first imported species, *Hasarius Adansonii*, Aud., has occurred freely in the Kew hot-houses. It has been found in numbers of localities in England and Scotland, but always in hot-houses or

warm greenhouses. One or two examples, however, have been found at Kew during the past year out of doors, so it may yet become a more correctly-termed “*naturalized*” spider. The total number of true spiders (Araneidea) up to the present time sent to me from Kew by Mr. Nicholson, and undoubtedly British, is 121, besides 8 species of Harvestmen—*Phalangidea*.

Another correspondent, *the Rev. E. A. W. Peacock*, of Cadney Vicarage, near Brigg, Lincolnshire, has sent me, during the past year, a very large number of Arachnida from that neighbourhood, comprising 135 species of true spiders and eleven Harvestmen. Among the former were examples of both sexes of *Diplocephalus (Plesiocraerus) speciosus*, Cambr., the second occurrence only of this spider; the female being new to science. *Linyphia impigra*, Cambr., was also among the Lincolnshire collections. *Mr. W. M. Webb*, of Brentwood, sent to me from Fulham, Putney, West Kensington, and Ashdown Forest a small collection, which included, however, only one species of interest, *Dysdera crocota*, C. L. Koch. Another spider of (hitherto) great scarcity and much interest, being the largest of the group to which it belongs, as well as almost the largest known British spider—*Trochosa cinerea*, Fabr., has turned up in abundance on the banks of the Severn (in N. Wales, I believe). Examples of both sexes (adult) were sent to me in August last by *Mr. Linnæus Greening*, of Warrington. From *Mr. Charles Gulliver*, of Brockenhurst, I have received specimens at different ages of *Epeira angulata*, Clk.; among them are several (but none quite adult) of a remarkable white and black variety (figured in Vol. XVI. of our Proceedings, pl. B., fig. 12A., 1895). I have myself found specimens of this variety in the New Forest, but all the examples were immature. It is possible that the variation in colour and markings may only belong to the immature form. *The Rev. J. Hull* has sent me numerous spiders from the neighbourhood of Carlisle, one among them being the female of *Sintula indecora*, Cambr. This spider appears to be (according to Professor Kulczynski) the female of *Mr. Blackwall's* very remarkable species *Neriene cornigera*.

Lastly, from my son, Arthur W. Pickard-Cambridge, I received a small but valuable collection from Scotland, some of them found at Dunlugas, Banffshire, and others at Crawford, Lanarkshire, in September last. In the Crawford Collection is a new and distinct little spider, *Cnephalocotes fuscus*. Mr. G. H. Carpenter records (in "Irish Naturalist," Vol. VII., July, 1898, p. 164) a remarkable little spider from the Slieve Donard Mountains, Ireland. This Mr. Carpenter believes to be the *Erigone broccha* of L. Koch. I have not had an opportunity of examining it, but from Mr. Carpenter's figures and description I should think it was of a different species from the one named, and also different from the species M. Simon has described in his "Araneides de France," as *E. broccha*, L. Koch, types of which received from Dr. L. Koch, are in my possession. In the list appended will be found also the records of a second example of a very distinct spider, *Tmeticus fortunatus*, Cambr. A somewhat curious coincidence is connected with this second specimen; I found it on the pillar of the porch of my front door on the 27th of May, 1898, being the exact day on which three years before (1895) the first example was found among waterweeds in the Marsh of the Estuary below Wareham (see Proc. Dors. N. H. and A. F. Club, XVI., p. 123, pl. A., fig. 6).

LIST OF SPIDERS.

FAM. DYSDERIDÆ.

DYSDERA CROCOTA, C. L. Koch.

Dysdera crocota, C. L. Koch. Spid. Dors., p. 6.

I have again found this spider at Bloxworth, and it has also occurred at Kew, near Brigg in Lincolnshire, and at West Kensington.

FAM. DRASSIDÆ.

PROSTHESIMA ELECTA, C. L. Koch.

Prosthesima electa, C. L. Koch. Spid. Dors., p. 462.

An adult female was sent to me from near Edinburgh in 1897 by Mr. W. Evans. Two localities only had been previously known

for this species in Britain—Southport, Lancashire, and near Merton Hall, Suffolk.

CLUBIONA CORTICALIS, Walck.

Clubiona corticalis, Walck. Spid. Dors. p. 26.

Adults of both sexes have occurred sparingly at Bloxworth, but abundantly in all stages of growth at Kew.

AGROECA INOPINA, Cambr.

Agroeca inopina, Cambr. Proc. Dors. N. H. and A. F. Club, 1886, Vol. VII., p. 71 IV, pl. 1., fig. 1.

An adult male and female were contained in the Kew Collection made for me by Mr. Nicholson. The only other British localities as yet recorded are in Dorsetshire.

CHIRACANTHIUM NUTRIX, Westr.

Chiracanthium nutrix, Westr. Cambr., Spid. Dors., p. 33.

An adult female near Brigg, Lincolnshire, sent to me by the Rev. E. A. W. Peacock.

FAM. DICTYNIDÆ.

DICTYNA VIRIDISSIMA, Walck.

Dictyna viridissima, Walck. Cambr., Ann. and Mag. Nat. Hist., Septr., 1879, p. 210.

An adult male in fine colour and condition, found among junipers, received from Kew. One British record only up to the time of this occurrence, viz., Box Hill, Surrey.

DICTYNA PUSILLA, Westr.

Dictyna pusilla, Westr. Cambr., Spid. Dors., p. 426.

Received from Kew. A rare species, though widely distributed; very possibly overlooked among examples of the abundant species *D. arundinacea*, Linn., and *D. uncinata*, Thor.

FAM. THERIDIIDÆ.

THERIDION SIMILE, C. L. Koch.

Theridion simile, C. L. Koch. Cambr., Spid. Dors., p. 88.

Numerous examples received from Kew; among them some so richly-coloured with red, yellow, and brown, that at first sight I thought it must be a distinct species.

THERIDION FAMILIARE, Cambr.

Theridion familiare, Cambr. Spid. Dors., p. 86.

This little semi-domestic spider continues to occur, though in some years very scarce, in various out-buildings, unused rooms and lofts at Bloxworth Rectory.

Gen. nov. MELOS.

Melos bicolor, sp. n., fig. 3.

I have (infra p. 15) characterised this new genus and species for a little spider sent to me from Kew by Mr. Nicholson. I think it has a fair claim to be indigenous, though possibly it may have been introduced among plants imported from exotic regions.

(?) TEUTANA NOBILIS, Thor.

Lithyphantes nobilis, Thorell. Kongl. Svenska Vetenskaps, Akademiens Handlingar, 1875, Baudet 13, No. 5, p. 338.

Steatoda Clarkii, Cambridge. 1879, Spid. Dors., p. 480.

Having lately had an opportunity of examining examples of *Lithyphantes nobilis*, Thor., from Spain and Madeira, and comparing them with the type of *Steatoda Clarkii*, Cambr., there appears to be no doubt of their identity. I have also in my collection an immature female from South Europe.

TMETICUS PRUDENS, Cambr.

Tmeticus prudens, Cambr. Spid. Dors., p. 456.

An adult male of this spider; found by A. W. Pickard-Cambridge, at Crawford, Lanarkshire, in September, 1898.

TMETICUS FORTUNATUS, Cambr.

Tmeticus fortunatus, Cambr. Proc. Dors. Nat. Hist. and Antiq. Field Club, XVI., p. 123. pl. A, fig. 6, 1895.

An adult male on the porch of Bloxworth Rectory, May 27th, 1898. This is the second occurrence only of this distinct species in Britain; the first example having been found in a swamp near Wareham, on May 27th, 1895.

TMETICUS REPROBUS, Cambr.

Neriene reprobata, Cambr. Spid. Dors., p. 431.

Adults of both sexes, from Mr. W. Evans, near Edinburgh, November, 1897.

BARYPHYMA PRATENSIS, Bl.

Walckenaera pratensis, Bl. Cambr., Spid. Dors., p. 502.

An adult male, from Cadney, Lincolnshire (Rev. E. A. W. Peacock.)

(?) STYLOCTETOR BROCCHA, L. Koch.

Erigone broccha, L. Koch. Zeits. des Ferdinandeums, II., Naturwiss Abtheil, p. 226.

Entelecara broccha, L. Koch, Carpenter, Irish Nat., Vol. vii., 1898, p. 164.

An adult male described and figured by Mr. Carpenter (l. c. supra) does not sufficiently agree with types of *Erigone broccha*, L. Koch, received from Dr. L. Koch, to convince me that it is identical with this last, though probably nearly allied; nor does it seem to me to be the *Styloctetor broccha*, L. Koch—Simon, described and figured by M. Simon in his "Araneides de France," V., p. 739, and which is probably different from *E. broccha*, L. Koch. Mr. Carpenter's spider is remarkable from the chitinous texture of the spiracular plates, which appears to suggest their use as a part of a stridulating arrangement. *E. broccha*, L. Koch, has very similar spiracular plates, as also (but less strongly marked) has another allied species, *Styloctetor penicillata*, Westr. (*Neriene corticea*, Cambr.). Mr. Carpenter's spider was found at Slieve Donard, Mourne Mountains, Ireland. Its supposed stridulating organ is figured and described in "Nat. Science," May, 1898, XII., p. 319.

DIPLOCEPHALUS SPECIOSUS, Cambr.

Plesiocrærus speciosus, Cambr. Proc. Dorset Nat. Hist. and Ant. F. Club, Vol. XVI., 1895, p. 109, pl. B., fig. 8.

Adults of both sexes received from Cadney, near Brigg, Lincolnshire, from the Rev. E. A. W. Peacock. This is only the second record of this species; the first occurrence of it was at Bloxworth, Dorset. The female is new to science.

CERATINELLA SCABROSA, Cambr.

Walckenaera scabrosa, Cambr. Spid. Dors. p. 143.

This spider has again occurred, though rarely, at Bloxworth during the past year.

CNEPHALOCOTES FUSCUS, sp. n.

Cnephalocotes fuscus, sp. n., Fig. 5.

An adult male was found at Dunlugas, Banffshire, in September, 1898, by A. W. Pickard-Cambridge. It is nearly allied to, but quite distinct from, the other species of this genus known to me—a description is added (postea).

TYPHOCHRESTUS DORSUOSUS, Cambr.

Erigone dorsuosa, Cambr. Proc. Zool. Soc. Lond. 1875, p. 196. pl. 27, fig. 6.

„ *digitata*, Cambr. Proc. Zool. Soc. Lond., 1872, p. 758, pl. 66, fig. 14. (Proc. Dors. N.H. and A.F. Club, Vol. XV., 1894, p. 112), and Vol. XVII., 1896, p. 60,

This spider was recorded as *T. digitatus*, Cambr. (l.c. supra.), from Mr. W. Evans, Scotland. At that time I had no type of *T. digitatus* with which to compare it. but having now received the types from Dr. L. Koch and carefully compared them, and also compared them with types of *T. dorsuosus*, Cambr., I feel no doubt they are of the latter species, *i.e.* *T. dorsuosus*. The two species are very closely allied; one chief difference is, that when looked at in profile, the slope of the fore-part of the slightly

elevated caput in *T. digitatus* is abrupt, more elevated and rises quickly and abruptly from immediately behind the hind-central eyes, whereas in *T. dorsuosus* the slope from those eyes is gradual, and less elevated. M. Simon (Araneides de France, V., pp. 584, 586) also recognises this difference. The palpi are similar. Whether a series of examples of both forms might not show that these two species are only rather differently developed, or perhaps local forms of the same, must remain for future researches to determine.

SINTULA CORNIGERA, Bl.

Sintula indecora, Cambr. Proc. Dors. N.H. and A.F. Club, XIV., p. 156, fig. 7.

Neriene cornigera, Blackw., Cambr. Spid. Dors., p. 430.

An adult female was received from Haltwhistle from the Rev. J. E. Hull in November, 1895. From *L. Kulczynski's* "Hungarian Spiders," Part II., p. 87, pl. III., fig. 33, sub. *Micryphantes cornigera*, it appears that *Sintula indecora*, Cambr., is the female of *Neriene cornigera*, Bl. It is thus in both sexes a very remarkable species, very rare in Britain, and the sexes give little or no clue by any structural details that they are of the same species.

ENOPLIGNATHA THORACICA, Hahn.

Neriene albipunctata, Cambr. Spid. Dors., p. 122, and Proc. Dors. N.H. and A.F. Club, Vol. XVI., p. 58.

Adult males were contained in Mr. Nicholson's Kew Collection.

LINYPHIA IMPIGRA, Cambr.

Linyphia impigra, Cambr. Spid. Dors. p. 221.

Adults of both sexes received from Lincolnshire from the Rev. E. A. W. Peacock.

FAM. EPEIRIDÆ.

TETRAGNATHA PINICOLA, L. Koch.

Tetragnatha pinicola, L. Koch, Cambr. Proc. Dors. N.H. and A.F. Club, XVI., p. 115.

Adults of both sexes from S. Kelway, Lincolnshire ; from the Rev. E. A. W. Peacock.

TETRAGNATHA NIGRITA, Lendl.

Tetragnatha nigrita, Lendl., Cambr. Proc. Dors. N.H. and A.F. Club, XVI., p. 115.

Both sexes adult from Kew (Mr. Nicholson).

EPEIRA DIADEMATA, Clerck.

Araneus diadematus, Clk. Cambr., Spid. Dors., p. 266.

A fine variety of this common spider, white with the ordinary markings of a pinkish red, edged with deeper red on a yellow ground, received from Mr. W. T. Lucas, Kingston-on-Thames; Sept. 28th, 1898.

EPEIRA MARMOREA, Clerck.

Araneus marmoreus, Clerck. Aran. Suec., p. 29, pl. I., Tab. 2, 6.

An immature female, which I conjecture to be of this species; received from near Brigg, Lincolnshire. Mr. Pocock (Brit. Mus.) tells me he has also received an adult female during the past summer from Chippenham Fen, Cambridgeshire. This species is generally considered to be the typical form of which *Epeira pyramidata*, Clk. (*E. scalaris*, Walck) is a variety. Both forms are found together in many European localities, but in what relative abundance I do not know. *E. pyramidata* has occurred, always sparingly, but in numerous widely separated localities in Great Britain, though until the past year I have never found nor received an example, of either sex, referable to the typical form, *E. marmorea*. This seems to be a remarkable fact. If *E. pyramidata* is only a variety of *E. marmorea*, it has something of a parallel among birds in the Hooded Crow (*Corvus cornix*), which is considered to be only a form, or variety, of the common Carrion Crow (*Corvis corone*). I have never heard of any intermediate varieties in respect to these birds, nor have I seen any with regard to the * spiders in

* Dr. Thorell, Syn. Eur. Spid., pp. 10-13, however, records an intermediate variety in Sweden, but "comparatively very rare."

question ; but with respect to spiders there are exotic species of *Epeira* which have occasional varieties where the ordinary abdominal marking or pattern exhibits a tendency to obliteration on the whole of the upper surface excepting a large triangular patch on the hinder half. On this patch the pattern becomes intensified, and sharply and strongly defined like the similar patch in *E. pyramidata*.

EPEIRA ANGULATA, Clerck.

Araneus angulatus, Clk. Spid. Dors. p. 270 ; also Proc. Dors. N.H. and A.F. Club, XVI., p. 116, 1895, pl. B, fig. 12.

Adult and immature, both sexes, including several of the black and white variety noted l. c. supra. The latter, however, were not adult. Perhaps the adult form never retains this very remarkable distribution of colour ? The above were received from Brockenhurst, New Forest, from Mr. Charles Gulliver, in September, 1896.

FAM. THOMISIDÆ.

OXYPTILA SANCTUARIA, Cambr.

Oxyptila sanctuaria, Cambr. Spid. Dors., 319.

Adult males have again occurred at Bloxworth Rectory in August and September, 1898.

PHILODROMUS CLARKII, Bl.

Philodromus Clarkii, Bl. Spid. Dors., 539.

„ *rufus*, Walck, Cambr. (Proc. Dors. N.H. and A.F. Club, 1895, Vol. XVI., p. 126, pl. A, fig. 1).

„ „ Kulczynski, Hungarian Spiders. Tom. I., p. 109, pl. iv., p. 16. Simon Aran. de Fr. II., p. 287.

Kulczynski gives (l.c. supra.) *P. rufus*, Walck, as identical with *P. Clarkii*, Bl. I have never seen a type of *P. Clarkii*, Bl., but on carefully comparing Mr. Blackwall's description of it with my type of *P. rufus*, Walck—Cambr., and with French types received from M. Simon of *P. rufus*, Walck—Simon, I have come

to the conclusion that these are identical. This is the more satisfactory, as clearing up one at least of Mr. Blackwall's species, of which the types have unfortunately been destroyed.

FAM. LYCOSIDÆ.

TROCHOSA CINEREA, Fabr.

Trochosa cinerea, Fabr. Cambr., Spid. Dors., p. 545.

Adults of both sexes of this fine spider were found in abundance on the banks of the Severn, and kindly sent to me by Mr. L. Greening, of Warrington, in August, 1898.

TARANTULA FABRILIS, Clk.

Araneus fabrilis, Clerck. Cambr., Spid. Dors., 368.

Adult males; rare, Bloxworth Heath, September 7th, 1898. The burning in 1893 of the heath-district, where alone this spider has yet been found in Britain, almost exterminated the species.

FAM. SALTICIDÆ.

HASARIUS ADANSONII, Aud.

Hasarius Adansonii, Aud. Cambr. Spid. Dors., 566, and also Proc. Dors. N.H. and A.F. Club, XVI., p. 120, &c.

Adult and immature examples of both sexes occur pretty freely in green-houses and stoves at the Royal Gardens, Kew. One or two were also found out of doors during the past summer, so that possibly it may one day become acclimatised.

HASARIUS NICHOLSONII, Cambr.

Hasarius Nicholsonii, sp. n., fig. 1.

Numerous examples of both sexes, adult and immature, from a hot-house at Kew, no doubt originally imported with tropical plants. It is a fine and very conspicuous species, and, appearing to be new to science, I have given it the name of the discoverer. Its genus can hardly be said to be as yet quite certain. I have sent examples both to Mr. Peckham (of Milwaukee, Wiscon., U.S. Amer.), who has made a specialty of this family, and to M. Simon. The former considers it to be a *Plexippus*,

C. L. Koch. ; the latter a *Cytea*, L. Koch. To me it appears to be nearer to, if not identical with, *Hasarius*, Sav., though at one time I thought it to be a *Phileus*, Thor.

ATTUS PUBESCENS, C. L. Koch.

Attus pubescens, C. L. Koch. Cambr. Spid. Dors., p. 408.

An adult female of this species, received from Mr. Nicholson Royal Gardens, Kew ; it is a widely dispersed species in the South of England, and in some localities tolerably abundant.

ORDER PHALANGIDEA.

FAM. PHALANGIIDÆ.

OLIGOLOPHUS SPINOSUS, Bosc.

Oligolophus spinosus, Bosc. Cambr., Proc. Dors. N.H. and A.F. Club, xi., p. 201, pl. E, fig. 25.

Examples of this local species occurred at Bloxworth in 1897, and at Kew, in 1898.

DESCRIPTIONS OF SOME NEW OR RARE SPECIES IN THE ABOVE LIST.

FAM. DRASSIDÆ.

PROSTHESIMA ELECTA, C. L. Koch, Fig. 2.

Prosthesima electa, C. L. Koch. Cambr., Spid. Dors., p. 462.

The male only of this species was described (l.c. supra), and until very recently the distinctive mark of the female genital aperture had never been figured ; I subjoin therefore a description of this sex, and have included in the plate figures of that and some other dissections.

ADULT FEMALE.—Length, $2\frac{1}{4}$ lines. In general form and structure this species is normal. The *Cephalothorax* is longer than broad, oval, each end slightly truncate, the fore end much narrower ; the lateral marginal impressions at the caput very slight. The profile slopes gradually from the eyes to the hinder

slope, which last is rather abrupt. Normal grooves and indentations very slight. Colour yellowish brown, narrowly margined with blackish brown, and the sides obscurely shaded and slenderly and somewhat irregularly marked with deep brown scratchy lines : an irregular patch of the same colour marks the junction of the caput and thorax.

Eyes, in normal position. The fore-centrals are separated by an eye's diameter, each being contiguous (when looked at from above) to the fore-lateral on its side. The fore-laterals appear to be the largest of the eight ; the fore-centrals are seated at the anterior extremity of a slight prominence within the ocular area. The eyes of the hinder row are in a very nearly straight transverse line, the convexity of the curve, if any, being slightly directed forwards. The intervals between the eyes of this row are equal, and the centrals are apparently smaller than the laterals. The trapezoid of the four central eyes is nearly a square, whose fore-side is rather shorter than the rest. The length (from back to front) of the ocular area is nearly about half its breadth behind.

Falces, not large, but prominent in front, straight, furnished with strong prominent bristles, and similar in colour to the cephalothorax.

Legs, short, strong, furnished with coarse hairs, bristles, and spines—4, 1, 2, 3. Coxæ and femora rather paler in colour than the cephalothorax. The femora unusually strong, and a little suffused with a darker hue on the outer side ; the genuæ, tibiæ, and metatarsi deep brown, the tarsi paler.

Palpi, pale yellow-brown, deepening towards their extremity into a darker line.

Maxille and *Labium*, of normal form ; colour, yellow-brown.

Sternum, short-oval, pointed behind, central portion flat ; surface shining, and marked with a few minute impressed points ; margins well rounded ; colour deep yellow-brown.

Abdomen, oblong, rounded behind, rather truncate before, and somewhat flattened-convex above ; colour, deep black-brown, hairs short, a number of prominent black bristles in front.

Spinners short. Genital aperture of very distinct and characteristic form.

An example of this small *Prosthesima* was sent to me by Mr. William Evans, of Edinburgh, by whom it was found running in the sun on a sandy spot on Largo Links, coast of Fife, on the 10th of June, 1897. In its colour this specimen differs greatly from the normal types, in which the brown and yellow-brown hues of the Scotch examples are of a bright yellow-red and red-brown, while the deeper brown colours are black. The sexes of the normal type resemble each other in colours.

FAM. THERIDIIDÆ.

* MELOS, gen. nov.

Cephalothorax, short, broad, as broad as long, attenuate before; upper convexity moderate, lateral margins at caput strongly and sharply indented, or impressed, and posterior slope abrupt.

Eyes as in *Theridion*; the four centrals form nearly a square, rather broader than long, and its anterior side shorter than the posterior. Hinder row straight or nearly so. Its eyes are more than a diameter apart; the hind-centrals rather larger than the hind-laterals. The ocular area is a little prominent, and the anterior row has its slight convexity directed forwards. The clypeus exceeds in height half that of the facial space, and its lower margin is prominent.

Legs short, moderately strong; 1, 4, 2, 3, furnished with hairs and a few slender spine-like bristles on the genuæ and tibix (1, 2).

Maxillæ strongly inclined towards the *labium*, and pointed at their extremity.

Labium broader than high; rather rounded at the apex.

Sternum large, its length rather less than its breadth, a little roundly truncated before, posterior extremity unusually broad and rounded, surface very convex.

Abdomen large globular.

MELOS BICOLOR, Cambr.

Melos bicolor, sp. n., fig 3.

Immature male length, $\frac{3}{4}$ ths of a line.

Cephalothorax, deep brown.

Legs, yellow. The coxæ of the fourth pair very wide apart owing to the breadth, at that point, of the sternum.

Palpi yellow, the yet tumid digital joint, and the radial tinged with black; the digital ends with a small bent claw.

Maxillæ and labium dark yellowish brown, with pale extremities.

Sternum very convex, glossy, dark yellowish brown, covered thinly with coarse hairs.

Abdomen black, glossy, thinly clothed with coarse hairs.

An immature male found among herbage "Sunny Bank, Queen's Cottage Grounds," the Royal Gardens at Kew, and kindly sent to me by Mr. Nicholson, the Curator, in April, 1898. Although not adult, I have but little hesitation in founding a new genus on this little spider. It is allied to *Euryopis* in some respects, but the large and very convex sternum, the form of the clypeus and armature of the legs, sufficiently distinguish it. It may possibly be an imported species.

CNEPHALOCOTES, FUSCUS, Cambr.

Cnephalocotes fuscus, sp. n., fig. 5.

Adult male, length 1 line.

Cephalothorax oblong, much broader than long, narrowest and rounded in front, truncate and slightly impressed in the marginal line behind, lateral marginal impressions gradual but not strong, colour, yellow-brown with darker scratchy markings, at the normal groves and indentations. Caput a little and roundly elevated behind the eyes; the height of the clypeus rather exceeds half that of the facial space; a strong somewhat oval longitudinal excavation behind each lateral pair of eyes.

Eyes in two transverse rows, anterior row nearly straight, posterior strongly curved, the convexity of the curve directed backwards; anterior shortest, its eyes are not greatly unequal in size, the fore-centrals smallest, and not quite contiguous to each

other, the interval between them is less than half a-diameter, that between the hind-centrals is equal to a diameter, and distinctly less than that between them and the hind-laterals. The central quadrangle is longer than broad, and narrowest in front. Those of each lateral pair are seated a little obliquely on a tubercle, and the fore-laterals are separated from the fore-centrals by slightly less than the diameter of the latter.

Legs moderately strong, rather short, not greatly unequal in length 4, 1, 2, 3, furnished with hairs and very slender bristles, a few erect ones of the latter are on the tibiæ. Colour, yellow-brown with a slight red-brown tinge. The innerside of the femora of the first and second pairs are furnished with numerous distinct parallel transverse striæ, whose edges appear to be sharp and a little raised.

Palpi short, cubital very short, curved, slightly clavate; radial a very little longer than the cubital, and stronger, rather broadly and roundly produced in front, the fore-margin on the upper side has a slight notch near the outer side, digital joint equal in length to the cubital and radial together, oval, obtuse at the fore-extremity, and with a conical lobe on the outer side. Palpal organs rather prominent and complex. A curved corneous blade-like process is situated at their base on the outer side just beneath the outer margin of the radial joint, and another runs from near their base on the innerside to their anterior extremity, ending in a black tapering curved spine, in front of which, and connected with another process, there appears to be another more slender black filiform spine. The outerside of the humeral joint is furnished, like the femora of the first pair of legs, with numerous transverse striæ on the inner sides.

Falces strong, divergent, with a patch of granulosities in front, and a close set row of teeth on the inner margin at the extremity. The outer margin is furnished with numerous transverse striæ or sharp-edged ridges, in connection with which possibly those on the femora of the first pair of legs and on the humeral joints of the palpi act as a stridulating apparatus. Colour of falces yellowish brown tinged with blackish.

Maxilla short, strong, obtuse at their extremity, and greatly inclined to the labium.

Labium rather small, broader than high, impressed across the middle and rounded at the apex.

Sternum large heart-shaped broadly-truncate in front very convex, obtuse at its hinder extremity; the colours of the maxillæ labium and sternum is like that of the falces.

Abdomen short, oval, nearly globular, black, glossy, furnished, but not thickly, with short hairs.

Spinners short, tolerably compact; colulus very distinct, oval, pointed at its extremity.

A single example of this very distinct little spider was found among moss and lichens by A. W. Pickard-Cambridge, in September, 1898, at Dunlugas, in Banffshire.

DIPLOCEPHALUS, Bertk. (*Plesiocrærus*, Sim.).

DIPLOCEPHALUS SPECIOSUS, Cambr., fig. 4.

Diplocephalus (Plesiocrærus) speciosus, Cambr. Proc. N.H. and A. Field Club, XVI., p. 109, pl. B., fig. 8.

The adult male only was described and figured (l.c. supra.). I now subjoin a description and figures of what I believe to be the female of this species.

Adult female, length 1 line.

In colour, general appearance, and characters this sex is similar to the male, but the caput (as usual) wants the elevation of its upper side; that part is slightly and roundly raised above the thorax, when looked at in profile, there being a dip between them just behind the occiput. The eyes are on black spots, and form a large transverse oval, broader than long. They are, excepting the fore-central pair, which are much the smallest, of tolerable and nearly equal size. The interval between those of the hind-central pair slightly exceeds a diameter, and is rather larger than that between each and the hind-lateral eye next to it. The central quadrangle is slightly longer than broad, its fore-side being much the shortest. Those of each lateral pair are seated a little obliquely on a strongish tubercle. Taken in two

transverse rows the curve of the posterior row is strong and its convexity directed backwards, that of the anterior row slight and the convexity directed forwards. The height of the clypeus is half that of the facial space.

The *legs* are rather short, moderately strong, and do not differ very greatly in length 4, 1, 2, 3. They are furnished with hairs, a few of a bristly nature, erect on the upper side of the tibiæ, and two longitudinal parallel rows, of a stronger kind on the anterior sides of the femora of the first and second pairs. The length of the metatarsi distinctly exceeds that of the tarsi; but this does not appear to be the case in the male in which they are nearly if not quite of equal length. The genital aperture is simple but of characteristic form, though bearing much resemblance to that of other allied species.

Three females and two males received from the Rev. E. A. W. Peacock, Lincolnshire, March, 1898.

FAM. SALTICIDÆ.

HASARIUS NICHOLSONII, Cambr.

HASARIUS NICHOLSONII, sp. n., fig. 1.

Adult male length from $2\frac{3}{4}$ to 4 lines. Adult female length 3 to $3\frac{1}{2}$ lines.

Cephalothorax of the male longer than broad, moderately convex, oblong, rounded behind, a little impressed laterally at the ocular area, profile line of the upper side moderately rounded, hinder slope rather steep. Ocular area broader than long, broadest in front, and distinctly in advance of the posterior half of the cephalothorax. Colour, deep shining black-brown, thinly clothed with dark hairs, and with a longitudinal central marking or band, densely clothed with short white hairs, this band is broad and rather abruptly pointed in front, and tapers from the ocular area to about the beginning of the hinder slope.

Eyes in the normal three transverse rows. Anterior row slightly curved, the convexity of the curve directed forwards; posterior row distinctly shorter than the anterior; central row shortest, but its eyes just in a straight line with the centres of the

lateral eyes of the first and third rows. Fore-central eyes not quite contiguous, double the size of the fore-laterals; height of clypeus less than half the diameter of the fore-laterals. Eyes of the second (or middle) row half way between the anterior and posterior rows; hind-laterals a little smaller than the fore-laterals.

Legs moderately long, 1, 4, 3, 2; those of the first pair strongest and considerably longest; colour of these, dark yellow-brown, the metatarsi with a broad orange-yellowish central band; the other legs are yellow, broadly, but not sharply annulated with red-brown. All are rather strongly spinose, two parallel rows of spines beneath the metatarsi and tibiæ of the two first pairs; and a compact claw-tuft beneath all the terminal tarsal claws.

Palpi not very long, deep blackish brown, paler at the extremity of the digital joint. Cubital and radial joints short; the latter has a small pointed apophysis at its outer extremity; the digital joint is rather long, oblong, narrow, palpal organs beneath its base simple and projecting backwards and outwards beneath the radial joint.

Falces, straight very slightly divergent, almost vertical, about equal in length to the depth of the most elevated part of the cephalothorax. On the inner margin of the anterior extremity, behind the fang grooves are two not very strong teeth near together or a geminated one. The colour of the falces is deep black-brown to black.

Maxillæ moderately long, strong, broadest and much widened at the extremity, which is rounded.

Labium about half the length of the maxillæ, broader than long, apex rounded. The colour of the maxillæ and labium is rich blackish-brown, tinged with red, and pale margined at the extremity.

Sternum somewhat oblong, rather longer than broad, truncate before, obtusely pointed behind, colour brownish yellow.

Abdomen of moderate size, oval, a little pointed behind, clothed with hairs, and thinly with prominent ones. Colour on the upper side brown to black, with a broad pale longitudinal central band slightly tapering at each end, clothed with white hairs, and reaching from the fore extremity to just above the spinners.

The margins of this band are slightly indentated, and sometimes dentate, more so in some examples than in others. Sides brown; underside pale dull yellowish to brown, with two longitudinal black-brown stripes, converging a little towards the spinners; these are of moderate length and strength and directed backwards.

The *female* closely resembles the male in colours and markings; but in some examples the central white band on the cephalothorax runs further forward in a more drawn-out pointed form, and the white abdominal band is more sharply defined and less dentated or irregular on the edges. The genital aperture is of a very characteristically distinct form.

A considerable number of both sexes of this spider, in all stages of growth, have occurred in one of the hothouses of the Royal Gardens at Kew, and have been kindly sent to me by the Curator, Mr. G. Nicholson. Mr. Nicholson tells me that they live within the folded leaves of Bromeliads, imported from Brazil. It is a fine and distinct species, and appears to be as yet undescribed; its generic position does not seem to be quite certain. Mr. Peckham thinks it is a *Plexippus*, C. L. Koch. Mons. Simon considers it a *Cytea*, L. Koch. To me it seems to be probably an *Hasarius*, another species of which, *H. Adansonii*, Sav. (the type of the genus), also occurs in a similar semi-naturalised state in the Kew Gardens.

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On the
Inquisitiones Post Mortem for Dorset

FROM HENRY VII. TO CHARLES I. (1485-1649).

By EDWARD ALEXANDER FRY.

(Read December 15th, 1898.)



HAVING already described (Proc. Vol. XVII., p. 1), in the introduction to the Calendar of Dorset Inquisitiones Post Mortem from Henry III. to Richard III., what these documents are, it is unnecessary to do so again here, so that the following remarks will be confined to stating that the Calendar now printed is a continuation of the first one, and comes down to the time when Inquisitiones were no longer taken; that is to say, to the end of the reign of King Charles I.

For this period, Henry VII. to Charles I., there are four series of Inquisitiones preserved at the Public Record Office, London, viz. :—

i. The *Chancery* Series from 1 Henry VII. to 24 Charles I., indicated in this Calendar by a letter C.

ii. The *Miscellaneous Chancery* Series for the reigns of Elizabeth, James I., Charles I. (and a few in Charles II.), indicated by a letter M.

iii. The *Exchequer* Series, Henry VII. to James I., indicated by a letter E.

iv. The *Court of Wards and Liveries* Series, 32 Henry VIII. to Charles I., indicated by a letter W.

Thus for the bulk of the period under consideration it is possible to find four Inquisitiones taken on the death of a person holding lands *in capite*, so that if in one series an inquisition is faded, or torn, or non-existent, we have the means of supplying the deficiencies from one or other of the remaining series.

The *Chancery* Series is, as before stated, a continuation of the Calendar already printed.

The *Miscellaneous Chancery* Series would appear to be a collection of Inquisitiones which have, from one cause or another, got out of place in the general Chancery series.

The *Exchequer* Series are contemporary and authentic transcripts of the Chancery documents, and were returned into the Court of the Exchequer to serve as a check on the fees and payments due to this Department. A Calendar of them was printed in the 10th Report of the Deputy Keeper of Records. They are arranged under the names of the escheators (or persons appointed to take the Inquisitiones), but as the same escheator served for both Somerset and Dorset, it is scarcely possible from that Calendar to identify which documents refer to each county. It has been necessary, therefore, to go through the whole lot of documents and note those which relate to Dorset.

The *Wards and Liveries* Series. These commence 32 Henry VIII. (1540), when the Court of Wards and Liveries was established to superintend and regulate enquiries upon the death of any of the King's tenants *in capite*, who were minors, idiots, or lunatics. The Inquisitiones are identical with the Chancery and the Exchequer Series. The functions of the Court were suspended during the Commonwealth, and it was finally abolished by statute of 12 Charles II.

By the help of the two Calendars now printed in the Dorset Field Club's Proceedings, and which, together, cover a period of some 430 years, reference can be made in as many minutes as

formerly it required days, to any Inquisition of Dorset land-owners, and it will be, it is hoped, a means of stimulating research in the records of the past history and genealogy of the county.

If the Dorset Field Club would devote a small sum annually for the purpose of transcribing into English and for the printing (as an Appendix to its Proceedings) of the early Inquisitiones, it would be money well spent, and enhance the value and utility of the work done by the Club.

To those interested in Inquisitiones it may be useful to know that the Public Record Office has recently issued a thick volume of Abstracts of Inquisitiones Post Mortem for the whole Kingdom, commencing 1-10 Henry VII. under a chronological arrangement.

ABBOTSBURY, Abbey of, Hugh, Abbott of	E. 11-12 Hen. VII., Bundle 894, No. 18.
„ „ „ „	<i>Breve de dictis tempor-</i>
„ „ „ „ <i>alibus restituendis</i>	E. 11-12 Hen. VII., 894, 19.
ABBOTT, Abbote, Robert	C. 4 Hen. VIII., 9.
„ Robert	E. 3-4 Hen. VIII., 900, 12.
ABINGTON, Thomas	C. 25 Eliz., 74.
„ Abbington, John	C. 34 Eliz., pt. 2, 100.
„ Mar. (? Margaret)	C. 40 Eliz., pt. 1, 59.
„ Abbington, Andrew	C. 13 Chas. I., pt. 2, 106.
„ „ „	W. 12 Chas. I., Bdle. 59, 109.
„ Margaret, vid.	C. 16 Chas. I., pt. 1, 38.
„ „ lunatic	W. 16 Chas. I., Bdle. 63, 4.
ACOUR, John	C. 34 Eliz., pt. 2, 9.
ADAMS, Addams, John	C. <i>v.o.</i> Eliz., Bdle. 3, 36.
ADEN, <i>als</i> Barbett, Robert	C. 6 Eliz., 31.
„ Robert	W. 6 Eliz., Bdle. 9, 137.
„ <i>als</i> Barbett, Robert	E. 6-7 Hen. VIII., 903, 10.
AGAUNT, John	C. 37 Hen. VIII., 23.
„ „ of Marschewood, gen.	E. 36-37 Hen. VIII., 934, 4.
ALLEN, John	C. 5 Jas. I., pt. 1, 67.

ALLEN, John	W. 5 Jas. I., Bdle. 8, 46.
„ „ gen.	M. 15 Jas. I., pt. 4, 70.
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„ Anketyll, William	E. 15-16 Hen. VIII., 912, 12.
„ Anketill, George	W. 38 Hen. VIII., — 1 Edw. VI., Bdle. 1a, 86.
„ Anktell, George	C. 1 Edw. VI., pt. 1, 25.
„ George, arm. of Estallmer	E. 1 Edw. VI., 936, 17.
APPLIN, Applyne, William, gen.	M. 8 Jas. I., pt. 12, 73.
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„ Apryce, Christina, wife of Robert	E. 15-16 Hen. VIII., 912, 22.
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„ „ gentleman	E. 15-24 Hen. VII., 897, B. 5.
„ Thomas	C. 7 Hen. VIII., 145.
„ „ gentleman	E. 6-7 Hen. VIII., 903, 11.
„ „	C. 8 Hen. VIII., 117.
„ Robert	C. <i>v.o.</i> Hen. VIII., pt. 2, 272.
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„ Roger	C. 31 Eliz., pt. 1, 57.
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” ” ” mil. attinct.	C. 6 Edw. VI., pt. 1, 22, 23.
” ” ” Knt.	W. 1, 2, 3 Eliz., Vol. 8, p. 66.
” Arrundell, Thomas, mil.	C. 3 Eliz., 48.
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” Arundell, Mathew, mil.	C. 40 Eliz., pt. 1, 83.
” ” John, arm.	M. 10 Chas. I., pt. 21, 22.
” ” Thomas, Dni, Baron de Warder	C. 17 Chas. I., pt. 1, 17.
ASHCOMBE, Asshecombe, Richard	C. 6 Hen. VIII., 115.
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” ” Gervase	C. 16 Eliz., pt. 2, 29.
” ” Henry, mil.	C. 42 Eliz., pt. 1, 117.
” Ashlye, Gervase	W. 16-17 Eliz., Vol. 15, p. 17.
” Gervase	C. 10 Jas. I., pt. 1, 16.
” ”	W. 9-10 Jas. I., Bdle. 4, 79.
” Francis, mil., Ser. at Law to the King	C. 13 Chas. I., pt. 2, 20.
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AUDLEY, John, mil.	C. 6 Hen. VII., 11.
” Audeley, John, mil.	E. 5-6 Hen. VII., 893, 4.
” ” Anne, widow	C. 14 Hen. VII., 54.
” ” ” widow of John Rogers, arm.	E. 13-14 Hen. VII., 895, 12.
” Awdley, Henry	C. 7 Jas. I., pt. 2, 114.
” Henry	W. 7 Jas. I., Bdle. 12, 161.
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„ Baunfeld, Marion, widow	E. 15-24 Hen. VII., 897, D. 17.
„ Edward	C. 20 Hen. VIII., 82.
„ Bampfelde, Edward, arm.	E. 19-20 Hen. VIII., 916, 6.
„ John	C. 21 Hen. VIII., 68.
„ Bäunfeld, John, arm.	E. 20-21 Hen. VIII., 917, 8.
„ Banfield, William	C. 1 Eliz., pt. 3, 218.
„ Bamfeld, William, arm.	E. 1 Eliz., 946, 35.
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„ Barbett <i>als</i> Aden, Robert	E. 6-7 Hen. VIII., 903, 10.
„ „ „ „	C. 6 Eliz., 31.
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„ Thomas	W. 1 Chs. I., Bdle. 43, 202.
„ „	C. 2 Chas. I., pt. 1, 53.
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„ <i>als</i> Hancock, Robert	W. 23-24 Eliz., Vol. 20, p. 24.
„ John	C. 34 Eliz., pt. 1, 49.
„ <i>als</i> Hancocke, John	W. 41-42 Eliz., Vol. 23, p. 107.
„ Bartlet, William	C. 42 Eliz., pt. 1, 79.
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„ Thomas	C. 4 Edw. VI., pt. 1, 45.
„ Baskatt, Thomas	W. 3-4-5 Edw. VI., Vol. 5, p. 118.
„ „ „ arm.	E. 4 Edw. VI., 939, 4.
„ Thomas	C. 35 Eliz., pt. 2, 38.
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„ Edith, widow	C. 5 Jas. I., pt. 1, 42.
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„ Robert	C. 10 Jas. I., pt. 2, 129.
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„ Baylie, Humphrey	C. 10 Jas. I., pt. 2, 89.

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" " Robert	W. 15 Jas. I., Bdle. 24, 12.
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" " "	E. 4 Hen. VII., 891, 4.
" Hugh	C. 22 Hen. VII., 82, 84.
" " arm.	E. 15-24 Hen. VII., 897, D. 3.
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" Bettiscombe, Thomas	E. 8-9, Hen. VIII., 905, 27.
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" Henry, " " " " "	C. 33 Eliz., pt. 2, 89.
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" Bynham, Robert, arm.	E. 15-16 Hen. VIII., 912, 24.
" Bingham, Roger, (<i>sic.</i>), arm.	C. 4 Eliz., 159.
" " Robert (<i>sic.</i>), arm.	E. 4-5 Eliz., 948, 26.
" Bynham, Robert	C. 36 Eliz., pt. 2, 98.
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" Birte, John	C. 34 Hen. VIII., 42.
" Byrt or Brett, John	E. 33-34 Hen. VIII., 931, 21.
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" Bysshop, William	E. 36-37 Hen. VIII., 934, 6.
" Bushopp, William	C. 20 Jas. I., pt. 2, 37.
" Byshop, William	W. 20 Jas. I., Bdle. 35, 142.
" Byshopp, Alice, vid.	C. <i>v.o.</i> 21 Jas. I., 27.
" Bishoppe, Alice	W. 21 Jas. I., Bdle. 37, 56.

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„ „ Guido, gen.	E. 6 Edw. VI., 940, 17.
„ Thomas	C. 8 Eliz., 160.
„ Bonvile, Thomas, arm.	E. 6 Eliz., 950, 12.
„ Bondville, Thomas	C. 26 Eliz., 66.
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„ Bowdiche, John	E. 1 Eliz., 946, 18.
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„ Thomas	C. 18 Jas. I., pt. 1, 86.
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„ Bowyer, Edward	C. 1 Chas. I., pt. 2, 42.
„ „ Edmund	W. 1 Chas. I., Bdle. 43, 25.
„ Edward	C. 7 Chas. I., pt. 1, 3.
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" John, arm.	E. 15-16 Hen. VIII., 912, 9.
" William	C. 28 Hen. VIII., 101.
" " arm.	E. 28 Hen. VIII., 925, 6.
" Richard arm.	C. 13 Eliz., pt. 1, 14.
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" " arm.	E. 36 Hen. VIII., 933, 8.
" Henry	C. 36 Eliz., pt. 1., 112.
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" William, arm.	E. 15-24 Hen. VII., 897, D. 9.
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" "	C. 9 Jas. I., pt. 2, 151.
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" John	E. 3-4 Hen. VIII., 900, 11.
" Brinsoppe (?), John	C. 22 Eliz., pt. 1, 23.
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" " mil.	C. 4 Chas. I., pt. 1, 56.
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BULLER, Alexander	C. 18 Hen. VIII., 127.
" " arm.	E. 17-18 Hen. VIII., 914, 2.
" John, arm.	C. 23 Hen. VIII., 67.
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" " gen.	E. 30-31 Hen. VIII., 928, 1.
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" Byconyll, John, mil.	E. 15-24 Hen. VII., 897., B. 23.
" Elizabeth	C. 19 Hen. VII., 13.
" Byconyll, Elizabeth, wife of John	E. 15-24 Hen. VIII., 897, C. 3.
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" Campyon, John	C. 24 Hen. VIII., 21.
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" " John Morton	E. 15-24, Hen. VII., 897, B. 4.
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CARENT, Carant, William, arm.	C. 20 Hen. VII., 126.
" William	C. 9 Hen. VIII., 2.
" " arm.	E. 8-9 Hen. VIII., 905, 8.
" Carrant, William	C. 35 Eliz., pt. 2, 134.
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" Elizabeth, vid.	C. 6 Chas. I., pt. 3, 27.
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" Andrew	C. 17 Chas. I., pt. 1, 101.
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„ Chetell, Henry, gen., of Blandford St. Mary	E. 7 Edw. VI. and 1 Mary, 941, 5.
„ Edward	C. 7 Jas. I., pt. 1, 48.
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„ Chetle, Henry	C. 14 Jas. I., pt. 2, 118.
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„ William	C. 22 Hen. VII., 135.
„ Roger	C. 9 Hen. VIII., 45.
„ „ arm.	E. 8-9, Hen. VIII., 905, 13.
„ Nicholas	C. 3 Edw. VI., 21.
„ „	W. 3, 4, 5, 6 Edw. VI., Vol. 5, p. 15.
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„ „	W. 21 Jas. I., Bdle. 64, 39.
„ „	C. 17 Chas. I., pt. 1, 82.
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„ „	C. 18 Chas. I., pt. 2, 2.
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„ <i>als</i> BROWNE, Edward	E. 17-18 Hen. VIII., 914, 8.
„ William, of Tysbury	E. 28 Hen. VIII., 925, 9 and 10 (copy).
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„ „ „	C. 15 Chas. I., pt. 1, 102.
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• COKER, Robert	E. 4-5 Hen. VII., 892, 2.
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„ „ arm.	E. 4-5 Hen. VIII., 901, 2.
„ Walter	C. 13 Hen. VIII., 49.
„ „ gen.	E. 12-13 Hen. VIII., 909, 10.
„ Thomas	C. 21 Hen. VIII., 61.
„ „ arm.	E. 20-21 Hen. VIII., 917, 4.
„ „	C. 2 Edw. VI., pt. 1, 42.
„ „	W. 2 Edw. VI., Vol. 4, p. 47.
„ „ arm.	E. 2 Edw. VI., 937, 1.
„ Robert, arm.	C. 15 Eliz., 27.

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„ „ arm.	E. 15 Eliz., 956, 2.
„ Thomas	C. 40 Eliz., pt. 1, 6.
„ John	C. 40 Eliz., pt. 2, 101.
„ Robert	C. 20 Jas. I., pt. I., 121.
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„ „ „	W. 6 Eliz., Bdle. 9, 29.
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„ Richard	W. 1-6 Jas. I., Bdle. 2, 214.
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„ „ William	C. 1 and 2 Phil. and Mary, pt. 1, 23.
„ „ „	E. 1 and 2 Phil. and Mary, 942, 6.
„ Roger, gen.	M. 11 Chas. I., pt. 19, 57.
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- „ Seyntmaur, Thomas, mil. E. 4-5 Hen. VII., 892, 6.
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- „ „ C. 13 Hen. VII., 101.
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- „ John C. 5 Jas. I., pt. 1, 11.
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„ Strowde, Alice	C. 9 Hen. VIII., 58.
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" " " Christopher	W. 19 Jas. I., Bdle. 33, 23.
" " " John	M. 11 Chas. I., pt. 21, 73.
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„ „ mil.	E. 4 Edw. VI., 939, 5.
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„ George, arm.	C. 2 Jas. I., pt. 1, 35.
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„ „ mil.	C. 7 Chas. I., pt. 1, 99.
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„ Trevilian, John, mil.	E. 12-13 Hen. VIII., 909, 9.
„ Trevelyan, John	C. 38 Hen. VIII., 36.
„ „ „ arm.	E. 37-38 Hen. VIII., 935, 2.
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„ Turbuile, John	C. 28 Hen. VIII., 52.
„ Turbervill, John, arm.	E. 28 Hen. VIII., 925, 13.
„ Turberfeld, Henry	C. 3 Edw. VI., 21.
„ Turbefyld, Henry, arm., of Ower	E. 3 Edw. VI., 938, 5.
„ Turbervyle, Robert, arm.	E. 1 Eliz., 946, 24.
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„ „ arm.	E. 9-10 Hen. VIII., 906, 4.
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„ „ „	E. 34-35 Hen. VIII., 932, 7.
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„ Twyneo, Roger	C. 13 Hen. VII., 50.
„ Twyneho, William	E. 13-14 Hen. VII., 895, 4.
„ Twyneo, Wm., arm.	C. 13 Hen. VII., 49.
„ Twynyho, George	C. 17 Hen. VIII., 87.
„ „ „ arm.	E. 16-17 Hen. VIII., 913, 17.
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„ Tydderleigh, Robert	C. 8 Jas. I., pt. 1, 101.
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„ „ „	E. 33-34 Hen. VIII., 931, 4.
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„ „ Henry	C. 42 Eliz., pt. 1, 158.
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„ Uvedall, Thomas	C. 10 Jas. I., pt. 2, 90.
„ Thomas	W. 10 Jas. I., Bdle. 16, 100.
„ Edmund, mil.	C. 22 Jas. I., pt. 2, 74.
„ „ Sir	W. 21 Jas. I., Bdle. 39, 205.
„ Uvedall, George	C. 7 Chas. I., pt. 1, 102.
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„ Thomas	C. <i>v.o.</i> Eliz., Bdle. 3, 7.
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„ „	E. 6-7 Hen. VIII., 903, 8.
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„ „ of Bridport	E. 4-5 Eliz., 948, 30.
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„ „	C. 14 Hen. VIII., 112.
„ „ arm.	E. 14 Hen. VIII., 910.
„ Alice	C. 27 Hen. VIII., 29.
„ „ wife of Christopher W., of Wareham	E. 27 Hen. VIII., 923, 1.
„ Waddham, John	C. 5-6 Phil. and Mary, pt. 2, 20.
„ John, arm.	E. 4-5 Phil. and Mary, 945, 9.
„ John	C. 26 Eliz., 73.
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„ Joan	E. 14-15 Hen. VII., 896, 4.
„ Warr, Count	C. 23 Hen. VII., 27.
„ Richard, mil.	C. 33 Hen. VIII., 62.
„ Warr, Richard, mil.	E. 32-33 Hen. VIII., 930, 6.
„ Thomas	C. 34 Hen. VIII., 46.
„ Warr, Thomas, arm.	E. 33-34 Hen. VIII., 931, 26.
„ „ John	C. 6 Edw. VI., pt. 1, 40.
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„ „ „ gen.	E. 6 Edw. VI., 940, 24.
„ „ Richard	C. 44 Eliz., pt. 2, 153.
„ „ „	W. 43-44 Eliz., Vol. 26, p. 135.
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„ Henry	C. <i>v.o.</i> 6 Jas. I., pt. 2, 36.
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„ Welstede, Robert	E. 4-5 Eliz., 948, 32.
„ Welsteed, Robert	C. 9 Eliz., 194.
„ Welstede, Robert, gen.	E. 9 Eliz., 951, 2.
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„ Richard, mil.	C. 34 Hen. VIII., 30.
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„ William, mil.	C. 37 Eliz., pt. 1, 90.
„ „ „	C. 2 Jas. I., pt. 1, 26.
„ „ Knt.	W. 1-2 Jas. I., Vol. 28, p. 30.
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WHITBY, Thomas	C. 14 Jas. I., pt. 2, 7.

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„ Thomas		C. 33 Eliz., pt. 1, 36.
„ Robert		C. <i>v.o.</i> 1-2 Jas. I., 13.
„ „	W. 1, 2, and 3	Jas. I., Bdle. 6, 130.
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„ John	C. <i>v.o.</i> 15	Chas. I., 58.
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„ John	C. 21	Hen. VIII., 20.
„ Whyting, John	E. 20-21	Hen. VIII., 917, 6.
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„ Wykes, John	E. 4-5	Hen. VII., 892, 4.
„ John	C. 4	Hen. VIII., 77.
„ Wykes, John	E. 3-4	Hen. VIII., 900, 2.
„ Wykys, Edmund, a fragment	E. 6-7	Hen. VIII., 903, 29.
„ Wyke, William	E. 9-10	Hen. VIII., 906, 3.
„ Wykys, Richard	C. 19	Hen. VIII., 101.
„ Wekkes, Richard	E. 18-19	Hen. VIII., 915, 7.
WILLIAMS, John	C. 8	Hen. VIII., 29.
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„ „ arm.	E. 11	Eliz., 953, 7.
„ Anne, vid.	C. 11	Eliz., 14.
„ Anna, „	W. 11-12	Eliz., Vol. 12, p. 108.
„ Anne, widow	E. 11	Eliz., 953, 6.
„ Henry	C. 31	Eliz., pt. 1, 111.
„ John, mil.	M. 16	Jas. I., pt. 4, 183.
„ John	C. 4	Chas. I., pt. 1, 82.
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„ „ arm.	M. 9	Chas. I., pt. 21, 55.
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WILLIS, Humphrey	W. 17	Jas. I., Bdle. 35, 127.

WILLOUGHBY, Richard, mil. attinct.	C. <i>v.o.</i> temp. Rich. III. and Hen. VII. —
„ Isabella	C. 2 Hen. VIII., 137.
„ „ wife of Wm. W., mil.	E. 1-2 Hen. VIII., 898, 10.
„ Robert, Dni. Broke	C. 15 Hen. VIII., 16.
„ Robert de Broke, mil.	E. 15 Hen. VIII., 911, 13.
„ Richard	C. 16 Hen. VIII., 150.
„ „ arm.	E. 15-16 Hen. VIII., 912, 13.
„ Isabella	C. 17 Hen. VIII., 158.
„ „	E. 16-17 Hen. VIII., 913, 6.
„ Nicholas	C. 35 Hen. VIII., 38.
„ „	W. 35 Hen. VIII., Vol. 1, p. 75.
„ „ arm.	E. 34-35 Hen. VIII., 932, 5.
„ Leonard	C. 2 Eliz., pt. 1, 12.
„ Willoughbie, William	C. 2 Eliz., pt. 1, 15.
„ „ John, lunat.	C. 9 Eliz., 194.
„ Willughbie, John	C. 13 Eliz., pt. 1, 28.
„ Robert	C. 39 Eliz., pt. 1, 67.
WILTSHIRE, Alianor, Countess of	C. 17 Hen. VII., 34.
„ Wilts, Henry, Count, and Cecilia, <i>ux. ejus</i>	C. 26 Hen. VIII., 50.
„ Wilts, Earl of, John Powlet	W. 20 Eliz., Vol. 19, p. 38.
WINCHESTER, John, Marquis of	C. 20 Eliz., pt. 1, 19.
„ Agnes, Marchioness of	C. 4 Jas. I., pt. 1, 158.
„ Winton, Agnes, Marchioness of	W. 1-5 Jas. I., Vol. 29, p. 114.
WOOLFRYS, Wolferys, John	C. 4 Edw. VI., pt. 1, 71.
„ Woolfryce, John	W. 3, 4, and 5 Edw. VI., Vol. 5, p. 111.
„ Woullfryce, John, of Marshe in Bloxworth	E. 4 Edw. VI., 939, 6.
„ Wollfryce, William	C. 11 Eliz., 18.
„ Wolfryce, William	W. 9, 10, and 11 Eliz., Vol. 11, 93.
„ Woolfrice, William, gen.	E. 11 Eliz., 953, 10.

WOOLFRYS, Wollfrice, Richard	C. 33 Eliz., pt. 1, 53.
WOOD, William	C. 8 Jas. I., pt. 1, 134.
„ „	W. 7-8 Jas. I., Bdle. 3, 42.
WOODWARD, John	C. 44 Eliz., pt. 1, 140.
WORSLEY, James, mil.	C. <i>v.o.</i> Hen. VIII., 3, 179.
„ „ „	E. 31-32 Hen. VIII., 929, 4.
„ „	C. 4 Eliz., 203.
„ Worselaye, James, of Hamworth, arm.	E. 4-5 Eliz., 948, 10.
„ Worseley, John	C. 7 Eliz., 163.
„ „ Richard	C. 8 Eliz., 161.
„ Thomas	C. <i>v.o.</i> Eliz., Bdle. 1, 108.
„ „	W. 5, 6, and 7 Eliz., Vol. 10, p. 80.
„ Worseley, Thomas, arm.	C. 4 Jas. I., pt. 1, 112.
„ Thomas	W. 1-5 Jas. I., Vol. 29, p. 106.
„ Richard, Sir	W. 11 Chas. I., Bdle. 56, 198.
WROUGHTON, Margaret	E. 12-13 Hen. VIII., 909, 11.
YOUNG, Younge, John	C. 4-5 Phil. and Mary, pt. 2, 13.
„ Yonge, John, gen.	E. 3-4, 4-5 Phil. and Mary, 944, 12.
„ Younge, Thomas	C. 19 Eliz., pt. 1, 18.
„ „ „	W. 12-20 Eliz., Vol. 18, p. 122.
„ „ Johanna, Lady	W. 1 Jas. I., Bdle. 7, 178.
„ „ Thomas	C. 4 Chas. I., pt. 4, 50.
„ „ „	W. 4 Chas. I., Bdle. 45, 180.





Returns of Rainfall, &c., in Dorset in 1898,

WITH APPENDIX OF RAINFALL CONSTANTS AT 104 STATIONS.

By **HENRY STORKS EATON.**

(*Past President of the Royal Meteorological Society.*)



OF fifty-six returns received this year forty-seven are complete for every month, compared with forty-four in 1897. The increase has of late accrued chiefly in South Dorset, now adequately represented. Observers are still wanted for the upper part of Portland, Marshwood Vale, Piddletown, the district north of Dorchester and round Blandford, and some parts of the county in the north and east.

The *Dorset County Chronicle* is the authority for abstracts of the monthly rainfall at Abbotsbury and at Upwey; and General Maclean has supplied an abstract for the new station at Wimborne. The other schedules, except from Bloxworth Rectory, also supplied in abstract, contain a full statement of the daily rainfall. This is as it should be. An abstract by itself is never very satisfactory, and always open to doubt. There is no opportunity for the detection and correction of errors, which even the best observers are liable to make. This year a comparison with the nearest stations proved conclu-

sively that at Hamworthy several days' rain escaped registration after the middle of March. For this omission 0·50in. has been added to the total depth of rain recorded for the month, and 5 to the number of days on which it fell. On yet another occasion an observer had an entry exceeding 1in. of rain in July when no rain had fallen, and in a month when the total rainfall nowhere came up to an inch. Here the mistake, which was readily accounted for, could not have been detected from an abstract. Seeing the time of year the large amount of rain entered in the journal might reasonably have been attributed to a local thunder-storm and escaped notice but for the proximity of other observers.

The approximate position and height above sea-level, &c., of the gauges at the 13 new stations have been ascertained from the most recently published sheets of the 1in. Ordnance Maps.

	N. Latitude.			W. Longitude.			Above Sea.		Diameter.		Above Ground.		Hour.
	°	'	"	°	'	"	ft.	in.	ft.	in.	ft.	in.	a.m.
Abbotsbury, New Barn	50	38	45	2	34	10	111	5	1	6			
Broadway	38	55		28	20		60	5	7	6			
Broadwindsor Vicarage	49	5		47	50		540	5	1	0			
Cheddington Court	50	55		43	40		605	5	1	0			9. 0
Chickerell, Montevideo	36	55		30			150	5	1	0			9.30
Chickerell Rectory	37	20		30	20		170	8		8			9. 0
Dorchester, Wollaston House ..	42	50		26			200	5	1	0			9. 0
West Lulworth Vicarage	37	30		14	50		128	5		1	0		
Lyme Regis, St. Michael's College	43	30		56	30		290	5					
Sherborne, Combe Farm	57	45		32	20		380	5					9. 0
Thornford Rectory	55	5		33	40		175	5		0	11		10. 0
Upwey, Westbrook	39	25		28	25		70	5	1	0			9. 0
Wimborne, Codford	48	10		1	59	20	69	5	1	0			

Observations have been discontinued at East Fordington House. Those at Burstock, Cheddington (Creed), and Martins-town have come to an end through the removal of the observers, and Swanage has lost an observer by the death of Mr. Burt.

Tables I. to IV. correspond with those of the same numbers in last year's report and are similarly arranged.

The year has been a dry one; the summer particularly so. The July rainfall, next to 1885, was the smallest since observations commenced half a century ago. Referred to the 50-year

period—1848-97—the ratio of the year's rainfall ascertained from 41 stations was as 80·7 to 100. The drought, which came to an end on the 28th September, was aggravated by the slight rainfall of the preceding autumn, a time of year when percolation is usually active; and the effects were long felt in the falling off of underground water-supply and the consequent failure of springs and wells. But the needs of vegetation were satisfied by a heavy snow-fall in February and a wet May, while the harvest was well saved.

The snow on the 21st and 22nd of February attained a maximum depth of more than 2ft. in a belt extending across the county from west to east through Broadwindsor, Cattistock, and Bloxworth to Parkstone. It commenced on the afternoon of the 21st, the temperature being above the freezing point, and continued falling about 20 hours. The snow was accompanied by lightning and thunder on the evening of the 21st, though with very little wind, and was wet, dense, and adhesive, preceded by rain on the coast. At Dorchester Water Works 16in. of snow yielded 1·44in. of water; at Parkstone the product of 21in. was 1·98in., the mean of the two measurements being about 11in. of snow to 1in. of water. As the snow upset the routine arrangements of several of the observers, the two-days' fall, entered by some on the 21st by others on the 22nd has been combined in the annexed table, in which is shewn the equivalent depth in inches of water of the snow and rainfall.

	In.		In.
Bloxworth	2·61	Fleet	1·41
Cattistock	2·60	Weymouth	1·40
Burstock	2·50	Steeple	1·43
Martinstown	2·41	Whitelovington	1·28
Blackdown	2·40	Chesil	1·27
Parkstone	1·98	Beaminster	1·25
Cheddington Court	1·91	Chickerell, Montevideo	1·13
Swanage, Victoria Hotel	1·89	Bridport, Portville	1·05
Swanage	1·83	Gillingham	1·04
Bere Regis	1·81	Buckhorn Weston	·97
Wyke Regis, Markham	1·80	Melbury	·97
Steepleton	1·72	Bridport, Coneygar	·93
Whatcombe	1·72	Chickerell Rectory	·89
Wyke Regis, Belfield	1·69	Corfe Castle	·81
Binnegar Hall	1·66	Thornford	·74
Houghton	1·59	Sturminster Marshall	·67
Herringstone	1·57	Chalbury	·60
Cheddington	1·56	Verwood	·59
Dorchester Waterworks	1·55	Wimborne, Rowlands	·55
Horton	1·51	Holwell	·52
Portisham	1·50	Sturminster Newton	·50
Wareham	1·43	Shaftesbury	·21
Hamworthy	1·41	Larmer (Wilts)	·18

In three cases where the gauge was overwhelmed by the snow, and in two others where the amount collected was evidently too small, the depth it attained on the level has been taken into consideration, and other values than those given in the schedules substituted conjecturally. These are at Wareham and Wyke Regis, Markham, +1'00in. each in addition to what was observed, Upwey + '50in. for the whole month, and at Haselbury Bryan the same. At the latter station nothing was recorded between the 21st and 26th inclusive; but the depth of snow is said to have been "fully 2 feet." On the 27th, after rain had fallen, there is an entry of 1'35in. At Burstock the snow was 2½ft. deep. In the above table and elsewhere in this report alterations and corrections are shown by italics. It is assumed from the Dorchester and Parkstone experiments that 1ft. of snow was equal to 1in. of rain.

Rain to the depth of not less than an inch occurred on 14 days, namely on 1 day in February and September, 2 days in November, 3 days in May and December, and 4 days in October. On 4 days the average of all the stations exceeded 1 inch. The wettest day of the year was the 23rd of November, with an average of 1'86in. of rain, followed by '81in. more next day. Next to this was the fall of snow on February 21st and 22nd, equivalent to 1'31in. of rain, an account of which has been given above: then 1'22in. on the 29th of September, and 1'04in. on the 16th of October.

The days and places with not less than 1'50in. were:—May 24th, Melbury, 1'73in. October 16th, Coneygar, Bridport, 1'80in.; Corfe Castle, 1'71; Parkstone, 1'70in.; Hamworthy, 1'62in.; Cheddington Court, 1'50in. and Steeple, 1'50in.

November 23rd, Horton, 2'19in.; Melbury, 2'17in.; Cheddington Court, 2'13in.; Blackdown, 2'12in.; Cattistock, 2'05in.; Haselbury Bryan, 2'05in.; Wimborne, Rowlands, 2'04in.; Chalbury, 1'79in.; Coneygar, Bridport, 1'78in.; Verwood, 1'74in.; Holwell, 1'71in.; Beaminster, 1'65in.; Steepleton, 1'59in.; Houghton, 1'52in.; Binnegar Hall, 1'51in.; Sturminster Newton, 1'50in.

Local thunderstorms were experienced on May 22nd, 23rd, and 24th. On the latter day one embracing a considerable area was developed over the hills of central and north-eastern Dorset. At Larmer, on the border of Wilts, the rainfall was 1'06in. Proceeding westerly, at Haselbury Bryan, it was 1'17in.; Holwell, '85in.; Melbury, 1'73in.; Cheddington Court, 1'14in.; Blackdown, '76in. On the coast, and south of latitude 50° 47' N., the only rain measured was '38in. at Parkstone, '04in. at Hamworthy, and '01in. at Binnegar. In the north the largest falls were '64in. at Gillingham, '60in. at Shaftesbury, '55in. at Buckhorn Weston, and '50in. at Sturminster Newton.

After a fortnight of great heat a succession of very severe thunderstorms passed from the northward in a southerly direction during the afternoon and evening of the 18th of August. Considerable damage was done by the lightning. Rain fell everywhere, but was moderate in amount. The average of all the stations was '33in. The largest falls were '84in., at Larmer, '65in. at Swanage, '61in. at Parkstone, and '59in. at Buckhorn Weston; the smallest '14in. at Portland, '15in. at Wyke Regis and Steeple, and '17in. at Chickerell.

OBSERVERS' NOTES.

BERE REGIS VICARAGE.—The fall on February 22nd, 1'8in., was snow, wet heavy stuff, carefully measured. From May 26th to September 26th, both days included, the fall was only 2'59in.

BUCKHORN WESTON.—February 21st: Snow '90in. This was the actual amount that fell into the gauge. I tested it in another way, and found only '02in. difference more. August 18th: A thunderstorm, which commenced at 2.30 p.m., continued almost incessantly until 10 p.m.

BROADWINDSOR VICARAGE.—October 10th: Lightning and thunder in the evening; 16th, rain 1'72in. North-east and east wind. November 25th: Hail and thunder.

BURSTOCK, HURSEY.—February 22nd: Rain gauge 2½ feet under snow.

CHALBURY RECTORY.—Average rainfall of 33 previous years 31'74in. Average number of days with '01in. or more to record, 164. August 18th: Heavy thunder and constant lightning from 4 p.m. to 10 p.m.

CHEDDINGTON COURT.—Highest reading of the thermometer in the shade in the year was 89° on September 7th.

CHICKERELL, MONTEVIDEO.—On 17 days rain fell less than '01in.

DORCHESTER WATERWORKS.—February 21st: Depth of snow, 16in. = 1'44in.

HAMWORTHY.—July 27th: Thunder.

HASELBURY BRYAN.—February 21st: Snow began to fall about 3.30 p.m. in large flakes. As there was no wind it lay as it fell. The snow continued to fall through the night until 10.30 a.m. on the 22nd. The depth in the Rectory garden on the level was fully 2 feet. The quantity which fell was probably equal to the great fall on March 8th—14th, 1891; but then the drifts were very deep. In 1891 the snow was piled up more than 9 feet at the Rectory gate. February 24th thaw set in and roads were passable. Much damage was done to the evergreens in the garden. Large branches were broken off the cedar trees and evergreens simply by the weight of snow; the damage done in this way was greater than was the case in 1891. Then the snow was blown off; now it rested in ever-accumulating weight as it fell.

MELBURY SAMPFORD.—May 24th: Heavy thunder and vivid lightning. In three hours an inch-and-three-quarters of rain fell. Water courses could not take the water, which overflowed everywhere. August 18th: Thunderstorms at 3 p.m., 9 p.m., and midnight. The lightning was vivid but at some distance.

PARKSTONE.—January: Minimum temperature in the screen 32°·7; mean temperature 6°·3 higher than the average of 15 previous years. February 21st: Remarkable snowstorm commencing about 4.30 p.m. and continuing till 1 p.m. on 22nd, when the depth of snow at the gauge was 21in. The snow, being wet and lying close and very heavy, did an enormous amount of

damage to roofs and greenhouses and telegraph wires and shrubs and trees. August 18th: Very heavy thunderstorm from about 4 p.m. till about 9.30 p.m. December: Mean temperature $6^{\circ}2$ above the average of the 16 previous years. Snow on 3 days in February, 5 days in March. Average rainfall 16 years—1882-97— $30^{\circ}43$ in.

PORTLAND.—June 26th: Thunderstorm.

SHAFTESBURY.—November 23rd: A light fall of snow at 5 a.m., and some snow on the 28th and 29th.

SHERBORNE, COMBE FARM. — August 18th: Lightning, thunder, and very rough wind. November 25th: Lightning and thunder at intervals for about 24 hours.

WAREHAM, BINNEGAR HALL.—February 21st-22nd: Heavy wet snow, mixed fall of rain and snow, causing much damage to the trees on the north-east side, its weight breaking off and twisting the branches. Snow about 1 foot in depth. Thunder and vivid lightning on the evening of the 21st.

WINTERBOURNE HERRINGSTONE.—September 30th: Thunder.

WINTERBOURNE HOUGHTON.—February: Deep snow fell the night of the 21st accompanied with lightning and thunder at times; very little wind. May 23rd: Sharp thunderstorm passed over at mid-day. July 27th: Heavy thunderstorm 3 p.m. August 18th: Thunderstorm afternoon and evening. September 7th: Maximum temperature of the year $85^{\circ}5$; minimum $24^{\circ}5$ on November 22nd.

WINTERBOURNE ST. MARTIN.—My measurement on February 21st-22nd, as recorded, was made by inverting the funnel of the rain gauge over the snow in a place where it was lying quite level for some distance all round, and taking up and melting the contents within the circumference of the funnel. On August 18th there were 3 severe thunderstorms, but hardly any rain fell.

WYKE REGIS, BELFIELD HOUSE.—Hard rain first, then snow. Gauge shewed $\cdot98$ in. rain before snow fell.

WYKE REGIS, MARKHAM HOUSE.—February 21st: Heavy fall of snow. Gauge blocked.

RAINFALL IN DORSET.

TABLE I.—MONTHLY DEPTH OF RAIN IN INCHES IN 1898.

Observer.	Station.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
J. C. P. White	Abbotsbury, New Barn	1.52	2.32	1.76	1.22	3.99	.59	.14	1.12	1.01	3.50	3.35	3.11
Rev. A. A. Leonard	Beaminster Vicarage	.73	2.45	1.60	1.70	3.75	1.05	.14	1.32	1.93	5.49	4.77	4.55
Rev. W. Farrer	Bere Regis Vicarage	.65	2.70	1.08	1.41	3.12	.89	.27	1.28	1.43	3.57	3.93	3.70
F. D. Lys	Whiteleavington	.77	2.42	1.15	1.65	3.21	.99	.41	1.41	1.48	3.82	4.25	4.48
Rev. O. P. Cambridge	Bloxworth Rectory	.72	4.16	1.13	1.62	3.47	1.30	.51	1.49	1.48	4.28	4.32	3.80
H. Gordon	Bridport, Coneygar Hill	.87	1.90	1.73	1.56	3.78	.88	.12	1.37	1.47	5.62	5.03	4.26
H. Gordon	" West Bay Road, Portville	.88	1.92	1.45	1.43	3.09	.86	.14	1.28	1.22	4.58	4.12	3.77
E. Baunton	Broadwindsor Vicarage	1.34	2.19	1.50	1.34	3.93	1.13	.22	1.56	1.24	4.70	3.58	3.90
Rev. G. C. Hutchings	" Blackdown House	.79	3.47	1.36	2.10	4.53	1.35	.21	1.41	1.91	5.44	5.64	5.05
C. E. M. Pinney	Buckhorn Weston Rectory	1.17	2.38	.96	1.85	4.68	1.62	.41	1.60	1.81	3.59	2.99	2.43
Rev. W. H. H. D'Aeth	Burstock Hursey	.79	4.27	1.44	2.25	3.96	1.37	.19	1.53	1.11	3.93	5.18	5.35
H. H. Palaret	Cattstock Lodge	.85	4.58	1.81	1.86	3.65	1.12	.39	1.11	1.93	4.67	4.29	3.70
Rev. G. H. Billington	Chalbury Rectory	.74	1.31	.56	2.07	3.10	.85	.45	1.35	1.33	4.67	5.18	5.35
S. Creed	Cheddington	.94	2.93	1.43	2.33	5.39	1.10	.36	1.11	1.97	4.91	5.17	4.77
G. Jones	Court	.81	3.18	1.16	1.16	3.33	1.10	.36	1.11	1.97	4.91	5.17	4.77
Mrs. Richardson	Chickerell, Montevideo	.67	2.09	1.50	1.06	3.99	.93	.12	1.04	.84	3.80	3.55	3.55
Rev. S. Poole	Rectory	.69	1.98	1.20	.99	3.77	1.02	.15	1.05	.98	3.85	3.26	3.48
L. W. Eike	Corfe Castle, Furzebrook	.67	1.81	1.38	1.46	3.45	1.17	.52	1.74	1.06	5.65	4.50	4.52
G. J. Hunt	Dorchester Waterworks	.89	2.67	1.35	1.55	3.19	1.03	.22	1.47	2.15	5.07	4.18	4.15
Captain J. E. Acland	Fleet House	.86	2.47	1.60	1.24	3.90	.60	.13	1.04	.96	4.16	3.47	3.60
Mrs. George	Gillingham	1.11	2.86	.86	2.22	4.51	1.53	.62	1.49	2.29	3.84	4.30	3.28
S. H. Stephens	Hamworthy	.38	2.14	.92	1.76	2.26	.82	.37	1.32	1.39	4.52	3.40	3.32
A. L. Scott	Haselbury Bryan Rectory	.83	3.88	1.69	1.99	4.87	1.04	.40	1.43	1.47	5.35	5.50	5.06
Rev. Canon R. F. Wheeler	Holwell, Westrow	1.06	2.06	1.14	1.93	4.81	1.25	.55	1.30	1.65	4.28	4.05	3.71
G. Coffin	Horton Vicarage	.72	2.55	.67	1.95	3.18	.86	.39	1.32	1.51	4.61	5.04	3.65
Rev. W. P. Schuster	West Lulworth Vicarage	.72	2.55	.67	1.95	3.18	.86	.39	1.32	1.51	4.61	5.04	3.65
Rev. W. P. Schuster	West Lulworth Vicarage	.72	2.55	.67	1.95	3.18	.86	.39	1.32	1.51	4.61	5.04	3.65
T. B. Blathwayt	Lyme Regis, St. Michael's College	.24	2.42	1.28	...	3.31	1.00	.19	...	1.29	4.49	4.34	...
R. Rintoul	Melbury Sampford	1.24	2.64	1.33	1.36	5.71	1.36	.57	1.46	2.11	5.26	5.21	4.87
E. H. Barnes	Parkstone, Heatherlands	.56	2.84	.94	1.89	3.37	1.19	.62	1.65	1.20	5.37	3.88	3.78

TABLE I.—(CONTINUED.)

Observer.	Station.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
W. Symes	Portisham	1.52	2.48	1.49	1.37	3.63	.91	.24	1.24	1.53	4.32	3.79	3.32
Rev. W. R. Waugh	Portland, Chesil	.46	2.00	.94	1.15	3.24	1.03	.07	1.16	.59	2.75	2.83	2.71
Miss L. M. Harris	Shaftesbury	1.17	2.01	1.22.	1.95	4.76	1.15	.80	1.72	1.96	3.42	4.14	2.99
S. Creed	Sherborne, Combe Farm	..	..	..	..	4.17	1.20	.48	1.32	1.75	4.51	3.86	3.41
T. Tyler	Steeple, Creech Grange	.83	2.89	1.17	1.38	4.21	1.00	.51	1.56	1.50	5.14	4.45	4.24
Rev. J. Cross	Sturminster Marshall, Baillie House	.80	1.58	.91	1.71	3.64	1.05	.58	1.55	1.43	4.73	4.08	3.86
A. R. Hallett	Sturminster Newton, Riverside	1.02	1.78	.66	1.74	3.86	.49	.40	1.31	1.84	4.86	4.18	3.28
Rev. H. Pix	Swanage	.70	2.83	1.02	1.23	3.40	1.30	.20	1.79	1.35	4.29	4.01	3.70
S. A. Burt	" 1, Gordon Villas	.62	2.53	..	..	..	..	..	..	..	..	..	..
H. B. Vincent	" Victoria Hotel	.63	2.81	.98	1.16	3.42	1.29	.19	1.71	1.33	4.14	3.94	3.61
Rev. W. Roxby	Thornford Rectory	.54	2.40	1.01	1.06	3.16	.98	.43	1.06	1.44	4.16	4.07	3.93
A. Ilbert	Upwey, Westbrook	1.38	2.11	1.33	1.65	3.83	1.02	.16	1.50	1.38	4.85	3.68	3.60
W. R. Fryer	Verwood Manor	.57	1.63	.84	1.66	3.82	1.37	.30	1.54	1.30	5.02	5.02	3.75
S. W. Bennett	Wareham	.63	2.75	1.17	1.58	3.25	.97	.52	1.46	1.23	4.50	3.60	3.68
O. C. Farrer	" Binnegar Hall	.61	2.61	1.36	1.56	3.10	1.13	.34	1.48	1.08	4.14	4.52	4.21
L. J. Brown	Weymouth Nothe	.63	1.84	1.53	1.08	3.51	1.11	.13	1.13	1.22	.73	3.42	3.34
Dr. G. H. Batterbury	Wimborne, Cotford	.86	1.70	.91	2.05	3.75	1.43	.92	1.42	1.42	4.95	4.09	3.88
Major-General P. Maclean	" Rowlands	.79	1.51	.73	1.69	3.69	1.23	.53	1.39	1.75	5.65	5.14	4.55
R. B. White	" Houghton Rectory	1.31	2.77	1.33	1.37	3.64	1.00	.25	1.54	1.60	4.97	4.00	3.54
Rev. H. H. T. Bennett	Winterbourne	1.16	2.68	.98	1.66	4.84	1.25	.46	1.22	1.72	4.70	4.94	3.94
Captain J. E. Acland	" St. Martin, Clandon	1.23	3.87	1.72	1.99	3.86	1.04	.34	1.44	2.25	4.70	4.76	4.76
H. Stilwell	" Steepleton Manor	1.06	2.99	1.63	1.72	3.56	1.02	.28	1.35	1.80	4.93	5.16	4.76
J. C. Mansel-Pleydell	" Whitchurch, Whatcombe	.74	2.93	1.12	1.76	3.83	1.19	.42	1.27	1.31	4.07	4.33	4.34
Mrs. Pretor	Wyke Regis, Bellfield House	.66	2.72	1.61	1.08	4.00	1.24	.16	1.26	.95	4.10	3.57	3.66
Rev. G. A. Rideout	" Markham House	.77	2.71	1.62	1.32	4.07	.96	.22	1.28	.92	4.24	3.85	3.78
Sir Cuthbert Peek	Rousdon	.98	2.14	1.45	1.48	3.42	1.05	.23	1.28	1.25	4.81	4.89	3.84
General Pitt-Rivers	Larmer Grounds	1.11	1.92	1.08	2.17	4.92	.81	.47	1.98	1.80	4.27	5.64	4.17
General Pitt-Rivers	Rushmore	1.06	2.28	1.04	2.18	5.09	1.24	.58	1.70	1.63	4.41	5.66	3.93

RAINFALL IN DORSET.

TABLE II.—(CONTINUED.)

Station.	Total.		Greatest Fall in 24 hours.		Days of		Number of Days on which $\frac{1}{10}$ in. or more was Recorded.												Year.
	In.	In.	Depth.	Date.	In. or more.	Only.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
Portsmouth	25.84	1.50		Feb. 21-2	3	24	6	17	15	13	18	9	6	11	7	21	14	16	153
Portland, Chesil	18.93	1.27		Sept. 20	3	18	4	19	14	14	18	12	2	11	4	17	18	12	145
Shaftesbury	27.29	1.58		Oct. 18	3	18	8	20	17	13	20	14	6	14	6	15	20	23	176
Sherborne, Combe Farm	28.97	1.45		Oct. 16	4	1	6	13	8	9	19	8	4	9	4	16	12	12	120
Steeple, Creech Grange	25.93	1.46		Nov. 23	2	30	8	19	13	15	19	12	5	13	7	18	17	15	163
Sturminster Marshall, Bailie House	25.42	1.51		Sept. 29	5	0	5	12	7	9	17	5	3	8	5	14	9	13	107
Sturminster Newton, Riverside	25.82	1.83		Feb. 21-2	3	15	5	19	14	14	18	10	6	10	5	16	16	15	149
Swanage	25.21	1.89		Oct. 16	3	28	4	15	13	14	20	10	6	10	5	19	18	15	149
Victoria Hotel	24.84	1.29			7	27	8	16	11	11	19	12	4	10	5	16	19	20	151
Thornford Rectory	26.49	1.74		Nov. 23	3	11	5	14	13	13	21	13	3	11	6	17	14	14	151
Upwey, Westbrook	26.82	1.40		Feb. 21-2	3	12	7	14	13	12	19	9	5	12	6	18	12	14	141
Verwood Manor	24.74	1.66		"	2	28	5	18	14	15	20	11	5	11	6	20	18	16	159
Wareham	26.14	1.40		"	1	8	4	12	14	12	19	10	5	9	4	18	15	12	134
Weymouth, Nothe	21.92	1.40		"	4	4	4	9	9	9	12	18	9	8	4	16	13	14	117
Wimborne, Cowford	27.98	2.04		Nov. 23	4	1	4	9	9	9	12	18	8	8	4	16	13	14	117
Rowlands	28.65	1.57		Feb. 21-2	5	1	6	14	11	10	19	9	3	12	5	19	13	15	136
Winterbourne Herringsstone	27.32	1.52		Nov. 23	4	5	6	17	12	12	21	9	6	12	7	15	12	12	141
Houghton Rectory	29.35	2.41		Feb. 21-2	4	13	20	17	15	15	19	9	6	13	7	22	17	20	172
St. Martin, Clandon	30.26	1.72		"	4	25	9	20	16	15	19	7	6	14	7	22	17	20	172
Sceptleton Manor	27.31	1.72		"	3	18	9	21	18	15	23	10	10	12	7	17	15	20	177
Whitchurch, Whatcombe	25.01	1.69		"	2	5	3	13	11	8	20	10	4	10	6	20	15	15	135
Wyke Regis, Belfield House	25.74	1.70		"	2	11	7	15	15	15	20	10	6	8	4	20	19	15	154
Markham House				"	2	11	7	15	15	15	20	10	6	8	4	20	19	15	154
Rouslon	26.82	1.77		Nov. 23	4	9	8	19	13	14	19	10	7	13	8	18	16	19	164
Farmer Grounds	30.34	1.82		Nov. 23	5	17	9	15	14	14	20	13	6	14	8	19	17	17	166
Rushmore	30.86	1.87		"	5	0	6	16	11	13	20	11	4	12	4	17	17	16	147

TABLE III.—AVERAGE MONTHLY RAINFALL.

	1898.			43 years, 1856-98.			
	Average of 47 Stations.	Proportionate fall (a). Difference from 43 years average (b).		Days of '01in. or more.	Proportionate fall (c). Do. corrected for inequality of days (d).		
	In.	(a)	(b)		In.	(c)	(d)
January ..	·859	32	- 65	7	3·265	966	938
February	2·449	91	+18	17	2·468	731	796
March ..	1·209	45	- 25	14	2·351	696	693
April ..	1·599	60	- 6	13	2·216	656	663
May ..	3·802	142	+83	19	2·000	592	586
June ..	1·078	40	- 26	11	2·242	664	661
July ..	·350	13	- 58	6	2·403	711	698
August ..	1·382	52	- 27	12	2·671	791	769
September	1·460	54	- 39	6	3·141	930	951
October ..	4·532	169	+51	18	3·986	1180	1162
November	4·219	157	+52	16	3·545	1049	1061
December	3·875	145	+42	16	3·494	1034	1022
Year ..	26·805	1000		155	33·782	10000	10000

TABLE IV.—STATISTICS OF THE TEMPERATURE OF THE AIR, AND OF THE HUMIDITY AND AMOUNT OF CLOUD AT WINTERBOURNE STEEPLETON MANOR AT 9 A.M., FORWARDED BY MR. H. STILWELL.

1898.	Temperature of the Air.							Humidity. Saturation = 100.	Cloud. Overcast = 10.
	In Stevenson Screen.					On Grass.			
	Averages of			Extremes.		Average Lowest.	Lowest.		
	Highest.	Lowest.	Daily.	Highest.	Lowest.				
	°	°	°	°	°	°	°		
January ..	48·0	39·9	44·1	53·1	26·6	35·9	20·0	92	9·7
February ..	47·2	34·8	41·0	52·2	18·1	29·2	11·6	86	6·0
March ..	46·9	32·6	39·5	55·8	25·1	27·0	17·8	81	7·0
April ..	53·4	37·3	45·0	58·2	24·9	30·9	18·0	82	6·8
May ..	57·7	44·0	50·4	71·0	33·5	39·0	26·3	79	7·4
June ..	63·7	47·2	54·9	75·0	35·0	41·1	27·4	77	7·1
July ..	70·2	49·9	59·3	80·2	39·0	43·0	30·0	71	6·1
August ..	69·7	52·1	60·4	81·0	41·0	45·3	34·9	81	7·3
September ..	69·6	47·2	57·9	81·0	31·1	39·8	23·0	78	4·7
October ..	59·0	47·5	53·1	67·0	31·4	40·9	23·8	88	7·5
November ..	51·8	39·0	45·4	60·0	23·3	32·9	15·9	92	7·2
December ..	50·4	40·4	45·6	54·1	25·0	34·1	15·0	88	7·8
Year ..	57·3	42·7	49·7	81·0	18·1	36·6	11·6	83	7·1

APPENDIX.

RAINFALL CONSTANTS AT 104 STATIONS IN DORSET, DEDUCED FROM OBSERVATIONS TAKEN BETWEEN 1848 AND 1897.

Since the publication of "Dorset Annual Rainfall, 1848-92," in Vol. XVI. of the "Proceedings," the steady growth in the number of observers and stations has rendered it both desirable and possible to define the distribution of the rainfall of the county with greater precision than was then attempted. With the additional information gathered in the interval the earlier observations have been incorporated and discussed anew. And a few of the returns, open to suspicion from the first, have been rejected, having proved to be inaccurate on further examination.

A notice of the monthly rainfall at West Lodge, Iwerne Minster, gleaned from the *Dorset County Chronicle*, amounting to 24·08in. for 1854, supports the belief that this year was much the driest of the half-century. The same periodical gives the rainfall for 1853 as 36·57in., not 36·00in. as previously stated, which latter includes only part of the month of December. Changes such as these, though small, have an important bearing on the results when the data are so scanty as they are for the earlier years. In this case they shew that the rainfall at Iwerne Minster was under-estimated, and that 1872 was probably slightly wetter than 1852, hitherto reckoned the most rainy year.

The returns supplemental to the old series are—Langton Herring for the four years, 1875-8, 36·28in., 37·87in., 36·24in., 28·60in.; Seaborough Court, formerly in Somerset, for the nine years, 1874-82, 36·46in., 44·38in., 44·84in., 44·18in., 37·98in., 38·72in., 35·15in., 38·99in., 44·37in. Coming to more recent years, the rainfall at Broadwey from 1894-7, which has not appeared in the annual reports like the returns from other stations, was 40·49in., 31·62in., 27·33in., 37·02in. On the other hand the interpolations for Osmington in 1891-2 have been discarded; also the Haselbury Bryan register from 1888-92 inclusive, and the whole of the Wimborne series, 1875-9, 1882.

The reference stations have been increased to six by the inclusion of Beaminster.

These, with the years of registration at each station, are:—

Church Knowle, West Bucknowle	24	years	1848-71
Melbury Sampford	42	„	1856-97
Shaftesbury	29	„	1864, 1866-92
Chalbury	33	„	1865-97
Osmington	24	„	1867-90
Beaminster	24	„	1873-5, 1877-97

RAINFALL CONSTANTS AT 104 STATIONS IN DORSET.

Deduced from Observations taken in the 50 Years from 1848
to 1897.

Station.	N. Latitude.			W. Longitude.			Rain Gauge above		Observations.		
	°	'	"	°	'	"	Sea Level.	Ground.	Period.	No. of Years.	Annual Rainfall.
	°	'	"	°	'	"	ft.	ft. in.			in.
Abbotsbury Castle Garden	50	39	40	2	36	50	150	3 6	1869-70, 1872-91	22	30.59
Ashmore Rectory	50	57	30	2	7	25	715	1 0	1874-75	2	34.05
Beaminster Vicarage	50	48	35	2	44	35	216	1 0	1873-75, 1877-97	24	38.83
Bere Regis Vicarage	50	45	10	2	13		185	..	1887-92	6	33.17
" Whitelovington	50	44	50	2	13		160	1 0	1895-97	3	32.18
"	50	44	50	2	13		150	2 6	1894-97	4	33.62
Bingham's Melcombe Rectory	50	49		2	19	15	380	1 3	1870-80	11	39.10
Blandford Forum	50	51	20	2	9	50	110	1 6	1864-72	9	34.52
" St. Mary	50	51		2	9	55	135	3 0	1894	1	31.08
Bloxworth	50	45		2	10		150	2 0	1876-85	10	31.24
" House	50	45	10	2	10	20	100	2 0	1886-97	12	33.12
" Rectory	50	45		2	9	50	198	1 6	1885-97	13	34.70
Bridport, Coneygar Hill	50	44	10	2	45	15	110	1 0	1893-97	5	32.87
" Downe Hall	50	44	5	2	45	20	110	1 0	1890-91	2	32.84
" East Street	50	44		2	44	55	50	8	1870-73	4	29.25
" Hill Side	50	43	50	2	44	50	60	10	1871	1	30.73
" St. Andrew's Villa	50	44		2	45		63	11	1856-75	20	30.59
" West Bay Road	50	43	35	2	45	20	10	1 0	1893-97	5	32.71
" West Street	50	44		2	46		..	1 3	1876-81, 1883	7	32.81
Broadway	50	38	55	2	28	20	60	7 0	1894-7	4	33.16
Broadwindsor, Blackdown House	50	49	20	2	51	15	515	9	1895-97	3	38.55
Buckhorn Weston Rectory	51	1	15	2	20	50	285	1 0	1895-97	3	28.51
Burstock, Hursey	50	49	15	2	48	20	500	7	1897	1	41.81
Cattistock Lodge	50	47	25	2	34	35	358	1 0	1888-97	10	42.11
Chalbury Rectory	50	51	40	1	58	20	338	2 0	1865-97	33	31.19
Cheddington	50	50	50	2	43	30	604	1 4	1883-97	15	42.73
Church Knowle, West Bucknowle	50	37	55	2	4	20	160	4 6	1848-71	24	31.38
Corfe Castle, Furzebrook	50	39		2	5	40	147	1 0	1878-97	20	34.53
Dorchester Waterworks	50	42	50	2	27		305	6	1865-72	8	36.44
"	50	42	50	2	27		315	6	1896-97	2	34.20
Encombe	50	36	20	2	5		170	6	1860-67	8	32.08
Evershot	50	50	20	2	36	15	580	1 0	1887-92	6	39.32
Fleet House	50	37	30	2	32	25	48	1 1	1897	1	29.03
Folke Rectory	50	55	5	2	29	10	295	..	1879-80	2	33.25
Fordington House, East	50	42	40	2	26		199	4 0	1896-97	2	35.28
Frome Vauchurch	50	46	20	2	34	10	330	4	1869-72	4	38.85
Gillingham	51	2	20	2	16	35	244	1 2	1879-97	19	33.02
Godmanstone Manor	50	46	20	2	28	35	320	1 0	1894	1	40.27
Hamworthy	50	42	40	1	59	45	12	1 6	1890-97	8	29.20
Hasselbury Bryan Rectory	50	52	25	2	21	10	305	6	1894-97	4	41.77
Holwell, Westrow	50	53	35	2	26		260	1 0	1893-97	5	33.70
Horton Vicarage	50	51	50	1	57	20	135	1 0	1893-97	5	33.07
Iwerne Minster, West Lodge	50	56	30	2	8	50	580	..	1852-54	3	37.48
Kimmeridge, Smedmore	50	36	25	2	6	30	260	4	1870-74	5	30.39
Langton Herring Rectory	50	38	25	2	32	30	153	1 0	1875-96	22	30.39
Langton Matravers	50	36	20	1	59	30	220	9	1890-91	2	30.35
Little Bredy	50	41	50	2	35	5	348	4	1856-65	10	39.51
"	50	41	50	2	35	5	..	1 0	1884-89	6	39.33
Lyme Regis	50	43	25	2	55	10	19	1 6	1866-68	3	33.11
"	50	43	30	2	55	50	146	4 6	1869-75	7	35.13
"	50	43	20	2	56		100	1 1	1885-90	6	33.51
Lytchett Minster	50	44	10	2	1	50	64	1 1	1883-96	14	30.51

RAINFALL IN DORSET.

FLUCTUATION OF ANNUAL RAINFALL.

Average = 100.

Year.	Ratio.	Year.	Ratio.
1848	139	1873	90
1849	102	1874	96
1850	82	1875	116
1851	77	1876	116
1852	142	1877	120
1853	99	1878	95
1854	62	1879	112
1855	72	1880	103
1856	104	1881	109
1857	90	1882	122
1858	83	1883	97
1859	97	1884	89
1860	124	1885	98
1861	97	1886	109
1862	102	1887	71
1863	109	1888	99
1864	71	1889	81
1865	114	1890	83
1866	114	1891	120
1867	97	1892	82
1868	114	1893	79
1869	96	1894	124
1870	72	1895	94
1871	102	1896	88
1872	142	1897	104

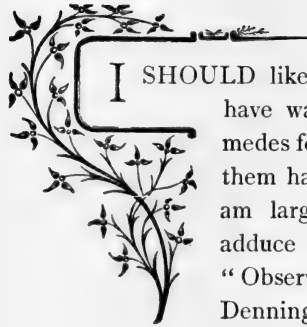




The November Meteors.

By Rev. W. R. WAUGH, F.R.A.S.

(Read December 15th, 1898.)



I SHOULD like to say at the outset that though I have watched for the Leonids and Andromedes for many years my success in observing them has not been considerable, also that I am largely indebted for the facts I may adduce to the classical articles in the "Observatory" by my friend Mr. W. H. Denning, F.R.A.S., a gentleman who has had a larger amount of experience in meteoric astronomy than any English observer, and who has been largely instrumental in reducing this somewhat complex department of astronomy to scientific order and recognition by skilled observers, and for which life work he last year received the gold medal of the Royal Astronomical Society. Also I should mention as authorities to which I am indebted, the writings of Dr. Johnstone Stoney, Professor Herschel, F.R.S., and Mr. Corder, of Bridgewater, who is the Director of the Meteoric Section of the British Astronomical Society. These and some other gentlemen may be looked upon as leading authorities in meteoric astronomy, and they are chiefly responsible for the facts I may present.

The Leonids, which are due in the November skies somewhere between the 13th and 16th of the month, are on the whole the most prominent and interesting of all the meteoric displays during the year. They were not visible in England this year, chiefly owing to cloudy skies, a disappointment that was shared by a large number of observers. This disappointment was felt more keenly from the near approximation of the maximum amount of display, and from the wide currency given to it by the daily Press. We must hope for more propitious circumstances in 1899 and 1900, in one of which years the true maximum will undoubtedly occur. The radiant point of the Leonids is in Dec. $+ 22^\circ$ and R.A. 150° a short distance from the well-known double star γ Leonis, hence the name of Leonids. This point, or rather area, in the celestial vault is the place to which all the trails of the Leonids may be traced. This area in the so-called sickle of the constellation Leo is about 5° in diameter. Dr. Johnstone Stoney, who has paid much attention to the width of this area, states that from the space immediately around this area many of the Leonids come. These meteors he calls *clino* Leonids, and those coming from the more circumscribed space are true Leonids, a somewhat refined distinction, but seeming to indicate that around the central stream of meteors there is a concentric circle of meteors, less prolific than the central area. This suggestion, however, needs verification.

The duration of the shower is another matter still *sub judice*. Mr. Denning thinks November 8th is not too early for some to be seen, and November 20th will not be too late. The denser portion of the swarm enters our atmosphere from the 12th to the 16th, and should be watched for after mid-night, when the sickle of Leo is fairly above the horizon. There are over 20 other radiants in the vicinity of the true Leonid radiant, but they are not so prolific or swift, and are generally smaller than the true Leonids. It needs some attention to distinguish the true from others, and perhaps only experts are quite competent to the task. When the radiant is on or near the meridian, the rush of Leonids is nearer at right angles with the observer, and the trails

are apparently shorter by perspective, some appearing simply as stars with a brushlike or nebulous surrounding. When the radiant is near the horizon the trails of course appear longer.

HISTORIC.

A few words with reference to previous displays may be interesting. There was a grand display in 1799, when Humboldt and Bonpland were travelling in Cumana, in South America, and Humboldt says that on November 11th thousands of bolides and shooting stars appeared during four hours. Bonpland related that from the beginning of the phenomenon there was not a space in the firmament that was not filled every instant with falling stars or bolides. He also says that the meteors left luminous traces or phosphorescent bands behind them. The natives said that the fireworks began at one o'clock. The phenomenon ceased by degrees at four o'clock. Bonpland adds "we still saw some shortly after sunrise;" of course he meant the larger kind, chiefly bolides.

This shower of 1799 was observed at many widely distant stations. It was reported from N. and S. America, Greenland, the Gulf of Mexico, and several places in Germany. The writer from the Gulf of Mexico gives his impressions as follows:—"The phenomenon was grand and awful. The whole heavens appeared as if illumined with sky rockets, which disappeared only by the light of the sun after daybreak. The meteors, which at any one instant appeared as numerous as the stars, flew in all possible directions. They were all more or less inclined towards the earth, and some of them descended perpendicularly over the vessel I was in, so that I felt constant dread of their falling on us."

In the present century the shower in 1833 is perhaps the most notable, when Dr. Lardner records that meteors were so numerous as to attract particular notice.

It was also well seen in 1831 and 1832. I mention this so that too much dependence may not be placed on the calculated maximum, for the previous and following years may, owing to

atmospheric influences, be equally or more favourable. Captain Hammond, who wrote from Mocha, on the Red Sea, states that from one o'clock a.m. until after daylight on November 13th the meteors were bursting in every direction. He says the sky was clear, and the stars and moon were bright. The Arabs told him they had been observing most of the night. This shower was noticed in several other places. M. Tharand, a retired officer of Limoges, stated that on the night of November 11th, the workmen engaged in laying the foundation of a new bridge over the river Vienne, observed the firmament brilliant with meteors, which at first only amused them; but that after some hours the number and splendour of these luminous appearances were so greatly augmented that the people were seized with panic, and so great was their terror that they abandoned their labour and flew to their families, exclaiming that the end of the world had arrived. Some of these people declared that they saw streams of fire, others that they beheld bars of red-hot iron crossing each other in all directions, others that they observed an immense number of flying rockets. All agreed that the phenomena were diffused over every part of the firmament, that they commenced at eleven o'clock, and continued until four the next morning. This display of 1832 was also seen in various places, from the Mauritius to Switzerland. Dawes, a well known English astronomer, says that on the same date in 1832, most astonishing brilliant meteors were seen from the east with little intermission for about an hour, when a thick fog supervened.

But in 1833 the Leonid shower attained its maximum on November 12th, and presented a spectacle the brilliant character of which it is difficult to describe. The terms "prodigious," "stupendous," "magnificent," and "splendid," have been freely employed to convey an idea of the effect produced. Denning says that mere words must always fail to paint in sufficiently vivid colours the real aspect of this great natural phenomenon. At Boston, in the U.S.A., the display continued during seven hours, and it was estimated that 240,000 meteors were visible. This night, the 12th, appears to have been cloudy in England, and

nothing unusual was seen ; but along the eastern coast of America, from the Gulf of Mexico to Halifax, the shower was well observed, and the rising sun could not blot out all traces of the phenomenon, for large meteors were seen now and then in full daylight. The meteors were most frequent at about five in the morning, November 13th, when the number falling was considered to equal one half the flakes filling the air during an ordinary snowstorm. One observer estimated that during the two hours from four o'clock to six o'clock, about 1,000 meteors per minute might have been counted. Within the scope of the eye more than 20 could be seen at a time shooting in every direction. Not a cloud obscured the broad expanse, and countless numbers sped their way across it in every direction. Their coruscations were bright, gleamy, and incessant, and they fell thick as the flakes in the early snows of December. One was seen which left a path of light, clearly discernible for more than ten minutes after the ball had exploded. We may somewhat discount this fervid American description of this marvellous meteoric display ; but similar accounts are on record of observations from the West Indies to Canada. The negroes in Carolina thought the end of the world had arrived.

During this brilliant display the fact that the meteors radiated from a common centre in the constellation Leo was distinctly manifested, and the position of this centre was accurately ascertained by Olmsted and Aiken. On November 12th or 13th, in 1834, 1835, 1836, 1837, 1838, 1839, an unusual number of meteors were seen and recorded by skilled and reliable observers. So that the display of 1833 may well be regarded as the period when meteoric astronomy was founded, and observing them might be regarded as an assured part of the science. It was suggested about the same time that myriads of meteors are revolving around the sun, intersecting the orbits of the several planets at all possible angles. This suggestion by Mr. Herrick has been fairly well established, and recognised by all competent astronomers, and will probably be reduced to comparative exactness as time passes.

It appears from well-authenticated records that after 1839 the Leonid shower virtually disappeared. As time drew near its expected recurrence in 1866, the interest in it revived. The display fully answered expectation, as many of us can testify. The display as seen in England in 1866 was indeed magnificent—100 meteors per minute were recorded by some observers. There were showers of considerable brilliance in America in 1867 and 1868. . . . Though clouds impeded these observations in Greenwich and other places, Mr. Denning gives a list of 35 places and observers where the showers of meteors in 1866 were conspicuous. One of these records is by Mr. G. J. Symons, who lately visited this County Club with reference to rainfall. He estimated that he saw 8,000, the time of observation being from eleven p.m. to nearly five a.m. Professor Schmidt, of Athens, reported 10,602. At Greenwich Observatory 8,786 were reported as seen between nine p.m. and five a.m.

The reports from various parts of America show similarly large numbers. In the east the numbers reported are not nearly so high. Nearly all these tabulated reports are for November 13th, 1866 or 1867 and 1868. It may be fair to infer from this that for the next three or four years we may expect large and possibly fine displays. With diffidence as seemingly opposed to the current views of experts I am inclined to think that the maximum will be nearer 1900 than 1899, for it is conceded that planetary attraction may retard the maximum.

It is from the credited data of these successive maxima that Professor Adams and Professor Schiaparelli, Professors Peters and Le Verrier, and Professor Newton calculated the orbit of the Leonids, and showed that it was identical with that of Tempel's comet, and concluded that the Leonids are probably largely due to the disintegration of the comet. This opinion meets with increasing acceptance from competent authorities.

Professor Kirkwood, of Indiana, who has made this matter a subject of special research, states as follows:—

1. That meteors and meteoric rings are the *débris* of ancient but now disintegrated comets, whose materials have become distributed around their orbits.

2. That the separation of Biela's comet as it approached the sun in December, 1845, was but one in a series of similar processes, which would probably continue until the individual fragments would become invisible.

3. That certain luminous meteors have entered the solar system from interstellar space.

4. That the orbits of some meteors and periodic comets have been transformed into ellipses by planetary perturbation.

5. That numerous facts, some observed in ancient and some in modern times, have been decidedly indicative of cometary disintegration.

The Planet Uranus is credited by competent mathematicians with having first drawn the group of Leonids into our system, and that by virtue of its attraction its parabolic orbit was changed into an elliptic one, with the sun in one of its foci; hence it became a member of the sun's family. The attraction of Jupiter and Saturn has also something to do with the present form and plane of its orbit, and with its intersection with the orbit of the earth.

There are several questions of interest to be settled by careful observation, such as the *duration* of the shower. Perhaps November 7th is not too early, and certainly November 20th is not too late; but great care must be taken that those seen earlier or later than the above dates are true Leonids. Then there is the *exact* position of the radiant point, by no means yet satisfactorily fixed. Then there is the *width* of its *area*. Then there is the *mobility* of the radiant, still a moot question among experts. A few words about the radiant. Professor Adams fixed it at $149^{\circ} 12'$ R.A. and $+ 23^{\circ} 1'$ in Dec. This is generally accepted, though only derived from 7 values. Denning's radiant, derived from 70 values, is nearly the same.

Visible aspects of the Leonids as given by accredited observers:—

Denning says: "These meteors display different features according to the varying conditions under which they are presented, and according to their size. There is no doubt that the individual particles show a great dissimilarity as regards their real dimensions. During an abundant shower of Leonids the smallest meteors visible to the eye are found to be interspersed with occasional fireballs of the largest class. The fireballs will burst out with lightning-like flashes, illuminate the sky and landscape, and leave dense streaks, enduring in different cases from one minute to several hours. Apart from actual differences in size, the meteors exhibit peculiarities of appearances depending on the elevation of the radiant and on their apparent position relatively to that focus. When the radiant has just risen the meteors appear to traverse extraordinarily long flights, their directions being nearly parallel to the earth's surface, and are presented to the observer under the greatest possible angle; on the other hand, when the radiant is near the meridian, the tracks are much foreshortened by perspective. With the radiant on the horizon the tracks will generally be 40° or 45° long, while they will not average more than 10° or 12° when the sickle of Leo is culminating. Meteors which appear near the radiant are very short, their lengths decreasing the nearer they are to that centre. As a rule the brighter the meteors the brighter the streaks and the longer their duration."

E. J. Lowe, of Nottingham, says: "The great number of large meteors on or near the S.E. horizon were orange-red, while those between Leo and the north were white."

T. Crumplin, observing in London, says: "Some were of a gold or copper tint; but the great majority were brilliant white or blue, resembling the electric light. Sir Thos. Maclear speaks of them as orange coloured leaving streaks of green."

A. S. Herschel, of Glasgow, says: "A frequent colour of the nuclei was a ruddy yellow, and the streaks of pale green."

James Challis, of Cambridge, says: "There was a blue or green appearance of several of the streaks with heads of a ruddy colour."

R. Grant, of Glasgow, says: "The colour of the streaks was invariably of a bright emerald green."

J. Birmingham, of Tuam, says: "The nuclei were generally red or of a deep orange, while the streaks were greenish or bluish."

Mr. Corder, of Bridgwater, describes those seen in 1896 as yellow with green streaks.

Magnitudes spoken of as comparable with the stars or planets:—

Mr. Symons said that the largest were not twice the size of Sirius in 1866; but many observers fully reliable speak of individual meteors as many times brighter than Venus, and in a few cases as half the diameter of the moon.

Mr. Baxendell, of Manchester, wrote that out of every 100 meteors 10 were above the 1st mag. The brightest of these were two or three times the brightness of Sirius. Mr. Wood, of Birmingham, estimated that in 1866 the average size was nearly that of Mars, then shining, which many of the meteors resembled, and that a small proportion were equal to Jupiter and one exceeded Venus at her greatest brilliancy. All the above are not American observers.

We close with a few words concerning the Andromedes seen from November 22nd to 29th; unhappily not seen this year in England owing to cloudy weather.

The Andromedes have a period of about $6\frac{1}{2}$ years. It furnished a shower of about 2,000 meteors in December, 1798, and recurred brilliantly in 1838, also in December. In 1872 and 1885 in each year on November 27th very abundant showers were observed, and also in 1892 on November 23rd. At Princeton, in the U.S.A., more than 20 meteors per minute were counted between 10 and 11 p.m. Bredichin says that the difference of four days between the showers 1885 and 1892 was brought about by perturbation due to the planet Jupiter, which caused a recession of the node to the extent of a little over 4° . The Andromedes are totally different from the Leonids, for the Andromedes move more slowly, having virtually to overtake the

earth in its orbit, and they leave trains of yellowish sparks. The radiant is visible all night, being circumpolar in our latitude. It is probable that the display this year would have been considerable; clouds, alas! prevented.

Permit me to call attention to the lunar eclipse on 27th inst. The time of observation is convenient—the first contact with the umbra being at 9h. 47·8m., the total phase commencing at 10h. 57·4m., the end of the shadow being 13h. 36·4m. G.M.T.

A few short reports of observations would probably add to the interest of the February meeting of the Field Club.

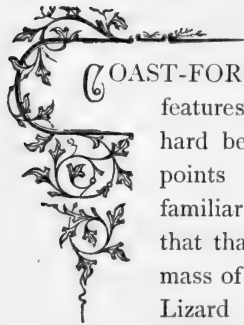




Coast Changes.

By **W. WHITAKER, Esq., F.R.S.**

(Abstract of Address spoken March 9th, 1899.)



COAST-FORMS really depend upon the geological features of the country. It is where there are hard beds not easily worn away that prominent points are noticeable. The Land's End is a familiar instance. The reason of its existence is that that particular district is composed of a hard mass of granite that does not erode quickly. The Lizard also projects because of tough masses of serpentine and associated rocks. In short, wherever there is a protuberance on the coast we may be sure that there is a consolidated rock, and wherever there is a hollow it is due to soft rock which is easily eroded.

In the south-east of England, near the mouth of the Thames, the projecting point in Kent is formed of the chalk. Chalk is not a hard rock, but it is firm and compact, and not easily worn away. This illustrates the fact that the determining cause of prominence is not simply the hardness of a particular rock, but its relative hardness in comparison with the adjacent rocks. Thus, if a soft limestone is found associated with clays and sand, the

limestone will project ; whereas if rocks much harder than limestone are adjacent to the limestone, the latter will be worn away, leaving the harder prominent.

England is a country particularly favourable for a study of this kind, both on account of its most varied rocks and on account of its great length of seabord. Along the coast we notice a very irregular outline ; and probably there is no other part of the world which shows such a variety of rocks and such a length of seabord for a comparatively small area. What are the processes which cut the land back in the irregular form which the coast presents ? The popular belief is that the sea is cutting away the cliffs and wearing back the land. That is poetry, not prose ; not the real fact. The sea really does little in this way, except where the rocks are very hard and the sea washes right up to them, and there it does undercut them. But that is not so with soft rocks. On the majority of our cliffs there are slips, and the cliffs are worn away mostly not at the bottom, but at the top.

The two most familiar outlines of a cliff are what Ruskin has described as the " wall above slope " and the " slope above wall." The cliff is not worn away so much by the sea (except where caves are hollowed out in the hard rock) as by the continuous action of rain, frost, and sun, those changes in the weather that cause alternate expansion and contraction, and thus lead to the cracking of the rocks. The work of the sea is usually the work of a carrier. The softer beds slip and fall down the slopes, and the sea washes the material away as it is brought within its reach. When the support of the upper beds is washed away there is again a fall, and generally during heavy gales the lower talus is swept away.

Some coasts go very slowly. For example, on the Cornish coast an old map shows nearly the same outline as at present ; but if we come to our Dorset coast and compare the same old map with the new six-inch ordnance map we can see that there is hardly a place where some appreciable fraction of an inch of the old map is not gone. It is important that these changes

should be recorded, and I wish that some of the Members of the Club who live near the coast would walk out sometimes with the six-inch map and record any changes that have taken place, and any fresh slip of importance that occurs. It is only by such work of recording that we can get to know how the coast is going.

Flower's Barrow, near Lulworth, an old British camp, illustrates how the cliff has wasted away, for half of it has disappeared over the cliff, and there can be no doubt that the ancient Britons who constructed the camp made it on ground that sloped down southward as well as northward. In all probability there will be less of it in a few years. This loss of land has an economical aspect, for there are cases on the east coast where whole villages have utterly disappeared before the encroachment of the sea. At Eccles, in Norfolk, a church built at a low level on the shore has been overwhelmed by blown sand. The same thing has happened in Cornwall, where we find church towers covered with blown sand.

The council of the British Association are considering the advisability of memorialising the Admiralty to get the Coast-guard to record the state of the coasts and report what changes are going on. By this means one will be able in the future to obtain prompt and accurate measurements. [Since this address was given that Council has approached the Admiralty with success.]

In the Wash we have a distinct record of an opposite kind, namely, how the land has grown. The Wash is silting up. An indication of this is that a Roman wall which used to protect the land from the inroads of the tide is now dry and about a mile inland. While I was living at Lynn the land increased in one place by two square miles, but this was done, not by the agency of Nature alone, but by that powerful coalition, Nature aided by man. Some say that the land recovered from the sea makes up for the land lost. Possibly it does in area, but not in height, for the land lost is far above high-water mark, whereas of necessity the land recovered is below high-water, and would,

generally speaking, be flooded again but for the banks raised to protect it. Another notable instance of the land gaining on the sea is to be seen at Dungeness, where an enormous mass of shingle, larger than the Chesil Beach, because broader, has been deposited.

In the matter of coast-protection it is of primary importance to study Nature's methods, for if one does anything contrary to Nature she will bowl one out; but we observe that Nature often builds up banks of shingle to protect a coast, and if we go to work properly we can help Nature to a considerable extent, and make her work stronger and more lasting. We get to know that along most coasts there is a definite line of travel taken by the shingle, and along the Dorset coast it is distinctly from west to east. We cannot make it travel the other way, and if we want to protect the coast in some place we should give Nature every opportunity to pile the shingle up. If any schemes are framed for protecting a coast they ought to be fairly comprehensive, for they could be much more effectively and economically carried out on a large scale than by isolated local efforts. I deprecate the removal of shingle from the coast, by which the coast is robbed of the barrier erected by Nature for its protection. This is a thing which ought to be stopped, except in some places where no harm could be caused.





The Influence of
Phoenician Colonization, Commerce, and
Enterprise on England
Two Thousand Years Ago.

By EDWARD CUNNINGTON.

(Read August 13th, 1896.)



ANTIQUARIANS are, perhaps, inclined to revel in many thousands of years long passed away, and I will venture to bring my starting point before the members of the Dorset Field Club by making a quotation from the beautiful words of Bishop Heber, in his poem on Palestine—

When Tyber slept beneath the cyprus gloom,
And silence held the lonely woods of Rome ;
Or ere to Greece the builder's skill was known,
Or the light chisel brush'd the Parian stone ;
Yet here fair Science nurs'd her infant fire,
Fann'd by the artist aid of friendly Tyre.
Then tower'd the palace, then in awful state
The Temple rear'd its everlasting gate.
No workman's steel, no pond'rous axes rung ;
Like some tall palm the noiseless fabric sprung.
Majestic silence ! then the harp awoke,
The cymbal clang'd, the deep-voic'd trumpet spoke,
And Salem spread her suppliant arms abroad,
View'd the descending flame, and bless'd the present God.

The conquest and partition of Palestine by Joshua was B.C. 1444. In Joshua, chapter 24, we have an account of the nations that fought against the Israelites—viz., “the Amorites, and the Perizzites, and the Canaanites, and the Hittites, and the Girgashites, the Hivites, and the Jebusites.” These were all driven “out from before you.” One of the expelled nations, according to the Jewish commentaries of Maimonides, was “the nation of the Girgashites who retired into Africa fearing the power of God.” There is a statement of Procopius, the eminent Byzantine historian of the sixth century, which tells how the Phœnicians fled before the Hebrews into Africa, and spread abroad as far as the Pillars of Hercules, and “there they still dwell and speak the Phœnician language, and in Numidia, where now stands the city Tigisis, they have erected two columns, on which, in Phœnician characters, is the inscription as follows:—‘We are the Phœnicians who fled before the robber Joshua, the son of Nun.’”

Suidas, who wrote about the tenth century—the author of a lexicon valuable for its extracts from ancient writers whose works in many cases have perished—also confirms this statement, using the word Canaanites instead of Phœnicians.

Part of the sea boundaries of Phœnicia were Tyre and Sidon, and the Sea of Acre; called in the 19th chapter of Joshua “Great Zidon” and “the strong city Tyre.” Their inhabitants were the first manufacturers of glass, which they made from the sands of the rivers Belus and Kishon, which flowed into the Bay of Acre. About 430 years after the partition of Palestine, or B.C. 1014, Hiram, King of Tyre, was sending the cedars of Lebanon in floats by sea to the place appointed by Solomon for building the temple; whilst Hiram, an eminent architect of Tyre, was employed in the stonework thereof. “And they brought great stones, costly stones, and Solomon’s builders and Hiram’s builders did hew them, and the stone-squarers; so they prepared timber and stones to build the house.”

Professor Rawlinson well describes the characteristics of the Phœnicians. He says: “Here it was—at Tyre and Sidon—that

the Phœnician character developed, especially that trait by which it is commonly known to the world at large—a genius for commerce and industry, a passion for the undertaking of long and perilous voyages, an adaptability to circumstances of all kinds, and an address in dealing with wild tribes of many different kinds, which has been rarely equalled, and never exceeded.” Again he says: “They left long intervals of space between one settlement and another, boldly planted them on barbarous shores where they had nothing to rely on but themselves, and carried them into regions where the natives were in a state of almost savagery. The commercial motive was predominant with them, and gave them the courage to plunge into wild seas and venture themselves among even wilder men. These mighty Phœnicians seem to have carried everything before them.”

Utica, 20 miles north-west of Carthage, was founded B.C. 1101. Malta was colonised by them B.C. 1000, and here was the famous temple of Hagir Kim. Mr. Flinders Petrie, in his interesting book on Lachish, mentions the stones in this temple as having the same pock markings as those of the trilithons at Stonehenge. Carthage was founded by Queen Dido, sister of Pygmalion, King of Tyre, B.C. 853.

The Carthaginian commerce was immense, northward to the Cassiterides or Cornwall for tin, and even to the amber-producing coasts of Northern Europe. They had 200 vessels of war, and in the first Punic war 350, with 150,000 men.

At Tingis and Lixus, both in North-West Africa and nearly opposite to Gibraltar, were two temples; parts of the stone walls of Lixus still remain, the blocks are squared and carefully dressed, some of them 11 feet long and 6 feet in height, arranged in horizontal courses without cement.

Cadiz, in Spain, is one of the most ancient towns in Europe, having been built by the Phœnicians 1100 B.C., under the name of Gaddir or fortress. It afterwards came into the hands of the Carthaginians, and there are known coins of the old Phœnician period, made of copper, and bearing the head of the Tyrian

Hercules or Melcarth on the obverse, and on the reverse one or two fish with a Phœnician inscription in two lines, the lower line in Hebrew characters HAGADIR, the Phœnician form of the city name. It was of immense maritime importance, having by its position an almost exclusive commerce with the Northern Atlantic, with the western coasts of Spain and Gaul, with Britain, North Germany, and the Baltic. Its size was moderate, not quite three Roman miles in circumference, this space not being crowded, as so many of its citizens were always absent at sea.

The Phœnicians were an eminently religious people, as shown in many parts of the Bible, where their gods and sacrifices "in their high places" are mentioned. Their gods are Kronos, or Saturn who is the Moloch of the Canaanites, or Baal, supposed to be the sun as the chief power of Nature. The latter they worshipped. To him they had recourse by propitiating him with human sacrifices, sometimes of captives taken in war, at other times—as the most acceptable offering—of the best children of the noblest citizens. The Tyrian Hercules was the patron deity of the mother city and all its colonies; the Phœnician name was Malcarth. The female deity associated with the last named is Astarte; she was sometimes identified with Vesta, sometimes with Diana on account of her symbol the crescent moon, and sometimes with Venus on account of her worship, which was celebrated with the utmost abominations. Malcarth, who corresponded with the Greek Hercules, was held in special honour, and missions with offerings were sent at regular intervals to his great temple at Tyre. The Phœnician people showed extraordinary reverence for their gods; in every city the temple was the finest building; their coins bore religious emblems. At Gades, or Cadiz, the everlasting light was kept burning in the temple; and Herodotus says of his visit to Tyre, "My attention was attracted by the various rich offerings in the temple at Tyre; particularly by one pillar all of gold, and another of emerald, which by night shone with amazing splendour."

We have frequently heard how terrible was the mode of sacrificing infants and children to Baal, Moloch, or Chemosh, but it was not restricted to the young; in fact, the more valued or beloved the offering was the more acceptable to the gods it was considered to be. In the third chapter of the second book of Kings we read how in the days of Jehoshaphat, King of Judah, when he and the Kings of Israel and Edom were fighting against the King of Moab, the latter was so hard pressed that "he took his eldest son, that should have reigned in his stead, and offered him for a burnt-offering on the wall."

About B.C. 311, Agathocles, the tyrant of Syracuse, besieged Carthage, and it is said that 200 children belonging to the best families were slain to propitiate the god Moloch or Baal Hammon. In his temple burned a furnace, into which human victims were cast. A true cremation!

In Mr. Harper's very interesting book, "The Bible and Modern Discoveries," he says on page 112—"Scattered all over the Sinai peninsula are rude stone buildings, which the Arabs say were erected by the Israelites to protect themselves from mosquitoes. They call these stone buildings Nawamis. They are rude in construction, circular at base, rising like a cone, and having a very small entrance door." The beehive huts in Portland seem to be identical in construction with them.

Mr. Harper says that "stone circles, like the so-called Druidical circles, are frequently found." Writing about the examination of the ruins of Heshbon, on page 124, he says—"On the hilltop they found the oldest stone monuments as yet found in Syria. Cromlechs were numerous. Ruins of a cairn with a circle of stones of moderate size surrounding it—the circle 40 feet in diameter. Lower down the hill another circle, 200 yards in diameter, consisting of two rows of stones, with an interval of eight feet between them. There is a second group of cromlechs on the north side of Wady Heshbon, about a mile away. All these, 16 in number, are so placed as to obtain a view of the hill east of them; and all are placed on the east slope, none on the west. All this points to the fact that Heshbon was

a sacred mountain, and that the cromlechs were built facing it, in positions whence the sacred centre might be seen with the sun rising behind it."

The orientation of Stonehenge is admittedly similar to the work at Heshbon just mentioned.

The Bible makes many references to the modes of worship of the gods of the Canaanites, Chaldeans, and other neighbouring nations of the Israelites, and very naturally so. In the book of Job, chapter xxxi., verses 26 and 27, are distinct references to the earliest form of idolatry known in the world in the time of Job, about B.C. 1520—"If I beheld the sun when it shined, or the moon walking in brightness; and my heart hath been secretly enticed, or my mouth hath kissed my hand." Dr. Kitto's observations on these texts seem so confirmatory, and so in accordance with what I have written, that I copy them as follows:—"This earliest idolatry is supposed to have originated with the Chaldeans. At first the sun and moon were worshipped in the open air, and their altars blazed upon the mountains. But in time symbolical representations and statues were introduced, as supplying their place when absent, temples were erected, gods were multiplied, and the actual worship of the heavenly bodies more or less ceased, for still lower depths of idolatry. The Persians worshipped the sun and the elemental fire, and when they had temples, it was merely to preserve the sacred fire from extinction."

In Chronicles, Book II., chapter xxviii., verse 4, "Ahaz sacrificed also and burnt incense in the high places, and on the hills, and under every green tree." Dr. Kitto here observes—"The interpretation of 'the high places'" in the Scriptures is precisely that which their frequent mention would spontaneously suggest to any reader. This is, that they were such rude altars erected on conspicuous spots, often on the tops of natural hills or artificial mounds. That altars or other sacred stones marked these high places is obvious from the phrases expressing erection or setting up. In the "Monumentorum Danicorum" of Olaus Wormius we see at page 8 a sacred hill crowned by a cromlech,

while below a circle of stones runs round the hill, which itself stands within a square of Druidical stones. In another place, page 35, a similar hill similarly enclosed has two circles of stones, one around the base and the other about one-third below the summit. Our Agglestone, in the Isle of Purbeck, may be regarded as a remarkable monument of this class. Of the Agglestone a figure is given in reference. Agglestone is from the Saxon "Halig-hon"—viz., Holy home.

In 1849 excavations were made into the centre of Silbury Hill, in Wiltshire, on the ground level. The tunnel was excavated on the original turf, which was plainly visible to the centre. This I had the pleasure of seeing at the time. Dean Merewether, in his "Diary of a Dean," says—"That so far as is yet known Silbury Hill was not a sepulchral tumulus." Was it one of the high places for sacrificing to Baal? Marlborough Mount is a similar erection. Both, I believe, have been well searched for remains of burials, but in vain. What were those artificial mounds made for? The Rev. W. Barnes, in Vol. IV., page 125, of the Dorset Field Club, suggests that the two mounds were for British Cor. or Court Mounds, or court of common law. But he seems to forget that on these originally sharp-pointed cones would have been space for very few except the judge or chairman. Now sacrificial fires lighted here could be seen for many miles round from the surrounding country. The temple of Hercules at Gades, or Cadiz, is mentioned by Strabo. He says that an unextinguished fire had burnt upon its altar for thirteen hundred years. Silbury Hill is only three-quarters of a mile from Amesbury, where is situated the largest megalithic structure in Britain, consisting originally of a circle of 100 large blocks of stone placed on end, with two smaller circles within. These stones vary from 5 to 20 feet in height. Dr. Stukely, in 1740, published his "Stonehenge and Abury, two Temples restored to the British Druids." If he had said restored to the British Phœnicians, he would, I think, have been nearer the mark.

Solomon looked for "the artist aid of friendly Tyre to make the noiseless fabric of the temple spring" nearly 3,000 years ago,

and we can learn a little of how the business was then managed, and probably for many years before and after, by the Phœnicians wherever they went. He employed 153,600 Canaanites, of whom 70,000 were bearers of burdens and 80,000 hewers of wood and stone, and 3,600 overseers. The Phœnicians were great slaveholders and dealers in slaves wherever they went. In all their colonies, whether in any part of the Mediterranean, North-West of Africa, or in Spain, France, or England, we find vestiges of their wonderful work of building in stone.

I must again quote the words of Mr. Flinders Petrie from his book on "Tel el Hasy, or Lachish." "This same peculiar dressing (of the Lachish stones) is that of the stone work of the temple of Hagir Kim at Malta. This temple is called Phœnician, and what lends some support to this is, that just the same system of stone tables, each in two blocks, placed around the inside of the enclosure, is to be seen in the sacred enclosures of the villages in Philistia to this day. The same pock dressing is that of the wrought stones at Stonehenge, the best examples of it being on the flat tops of the uprights of the great trilithons."

The Phœnician discovery of the Cornish tin mines must have brought about a grand era of industrial activity and influence of the most extended kind. Professor Rawlinson says that the tin of the civilised world was almost wholly derived from this quarter. The tin had not only to be extracted from the mine, but purified and made into ingots for export. Some of these ingots have been found, showing to a certain extent the route of their export. With their enterprising commercial spirit they must have been penetrating to all parts of this country wherever trade of any kind could be done, and naturally employing the natives in all parts to carry out their enterprises.

Since the foregoing was spoken in 1896 I have seen dug out, in 1898, another of the beehive huts at Coomb Quarry, Portland.

This hut was 5 feet in diameter, with an arched entrance of 8 feet long; the walls all of 9 inches thickness. In it were found a pestle and mortar—now in the Dorset Museum—and three

pieces of well burnt black pottery. In another part of Portland I have lately found several fragments of very finely cut stones for grinding corn. When complete these stones are 7 inches in diameter and 3 inches in thickness; the rounded edge beautifully carved. They were made of the hardest flint, and were used by the hand alone in grinding corn on a large flat stone surface.

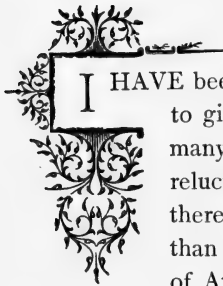




Athelhampton Hall.

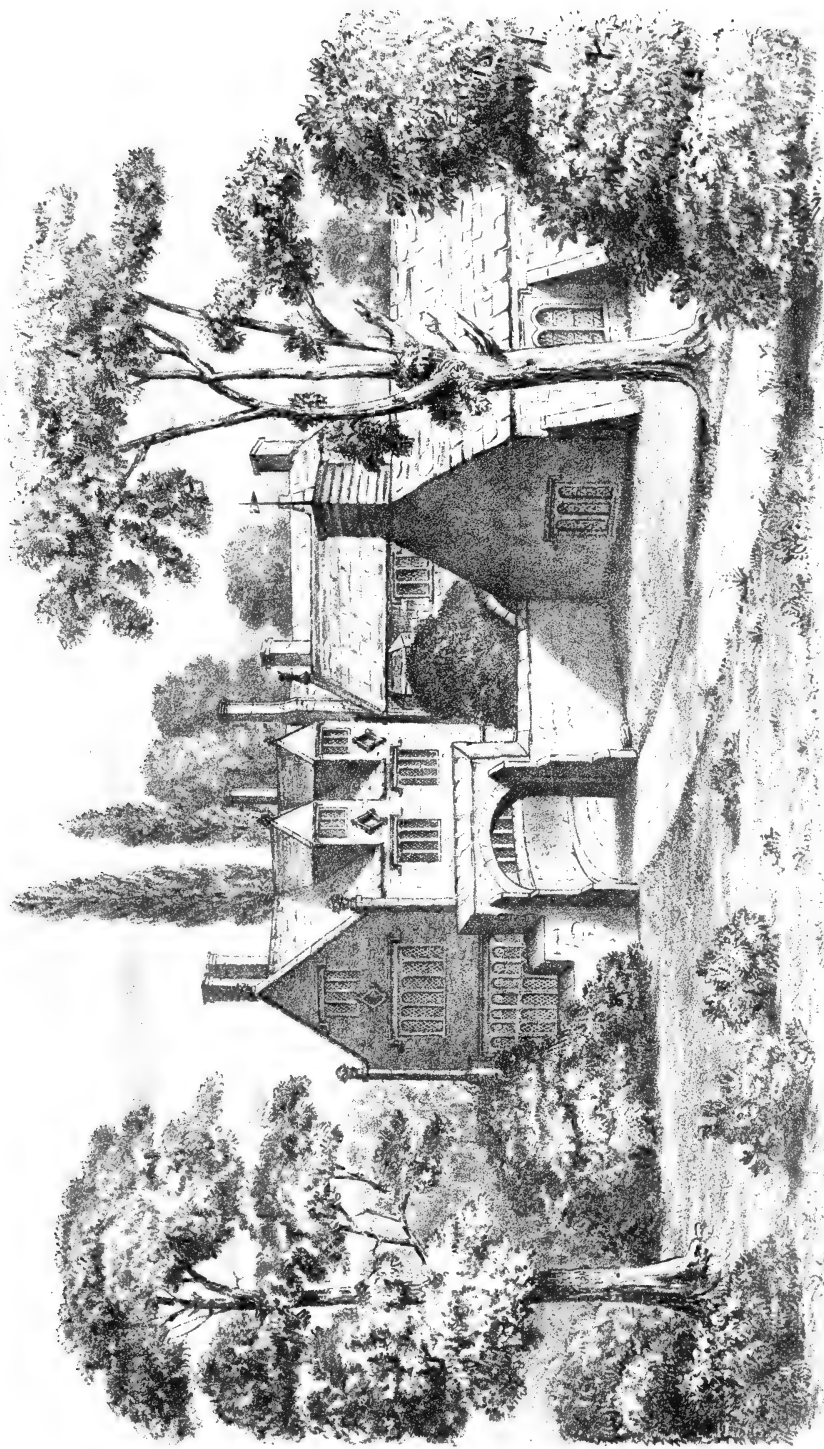
By **A. De LAFONTAINE, Esq.**

(Read August 9th, 1899.)



I HAVE been asked by our excellent Honorary Secretary to give you some account of this house and its many points of interest. To this request I very reluctantly consented, for I cannot but feel that there are many present who are better qualified than myself to speak on the architectural beauties of Athelhampton and its history, both from a greater knowledge of the period, and also, most certainly, from a longer acquaintance with the place. However, with your kind indulgence, I will do my best, prefacing my remarks with the assurance of the great pleasure it gives me to welcome the Dorset Field Club here to-day.

The origin of the name Athelhampton, or more correctly Athelhamptan, is somewhat uncertain. Coker, in his "Survey of Dorsetshire," says "the veri name intimates nobilitie," and thus, even though the old tradition of its being King Athelstan's residence be thrown overboard, there remain the three Saxon words—**ATHEL** (noble), **HAM** (habitation), and **STAN** (denoting the superlative degree) to intimate a sufficient degree of eminence. Hutchins thinks it probable that Athelhelme, one of the Saxon



OCTAVIUS PICKARD,
ART. 22-1846.

ATHELHAMPTON. — BEFORE REMOVAL OF CHURCH, ENTRANCE ARCHWAY, AND GATE-HOUSE.
from Sketch by Rev. Octavius Pickard — Cambridge. in 1846.

W. Parlane & Evans Lith. Lond.

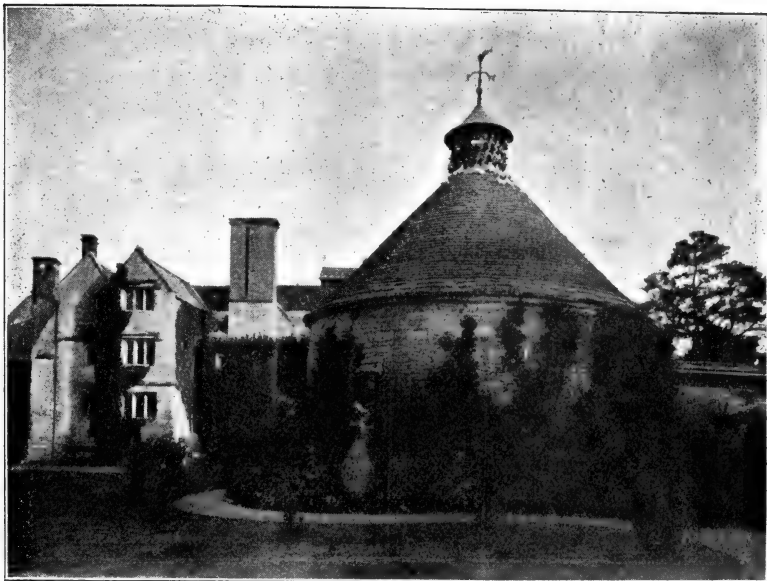
earls of Dorset, gave name to the place. He is styled a "duke" or general (dux) in the Saxon Chronicles; and in 837 he commanded the Dorsetshire men in an engagement at Portland with the Danes, in which he lost his life.

In the time of Richard II. the estate was in the possession of two families named respectively de Londres and de Pydele, whose arms you will find in the east and west windows of the great hall. From these families Athelhampton descended by marriage to the very ancient family of Martin, or Fitz-Martyn, about the middle of the 14th century. Martin, of Tours, who came over with the Conqueror, was their prime founder, and was, no doubt, of the same family as the great saint of that name, whose sister was the mother of St. Patrick. The estate remained in the Martin family until Elizabeth's reign. Nicholas Martin, then the head of this old family, died in 1595 and left four daughters, between whom the estate, and even the house, was divided. When you visit the church at Puddletown you will notice the tomb of this the last of the Martins of this place. It occupies the south-west corner of the chapel of St. Mary Magdalene, which belongs to Athelhampton, its more common name being the Athelhampton aisle. The beautiful effigies it contains must have been sadly neglected in the past, and their mutilated and defaced condition does not reflect credit upon the successive guardians of the place. The tomb of Nicholas Martin, with its three monkeys or "martins segeant," bears this epitaph—"Nicholas ye first and Martyn ye last. Good-night, Nicholas"—a no doubt somewhat humorous but surely sad contrast to the pious inscription on the brass to an earlier member of the family. The eldest of the four daughters of this "the last of the Martyns" married a Brune, and soon obtained possession of most of the other portions of the estate. On the 11th of April the heiress of this "great western family," as it is styled in "The Story of Corfe," became the wife of Sir Ralph Bankes, and in 1665 he sold all the Brune's share in Athelhampton, Burlleston, and Southover to Sir Robert Long, of Draycot, Cerne, Wilts. In 1812 the property became vested in the family

of the Earl of Mornington by his marriage with Catherine, daughter of Sir James Tydney Long. Their eldest son, fifth Earl of Mornington, great nephew of the great Duke of Wellington, in the year 1848, sold the estate to Mr. George Wood. In 1891 I myself became the owner of the property. You will notice that the estate has only changed hands three times through purchase.

The date of the greater part of the house, as you now see it, is generally assigned to the end of the 15th century. Sir William Martin, who died in 1503, is said to have built the north wing of the courtyard, the beautiful gatehouse, and added a third storey with gables to what, no doubt, was formerly a quadrangular one-storied house, a type so common at the close of the 13th and beginning of the 14th centuries, and which was a style of domestic architecture likely to be resorted to at a period when security was not to be disregarded. As far as I have been able to ascertain, I think there must at one time have been three, if not four, quadrangles or enclosed courts. The first, outside the gatehouse, extended about as far as where the present Italian gates stand. This was enclosed on all sides by walls, a church, or more correctly, private chapel, standing in the south-west corner. The second or "fore-court" was enclosed on the N. and E. sides by the mansion, and on the S. and W. by the gatehouse and connecting walls. The third or inner quadrangle was, I believe, surrounded on all sides by different wings of the house. At present only the W. formed by the great hall and S. sides are standing. If there was another quadrangle it would have been where the present modern kitchen offices are.

When one thinks what the house must have been even in the memory of many still living, and sees it in its present mutilated condition, it cannot but fill one with a very deep regret. To me it seems to have been an act of terrible Vandalism to have destroyed so unique and beautiful a specimen of mediæval domestic architecture as Athelhampton must have been. I believe so lately as the year 1862 the house and quadrangles were practically untouched. But in that year the chapel, gatehouse,



OLD CULVER OR PIGEON HOUSE AT ATHELHAMPTON.



GATEHOUSE AT ATHELHAMPTON FROM A PHOTOGRAPH TAKEN THE DAY BEFORE IT WAS PULLED DOWN IN 1862.

enclosing walls of the two front quadrangles, and part of the house were pulled down—the present stables being built from the stones of the gatehouse. The possibility of restoring this gatehouse and forecourt—I do not yet say advisability—has often occurred to me, and any information on the subject I should gladly welcome. You will see a photograph of this beautiful building (taken by Mr. Fane, 1862) in the porch.

On entering the hall you will at once be struck with the beauty of the original open roof with its bold cusps, 50ft. in height, ornamented with gilded bosses. This roof was almost white with neglect and mildew when first I saw it, but luckily beyond cleaning and oiling I had to do little to it. I would also draw your attention to the charming oriel window, which forms a connecting passage with the north wing. Notice also the 15th century glass in the east window which faces you on entering. The rest of the painted windows I have restored, and I was fortunate enough to obtain a complete list of the coats of arms which they formerly contained. You will also remark the beauty of the original carved oak doors, one of which I have been able to put back *in situ*, and the huge wooden bar or bolt, ensconced in one of the fortress-like walls. The monumental mantelpiece, somewhat French in feeling, of the time of Francois I., bearing the Martin arms and crest (the chained monkey, which you will notice occurs so frequently), I put up a few years ago. I might mention that the letters M.E. which powder the hood of the mantelpiece are not intended to advertise the present owner, but are the initial letters of Sir William Martin and his wife Elizabeth. You will see they occur, too, in the glass in the east window. The linen fold panelling and minstrel gallery are also modern. The old Flemish tapestry was formerly in an old manor house in Oxfordshire.

Passing through the door at the end of the hall under the gallery we enter what was formerly the butlery, plate room, and servants' offices. The first of these rooms, now called the green parlour, I use as a dining room. The green silk which lines the walls is Florentine brocade of the 18th century. All the wood-

work and carving in this room was executed by Mr. Parsons, of Dewlish. Notice the arms of Jane Seymour in the south window. Through the archway in this room we enter the oak parlour. Eight years ago this was the back entrance and scullery. The wainscoting in this room was made from the old oak beams which in nearly every case we had to remove on account of the ends having rotted.

We now pass up the principal staircase, which was put up by Mr. Wood, and constructed by the local carpenter, in place of the original circular stone one. I have not yet touched it. On the first floor you will see the state bedchamber with its original panelling of the time of Henry VII. Notice the curious carved panels in the frieze, the beautiful carved Ham Hill stone mantle-piece, at one time covered over, the oratory, and the washing closet. Retracing our steps and recrossing the great hall we next enter the north wing. The first room, called the king's ante-room, is wainscoted in original panelling of a beautiful dark colour. Notice the original painted glass in the window, and the low stone archway, at one time admitting to the cellars. You will see the sides have been cut away to allow barrels to pass through. Over this cellar there was formerly the "solar" or ladies' with-drawing room. Traces of the window overlooking the daïs in the hall are still visible.

We next enter the great parlour, a beautifully-proportioned room, with a large eight-light mullioned window, divided by a transom, at one end. This room, though somewhat overcrowded with furniture, is at present untouched in the way of decoration. You will see a portion of a dress worn by Queen Elizabeth.

We now ascend the "King's Way," a most interesting stone and oak spiral staircase. The blocks of solid oak which form the upper portion terminate in a newel post, and do not rest on each other as they do in a somewhat similar staircase in the gatehouse at Wolfeton House, Dorchester. From the half-landing of this stair, or "way," we enter the long gallery or library. This interior I took upon myself to more or less create; formerly it was divided into three rooms, with a communicating

passage running along one side. The enriched moulded plaster ceiling and panelling are therefore modern. You will notice a secret staircase in this room, hidden in the thickness of the wall. A pair of boots worn by King Charles I. when a boy are preserved in this room; also a very fine first folio Shakespeare. If I have said little of the contents of the house, its decoration, furniture, and the many objects of interest it contains I am sure you will forgive me, for I fear I have already taken up too much of your time. I must not, however, fail to draw your attention to the old "culver," or pigeon house, in itself sufficiently interesting, but doubly so containing as it does the original "potence," or internal revolving ladder—a thing, I believe, almost unique.

In conclusion I must say a word as to the gardens. The walls and two terraces of Ham Hill stone were begun in 1891, and, incredible as it may seem, some forty thousand tons of stone were used in their construction. The site was formally occupied by cowsheds and dilapidated outbuildings. The ground then surrounding the house was about three feet higher than its present level, and the former owner told me it was no unusual thing in stormy weather to be called up in the middle of the night to assist in baling the water out of the hall. This, I am happy to say, I have been able to completely remedy. To the garden, or south, front of the house, you will notice I have added a new gable and turret, corresponding with the old one on the opposite side. This is practically the only new building that has so far been completed. Of its fitness I must leave you to judge. Eight years ago I found Athelhampton neglected, sadly ill-used, and, may I say, hardly known. Since then I have restored and altered much. If I have made mistakes I trust they are not such as cannot be corrected, and I would ask you in making your criticism to bear in mind that the house, gardens, and surroundings generally are still in a very unfinished state.





A Contribution to the History of
Dorchester.

By the Rev. W. MILES BARNES.

(Read December 15th, 1898.)

THE PLAGUE AT DORCHESTER.



THE histories of Dorchester generally relate that in 1595 the town was visited by a dreadful plague, which carried off so many of the inhabitants that the living were not sufficient to bury the dead. I have searched, but can find no confirmation of this story.

As to the plague generally, on account partly of the very insanitary condition of the dwelling-houses and their surroundings in the middle ages, England as well as other European countries was visited by terrible epidemics. That Dorchester wholly escaped these scourges is not to be expected. From the direction taken by the Great Plague or black death of the reign of Edward III. (A.D. 1349) it is not unreasonable to suppose that this most virulent and deadly pestilence visited Dorchester.

It appeared first in the East in 1346, crossed to Italy in 1348, overspread France and Spain in the same year, and then appeared on the coast of Dorset. Weymouth was a very likely place to receive the plague. There was a great deal of communication in olden times between Weymouth, France, and Spain. When the pilgrimages to the shrine of S. Jago de Compostella in the North-West of Spain were set on foot, several Weymouth vessels received licences to convey pilgrims for the shrine. In 1428 one of the largest vessels that sailed for that country embarked 120 pilgrims from Weymouth. It is a matter of history how Queen Margaret of Anjou in 1471, Philip King of Castile in 1505, and other important personages landed there. It is not surprising, therefore, that persons flying before the dreaded visitation which was advancing so rapidly on the Continent should

Exeter, thus infecting Devonshire, others to London and other parts of the country, so spreading the plague over the whole land. Of the deadly character of the visitation we may judge from the following significant fact:—The Sarum register contains the admission of 70 incumbents within nine months. These 70 would probably represent one-fourth of the beneficed clergy of the diocese. The burial of one-fourth of the clergy within nine months is an evidence of awful mortality. Though there is no direct evidence that the Great Plague of Edward the Third's reign visited Dorchester, there is, therefore, this circumstantial evidence—namely, in the first place, the fact of its appearance in England first in this neighbourhood, and second the probability, which, taking into account the general character of the visitation, would amount to a certainty, that persons flying from the plague would pass and some of them would remain for a time in Dorchester, so infecting it.



A Contribution to the History of Dorchester.

By the Rev. W. MILES BARNES.

In page 129, line 20, for "old" read "ancient road which has been erroneously called the"



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Its appearance next in Devonshire, and immediately after in London and elsewhere, seems to suggest that the fugitives followed the road to Dorchester, carrying the plague with them, and then branching off, some along the old Via Iceniana to Exeter, thus infecting Devonshire, others to London and other parts of the country, so spreading the plague over the whole land. Of the deadly character of the visitation we may judge from the following significant fact:—The Sarum register contains the admission of 70 incumbents within nine months. These 70 would probably represent one-fourth of the beneficed clergy of the diocese. The burial of one-fourth of the clergy within nine months is an evidence of awful mortality. Though there is no direct evidence that the Great Plague of Edward the Third's reign visited Dorchester, there is, therefore, this circumstantial evidence—namely, in the first place, the fact of its appearance in England first in this neighbourhood, and second the probability, which, taking into account the general character of the visitation, would amount to a certainty, that persons flying from the plague would pass and some of them would remain for a time in Dorchester, so infecting it.

Again the plague certainly visited Dorchester fifty years later, in 1645. An entry in the burial register of All Saints' Church made in that year states:—"Mr. Stephen Thorington, buried October 13, at which time the plague of pestilence was here, and in twelve months there died 52 people whose names are not inserted, the old clerk being dead who had the notes." But this entry does not afford ground for the supposition that even in that year the plague made such havoc in Dorchester that the living were not sufficient to bury the dead, for the Rev. John White, Puritan Rector of St. Peter's during the Commonwealth, in "Directions for the profitable reading of the Scriptures," published in 1647, speaking of this very visitation, said that last year, the "Pestilence, which brake in upon you several times and by several ways, gleaned only a few among you here and there, at that time when some other towns were almost laid waste by the stroke of God's hand."

But of the visitation of the plague in 1595 we have not only no circumstantial evidence, but direct and decided evidence to the contrary. This is contained in the old registers of Holy Trinity Church. Fortunately the ancient registers of Holy Trinity Church commence at an earlier date than 1595, and they have been very regularly and very carefully kept. Under the date 1594 there are entered 6 marriages, 19 baptisms, and 13 burials. From a rapid survey of the registers these numbers appear to represent the normal condition of the parish as regards baptisms, marriages, and burials. Now in a year when the plague appeared in a town there was a general exodus of all persons who were in a position to leave; there would, therefore, be fewer marriages as well as more burials, but in the next year, the one in question, 1595, the entries are eight burials, many fewer than in ordinary years, and five marriages, only one fewer than in ordinary years, and in 1596 there were fewer again—namely, only six burials. It is, therefore, clear that in the years 1595 and 1596, though there was a good deal of sickness in the country at large, through unseasonable weather, the health of Dorchester was in a particularly satisfactory state.

THE EAST GATE OF THE ROMAN TOWN.

In a paper on Roman fortifications (Transactions Vol. XII., p. 143) it was suggested that the Roman gateway in the east wall of the town might have been at the end of Durngate-street, and that if so a Roman road to the north would be right for it, according to the precept of Vitruvius, who recommended this position for the road in relation to the gate, because the besiegers would then have to pass to the attack of the gateway with their unshielded sides exposed to the weapons of the enemy who defended the walls. Here the road has since been found, and a portion of it broken up in laying gas mains. The Roman road was cut across in two places, in front of the Foundry, and further up, in Holloway, opposite the school. The road was, therefore, considerably to the right of Durngate-street, and the direction of it would have been altogether wrong for the gate if it stood at the end of High-street, where, moreover, it would have opened on a marsh, or, as Mr. Cunnington affirms, a lake.

THE NORMAN MINT.

William the Conqueror confirmed Athelstan's grant to the town of mints for the coining of money. There is quite a romantic story connected with some of the coins struck at these mints during the reign of the Conqueror.

It is as follows :—On Sunday afternoon, June 30th, 1833, four boys, all under ten years of age, were playing marbles in a field at Beaworth, when one of them discovered, in the track of a waggon wheel, a piece of lead sticking up. On stooping to take hold of it he discovered a small hole, into which he thrust his hand, and brought out a number of coins. He and his companions filled their pockets, and, as they scattered some of the coins about the pathway and about the streets of the village, the news of the find was soon spread throughout the neighbourhood, and the villagers hastened to the place, where there was a regular scramble for the coins. Some families secured a large number of coins, others only a few, and there was in consequence so much discontent on account of the unequal distribution of the

wealth that an appeal was made to the owner of the property to use his influence so that there might be a fair distribution of the spoil. His decision was as bad as that of the cat who was called upon to adjudicate upon the rival claims of the two monkeys who had found a piece of cheese. He claimed the whole as treasure trove. Six thousand coins were given up to him.

Amongst them were a number of coins of William the Conqueror, minted at Dorchester. These were stamped with the name of the town and the name of the moneyer. One had Lieril (the name of the moneyer) on Dorel, which represented the town; three Lifril on Doreless; twelve Oter on Dorlest; six others, Oter on Dorleter; three Oter on Dorelest. Three coins similar to the three first named were sold by Messrs. Sotheby, Wilkinson, and Hodge, at the sale of Mr. Charles Warne's collection of coins, for £4 17s. 6d. on May 24th and 25th, 1889.

DORCHESTER CASTLE.

Dorchester Castle in Norman times possessed a fine hall, which was divided into three aisles by two rows of columns. Some of the bases of the pillars were uncovered in making alterations to the prison buildings when Mr. Lawrence was its governor. From him I learned that the masons employed on the works pronounced them to be of Portisham stone, from which it may be inferred that the stone employed in building the castle came mainly from those quarries. The architecture of domestic buildings of the date when the hall was built is well understood, and it was rarely departed from, so that the building can be described with some degree of certainty. The hall at Dorchester was a large rectangular building with two rows of massive pillars, supporting round-headed arches. The king's seat (probably carved) was in the centre of one end of the building. In the midst of the hall was the hearth for the fire, the smoke from which ascended to the roof and found its way out through louvres built into it for the purpose. The building was lighted by small round-headed windows unglazed, but with shutters which could be closed at night and in rough weather. The hall was furnished

with benches and tables. On comparing the lists of repairs to kings' castles with those of kings' houses, it will be seen that they consisted of the same buildings, but the space being more confined the buildings were clustered more closely together in the former. The entries in the pipe rolls show that at Dorchester, besides the hall, there were chambers with their wardrobes, chapels, kitchens with their offices, stables, kennels, mews for mewing hawks, and even a vivarium. As the vivarium could not have been on the high ground on which the castle stood, there must have been an enclosure communicating with it below the slope of the hill, within which would have been the vivarium, the water being brought to it by a water course from the river. There are reasonable grounds for believing that the King's garden was on the east side of the Friary Lane, in which case the vivarium would have been on the low ground to the north of it, and the King's and Queen's houses would have been on that side of the court of the Castle.

To the Norman era must be ascribed two at least of the curious subterranean passages which have been discovered in Dorchester. The gaol lately pulled down was supplied with water from the river by means of an underground tunnel through which the water flowed from the river to a spot underneath the gaol, whence it was pumped up by a treadwheel into cisterns for the use of the prisoners through a shaft of modern construction. The tunnel was cut in the solid chalk and was of irregular height, much contracted at the mouth, but for the greater portion of its length it was nearly high enough for a man to walk upright in. The floor was below the level of the water of the river, which in consequence flowed to the pumping shaft. Here the authorities made a filter bed, which was cleaned out every year by men who entered the tunnel from the bed of the river, the water of which was drawn off to allow of their doing so. I obtained these particulars from the governor, the miller, and the workmen employed in cleansing the passage and filter bed. The water for the use of the prison is no longer obtained from this source, and the shaft has been filled up lest it should

afford a means of escape to prisoners. The very existence of this tunnel will doubtless soon be forgotten; hence the importance of recording particulars of it. Mr. Lawrence, who was governor of the gaol as early as 1849, informed me that the tunnel existed before the gaol was removed to the castle hill in 1745, and, as we know of no other building upon this site since the destruction of the castle, it seems clear that it must have been constructed by the builders of the castle, probably to afford a secret exit from it. When the gaol was re-built a few years ago the workmen employed in digging the new foundations came upon and opened an ancient shaft cut in the solid chalk and apparently communicating with this tunnel. On striking the bottom with an iron bar it gave a hollow sound, as if it was composed of baulks of timber laid over a tunnel or hollow. From the similarity of construction the tunnel discovered in the field to the east of Charles Street, and running not quite parallel with it, might be assigned to the same date, as it appears to have communicated with the Castle; and it had an exit outside the walls on the south of the South Walk, where what appeared to be a continuation of it was again cut across.

If the Norman garrison of the castle were besieged by the Saxon inhabitants of the town the subway would afford the garrison a means of communication with their friends outside and of bringing in succour and provisions without the garrison having to fight their way through the town and to capture a gate. Such subways connected with the Norman castles were not uncommon, and they were certainly used for the purposes I have described at a later date. We have historical evidence that an ancient subway communicating with Nottingham Castle was so used. When Edward III. was shut up in that place under the unscrupulous Mortimer, Isabella, wishing to guard against surprise or treachery (for the castle was too strong to be taken by assault), was accustomed to have the keys brought nightly to her bedside. It was a useless precaution, for she was not aware of these subways, and it was through one of them, whose entrance was in a thicket at the base of the hill, that Lord

Montacute led a party to the succour of the young king. They entered at midnight, with the collusion of the governor, and seizing Mortimer released the Royal prisoner. There are underground passages at Windsor, and indisputable architectural evidence that they are of the Norman period. A paragraph which went the round of the papers last year shows that similar subways have been found at Winchester; indeed, they may be said to be a feature of Norman castles, at least of such as were built upon the chalk. The paragraph was as follows:—

“A RELIC OF NORMAN TIMES.—The subterranean passage forming part of the works of the Norman Castle of Winchester, and (except the Great Hall) almost the only part preserved of the great structure, is being partially cleared by the County Council. It is a remarkably fine example of ancient work, and the excavations are watched with interest by the antiquary.”

THE DESTRUCTION OF THE CASTLE.

The later history of the Castle is enveloped in mystery. Very little is known about it beyond the short entries recorded of repairs in the pipe rolls and similar documents, but something may be gleaned from them as to its destruction. The last entry I have found relating to the Castle is in 38 Hen. III. (1254), when £8 16s. 5d. was laid out on the King's Chapel and on books and suitable vestments for the same. Speed says that the Priory was built out of its ruins, and this seems probable enough.

Now the Priory existed in 5th Edward I. (1310), because, according to Tanner, in that year Robert Bingham gave 6s. 8d. to the Friars Minor in Dorchester by his will. Allowing a little margin to these dates—namely, the dates of the repair of the chapel and the date of R. Bingham's legacy to the Priory, we may fairly assume that the destruction of the Castle and the building of the Priory occurred some time between 1260 and 1300 (assuming that there are no entries relating to the Castle later than the entry of 1254).

The Priory was a Royal foundation, and would, therefore, be endowed with lands by the Crown: the Castle, which also

belonged to the Crown, appears to have been disused, and in the possession of the Franciscans about this time. It is far from improbable that the Castle would be handed over to the Friars on the condition that they dismantled it, for, after the experiences of the Sovereign in Stephen's and other reigns, it is not likely that the king would have handed over a strong and serviceable fortress, which commanded the town, to any private individual; or even to any religious body, without making it a condition that it should be rendered unserviceable.





Powerstock Church and Castle.

By Rev. ROGER W. H. DALISON.

(Read July 19th, 1899.)



THE Parish of Powerstock or Poorstock contains many points of interest, the chief of which centre round the Church and the grassy mounds of an old Castle, which was re-built and tenanted by King John. There are also some interesting traditions which should be recorded ere they are lost sight of.

The Church is renowned for a very beautiful Norman arch, which has the appearance of having undergone a settlement, the arch itself being very much askew. But as the masonry on the top is perfectly level, I consider that the archway has never had a settlement at all, and that the crooked appearance it has arises from the fact that it was built by the people of the parish themselves, who did not understand the technicalities of arch-building.

In not very remote times, that is within the last fifty years, it was the custom in the Parish Church at the time of administering the Sacrament of Baptism, for the parent to take the child round to a little door leading into the west end of the Baptistry

and knock for admission; whereupon the clerk would demand, "What is your business?" to which the parent would reply, "We demand baptism." The clerk would then open the door and admit the parties, and the service would then proceed. This Baptistry door has been done away with, and a window now takes its place. But the old custom has migrated from the Parish Church to West Milton, where the Baptistry door exists.

Of the old Castle of King John nothing remains but some grassy mounds. I have been told by an old parishioner, still living, that he remembers digging about there and coming upon what looked like the old stables, where there were remains of refuse and the foot of a fowl. We know from the following Pipe Rolls that the Castle was *re-built* by King John, but lately there came into my keeping a very good specimen of a sculptured rabbit found in an old farmhouse which had been burnt. This rabbit has all the appearance of being Anglo-Saxon work, and, as much of the stone of King John's Castle seems to have been employed for building purposes in the village, it would lend colour to the tradition that the original Castle was built by Athelstan, who was known to have lived at Wytherstone close by.

Quite recently I have come across an old copy of the Parish Magazine, bearing date 1870, containing a letter written by a Mr. John Jefford, of Bridport, to the late Archdeacon Sanctuary. The letter, after referring to some books and maps, about to be brought out by Mr. Warne, the well-known antiquarian, proceeds thus:—

"Mr. Warne published about two years ago (1867-8) another work on the antiquities of our county, 'The Celtic Tumuli of Dorset.' This work I have read, but do not at present possess it. It gives an excellent account of the opening of more than one hundred tumuli in Dorset. About sixty of them were opened under his superintendence. The remainder are those opened by the late Sir R. Hoare, in the upper part of the county, and some by several clergymen and other gentlemen, who had taken an interest in the subject during the last 70 or 80 years. He is now preparing for the press another volume, which I have

no doubt will be a most interesting one, 'On the Camps, Ancient Trackways, British Villages, and Roman Roads.' Mr. Warne visited your neighbourhood about seven years ago, accompanied by a very experienced antiquarian. Perhaps it will prove interesting to you if I here briefly state what I have learnt from these gentlemen and from other sources respecting Powerstock Castle. The earthworks which surround the hill (Castle Hill) are believed to be Celtic; that it was in fact a Celtic fort in all probability much more ancient than the camp of the Durotriges at Eggardon, which Hutchins and other antiquarians attribute to the Romans. Within the Celtic fort at Powerstock in subsequent ages a castle was built. Hutchins says there was a tradition that Athelstan had a summer palace there. I am not aware of there being any historical evidence to support this tradition. In Plantagenet and probably in Norman times a castle undoubtedly stood there. I have it on good authority that there is in the British Museum an Itinerary of King John, a very rare book, in which it is recorded that John visited the Castle four or five times during his reign in order to enjoy his favourite sport in the adjacent forest. On one of his visits he arrived at Bridport on Saturday, spent Sunday in this town, and started for Powerstock Castle on Monday morning. I have said that the Celtic fort which surmounts the ruins of the Castle is probably much older than the camp at Eggardon. If I am not trespassing too much on your valuable time, I will venture to state briefly my reasons. If you stand on the easternmost rampart at Eggardon, about the middle of it, you will discover an ancient British trackway coming across the Down from the east; it is intersected by the outer fosse, but may be traced within and through the camp, and is covered also by the rampart at the western side. This trackway, therefore, is older than the camp. I have, as I believe, been able to follow the course of this trackway nearly to Castle Mill, where all further traces have been no doubt long since obliterated. A Celtic scholar informs me that the word Nettle or Nettell, in Nettlecombe, means a toll or a place where toll was taken, that is, in modern language, blackmail. From

these facts I draw the following inference:—This trackway was the ancient line of communication between different tribes. If at war or unfriendly, the tribe holding the fort at Powerstock levied toll at or near Castle Mill. Whether this inference will bear a severe criticism or not I leave to your superior judgment. Pardon me for trespassing so long on your attention, and believe me, Rev. and dear Sir, yours respectfully, JOHN JEFFORD. P.S.—From an examination of the contents of the tumuli examined, Mr. Warne concludes that the tumuli in West Dorset are amongst the most ancient in England.”

The following is a description of Powerstock Church by Mr. C. E. Ponting, F.S.A., and the extracts from Pipe Rolls relating to Powerstock Castle were communicated by Rev. W. Miles Barnes:—

THE CHURCH OF S. MARY THE VIRGIN, POWERSTOCK.

This church, as at present, consists of chancel, nave with north and south aisles, south porch and western tower; the north aisle is, however, an addition made at the restoration of the church in 1859, when the remainder of the fabric was rebuilt with the exception of the tower, the east end of the nave, the arcade between the nave and south aisle, and the south doorway.

The tower is of three stages in height, and the divisions are marked by string courses. It has in the lower stage a western door with three-light window over (in addition to a modern window in the north wall), and in the upper stage a two-light window in each face of transitional type from the Decorated to the Perpendicular. The lower stage is divided into two by a set-off, which is very pronounced outside on the north and inside on both north and south sides; up to this point the walls of the tower are Norman work, probably coeval with the chancel arch. Late in the 14th century (circa 1380) the Norman tower (which must have been higher than the set-off) was reduced to this level, probably to get a sound base for the new work, the buttresses and turret staircase were added on the outside, and the tower carried up to its present height. It is interesting to note

the evidences of the exact points at which the old work was retained and the new begun—(a.) the points of the Norman work on the north side were out of level, and in order to start the new part level the upper Norman course was reduced in depth towards the west; (b.) where the buttresses and staircase were built against the earlier walls a straight joint occurs, and they are not bonded into the walls, as is the case higher up where the two are coeval; (c.) on the south side the 14th century base mould is obviously *inserted* in the Norman wall, and a thin piece of stone has been put to make up the depth of a course to meet it; (d.) the doorway retains the jambs of the Norman door on the inside, and the outline of the early arch can be traced on the outside; (e.) oyster shells are used in the joints of the later work, but not in the earlier (I may mention that I have never found these in *walling* joints of earlier than the middle of the 14th century).

The buttresses are placed at right angles with the tower; they have a deep plinth and are carried up to the top of the middle stage with three set-offs. The 14th century staircase has been raised in more recent times, and a doorway inserted to give access from the outside. The tower is surmounted by a moulded cornice, with rude gargoyles which might have belonged to the Norman tower, and embattled parapet.

The archway between the tower and nave, the north window, and the head of the west window are insertions of 1859.

The west doorway, as remodelled in the 14th century, is a rich one; it has two orders of mouldings, the cavetto and wavemould carried round jambs and arch, and the former member is enriched by carved pateræ; the doorway is flanked by attached pinnacles which stop the label, and have crocketed finials. The inner arch is a barrel vault with moulded ribs and central bosses, springing from the Norman jambs.

The chancel arch is a good specimen of early Norman work (circa 1100) of three orders. The inner order of the arch has a roll and a cable member, with diaper ornament on the flat surface; it is supported by engaged shafts on the jambs, with

caps having rude foliage and a triple cable mould on the abacus. The outer and middle orders of the arch (which occur on the west face only) consist of the chevron and roll-and-cavetto respectively, and are carried by detached shafts with carved caps—three of which have carved volutes and the other a fish-scale pattern; one has also a curious tree ornament. The abacus mould of these caps is chamfered and enriched with the saw-tooth ornament; it was formerly carried on to the side walls. The shafts are carved on the north, one with chevron and the other with diaper ornament, and on the south one with chevron and the other with a raised foliated pattern; this shaft (which had been cut away in forming the squint) has been renewed. The bases of all shafts are moulded. The greater part of the label of the arch has been cut away, and only the enriched lower mould remains. The Norman wall extends to the height of the set-off.

Two squints were cut through the wall on the south side of the chancel arch, probably in the 15th century, one from the nave and the other from the south aisle, both in the direction of the centre of the altar foot pace, and evidently intended to give a view of the celebrant.

The south arcade is of three bays, each arch with two orders of chamfers on cylindrical columns with moulded caps and bases of Early Decorated character. The responds have semi-cylindrical attached columns; in the west respond a later opening has been cut, and the hooks which remain show that it was provided with a door. The north arcade is a modern copy.

The south doorway of the church is a beautiful composition of a date only slightly later than the remodelling of the tower. It has a four-centred moulded arch flanked by attached pinnacles, panelled, and with crocketed finials; over the arch is a moulded cornice enriched with pateræ returning round the pinnacles, where an embattled member occurs. Above this are three niches supported by angel-corbels which have been partially renewed; the central niche is occupied by figures of the Patron Saint—the B.V.M. and Child—the heads of which are

modern; the side niches are vacant. On each jamb of the doorway, between the mouldings and the pinnacle, is a shaft with an angel-capital, supporting a figure carved in high relief. The one on the west is a male figure holding a book and staff, the cloak being secured by a morse; the one on the east is a female figure holding two loaves, and on each side of her stands a child clinging to her robes and holding a loaf. These are intended to represent either a king and queen, or crowned saints; but their identification is not obvious.

EXTRACTS FROM THE PIPE ROLLS OF KING JOHN'S REIGN
RELATING TO POWERSTOCK, BY REV. W. MILES BARNES.

(Translation.)

1. "Robert Belett renders account of £7 10s. for half the honour of Pourstock."—(3rd year of John's reign).
2. "For the repair of the King's houses at Pourstok, £104 by the King's brief."—(John 8.)
3. "For work about the houses of Pourstok, £25 by the King's brief and by view of Robert Bonet and Richard Olaves-ton."—(John 9.)
4. "And again for work about the houses (of the King) at Pourstok, £25 by the King's brief and by view of the aforementioned."

Note.—The above are from the original manuscripts.

The following extracts are from "Rotuli Litterarum Clausarum." In turri Londinensi asservati accuranti Thoma D. Hardy.

(Translation.)

5. The King to the Sheriff of Devon, &c. Find for the Sheriff of Somerset and Dorset 100,000 tiles for covering our houses at Pourstok, and cause them to be brought to Bridport. April 7, 1205."

Note.—There is a little difficulty about this passage, as the meaning of "azeisia" (in the original Latin) is not clear. It

might mean "nails;" I think it must be here "roofing materials" (shingles or tiles), for it commonly means "materials." The word seems to be derived from "assero"—"to bind to."

6. "The King to the Barons, &c. Reckon to the Sheriff of Dorset and Somerset what, by view and testimony of lawful men, he has laid out in repair of our houses at Pourstok, and in restocking our manor of Pourstok. Nov. 12, 1205."

7. "The King to the Barons of the Exchequer, &c. Reckon to William de Monte Acuto, Sheriff of Dorset, that, which by view and testimony of lawful men, he has laid out in repairing our houses at Pourstok by our precept. June 1, 1206."

8. "The King to the Barons, &c. Reckon to William de Monte Acuto that, which by view and testimony of lawful men, he has laid out in the works about our houses of Pourstok. June 17, 1207."

9. "The King to the Bailiffs of Southampton, &c. We command you that you receive of Nicol de Kivily, at Southampton, thirteen doliums of wine, and of them that you cause to be conveyed to Pourstok one dolium. Feb. 17, 1207."

10. "The King to his Bailiffs at Southampton, &c. Find carriage for bringing our wines underwritten to the places underwritten, namely; to Pourstok, one tun of wine. July 6, 1207."

11. "The King to the custodians of the Bishopric of Exeter, &c. We command you to send to Pourstok three doliums of the wine of "Andêg," and it shall be reckoned to you at the Exchequer. March 21, 1208."

Note.—I forget what place in France Andêg represents, I think it is Anjou.—W.M.B.

12.—"The King to the Sheriff of Dorset, greeting. We command you that you cause Robert de Newburgh to have eight librates and one hundred solidates of land in Fordington, which we have given him in exchange for Pourstok, and pertinences according to our Charter, notwithstanding the testator held them entire. And you shall seize for our use Porstok and Stafford (?), and Nettlecombe with pertinences as ours, because the same

Robert granted them to us. And of the corn of those Manors you shall cause to be replaced as much as may be necessary for seed for the land, and for the food of the servants, for themselves only, and the residue you shall have valued and kept in safe custody till such time as you know if we wish to retain it at that price for our own use. September 7, 1205."

King John was at Poorstock on the following dates:—

1205	-	Ann. 7	-	August 25.
1207	-	Ann. 8	-	March 29, 30.
1207	-	Ann. 9	-	September 8.
1210	-	Ann. 12	-	September 27.
1213	-	Ann. 15	-	July 29, 30, 31.

These dates are from Sir D. Hardy's Itinerary of King John.

Notes to above.—"For the sake of ready reference I have numbered the Extracts given above. The last entry (No. 12) is of importance. The King commands the Sheriffs of Dorset to cause Robert de Newburgh to have sieizn of eight librates and one hundred solidates of land in Fordington, which he had given him in exchange for Powerstock and its pertinences. As Powerstock was an Honour or Barony (No. 1) it must have been held by Robert de Newburgh of the King *in capite*; after the exchange it was held by the King himself *in demesne*, as stated in the Testa de Nevill. The date of the above extract (No. 12) fixes the actual date of the exchange September 8th, 1205, but the agreement must have been come to between the King and Robert de Newburgh earlier than this, for the King on April 17th previously orders materials to be provided for the building (No. 5), and some progress must have been made with the work, for on November 13th of the same year the Barons of the Exchequer are ordered to pay the Sheriff what he had laid out on the buildings at Powerstock, and a second payment was ordered on June 1st, 1206 (No. 7), and a third on June 17th, 1207 (No. 8). The work extended over a considerable time. In the Pipe Rolls two of these payments are mentioned (and I may have overlooked the third), namely, £104 in John 8, and £25 in John 9—£129 in all. This would be equivalent to £2,000 in the

currency of the day, not an inconsiderable sum to be spent on repairs; for it seems probable, judging from the wording of the extracts, that an entirely new house was not built for the King at Powerstock, but that Robert de Newburgh's Mansion house, which we may reasonably suppose was at Powerstock, since that was the head of the Barony, was repaired and perhaps enlarged. This will be more evident if we compare the description of building operations elsewhere—at Cranborne for instance—with that of the work at Powerstock. In an entry in the Close Rolls relating to the King's houses at Cranborne, the nature of the work there is thus described—"For the *building* of the houses at Cranborne," but in the Pipe Rolls the work at Powerstock is described as—"for the *repair* of the King's houses at Pourstok" (No. 2), and "for *work about the houses* at Pourstok" (No. 3), and I cannot find any evidence of a Royal residence at Powerstock before John's reign.

As soon as the houses were finished the King ordered wine to be sent there—one barrel on Feb. 18th, 1207 (No. 9); one tun on July 6th, 1207 (No. 10); and three barrels of "Anjou" wine on 21st March, 1208 (No. 11).

LIST OF CHURCH GOODS IN THE PARISH CHURCH OF
POWERSTOCK IN THE 6th YEAR OF EDWARD VI.

From a MS. in the Record Office.

Press mark "Q.R.-Church Goods, Dorset $\frac{2}{17}$."

THE PARISH OF PORESTOKE.

First: Two chalices of silver gilt; five pairs of vestments, one of satin of Bruges, one of silk damask, two of dormax, one of red damask, one cope of red damask; two table clothes of linen; two candlesticks of brass; five bells in the tower, one "liche" bell.

To the Church use there is appointed the worst chalice, one cope of red damask, with all the table clothes and surplices.

The residue of the premises are committed to the charge of the churchwardens and other parishioners under-written:—

Sir THOMAS HARRYSON, Curate.

WILLIAM TURNER.

ROBERT MORE.

NICHOLAS TRAVERS.

HARRY TURNER.

WILLIAM STEPHENS.

ROBERT PRYNCE.

(In the above extract the spelling has been modernised, except in the names.)

Notes.—*Pair* of vestments would mean the whole suite of vestments—namely, the alb, girdle, stole, maniple, amice, and chasuble.

Dormax.—A coarse damask made at Dormax or Tournay in France.—(Walcott.)

Lyche Bell.—Probably the small bell rung at funerals as a signal to clear the way and to call for a prayer for the departed. The Synod of Exeter enjoined parishioners to provide, amongst other necessaries, “*small bells for the dead.*”

Outside the south porch of the Parish Church there is what looks like an old raised tomb, but Mr. Ponting says he has no doubt whatever that it was an old “Dole Table” on which the charity loaves of bread were placed previous to their being distributed. It dates probably about the 13th century, and is the eleventh dole table that he knows to exist in Dorset. Another one used to exist at West Milton, but it has been broken up.

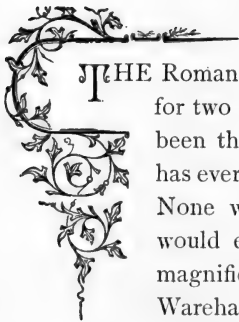




The Roman Occupation of Wareham.

By **GEORGE J. BENNETT.**

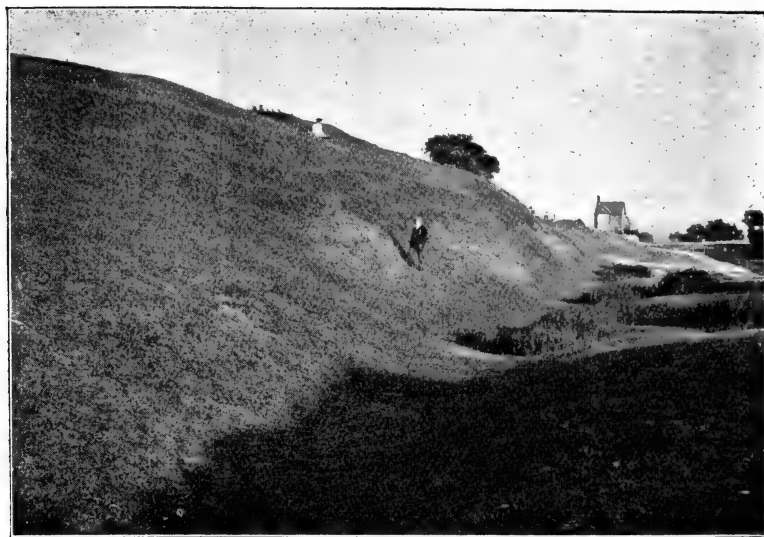
(Read December 15th, 1898.)



THE Roman occupation of Wareham has been disputed for two reasons, first, because the subject has never been thoroughly studied; next, because no record has ever been made of the Roman relics discovered. None who have given the subject consideration would entertain a thought that the stupendous, magnificent, and extraordinary earthworks at Wareham are of Roman origin. That they were of British origin, adapted and strengthened by succeeding races, will not admit of doubt. Wareham has well been described as "affording the rare spectacle of a modern town existing within the ramparts of a British fort."* And these military relics of a semi-barbarous age are entitled to consideration from the antiquaries and protection from the modern barbarians.

Few towns can boast such splendid monuments of a very distant past as Wareham; and it is deeply to be regretted that these military earthworks, vestiges of a far remote period, and

* See Hutchins' 3rd Ed., Vol. I., page 94.



WEST WALL OF WAREHAM AND DITCH, TAKEN FROM BLOODY BANK.
THE PORTION OF DITCH REMAINING IS 51 FEET WIDE; THE DEPTH VARYING
FROM 28 TO 34 FEET.



N.W. ANGLE OF WAREHAM WALLS, ENCLOSING SITE OF AMPHITHEATRE.
REMAINS OF RIVER TRENTE AT THE BASE. OUTPOST OF
WEREGROTE IN THE DISTANCE.

probably unequalled in the kingdom, whose magnificent scale and solidity of construction excite so much admiration, should be continually disfigured by deliberate and deplorable demolitions. At the time I write there is, in the highest part of the west wall, a cutting made by the children sliding down, which measures 37 feet from top to bottom; at one part the width is above 8 feet, the depth varying till it reaches a depth of 6 feet. On the 8th of August, 1899, I discovered among the gravel 6 feet deep in that cutting a rib and portions of a leg bone, with a large petrified tooth. It will be noticed that a large portion of the west wall is considerably lower than the rest; and it may be as well to mention that about the middle of the present century a large portion of this wall, with the outer rampart which Hutchins mentions, was thrown down to fill up the remarkable ditch at the base of the wall. The importance of Weregrote Hill as an outpost and outer gate to fortified Wareham are facts too much ignored. The evidences that the sea formerly existed as far as Portham, north of that outpost; and that the perfect handle of a Roman vessel was discovered 12 feet deep in the old bed of the Frome, where that river is crossed by the railway bridge south of Weregrote Hill, are facts worth consideration. Amongst the relics of a far distant past deserving attention are the remains of an early Celtic location, three round barrows, the British trackway and Roman roads at Weregrote and on Wareham Common. When a barrow on Weregrote Hill was demolished about 1830, between 20 and 30 urns were discovered, which, from some specimens still preserved, appear to have belonged to the earliest era of barrow burial. It is worthy of mention that the largest British urn hitherto discovered in Dorset, and now in the County Museum, was unearthed at Weregrote.

That no effort has ever been made to ascertain the extent of the ancient fortifications of Wareham is to be deplored. The Roman roads west, north, and south of Wareham, West Port, North Port, and the Roman outpost of Stowborough, are objects and places to which I trust some day those interested in Roman

antiquities will direct their attention. Amongst the relics of British and Roman periods existing in Wareham, and worthy more attention from competent antiquaries, are (1) an inscribed stone, the inscription on which the late Rev. W. Barnes attributed to the British period. (2) An inscribed stone discovered in 1841 when the nave of Lady St. Mary's Church was rebuilt. This stone bears what the Rev. C. Bingham termed "the remarkable Runic inscription:" and what the Rev. W. Barnes believed to be "an inscription on a Roman votive altar, probably by some Roman soldier."

Such, with the Roman relics hereafter to be described, discovered around and within the ramparts of Wareham, the various names of the ancient British fortress, the ground plan, position of the town at the confluence of two rivers, a situation in which the Romans particularly delighted, and the almost square shape of the earthen ramparts, all help to support, if not confirm, the much disputed Roman occupation of Wareham. But whilst those unacquainted with the subject doubt and dispute, it is exceedingly gratifying to hear from such authorities as Mr. J. C. Mansel-Pleydell and Mr. John Bellows that they consider the evidences of the Roman occupation of Wareham incontestable. The 100 acres encircled by formidable earthen walls would accommodate a large garrison; and the unusual natural advantages of the situation are beyond question.

Competent antiquaries have made no research in Wareham, and consequently no discoveries. By the working men the most important relics have been unearthed; and by the finders they have unfortunately been disposed of and dispersed; the result being that many relics of antiquity, capable of throwing light on this debated subject and Wareham's ancient importance, have been carried thence to other places. Let it be remembered that for the Roman relics hereafter mentioned as having been discovered within the walls, no special search was made. All were accidentally discovered.

The author of "The Beauties of England and Wales," Lewis in his Top. Dict., Mr. Warne in "Ancient Dorset," and others,

inform us that Roman coins have been found in Wareham, but unfortunately give no particulars. More recent discoveries are, however, of greater interest and importance. When, about 50 years ago, the hill at the top of North Street was lowered about five or six feet, a quantity of coins of various kinds, some forty in number, were discovered during the excavations and dispersed. In 1895 several Wareham coins were traced with satisfactory results. At the suggestion of the Rev. W. Densham, the owner sent some of the coins to Mr. John Bellows, who, in reply, said he recognised four of them as brass coins of the Roman Emperors Tiberius, Nero, Vespasian, and Domitian.

Not less interesting than the above are some coins discovered at great depth in the cemetery, which is within the walls of Wareham. 1. A silver denarius of the Emperor Augustus, struck in Gaul, between 29 and 27 B.C. This coin, which is in an excellent state of preservation, was found at a depth of 8 feet, and exhibited during the reading of this paper. 2. Two silver denarii of the Emperor Constantine. 3. Two bronze coins struck at Treves, A.D. 315. These coins are in Mr. Arthur S. Drew's collection. In the gardens by the east wall two Roman coins were unearthed. 1. A third brass of Licinius the Elder. 2. A third brass of Claudius Gothicus. These coins, in the possession of Mr. Albert Laws, were shown with the above.

A third brass of Constantine the Great, in good preservation, was found in a broken part of the eastern rampart in June, 1896. In January, 1898, a first brass coin of Antoninus Pius was discovered in a garden by West Street. The head to the right on the obverse is very prominent and clear. This coin is interesting, because of a figure on the reverse, which, though defaced, appears to be that of Britannia. The writer of "Old England" asserts that it was during the reign of Antoninus Pius, when there "first appeared on Roman money the graceful figure of Britannia calmly resting on her shield." By the letters S.C. underneath the figure, it is shown that the coin was struck by decree of the Senate. This coin, also exhibited with the above, is in the possession of Mr. J. B. C. Best. In Ancient

Dorset, Mr. Warne, writing of Wareham, says: "With the exception of a first brass coin of Antoninus Pius, not a Roman vestige of any kind has ever been discovered, in or near the town, within the memory of the oldest inhabitant." This he seems to have regarded as conclusive evidence that Wareham was not the true site of Moriconium, and for contradicting Baxter and Stukeley, by whom Wareham is called Morini. Mr. Baxter, with whom Dr. Stukeley concurs, will have it to be the Moriconium of Ravennas.

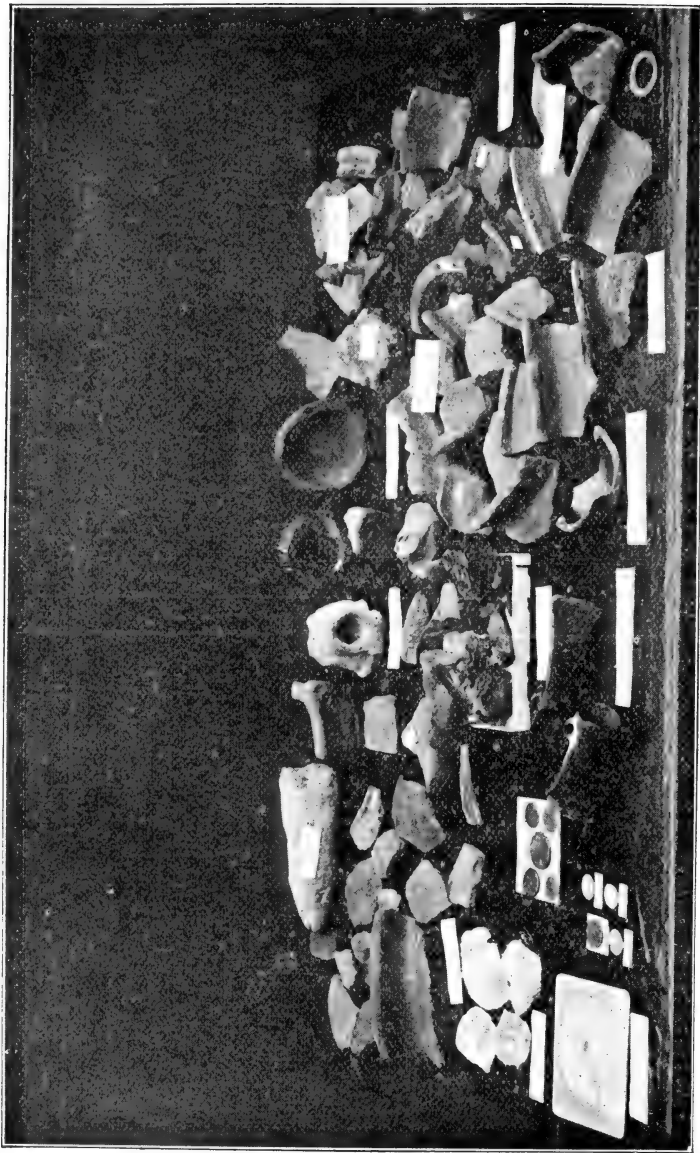
Five Roman coins, defaced, shown in the photograph of my own collection of Roman relics, were found during some excavations in gardens. No description can be given, as they are unfortunately lost. In the gardens known as Cock Pits, adjoining the conjectured amphitheatre at the north-west angle of the walls, many Roman coins, both silver and bronze, have been unearthed.*

Other interesting coins have been discovered in the town and neighbourhood, though the actual sites cannot be ascertained. Among them—1. A silver denarius of the Emperor Trajan. Obverse—bust laureated to right. Legend, IMP. CAES. NER. TRAIANO OPTIMO PRINC. GER. DAC. Reverse—soldier helmeted with spear on the fasces. 2. A silver denarius of the Emperor Trajan, which represents a different coinage. Obverse—IMP. CAES. NER. TRAIANO OPTIMO AUG. GER. DAC. Bust laureated to right. Reverse—Fortune seated with cornucopia on a helm. PM. TR.P. COSVI P.P. S.P.Q.R. beneath Fortuna.† One of these coins was found at Trigon. 3. Silver denarius of the Emperor Hadrian. 4. Third brass of the Emperor Aurelian. Bust to right. Legend, IMP. C. AURELIAN US. AUG. These coins are in the possession of Mrs. F. Marshallsay. 5. Third bronze of

* NOTE.—The finder of these coins, a gardener, declared that he had found in the gardens of Wareham above 50 Roman coins of various kinds. He was a diligent searcher, because he could always dispose of the Roman coins to advantage.

† NOTE.—These legends were copied from a description, lent with the coins of the Emperor Trajan, by the owner.





BRITISH AND ROMAN RELICS FOUND IN WAREHAM. BRONZE CELTS FROM THE STOWBOROUGH BARROW.
COPROLITE FROM MORDEN.

Constantine the Great. Bust to right. Legend, IMP. C. FL. VAL. CONSTANTINUS PF. AUG. This coin, which is in an excellent state of preservation, belongs to Mr. Joseph H. Bennett. All five coins were shown at the reading of this paper.

From the coins we turn to consider the fragments of Roman pottery. It has been said, and rightly, "they are but shards," yet I know no reason why one should be ashamed to bring them forward. Shards though they may be, they have done an important part in helping to prove the Roman occupation of Wareham. Since I commenced bringing the antiquities of Wareham to the front, I have noted the discovery of Roman relics, including silver and bronze coins, bronze ornaments, lead image, beads, querns, and pottery at 15 places within, and four without the walls. Fragments of British, Roman, Samian, Saxon, and Norman pottery have all been unearthed in Wareham. Amongst these fragments are specimens of sun-baked, rough hand-made, and superior moulded pottery. Some were ornamented by the potter's fingers, and some bear rude designs made by engravers' tools. Others are discoloured by smoke, bearing evidence that the vessels of which they formed part had been associated with fire.

I have mentioned British pottery. The earliest date at which I can find any discovered within the walls was in 1883, when the foundation of the present post office was dug. The portions of a rough earthen vessel then discovered are believed to be very early British.

Though numerous relics have been unearthed in various parts of the town, the cemetery has proved most prolific; even there they are not confined to any particular spot, and it is only at considerable depth, from five to nine feet, that they have been discovered. The fragments of pottery continually being unearthed represent a considerable number of vessels of various shapes and sizes, the greater part of which appear to have been manufactured for domestic purposes. In very few cases do the fragments of pottery, whether many or few be found buried together, belong to the same vessel. Careful investigation leaves

little, if any, room to doubt, that a Roman pottery existed in the locality of the cemetery, and that the refuse was scattered broadcast. Yes! recent excavations have proved that both sand and clay were obtainable within the ramparts.

It is a matter for deep regret that excavations were not made by competent persons before the cemetery became filled with graves. From the skulls, bones, some of which had been partially consumed by fire, charcoal, burnt flints, and other similar matter unearthed at times when deeper graves were dug, it is certain that there had been burials centuries previously, and that fire had been associated with the burials. From the huge stones unearthed when some of the graves had reached a depth of six feet, it is evident that buildings had also existed there. If Roman pottery had not been manufactured in the locality, we may reasonably conclude that an extensive Roman dwelling existed thereabouts, else, what is to account for such a considerable number of fragments of Roman pottery being constantly found in the cemetery?

At a meeting of the Dorset Field Club, held December 8, 1897, my own collection of pottery, numbering above fifty fragments, including early British, Roman, and Samian, was exhibited with other relics of various periods found in and around Wareham. When this paper was read, December 15, 1898, fragments representing 16 Roman vessels were again shown. Some of the most curious, and unique in Wareham, were the portions of an earthen vessel with perforated corners for hanging, discovered at a depth of six feet in the cemetery, and which Mr. Bellows considers are portions of a Roman cooking vessel. Mr. B. A. Hogg asserts that these perforated fragments are undoubtedly Roman, yet a peculiar kind of sand was used in the manufacture, and it is a make of pottery new to him. Fragments of a similar make were found in the same locality, and with them bones and ashes.

In Mr. Arthur S. Drew's collection there are fragments of British, Roman, Samian, and Saxon pottery, and bronze ornaments, the majority of which were unearthed in the cemetery.

Whilst examining his collection with him on December 2, 1898, Mr. Drew pointed out some fragments of Roman pottery which he himself had picked up in the cemetery and when walking around the ramparts. He also drew my attention to some Roman beads found on the site of All Saints' Church, in North Street, in May, 1896. And to a Roman bead of exquisite blue glass found deep in the clay at Norden. There is also in that collection a fine specimen of Saxon pottery found deep in the cemetery. This large fragment, which is highly ornamented, and bears a perfect handle, was shown with the other relics at the reading of this paper. *

A necessary article in the Roman kitchen was the quern, or handmill, for grinding corn; frequently met with on Roman sites. A complete specimen of two stones has been found in Wareham. The top stone was discovered at a depth of nine feet in the cemetery in 1889; the lower stone was found built into the wall of a house which was demolished several years later.

During some excavations in August, 1890, in the cemetery, at a depth of 6 feet, an old dry well, with a large flat stone covering the top, was discovered. It was in the soil adjoining this well that so many of the Roman relics were found. Not only Roman, but coins and other relics of the British, Saxon, and Norman periods have been discovered in the same locality.

During the visit of the Dorset Field Club to Wareham in June, 1891, some fragments of Roman pottery were picked up by the members in their walk around the ramparts. How, it may be asked, is this to be accounted for? Because when excavations are made, the fragments of pottery are sometimes carried away with the loads of earth and scattered broadcast. Whilst some excavations were being made by the base of the bastion at the north entrance to Wareham, by the bridge, in 1895, at a depth of three feet, a large bed of oyster shells was unearthed—a considerable quantity, tightly pressed together, and

* NOTE.—With Mr. Drew's collection there is a fine boar's tusk, discovered at some depth in the cemetery.

of unquestionable antiquity. In November, 1897, during some excavations at the base of the bastion on the east side of the bridge, another bed of oyster shells was discovered at the ancient sea level, about four feet deep. When the graves were being dug in the cemetery, quantities of oyster shells were also frequently found at a depth of five or six feet. If, as it has been asserted, an abundance of oyster shells is "a sure indication of a Roman occupation;" there is in these ancient shells a substantial proof that the Romans occupied Wareham.

A small lead figure, believed to be Roman, was dug up in a garden by the east wall in the spring of 1896. The figure was shown with the other Wareham relics at the meeting of the Dorset Field Club, held December 8th, 1897, and, during a discussion thereon, it was compared with a figure in the County Museum. Having forwarded the lead figure to the British Museum, the owner, Mr. J. B. C. Best, received from Mr. Charles H. Read the following:—

“ BRITISH MUSEUM,

“ London, W.C.,

“ 9 June, 1896.

“ The lead figure of a negro in the Greek and Roman department is almost identical with yours, except that the details are much clearer; probably it is from the same mould, but is cast hollow. Round the waist there is a belt fastened by two large buckles and holding up a pair of drawers. Although the surface is in better condition, the figure has been mutilated to almost the same degree as yours. The specimen in the Museum came from Perugia last year, and Mr. Murray, keeper of the Greek and Roman antiquities, considers that both specimens may be genuine; but to me it seems very strange that two identical specimens should reach us at almost the same time.”

In May, 1896, the remains of All Saints' Church, in North Street, were demolished. Whilst some excavations were being made upon the site a large number of fragments of Roman pottery were unearthed. Some 20 of the fragments, representing

urns and vases, are in my own collection, some being exceedingly thin and almost black. At the same time and place some Roman beads and a fragment of Samian ware were found. In Hutchins and Ancient Dorset, it is stated that fragments of a species of fine red glazed pottery, distinguished by the name of Samian ware, has been found in all the Romanised settlements of the Britons. At two places in Wareham, in North Street and in the cemetery, pieces of Samian ware have been found.

When the foundations of the Wesleyan Chapel in North Street were dug in 1896, some fragments of Roman pottery were discovered at a depth of four feet, and with the fragments portions of the skull of a bird.* It is much to be regretted that this spot, and the site of All Saints' Church near, were not thoroughly examined before being again built upon. The latter especially because, in addition to the fragments of Roman pottery, Roman beads and Samian ware were found upon the site. Whilst the gardens adjoining the West Wall, at West Port, were being dug in 1897, several fragments of Roman pottery were found.

When the foundations of some cottages were being dug in Mill Lane, in June, 1898, a number of fragments of Roman pottery were unearthed, and a piece of British was also found; many of these fragments were unfortunately carted away with the soil. During some excavations in Mill Lane, on January 6, 1899, at some depth, 14 fragments of Roman pottery were unearthed. Fig. 4 on Plate xxi. of the Purbeck Papers shows the handle of a vessel precisely similar to one found among the above-mentioned fragments. The handle was for the finger, not the hand. Some pieces represent a lagena; others are ornamented with the cross-lined pattern so common upon Roman pottery. The above are in the possession of Mr. Albert Laws.

* NOTE.—Writing of Roman relics discovered at Christchurch, Hants, Mr. Warne says: "At Christchurch a curious sacrificial deposit, consisting of the bones of a cock, &c., was found at the base of a mound, on which I believe the castle of De Redvers was built. A similar deposit was found at the base of a mound at Lewes."

On the 8th day of March, 1899, a good discovery was made in the cemetery. At a depth of about 6 feet, 16 fragments of Roman pottery were unearthed, representing five different vessels. One of these fragments is very dark and of superior make; some of the pieces of grey pottery are the largest I have yet seen unearthed in Wareham. One bears a rude design which seems to have been made by engraver's tools; some others are discoloured by smoke. With the above were three fragments of a much lighter pottery, which Mr. B. A. Hogg pronounced to be very good Norman. These represent three vessels, the tips of which had been ornamented by the potter's fingers. All these are in the possession of Mr. J. B. C. Best.

About a week later several pieces of Roman pottery, and one of Norman, were discovered a few feet from the same place. During some excavations in Mill Lane, May 27th, 1899, some fragments of rough hand-made British, and also Roman, pottery were unearthed. Some of these pieces fit together and represent a bowl of large dimensions. With these was a piece of a much harder flint-like substance, evidently portion of a vessel in which some metal had been melted.

One other object of interest recently discovered is an earthen jug or bottle, in the possession of Mr. J. B. C. Best, which was unearthed during some excavations in Mill Lane at a depth of 8 feet. This is unique, inasmuch as it is the only whole earthen vessel known to have been discovered in Wareham. The height of the jug is $7\frac{1}{2}$ inches; circumference at the lip, $3\frac{1}{2}$ inches; diameter, just under an inch; circumference of bowl, $14\frac{3}{4}$ inches. Because of the brown glaze on this vessel opinions differ as to its being of Roman manufacture. Mr. B. A. Hogg pronounced it Old English pottery of the 14th century.

The above is not given as an exhaustive list of the Roman relics found in Wareham; but one great object has been the hope that it may prove of use to some future antiquary endeavouring to give our ancient and interesting old town some of the credit to which it is entitled. I have mentioned especially the fragments of Roman pottery and other relics of antiquity which

have come under my own observation. My aim has been to be authentic, and I have endeavoured to point out in and around the ancient British fortress, not by any means all I should like to, but some of the places, objects, and relics appertaining to the Roman period, and which in my opinion help to clear away some of the doubts concerning the Roman occupation of Wareham.

Though not belonging to the Roman period, other interesting relics of antiquity have been unearthed at Wareham, of whose discovery few seem to be aware.

1. The two bronze celts * taken from a small barrow adjoining the King Barrow, Stowborough, in 1833.

2. The coprolite found at a depth of 12 feet at Morden. Both are shown in the photo of my collection of relics.

3. The "remains of a large canoe or barge hollowed out from the trunk of an entire tree," which Brannon informs us was found with other naval remains in the bed of the river Frome, between Wareham and Stowborough. If such were the earliest boats made by prehistoric man, and only found deep in the beds of ancient rivers, this discovery is worth consideration.

4. "An early coperstone, † about 2 feet 3 inches by 8 inches or 9 inches, indicating heart burial," formerly existing in Lady St. Mary's Church.

5. A perfect square cresset stone containing five hollows, now in Lady St. Mary's Church. It was discovered during some excavations on the glebe land at North Port.

6. During some excavations on the site of Wareham Mint a small pair of ancient and curious balances with some small weights were discovered and unfortunately disposed of.

As I close my unavoidably imperfect paper the earnest wish arises, would that an abler pen than mine would take the subject up! After long and deep research I am fully convinced that the Roman occupation of Wareham is a subject which could, and ought to be, placed beyond question. Only those who, like

* See Hutchins' 3rd Ed., Vol. I., p. 100, and Purbeck Papers, p. 231.

† See Journal of Arch. Ass., Vol. XXVIII., pp. 301 and 302.

myself, with a life-long acquaintance and deeply-rooted love for the ancient British fortress, have studied carefully its chequered history, can, as they contemplate the many indisputable evidences, realise to any extent what Wareham's pristine size, strength, and importance actually was. Whilst sitting upon the ruined fortifications quietly meditating on what has been, and reviewing the long, fierce, and bloody conflicts, the centuries of miseries and misfortunes from which Wareham derived her unique history, the appropriate words suggest themselves—*Sic transit gloria mundi.*







Newel Staircase. West front. Woodford Castle



Woodsford Castle.

By H. J. MOULE, M.A.

(Read Aug. 9th, 1899.)



WOODSFORD CASTLE is so well described and illustrated in Hutchins' "History of Dorset," ed. 3, that nothing more need be said if this book were in the hands of every one. This, however, is not the case. A few notes are therefore offered to-day. They are founded not a little on Hutchins, but are very far from being a mere epitome of his description.

He, at least the writer of his description, speaks of this building as a castle in a tone of doubt and apology. Why? Wentworth Woodhouse, 600 feet long, is a house. But none the less is a dwelling of six rooms a house. Corfe, with its half mile of *chemin de ronde*, is a castle. But surely so is Borthwick, 40 feet square or so. A castle, a house of defence, it is called, and has many a time proved itself. So Woodsford, likely enough something of a pile in the fourteenth century, lengthened to 100 feet and more in the fifteenth, and then needing a cannonade to take it, is a castle past doubt. It does not go by size.

Time would fail to do more than name the families who have in turn held Woodsford Castle, nor are long pedigrees generally desired, perhaps, on these occasions. In a word, then, the Beletts, de Bryans, Staffords, and, for the last 300 years and more, the Strangways, have been successive owners from Domesday time to this day.

Now to turn to the building. The ground floor and first floor of the main parallelogram and of the north tower, as well as the second floor of the latter, are mediæval. The rest of the second floor is modern, perhaps only of last century. Further, the whole west wing is modern, but partly on an old foundation. This foundation is that of a destroyed tower, one of four formerly standing. A striking building the castle must then have been, with a tower standing out at each corner, one near the middle of the east side, and the existing stair turret, between the western towers. Furthermore, the walls were then capped in whole or in part with machicolated parapets and covered with a lead roof. And Hutchins, ed. 1, says that even in 1774 there was a high stair turret,* overtopping the house. From this lordly estate the castle fell owing to the rebellion of Hugh Stafford in 1460. At least the delightful writer of Coker's Survey says that this is "the greatest Probabilitie." Yet, as he affirms that "the neighbour inhabitants" said that they saw the siege, the question arises whether it may not have happened about 100 years later, when a Stafford rebelled against Queen Mary. In any case, Coker says "the Castell is now almost ruined" by a cannonade from a rising ground then, if not now, called Gunhill. Between this event and 1774 we may hold that the castle was repaired into its present state, with two annexes, one on the east, one on the north, both removed 30 or 40 years ago. And this repair largely consisted in putting on the roof which we see, perhaps the largest thatched house-roof in the kingdom. It has been said that West Stafford Rectory roof, close by, has this dignity. The Rector has most kindly given the length and breadth of the

* Possibly this may be the existing north turret, which in that case has since been lowered.

house, which show an area to be roofed of less than 3,000 square feet, whereas that of the castle as it stands is 3,300.

It is very likely, indeed, that the Beletts and early de Bryans had a strong house here. But the oldest part of the existing castle, the northern 50 feet of its length, was built, we may be pretty sure, in Edward III.'s reign, say about 1350. It is strongly built. The ground floor north wall of the tower is $5\frac{1}{2}$ feet thick. The corresponding stage of the stair-turret, close by, is solid, and is 9 feet in diameter. The $2\frac{1}{4}$ inch wide arrowslits, one in the east wall, one in the south wall of the ground floor of the tower should be noticed. The position of the southern slit may possibly lead one to think that the door of this early castle of de Bryan's was on the east side, the slit being made to command it. The present door of the castle, indeed, is on the west side of the part of the building in question. But that entrance is pronounced by Hutchins to be modern. Before passing on to the interior of de Bryan's work it may be noted that both his and Stafford's masonry is very good. With regret it is confessed that personal search for a certain feature of interest in de Bryan's work has not been made.* Hutchins says that slates, and those Devon slates, are inserted between the courses. Omission of search is the more regretted because the line between slates and no slates should show, what these notes leave in doubt, the limit between the 14th and 15th century work.

As to the interior of the early castle, its three ground-floor rooms are rubble vaulted, plain barrel wise, with very slight curve. Over the two northernmost in the main building extends a room of 23 by 18 feet, now the dining room. It was the hall. The two large beams across it may, or may not, be original. The old fire-place is gone. The 14th century sink, for washing plates, &c., with well moulded sill, remains in the south-east corner. The dais was, therefore, at the north end we may think. The kitchen may have been in the destroyed north-west tower,

* Since this paper was written the slates have been duly found in the northern part of the east wall. But owing to the wealth of creepers the spot where they cease could not be surely found out. The slates are blackish.

on the site of which is a well. From the hall you enter a small room to the south, which was a chapel, and contains a simple but good piscina. South of this is a lofty room, now the drawing room. From the hall, too, the newel stairs of the turret begin. It is, you will remember, solid below. In the north-east corner you enter the first floor of the north tower, containing a room and a small cell* opening into it. In this room is another sink with moulded sill. In the passage from the hall to this room are stairs to the second floor of the tower, the only mediæval part of the existing second floor. Here is a small disused room said to be haunted—likely looking, too. Outside this second floor on the north side is a large panel, as it may be called. By some this is held to be the place where by irons a grate for a beacon fire or a lantern was fastened. This beacon was to guide benighted wayfarers over the ford, near the present Sturt's Weir hatches. The plan in Hutchins shows how you would get your bearing by just "opening" that side of the tower with its welcome flame. Owing to trees it is not very easy to verify this now. As you look at the beacon place, you should notice the fine parapet-bracket close by. Small corbels on the east side of the tower and larger on the east wall of the de Bryan part of the main building may, it is suggested, be imperfect fellows of it. The large transomed window near the bracket is a modern insertion. So, also, are the two northernmost of the transomed windows on the west side of the castle.

We now come to the 15th century half of the main building. Hutchins does not define the point of junction; and, as above said, personal search for the slate courses of de Bryan's work and for any other masonry mark of that point has, unfortunately, not been made. Failing certainty, the idea is thrown out that all the four southernmost rooms are Stafford's. It is true that to outward appearance the castle is divided further south, so as to include two of those rooms in de Bryan's castle. But may not this appearance, the different level of roof and consequent gable, be due to post mediæval refitting? And the two rooms in

* A latrine no doubt.

question are kitchens and seem to be intended to serve the ground floor south hall of Stafford's work rather than the first floor north hall of de Bryan's. This view is, perhaps, strengthened by certain corbels so placed outside these kitchens as to give the idea of a lean-to covered way from the said kitchens to or towards the south hall. These kitchens and the small room south of them are rubble-vaulted, like those to the north of them. The larger of these kitchens has a fine fire-place arch, filling the whole width of the room, 14 feet. Of course this is not so wide as many other such arches. For instance, one in Gaunt's kitchen, Canford Manor, is several feet wider. But this Woodsford arch is well worth examining, being very well and boldly framed. It consists of two 6ft. 10in. by 3ft. stones and a key, all joggled at each joint. The soffit edge is chamfered. The other kitchen has a like, but smaller, arch, and with the stone painted. The large one is of excellent colour. Passing over the next room we come to the south hall, now the stable. As a mediæval hall this differs in shape from our ideal even more than does the north hall. This south hall is a square of 20 feet. At each of its southern angles there seem to have been stairs of some kind to the south-west and south-east towers, respectively. How this could be managed without greatly hurting the look and use of the hall is puzzling. But mediæval ingenuity and taste may have been equal to the problem. And how was the hall roofed? On the south and east walls there are corbels. The north wall is built out, as for a corbel-ledge. The writer in Hutchins does not put his view about these features very clearly. But he seems to think that a smaller room, rubble vaulted, once terminated the building to the south. Then they pulled down that vault, of which the corbel-ledge is one of the springs. The opposite wall was rebuilt further to the south, with corbels for a timber roof. Certainly it is very possible that these corbels took the struts and wall posts of a hammer beam roof, the fellows to which would rest on the continuous ledge on the north side. The corbels on the east wall may have had something to do with stairs to the south-east

tower. All this is thrown out with much diffidence. There is in the south hall a fire-place arch like those in the kitchens, which a little strengthens the idea of those kitchens belonging to this hall. On the west side the hall has a good, mostly original, two-light transomed window. Lying in the arch close by, and which evidently led to the south-west tower, is a curious fan-lighted window frame cut out of one stone. It is of no great age, seemingly. In the first floor of the southern part of the castle the chief feature to note is the double passage to the east tower.

The last detail of the castle to be noted (save a closed chamber in the modern second floor) is the semi-circular stair turret on the west. It is so luxuriantly decked with creepers that it can hardly be seen, much less examined. But from Hutchins' note, and from former personal observation, it may be said that it is interesting as retaining its original stone weathered roof. It may be compared with a very good turret at Wolfeton.

Such is a scrawled, inexpert sketch of this most interesting little castle. It was much more archaic looking 50 years ago. Then it stood out boldly on the west in an open field, and few or no creepers shrouded the hoary walling. And on the east it was surrounded, nay, in one instance leant against, by old-world thatched farm buildings. Yet, as it stands, it tells of another age. It shows much, it speaks much—much that reaches not the bodily eye or ear. No time is there, nor yet ability, for word painting. But there are those present, past doubt, who of themselves can perceive not the prose only, but the poetry, too, of a place like this. The grey Frome on a wild autumn night, and chapmen from Woodbury taking the ford with fearful hearts and only by the castle beacon's help—raiders from Owermoigne moated court battering at the east door—a clash, a crash may be, as a great stone pitches from behind the parapet on basnet of proof—the hiss of the "grey-geese wing" as the "cloth yard shaft" flashes through the tower arrow-slit and slays its man. Truly there is more to see at Woodsford Castle than the hoary walls and the great thatched roof—more to hear than the lowing of cows and song of birds.



Mapperton.

By the Rev. Canon GILDEA.

(Read July 19th, 1899.)



THE estate of Mapperton has come down either through heirs male or female in unbroken descent for 620 years to the present owner, H. F. Compton, Esq., of The Manor House, Minstead, near Lyndhurst.

From traces of old foundations it is not improbable there was on or close to the site of present house a residence of a still more ancient date than the existing building. However that may be, the present house, consisting of a front and north wing, was built, according to Hutchins, by Robert Morgan and Mary, his wife. The following inscription formerly existing in the hall recorded the fact—"Robert Morgan and Mary, his wife, built this house in their own lifetime and at their own charge and cost.

"What they spent, that they lent;
What they gave, that they have;
What they left, that they lost."

According to the same authority there were formerly in the parlour the picture of Mr. Brodrepp and his lady co-heiress of the Morgans, and on the frame of another picture "Robert

Morgan," and near the head of this picture "1560, æt. 51." From this date we can fix the exact time of the building of the house to the period between the last years of Henry VIII. and the early ones of Queen Elizabeth. The front is said to have been partially rebuilt by Richard Brodrepp.

Of the house as it now exists only the north wing retains traces of its beauty as originally built. Even this wing has been sadly altered, but the deep hollow sharp-edged mouldings of the corner pinnacles supporting the Morgan Griffins—the window in the west gable—the dormer in the south side of the roof—the traces of the great east bay, of which a stone only partially broken and still in existence just at the ground level gives the exact splay—all these shew that, beautiful as Mapperton still is by natural situation and architectural effect, it has been shorn of part of its former perfectness.

The front of the house appears to have been not partially but wholly rebuilt by Richard Brodrepp, otherwise the courses of the masonry and the transoms of the windows could hardly have run so accurately together. On the front of the porch is a large shield with the Brodrepp sheldrakes, but the entrance door of the house inside the porch, if not the actual original door of Robert and Mary Morgan's house, seems to be hung on the old stone jambs, the low flat arch of the door head having the Morgan crest in an elaborate piece of carving in the spandrills. This is probably the only piece of original work remaining in this part of the building.

The date of the rebuilding of the front seems a little uncertain. It lies between the time of Richard Brodrepp the 1st, who came into the property by his marriage with Miss Mary Morgan, and that of his grandson, Richard Brodrepp 2nd, who died in 1706. The marriage contract of Richard Brodrepp the 1st is dated 5 of James (1608), but the division of the property which finally assigned Mapperton to Richard Brodrepp and his wife is ten years later, 15 of James (1618). As the style of the rebuilt front, of the old oak panelling of the halls, and of the massive oak balustrades of the back staircase, as well as the ceiling designs of

the principal staircase and of the west room in the north wing, are of the Jacobean period, it would seem probable that Richard Brodrepp the 1st was the rebuilder.

The great features of the interior are the ceilings of the drawing room and the room above, both lighted originally by the great bay window now unhappily destroyed. In the ceiling of the drawing room, in the panels formed by the bold geometric traceries of the plaster, are repeated in several places the crest or arms of the Bretts and Morgans. In the room above wooden bosses, fastened with iron bolts through the floor over, form a basis from which spring to the ceiling moulded plaster arches, which mouldings, continued and intersecting each other, form panels and patterns, while round the room is a cornice of 10 or 11 inches deep, in which the head of a man and a woman, each in a medallion with tracery between, are repeated. This cornice seems to have been cast in a mould in lengths of some 6 feet each, and then put in place and joined.

These ceilings are said to be of the same style and design as those in a well known house at Seven Oaks, in Kent, and of several houses in other places; and as it is known that Henry VIII. introduced foreign workmen into England to carry out work of this special style, it is reasonable to suppose that these ceilings were executed when the house was originally built, either by some of these foreign workmen or their pupils, the more especially as the grant of "the Bonnet patent" seems to imply an intimacy or connection between the Morgan family and the Royal Court.

The ceilings of the principal staircase and of the west room of the north wing are, as I have mentioned above, of a much later date, and were probably part of Richard Brodrepp's Jacobean restoration.

A minor feature of the interior, of interest to any one skilled in actual workmanship, is that the old oak doors, though only one inch in thickness, are still for the most part quite "true" and "out of winding," and have scarcely shrunk, if at all, since the day they were put in place.

“The garden fronts face the south and east, and were modernised by the last Mr. Brodrepp. Happily the highly picturesque entrance front which faces the north escaped this process” (Hutchins). At the south-east corner of the present building, and which hardly seems part of its plan, there are rooms of which the stone work is of an old character. A large arched room, made either for cellarge or to raise the ground floor to the level of the terrace, forms the basis of this part of the buildings. These rooms may have been outbuildings, or they may be part of a house still older than the Morgan’s house. They are united to the present house by modern brickwork. In one of the rooms, built into the wall, is part seemingly of the under portion of a large mantelpiece, carved with a cable pattern.

Further north, or between the east windows of the drawing room and the edge of the terrace, old foundations were found some years ago when an asphalt path was being laid down. They may have been the foundations of an older house or of a wall running originally along the edge of the terrace : but this is mere conjecture.





Note on a
Fossil Crocodile from Chickerell.

By R. LYDEKKER, B.A., F.R.S., &c.

(Read March 9th, 1899.)



LAST summer I received from Mr. Nelson M. Richardson an associated series of reptilian remains from a newly-opened pit in the Oxford clay of Chickerell, near Weymouth. These comprised several scutes, the imperfect skull, a number of vertebræ (29), and the nearly entire right ilium.

The presence of scutes (fig. 1) indicated the

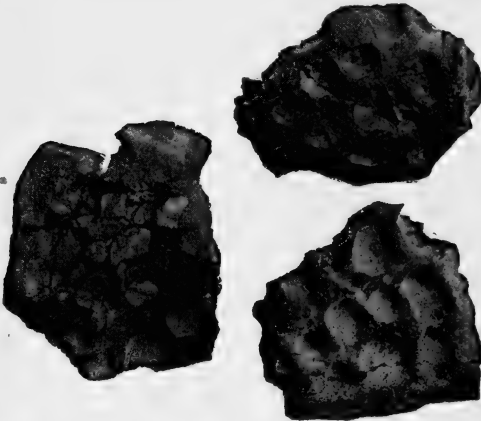


FIG. 1.—THREE DERMAL SCUTES OF STENEOSAURUS
FROM CHICKERELL.

crocodilian nature of the animal; while they further suggested its reference to the Jurassic genus *Steneosaurus* rather than to the contemporary *Metriorhynchus*, in which these structures are undeveloped. And this reference is confirmed by the character of the right ilium (fig. 2), which is one of the most



FIG. 2.—IMPERFECT RIGHT ILIUM OF STENEOSAURUS
FROM CHICKERELL.

characteristic bones in this group of crocodiles. With the exception of the pre-acetabular process (restored in the figure) and the tip of the posterior extremity, the bone is complete. And it will be found to agree in all respects with the specimen of the same bone of the opposite side of a *Steneosaurus* from the Oxford clay of Peterborough figured by the late Mr. J. W. Hulke in the *Proc. Zool. Soc.* for 1888, plate xix., figs. 3 and 4. In figures 1 and 2 of the same plate is shown the corresponding bone of *Metriorhynchus*, which will be seen to be of a shorter, narrower, and taller form than that of *Steneosaurus*, with the pre-acetabular process projecting in front of the anterior border which is straight, instead of convex. So far indeed as I can see, no specific difference can be detected between the Northamptonshire and Dorsetshire specimens. But as Mr. Hulke does not consider it advisable to attempt the specific determination of the former, and seeing also that the fine series of Peterborough

skeletons in the British Museum have not yet been named, I shall follow the same course here, and content myself with the generic identification.

When the Peterborough specimens are investigated it will doubtless be found that the Dorsetshire crocodile is specifically the same; and the record of its occurrence may be of some value from a distributional point of view. Not improbably the English Oxfordian form will be found inseparable from one of those already named on the Continent.

It may be added that two species of this genus have already been recorded from Dorsetshire by Mr. Hulke. These are *Steneosaurus stephani* * from the Cornbrash of Closworth, and *S. megarhinus* † from the Kimmeridge Clay of Kimmeridge Bay, the latter being incorrectly referred to *Peleosaurus*. ‡ The type specimen of neither of these admits of comparison with the remains from Chickerell, although their different geological horizons are probably indicative of specific distinction.



* Proc. Dorset Field Club, Vol. I., p. 29 (1877).

† Quart. Journ. Geo. Soc., Vol. XXVII., p. 442 (1871).

‡ See Lydekker, Cat. Foss. Rept., Brit. Mus., pt. i., p. 117.



Eggardon Hill:
Its Camp and its Geology.

By Rev. H. S. SOLLY, M.A.

(Read on the Hill July 19th, 1899.)



THIS camp on Eggardon Hill, about which I have been asked to say a few words, belongs to the class which used to be called Roman camps, but which we now know were not constructed by the Romans, but by the inhabitants whom the Romans found here and conquered. Such fortifications are generally called British camps, and there is no objection to this name if we understand that it does not imply a Celtic origin. For the inhabitants of this part of Britain conquered by the Romans were not a Celtic race—did not belong to the great Aryan Family of nations—but were Iberians, and are now represented by the Basques of the Pyrenees. They were a small, delicate-featured race, with dark hair and eyes, and have left considerable evidence of themselves as ancestors among the Dorset population of to-day. We find their camps extending over a considerable area of Britain, as far east as Lewes in Sussex and along the Welsh Marches. There are many fine specimens on the downs of Dorset, Maiden

Castle being the largest. We also know that it was the same race who constructed and inhabited the Lake Dwellings at Glastonbury. I believe I am right in saying that no scientific examination has ever been made of Eggardon Camp; but in Vol. XVIII. of the Proceedings of the Field Club, p. xliii., will be found some account of the Glastonbury Village by Professor Boyd Dawkins, and in Vol. XIX., p. lxxx. sqq., will be found the same gentleman's account of the camp at Hod Hill. We may apply the information there given to this camp on Eggardon.

The Iberians survived into the pre-historic Iron Age, and were then very far from being mere barbarians. They were agriculturists, and practised the arts of spinning, weaving, and making pottery. They had saws, axes, hoes, and other tools made of iron. They had flocks and herds of sheep and cattle, and kept pigs, horses, dogs, and, probably, goats. We must not imagine that they always lived in these camps. But they were perpetually fighting; fighting with each other and with different races with whom they came in contact; fighting, Professor Dawkins says, as the Scottish Highlanders used to fight, clan against clan, until the country was finally pacified in comparatively recent times. They needed these large camps of refuge for their wives and children and their live stock to save them from annihilation during the merciless forays that were of frequent occurrence. I would venture to suggest that the "Lynches," or "Terraces of Cultivation," of which we have interesting specimens near Bridport, were executed by the same race at this same period, when every little district had to support itself without exchange with any outside area, when there were no roads and no trade, and there was a state of almost constant warfare.* How ably this people used the spade in constructing fortifications, especially how well they guarded the entrances to their camp, may be noticed on Eggardon. There are various

* I do not doubt that some of these terraces are originally due to "differential hardness" in successive beds of Midford Sand, or that others were made by ploughing; but it is difficult to believe that these two causes account for all that we see.

depressions still remaining which probably formed the bases of their dwelling-places, and which deserve the careful examination of a competent explorer. What will probably not be found here is any trace of Roman occupation. The Romans pacified the country, put a stop to this perpetual internecine warfare, as we have done in India, and these camps of refuge were no longer needed. Of this we have an interesting proof in the fact that the Roman road which runs west from Dorchester and passes through Bridport comes tolerably near to this camp on Eggardon, but does not come to it, leaves it instead contemptuously on one side as a place of no importance. Herein lies the human interest connected with these ancient ramparts and the old road. They tell of a state of things existing before the advent of the Roman power, and of the civilisation introduced by those whose mission it was "to spare the conquered and war down the proud." These mounds of earth, and yonder road leaving them on one side, tell what a blessing to Britain was the Roman conquest.

Your attention will be called to an interesting octagonal shape marked out within the camp by ridges of earth some two or three feet high. It is difficult to conjecture the purpose of this octagon; probably it is of very much later date than the structure of the camp. There are also two large depressions near the east entrance to the camp; they may be simply the hollows out of which chalk was dug to form the defences of this entrance, but they, too, deserve the attention of the explorer's spade.

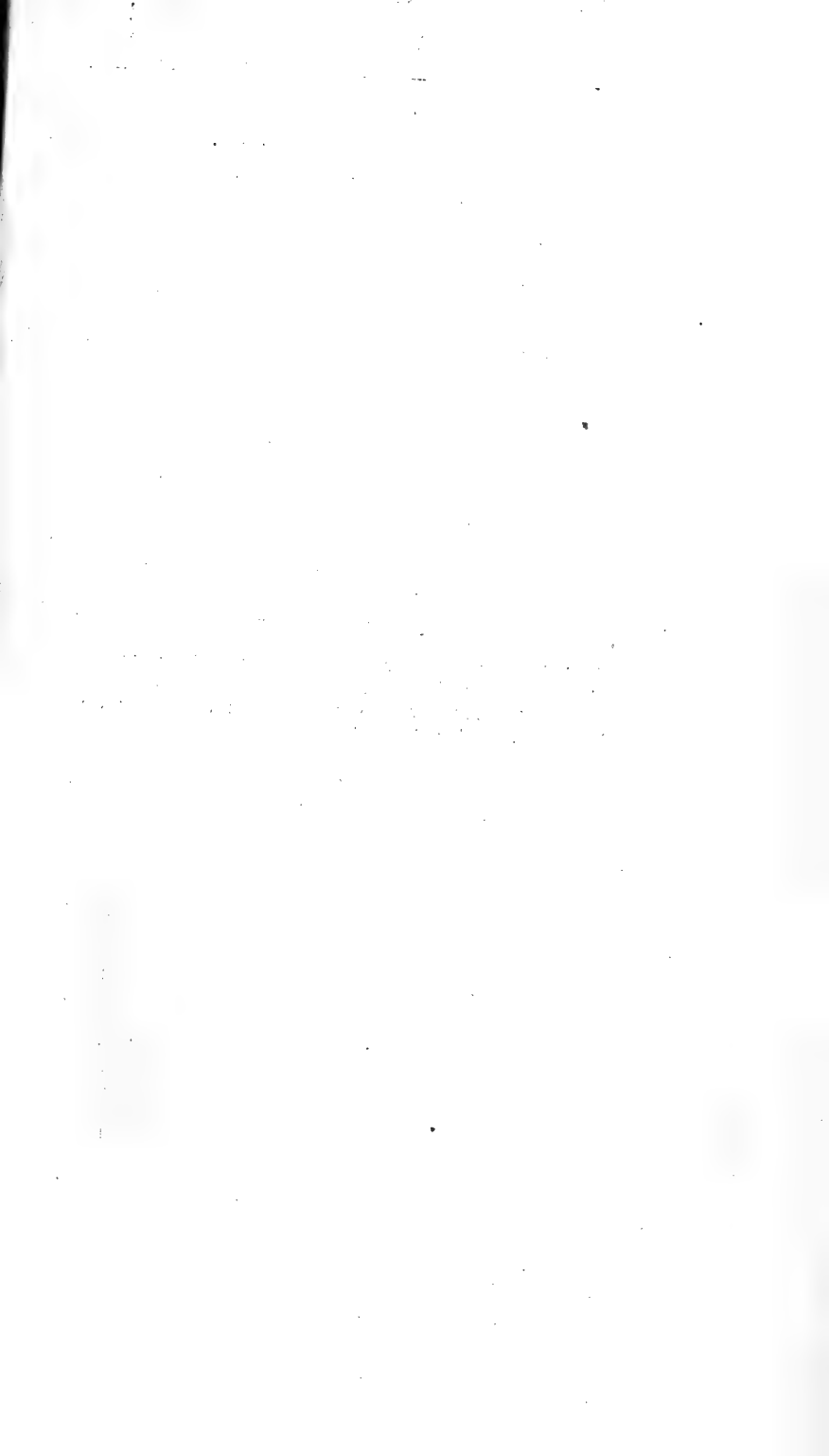
Turning to the geology of the hill, we observe that we are now on the western edge of the chalk plateau which extends eastwards with more or less interruption to the cliffs of Kent, but which, to the west, is found again only in a few outliers, such as the cliff at Beer Head. Immediately below the chalk is the greensand, which also belongs to the Cretaceous Series of Rocks, and this greensand may be seen from here forming the summit of most of the higher hills within sight. Let me again refer you to Vol. XVIII. of the Proceedings of the Club, where on p. 174, sqq., you will find a paper written by Mr. Jukes-

Browne on "The Origin of the Vale of Marshwood and of the Greensand Hills of West Dorset." If you consult his map and section you will easily trace the circle of these hills—Mount Pleasant, Warren Hill, Hackthorn, Lewesdon, Pillesdon, Lambert's Castle, Hardown Hill, Golden Cap, and Eype Down. The summits of all these are of greensand, and the geologic interest in the view we now have of them is to reconstruct in imagination the great chalk plain which once extended over them all and the whole intervening space, and then to realise how the forces of denudation, especially the frost and the rain, have removed it all and made the scenery which now lies before us. The process has been much aided by landslips. At Eggardon Farm there is a mass of chalk, now quarried for lime, which must have slipped many hundreds of feet from its original position. When rain falls on porous strata, such as chalk and sand, it sinks lower and lower till it reaches a bed such as the lias clay, which forms the floor of the valleys before us. The water cannot pass the clay, so finds its way to the surface in springs, and flows to the sea in streams and rivers. But before reaching the surface of the ground it does a good deal in the way of excavating and undermining the foundations of the permeable strata through which it can pass; and the time comes when a mass of chalk or sandy rock will have no sufficient support and will slip to a lower level. We have a splendid example of this in the great landslip between Lyme Regis and Seaton. The large scale on which this took place is due to the fact that cliffs of calcareous sandstone there rest on a bed of clay which slopes towards the sea, so that an inclined plane is formed down which the cliffs slipped when their foundations were sufficiently undermined. But the same agency on a smaller scale has been ceaselessly at work over this whole area, and these hills, while they may be called "everlasting" in comparison with the span of human life, are really themselves the evidence of the ceaseless changes recorded by geology.

While, however, the forces in operation to-day are the same as those which have done the whole work in the ages of the

past, there was certainly a time when they operated much more rapidly than they do at present. When the land was at a considerably greater height above sea level, and there was a larger rainfall, the forces of denudation would act much more powerfully. But there was also a period when their efficiency would be increased one hundred-fold. During part of the Glacial Epoch there must have been a time when the ground was frozen solid to the depth of several feet, and when only a few inches from the surface downwards would be thawed by the summer's sun. Imagine the effect of heavy rainfall or melting snow upon this squashy mud lying above ground which was frozen and, therefore, impermeable to water. The mud would be simply swept away. There would be no vegetation to hold it together. Season after season the frost would be melted out of a fresh surface, and torrents formed which would carry off the *débris*. Some such action as this is needed to account for the moulded forms of our chalk downs all over the South of England. Now that they are covered with turf, and capable of absorbing the rainfall like a sponge, centuries pass without appreciable change in their shape. These ramparts, scarcely altered since pre-historic times, are evidence of this. But there are districts, for instance, in Canada, where denudation is very rapid owing to the intense cold of winter followed by floods in spring acting on the partially thawed surface of the ground. Anyhow, whether the time required for it was long or short, the great chalk plain which once extended westward from here has disappeared, and the principal traces of it that still remain may be found in the flint pebbles which constitute the great majority of the stones upon our sea beach. If some of these pebbles could tell us their whole history this would settle many vexed problems in geology. But pebbles answer no questions, and we are left to find "Sermons in Stones" as best we may.







1.—GENERAL VIEW OF BEACH LOOKING TOWARDS PRESTON COASTGUARD STATION IN THE DISTANCE. SEA ON RIGHT, LGDMOOR (FLOODED) ON LEFT. ROAD ENTIRELY COVERED BY SHINGLE IN STORM OF FEB. 13TH, 1899. PHOTO FEB. 16TH, 1899.

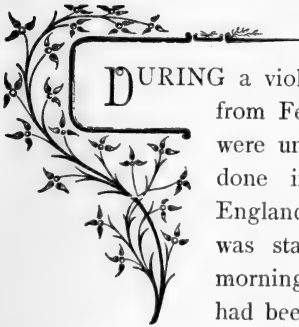


2.—VIEW OF LODMOOR SIDE OF BEACH, SHEWING DAMAGE TO ROAD AND SHINGLE PROMONTORIES WASHED INTO LODMOOR.



Notes on the Effect of the Gale of
February 11-13, 1899, on the Beach to
the East of Weymouth.

By NELSON M. RICHARDSON, B.A., F.E.S.



DURING a violent south-westerly gale which blew from February 11th to 13th, 1899, the tides were unusually high and much damage was done in many places in the South of England. At Weymouth Harbour the tide was stated to have been higher on the morning of Monday, February 13th, than had been the case during the past 20 years. Some damage was done in Weymouth and a ship was driven across on to the rocks at Osmington Mills from her anchorage in Portland Roads.

One of the most striking effects of the gale was in connection with the beach and road which run from Greenhill to the Preston Coastguard Station. This ridge of beach is, like the neighbouring Chesil Bank, raised a few feet above high-water mark, though not to the same extent as the latter, and is somewhat over a mile in length and about 40 yards in breadth,

including the road. At about a quarter of a mile from Greenhill Gardens it begins to widen, and gets wider as it approaches Weymouth. The height at the old Gatehouse is about 7 feet above high-water mark, and at the point represented in Fig. 3, about a foot lower, the height falling gradually towards the Coastguard Station, near which point the ground rises suddenly and the beach entirely loses its peculiar character, becoming an ordinary sloping sea-beach. This also occurs where the ground rises at the Weymouth end. On the inner or land side lies Lodmoor, a marshy and very low tract of land which is generally flooded in the winter. The road to Preston from Weymouth runs along the land side of the beach, which rises 5 or 6 feet higher between it and the sea, whilst on the sea side, near the Preston end, are still to be seen, at about the same level as the present road, portions of concrete, which formed the road many years ago. From this we may infer that the beach has been moving inland at a rate possibly approaching 2 to 3 feet in a year, but there do not seem to be sufficient data for accurate measurement. It would also seem probable, considering the effect of the storm of February last, that much, if not the whole, of the movement was caused by large steps in previous storms and was not the result of any gradual process, as except in very rough weather the waves do not nearly reach the top of the beach.

During the gale, an immense quantity of shingle was thrown over on to the road, covering it for the space of about half a mile of the Preston end to the depth of some feet; in one place it is stated to have amounted to 6ft., but usually the depth was about 3 feet. On the side of the road adjoining Lodmoor much damage was done in places by the scooping out of large hollows in the road, and down these hollows masses of shingle were poured, forming promontories projecting into Lodmoor. This is well shewn in Fig. 2, where the lady (Mrs. Richardson) is standing at the middle of the road. This photograph was taken from the edge of one of the shingle promontories. Preston Coastguard Station is seen in the distance, and about midway lies a very long shingle promontory.



3.—MEN CLEARING SHINGLE FROM ROAD ABOUT HALF WAY BETWEEN OLD GATEHOUSE AND COASTGUARD STATION AFTER STORM OF FEB. 13TH, 1899. PHOTO FEB. 16TH, 1899.



4.—MEN CLEARING SHINGLE FROM ROAD (NEARER COASTGUARD STATION THAN 3). SHINGLE 3FT. DEEP OR MORE OVER ROAD.

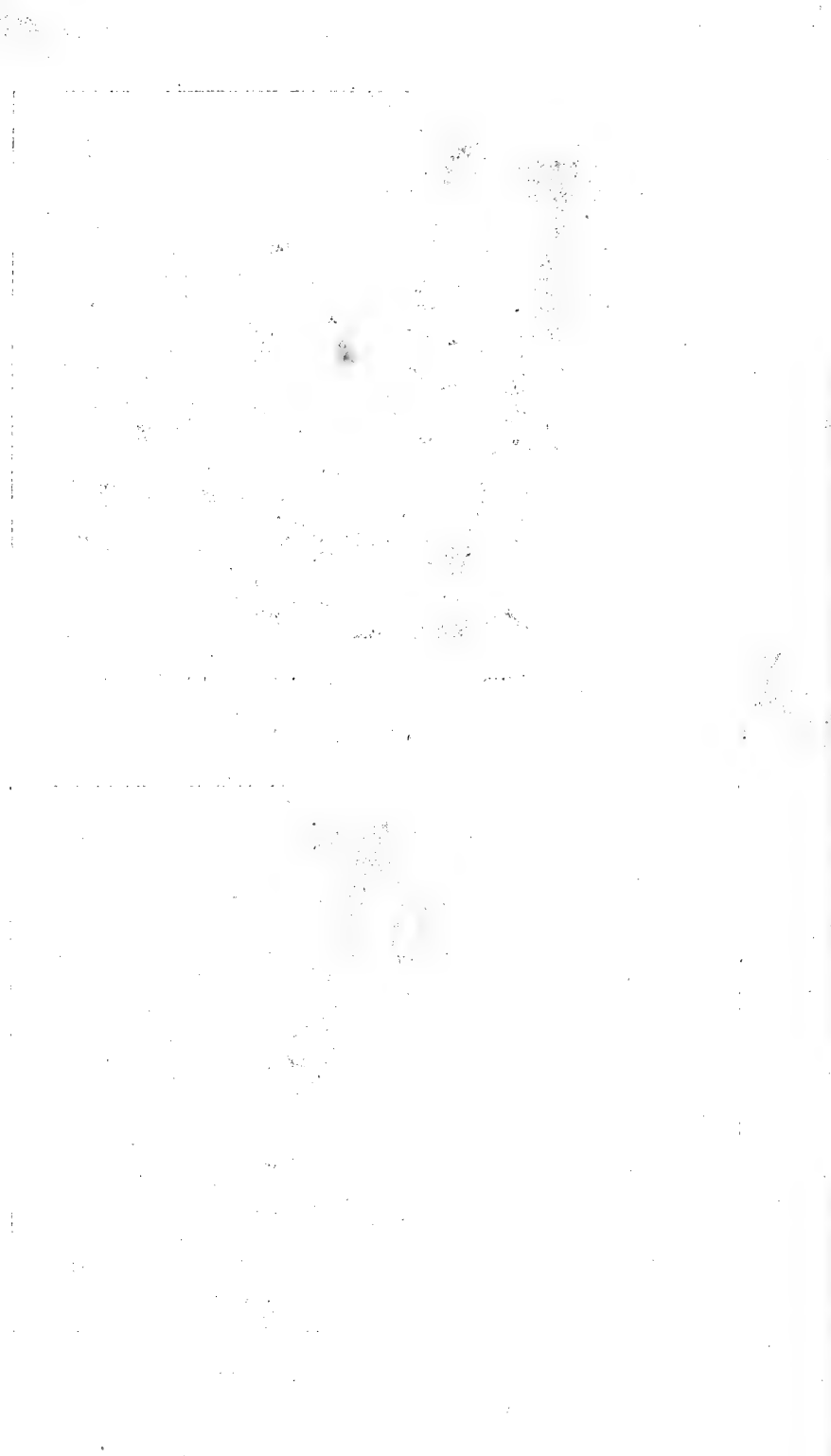


Fig. 1 is taken from the top of the beach and gives a general view of the whole, the road being quite invisible. In the distance is the Preston station, with the sea to the right and Lodmoor flooded to the left. Far away on the left of the beach are the men, about 80 in number, employed to clear the road.

Figs. 3 and 4 show the men employed in clearing away the shingle. Fig. 3 is taken at a spot about midway between the old gate house and the Coastguard Station, where the shingle was about 2 feet deep. Fig. 4 at a spot nearer Preston where the shingle was about 3 feet deep. It shews a bank of about 6 feet high thrown up on the sea-edge of the road, with the sea just visible over the top.

The whole of the movement of shingle and destruction of the road is said to have taken place early on the morning of Monday, February 13th, and to have been accomplished in the short space of half-an-hour. This may have been the case, considering that the full effect of the sea would only be felt whilst the tide was at its greatest height. No similar covering up of the road by shingle has occurred for many years, if ever, and the present one is confidently ascribed in many quarters to the erection of the new breakwater. In the absence of direct evidence on this point, it would seem that the very high tides and violent S.W. gale coming together might have been amply sufficient to cause the disaster, had the new breakwater not existed.





Report on Observations of the First
Appearances of Birds, Insects, &c., and
the First Flowering of Plants

IN DORSET DURING 1898.

By NELSON M. RICHARDSON, B.A., F.E.S.



THE names of those who have this year sent in returns are as follows; they are denoted in the Report by initials:—

(J. C. M.-P.) J. C. Mansel-Pleydell, Whatcombe, near Blandford.

(N. M. R.) Nelson M. Richardson, Montevideo, near Weymouth.

- (Miss P.) Miss Payne, Weymouth.
(E. R. B.) E. R. Banks, The Rectory, Corfe Castle.
(O. P. C.) Rev. O. P. Cambridge, Bloxworth Rectory.
(H. J. M.) H. J. Moule, Dorchester.
(T. R. A.) T. R. Atkinson, Sherborne.
(E. S. R.) E. S. Rodd, Chardstock House, Chard.
(G. H.) G. Hibbs, Bere Regis.
(D. C.) D. Curme, Childe Okeford, near Blandford.

- (S. C.) S. Creed, Coombe Farm, Sherborne. Until April 6 Mr. Creed was living at Cheddington, and his notes up to that date refer to that locality.
- (H. S. G.) H. S. Gray, Rushmore (Wilts); also at Motcombe, near Shaftesbury.
- (R. F. W.) Rev. Canon R. F. Wheeler, Haselbury Bryan Rectory.
- (E. J. B.) Rev. E. J. Bodington, Osmington Vicarage.
- (J. R. E.) J. R. Eldridge, Poole.

NOTES ON RARE AND OTHER BIRDS IN 1898.

SHOVELLER (*Spatula clypeata*).—Three young specimens were shot in the river by Mr. E. S. Clark on August 6, and another was seen there by Mr. J. B. Luckham early in September. (E. R. B.)

CROSSBILL (*Loxia curvirostra*).—These have been observed this autumn in W. Dorset and S. Somerset. (E. S. R.)

ROSE-COLOURED PASTOR (*Pastor roseus*).—Seen by Mr. A. Murray in the Rectory garden, Shapwick, during August and September. (J. C. M.-P.)

THRUSH (*Turdus musicus*). BLOXWORTH. — Numbers of Thrushes suddenly appeared from March 19th to 26th, when they disappeared as suddenly. (O. P. C.)

BLACKBIRD (*Turdus merula*).—A white-tailed variety observed at Sherborne. (T. R. A.) One at Yeovil with white head and the greater part of the right side white with some blackish spots (S. C.)

ROOK (*Corvus frugilegus*).—A white-winged variety observed at Sherborne. (T. R. A.)

GREAT TIT (*Parus major*).—An almost white variety has appeared here (Osmington). That it was a Great Tit could not be doubted from size, note, movements, and companions. The only markings on it were blue of the colour of the blue in the Blue Tit, and these were on its back and breast, amounting to the appearance of a shadow only. (E. J. B.)

CHAFFINCH (*Fringilla cælebs*).—A White-winged Cock Chaffinch observed at Sherborne. (T.R.A.)

REDSTART (*Ruticilla phœnicurus*).—Not uncommon about Sherborne. One or more pairs observed every year in the same localities. (T. R. A.)

WOODPECKERS (*Dendrocopus major and minor*).—The Greater and Lesser Spotted Woodpeckers, both observed at Sherborne. (T. R. A.)

WATER RAIL (*Rallus aquaticus*).—One shot at Bere Regis on January 18. (G. H.)

KESTREL (*Falco tinnunculus*).—Bere Regis. Four eggs April 24. (G. H.)

CORNCRAKE (*Crex pratensis*).—A fine specimen, well nourished, with the plumage in perfect condition, was caught on March 20 in some allotment gardens just outside Poole, having been driven by a ferret out of a rat's hole in a hedge bank, where it had evidently taken refuge. It was either a very early visitor or had remained during the winter. The weather was unusually mild. (J. R. E.)

TUFTED DUCK (*Fuligula cristata*), &c.—One dropped down into the fresh water lake in Poole Park, attracted by the tame ducks, and remained for several days, seeming very tame. I saw it myself on April 3, when it was very lively, ducking itself and raising and depressing its long crest feathers. It disappeared on April 4. A wounded (winged) *Widgeon* dropped into the same lake during the winter, and was later on joined by a male bird, which has remained with it ever since, keeping as far away from the people as possible, where they are sheltered by the long grasses. We have had between 30 and 40 *Bald Coot* in the Park all the winter, but there are now (April 12) only a few pairs left. I think they go to Littlesea in Studland Bay to breed. There have also been a pair of *Dabchicks*, and I have several times seen a *Kingfisher* along the shore of the Harbour this winter. (J. R. E.)

(E. J. B.), Osmington, has sent the following note on various birds:—Large numbers of Guillemots (*Uria troile*), some razor-

bills (*Alca torda*), and a few Puffins build on the cliffs east of Whitenose every year. Our fishermen say that this spring considerable numbers of the dead bodies of these birds have been washed ashore, they think owing to some disease to which they, together with the Razorbill and Puffin, would appear to be subject periodically. Possibly, however, it may be accounted for by the rough storms of March and the difficulty of procuring food. The Razorbill is common with us, though not so plentiful as the Guillemot. The Puffin is rarer just here. An intelligent fisherman speaks of the haste with which the parent Guillemots bring their young down to the water. He has seen the young far out at sea long before they were properly fledged, and he mentions from observation instances of the young vanishing a day or two after having been hatched from the egg. Were they destroyed by enemies, or did they fall from their ledge of rock? He thinks not, but that they were carried down by their parents to the sea. The ravens have once more built their nest in a wholly inaccessible cliff not very far from here. The Nightingale for the first time appears to have bred with us this season, though I have not found the nest. At least two males began singing on 26th April. The song continued till 4th June, though it was only maintained at its best for about a fortnight. This is the first season I have myself heard this bird within this parish, though it is said to have sung before. The song was begun about two hours before sunset, and would go on through the night till towards noon the next day. The Black Cap has seemed more plentiful than last year. Song Thrushes, it would appear, have never recovered in numbers from the great frost of 1895. Might not they be protected during the breeding season? They are not so destructive to fruit as the blackbirds. The Bunting always appears about the first week in May on the high sprays of the hedges round the fields, singing his harsh but pleasing song. But curiously we never see him here in flocks in the winter. When the breeding season and the moult is well past these birds appear to leave our neighbourhood to flock elsewhere. For two years a pair of Sparrow-Hawks have built

their nest in a low fir tree, about 18 feet high, in the middle of a "chicken nursery" in this neighbourhood. But, alas! They paid for their enterprise by losing their eggs. The Goldfinch is still almost common with us, breeding chiefly in the orchards. But it sadly needs more strenuous protection, not only within the breeding season, but all through the year. Few nests seem to escape depredation.

The only botanical notes are from Mr. Creed (Sherborne). "First observed wheat ears, June 10; barley ears, June 24; oat ears, June 8. Began cutting grass June 8."

And from Mr. T. R. Atkinson. "I noticed in June a large mass of *Mimulus luteus* in bloom by the roadside about three miles out of Dorchester on the Maiden Newton Road. I have never seen this plant growing wild in England before."

This plant is included as a naturalized species in the President's "Flora of Dorset." It only occurs as such in this country, being a native of the Western part of North America. A locality given by Mr. Mansel-Pleydell is Riverside, Bradford Peverell, which cannot be any great distance from the spot which Mr. Atkinson indicates.

With regard to the notices of the dates of flowering of cultivated plants—*e.g.*, corn, especially those which are yearly grown fresh from seed, the records are not likely to be so valuable as those of strictly wild flowers, on account of the artificial conditions that affect the date. Probably the date of sowing would make a considerable difference as well as the variety of wheat sown, as one kind would flower later than another. This latter is the case amongst strictly wild plants, for one bush of hawthorn, for instance, will be sometimes quite green whilst a neighbouring one is still in bud. It has often been urged upon our observers that they should choose out one particular bush and make their yearly observations upon it alone—but if the earliest bush in their neighbourhood is chosen, it will come to much the same thing if they merely look out for the first flowers generally—they are usually to be found in the same spot year after year owing

either to the earliness of some individual bush or to the warm sheltered position.

The other notes sent in are as follows:—

“It may be noted that at Tincteton one or more wells which had run dry last summer continued dry to January 15th, 1899, if not longer.” (H. J. M.)

And the following from Mr. E. S. Rodd:—“January, 1898, was one of the driest, finest, and mildest ever known, barely any frost and no snow, and very little rain. The whole winter, from November, 1897, to February, 1898, was one of remarkable mildness and dryness. Grass was growing all the winter. On Monday, February 21st, a very heavy fall of snow fell in the South of England, and on Tuesday, February 22nd, there were from 20 to 24 inches of snow all over the ground, and snow drifts 4 to 8 feet deep in this district. All traffic was impeded for some days. Hard frost prevailed for a few days, too, about this time. This check to vegetation will do good, as vegetation was quite a month in advance of the usual season. A very dry, warm summer; four months' drought this summer, but enough rain to give us a most abundant hay and corn harvest. Weather very mild with a good deal of rain and hardly any frost up to December 31, 1898.”

The lists of First Appearances, &c., are appended:—

FIRST APPEARANCES OF BIRDS IN DORSET IN 1898—(continued).

	Dorset.	J. C. M.-P. Whatcombe.	N. M. R. Weymouth.	E. R. B. Corfe Castle.	O. P. C. Bloxworth.	T. R. A. Sherborne.	E. S. R. Chard.	G. H. Bere Regis.	D. C. Childe Okeford.	S. C. Cheddington.	S. C. Coombe Farm, Sherborne.	R. F. W. Haselbury Bryan.	H. S. G. Rushmore.	H. S. G. Motcombe.	E. J. B. Osmington.	H. J. M. Dorchester.	J. R. E. Poole.
Swallow ..	Ap. 2	Ap. 11	Ap. 13	Ap. 5	Ap. 9	Ap. 8	Ap. 2	Ap. 6	Ap. 8	..	Ap. 12	Ap. 8	Ap. 9	Ap. 8	Ap. 8	Ap. 20	
Sand-Martin	Nov. 8	Oct. 19	Nov. 8	..	..	..	..	..	..	..	..	Oct. 8	..	..	Oct. 19	..	
	Ap. 6	Ap. 20	..	Ap. 12	Ap. 16	..	..	Ap. 6	Ap. 14	..	May 6	..	..	..	..	..	Ap. 10
Swift ..	May 6	..	..	..	..	..	..	..	May 6	..	..	..	..	..	..	..
	Ap. 26	May 2	Ap. 28	Ap. 29	May 8	Ap. 26	..	Ap. 26	..	..	May 7	..	..	..	..	May 2	
Nighthjar ..	Aug. 23	..	..	..	..	..	..	Aug. 23	..	..	..	..	..	..	..	..
	Ap. 20	May 15	Ap. 20	May 7	May 5	..	..	May 9	May 8	..	June 7	..	..	..	..	..
Turtle Dove	Ap. 20	..	Ap. 20	..	May 7	..	..	L. Aug. 23	..	..	..	..	..	..	..	..
	Ap. 20	..	Ap. 20	..	May 7	..	..	L. May 9	..	..	..	..	..	..	..	..
Woodcock ..	May 2	May 2	May 22	May 16	May 16	May 21	..	..	..	..	May 25	..	..	..	..	..	Mar. 20
	June 12	..	(7)	..	..	..	..	..	..	..	June 12	..	..	..	..	..	Mar. 20
Corncrake (2)	Mar. 24	Mar. 18	..	..	..	..	..	Mar. 24	..	..	..	..	..	..	..	..	Mar. 20
	Mar. 20	May 8	May 25	..	..	..	..	L. May 6	..	..	..	..	..	..	..	..	Mar. 20
Wryneck ..	Mar. 31	..	..	Ap. 11	Ap. 13	..	..	..	..	..	..	..	..	..	..	..	Mar. 31

N. Nesting. E. First Egg. S. Song first heard. L. Last seen or heard.

CORFE CASTLE.—House Martin, Ap. 29. BLOXWORTH.—Missel Thrush song first heard Jan. 24.

(1) Cuckoo heard at Wimborne Ap. 13 (E.R.B.). (2) Corncrakes appear to be getting much scarcer at Chard (E.S.R.). (3) Nighthjar sitting on five eggs May 8 (G.H.). (4) Rook nesting Dec. 9 (D.C.). CHILDE OKEFORD. (5) Black bird and Skylark autumn singing commenced Oct. 31 (S.C.). SHERBORNE. (6) Probably the first song was before May 3 (E.J.B.). (7) Very rarely seen at Chickereil. (8) Numerous. (9) See note ante near beginning of Report.

EARLIEST DORSET RECORDS OF PLANTS IN FLOWER IN 1898.

	Dorset.	J. C. M. P. Whatcombe.	N. M. R. Weymouth.	Miss P. Weymouth.	E. R. B. Corfe Castle.	O. P. C. Bloxworth.	H. J. M. Dorchester.	T. R. A. Sherborne.	E. S. R. Chard.	G. H. Bere Regis.	D. C. Childe Okeford.	S. C. Cheddington.	S. C. Sherborne.
Wood Anemone	{ Leaf .. { Flower Feb. 10	Mar. 19	Mar. 18	..	Mar. 19	Mar. 1	..	Mar. 19	Feb. 10	Mar. 28*	Mar. 11		
Lesser Celandine	{ Leaf .. { Flower Jan. 1	Jan. 1	Jan. 1	Jan. 28	Jan. 18	Feb. 20	..	Jan. 3	Feb. 15	..	Ap. 3	Ap. 1	
Marsh Marigold	{ Leaf .. { Flower Jan. 14	Feb. 3	Jan. 31	Feb. 26	Feb. 2	..	Feb. 10	Jan. 14	Jan. 26	Feb. 25	Jan. 22	Jan. 20	
Dog Violet	{ Leaf .. { Flower Jan. 20	Mar. 11	..	..	Mar. 26	..	Mar. 24	Mar. 18	Jan. 20	..	Feb. 11	Ap. 6	
Greater Stitchwort	{ Leaf .. { Flower Jan. 11	Mar. 8	Ap. 4	..	Mar. 18	Ap. 3	Ap. 21	Mar. 17	Feb. 16	..	Jan. 11	Mar. 22	
Herb Robert	{ Leaf .. { Flower Jan. 23	Mar. 19	..	..	Feb. 16(1)	..	..	Ap. 13	Jan. 26	..	Ap. 7	Ap. 6	
Horse Chestnut	{ Leaf .. { Flower Jan. 15	Ap. 23	..	..	..	May 17	..	May 2(3)	(5)	..	Jan 23	..	May 2
Bush Vetch	{ Leaf .. { Flower Mar. 15	Ap. 25	Mar. 21	Ap. 26	Mar. 16	Mar. 15	Ap. 8	Mar. 27	Ap. 10	..	Ap. 6	..	May 18
Blackthorn	{ Leaf .. { Flower Feb. 10	May 12	May 6	May 13	May 10	May 15	..	May 5	Feb. 10	..	..	..	May 24
Hawthorn	{ Leaf .. { Flower Feb. 27	May 4	May 18	..	May 1	..	..	May 3	..	..	..	..	Ap. 27
Ivy	{ Leaf .. { Flower Ap. 25	Mar. 29	Mar. 15	..	Mar. 17	..	Mar. 26	Ap. 17	Ap. 4	Dec. 16	..	Mar. 25	Ap. 21
Dogwood	{ Leaf .. { Flower Ap. 26	May 2	Ap. 26	May 14	May 14	Mar. 20	Mar. 18	Feb. 27(4)	..	Mar. 16	..	..	May 25
Elder	{ Leaf .. { Flower Sept. 19	Oct. 3	Sept. 19	Sept. 24	June 23	May 14	..	May 8	..	..	..	..	Oct. 31
Wild Teasel	{ Leaf .. { Flower Jan. 18	June 14	June 23	May 9	..	..	Jan. 28	..	..	..	..	..	Jan. 18(6)
Devil's Bit	{ Leaf .. { Flower May 5	June 12	June 1	May 23(2)	May 5	..	..	..	..	Jan. 22	..	..	June 11
Knapsweed	{ Leaf .. { Flower July 16	July 16	Aug. 3	..	..	..	..	..	..	..	..	..	..
Field Thistle	{ Leaf .. { Flower July 4	July 8	Aug. 3	..	June 17	..	..	..	..	..	..	..	July 4
Coltsfoot	{ Leaf .. { Flower Jan. 21	May 23	July 24	..	July 6	..	..	..	..	Jan. 12	..	..	July 5
	{ Leaf .. { Flower May 1	Feb. 10	Jan. 25	..	..	..	..	May 21	..	..	..	..	July 10

EARLIEST DORSET RECORDS OF PLANTS IN FLOWER IN 1898—(continued).

	Dorset.	J. C. M.-P.	Whatecombe.	N. M. R.	Weymouth.	Miss P.	Weymouth.	E. R. B.	O. P. C.	H. J. M.	Dorchester.	T. R. A.	F. S. R.	Chard.	G. H.	Bere Regis.	D. C.	Childe Okeford.	S. C.	Cheddington.	S. C.	Sherborne.	
Yarrow ..	{ Leaf .. { Flower ..	Feb. 3 June 22 June 15	July 2 May 25 May 26	Aug. 3 June 1 June 18	.. 3 .. 1 .. 18	.. .. .. .. .. ..	June 22 May 15 .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	.. .. .. .. .. ..	June 28 June 4 June 20
Ox-eye Daisy	{ Leaf .. { Flower ..	May 26 June 30	May 26 June 30	July 6	.. 6	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Mouse-ear Hawkweed	{ Leaf .. { Flower ..	June 19 Aug. 20	June 19 Aug. 20	July 6	.. 6	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Harebell..	{ Leaf .. { Flower ..	June 30 Ap. 26	June 30 Ap. 26	July 6	.. 6	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Greater Bindweed	{ Leaf .. { Flower ..	June 19 Aug. 20	June 19 Aug. 20	July 6	.. 6	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Water Mint	{ Leaf .. { Flower ..	Jan. 12 Mar. 15	Jan. 12 Mar. 15	Ap. 4	.. 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Ground Ivy	{ Leaf .. { Flower ..	Jan. 13 Ap. 22	Jan. 13 Ap. 22	Feb. 12	.. 12	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Wych Elm	{ Leaf .. { Flower ..	Jan. 13 Feb. 13	Jan. 13 Feb. 13	Jan. 7	.. 7	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Hazel ..	{ Leaf .. { Female Flower ..	Jan. 7 Feb. 13	Jan. 7 Feb. 13	Jan. 7	.. 7	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Cowslip ..	{ Leaf .. { Flower ..	Feb. 11 Mar. 28	Feb. 11 Mar. 28	Ap. 4	.. 4	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Spotted Orchis	{ Leaf .. { Flower ..	Mar. 11 Ap. 19	Mar. 11 Ap. 19	Ap. 19	.. 19	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Bluebell ..	{ Leaf .. { Flower ..	Jan. 23 Mar. 22	Jan. 23 Mar. 22	Ap. 9	.. 9	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..

* Had been in flower some days.

(1) At East Lulworth (E. R. B.) (2) Ripe fruit, Sept. 21. (3) In flower on Feb. 6. (4) In a very sheltered spot. Next seen Mar. 16. (5) All the winter. (6) Ripe fruit, Sept. 1.

WEYMOUTH.—Picked a Twin Mushroom on Dec. 18 (N. M. R.) CHILDE OKEFORD.—Ripe Raspberry, Nov. 14. Strawberry in blossom, Dec. 16 (D. C.)

HASELBURY BRYAN.—Snowdrop in flower, Jan. 16. Daffodil, Feb. 12 (R. F. W.)

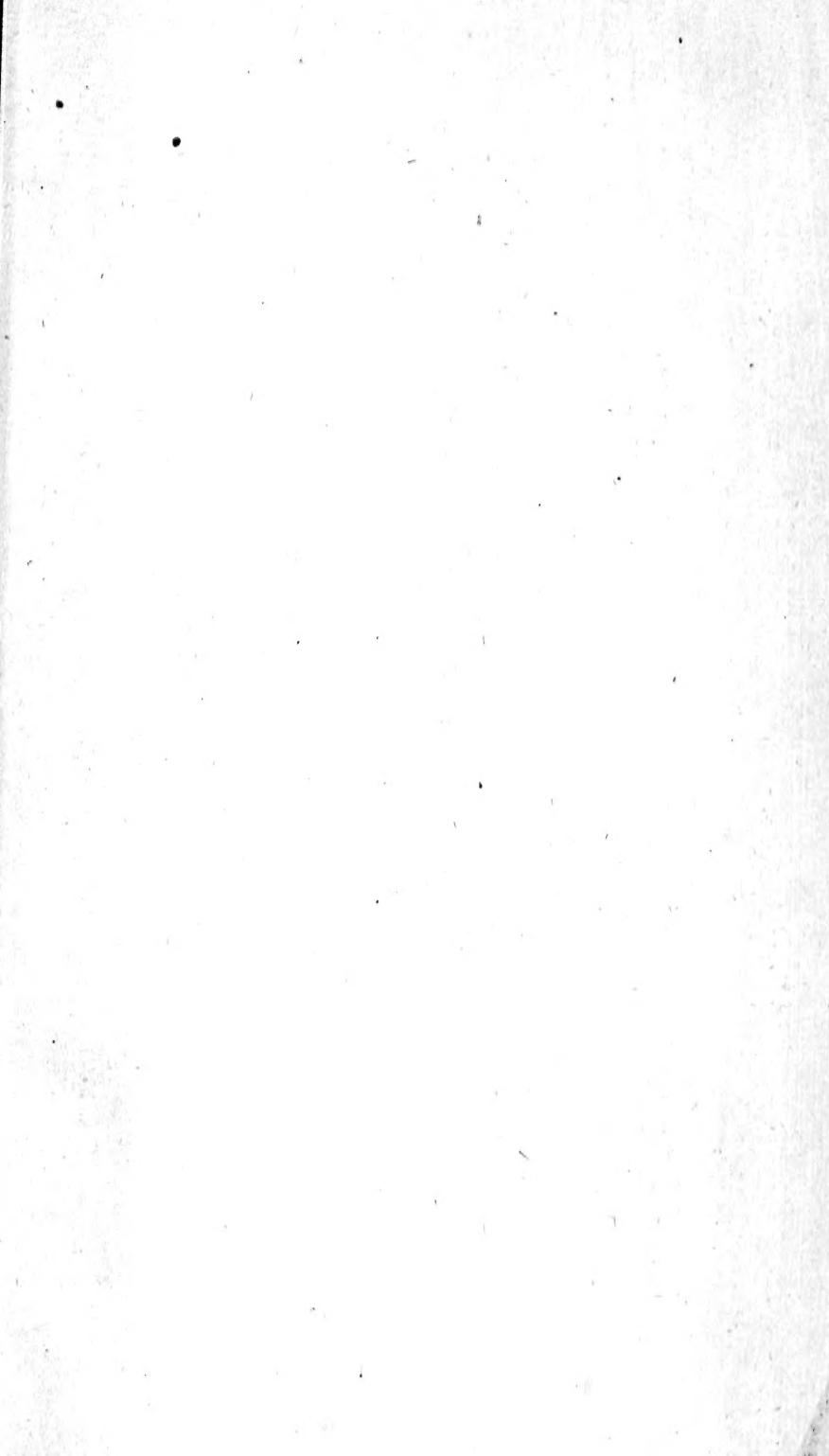
FIRST APPEARANCES OF INSECTS, &c., IN DORSET IN 1898.

Rose Beetle	.. ..	Dorset.	June 22	Weymouth.	Miss P.	Weymouth.	E. R. B.	O. P. C.	Bloxworth.	H. J. M.	Dorchester.	I. R. A.	Sherborne.	E. S. R.	Chard.	G. H.	Bete Regis.	D. C.	Childe Okford.	S. C.	Chedington.	S. C.	Sherborne.	R. F. W.	Haselbury Bryan.	H. S. G.	Rushmore.	H. S. G.	Motcombe.	
Cock-chaffer	.. ..	.. ..	May 9	May 15	.. ..	June 22	May 9	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	May 23	Ap. 29	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Fern Chaffer	.. ..	.. ..	July 2	July 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	May 10	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Bloody-nose Beetle	.. ..	.. ..	Mar. 10	Mar. 10	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Glow-worm	.. ..	.. ..	May 10	June 20	July 9	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Common Hive Bee, <i>h.</i>	.. ..	.. ..	Jan. 18	Mar. 2	Mar. 14	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Wasp, <i>h.</i>	.. ..	.. ..	Jan. 18	May 5	Mar. 12	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Large White Butterfly	.. ..	.. ..	Ap. 1	Ap. 2	Ap. 26	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Small White Butterfly	.. ..	.. ..	Mar. 30	Mar. 30	Ap. 17	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Orange-tip Butterfly	.. ..	.. ..	Ap. 16	Ap. 16	May 25	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
Meadow-brown Butterfly	June 16	July 10	June 16	
Wall Butterfly	Ap. 8	June 12	May 14	
Brimstone, <i>h.</i>	Mar. 16	Mar. 19	May 11	
Painted Lady, <i>h.</i>	Ap. 20	Ap. 20	June 30	
Cinnabar Moth	May 15	June 6	June 11	
Curran Moth	June 25	June 25	July 12
Viper	Jan. 27	Feb. 1
Frog Spawn	Jan. 30	Feb. 8

A. Abundant. S. Scarce.

(1) Small white seen in house Mar. 14, perhaps from pupa spun up indoors and somewhat forced. (2) Much commoner than last year. (3) A Painted Lady seen on Nov. 4. (4) Flying actively in shrubbery. No sun out, but temperature 52° F. (5) Last seen Oct. 23. (6) Had been deposited some time. (7) Last seen Nov. 16. (8) Had been deposited at least 10 days. Tadpoles Feb. 28. (9) Last seen Oct. 17. (10) Out of water mostly all the winter. (11) Possibly a case of mistaken identity—the date is so extraordinarily early, or the emergence might have taken place in a greenhouse. (12) Female orange tip.

WEYMOUTH.—Clouded Yellow Butterfly (*Colias Edusa*). Scarce. Saw one Sept. 25 (N.M.R.). SHERBORNE.—Clouded Yellow not seen (T.R.A.).



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