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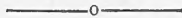
OF THE

Royal Institution of Cornwall.

VOL. III.



1868—1870.



TRURO:

PRINTED AND PUBLISHED FOR THE SOCIETY.

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JOURNAL

OF THE

Royal Institution of Cornwall.

WITH THE

FIFTIETH ANNUAL REPORT.

No. IX.

APRIL, 1868.

TRURO:

JAMES R. NETHERTON, 7, LEMON STREET.

— 1868.

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CHRONOLOGICAL MEMORANDA, 1867.

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FORTY-NINTH ANNUAL GENERAL MEETING

OF THE

ROYAL INSTITUTION OF CORNWALL,

Held on Friday, November 22nd, 1867.

At this meeting there were present: Mr. Smirke, V.W., the President; Dr. Barham and Rev. T. Phillpotts, two of the Vice-Presidents; Mr. Tweedy, Treasurer; Dr. Jago, one of the Secretaries; Major-General Sir William Hill, K.S.I.; Mr. Humphry Willyams; Rev. N. F. Chudleigh, Rev. H. S. Slight, Mr. W. J. Henwood, Mr. Chilcott, Mr. W. Naylor Carne, Mr. H. Andrew, Mr. A. Paull, Mr. W. Tweedy, Mr. A. P. Nix, Mr. Pascoe, Mr. N. H. Lloyd, Mr. H. M. Whitley, Mr. Hudson, and a number of Ladies.

The Chair having been taken by the President, and the Council's report having been read,

It was resolved unanimously,

1.—That the Report now read be received, adopted, and printed.

2.—That the thanks of the Society be given to the Officers and Council for their services during the past year; and that the following gentlemen form the Council for the ensuing year:—

Mr. ROGERS, *President.*

Vice-Presidents.

MR. SMIRKE, V.W.,
MR. AUGUSTUS SMITH,
C. BARHAM, M.D.,

MR. JOHN ST. AUBYN, M.P.,
REV. T. PHILLPOTTS.

MR. TWEEDY, *Treasurer.*

JAMES JAGO, M.D., AND MR. WHITLEY, *Secretaries.*

Assistant Secretary, MR. H. M. WHITLEY.

Other Members.

MR. H. ANDREW,
 REV. JOHN CARNE, M.A.,
 MR. WILLIAMS HOCKIN,
 MR. JOHN JAMES,
 MR. A. P. NIX,

MR. ALEXANDER PAULL,
 MR. G. F. REMFRY,
 MR. ROBERTS,
 MR. W. TWEEDY,
 MR. S. T. WILLIAMS.

3.—That the cordial thanks of this Meeting be given to those gentlemen who have favoured the Society with Papers or other Communications in the course of the year, and also to the Donors to the Library and Museum.

4.—That the thanks of this Meeting be given to Mr. Smirke, for the ability with which he has presided over the proceedings of this day.

THE COUNCIL'S REPORT.

IN presenting to you the customary retrospect of the past year, your Council have the satisfaction of being able to regard it as a period of progress rather than stagnation, though not marked by unusual success. In relation to the future, some points in our present arrangements will be submitted to your consideration. The Income of the Institution has slightly exceeded the Expenditure; the balance in the hands of the Treasurer having been £29. 14s. 4d. for 1866, and being £34. 2s. 1d. for 1867. The Mortgage Debt is now reduced to £245. 19s., and the yearly charge on this account to about £10. However satisfactory the comparison is between this state of our affairs and that which existed thirty years ago, when the debt was £1500, and the interest on it £60 a year, it is much to be wished that every liability of this kind should be cleared off; and contributions are still requested to the special fund opened last year for this purpose.

By far the heaviest item of expence has been incurred on account of the *Journal*, the total expenditure on which exceeds £100, whilst the proceeds of its sale are not much more than a quarter part of that sum. Your Council cannot feel warranted in advising a continuance of so large an outlay under this head. The experiment has been fairly tried for four years, and, as far as the quality of the publication is concerned, there has been much reason for satisfaction. The contents of the *Journal*, and the manner in which it has been edited, have been highly approved by very competent judges beyond as well as within the limits of this County; and it cannot be doubted that it has materially increased

the sphere of action of the Institution, both in regard to the number of persons who have been interested in its proceedings, and to the extent of research on its special subjects. It was hoped, when this extension of our publications was resorted to, that the number of subscribers to the *Journal* would be sufficient to reimburse, or nearly so, the charges incurred over and above those heretofore occasioned in printing the Annual Reports and the Communications read at our Meetings; and the sale of about 300 copies would have done this. But with only 100 Subscribers, the loss entailed is so heavy, that perseverance in the same extent of publication would not be consistent with a due regard for the other purposes to which a fair share of the income ought to be applied. Your Council would therefore suggest that, for the present at least, one Number only of the *Journal* be issued annually, in addition to the Report; and that the charge to Subscribers be reduced to 3s. a year. Should their number materially increase, it will be easy at any future time to revert to the half-yearly issue. Mr. Chorley, the ability of whose editorship has been referred to already, is willing to continue his services at a proportionate reduction of the slender remuneration he has hitherto received. Under this arrangement, taken as a whole, it can hardly be doubted that gain to our funds, rather than loss, will result, in comparison with the old system; whilst it may be hoped that most of the advantages of the recent form of publication will be preserved.

You will have just received the 8th Number of the *Journal*, completing the Second Volume. We feel assured that you will consider it fully equal to its predecessors, and will cordially join us in tendering our best thanks to those who have contributed to its pages and illustrations, or to the preceding Number.

The history of the Institution during the past year, in its other relations, does not call for any lengthened remarks. The Museum has received several valuable accessions; among them must be noticed as deserving special acknowledgment, a large collection of articles from various parts of the world, chiefly in illustration of their social conditions, presented by Mr. Rashleigh, of Menabilly. These, with the other donations then received, were exhibited at the Spring Meeting, and are mentioned in the current Number of the *Journal*. The re-arrangement of some parts of our collection, and the substitution of new specimens for damaged ones, have been long called for; and a liberal expenditure should be allotted to these objects as soon as it can be afforded.

The visitors to the Museum have not been quite so numerous as in some preceding years; but free admission has been given to between six and seven thousand (6442).

The Microscopic Soirées, whose first introduction was referred

to in the last Report, have been lately resumed; and there is reason to hope that, through the co-operation of new and younger workers with the old ones, they will not only be useful as well as attractive in themselves, but will be developed gradually into more general meetings of our members for the cultivation of many subjects embraced by this Institution. Under this head, your Council are glad to be able to recommend to you the appointment of Mr. Michell Whitley to the office of Assistant Secretary. You will welcome a worthy scion from so good a stock, who is willing to bring the fresh energies of early life to the service of the Society, to which your senior officers, however good their will, are often prevented from attending, by more imperative duties.

It is but due to Mr. Newcombe, your Curator, to mention the assiduity and accuracy with which he records and reduces the Meteorological Observations. Some extension has been given of late years to the yearly summary of facts in this department, especially in the way of comparison with other localities in Cornwall and elsewhere. Fuller knowledge on this subject may be expected through the establishment of a Government Observatory at Falmouth.

It is matter of congratulation that no obituary notice is called for on this occasion. No member has been lost to us during the year.

One parting we have to regret. Mr. Smirke, who kindly yielded to our request that he would fill the chair for a second year, has now completed the term to which our laws limit the holding of the Presidency. You will join us in thanking him not only for the attention he has given to the ordinary duties of that office, and his own valuable communications both oral and written, but also for the zealous kindness with which he has turned to account for our benefit his special facilities of access to the Prince of Wales and the archives of the Duchy of Cornwall, particularly in relation to the Golden Lunulæ now in our cabinet, and the perhaps unique Gold Cup shewn here in August.

Your Council indulge the hope that at some future time Mr. Smirke will again be at our head. Meanwhile, we have no doubt you will share the satisfaction we feel in being allowed to nominate Mr. Rogers, of Penrose, as his successor. In him, you are well aware, the Institution will have as its President one who is interested in and conversant with its objects, particularly in regard to Antiquities,—who has aided it constantly by donations and by his pen,—and who is the son of one of its founders and earliest and most zealous supporters. Under his direction we may feel confident that the Institution will go on and prosper.

A letter was read from Mr. Rogers, of Penrose, in which that gentleman consented to accept the Presidency in succession to Mr. Smirke.

The following Papers were read :

Notice of Early Enclosures at Smallacombe, near the Cheesewring, Cornwall.—By Mr. J. T. Blight, F.S.A.

Chronicles of Cornish Saints. (II.—*S. Petrock*). By Rev. John Adams, M.A.

Correspondence (Anno 1700) between the Bishop of Exeter (Trelawny) and Mr. Charles Godolphin.—From Mr. Jonathan Couch, F.L.S.

Communications were read, from Mr. Freeth, Duporth ; Mr. Charles Fox, Trebah ; and Mr. Enys, Enys.

Mr. Freeth's note enclosed a photograph of the "Long Stone" near Menabilly Lodge, and stated concerning it, that Borlase had given the inscription the wrong way, and that Mr. Michell, the photographer employed by Mr. Freeth, stated that he could see no sign of any cross or inscription on the side unrepresented in the photograph.—Mr. Freeth added that he hoped to send a photograph of the cup and other articles found near St. Austell in 1774, from the Plate in *Archæologia*, Vol. 9. He had ascertained that there was no such Cup among the Communion Plate at St. Austell, as had been traditionally reported, and he had no doubt that it was in Mr. Rogers's possession.

Mr. Charles Fox's communication had reference to presents by him, viz.—The Nest of a Spider, from near Orense, in Galicia ; and a Curiously Perforated piece of Slate. Concerning the Spider's Nest, Mr. Fox writes :

"The texture of this curious little building, which in its shape reminds one of the hut of a Hottentot, is very different from that of the lustrous spinning of the Spiders of Corrientes, of which I presented a specimen on a previous occasion. But the former can also spin threads resembling in appearance those of the Silkworm. We have yet to learn how the young spiders escape from their closely woven prison, and the nature of their food in this early stage."

Of the perforated slate Mr. Fox writes :

"The accompanying piece of slate was taken from the slated west end of a cottage in the parish of St. Cleer. During a thunder-storm in 1866 a man observed what he describes as a ball of fire rushing along the road towards the house, in which it dislodged, close to the ground, large granite stones, and made a rent $1\frac{1}{2}$ foot in diameter. Many of the slates, of which

the lowest row was about five feet from the earth, were pierced with holes, as in the one now presented to your notice. They looked as if a volley of large shot, of different sizes, had been fired at them. It may be seen that some of the holes are quite round, and that they are larger and without any "burr" on the inner side. Is it not probable that they were occasioned by drops of rain which conducted the electricity to this flat, uniform, and not highly conducting surface? The mistress of the cottage and her child, happily, were in the adjoining house, where the lightning stripped off the gilding of some picture-frames. Her own furniture was destroyed."

Dr. JAGO read a note from Mr. Enys, explanatory of a diagram setting forth his views on the geology and climatology of the globe.

The PRESIDENT stated that Mr. Rogers had sent photographs of various interesting objects exhibited by him at the Spring Meeting; among them a "disciplinarium," in relation to which he stated that recently he became acquainted with the fact that in Lichfield Cathedral was a curious monument, representing the body of an armed Knight lying at full length on an altar-tomb, but without clothing on the upper part of the body. The representation of the Knight in such a state was an enigma to people; but he believed that the true explanation of the matter was that the Knight wished it to be conveyed to posterity that he had submitted, or had been ready to submit, to flagellation for some offence or sin that he had committed. Similar monuments had been found abroad. Formerly, when any person had drawn blood in a church, whether by accident or otherwise, he was required to submit to such discipline, and without it could not receive absolution. Even in the present day the practice existed in some parts of the continent. This seemed to be a very probable explanation of the remarkable monument in Lichfield Cathedral.

REV. T. PHILLPOTTS said that at Rome, at the present time, there were services for discipline in certain churches, during the last week of Lent; the lights were put out, and persons submitted their bodies to flagellation. At the Church of Saint Francis Xavier some friends of his witnessed the discipline, and they described it as being pretty severe.

DR. JAGO added that Blanco White, who left the Roman Church, stated that such practices were not uncommon in Rome, and that the punishment was by no means merely nominal.

From Mr. CHILCOTT were exhibited a considerable number of Copper Tokens, formerly issued in this county.

Mr. ALEXANDER PAULL stated that among the presents on this occasion were two ancient Counters. One of these, presented

by Mr. George Clyma, was found in a garden adjoining Kenwyn-street, Truro, where similar objects of antiquity had previously been discovered. The other, presented by Mr. William Dix, was found in Newlyn churchyard. They were interesting objects, and nothing of the kind had hitherto been placed in the Museum. They were termed "jetons," and were of brass; and Mr. John James, of Truro, who was a collector of such objects, had enabled him to illustrate them by lending him other jetons, in great variety. Most of them appeared to have been manufactured at Nuremberg; and it was probable that many of them had been used by religious houses. The specimen presented by Mr. George Clyma was found near the site of the ancient Priory of St. Dominick. On its obverse was a *reichs-apfel*, or monde and cross ("mound of sovereignty"); and on the reverse were three crowns and three fleurs-de-lis placed circularly round a rose—a type which seemed to have been common in Germany.*—The specimen presented by Mr. William Dix was of similar character.

The PRESIDENT remarked that in the British Museum were similar objects, obtained from Bodmin. He did not think that the fleur-de-lis showed, necessarily, any connection with France; it was a frequent device.

Mr. Blight's Paper concerning some ancient rectangular buildings at Smallacombe, near the Cheesewring, induced DR. BARHAM to mention that similar remains, (described by Mr. Kelly, of Yealmpton, in a former Number of this *Journal*) had been found near the upper part of the river Yealm, where there were also remains of ancient tin-workings. These buildings, which were of considerable but unrecorded antiquity, were supposed to have been smelting-houses; and near them were found some granite moulds for tin-blocks.

The PRESIDENT remarked that it was in one of four barrows near the Cheesewring that the Gold Cup was found, which he ex-

* We learn from *Snelling* that there were at Nuremberg mills for the making of Jetons or Rechen Pfennings (reckoning pennies), and that this business was one of those called in Germany *gesparred*, or *locked up*; that is, that those who were brought up to it could not follow their calling in any other place. *Snelling* adds: "It is very probable that most parts of Europe wherein they were used were supplied with them from hence; but whether those with the fleur-de-lis were intended for France, those with the Lyon of St. Mark for Venice, and those with what the Germans call the *Reichs Apfel*, or *Monde and Cross* on one side, and on the other side three fleurs-de-lis and three crowns placed circularly round a rose, were designed for Germany; or whether all the sorts were sent promiscuously, we cannot tell; but, however, at present they are frequently found together."

hibited at the meeting of this Institution in August. But the other three Barrows had apparently never been opened. With regard to that neighbourhood generally, which at the present time was not very populous, it was remarkable for the numerous and rather important discoveries which had been made there, especially of gold and silver ornaments.—On the subject of ancient tin works, MR. SMIRKE observed that there were very few indications of old stream works except in the neighbourhood of Dartmoor; but the records of the 13th century afforded a remarkable test as to the value of tin raised in Devon and Cornwall, and that test continued to the present day; the bishop of the diocese being entitled to a small due on tin raised in these counties; the fee in respect of Devon tin being much larger than that on tin raised in Cornwall. There were no public records relating to tin earlier than the 12th century; and it was not until the 13th and 14th centuries that much tin produce was recorded. But from undoubted data which could be traced back to the reign of John, it could be shown that the county of Devon produced a larger quantity of tin than Cornwall; and there were strong indications that at an earlier period the coasts of Devon were as likely to have been resorted to by foreigners—Phœnicians and others—as were the coasts of Cornwall; and most probably Dartmoor was the great source of the tin obtained in Devon. Although there were now but few mines of importance in the neighbourhood, he had recently seen considerable indications of tin having been formerly obtained near Torquay.

MR. HENWOOD observed that when the coinages were in existence, the duty paid on tin raised in Cornwall was at the rate of 4s. per 120 lbs., while in Devon the duty was only 1s. 6 $\frac{3}{4}$ d. per 112 lbs. Whether that difference existed originally, or was subsequently introduced for the purpose of encouraging mining in a particular district, he could not say; but certainly the difference was very considerable.

DR. BARHAM remarked that if the amount paid by Devon was so much greater than that by Cornwall, while the rate of dues in Devon was so much lower, it would show that the quantity of tin raised in Devon must have been very much larger than that raised in Cornwall.

MR. HENWOOD apprehended that the duty was in substitution for lords' dues, and that lower dues had been allowed in some districts, in order to encourage mining.

The PRESIDENT said the stannaries of the two counties were united in the time of Earl Edmund, and it was pretty clear that he made certain alterations with regard to dues, but whether by way of reduction or not, he could not say.

MR. HENWOOD said it was possible that the cwt. of 112 lbs. might have been a more modern standard; but he had no means of knowing with certainty whether 112 lbs. or 120 lbs. was the original cwt. Yet so radical a difference, he thought, could never have been accidental.

The PRESIDENT thought that by looking into ancient records, a determination of the question might be arrived at.

DR. BARHAM stated, in relation to the discovery of mining antiquities near the Cheesewring and on the Yealm, that, some years since, a stone tin-mould was found near Trebartha, in the parish of Northill; and in the same neighbourhood were found some small tin-ladles, made of Polyphant stone. Such facts, he thought, were confirmatory of the opinion that a great deal of tin was formerly raised in East Cornwall and in Devon, and, probably, exported near the mouths of the Yealm, and other rivers on the south coast, having islets adjacent to them.

MR. HENWOOD directed attention to a Paper by Mr. Pattison, in the last Number of the *Journal*, in which were recorded the discoveries, by M. Mallard, a French mining engineer, of slags in the neighbourhood of ancient stream-works in the province of Limousin; and these slags, on being analysed, were found to contain "notable quantities of tin." It was therefore probable that at least some portion of the tin anciently exported at Marseilles was obtained in that French province.

DR. BARHAM had hoped that Mr. Hustler would have been present at this meeting, and have favoured them with a further account of the tin mines in Galicia, in Spain, where he was conducting extensive operations, and where his mining experience had led him to the conclusion that Cornwall was not, in ancient times, the only place where tin was obtained. It appeared, from a statement by Pliny, that there was in Spain a great deal of superficial tin; and probably in all stanniferous districts, mining was preceded by stream-works.

On this occasion the following objects were exhibited:

From Mr. Alexander Paull: A Rubbing of the Inscription on the Rialton Stone.

From the Rev. G. L. Woolcombe: A Tracing of Frescoes in Sennen Church.

From Mr. N. Hare, Jun., Liskeard: 38 Rubbings from Memorial Brasses in Cornish Churches, principally in the eastern part of the county. The following have not been previously mentioned in our *Journal*:

Callington: Nicholas Assheton and Margaret his wife, c. 1465. He was one of the King's Justices, and, in 1436, M.P. for Cornwall.

Cardynham: Thomas Awmarle, rector, c. 1400. Mr. Hare states that the late Dr. Oliver informed him that "Thomas de Awmarle was appointed "to the living of Cardinham, on the 22nd September, 1356, and must "have died about 1401, his successor being appointed the 23rd March "ensuing." *

St. Columb: Sir John Arundell, Knt., of Lanherne, receiver of the Duchy of Cornwall, and two wives: 1st, Elizabeth (Grey) daughter of the Marquis of Dorset, and 2nd, Katherine, daughter of Sir Thomas Greenvill, 1545. He was made a Knight of the Bath, 10 Henry VII; Knight of the Garter, 17 Henry VII; and a Knight Banneret, 5 Henry VIII.

——— Sir John Arundel, 1590, and wife Anna (Stanley), daughter of the Earl of Derby, 1602. †

——— John Arundel, Esq., (son of the preceding), † and his wife Anne (Jarnegan), c. 1633.

Ullogan: "James Bassett Esquire," and his wife Jane "y^e daughter of Sir Francis Godolphin, Knight," with "5 Sonnes and 5 Daughters." 1603.

Landrake: "Edward Cowrtney esquier seconde son of S^r Will^m Cowrtney Knyght of Powderam." 1509.

* In *Haines's Manual of Monumental Brasses* this Brass is mentioned among a few "in which the clerical character is apparently relinquished"; and it is added: "Thomas Awmarle, rector, c. 1400, at Cardynham, Cornwall, had his brass laid down in his lifetime; the figure has the tonsure, "but the costume is that of a civilian, with a short sword suspended at the "side. By the 2nd Constitutions of Abps. Stratford and Bourchier, 1343, "1463, the clergy were restricted from wearing gilt or highly ornamented "swords and purses at their girdles."—Again, Haines refers to the inscription on this brass as containing a peculiar invitation to pray for the soul of the deceased: "*Rogo vos fratres orate pro me et ego pro vobis in quantum possum.*"

† Haines states that this brass was engraved c. 1630, and he mentions it with others when speaking of examples which shew that costume is not always a sure indication of date. "In the beautiful brass at Little Horkesley, "Essex, of Sir Thomas Swynborne, 1391, and his son Sir Robert, 1412, the "father is represented in a suit of armour which he might actually have worn, "although the brass was engraved at his son's death. Similar instances are "at St. Columb Major, Cornwall, 1602 and 1633; Lambourn, Berks, 1372 and "c. 1410. In these three monuments, which were placed by children to their "parents, there is a manifest propriety in the alteration of the costume; but "there are some brasses in which a much earlier costume than that worn by "the deceased is adopted without any apparent reason."

‡ This military brass is one of those mentioned by Haines, in illustration of his remark that: "About the commencement of the reign of Charles the "First the tassets were either obtusely pointed or else worn longer and the "genouillières united to them; cuisses and jamps were disused, and the legs "protected by heavy jack-boots, with tops, spurs, and spur-leathers; the "hair was worn long, and plain collars and wrist-bands superseded the ruffs "and frills."

Madron: "John Clies, marchant, twice Maior of Penzance," and his wife
"Blanche, the onely daughter of Heugh Trevanion Esq.," with one son
and five daughters. 1623.

Mawgan in Pydar: George Arundell and wife. 1573.

————— Cyssell Arundell, "that syrved Quene Mary's grace."
1578.

————— Mary Arundell. 1578.

(George, Cyssell, and Mary, were son and daughters of Sir John Arundell
and Elizabeth his wife, whose Memorial Brass is in St. Columb Church.)

————— A Priest, in cope. c. 1420.

————— A Civilian, "———— de Tregonon generosus." c. 1580.

St. Mellion: Peter Coryton, Esq., and wife Jane, daughter and heiress of
John Tregasoo, with 24 children (17 sons and 7 daughters). 1551.*

Menheniot: Ralph Carmynow. 1387. He was Sheriff in 1379, and M.P.
for Cornwall, 1384, 1386. He is said to have been pulled over a cliff
by two greyhounds and thereby killed. *C. S. Gilbert*, vol. 2, p. 56.

Quethiock: Richard Chiverton, 1617, † and his wife Isabell, daughter of
Digory Polwhele, of St. Erme, 1631, with five sons and five daughters.

Stratton: Sir John Arundell, † of Trerise, with his two wives, and ten child-
ren. 1561. (The marginal inscription on Sir John concludes as
follows: "whose soul now resteth wyth the faythful Chrystians in our
lorde.")

Besides Rubbings from Ancient Brasses, Mr. Hare sent one,
from a medallion tablet in Liskeard Church: "In memory of Ed-
ward Hoblyn Pedler, son of William and Sarah Pedler, who died
24th August, 1863, aged 61 years."

Mr. Pedler was author of "The Anglo Saxon Episcopate of
Cornwall."

* Haines remarks: "Such a convulsion in the habits and feelings of the
people as took place in England at the time of the Reformation, would
lead us naturally to expect a great change in the Ecclesiastical Emblems,
and the phraseology of the Inscriptions. . . . At St. Mellions,
Cornwall, on the brass of Peter Coryton, Esq., and wife, 1551, some animals
(a lion, talbot, &c.), which form part of their armorial bearings, are sub-
stituted for the symbols of the evangelists."

† This brass is mentioned by Haines with one at Launceston, c. 1620,
and others in various parts of the kingdom, in proof of his statement that
after the middle of the 16th Century brasses "are occasionally to be met
with which were engraved by provincial artists, and are little better than
miserable caricatures of the deceased."

‡ This brass is mentioned amongst others by Haines, as illustrating the
military equipment just after the middle of the 16th Century: "the breast-
plate is now generally without placates, and has the tapul or projecting
edge formerly in fashion; the mail skirt has an indented edge, frills are
worn at the wrists, and the skirt of taces is divided at the lower part by an
arched opening between the tuiles."

Dr. Robert Tweedy, Treasurer, in account with the Royal Institution of Cornwall. Cr.

1867.		1867.	
July 31.	£ s. d.	July 31.	£ s. d.
To Balance from last Account	29 14 4	By Taxes and Fire Insurance	5 7 4
Annual Subscriptions	83 4 0	Repairs	3 18 4
Ditto H.R.H. the Prince of Wales	20 0 0	Curator's Salary	32 0 0
Ditto Truro Town Council	20 0 0	Museum Expenses	10 1 3
Arrears of Subscriptions	10 15 0	Printing and Stationery	4 13 0
Rent from Library	20 0 0	Postages and Carriage of Parcels	7 2 8
Visitors' Fees	2 14 0	Printing and Editing Journal	98 19 9
Sale of Journals, Reports, and Fauna	26 19 9	Sundries	0 18 7
		Ray Society	1 1 0
		Palaeontographical Society	1 1 0
		British Meteorological Society	1 0 0
		Royal Horticultural Society	2 2 0
		Quarterly Journal of Science	1 0 0
		Interest on Mortgage	10 0 1
		Balance	34 2 1
	<u>£213 7 1</u>		<u>£213 7 1</u>
To Balance	£34 2 1		

Dr.		TRUSTEES OF THE ROYAL INSTITUTION IN ACCOUNT WITH MESSRS. TWEEDY, WILLIAMS, AND CO.		Cr.	
1866.		1866.		1867.	
August 1.	£ s. d.	December 3.	£ s. d.	August 1.	£ s. d.
Amount due on Mortgage	255 0 0	By Hon. G. M. Fortescue	5 0 0		
		Miss E. Stackhouse	1 1 0		
		Wm. and the Hon. Mrs. Rashleigh	3 0 0		
		Balance	245 19 0		
	<u>£255 0 0</u>		<u>£255 0 0</u>		
Amount now due	£245 19 0				

JOURNAL

OF THE

ROYAL INSTITUTION OF CORNWALL.

No. IX.

APRIL.

1868.

I.—*Chronicles of Cornish Saints.*

II.—S. PETROCK.

By the REVEREND JOHN ADAMS, M.A., Incumbent of Stockcross, Berks.

Read at the Autumn Meeting, November 22, 1867.

THE traces which remain of Petrock's life are very few and fragmentary, but nevertheless they are remarkably interesting and suggestive. They remind us of a scene which may sometimes be witnessed on a calm summer's morning from the lofty crags of the Cornish cliffs. Clouds of dense fog float up from the Severn sea, submerging the narrow combs, mantling the slopes of the hills, and streaming away inland like columns of white smoke. Coast and sea are alike obscured; wherever the fleecy clouds rest, everything beneath is completely hidden; but there rises here and there above the mist, a hoary rock or a gorse-clad hill-top, sharp and distinct in outline, and radiant with the glory of the morning sun. So it is with the life of old S. Petrock. Over most of it the impenetrable mist of ages has fallen, and we cannot roll away the darkness, or guess what it conceals. But, nevertheless, isolated incidents remain,—incidents full of life and interest, which are

well worth contemplating and investigating, even though they are too meagre to be woven into a connected biography of the Saint.

Leland gives us in his *Itinerary* the following outline from a Life which he had seen :

“ Petrock was by birth a Camber.

“ He studied twenty years in Ireland.

“ He returned from Rome to his own monastery in Cornwall.”*

In this brief sketch we have a summary of the few historical facts which have been handed down to us of Petrock's life, stripped of the traditional fancies in which they were clothed. Let us endeavour to illustrate and fill up the scanty outline with such probable and consistent materials as older writers than Leland furnish.

I. As to Petrock's nationality. Leland says he was by birth a Camber, a word which may designate a native of either Wales or Cornwall ; and, accordingly, he is claimed by both countries. Some of the Welsh writers insist that he was born, of princely parentage, in Wales ; whilst all other authorities regard him, to use the words of the Church historian Fuller, as “ the Captain of the Cornish Saints.” That he had some connection with Wales must be admitted, from the fact that he is the titular saint of two Churches † in that principality ; but that he was not a native of Wales is evident from an authority which no Welshman will question. Their own *Bonedd y Saint* tells us that he was the son of Clement, a Cornish prince. Suasius calls him a Cimber, whilst John of Tinmouth, Capgrave, and Ussher, assert that he was a Cumbrian, and all agree that he was born towards the end of the 6th Century ; but, inasmuch as he is commonly styled by the cognomen Corinius, which is equivalent to Cornubiensis, these writers themselves think that the word “Cumber” is a misprint for “Camber,” as Leland has given it. We may assert then that

* “ Ex Vitâ Petroci.

“ Petrocus genere Camber.

“ Petrocus 20 annos studuit in Hibernia.

“ Petrocus reversus est ad suum monasterium in Cornubia.

“ Petrocus obiit prid. non. Junii.”

Vol. VIII, p. 52.

† Llanbedrog in Carnarvonshire, and Llanbedrog in Pembrokeshire.

Petrock was a Cornishman, and the son of Clement, a prince or chief. In a MS. Life, attributed to John of Tinmouth, and published in the *Acta Sanctorum*,* we are further told that the people wished him to become their chief, but that he resolved to abandon an earthly, in order that he might the better seek after a heavenly crown. Thereupon he withdrew from the world, and lived in the seclusion of a monastery. We are not told precisely where this monastery stood; but as he is said † to have occupied a hermitage in the valley at Bodmin, and as we know that a conventual establishment associated with his name existed in subsequent times near the site of the present parish church, *there* we may conjecture the scene of his retirement to have been. Beside the copious fountain which still flows in that pleasant valley, we may picture to ourselves the young recluse, deepening his religious ardour by devotion, and acquiring day by day a firmer grasp of the faith of CHRIST. After the lapse of some years he left his hermitage and went to Ireland, to study theology under the eminent teachers who flourished there in that early age. The most famous school in the island at that time was at Clonard, in Meath. It was founded by S. Finian, A.D. 520, and it soon became a kind of University for the whole country. "The fame of his good works," it is said, "drew many great men to him from divers parts of the land, as to an admirable sanctuary of all wisdom, to learn in his school the sacred scriptures and the ecclesiastical institutes." ‡

* June, vol. I, p. 400.

† *Leland's Coll*: I, 75.

‡ *Colgan, Feb. 23.*

It is by no means improbable that Finian spent part of his missionary life in Cornwall. Though the conjecture may be somewhat hazardous, I venture to suggest that he may be the same person as S. Gwythian, and the founder of the Church so called in the Hundred of Penwith. *F* and *G* are sometimes convertible letters; *e.g.*, Fingar is called also Guigner (hence Gwinear). *De Primordiis*, cap. XVII. No one, I believe, has yet identified the name of Gwythian with any historical personage. Even Whitaker, who was gifted with no ordinary ingenuity and powers of research, passes it by in silence. Dr. Oliver, it is true, informs us that the saint of Gwythian is S. Gothianus; but can any one tell us who S. Gothianus was? Traces of the same saint may be found in close contiguity to the hermitages of Petrock and his friends Sampson and Constantine. There was discovered, about fifty years since, in a sand-hill near the present little Church of S. Enodoc, an old chapel, supposed to have been dedicated to S. Gwythian, corresponding in general character and masonry with one found, also buried in the sand, in the parish of Gwythian. *Haslam's Perranzabuloe*, p. 82.

Thirty years of Finian's early life had been spent in Britain. He is mentioned as an associate of the famous S. David at Menevia, and he was the founder of the Church of Llanffinan in Anglesey. On his return to his native land, he was accompanied by many British Christians, who were afterwards held in great veneration for their sanctity, by the Church in Ireland. As the time of his return corresponds with the time of Petrock's migration to Ireland, we may suppose that our saint was one of the companions of Finian alluded to, or, at all events, that he was attracted to Ireland by him, and pursued his studies under his guidance at Clonard.

II. During the twenty years which Petrock spent in Ireland, we catch but one glimpse of him,—a glimpse however which is very suggestive, and which enables us to form some opinion of his character and position. In the Life of S. Coemgen, one of the most illustrious among the Irish Saints, we read that his parents, who were Christians and of princely birth in Leinster, committed their son to S. Petrock for instruction when he was seven years of age, and that he remained with him five years.* The monastery at Clonard had at that time many teachers and students, famous in their generation for sanctity and learning. It is said that no less than 3000 scholars studied there in the course of S. Finian's presidency.† The selection therefore of Petrock to be the teacher of such a pupil stamps him as a man of mark amongst his contemporaries in Ireland.

III. The next incident which Leland mentions is Petrock's return from Rome to his monastery in Cornwall. Ussher and Capgrave, following the memoir attributed to John of Tinmouth, place the visit to Rome after he had returned to Cornwall and spent thirty years there; they speak also of his making a pilgrimage to Jerusalem at the same time. But it seems more likely

* *Ussher, De Primordiis.*

† "Trium virorum millium
 "Sorte fit doctor humilis;
 "Verbi his fudit fluvium,
 "Ut fons emanens rivulis."

From the Hymn "*Ad Laudes*" in the office of S. Finian. *Colgan, 401.*

that he should have undertaken this long journey in middle life, on his withdrawal from Ireland, than in old age, after his thirty years sojourn in Cornwall. In visiting those celebrated cities, Petrock only followed the general custom of his generation. It was the great aim of every Christian in those days to visit the tombs of eminent saints and martyrs, and especially to gaze on the scenes consecrated by the SAVIOUR'S life and death. Augustine tells us* that the whole world flocked to Bethlehem to behold the place of CHRIST'S nativity; and, from a remark which we find in one of Jerome's Epistles,† it would seem that the British Christians were specially addicted to this religious vagrancy long before Petrock's time. "Heaven stands open," he says, with a touch of irony, "in Britain as well as at Jerusalem"; and in another place he says, speaking of pilgrimages, that "the Britons, though divided from the rest of the world, quit their western sun and go in quest of a climate which they know nothing of, unless by report and the history of the Bible."‡

From Jerusalem, we are told, Petrock proceeded further eastward until he reached India, and spent seven years there on a solitary island; but the narrative of this remote journey is so blended with improbable and supernatural stories that nothing historical can be deduced from it, besides the fact that he was absent a long time and travelled beyond Palestine. "All far countries," says Fuller, in allusion to this narrative, "are East Indies to ignorant people." On his return to Cornwall, Petrock landed at a port called Loderic, or Laffenac, since from him named Petrockstowe, and, by contraction, Padstow. Great calamities had befallen his native land during his long absence. Saxon armies had well nigh quenched the independence of the British chiefs, and had ravaged the country from the banks of the Tweed to the borders of Dartmoor. King Arthur had, it is true, during many years kept the pagan hosts at bay, and had in some degree restored the supremacy of the British power; but that hero was now gone, and his successor, Constantine, had been obliged to wage war with the two sons of Mordred, who claimed the throne, and

* Vol. I, p. 561.

† Epist: 13. Ad Paulinum.

‡ Epist: 17.

had induced the Saxon invaders to espouse their cause. Cornwall, though still the stronghold of British power, was beset on all sides by the foe. Rapacious bands hovered about the fords of the Tamar, and piratical ships kept the coasts in constant alarm. Moreover, the country itself was full of insurrection and strife, for petty chieftains were everywhere struggling for supremacy. One of the mightiest among them in the west seems to have been a certain Tendurus, who is described, in the Life ascribed to John of Tinmouth, as a man of fierce aspect and savage manners. There is a Constantine also mentioned, not however as a chief, but as a rich man, who is restored to health by the prayers of Petrock, and who afterwards becomes a Christian teacher. Leland designates Tendurus as Theodorus, and says that both he and Constantine were chieftains of renown, and that they aided Petrock by their generosity and piety, giving him a suitable site for the monastery which he built.* Perhaps this Constantine may be identical with the tyrant of that name whom Gildas vehemently denounced for his life of iniquity; for we are told that after he had slaughtered his rivals, the sons of Mordred, he was seized with remorse, and resigned his throne that he might spend the rest of his days in seclusion. We are also told that in his old age he became a pattern of Christian virtue, and a preacher of the gospel in distant lands. That he resided in Cornwall for some time after his conversion may be inferred from the fact that a Church in the county † has from time immemorial been associated with his name, marking probably the place of his abode and Christian labour. Moreover, there is a trace of his connection with the district in which Petrock himself resided. In the parish of S. Minver, which originally belonged to Padstow, there were, when Hals wrote his history, the ruins of an old Chapel dedicated to S. Constantine, and near it “A Well strong built of stone and arched

* “Regnabant eo in Coriniâ sæculo, duo reguli, famâ celebres, Theodorus et Constantinus; quorum cum liberalitate tum pietate adjutus, locum con-
dendo aptissimum monasterio accepit, cui nomen patriâ linguâ Bosmanach
a monachis inditum.” *De Script. Brit*: 61.

† Constantine, in the Hundred of Kirrier. From the notice of the
Church in Domesday it seems to have been, as Polwhele says, one of more
than ordinary note. “S. Constantinus tenet dim: hidam terræ, quæ fuit
quieta ab omni servicio T. R. E. Sed postquam Comes terram accepit,
reddidit geldum injuste, sicut terra villanorum.”

over." It is not improbable therefore that the change which God's grace wrought in Constantine was brought to pass by the instrumentality of S. Petrock, and that he occasionally occupied a cell on the sands of the northern shore, to hold frequent intercourse with his spiritual guide. At the time, however, of Petrock's return, the country in the immediate neighbourhood of Padstow seems to have been in the hands of pirates. A band of Saxon plunderers,* taking advantage of the defenceless condition of the inhabitants, had made a descent upon the northern coast and were in possession of a tract of land contiguous to the port. It was the season of harvest, and those pagan robbers were reaping the corn that grew on the hill slopes beside the river Alan. Seeing a strange vessel enter the river, they rushed down to the shore, intent on plunder; but, finding no booty worth seizing, they reviled and scoffed at the Saint and his company. Petrock inquired of them if any Christian remained in the province; and they told him of one Sampson who dwelt in a hermitage not far distant, and who was in great repute for his zeal and sanctity. Thither Petrock betook himself, and found the holy man living in great poverty, and labouring with his own hands in an adjoining field. This Sampson was, no doubt, the famous disciple of S. Iltutus, who became Bishop of Menevia, and afterwards of Dol in Brittany. We gather from his memoirs that he was much addicted to the life of a recluse; and there is local evidence confirmatory of this incidental mention of his residence in Cornwall. The parish of Golant was in ancient times called by his name, and there was formerly an old Chapel called S. Sampson's standing on the spot now occupied by Place House, at Padstow. This Chapel was no doubt built on the site of his Oratory, and was probably the spot to which Petrock was directed by the Saxon pirates.

In returning to his native country with a band of fellow-labourers, Petrock's object was to establish a Monastery in Cornwall. He had seen the value of such institutions in Ireland. S. Patrick's famous establishment at Armagh, as well as Finian's at

* "Jām loca illa occupaverat Saxo, Britannosque inde fugaverat; vel qui cum Porto nuper, vel qui cum Cerdicio venerat prius; unde sequitur in Capgravio; Egressis de nave discipulis, messoris illic operantes amarè illis locuti sunt." Alford: *Annales Ecclesiæ*, Vol. 2, p. 10.

Clonard, must have been examples to him of their wonderful power and success. Whatever the subsequent faults of Monasteries may have been, they were in earliest times the chief agencies in civilizing and evangelizing the people. They were instructors of the ignorant, refuges for the oppressed, and almoners to the needy, as well as centres of Christian life and light in the midst of heathen darkness. The place above all others dear to Petrock's memory must have been the hermitage of his early days at Bodmin; and thither he proceeded to plant the first and most renowned monastery that has ever existed on Cornish soil. What changes must have swept over his native land since, in years long past, he had sojourned there! Everywhere, except in Wales and Cornwall, Saxon paganism had trampled down the British Church, and idol temples had sprung up, with their unhallowed rites and sacrifices. Even in the strongholds of British power, the tide of invasion could not, without severe struggles, be stemmed back, or the ministrations of religion be kept alive.*

Many disciples, illustrious for learning and sanctity, were associated with Petrock in his arduous work, but the names of only three have been handed down. They were Credanus, Medanus, and Dachanus.† Of the first two nothing certain is known; but Colgan, in a brief memoir of "Dechanus" or "Deganus," states that he was born at the end of the 6th Century in the borders of Lagenia (in the west of Ireland), that he was a man of high repute, first as an Abbot, and afterwards as a Bishop, in Ireland, and that he was a nephew of Coemgen, Petrock's pupil.‡ The

* Rudburn asserts that the Cornish submitted to the humiliation of paying tribute to the Saxons in the time of Cerdic, in order that they might be allowed to observe their religious rites without molestation.

“Cerdicum sæpius cum Arthuro conflixisse, pertæsum Arthurum cum Cerdico deinceps prælia inire fœdus cum illo pepigisse, et concessisse Cerdicum Cornubiensibus ut sub annuo tributo ritum Christianæ religionis observarent.” *Chronica*: lib. 2, cap. 1.—*Ussher de Primordiis*, cap. xiii.

† Leland tells us that they were all buried at Bodmin. “Extat Petroburgi libellus de sepulturâ sanctorum Anglorum, ex quo liquet Credanum, Medanum, et Dachanum, viros sanctitate vitæ illustres, et Petroci imitatores, in Bosmanach fuisse sepultos.” *De Scrip. Brit*: 61.

‡ *Colgan*, Vol. I, 534.

I am inclined to think that Coemgen also accompanied Petrock, and that he is the Saint from whom the Church of S. Keverne takes its name. Langan tells us that Coemgen signifies “pulcher genitus,” and is pronounced,

monastery which those holy men helped to establish occupied the site of Petrock's former cell, and must have been an institution of considerable magnitude as well as zeal, for no less than twelve ancient Churches in Devon and Cornwall owe their foundation to it, and are even now called by, or associated with the name of S. Petrock.* After his death, his memory was gratefully revered; and when centuries had gone by, and superstition had mingled with the simplicity of the early faith, a beautiful shrine in the parish Church of Bodmin marked the place of his interment, and pilgrimages were wont to be made to it for the adoration of his relics. In such estimation were they held, that in the year 1177 a Canon of the Abbey of Bodmin, by name Martinus, stole the bones of the Saint and carried them to the Abbey of Mevennus in Brittany;† and, so great was the loss supposed to be, that Roger, the Prior of Bodmin, went with his brethren to King Henry II, and implored him to aid them in recovering the sacred body. The King granted their request. A band of armed men were sent to the Abbey of S. Mevennus, who insisted on the restoration of the body; and the Abbot and Monks were compelled to take an oath on the relics belonging to their Church, that they had not retained any part of the remains, but had restored them unaltered and complete. They were doubtless brought back to the scene of the Saint's early devotions and final labours, and restored to their early tomb; and, though no vestige of the sepulchre now remains, the place will always preserve the memory of the holy man, and Cornwall will evermore enrol his name amongst the greatest and best of her Christian heroes.

in Irish, "Kevin." *Ecc: Hist: of Ireland*, Vol. 2, p. 46. The name, in fact, is sometimes written "Keivin." Leland and Whitaker assert that he was identical with Piran; but Dr. Borlase argues that he must have been a different person, chiefly on the ground that different parents are ascribed to them. He adds also that in Domesday Perranzabuloe is called Lanpiran; whereas S. Keverne is called Lannachebran, *i.e.*, Lan-a-Chebran, the Church of Chebran. There were formerly considerable ruins to be seen near the parish Church of S. Keverne, at a place called Tregonin, which, according to tradition, were the remains of an old Chapel and Priory. *Leland's Itin: III, 24.*—*Whitaker's Cathedral of Cornwall*, II, 10.—*Borlase*, 388.

* They are, in Cornwall: Padstow, Bodmin, Little Petherick or S. Petrock Minor, and Trévalga; and in Devon: West Anstey, South Brent, Clannaborough, S. Petrock, Hollacombe, Lidford, Newton S. Petrock, and Petrockstow.—Lobineau informs us that Petrock is the titular saint of a Church in France also.

† Roger de Hoveden. *Benedictus Abbas.*

II.—*Notice of Enclosures at Smallacombe, near the Cheese-wring, Cornwall.*—By J. T. BLIGHT, F.S.A.

Read at the Autumn Meeting, November 22, 1867.

ON many of the moors and hill-sides in Cornwall—on those tracts still uninvaded by the plough, and which at first sight appear never to have been the scene of human toil, but to retain the native wildness in which they were created—it will be found, on closer examination, that amidst the gorse and heather and such stunted herbage as the barren soil affords are traces of numerous small enclosures, mostly of circular or elliptical form, with remains of fences branching off from them in many directions—the first rude idea of a homestead with surrounding folds for the security of cattle and sheep. These archaic dwellings appear to have been almost always in groups, showing in those primitive times the gregarious and social habits of man. They tell us also that then, as now, the greatest enemy of man was man—that, at least from the visible world, there was no other creature so much to be feared, or from which it was necessary to have such means of protection. Hence we find that whilst many of these hut-groups were themselves strongly fortified by massive walls, the greater number were generally situated on the slope of a hill, the summit of which was crowned by a castle or fortification, easy of access from the dwellings below, and to which the inhabitants could retire in times of danger. Whether one tribe molested another, or whether all the inhabitants were subject to the incursions of a common foe, is perhaps not very evident from these facts; though it is clear that the country was at times occupied by opposing forces. Just as in many parts of Wales, where there were native strongholds, a Roman Station was planted at some neighbouring advantageous position from which the enemy could be watched. But the extent of these

early Cornish settlements, and the care with which they were constructed, are proofs that there must have been long intervals of comparative peace, whoever the enemy may have been. We find no traces of agriculture; but folds extending over many acres show that our forefathers had here led quiet pastoral lives. Tracts now presenting the most dreary appearance of desolation were the scenes of active life, of which the sole evidences that remain may be, perhaps, a rude circle of stones, or a low earthen bank, at first scarcely discernible as the work of art, encrusted with lichens and overgrown by herbage, yet imperceptibly crumbling away and again becoming one with the earth from which it had been formed.

Although this may be said to be the general condition of the earlier *cyttiau* in Cornwall, some examples of primitive habitations still exist in comparatively good preservation, enabling us to make out distinctly the arrangement of the structures and the manner in which they were built.

By examination of a great number of examples in different parts of the kingdom, some clue may be obtained as to the different peoples by whom they were constructed, or to what extent the habits of tribes in various parts resembled or differed from each other. Even in Cornwall I have found a marked distinction between the primitive hut-dwellings of those who occupied the eastern, and those who occupied the western, lands. In West Cornwall the prevailing type consists of a massive encircling wall, in its breadth containing several small chambers, whilst in the centre is a large open area. The Chysauster huts are constructed on this plan. In East Cornwall I have not yet found an instance of these wall-cells; each hut is generally unattached, forming a separate building of itself, though occasionally having two circular compartments leading one into the other.

In Wiltshire the ancient inhabitants formed, as the basements of their dwellings, excavations in the ground; thus rendering it unnecessary to carry walls to any great height. Boughs of trees and sods of earth composed the roofs. The *cyttiau* in many of the Welsh fortifications were constructed in like manner. First, a shallow pit was seeped out, and then stones set around the upper edge at once gave almost sufficient height to the structure.

This method has not yet been observed in Cornwall, though

other hut-dwellings in Wales are in their arrangement analogous to some of the Cornish. The plans of early enclosures at Llanllechid in Carnarvonshire, given in Vol. XII of *Archæologia Cambrensis*, might almost serve for those of Chysauster or Bodinnar. Fortified enclosures in the Northumberland moors also have a strong resemblance to those of West Cornwall.

There are many rectangular structures, and many not assuming any definite plan in their arrangement, unquestionably to be attributed to a very remote period. In fortifications, walls were frequently built in accordance with the natural formation of the ground; rocks and steep banks were made available as part of the work. In the hut-dwellings, however, there was generally some uniform design. Circular and rectangular walls are sometimes found together. A remarkable example of this combination occurs on an estate of Lord Boston, at Penrhos Lligwy, in Anglesey. It has been most ably described by the Rev. W. Wynn Williams in the 13th Volume of *Archæologia Cambrensis*.

The Bosphrennis hut also has a circular and an oblong chamber; and traces of ancient angular buildings may be seen in an adjacent croft.

Scotland affords examples of early dwellings both rectangular and circular. As an instance of the former, it will be sufficient to refer to the remains of a "Crannog" on the Isle of the Loch of Banchory (see *Proceedings of the Society of Antiquaries of Scotland*, Vol. VI, Part I). Of the circular "brough," or house, of Clickimin, near Lerwick, a plan is given in the *Journal of the British Archæological Association*, 1866.

The builders of circular walls were at the same time acquainted with the advantages of the rectangular plan for certain purposes, as shown by the kistvaens within round barrows. Still, it would appear that, for habitations, the circular was the prevailing form. When the Romans introduced their rectangular work and straight lines, these would, of course, be imitated by the natives in their own rude way of building; and although it cannot be said there were no square buildings in this country when the Romans came, investigation has proved that, as a general rule, it is safer to consider the rectangular structures as being erected during, or after, the Roman occupation.

The most interesting example of a rude sort of rectangular

walling, apparently designed to enclose places of habitation, that I have yet seen in Cornwall, exists at Smallacombe, near the Cheesewring, in the parish of Linkinhorne.

In the month of August last, I spent a day in examining these remains, to attempt a description of which has been my object in writing this paper.

The locality abounds in primeval antiquities; and the Cheesewring Carn itself is the site of an early fortification, of which the ruined walls may yet be traced. On the west side of the Cheesewring a valley, extending northward, leads away into the moors of Altarnun and Northill. A small stream, a mere rivulet, finds its way along this hollow; and there are numerous evidences of its course having been worked for tin—probably at periods far apart. On the west side of this rivulet, and about two miles from the Cheesewring, at the base of a hill and extending some way up its slope, are the remains of early habitations on the spot known by the name Smallacombe.

The enclosed spaces mostly approach to a rectangular form; but a greater squareness is given to many of the angles by the erection, in more modern times, of structures on and adjoining the old works. This fact is at once apparent; and any one, even with but slight acquaintance with primeval structures, would see at a glance that there are here the remains of buildings of two different periods. In later times advantage had been taken of the ancient massive walls as excellent foundations on which to raise buildings for some purpose not easy to explain, though possibly as places of abode.

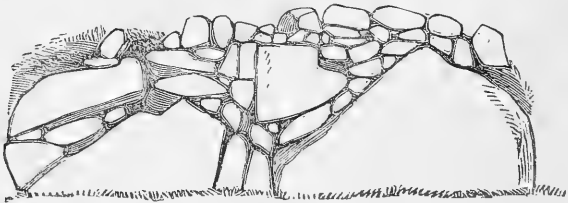
The spot is approached on the south, for the length of about 50 yards, by a well paved, or rather flagged, roadway, leading to what appears to have been the principal entrance (A in the plan), which is 6 feet wide, and carried through a wall 12 feet thick. This opens into a space (B) about 20 feet square, protected on the east by a wall now 5 feet high and 12 feet wide; on the north end occur the modern additions* in the form of a chamber (C), 9 feet by 27 feet internally, with walls 2 feet thick, of dry masonry, consisting of small stones built with much care and with some at-

* The black lines in the Plan mark the modern additions to the old work.

tempt at courses. This walling has much the appearance of that of some of the early chapels in Cornwall. The building also runs east and west; which arrangement, however, may be merely the result of accident. Eastward of, and adjoining this chamber is a cell (D), about 6 feet wide and 9 feet long. Two others (E, F), of the same length, but each only 3 feet in breadth, are joined on to the western end. Northward of the eastern cell, and in continuation of its east side, a wall is carried along for the length of 33 feet on the old rampart, and terminates (at G) in another rectangular chamber (H), 24 feet by 6 feet. Some parts of the walls of this, with the rectangular chamber and its cells described above, constitute all the more recent work.

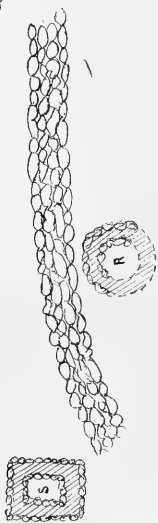
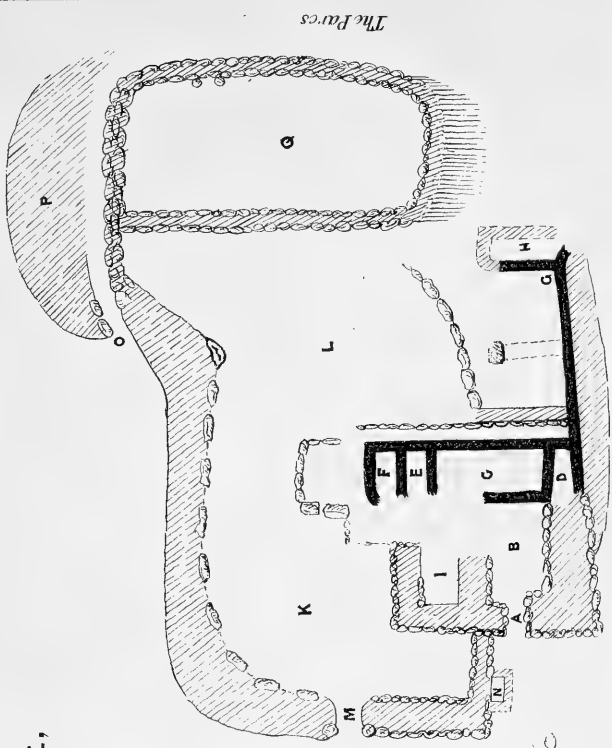
Returning to the west of the entrance (A), from which point the ground rises considerably, there is a small cell (I) between walls of immense breadth; above which an area (K) runs from north to south 22 yards, from east to west 10 yards. This opens into another (L) extending from east to west 30 yards, from north to south 15 yards. Both these enclosures are bounded on the west by a wall from 10 feet to 12 feet thick, and of which internally only the basement stones, rough blocks set on end, remain. Opening into the first of these areas, on the south side, is a gateway (M), 7 feet wide. To the east of this the wall is continued for about 8 yards; then, turning northerly, it has a projecting cell (N), 6 feet by 3 feet, as if to form a guardroom to the entrance (A) first described.

Outside the great western rampart there appears to have been a narrow pass (O) into the second area (L), and this was covered by another rampart, or kind of outwork (P), of a curved form, and of the extraordinary breadth of 15 feet, carried on northward to protect also the western end of an enclosure (Q), measuring 12 yards from north to south, 20 yards from east to west, of an irregular form; its south wall being a tolerably straight line, the north side curving outwardly. The walling of this enclosure is

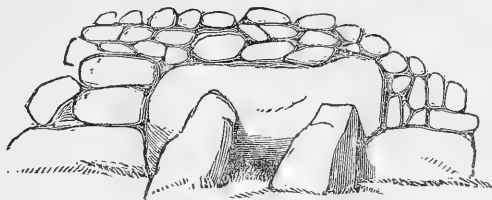


PLAN OF ENCLOSURES AT SMALLACOMBE,
In the Parish of Linkinhorne

CORNWALL.



of a very primitive type. Great blocks were set on end, with smaller stones built in between. In some parts where rocks occurred *in situ*, they were permitted to remain, and the masonry joined on to them. On the north side, one block of this kind is curiously buttressed by two others placed against it. It appears



to have been naturally in a leaning position, and was thus supported to bear the weight of superincumbent masonry.

North of this enclosure are others, less defined in shape, occupying a considerable portion of ground, and known as the *Parcs*.*

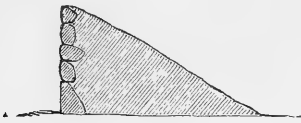
About 25 yards from the principal entrance (A), and immediately adjoining the paved way on the east side, are the remains of a dome, or bee-hive, shaped structure (R), the external diameter of the base measuring 15 feet. Its present height is 4 feet, but the upper portion has fallen in. There is nothing to indicate the purpose of this building; possibly it may have been raised over a spring, since dried up. This mode of building with stones overlapping has been found elsewhere in this neighbourhood. Sir Gardner Wilkinson has, in the *Reports* of this Society, described some as existing on the east and west sides of Brown Willy, and has given figures of them in the *Journal of the British Archaeological Association*. Sir Gardner says: "I am disposed to think them of later date than the hut-circles, and, like those in Ireland, of Christian time." This conclusion had been arrived at partly from the excellent condition of the examples which had been examined; but the overlapping masonry, as a principle in the rude architecture of the times, is to be seen in some of those structures attributed to the earliest period of which we have remains of places formed for habitation. I have, however, seen bee-hive structures of stone,

* *Parc* (Cornish)—field, or enclosure.

built not a hundred years ago, which at first sight might very well be taken for some of the most primitive character.

Near the southern extremity of the paved way, on its west side, (at S), are the foundations of a rectangular structure, 12 feet by 18 feet; and others of similar form and dimensions occur on the hill-side still further south.

The situation occupied by these remains is not one that would have been chosen for military purposes, as the hill rises rather steeply to the west, thus affording an enemy great advantage in an attack. But the exceedingly great breadth of the walls, on this side in particular, favours the supposition that the place was to some degree fortified; as, for the mere purpose of enclosing spaces, walls one-third the thickness would have done as well. The east wall of the northernmost enclosure (L) presents a curious and unusual section; internally it is perpendicular masonry, but



outside it assumes the appearance of a sloping bank. This would be contrary to military arrangement; but probably it was covered by the great east rampart, on which the

more modern walls are built, extending farther northward than they do at present.

It would appear as if this place of settlement was chosen for some special purpose on this particular spot; certainly not for a military post, though it was necessary it should be protected; and the traces of ancient stream-works for tin seem to indicate the nature of the employment of the people.

The name "Smallacombe" (the place has also been known as Faggelford) would imply a Saxon occupation of the valley; but research by digging within the enclosures might supply more satisfactory proofs of the date of the buildings than may be obtained from the present appearance of the walls.

These interesting remains are the joint property of T. S. Bolitho, Esq., and of Richard Foster, Esq.

III.—*Correspondence (Anno 1700) between the Bishop of Exeter and Mr. Charles Godolphin.*—From MR. JONATHAN COUCH, F.L.S., &c.

Read at the Autumn Meeting, November 22, 1867.

THE following letters are characteristic of the times and of the men. The officers of Loe (Looe) referred to appear to have been of the Custom House, who had passed the wine free of duty; and as no tradition refers to the circumstance, it is probable they were not finally dismissed. The writer is evidently very angry.

Mr Charles Godolphin

·S^r

Had I written my Lord Godolphin w^t I wrote to you I am sure so greate severity had not falⁿ upon y^e officers at Loe as I heare you are now bringing on y^m, & y^t too with such hast & eagernesse as will make y^e punishment of y^r censure quicker yⁿ y^e Justice of y^e Tryal. & y^r Officer Borlace must be chid for depriving y^r board one post of y^e pleasure of discharging y^m all at once, tho they had not in y^e interim time to prepare y^{ir} answers for him. if it be a satisfaction to you to act so hastily as not to allow me notice & time to make some enquiry (since I heare my name was mention'd by y^r informers) much good may it doe you. t'was y^e least peice of civility I should have pay'd you in y^e same circumstance, & truly much lesse yⁿ I expected from you. however men may fare wth some of y^r board y^e worse for being my friends, I did not beleive till now my concern for y^m had been wholly insignificant, tho' you gave me good grounds of doubting wⁿ you blew so hard y^e first storm against y^m at y^e council board. Had I chosen by applying to favorites, I could before have skreened y^e Loers, & now too from y^r hardships. I am not so little with some persons but y^t I could have obtain'd y^t from y^m w^{ch} I hop'd to get more easily by y^r friendship; but I neither did nor will apply to y^m but wil either receive no favor or from

such persons whose honb^e principles to y^r country & church makes it also an honor to receive y^m. I thanke God I long for no kindnesses y^t bring a blush wth y^m, & will not think of getting anything for my services to my Country til I see honest men true to y^e interest of these Kgdoms & Government, & none else encourag'd. I did not at first offer myself & my family, my interest everywhere to my L^d Godolphin as a person y^t really wanted or ambitiously courted so greate & so sure a dependance. I have no expectations to gratify, & wil have no dependance, but w^t I think fit for a man of just honor to own. I devoted myself to his Lor^p becaus I found him to be a person of greate wisdom & integrity, & y^t as to y^e public our principles suited tho' our fortunes & stations did not. I was as humbly his L^{ps} servant wⁿ he was no minister, as I can be now he is, & I hope wil be for y^e K'gdom's sake these fifty years. but I ask nothing of him, or anybody for myself my whole aime is & has been to serve my Country by serving y^e onely greate y^t is those who are truly good without proposing to myself greatnesse or advantage by y^m my expence is without end, my trouble infinite, & y^rfore I can't but look on it as very hard to find my labors expence & pains meet nothing but slights & contempts, nay w^{ch} is worse persons hated for being my friends, & discharged for ever from all businesse for designing upon y^e prospect of y^e war breaking out to offer six hogsheads of wine to me & to my 2 bro^{rs} & to lodge y^m in y^e merchants cellar openly till they could see whither we could get y^e boards leave to accept at y^e first price without paying such exorbitant duty for such a trifle as y^t is, it being to be spent in our own houses. Lord w^t a greate bribe in y^e state to have granted me y^e Maj^r Gen^l & Brig^r 6 hogsheads of wine Custom free! there were I heare more, but they were all proffer'd to other Country gentlemen on y^e same terms who are likewise of y^e parl^{mt}. if I mistake not I may be law claime 2 tuns custom free for y^e use of my own hous, yet as soon as I heard it I declar'd y^t I would have nothing to doe wth y^e wine, & while my bro^{rs} & y^e gentlemens answer was getting y^e information was made. heares y^e greate cheate designed by these ignorant fellows who thought we had interest enough, & likewise y^t we would have us^d it for getting such a vast sum w^{ch} by y^e concern you expresse seems indeed such as would have ruin'd all our undertakings; but now you have brought this greate Cargoe to an entry

surely y^e war may goe on. had we any Guynns in our port they had gone off wth 10,000 of y^e spoils of his Country in his pocket. where was y^r Zeale in prosecuting him; who tho' mark'd by y^e parlm^t & turnd over to a tryal yet I heare was acquitted wth y^e honor of being *venaciously & maliciously prosecuted*. but at last you are pleas'd to sugar all up wth a complement y^t I may name other men but I love my friends too well to have y^m known to be such, & so to be immediately remov'd. if there can be no other favor for these men upon this mistake y^t they thought we had greater interest yⁿ we have, pray consult w^m you please for y^e recommending others in y^r places who if they are disaffected at y^e bottom to y^e government & y^e church wil be sure to sit y^e longer there, because they'l find friends enough to help y^m out upon worse occasions. these men have so much increas'd y^e Kings revenue as might plead for y^m were they not guilty of y^t unpardonable crime of being my friends. this is an extraordinary stroak for y^r Nephew at Loe, & an Infallible way to get him y^e concurrence of all y^e gentlemen of y^e County, wⁿ six at least & perhaps not y^e meanest of it could not get pardon for y^e folly rather yⁿ y^e design'd fraud of y^r Officers.

I am

Y^r humble Serv^t

J. E.

(N.B. Of course JONATHAN EXETER).

London, 15th Feb^r 170^q.

My Lord,

Yo^r Lodp^s of the 8th came not to my hands till after the Warrant was signed at the Treasury for supplying the vacancies at Looe by the persons I mentioned in my former letter; one of these that is, Paxton the same whom yo^r Ldp was pleased yo^r self to recom'end to M^r Strongs Succession, and the other, that is

Gillard mentioned to our Bord for severall yeares last past by a Gentleman, who I had reason to believe would no more propose any body for an employment at Looe that he thought was unacceptable to yo^r Ldp than I should myself, and therefore, my Lord, you must allow me to thinke my self very unfortunate, that when I was contriving to oblige you, it should prove to yo^r dissatisfaction. I must call it my contrivance, for I was not spoke to for Gillard upon this occasion, and that you may be fully satisfied of this I am no longer concernd for him nor what becomes of him,—the rather because the day after this remove was obtained and when I am sure it was impossible for him to know that any thing of that kind was intended, at least by me, I received a letter from him signifying his desire to return to his family till some opportunity should offer for his being employed nearer home and proposing to quit his employment in the west in favour of a particular person whom he named, and who ought to miss it, as he has done, because I doubt Gillard was to have had some consideration for the surrender. I shall doe my self the honour to wayte upon yo^r Ldp as soon as you come to town to give you all the demonstrations in my power that you have a most faithfull humble Serv^t in

C. GODOLPHIN.

IV.—*Charter of Queen Elizabeth to the Hospital of St. Lawrence de Ponteboy, Bodmin, A.D. 1582.*

PATENT ROLL 25 ELIZABETH, PART 9.

DE CONCESSIONE SIBI ET SUCCESSORIBUS PRO MAGISTRO, GUBERNATORE, FRATRIBUS ET SORORIBUS HOSPITALIS ELIZABETHE REGINE, SANCTI LAURENCII DE PONTEBOY IN COMITATU CORNUBIE.

ELIZABETH, &c. knowe yee that We, of our especiall grace, certain knowledge, and mere mocion, consideringe howe godly a thinge it is to releave the poore and such as are nedye, and especyally such as the hand of God hath visited with sicknes, in such sorte as without greate daunger to other of our subjectes they may not conveniently procure and gett there livelyhood; and beinge enformed that at a place called St. Lawrence de Ponteboy, in the parish of Bodman, in our county of Cornewell, there hath bene of longe tyme a greate company of lazer people estemed by the name of pryor and brethren and systers, but never by us or any of our progenitors so incorporate;* and whereas dyverse persons of their charitable disposition have gyven unto the said leproous people dyverse landes and tenements by that name of corporacion, which they of longe tyme by cullour thereof enjoyed, and at this present therby mainteine the number of six and thirty leproouse people, to the great availe of all our subjectes inhabitinge theraboutes within our said County of Cornewell, We, to the end the said charitable acte may remaine inviolate and may not be defeated hereafter, but suche number of leproous people mainteined as heretofore hath byn, of our grace especiall, certeine knowledge, and mere mocion, for us, our heires and successors, doe gyve and

* Lysons observes that they are called by that name in a deed bearing date 29 Hen. VIII. *Magna Brit., Cornwall*, p. 36.

graunt, and do by these presents notify and declare, that our will and intent is that the said lazer people, and all other which frome henceforthe shalbe in the said house called St. Lawrence de Pontboye in Bodman, shalbe called and knowen by the name of the Hospitall or Almeshouse of Elizabeth, Quene of England, of St. Lawrence de Ponteboy in the parishe of Bodman, and shall frome henceforthe for ever be and consiste of a Maister or Governor, and nyne and thyrtye poore men and women beinge leproous people; and we doe furder graunte for us, our heires and successors unto the said lazer people that they shalbe incorporate and made a body corporate for ever by the name of Maister or Governour, and the brethren and sisters of the said Hospitall, and to remaine and continue one bodye by that name incorporate for ever, and by that name shall and maye sue and be sued, and otherwise doe, performe and receyve all and everye other thinge that any bodye corporate maye doe, performe or receyve; and also knowe ye that we have nominated, elected, and appoynted one Lewis Shessell to be the present and first Maister or Governour there, and that the rest of the poore people that are at this presente in and of the same laser howse shalbe the firste brethren and sisters there. And furder our will and plesure is that it shall frome tyme to tyme be in the free eleccion of the Maister or Governour, brethren, and sisters, lyvinge or remayninge, or of the moste parte of them, to make choise or eleccion frome tyme to tyme, as often as any of the brethren and sisters shall dye or departe the said Hospitall, to elect and chuse others in the place or steed of the person or persons soe dyenge and departinge the said Hospitall, to be of their corporacion and fellowship, so that the full number of fortye, and no more, be there contynuege; and likewise upon the death or departure of every Maister or Governour of the said Hospitall, that the brethren and sisters, or the moste parte of them remayninge, shall frome tyme to tyme make choise of a newe Maister or Governour, and that suche choise shall remayne good and stable, and the person so by them or the moste parte of them elected shalbe and continewe their Maister and Governour. And also the said Maister, brethren, and sisters shall twice everye daye assemble themselves together and use suche prayers as are nowe appoynted in the Church of England, and shall in their said prayers pray for the prosperous estaite of us,

our heires and successors. And furder we, of our especial grace certen knowledge, and mere mocion, for us, our heires and successors, do graunt and confirme unto the said Maister or Governour, brethren and sisters of Elizabeth, Queene of England, of St. Lawrence de Ponteboye in Cornewall, and to their successors, all that the mansyon howse de Ponteboy, alias St. Lawrence de Ponteboye, wherein the said lazer people nowe dwell, with thre farthinges land and twoe mylles, parcell of the possessyons nowe or lately belonginge, or reputed to be belonginge to the said lazer howse, wherof the one is scituate nere unto Benduye, with all water courses, leetes, libertyes and hereditamentes to the said mansion house, mylles and landes in any wise belonginge or apperteyninge; and also we, of our especiall grace, certaine knowledge, and meer mocion, doe furder gyve and graunt unto the said Master and Governor, brethren and sisters and to their successors, all that one farthinge land with all his rightes, members, and appurtenances which the said Hospitall sometime held of one Symon the sonne of one John Alcred, scituate, lyenge, and beinge in St. Lawrence aforesaid nere unto the said Hospitall, and which were lately also parcell or reputed parcell of the possessyons belonginge to the said lazer house, and one Faire to be kepte in a feild adioyninge to the said Hospitall, called the Faire feild or Faire close, and in other convenient places adjoyninge to the said Hospitall, lyenge without the towne of Bodman in the said County of Cornewall, everye yere for ever, to be kepte at the feaste of St. Lawrence by the space of thre dayes, that is to saye, on St. Lawrence eve, St. Lawrence day, and the morowe upon St. Lawrence daye, with all courtes of pypowders, proffitts, commodities, incidents and advantages whatsoever to the said faire belonginge or appertaninge, or cominge, risinge or happening, for or by reason of the same.* And furdermore we, of our especiall grace, certen knowledg and meer mocion, for us, our heires and successors, do gyve and graunte by thes presents unto the said Master or Governor, breth-

* Lysons states that James I, a few months after his accession, granted to the Hospital a weekly market on Wednesdays, and an annual fair, with a court of piepowder, on the festival of St. Luke. The market has been long discontinued, but the fair, for cattle, &c., held August 21, is still kept up; there is also another fair for cattle, at St. Lawrence, October 29 and 30. *Magna Brit., Cornwall*, p. 36.

ren and sisters and their successors, all those twoe tenements and one garden with thappurtenances in St. Lawrence aforesaid, heretofore also parcell or reputed as parcell of the possessions belonging to the said lazer howse, and are scituete, lyenge and beinge between the tenements of the heires of one John Beare, late of Pengelly deceased, of the northe parte, the greate ryver on the southe parte, and the moore of the heires of the said John Beare on the weste side, and the Quenes highway on the easte side, sometime in the tenure of one John Aveye or of his assignes ; and also all the mill of Pendewaye with the beade to the said myll belonginge, together with a smalle pece of enclosed land which lyeth betwene the water which descendeth from the said mill towards the great water, on the North side, and the greate rocke where the water issuethe from the beade of the said myll, and extendeth downewardes towards the greate water, on the Southe parte, heretofore also parcell, or reputed as parcell of the possessyons of the said lazer howse, and sometime in the tenure of one Thomas Trote or of his assignes ; and also all thos twoe griste mylles, and one mesuage with thappurtenaunces in St. Lawrence aforesaid, late parcell also, or reputed as parcell of the possessyons of the said lazer howse, nowe in the tenure or occupacion of one John Balhatchett, Richard his wife,* and one James Sturgin, or of some or one of them, or of their or some or one of their assignes ; and also all that one mesuage and garden with thappurtenances in St. Lawrence aforesaid, late parcell also, or reputed as parcell of the possessions of the said lazer howse, now, or of late, in the tenure or occupacion of Thomas Cleise, Christian his wife, and Thomas Cleise their sonne, or of some or one of them, or of their some or one of their assignes ; and also that one howse and a garden in St. Lawrence afforesaid, late also parcell or reputed as parcell of the possessions of the said lazer howse, which Raife Cleise now or late held at the will of the said leproous people ; and also that one howse, and a garden in St. Lawrence aforesaid, late parcell or reputed as parcell of the possessions of the said lazer howse, which one Alice Greybin now, or of late held of the said Hospitall at will ; and also all that mesuage with

* *Sic* in the original.

all and singuler his rightes, members, and appurtenances in St. Lawrence aforesaid, late parcell or reputed as parcell of the possessions of the said lazer howse, nowe or of late in the tenure of John Lowe ; and also all that one mesuage or tenement, with all his rightes, members, and appurtenances in St. Lawrence aforesaid, late also parcell, or reputed as parcell of the possessions of the said lazer howse, nowe, or late in the tenure of Richard Jenkin at the will of the said Hospitall ; and also all that one mesuage or tenement in St. Lawrence aforesaid with all his rightes, members, and appurtenances late also parcell, or reputed as parcell of the possessions of the said lazer howse, now, or of late in the tenure or ocupacion of William Rawe at the will of the said Hospitall ; and also all that one mesuage or tenement with his appurtenances in St. Lawrence aforesaid, late also parcell, or reputed as parcell of the possessyons of the same lazer howse, now, or of late in the tenure, manurance, and ocupacion of one John Kember at the will of the said Hospitall ; and all that one mesuage or tenemente with his appurtenances in St. Lawrence aforesaid, late also parcell, or reputed as parcell of the possessions of the said lazer howse, now, or of late in the tenure, manurance, or ocupacion of one John Renawden at the will of the said Hospitall ; and also all that one chamber with his appurtenances in St. Lawrence aforesaid, parcell also or reputed as parcell of the possessions of the said lazer howse, nowe or of late in the tenure or ocupacion of one Peter Nicholas, at the will of the said Hospitall ; and all that one howse or mesuage in St. Lawrence aforesaid late also parcell or reputed as parcell of the possessions of the said lazer howse, now, or of late in the tenure of one Richard Piper at the will of the said Hospital ; and also all that one tenement with his appurtenances in St. Lawrence aforesaid, late also parcell or reputed as parcell of the possessions of the said lazer howse, now, or of late in the tenure, manurance, or ocupacion of one Johan Garland, widowe, at the will of the said Hospitall ; and also all that one tenement with thappurtenances in Bodman aforesaid, late also parcell or reputed as parcell of the possessions of the said lazer howse, now, or of late in the tenure or ocupacion of one Walter Hooper, at the will of the said Hospitall ; and also all that annuall or yerely rent of twoe shillinges and eighte pence, yssuinge and goinge out of the landes and tenementes in St. Tin-

gelly,* now, or of late in the occupacion of Benedict Harry, late also beinge parcell, or reputed as parcell of the enheritance of the said lazer howse; to have and to hold all and singuler the said mansion howse, landes, tenementes, and hereditaments, mylles, faires, rents, revercions and services, and also all and singuler other the premisses, with the appurtenances, and everye parte and parcell therof, unto the said Master or Governor, brethren and sisters, of Elizabeth, Quene of England, of St. Lawrence de Ponteboye in Cornewall, and to their successors for ever, to the onely proper use and behoofe of the said Master, Governor, brethren and sisters, and their successors for ever, to be holden of us our heires and successors, as of our duchy of Cornewall, in free socage, and not in capite, by fealtye only, and suche yearly rents as heretofore have bene answered and payed for the same premisses or any parte therof, for all manner of services and demaundes; and we doe nevertheles ordeyne, will, and straightly command the said Master or Governor, brethren, and sisters of the said Hospitall, and their successors, that they, and their successors for ever shall provide and mainteine a good and convenient minister to say the divine service now used within the Church of England, within the Chappell of the said lazer howse, and to minister the sacraments there, as heretofore in her majestyes tyme the same hathe moste commonly bene used. Provided alwaies neverthelesse, if at any tyme hereafter any controversy or suite shall happen to growe or be betwene the said Master or Governor, brethren and sisters of the said Hospitall, and any other person or persons, for, touchinge or concerninge any lease, or leases, estate or estates, heretofore maid, or pretended to be made, of any of the premises before by these presents graunted unto the said Master or Governor, brethren or sisters of the said Hospitall, and that informacion thereof be gyven, or complaint thereof made to the Lord Tresorer of England and the Chauncellor of the Exchequer, for the tyme beinge, if therupon the said Master or Governor, brethren and sisters of the said Hospitall, do not from time to time stand to ob-

* Mr. T. Q. Couch, of Bodmin, informs us that St. Tingelly is an estate near St. Lawrence, now called Stephengelly; and that he has seen several old entries in an account book, in which the name is St. Gelly. St. Lawrence (Mr. Couch adds) receives nothing now from St. Tingelly; but a small conventionary rent is paid by it to the manor of Rialton.

serve, performe and keep such order and direccion as shall in that behalfe be made, taken, or sett downe by the same Lord Tresorer of England, and Chauncellor of the Exchequer, for the tyme beinge, that then, and frome thenceforthe, thes our letters patents for and concerninge onely suche parte of the premises for the which the same order and direccion shall not be observed, performed or kepte, shalbe utterly void and of none effecte, anythinge before in thes presents conteyned to the contrary notwithstandinge.

In witnes wherof, &c., Witnessse our selfe at Westminster, the ninthe daye of Marche. [A.D. 1582.]

Per breve de privato sigillo, &c.

THE foregoing Charter, or Letters Patent, has been already referred to by Professor Babington in an interesting notice of the Lazar House of St. Laurence de Ponteboy, in Cornwall, printed in the Journal of the Cambrian Archæological Association, vol. ix., third series, p. 177. At the time of that publication, the writer had not found the original charter of incorporation, nor seen the enrolment of it in the Patent Rolls, of which the foregoing is a verbatim copy. We are indebted to Mr. Burt for his friendly assistance in making search at the Record Office for the document, which we have thus been enabled to bring before our readers. The present affords a favorable opportunity of offering some observations on this ancient charity, and adverting to some other documents connected with its history and its subsequent dissolution in 1810.

Dr. Oliver, *Monast. Dioc. Exon.*, p. 15, in a general notice of Chapels and Hospitals that existed in Bodmin, observes—"S. Laurence, of this house even Tanner knew little more than Leland, who calls it 'a pore hospital or lazar-house beyond the bridge, about a mile,' dedicated to S. Laurence.* Bishop Stafford, on

* Leland, *Itin.*, vol. ii, f. 77. Compare also vol. iii, f. 2. "From Bodmyn to S. Laurence, wher a poor Hospital or Lazar House is, about a Mile. Here I passid over a Stone Bridge, and under it rennith a praty Broke that cummith out of the Hylles from South Este," &c. A marginal note supplies the following evidence of a benefactor to the Hospital:—"One of the Peverells gave a little Annuite onto this House." The Peverels were the founders of the Grey Friars' Monastery, Bodmin.

Oct. 11, 1395, granted an indulgence ‘ad sustentacionem pauperum leprosorum Sancti Laurencii juxta Bodminiam.’ Again, in Lacy’s Register, vol. iii, fol. 125, March 5, 1435, is a similar indulgence to S. Laurence.” These appear to be the earliest notices of the Hospital. No other record of its existence has come to my knowledge previously to that which is to be found on the certificates of colleges, hospitals, chantries, free chapels, &c., in the counties of England and Wales. An abridged copy of those relating to Cornwall and Devon is inserted in the Supplement to Dr. Oliver’s Monasticon of the Diocese of Exeter, p. 483, under the head of “Chantry Rolls.” The abstract, furnished at my request by my friend Mr. Cole, then one of the assistant keepers of public records at Carlton Ride, was supplied to Dr. Oliver as a contribution to his important edition of the Monasticon of that diocese.

The name of the founder in that report is left in blank, and that blank has never been supplied. At the date of the report (about 37 Henry VIII), the charity is said to be for the maintenance of “nineteen Lazare peple, tow hole men, tow hole women, and one pryste, to mynystre unto them in a chappell adjoyning to the sayd hospital not farre distant from the paryshe church;” the yearly value of the possessions is there stated to be £4. 14s. 1½d., and the value of the ornaments, jewels, plate, goods, and “catalls,” to be 30s.

The next instrument is the above Charter of Elizabeth. It recites the existence for a long time past of a great company of lazar people by the name of “Prior, brethren, and sisters,” at the place called St. Lawrence de Pontboy, in the parish of “Bodman,” who had never theretofore been incorporated by the Queen or her progenitors. The Charter then declares them to be a corporation by the name of the Hospital or Almshouse of Elizabeth Queen of England of St. Lawrence de “Ponteboy” in the parish of “Bodman.” The number of lepers at the time of the charter is stated to be 36. By the new incorporation, the style of the body is to be “the master or governor, brethren, and sisters” of the Hospital, and there are to be in all forty persons;—viz., 39 “poor men and women, leprous people,” and the master. The brethren are to be elected by the general body, and the master by the brethren and sisters. All the late possessions of the body specified therein are granted to the new body, to have and to hold to them and their

successors for ever, of the Queen, her heirs and successors, "as of her Duchy of Cornwall—in free socage and not in capite." The choice of a minister to perform divine service in the chapel is vested in the new body.

For the results of this new incorporation, we have to obtain information from the proceedings in the Court of Chancery referred to in the memoir by Professor Babington. The original proceedings, and the decree, are among the records of that Court, but the official copies of the decree, and other orders of the Court, in the possession of the local authorities at Truro, are no doubt authentic, and may be safely relied upon; and these testify that, at the date of the final order and decree, the whole establishment had degenerated into a disorderly pauper asylum, under no control, self-elected, and retaining no vestige of the original scope and object of the charity, as administered either before or under the charter of Elizabeth. The proceedings before the Master in Chancery show that there was not a single member of the body having any right or title to admission into the Hospital. The practice had been to sell annuities for lives, make leases, and grant undivided shares in the property and profits, to any one who was disposed to buy, and without the slightest apparent regard to the intention of the charity. The final decree annuls and cancels all the outstanding grants of this irregular character, and the charity in effect became extinct and incapable of re-establishment, for want of a full complement of leprous patients, and a competent elective body.

In the suits pending in Chancery, the object of the gentlemen who, in the name of the Attorney-General, instituted the proceedings, in 1803, was to obtain a transfer of the property to a hospital then lately established at Truro and supported only by voluntary contributions, and which had no special reference to leprosy or any one class of disorders.

On the other hand, it was contended that if the charity had wholly failed in its object, the corporation was in effect dissolved, and consequently its possessions had relapsed to the representatives of the original founders (if any could be found), or escheated to the Crown, or to the Duchy of Cornwall,—inasmuch as the tenure in the above charter is of the Crown *in right of the duchy*, then vested in the Crown. With regard to the duchy right (which, in

the event of an escheat, would have been supported by the language of the charter), the Prince was made a party to the suit, and notified his personal assent to the scheme ultimately sanctioned by the Court. This "scheme" adopted partially the proposal of the gentlemen who had promoted the suit; but, in conformity with the principle of *cy pres*, that is, of adhering, as nearly as possible, to the general intent of the founders, the Court exacted from the Managers of the County Hospital, as a condition of the transfer, an engagement to receive any patient of the class contemplated by them—namely, leprous patients. The words of the engagement were "that all leprous persons that may offer themselves for that purpose, shall (without any recommendation of a Governor) be admitted into the infirmary in preference to any other cases, and provided with proper treatment and accommodation in the infirmary, so long as their disorder may require."—13th August, 1810.

It is remarkable that, shortly after the publication of Professor Babington's notice, an application was actually made by an eminent living surgeon to the officers of the infirmary to receive such a case of leprosy. I only mention this incident, because I heard a friend and member of the Institute refer to it as a proof of the value of archæological inquiries. The application was, in fact, suggested *abundè*.

Let me add a word on the name of the original site of this Hospital. It lies at a short distance to the west of the church and town of Bodmin. A stream runs through the village or site of St. Laurence into the larger river that flows down to Padstow. The documents of the Hospital show that there were several mills belonging to it. Mr. Babington reads the name on the seal as "Penpoy," and sees in it a latent Cornish meaning, which he prefers to the reading in the charter. I suspect the seal, if rightly read, to be a blunder of the seal engraver, and that a wooden bridge at St. Laurence may have given name to the site of the "Mansyon howse de Ponteboy," as Twiwood, or Twyvel-wood,*

* As this Paper has been passing through the Press, I have availed myself of an opportunity of examining, at the Registrar's Office, Truro, the Map of Liskeard, and annexed Schedule of Lands, prepared, some 25 years ago, for the Commissioners appointed to ascertain Duchy Boundaries. Doublebois is there called "*Doubleboys* otherwise *Twyvelwood*"; and, having much faith in Mr. McLauchlan's accuracy, I think the latter reading is probably correct.—Martin's Map calls it "Twilwood."—E. S.

between Bodmin and Liskeard has given the name of "*Doublebois*" to the Railway Station at that place. My Cornish friends in those parts feel no difficulty about this designation; and though I cannot undertake to say whether they will now see a bridge of wood, I think that if, on their next visit to Cornwall, my Cambro-British friends would bend their steps to the pretty bridge and beautiful woods of Dunmear and Pencarrow, they will at least thank me for having suggested so pleasant a stroll on a summer's evening.

EDWARD SMIRKE.

By the courtesy of the Cambrian Archæological Association we are enabled to place before our readers a representation of the seal of the dissolved Hospital of St. Laurence de Ponteboy, first published in their Journal in 1863.* The existence of the matrix appears to have been forgotten until the meeting of that Society in Cornwall in 1862; during a visit to Bodmin on that occasion the seal was shown in the Guildhall. Professor Babington, in his memoir before cited, observes that it is well deserving of a place in some permanent museum, and such suitable depository might, as we believe, be found either at Truro or Penzance. He remarks that the seal is apparently the most ancient proof of the existence of the Hospital that is extant; the entries in the bishops' registers at Exeter, previously mentioned, had escaped his notice whilst compiling his interesting memoir. The matrix, as he supposes, was probably made in the fifteenth century, and even perhaps not long before the year 1500. We entirely agree in the conclusion expressed by our friend that the seal at the first aspect seems much older than that period; and, whilst admitting the possibility that its somewhat unartistic design may have been due, in some degree, to its having been executed by some provincial workman in a remote district,† the fashion of the lettering, with certain other

* *Archæologia Cambrensis*, vol. ix., third series, p. 177.

† As further examples of old seals, unskilfully reproduced in a more modern matrix, the reader may be referred to the present seals of Helston and St. Ives, and the lost seal of the Deanery of St. Burian, in Cornwall; Wells, in Somerset; Bideford (bridge trustees), in Devon; Wokingham, in Berks; &c., &c. The very grotesque seal of West Looe, called in more formal documents Porthpigham, or Portbigam (*Cornub.* "Lesser port"), in Cornwall, is also clearly of this character, and affords a like instance of a variation in the spelling of the name, which is therein spelt "Portuan."—E. S.

details, seems to suggest the inference that the seal may have been copied from a more ancient matrix. The device, as will be seen



Seal of the Hospital of St. Laurence of Penpoy, or Ponteboy, Bodmin. Original size.

by the woodcut, is a figure of St. Lawrence, holding a gridiron, and the Book of the Gospels, appropriate to his office of deacon. A cusped and crocketed canopy appears over the figure, and beneath is a small distorted figure kneeling in prayer. The legend is $\bar{S} + \bar{S}C\bar{I} : \bar{L}A\bar{V}R\bar{E}N\bar{C}H\bar{I} \bar{B}O\bar{D}M\bar{O}N\bar{S} \bar{D}E : \bar{P}E\bar{N}P\bar{O}Y.$ * The name Penpoy, as Professor Babington has truly pointed out, has a much more Cornish appearance than its form of Ponteboy,† in the Patent of Queen Elizabeth. He expresses the hope, in which we fully accord, that our Cornish friends may investigate the different

* The name of the place, it will be observed, has a mark of contraction over the last letter. It has been suggested that the word may perhaps be read *Bodmonensis, in extenso*. Mr. Smirke, however, proposes to read—*Bodmonis*.—The name was written with very arbitrary variation in spelling. The earliest form seems to have been *Bodmon*; we find *Bodman*, and *Bodminian*, frequently, and also *Bodenham*, even at a late time.—A. W.

† Mr. Couch writes: “I have made enquiries for the word *Penpoy*, which was afterwards Normanized into *Pontebois*; but both names are now dead.”

forms of the name, and give us some explanation of the anomaly in the changes that it seems to have undergone.

I may notice, in conclusion, that the seal, as I am informed by Mr. Smirke, had been given by Lysons in the Supplementary Plates of Cornish Seals, rarely found in copies of the *Magna Britannia*. Its repetition (from the original), through the kindness of the Cambrian Association and of our friend Professor Babington, cannot fail to prove acceptable. I would also acknowledge my obligations to R. Bray, Esq., Town Clerk of Bodmin, and to Mr. Couch, of Bodmin, for an impression from the matrix.

ALBERT WAY.

V.—*Some Account of the Discovery of a Gold Cup in a Barrow in Cornwall, A.D. 1837.*—By EDWARD SMIRKE, *Vice-Warden of the Stannaries.**

IT gives me great pleasure to avail myself of the gracious permission of Her Majesty, and of His Royal Highness the Duke of Cornwall, to submit to the inspection of this Society a remarkable cup of gold which was disinterred from a barrow or tumulus of earth, as long ago as the spring of 1837, on the waste of the Duchy manor of Rillaton, in Cornwall.

I have a perfect recollection of the discovery, having been at that time in frequent communication with certain officers of the Duchy, who kindly described to me the circumstances under which the cup was found.

I have since also personally received from one of those officers, Mr. George Freeth, of Duporth, in Cornwall, a full confirmation, from his own knowledge, of the contemporaneous statement of the then mineral agent of the Duchy, Mr. Colenso, who was instructed by the late auditor, Sir George Harrison, to make careful inquiries on the spot and to embody the result in a written statement of facts.

The information so obtained is entirely worthy of reliance. It was contained in three letters written on the 10th, 19th, and 20th of May, 1837, of which this paper may be taken as a fair abstract.

Shortly before that time, some labourers, in search of stone for building an engine-house on a mine on the manor, thought they could more easily obtain some from a large mound of earth and stones which had been standing from time immemorial, with three others, on a part of the moor about half a mile from the well-known masses of granite locally called the "Cheese-wring."

The mound or barrow was about thirty yards in diameter.

* Reprinted from the *Archæological Journal*, by permission of the Royal Archæological Institute.

After removing part of the superincumbent earth and stones, they came upon a vault or cist of rough masonry forming an oblong four-sided cavity, consisting of three vertical stones on each of the longer sides, of one stone at each end, a large flat one below, and a large flat covering stone above. The length of the whole vault was 8 ft., the breadth $3\frac{1}{2}$ ft., and the height about 3 ft.

None of these granite blocks had any visible tool-mark on them; but they were regularly arranged, the upper stone being about 5 ft. below the surface of the mound. The vault extended in length from N.N.E. to S.S.W. In the opinion of Mr. Colenso, the mound had been already disturbed, and the central part of it had been thereby somewhat depressed; but I do not understand from this that the vault or cist itself had been apparently disturbed; on the contrary, a sketch by Mr. Freeth represents both the horizontal and vertical stones as in their proper position.

At the northern end of the vault were found human remains, consisting of the crumbling portions of a skull and other bones almost pulverised.

Within the vault, and about $3\frac{1}{2}$ ft. from this north end, were found two vessels lying near each other, one being of earthenware, the other and smaller one being the gold cup before us.

When first observed, there was a small flat stone, about 16 in. square, leaning diagonally against the inner west side of the cist, apparently (as my informant suggests) for protection of the vessels, of which the earthen vessel was unfortunately broken by the tool used in disengaging it from this stone.

Mr. Colenso states in his letter that the earthen vase must, in his opinion, originally have contained the gold one, which probably fell out of it when the larger earthen one was broken; but neither he nor Mr. Freeth saw the two *in situ* in the vault; so that the opinion was founded on the description of it by the workmen.

Some other articles were also found in the cist, and were sent up to London with the cup, but they are not now forthcoming. This is to be regretted; for, on the old principle of "*noscitur a socio*," these other relics, found in company with the cup, might have thrown light on the age or date of the cup. They were however seen by Mr. Freeth, now the only attesting witness of their nature and aspect. They were sent up in four packages or boxes,

containing the following articles, as described in the letter accompanying them, viz., portions of the fictile vessel called by the writer the "urn"; a small bit of "ornamental earthen ware"; something like a metallic "rivet"; and other undescribed articles, as well as small portions of the human bones already mentioned. With these were also enclosed what remained of a spear-head or sword blade, which was about 10 in. long when first seen in the vault, but was afterwards broken by removal.

The cup was forthwith sent to King William IV by Sir George Harrison; but the demise of his Majesty within a week or two afterwards will sufficiently account for the temporary disappearance of the treasure. In all probability the contents of the boxes were not sent to the Palace with the cup. Sir George himself did not long survive, and my friend Mr. Freeth's memory is now the sole depository of the secret of those lost relics. He speaks of them with a natural distrust of his recollection after an interval of thirty years, and in relation to objects at that time, in themselves, of little ostensible interest. He remembers the fragments of metal, and of the blade; and also the fragments of pottery, of a "reddish brown" color; and he has some recollection of some pieces of ivory, and of a few glass beads.

Such is all that I can offer to supply the place of the miscellaneous contents of the cist, other than the cup, which has alone been preserved for our gratification and instruction.

In order further to identify this cup, you will bear in mind the accession of our Queen, and her subsequent marriage,—events of such engrossing importance as to leave little room for thought or inquiries about the cup. It is easy to understand that the discernment of the Prince Consort distinguished this golden spoil, at a subsequent period, from other royal plate. The record of its finding was brought to light and annexed to the relic; and it now has its place of deposit, at the wish of his Royal Highness the Prince of Wales, in the Swiss Cottage of the Queen at Osborne.

This highly curious cup,—so far as I am aware, unique,—measures in height $3\frac{1}{4}$ in.; diameter at the mouth $3\frac{2}{8}$ in.; at the widest part of the bowl $3\frac{1}{2}$ in. The handle measures $1\frac{1}{2}$ in. by $\frac{7}{8}$ in., greatest width. The weight of the cup is 2 oz. 10 dwts.; its bullion value about £10. The handle, which has been a little crushed, is attached by six little rivets, three at the top and three

at the bottom, secured by small lozenge-shaped nuts or collars. This appendage, it should be observed, seems, at least in its present state, fit only for means of suspension, barely affording sufficient space for the smallest finger to be passed through it. Indeed, the cup does not stand firmly on its base, and I have doubts whether it was intended to do so. On the bottom of the cup there are concentric ribs or corrugations, like those on the rest of it, around a little central knob about $\frac{1}{4}$ in. in diameter. Thus the corrugated fashion of work extends over the entire surface. The prevalence of this corrugation in early gold ornaments may have been caused by some constructive advantage; as we see in the frequent use, in our own times, of thin wavy sheets of metal for temporary and other buildings, whereby a greater degree of strength is obtained with economy of metal. This, in objects of gold, would of course be a cogent consideration.

With regard to the mode of manufacture of such a cup I have had the advantage of obtaining the valuable opinion of Messrs. Garrard, who carefully examined and weighed it. They found in it no sign of solder, nor any rivet used except for attaching the handle; and they considered that a like cup, of the same material, might be produced without difficulty out of a single flat lamina of thin gold, hammered or beaten into a similar form. They recognised it as belonging to a type of Scandinavian antiquities that had occasionally been brought under their notice. I mention this because some practical gentlemen, to whom I showed it last summer, considered the workmanship to be of a character which it would not be easy to reproduce without a mould.

Since the re-discovery of this very remarkable treasure-trove, I have looked in vain for any like cup, of the same material, to which so early a date can be assigned (at least since the well-known prize won by the valiant "Carodac!"); and have been kindly aided in my search by friends more learned than myself in the history of such art. Mr. Way has pointed out to my notice a cup of amber, of a character not dissimilar, found near Brighton several years ago. It was found in connection with remains of a so-called Keltic character, and is figured in the *Sussex Archaeological Transactions*, and also in the *Archæological Journal*, vol. xv, p. 90. The small handle has some resemblance to that of the present cup, but the material distinguishes the two. The *general*

outline or form of the gold cup is by no means rare, and might find a type in more than one period of early art, especially in fictile ware. I observed several such earthenware vases from Boulogne in the late Paris Exhibition, in the inner circle, which might pass for fac-similes of the present cup (except the handle), with like annular horizontal undulations of the surface.

There is an armlet, found in Lincolnshire,* which, both in respect of material and of workmanship, might be a counterpart of the cup, but for its application to the purposes of a personal ornament, instead of a cup. Indeed the corrugation of thin gold seems to be a mode of metallurgy that has been resorted to in various analogous objects in that metal, which have been referred to as early, or Keltic, manufacture, quite unconnected with Phœnician, Roman, or Saxon work. We have an example in the gold corslet found at Mold, in Flintshire, which is now in the British Museum,† together with some other small portions of like sulcated, or punched laminæ of gold in the same glass case with the corslet. The diadems, or gorgets, of gold, figured in Sir W. R. Wilde's *Catalogue of the Gold Antiquities in the Museum of the Royal Irish Academy*,‡ also afford examples of a like treatment of gold laminæ for the purposes either of ornament or of increased strength. For the latter purpose, those who have observed the growth of shells of deep-sea mollusks, must recollect how often the like purpose of protecting their brittle envelopes seems to be effected by annular folds or corrugations of the outer material.

But I will not further pursue this consideration, in the hope that my friend, Mr. Way, who can speak *ex tripode archæologico* on the subject of English gold-finds, may be tempted to give us the benefit of his own observations *in subsidium* to the present imperfect references.

One of the letters of Mr. Colenso above referred to, calls the attention of his correspondents to the three other untouched barrows, adjacent to the one in which the cup was discovered; and suggests that what the miners call a *cross cut* might be productive

* See plate annexed.

† This remarkable relic is figured in the *Archæologia*, vol. xxvi, p. 422, and in *Archæological Journal*, vol. xiv, p. 292.

‡ See especially the ornaments figured, *ibid.*, pp. 22, 23, and 24.

of further discoveries of interest in that unexplored ground. As yet I have not heard whether this useful hint has awakened the curiosity of our Cornish co-adventurers in this field of metal-lifodine enterprise. Considering that this Northern district has already produced the lunettes of Padstow and of St. Juliot, to say nothing of the lost *στρεπτόν* of Looe Down, of which I reminded my Cornish friends in October, 1866,* I cannot forbear to hope that they will find out some "Stannary process" for facilitating the exploration of the other Rillaton tumuli.

I cannot refrain from mentioning here, that, during the presidency of the Prince Consort over the Duchy Council, an incident occurred which may supply a laudable example to lords of manors elsewhere. When an application was made, in my own recollection, by the contractors of some great works near Plymouth, for a lease or liberty to quarry granite, at a tonnage or royalty, in Rillaton manor, the council prohibited the removal or quarrying of any within a certain prescribed distance from the Cheese-wring. That colossal pile of tabular slabs of rock,—so often visited as a geological phenomenon; or as a picturesque object; or as a Druidical altar or idol, according to the more favourite local opinion;—standing in the midst of the Caradon copper mine district a few miles north of Liskeard, has thus been protected from demolition.

SUPPLEMENTARY NOTICES, RELATING TO THE GOLD CUP FOUND IN
A SEPULCHRAL CIST NEAR THE CHEESE-WRING, AND ALSO TO
SOME OTHER GOLD RELICS IN CORNWALL.

It is remarkable that amongst the numerous objects of gold found in Great Britain none should have occurred, as I believe, of the like description as the cup which, by the gracious favor of her Majesty, we are now permitted to publish. The precious relics heretofore brought to light have been exclusively of the nature of personal ornaments. In Ireland, as Sir W. R. Wilde informs us,†

* *Journal of the Royal Institution of Cornwall*, vol. ii, pp. 138, 139.

† *Catalogue of the Antiquities of the Royal Irish Academy*, by Sir W. R. Wilde, *Metallic Materials*, p. 355; *Antiquities of Gold*, p. 1.

it is supposed that the native gold was the metal with which the primitive inhabitants were first acquainted, and a greater number and variety of objects of gold have there been found than in any other country in North Western Europe. These likewise consist, for the most part, of articles connected with personal decoration, and it is remarkable that they have rarely occurred, as in other countries, with sepulchral deposits. Ancient Annals* give us even the name of the artificer by whom gold was first smelted in the woods of Wicklow, three centuries before the Christian era, and affirm that by him were goblets and brooches first covered with gold and silver in Ireland. Banqueting vessels of the precious metals, as Sir W. Wilde states, on the authority of the Annals, were not unknown to the early Irish; he points out, moreover, that some golden cup-shaped vessels in the Copenhagen Museum, which have been found suspended in tombs, strikingly resemble, when viewed in an inverted position, certain Irish relics of the same precious material and workmanship, noticed by Vallancey and other writers as regal caps or helmets.†

The fashion of the golden *petasus*—like a helm or cap with recurved brim and conical apex, seems little adapted, it must be admitted, to any use as a “banqueting vessel”; the style of decoration is doubtless that with which we are familiar alike in early Scandinavian relics, and likewise in those of the sister Island. Gold cups of thin metal, ornamented with ribs and parallel lines, rows of small knots and concentric circles, that seem to be for the most part hammered up, are not infrequently found in Denmark and other northern countries; these vessels, although in their general form dissimilar to the cup found in Cornwall, present the same peculiarity of being round-bottomed. In some examples also the addition of a handle occurs, of a different fashion, however, to that of the Cornish treasure-trove.‡ A speci-

* See the curious tradition preserved in the *Book of Leinster*, given by Dr. Todd, *ibid.*, p. 7.

† Compare especially Worsaae, in the *Nordiske Oldsager*, pl. 61, fig. 280. The Irish “crown,” in form precisely similar to the “billicock” hat of our own times, is figured in the Introduction to *Keating’s History of Ireland*; and *Wilde’s Catal. R. I. A.*, Antiqu. of Gold, p. 8.

‡ See the late Lord Ellesmere’s *Translation of the Guide to Northern Archæology*, p. 44, and various treatises on Scandinavian Antiquities. Dr. Wilson also refers to gold vessels found in Denmark; *Prehistoric Annals of Scotland*, vol. i, p. 406, second edit.

men recently shown in the Exhibition at Paris, amongst the Danish Antiquities, has, as described to me by Mr. Franks, the form of an ordinary basin, of very thin plate, ornamented with horizontal bands and concentric circles; it has a slight curved handle, like the elongated neck of some animal, terminating in a small head with ears, intended possibly to represent that of a wyvern. M. de Mortillet, however, describes it as the head of a horse rudely designed.* Eleven of these golden vessels, similar in their fashion, were found together in the Island of Funen. They are assigned by Scandinavian archæologists to the later times of the Age of Bronze.

There is great difficulty in suggesting a date, even approximately, for the remarkable relic brought before us by Mr. Smirke. Its discovery with a sepulchral deposit and urn in a cist of stones, more especially as being accompanied by a weapon of bronze, may doubtless lead us to assign the relics to a remote period, when the use of that metal prevailed. It is observable that in another remarkable discovery of golden relics in Cornwall, namely the two *lumulæ* found at Padstow, as stated in the *Archæological Journal* by Mr. Smirke, the precious deposit was likewise accompanied by an object of bronze, a celt of the most simple form, the flat axe-blade, which may possibly have been the earliest type of the series of relics of that class.†

It is to be regretted that no record of the fashion either of the blade, described as a "spear-head," or of the cinerary vase and its incised ornamentation, should have been preserved. The sepulchral mound, however, enclosing an urn-burial in a cist, may unquestionably be referred to an early age of British antiquity, subsequent to the so-called Stone-Period. It is worthy of remark that the one-handed cup of amber, noticed by Mr. Smirke, found

* G. de Mortillet, *Promenades pré-historiques à l'Exposition Universelle*, p. 121; given also in his *Matériaux pour l'histoire primitive de l'homme*, tom. iii. The head, as supposed, of a horse, occurs likewise on the termination of the handle in objects of bronze found in Denmark, and described as razors. This feature, M. de Mortillet observes, may indicate a date subsequent to the Age of Bronze, properly so called. Representations of animals first occur, as it is stated, on objects of the early part of the Age of Iron. *Promenades, ut supra*, p. 120.

† *Arch. Journ.*, vol. xxii, p. 277. See of this type of celt, *Catal. Antiqu. R. I. Acad.*, by Sir W. R. Wilde, p. 362.

in a barrow at Hove near Brighton, was likewise accompanied by a bronze blade; the contents of that tomb included also a skillfully wrought stone axe-head, perforated for a haft; a type of weapon familiar amongst Scandinavian relics of the "Age of Bronze."

I may here cite the opinion of one of our most reliable authorities in all such questions of difficulty, Mr. Franks, that the Cornish cup should be classed with the corslet found in the grave-hill at Mold, and the Lincolnshire armlet figured above; with certain golden ornaments also found in Scotland, in Ireland, and in Scandinavia. The same type of ornamentation will be found to prevail in all; its general arrangement being in horizontal bands, more or less enriched with lines of stippled, beaded, or corded work, the surface in some examples ribbed or corrugated, in others elaborately embossed, as in the gold corslet from the barrow near Mold, with rows of studs, nail-head and other ornaments in strong relief. We find moreover, especially in Irish relics of gold, small concentric circles, and also patterns for the most part of chevrony or lozenge type, that closely resemble those on early sepulchral urns, occurring likewise, but more rarely, on bronze weapons and celts.

In considering the peculiar ribbed or corrugated fashion of relics of gold, such as those to which I have briefly adverted, we cannot fail to recognise a certain constructive analogy to the remarkable circular British shields of thin bronze plate that have repeatedly been brought under our notice. In these we find around the boss a series of concentric rings hammered up, with intervening circles of knobs, in alternate arrangement, the knobs or studs having the appearance of round-headed nails, such as are often seen on the old Highland targets that frequently present an almost archaic aspect. In the bronze shield, as also in the corrugated cup or armlet of gold, it is probable that by such mode of construction, as already noticed, increased strength was obtained, with lightness and economy of metal.*

* The corrugated material of which the bronze shields are formed is so thin that they seem little suited to resist any blow: it has even been suggested that these British relics were either objects of parade, or merely the superficial coatings of defences of more substantial description. This inference is wholly set aside on examination of the fastenings affixed to the

A few other golden relics found in Great Britain and on the Continent claim notice, in connection with the subject of the curious discovery brought before us by the gracious consideration of the Queen.

Of the great hoard of gold that was brought to light by the plough a few years since near Hastings, consisting chiefly it is believed of torques, armlets, and the like, some fragments only escaped speedy destruction in the melting-pot. Two of these are now in the British Museum; they have been figured in the *Proceedings of the Society of Antiquaries*, and apparently may have been portions of broad armlets, resembling that before figured found in Lincolnshire, or of some similar ornament.* They bear the same stamp of workmanship, the ribs with the lines of stippled markings between them.

Of similar workmanship is a broad gold bracelet in possession of Lord Panmure, at Brechin Castle, N. Britain, figured in *Wilson's Prehistoric Annals of Scotland*. It is of thin metal, hammered up, and formed with five ribs or corrugated bands, and slight corded ornaments between them. This ornament, of which a portion is lost, was found at Camuston, Angus, in a cist, under an erect stone sculptured with a cross. A large skeleton lay in the cist; part of the skull had been cut away: an urn, ornamented with zig-zag patterns, was also found with this deposit, traditionally regarded as the remains of the leader of the Danish marauders slain there by Malcolm II, about the close of the seventh century. The interment, however, was doubtless of a much earlier period. The fashion of this Scottish specimen seems to be precisely

inner side of these shields, and serving for the attachment of straps by which they were held on the arm, termed in after times *enarmes*, and also for that which passed over the neck or shoulder. It is then clear that there could not have been, as conjectured, any substantial lining, even of hide, upon which the corrugated bronze was affixed. The defensive quality of such a shield, insufficient as it would appear, may as I believe have been materially augmented by its corrugated construction. See notices of the principal examples of these shields in my *Catalogue of Antiquities in possession of the Society of Antiquaries*, and in *An Account of Specimens found near Yetholm, Roxburghshire*, recently published by the Antiquaries of Scotland.

* *Proceedings Soc. Ant.*, vol ii, new series, p. 247. A full account of the discovery at Hastings may be found in the *Transactions of the Sussex Archaeological Society*.

similar to that of a diadem found in the county of Limerick, figured in Sir W. Wilde's *Catalogue of Antiquities of Gold in the Museum of the Royal Irish Academy*, p. 24, fig. 551.

Amongst other relics of gold obtained in Scotland, where such objects have been found in considerable variety, I may here mention an armlet brought to light in Angus. It had been deposited in a stone cist, and was accompanied by an urn; this example of the occurrence of ornaments of gold at the period to which the interments of that description may be assigned, is recorded by Mr. Jervise, *Memorials of Angus*, p. 22*.

Some remarkable examples of golden ornaments have been brought to light in France, especially the rich treasure of armlets found in Britany, as described by the Rev. J. Bathurst Deane. The most singular object of the like precious material is a relic found in 1844 near Poitiers.* It was regarded by Raoul Rochette as Gaulish. In general form it bears resemblance to a quiver; its length is 21 in., and the decoration consists, as on the Scandinavian cups, of numerous concentric circles arranged in bands horizontally, and stippled markings. The ornaments seem to have been hammered up; the metal, in this instance, is not corrugated. The ornamentation may be compared with that of certain Irish objects of gold, such as the cupped "fibula" in the Museum of Trinity College, Dublin; and the boxes, by some supposed to have been used for mortuary purposes, in that of the Royal Irish Academy.†

It may seem scarcely necessary to remind the reader of the frequent occurrence of small fictile vessels with early interments; it has been supposed, with much probability, that they had contained food or drink, placed near the remains of the dead.‡ Examples of such vessels of any other material, especially of

* *Arch. Journ.*, vol. i, p. 252.

† Figured in Sir W. Wilde's *Catalogue, Ornaments of Gold*, pp. 60, 84.

‡ Ancient fictile vessels, similar in some respects to the gold Cornish cup, but of less ancient periods, are doubtless familiar to the reader. I may mention particularly a small one-handled cup of earthenware, amongst Roman relics brought before the Institute in 1858 by Count Paolo Vimercati-Sozzi, of Bergamo. These objects were found in sepulchral cists of brick near Lovere, in Lombardy. The cup, lathe-made, is round-bottomed, and has a flat handle through which the finger could scarcely pass.

metal, as in the deposit described by Mr. Smirke, are very rare. He has adverted to the remarkable discovery of a one-handed cup of amber, accompanied by weapons of stone and bronze, in a barrow near Brighton. Such precious relics were, doubtless, objects that had been most prized in life by the deceased. A singular little cup, described as of oak, but possibly of the Kimmeridge shale obtained near the shores of Dorset, was found in that county in 1767, in a grave-hill known as the King Barrow near Wareham. In this instance the corpse had been placed, wrapped as it appeared in deer-skins, in a large hollow trunk of an oak; no weapon was noticed with the bones nor any trace of metal, with the exception of a portion, as stated, of gold lace. The little bowl-shaped vessel had no foot or handle, it was of oval form, the diameter at the mouth being 3 in. by 2 in.; the depth about 2 in.; the whole of the surface was engraved with horizontal and oblique lines.* It is supposed that it had been placed at the head of the corpse.

A small wooden vessel has been described by Professor Worsaae as found in a similar depository in Denmark in 1827. The oaken trunk lay in a barrow, near the village called Vollersley; an urn was first disinterred in the superincumbent earth; below this was a heap of small stones, that covered the wooden coffin in which lay some locks of human hair, a woollen mantle, a sword and dagger of bronze, a palstave also with a brooch of the same metal, and a horn comb. The little cup that accompanied this remarkable interment had two handles; it contained some deposit having the appearance of ashes.† Several interments of the same description have been noticed in the *Archæological Journal* as occurring in the northern part of Sleswick. With the unburnt bodies, wrapped in woollen cloth and laid upon hides, had been deposited swords and other objects of bronze, with other relics, including cups of wood described as turned on the lathe, and in some instances ornamented with minute studs of tin skilfully hammered in. One of these curious cups, found in the trunk of

* See the account by Mr. Hutchins, in his *County History*, and in *Gent. Mag.*, vol. xxxvii, p. 53; given also by Mr. Warne in his *Celtic Tumuli of Dorset*, in the Section of "Tumuli opened at various periods," p. 4. The cup, as stated, afterwards belonged to Gough.

† Worsaae, *Primeval Antiquities of Denmark*, p. 96.

an oak in a barrow called Dragshoi, has been figured in the *Archæological Journal*. It has one handle; the base is of such narrow dimensions that the vessel, when filled, could scarcely preserve its equilibrium, even when carefully balanced; the under surface of this foot is ornamented with six concentric circles of diminutive nails or studs of tin.* It may deserve notice that in one instance an armlet of gold was brought to light. These remains have been assigned by Professor Worsaae to the Early Bronze Age.

I have willingly acceded to the wish of our friend Mr. Smirke, that I should append to his account of the Rillaton Treasure Trove some notices of other objects which appear to present features of analogy that, by comparison, may aid the investigation of the period to which these and other golden relics should be assigned, especially in regard to their occurrence with some mortuary intention. We have been indebted to his kindness on a former occasion for an account of golden crescent-shaped ornaments, or *lunule*, found in Cornwall, four in number, resembling such as have frequently occurred in Ireland.† Whilst the foregoing notes have been in preparation, I have received from an obliging friend at Penzance, Mr. J. T. Blight, F.S.A., whose knowledge of antiquity has repeatedly aided my researches, drawings of two other Cornish relics of gold, likewise of Irish types. One of these, a portion of a penannular armlet, or possibly of a neck ornament, was found at Tredinney in ploughing near the "vow," or subterraneous walled chamber and passages at Chapel Uny in the parish of Sancreed, about two miles from Penzance; it is preserved in the Museum of the Antiquarian Society of that town.‡ British hut-circles and other early vestiges occur near the spot. The length of this fragment of gold is about $4\frac{1}{2}$ in.; the armlet was a slight round bar of gold, in part somewhat twisted, it may be in the process of working it; the extremity is gradually dilated, term-

* See the translation, by Mr. Ch. Gosch, of Worsaae's memoir on the Antiquities of South Jutland, *Arch. Journal*, vol. xxiii, p. 32. The wooden cup above noticed measures 6 in. in height; diam. of the mouth $12\frac{1}{2}$ inches.

† See Mr. Smirke's Memoir on the golden ornaments found near Padstow, *Arch. Journ.*, vol. xxii, p. 275; *Journ. Inst. Corn.*, 1866, p. 134.

‡ *Penzance Nat. Hist. and Antiqu. Soc. Reports for 1862-65*, p. 39; an account of the curious "fogou" or cave is given by Mr. Borlase with a ground plan, *ibid.*, p. 14. The gold relic was found in 1864.

inating in an enlarged flat end rather more than a quarter of an inch in diameter. The dilated terminal knobs, varying from the simple button-shaped terminations, that first take a slightly cupped form, and gradually expand until they assume the broad saucer-like fashion of the so-called "mammillary brooches," are characteristic of Irish penannular ornaments.* The second relic of gold is a portion of a more massive penannular object, a cupped "fibula" of unusually large dimensions, and of a type almost exclusively Irish.† It was found near the Lizard, in a district of Western Cornwall replete with early remains, and is now preserved in the British Museum. The length of this fragment is 3 in., its weight $5\frac{1}{4}$ oz. It formed part of Payne Knight's Collection. The "calicinated" extremity must have been of unusual breadth, when perfect; the portion that remains measures $1\frac{3}{4}$ in. in diameter. The largest brooch of this description in the Museum of the Royal Irish Academy weighs 16 oz. 17 dwt. 4 gr., the cupped disc at each of its extremities measures 5 inches in diameter. It will be noticed in the woodcut, that the bow or handle of the Cornish fragment is lozenge-shaped, a variety of fashion that occurs in Irish specimens, but no example is figured by Sir W. Wilde. I have seen only one other "mammillary brooch" found in England; it was figured in my *Memoir on Ancient Gold Ornaments in the Archæological Journal*, vol. vi, p. 61, having been brought before the Institute by Mrs. Danby Harcourt, through Mr. Charles Tucker. This specimen, weighing 5 oz. 7 dwts. 22 gr., was found at Swinton Park, Yorkshire. Two similar objects are noticed by Gough as found, in 1780, near Ripon.

It is very remarkable, as Mr. Blight observes, that all the Cornish gold ornaments have their counterparts in Ireland. I have much pleasure in being enabled to publish representations of these remarkable relics that have become known to me through his courtesy.

ALBERT WAY.

* See Sir W. Wilde's *Catalogue*, *Antiqu. of Gold*, Mus. Roy. I. Acad., pp. 52-75.

† *Ibid.*; compare Nos. 120, 122, 593, &c.

P.S.—Since the publication of my friend Mr. Way's "Supplementary Notices," he has brought to my notice a former discovery of mixed bronze and gold relics in the western part of Cornwall, of which Mr. Malachy Hitchins sent a description in 1802 to the Society of Antiquaries through Sir Joseph Banks.—It is found in Vol. 15 of the *Archæologia*, p. 118.—A farmer, having occasion to remove some earth in a field in Lelant parish, found, a few feet beneath the surface, numerous celts, and portions of copper swords, and lumps of fine copper, evidently brought for the purpose of fusion, as the ashes found in company with them seemed to indicate. Mr. Hitchins considered the whole to be the remains of a foundry for the manufacture of such objects. At the bottom of some of the celts small bars of gold were found not larger than a straw, as bright as if they had been lately deposited there. The bronze objects were sold to a blacksmith at St. Ives, and weighed 14 or 15 pounds. One of these celts, with the gold within it, was secured by Mr. M. Hitchins, and sent to Sir Joseph Banks. This discovery is also adverted to by Lysons, in his *Cornwall*, p. cexx.

In the same neighbourhood, in a field in St. Hilary parish, some celts and military weapons, and considerable masses of copper, weighing 80 lbs., were found about eighteen months before this last discovery at Lelant. The bronze celts were found to be very difficult of fusion, and the gold is supposed to have been inserted to facilitate the operation. Urns, filled with common Roman coins of brass, seem to have been frequently found, underground, in the western part of Cornwall, in the latter half of the last century. See, Vol. 14 of the *Archæologia*, a previous communication by Mr. Hitchins, p. 224. Mr. Lysons, as well as Dr. Borlase, notices the remarkably abundant occurrence of metallic celts in the mining districts of Cornwall. It is suggested that they are probably referable to the working of tin mines, although so impotent a tool would be of little value except in superficial works.

E. SMIRKE.



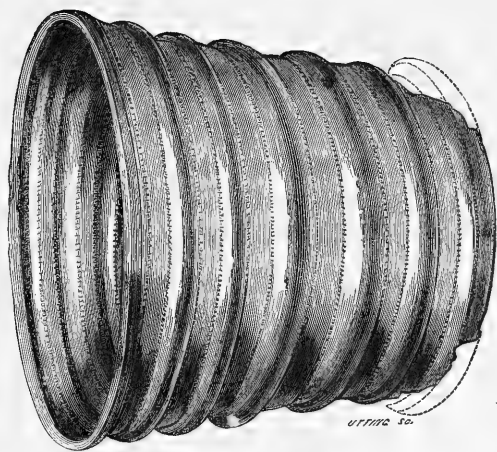
Gold Cup found in a Barrow in Rillaton Manor, Cornwall.

Now preserved at Osborne. Height $3\frac{1}{4}$ in., diameter at the mouth $3\frac{3}{8}$ in.



The bottom of the Cup, showing the terminal corrugations, as seen from below, and the central knob.

Exhibited by permission of the Queen, and of the Prince of Wales, at a meeting of the Royal Archæological Institute, June 7, 1867.



Gold armlet found at Cuxwold, Lincolnshire.

ANCIENT RELICS OF GOLD FOUND IN CORNWALL.



Portion of an Armlet found at Tredinney near Penzance.
Museum of the Penzance Nat. Hist. and Antiqu. Soc. Weight, 10 dwt. 16 grs. Orig. size.



Section of the solid handle.

Fragment of a "Mamillary Brooch" found near the Lizard. Payne Knight Collection,
British Museum. Weight, 5½ oz. Orig. size.

From Drawings by Mr. J. T. Blight, F.S.A.

VI.—*Rare Plants in the neighbourhood of Callington.*

SOME of our rarest plants are fortunately so abundant in the localities in which they are found, that there is not the slightest possibility of their extermination. This is the case with the *Physospermum Cornubiense*, which abounds in every bushy field in the valleys and on the hills in a direct line between Halton Quay on the banks of the Tamar and Newton Ferrers on the river Lynher. There is nothing attractive about the plant, which, in its general characteristics, bears a close resemblance to many other members of the tribe *Umbellifereæ*, which are remarkable for their family likeness. This may account for the fact that it has hitherto (so far as I am aware) escaped notice in the above-named locality. In the botanical works to which I have been able to refer, with one exception, "near Bodmin" is given as the only locality in this country in which it grows; Mr. Johns, in his *Flowers of the Field*, adds "Tavistock, Devon." It was formerly called *Ligusticum Cornubiense*, but is now rightly named *Physospermum*, from the inflated bladder-like form of the seed, which is a distinguishing feature of the plant. Lysons, in his *Magna Brit: Cornwall*, p. 198, says: "There are a few plants which may be considered as peculiar to this county, having been found in no other part of England, as the *Ligusticum Cornubiense*, *Erica vagans*, and *Illecebrum verticillatum*. We saw the *Ligusticum* growing abundantly on the skirts of St. Margaret's Wood, about a mile north of Bodmin, where, having been lost to the botanists ever since Ray's time, it was re-discovered by Mr. Pennington of the Priory, about 25 years ago. We heard of it also as growing plentifully between Dunmere Wood and the river; but it has never been found except within a few miles of Bodmin." A little further on he adds: "It may be remarked that several of the rarer plants found in this county are, strictly speaking, natives of the south-east parts of Europe; *Sibthorpia Europæa* being found in Crete and Thessaly, and *Ligusticum Cornubiense* on Mount Athos." My attention was first drawn to this plant

by Mr. Kempthorne of Callington, who found it growing in a field near Newton Ferrers.

On grassy knolls, among the heath and furze of Vernico, where the *Physospermum* is particularly plentiful, may be seen in autumn the upright purple flowers of the little annual, *Gentiana campestris*; and the furze themselves in the same place are hung with festoons of the Lesser Dodder (*Cuscuta epithymum*), whose threadlike stems, floating from spray to spray, give the appearance of gossamer. This is one of our few parasitical plants. Another, more interesting on account of its greater rarity and the peculiarity of its structure, being a leafless plant, the Greater Broom-rape (*Orobanche major*), may be found growing on the roots of furze in the deep wooded glen which reaches down to the Tamar, between Vernico and Pentillie Castle. In itself the *Orobanche* has no beauty to boast of, for it might easily be passed by as a dead twig accidentally stuck upright in the ground.—In this same valley occur the Wild Balm (*Melittis melissophyllum*) and the Tway-blade (*Listera ovata*), as well as the Common Columbine in great abundance. Concerning the latter there is a tradition that Sir James Tillie, of Pentillie, was so fond of it that he used to go about his woods with his pockets filled with the seed, which he scattered in all directions. It is found however in all the woods on the banks of the Tamar between Saltash and Launceston, and on both sides of the river. The *Melittis* is one of the most beautiful of our native plants, and peculiar to the western counties.

Another western plant, Yellow Bartsia (*Bartsia viscosa*), the flowers of which are as beautiful as those of the Common Garden Musk, which they much resemble, is found in almost every bog. Indeed the bogs in this neighbourhood may well be said to be rich in botanical treasures. Mounds of Sphagnum Moss are frequently dotted all over with the lovely little bells of *Campanula hederacea*, and look like large soft pin-cushions, fringed with the pink and equally beautiful flowers of the Bog Pimpernel (*Anagallis tenella*). In wetter places, more difficult to get at for those who are afraid of damp feet, grow the singular little Sundews (*Drosera rotundifolia* and *D. longifolia*). The former is commonly found in every bog; the latter is by no means so common. They are curious fly-catchers, imprisoned insects being found dead on every plant, caught by the thread-like fingers which extend from

the fat rotundity of the fleshy leaf. Close at hand may be found other bog-plants mentioned as growing in the neighbourhood of Truro; e.g., *Scutellaria minor*, *Viola palustris*, and the greasy little Pale Butterwort (*Pinguicula Lusitanica*). *Campanula hederacea*, mentioned above, abounds in every shady lane. *Helleborus viridis* grows on the roadside hedge between Callington and Penter's Cross. *Oxalis corniculata* clings to little crevices on a rock near Pillaton, and continues to produce its yellow flowers throughout the winter. *Sedum telephium* grows on a hedge near St. Mellion; and in the Rectory garden in the same parish the little *Neottia spiralis* used to send up its spiral spike in spite of the scythe; but the more frequent cutting with the mowing machine has prevented it from making its appearance this year. The Butterfly Orchis (*Habenaria bifolia*) may frequently be met with in a plantation near Keason; and *Iris foetidissima* grows in the lanes of Botus-Fleming and Landulph. The berries of the latter are useful for Christmas decorations when holly-berries are scarce.

With regard to Ferns and their allies, *Ceterach officinarum* is common on all the old walls of several farm-houses, and attains an unusual size; it grows side by side with *Asplenium ruta-muraria* and *A. trichomanes*. *Asplenium lanceolatum*, common further west, is here very rare; many persons go to the Morwell Rocks, on the other side of the Tamar, to procure specimens; but there is one little nook on the Callington side in which it grows plentifully. The Royal Fern (*Osmunda regalis*) grows luxuriantly in many valleys; and the rare Moon-wort (*Botrychium lunaria*), and the curious Stag's-horn Moss (*Lycopodium clavatum*), may both be found on Hingston Down.

VII.—NATURAL HISTORY.—*Notes on the Ornithology of Cornwall for the year 1867-8.*—By E. HEARLE RODD.

THERE has been a dearth of ornithological news in Cornwall during the past year; and I am unable to report the occurrence of any new addition to the avi-fauna of Cornwall since the interesting fact of the "Grey Shrike" which was killed at Scilly in 1851 proving to be the "Lesser Grey Shrike" (*Lanius minor*), a European species figured and described in Gould's Birds of Europe and in Dr. Bree's work on European Birds not found in Britain. This is the first instance, according to Mr. Gould, of its occurrence in Great Britain. Professor Alfred Newton, of Cambridge, had this specimen submitted to his inspection by Mr. Gould, to whom I sent the bird; and the Professor's letter to me, in referring to the value of this new British bird, was highly congratulatory to the County which claims title to the occurrence.

On different occasions I have observed on our eastern moors in the Kilmar and Dosmare Pool district, hybrid specimens of a cross between the Common Pheasant and Black Grouse, but only one or two examples at a time presented themselves. On the last instance of their occurrence, however, in September last, I received information from my nephew that he had seen a brood of nine to eleven on the moors not far from Dosmare Pool. He at first thought they were a pack of Black Grouse. He shot a brace, which proved to be hybrid males; in moulting, which had then set in, the grey feathers were giving way to new black feathers, which were gradually cropping out and forming patches. The old Grey Hen or Female Black Grouse was very perceptible amongst the rest; and, there being no Black Cock seen, the hybrid character of the flock or pack was at once suspected, and this suspicion was subsequently confirmed; my nephew, about the same time, found an old outlying Cock Pheasant in or about the same locality in the open moors. Some years since, I received a hybrid specimen of the same kind from the same locality, with the tail longer and tapering, approaching in fact the form of the Pheasant's tail, and

with *the legs partially feathered*,—these parts in the Black Grouse being entirely so to the feet, whereas in the Pheasant they are entirely naked. The late Mr. Rodd, of Trebartha Hall, gave Sir William Call a specimen with the middle tail feathers still more produced. I have no doubt that my nephew, who has carefully abstained from shooting any of the remaining birds, will be glad to furnish your Institution with a specimen of this hybrid at a future time.

In the last week in November, several Black Redstarts made their appearance at Scilly; they have been observed at different times in this neighbourhood frequenting our stone hedges—generally those near the sea. This species forms an exception to the other *Sylviadeæ* in being a *winter* instead of summer migrant. Bramble Finches, Stock Doves, and a Horned Grebe were also observed at Scilly at the same time; and to these must be added another, but immature, specimen of the Surf Scoter, which is a duck of very rare occurrence so far south, being almost entirely confined to the arctic regions. It appears to possess a specific character, not observable in the two other species of Scoter, in an extension of the frontal feathers half an inch down the centre of the ridge of the upper mandible. This is a useful help in determining this species before development of the remarkable and brilliant colours of the bill in the adult bird. A Fire-crested Wren—a young bird—was captured at Scilly at the same time.

The winter just passed has been unparalleled for mildness and freedom from violent storms. This prevents my recording any visits of our rarer Ducks, Wild Geese, Swans, &c. The only waders of any interest which have fallen under my notice are the Greenshank, in a state of plumage intermediate between that of summer and winter, and two specimens of the Reeve (a term given to the female of the Ruff),—both specimens obtained from the Land's End district, on the property of John Symons, Esq., of Mayon House. They came to hand at the end of April. The Greenshank belongs to the family of Sandpipers, and exhibits in a very interesting form the connecting link between this genus and that of the Godwits (*Limosa*), in the upturned tendency in the shape of the bill, showing in the Greenshank a deviation from the cylindrical character of the bill in the *Totani*, or Sandpipers; this character developing itself more decidedly in the Godwits,

and passing at once to the Avocet, where it appears in its extreme development.—The other species now under notice—the Ruff, deserves separation from the family (*Tringa*) at the head of which it has stood, as it shews several aberrant forms of character, both in plumage and habits, not observable in the other members of this genus. The first is the remarkable assumption, in the spring months, of a large ruff and lengthened ear-feathers of the head and neck in the male, whence its name, with a mass of small tuberculated warts encircling the eyes and the base of the bill.—Secondly; in the superior size of the male to the female, contrary to the relations of size in the other Stints. Thirdly; in its polygamous character. Fourthly; in the systematic warfare carried on by the males during the breeding season. These characters not belonging to the other species, a new sub-genus has been established for the Ruff under the title of *Machetes*—a name significant of its warlike propensities.

VIII.—*A Calendar of Natural Periodic Phenomena: kept at Bodmin, for the year 1867.*—By THOMAS Q. COUCH.

“Il semble, en effet, que les phénomènes périodiques forment, pour les êtres organisés, en dehors de la vie individuelle, une vie commune dont on ne peut saisir les phases qu'en l'étudiant simultanément sur toute la terre.”
—*Quetelet.*

N.B.—The Names printed in *Italics* indicate plants and animals marked for special observation.

fl. means flowers; fol., foliates; defol., defoliated.

The time of flowering is to be noted when the flower is sufficiently expanded to show the anthers; of foliation, when the leaf-bud is so far open as to show the upper surface of the leaves; of fructification, at the period of dehiscence of the pericarp, in dehiscent fruits; and, in others, when they have evidently arrived at maturity; of defoliation, when the greater part of the leaves of the year have fallen off.

January 6. *Adder (Pelius Berus)*, seen on an open bank.

24. *Corylus avellana*, fl.

— *Lonicera periclymenum*, fol.

25. *Galanthus nivalis*, fl.

31. *Ranunculus ficaria*, fl.

February 9. *Ribes grossularia*, fol.

10. *Cardamine hirsuta*, fl.

— *Potentilla fragariastrum*, fl.

12. *Cochlearia Grœnlandica*, fl.

15. *Ligustrum vulgare*, fol.

16. *Narcissus pseudo-Narcissus*, fl.

23. *Veronica chamædryis*, fl.

March 10. *Syringa vulgaris*, fol.

24. *Viola canina*, fl.

29. *Oxalis acetosella*, fl.

30. *Stellaria holostea*, fl.

- April 3. *Prunus spinosa*, fl.
 5. *Cuckoo* (*Cuculus canorus*), seen.
 8. *Acer pseudo-platanus*, fol.
 13. *Cuckoo* (*Cuculus canorus*), heard.
 19. *Corn-crake* (*Crex pratensis*), heard.
 24. *Hyacinthus non-scriptus*, fl.
 25. *Sorbus aucuparia*, fol.
 27. *Syringa vulgaris*, fl.
 28. *Fagus sylvatica*, fol.
- May 6. *Cytisus laburnum*, fl.
 21. *Sambucus nigra*, fl.
 22. *Sorbus aucuparia*, fl.
- June 8. *Lotus corniculatus*, fl.
 — Horse-fly (*Æstrus equus*), seen.
 — *Lysimachia nemorum*, fl.
 9. *Cicadia spumaria*, froths.
 10. Barley in ear.
 11. Hay harvest begun.
 12. *Rosa canina*, fl.
 14. *Chrysanthemum leucanthemum*, fl.
 16. *Stellaria graminea*, fl.
 18. *Sedum Anglicum*, fl.
 20. *Valeriana officinalis*, fl.
 — *Rubus fruticosus*, fl.
 21. *Erica cinerea*, fl.
 26. *Jasione montana*, fl.
 27. *Hyperichum pulchrum*, fl.
 30. *Scabiosa arvensis*, fl.
- July 5. *Betonica officinalis*, fl.
 — *Prunella vulgaris*, fl.
 9. *Verbascum Thapsus*, fl.
 13. *Rubus fruticosus*, fruits.
 14. *Eupatorium cannabinum*, fl.
 19. *Solidago virgaurea*, fl.
- August 13. Wheat harvest begins.
 29. *Sambucus nigra*, fruits.
 2nd Week. *Sorbus aucuparia*, fruits.
- September, 1st Week. *Acer pseudo-platanus*, defol.
- October 1. *Swallows* (*Hirundo rustica*), congregate.

- October 10. *Golden Plover* (*Charadrius plumialis*), seen.
11. *Sorbus aucuparia*, defol.
— *Woodcock* (*Scolopax rusticola*), seen.
18. *Ivy* (*Hedera helix*), fl.
1st Week. Birch (*Betula alba*), defol.
3rd Week. *Fraxinus excelsior*, defol.
4th Week. *Fagus sylvatica*, defol.
December 20. *Viburnum Tinus*, fl.

This year the crop of hay was generally heavy and well-saved. Wheat was hardly an average, but well-saved. Oats under an average, and of inferior sample. Barley over an average, and well-saved. Potatoes were affected by the disease, as sharply as in any year since its advent in 1845. Apples and Plums were a bad crop.

REMARKS ON THE METEOROLOGY OF 1867.

BEFORE we look at the past year as a whole, it will be well to pass the several months briefly in review, and to notice the peculiar features of different localities in Cornwall, comparing them sometimes with the rest of England.

January was remarkable, as in the preceding year, for its gales, but contrasted with 1866 by the lowness of its temperature. At Truro, in this month, *frost* was recorded on 13 days in 1867, and only once in 1866; and whilst no *snow* at all was noticed in the last-named year, it was registered seven times in the former. The mean temperature of the month was 39·7 in 1867, and 46·2 in 1866; and the thermometer, some feet above the ground, did not fall below 24° in 1866, but dropped to 8° in 1867,—the lowest temperature registered in Truro during the thirty years to which the record at this Institution extends. This was on the night of the 14th; on the following night the minimum in the air was 11°, but on the surface of the snow in my garden it was 5°; showing the intensity of cold to which everything immediately above this natural blanket was subjected. The usual exemption from such extremely low temperature was enjoyed by the south-western districts: the lowest point reached at Penzance was 23°; at Helston, 20°. The mean of all the minima was at Penzance, 38·6; at Helston, 37·9; at Truro, 34·4. At Bodmin, the mean temperature of the month was 37°·7, 2° lower than Truro, and nearly 5° below its own average for January; but the minimum registered was 11 degrees, a less intense cold by 3° than that noted at Truro. On the high land at Altarnun the severity of the season was most strongly marked. The mean temperature for the month was 36°·5; and the lowest, 4 feet from ground, on 4th, 10°·5 (when it was 24° at Truro); on 13th, 9°; on 15th, 4°·5. On the ground the thermometer fell several degrees lower on each night, marking 2°·5 on 15th. Mr. C. U. Tripp, to whom we are indebted for a record of his observations in this as in former years, remarks that numbers of blackbirds, &c., perished from the severity of the weather, and that Dosmary Pool was covered with ice 4 inches thick on the 19th. In the neighbourhood of Truro, the ponds at Pencalenick and elsewhere allowed of skating to an extent but rarely enjoyed in these parts, where it is quite a luxury. There was a very sharp frost at the beginning of the month in the eastern parts of England, which barely touched this county, as just noticed at Altarnun. On the 3rd, 4th, and 5th, the temperature fell to zero, or even lower, at several stations in the Thames valley: the lowest at Epsom was —12°, and at East Peckham, —10°.

There were two considerable falls of snow in Cornwall, as generally

through the country; the first marking the very close of 1866, and the beginning of 1867, and continuing at intervals till the morning of the 3rd. About mid-day of the 2nd there was a thunderstorm with hail. A rapid thaw took place on the 5th, when the heaviest fall of rain of the year, about 2 inches, occurred, preceded and accompanied by a violent storm, which commenced from the E., and veered towards S., and on subsequent days to W., occurring with less force in squalls till the 9th. The second fall of snow began on the 11th, and, recurring every day till the 14th, reached a depth which might average nearly a foot in this district, and was kept unthawed by steady frost till the 20th. In several other parts of England the fall of snow was very much heavier; in certain parts of Kent and Sussex, for instance, it reached 8 or 12 feet, and put a stop, there and elsewhere, to traffic by rail as well as road. In Scotland, especially in Perthshire and Forfar, the fall was also very heavy. I observed fine *parhelia* at sunset on the 17th, indicating, probably, frozen vapour in the air. The thaw on the 20th was again accompanied by a strong gale, veering from E. to S. A full and very interesting account of these twin storms has been given, with an able discussion of a theory of their causation, by our Secretary, Mr. Whitley, in the 7th No. of the *Journal* of this Institution, to which I would invite attention. It is interesting to notice the distance through which similar weather prevailed at this season: thus, on the 16th there was a snow storm in the United States, the heaviest for 10 years; 5000 sleighs passed through the gates of the central park at New York. At Brujala, Spain, six third-class passengers were found insensible from cold; and at Naples, on the 14th, there was a hurricane such as no one remembers to have seen there.

February was chiefly remarkable for mildness; there was hardly a frosty night, and vegetation advanced rapidly. The mean temperature was 2° above the average. Storms occurred here from the 5th to the 8th, but they were less severe than in other parts of England.

March was, on the contrary, remarkably cold, 3° or 4° below its mean. At Truro, *frost* was recorded on six days, and *snow* on three. At Altarnun there were 23 frosty nights, and the mean temperature of the first three weeks was 36°. The rainfall there was not as it usually is—greater than at Truro and Helston, in which places it was more than one third above the average. In many parts of the country the fall of snow was heavy: at Clifton it was 12 in. deep on the level, on the evening of 19th,—far deeper than the observer had ever known it.

April was rather damp and ungenial in Cornwall and elsewhere, with about average mean temperature and rainfall. Cuckoo heard here on 28th, the usual date, reported to me as heard at Feock on 23rd, which is early.

May presented violent contrasts; the first ten days being unusually warm, the last half more remarkably cold. At Truro there was frost on 17th and 24th; at Altarnun 7 times, the mean temp. of the first week having been 58°. On the 6th there was an unusual rise and fall of the sea in Mount's Bay, with thunder. These great changes were even more marked in other parts of the country, and in the transition period violent thunderstorms occurred. For Greenwich, Mr. Glaisher remarks that for the 42 days

ending 12th May, the mean daily excess of temperature was $4\frac{1}{2}^{\circ}$, whilst the deficiency of daily temperature from 13th to 26th was 7° nearly, the weather being quite wintry.

June was a very dry month, especially in the extreme west, where less than $\frac{1}{2}$ inch of rain fell, and that almost entirely on two days;—the driest month since Sept., 1865. The mean temperature was only about its average, and there was a prevalence of cool breezes between N.E. and S.E. At Greenwich the deficiency of temperature was $1\frac{1}{2}^{\circ}$ daily.

July needs little comment. The rainfall was one third beyond the average, and half the days were more or less rainy. A waterspout, like a snaky cloud reaching to the earth, was seen near Roughtor. The weather was more unfavourable beyond this county; in Scotland very much so. Mr. Glaisher remarks that the rainfall in the south of England, beginning on the night of 25th, and continuing through the next day, varied from $1\frac{1}{2}$ to $3\frac{3}{4}$ inches, and was the heaviest fall in the space of a day he has ever known.

August was decidedly dry, and the mean temperature was about 2° above the average. Capt. Liddell notes the maximum at Bodmin, on 13th, 80° , as the highest by $2\frac{1}{2}^{\circ}$ ever registered there. Mr. Tripp records 87° at Altarnun on the same day: the highest at Penzance was $71\frac{1}{2}^{\circ}$.

September was a fine month in Cornwall generally; more so than in many parts of England. The rainfall was about $\frac{1}{3}$ rd the average. There was electrical discharge from west to east of this county on the 3rd. At Altarnun it amounted to "a tremendous thunderstorm," and it appears to have occurred with at least equal violence through a great distance eastwards in the course of a few hours, as if by successive communication. It visited Torrington, Newton Abbot, and Sidmouth, from 1 to 4 a.m.; Bath, between 5 and 6 a.m.; Cambridge, from 8 a.m. to noon; Rugby, from 6 to 10 p.m. By Mr. Glaisher's estimate, from the beginning of the quarter to 7th August the deficiency of temperature was more than 3° daily on the average; afterwards for the 54 days ending 30th September, the average excess of temperature was $1\frac{3}{4}^{\circ}$ daily.

October was a wet month, both in regard to quantity of rain, and the number of days on which it fell. Reference to the table will show that this was more and more marked in going from east to west. Thus it was 2.65 inches at Land's End; 5.70 at Truro; 7.45 at Bodmin; 9.90 at Altarnun. The mean temperature was slightly below the average.

November contrasted with the preceding month by most unusual dryness, extending almost equally through the county; the rainfall being hardly one third of the average. Capt. Liddell notes it as "the driest November ever recorded at Bodmin, and the highest average barometer." This dryness was owing to the great prevalence of N.E. winds, and the weather was rather cold from the same cause; there were 8 frosty nights at Truro, and 27 at Altarnun. The characteristics of the month were the same throughout the country, except that the temperature was several degrees above the average in Scotland (Culloden). Mr. Glaisher states that the quantity of rain was smaller than in any November for 50 years; the average deficiency of temperature was $1^{\circ}6$ daily.

December was introduced by a heavy gale, of very extensive prevalence. The rainfall was considerably below the average at Truro, more so than at other stations. The mean temperature was very near the average in Cornwall, but sudden changes were frequent. Frost was recorded 7 times at Truro, 19 times at Altarnun. Mr. Glaisher says, for Greenwich, "from 2nd Dec. to 10th the temperature was low, and its average deficiency daily was as much as $9\frac{1}{2}^{\circ}$; thence to 17th there was an excess over the average of $7\frac{1}{4}^{\circ}$ daily. After this the weather was changeable, but the average deficiency of temperature in the last 14 days of the year was $2\frac{3}{4}^{\circ}$ daily."

Looking at 1867 as a whole, the extreme dryness of November is almost its only peculiar feature. The total rainfall and number of rainy days varied very slightly from the average, either in Cornwall or the country generally. The effect of the season on the crops throughout England, according to the most reliable reports, was most favourable to oats, next so to barley, and least to wheat, which was below an average. Potatoes were a large crop, but disease was spoken of in many places. Their price was nearly twice as high in the last quarter, as at the end of 1865. The price of wheat—which had risen steadily in the last 2 years—in the four successive quarters of 1867, was 60s. 7d., 63s. 11d., 65s. 4d., and 67s. 11d.

As on former occasions, I have thrown into a tabular form the comparative results necessary, in addition to those already given, to an accurate estimate of the spring and summer of 1867, especially in their bearing on animal and vegetable nature:—

	Wet Bulb Ther. below Dry.		Humidity of atmosphere Saturation 100.		Obscuration of Sun at 9 a.m. & 3 p.m.						Actual Weather at 9 a.m., 3 p.m., & 9 p.m.			
	18 yrs	1867.	18 yrs.	1867.	Sunshine.		Gleam.		Cloud.		Dry.		Wet.	
					16 yrs.	1867.	16 yrs.	1867.	16 yrs.	1867.	15 yrs.	1867.	15 yrs.	1867.
April . . .	3·07	0·9	78·0	93	31·3.	27	6·7	4	22·0	29	75·6	61	14·4	29
May . . .	3·87	2·3	75·9	86	33·8	33	7·4	3	20·8	26	81·2	83	11·8	10
June . . .	3·19	3·2	78·3	81	33·4	42	8·5	4	18·1	14	78·4	87	11·6	3
July . . .	3·53	3·2	79·7	77	34·4	44	8·5	5	20·1	13	83·6	81	9·4	12
August . .	3·46	4·1	80·3	77	35·3	44	8·4	6	18·3	12	82·1	83	10·9	10
September	3·29	4·2	79·8	76	27·5	40	7·5	3	25·0	17	78·9	87	11·1	3
Means . .	3·60	2·98	78·7	81·7	32·6	38·3	7·8	4·2	20·7	18·5	80·0	80·0	11·5	11·1

This table exhibits in a clear light some very instructive facts. April appears as a typical specimen of a *damp* month, the air being nearly saturated with moisture, although the rainfall was little above the average; cloudiness bore a very unusual proportion to clear sky, and wet hours to dry; and May follows closely in the wake. But I wish particularly to direct attention to the relative moisture of the air in the very fine month of June, when the proportion of sunshine and of dry hours greatly exceeded the average, the rainfall was less than half the usual quantity, the temperature

was 2° above the mean of 18 years, and the barometer was generally high; yet the humidity was decidedly greater than its average for 18 years past; and such humidity is certainly one of the most important conditions of the atmosphere in its relations to life and growth. September, a month strikingly similar to June in most of the other points referred to, contrasts with it in having a humidity much below the average. The two months serve to illustrate the distinction between rainfall and dampness, on which, as one not sufficiently appreciated, I have dwelt on former occasions.

I will conclude this summary with a very brief notice of a few of the meteorological results lately published which apply to this climate generally, although subject probably to some slight limitations. Mr. Glaisher has inferred from the analysis of six years of the continuous self registration of rainfall in connexion with Osler's Anemometer at the Greenwich Observatory, that rain falls most frequently in *winter* (November, December, and January) in the 6 hours preceding, and the 3 hours following, noon; in *spring* in the 3 hours following noon; in *summer* in the 3 hours following 6 p.m.; in *autumn* in the 6 hours following noon, the most frequently of any in the year. It falls the least frequently in *winter* in the 3 hours preceding midnight; in *spring* in the 3 hours from 6 p.m. to 9 p.m.; in *summer* in the 6 hours before noon, the least frequently in the year; in *autumn* in the 3 hours preceding noon, and from 6 p.m. to 9 p.m. Mr. Glaisher also treats of the quantity of rain at different hours, which by no means corresponds with the frequency of its fall. Speaking generally, the period of heaviest rainfalls is in *winter* after midnight and the early morning hours; in *spring* in the hours immediately following noon, and those about midnight; in *summer* in the hours both preceding and following midnight; and in *autumn* in the 3 or 4 hours following 2h. or 3h., both in the afternoon and early morning. Two interesting inquiries have been published by Mr. Symons; one by himself, on the proportion of the greatest single falls of rain to the total yearly quantity, from which it appears that, although the greatest daily falls are at wet stations, the greatest percentages are at dry stations; so that while the former have seldom more than 5 per cent. of their yearly fall in 24 hours, the latter often have 10, and sometimes 15 per cent. The other investigation is by Mr. F. Gaster, on the *monthly* percentage of the annual rainfall in different localities. One important result is, that stations where little rain falls have their maximum in the summer, but those where the fall is large in the winter months. As regards the west of England, I have drawn attention to this law for many years, and that moreover in relation to the effects of elevation above the sea. The lateness of the issue of this Number of the "Journal" enables me to mention a most valuable contribution to our climatology,—Mr. Whitley's Paper on the "Temperature of the Sea," recently published in the "Journal of the Royal Agricultural Society of England." He has added largely to the extent and precision of our knowledge of the great ocean stream which conveys to us the warmth of the tropics, and has handled materials accumulated through many years with his accustomed force and practical usefulness.

C. BARHAM.

Summary of Meteorological Observations at *Truro*, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1867, from Registers kept at the Royal Institution of Cornwall, by Mr. W. Newcombe.

TABLE No. 1.

1867.	MONTHLY MEANS OF THE BAROMETRE. Cistern 43 feet above mean sea level.												Between which days it occurred.						
	Month.	Mean pressure corrected to 32 deg. Fahr.			Mean of monthly means.	Mean diurnal range.	True mean of monthly means.	Mean force of vapour.	Mean pressure of dry air.	Corrected absolute maximum observed.	Day.	Corrected absolute minimum observed.		Day.	Extreme range for the month.	Mean diurnal range.	Greatest range from 9 a.m. to 9 p.m.	Day.	Greatest range in any 24 hours.
		9 a.m.	3 p.m.	9 p.m.															
January	in. 29.637	in. 29.625	in. 29.629	in. 29.629	in. .004	in. 29.625	in. .207	in. 29.418	in. 30.196	31	in. 28.800	7	in. 1.396	in. .152	in. .38	5	in. .54	9 & 10	
February	in. 30.053	in. 30.051	in. 30.062	in. 30.062	in. .003	in. 30.059	in. .309	in. 29.750	in. 30.574	21	in. 29.108	6	in. 1.466	in. .095	in. .31	28	in. .84	3 & 4	
March	in. 29.684	in. 29.681	in. 29.724	in. 29.696	in. .007	in. 29.689	in. .245	in. 29.444	in. 30.653	2	in. 29.198	18	in. 1.455	in. .119	in. .31	18	in. .52	18 & 19	
April	in. 29.833	in. 29.827	in. 29.860	in. 29.840	in. .004	in. 29.836	in. .334	in. 29.502	in. 30.460	1	in. 29.077	20	in. 1.383	in. .097	in. .24	28	in. .53	13 & 14	
May	in. 29.792	in. 29.799	in. 29.829	in. 29.807	in. .002	in. 29.805	in. .347	in. 29.458	in. 30.175	23	in. 29.352	12	in. 0.823	in. .077	in. .33	21	in. .44	21 & 22	
June	in. 30.101	in. 30.096	in. 30.128	in. 30.108	in. .001	in. 30.107	in. .393	in. 29.714	in. 30.579	28	in. 29.688	6	in. 0.891	in. .063	in. .27	7	in. .42	29 & 30	
July	in. 29.866	in. 29.873	in. 29.906	in. 29.882	in. .002	in. 29.880	in. .410	in. 29.470	in. 30.286	7	in. 29.206	15	in. 1.080	in. .080	in. .34	15	in. .33	15 & 16	
August	in. 29.953	in. 29.948	in. 29.950	in. 29.950	in. .004	in. 29.946	in. .427	in. 29.519	in. 30.186	29	in. 29.668	15	in. 0.518	in. .049	in. .20	9	in. .26	9 & 10	
Sept.	in. 30.064	in. 30.058	in. 30.091	in. 30.071	in. .004	in. 30.067	in. .367	in. 29.700	in. 30.495	25	in. 29.624	11	in. 0.871	in. .079	in. .25	24	in. .39	23 & 24	
October	in. 29.917	in. 29.905	in. 29.947	in. 29.923	in. .006	in. 29.917	in. .322	in. 29.595	in. 30.435	1	in. 29.476	27	in. 0.959	in. .100	in. .40	10	in. .55	27 & 28	
Nov.	in. 30.249	in. 30.213	in. 30.256	in. 30.239	in. .004	in. 30.235	in. .233	in. 30.002	in. 30.599	22	in. 29.416	14	in. 1.183	in. .100	in. .27	1	in. .66	29 & 30	
Dec.	in. 30.054	in. 30.041	in. 30.094	in. 30.063	in. .003	in. 30.060	in. .244	in. 29.716	in. 30.358	12	in. 28.990	1	in. 1.368	in. .106	in. .50	1	in. .89	1 & 2	
Means	in. 29.934	in. 29.926	in. 29.958	in. 29.939	in. .004	in. 29.935	in. .320	in. 29.615											

REMARKS.—0.05 in. should be added to all the readings of the Barometer for its elevation of 43 feet above mean sea level. The Barometer used is a standard, made by Barrow, and compared with the standard Barometer at the Royal Observatory, Greenwich, by Mr. Glaisher. The corrections for Index Error (49.008) and for Capillarity (49.013) have been applied.

TABLE No. 2.

1867.	MONTHLY MEANS OF THE THERMOMETER.												MASON'S HYGROMETER.					SELF REGISTERING.					ABSOLUTE.																					
	9 A.M.		3 P.M.		9 P.M.		Mean of diurnal range.		True mean of Wet Bulb.		Mean of Wet Bulb.		Mean correction for diurnal range.		Mean temp. of evaporation.		Wet Therm.		Mean dew point.		Dew point below Dry Therm.		Mean of all the maxima.		Mean of all the minima.		Approximate mean temp.		Correction for the month.		Adopted mean.		Mean range.		Maximum.		Days.		Minimum.		Days.		Range.	
	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean correction for diurnal range.	True mean of Dry Bulb.	Mean of Wet Bulb.	Mean correction for diurnal range.	Mean temp. of evaporation.	Wet Therm.	below dry.	Mean dew point.	Dew point below Dry Therm.	Mean of all the maxima.	Mean of all the minima.	Approximate mean temp.	Correction for the month.	Adopted mean.	Mean range.	Maximum.	Days.	Minimum.	Days.	Maximum.	Days.	Minimum.	Days.	Range.												
January	38.2	36.9	42.9	40.9	39.3	38.1	40.1	0.4	39.7	38.6	0.1	38.5	1.2	37.3	2.4	37.3	2.4	45.3	34.4	39.9	0.2	39.7	10.9	57	8	57	7	8	15	49	0	49	0	49	0	49	0	49	0	49				
February	47.9	46.8	50.8	48.5	48.0	46.9	48.9	0.6	48.3	47.4	0.4	47.0	1.3	45.7	2.6	45.7	2.6	53.0	44.5	48.7	0.4	48.3	8.5	58	28	58	20	28	3	30	0	30	0	30	0	30	0	30	0	30				
March	42.2	40.6	46.0	43.0	41.4	40.2	43.2	1.5	41.7	41.3	0.7	40.6	1.1	39.5	2.2	39.5	2.2	48.8	36.9	42.8	1.0	41.8	11.9	57	28	57	22	28	7	29	0	29	0	29	0	29	0	29	0	29				
April	51.7	50.0	54.4	51.8	49.7	48.7	51.9	2.2	49.7	50.2	1.4	48.8	0.9	47.9	1.8	47.9	1.8	56.8	45.6	51.3	1.5	49.8	11.2	63	17	63	17	32	12 & 29	31	0	31	0	31	0	31	0	31	0	31				
May	55.2	52.8	58.4	54.6	51.9	50.6	55.2	2.3	52.9	52.7	2.1	50.6	2.3	48.3	4.6	48.3	4.6	61.8	48.1	54.9	1.7	53.2	13.7	70	7	70	7	32	17 & 24	38	0	38	0	38	0	38	0	38	0	38				
June	61.8	57.2	65.4	59.2	57.0	55.2	61.4	3.0	58.4	57.2	2.0	55.2	3.2	52.0	6.4	52.0	6.4	61.8	50.9	56.3	1.8	54.5	10.9	79	30	79	30	44	25	35	0	35	0	35	0	35	0	35	0	35				
July	63.6	59.0	66.4	60.2	58.7	57.2	62.9	2.2	60.7	58.8	1.3	57.5	3.2	54.3	6.4	54.3	6.4	69.9	53.4	61.6	1.9	59.7	16.5	79	8	79	8	40	30	39	0	39	0	39	0	39	0	39	0	39				
August	63.6	58.9	68.0	60.2	60.0	58.2	63.9	2.1	61.8	59.1	1.4	57.7	4.1	53.6	8.2	53.6	8.2	71.2	55.6	63.3	1.7	61.6	15.6	78	12 & 14	78	12 & 14	45	10	33	0	33	0	33	0	33	0	33	0	33	0	33		
Sept.	60.3	55.4	63.8	56.6	55.6	53.5	59.9	1.7	58.2	55.2	1.2	54.0	4.2	49.8	8.4	49.8	8.4	66.9	49.8	58.3	1.3	57.0	17.1	75	2	75	2	38	21	37	0	37	0	37	0	37	0	37	0	37	0	37		
October	53.6	50.4	56.5	51.8	51.5	49.6	53.9	0.8	53.1	50.6	0.7	49.9	3.2	46.7	6.4	46.7	6.4	59.3	47.2	55.2	1.0	52.2	12.1	67	1	67	1	35	2 & 11	32	0	32	0	32	0	32	0	32	0	32				
Nov.	43.0	40.6	50.4	45.6	43.2	41.3	45.5	0.5	45.0	42.5	0.5	42.0	3.0	39.0	6.0	39.0	6.0	53.1	38.3	45.7	0.4	45.3	14.8	62	1	62	1	27	26	35	0	35	0	35	0	35	0	35	0	35	0	35		
Dec.	42.7	41.0	46.0	43.0	42.6	41.0	43.8	0.2	43.6	41.7	0.1	41.6	2.0	39.6	4.0	39.6	4.0	48.7	39.2	43.9	0.6	43.3	9.5	57	1	57	1	22	4	35	0	35	0	35	0	35	0	35	0	35	0	35		
Means	52.0	49.1	55.7	51.3	49.9	48.4	52.5	1.5	51.1	49.6	1.0	48.6	2.5	46.1	4.9	46.1	4.9	58.0	45.3	51.7	1.1	50.5	12.7																					

The Thermometers are placed on the roof of the Royal Institution in a wooden shed, through which the air passes freely. The Standard Wet and Dry Bulbs are by Negretti and Zambra, and have been corrected by Mr. Glaisher.

TABLE No. 3.

WINDS.

1867.	Month.	E.			S.E.			S.			S.W.			W.			N.W.			N.			N.E.			AVERAGE FORCE.				
		9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	Mean.	
	January	5	6	3	2	2	1	1	1	7	7	7	4	3	2	3	4	4	4	4	4	3	3	5	7	9	1.8	2.5	2.3	2.2
	February	3	1	1	2	4	1	2	2	9	5	5	6	8	7	1	8	7	7	7	1	0	0	0	0	0	2.0	2.8	1.9	2.2
	March	8	8	7	4	3	4	0	1	3	4	4	2	3	4	3	4	4	4	4	3	2	1	8	6	7	2.4	3.0	1.8	2.4
	April	0	0	0	2	1	0	3	1	6	5	9	6	10	6	4	9	11	11	4	4	2	4	0	0	0	2.8	3.4	2.3	2.8
	May	7	5	5	9	11	4	6	5	3	5	5	0	1	1	1	0	0	0	3	2	3	2	2	2	2	2.0	2.5	1.6	2.0
	June	5	2	2	3	6	2	1	1	2	2	1	1	4	3	4	3	4	4	10	12	13	2	0	1	2.0	2.2	1.1	1.8	
	July	2	2	2	2	4	2	2	3	4	3	4	6	5	8	4	5	4	4	8	8	8	1	0	1	1.6	2.5	1.0	1.7	
	August	2	2	2	2	4	3	4	5	6	3	5	7	7	7	4	6	6	4	4	4	2	1	0	1	1.5	2.0	1.0	1.5	
	Sept.	0	0	0	2	3	1	4	0	3	3	4	9	6	9	5	8	6	4	7	6	6	3	2	2	2.0	2.5	1.0	1.8	
	October	2	2	0	1	0	1	3	2	6	5	7	7	8	5	6	8	11	6	6	4	5	2	1	1	2.0	2.5	1.7	2.1	
	Nov.	5	8	5	2	3	1	1	0	2	5	3	1	0	0	2	2	1	1	9	5	8	8	6	8	0.7	1.3	1.0	1.0	
	Dec.	4	3	2	1	2	1	1	3	1	2	1	4	3	3	4	5	6	11	11	10	3	4	5	1.8	2.3	1.7	1.9		
	Total	43	39	29	34	44	39	26	23	52	51	53	53	58	55	53	64	64	67	58	64	35	28	37	35	28	22.6	29.5	18.4	23.4
	Means	37.0			39.0			24.3			52.0			55.3			60.3			63.0			33.3			1.9	2.5	1.5	2.0	

The force of the Wind is estimated on a scale from 0 to 6, from calm to violent storm.

TABLE No. 4.

WEATHER.

1867.

Month.	AVERAGE CLOUDINESS.			RAINFALL.				RAINFALL.			MEAN ELASTIC FORCE OF MEAN HUMIDITY OF MEAN ADDITIONAL WEIGHT REQUIRED FOR SATURATION OF THE AIR.			MEAN WEIGHT IN RAIN IN A TROY OF A CUBIC FOOT OF AIR.			AMOUNT OF WATER IN A VERTICAL COLUMN OF AIR.			SUN.			REMARKS.
	9 a.m.	3 p.m.	9 p.m.	Amount in inches.		No. of days in which rain fell.	Greatest Fall in 24 hours.	Depth.	Date.	in.	2'02	5	in.	2'02	549'9	2'8	in.	2'8	23	70	23	Wet.	
				Truro.	Penarth.																			in.	18	2'02	5	in.	2'8	23
January	75	75	60	70	6'74	6'82	18	2'02	5	2'02	5	2'02	549'9	2'8	2'8	23	70	23	Frost, 1 to 4, 11 to 19. Snow, 1, 2, 11, 12, 13, 14, 19. Hail, 5. Thunder Storm, Gale, 5, 7, 9, 20.				
February	85	85	76	82	3'37	3'47	20	0'84	27	0'84	27	0'84	309'549'4	4'2	4'2	25	59	25	Remarkable Rain, 5. Hail, 5. Gale, 5, 7, 8, 17, 20. Hail, 6.				
March	73	74	56	68	5'44	5'75	20	1'31	13	1'31	13	2'8	245'551'6	3'3	3'3	27	77	16	Lightning seen, Thunder not heard.				
April	79	77	64	73	3'46	3'35	17	0'64	26	0'64	26	3'8	334'442'8	4'6	4'6	27	61	29	Frost, 1, 2, 3, 6, 7, 8. Snow, 7, 9, 17. Gale, 12, 13, 21, 23, 25, 26, 29. Remarkable Rain, 14, 15, 21, 22. Frost, 12.				
May	77	70	60	69	3'53	4'06	17	0'72	25	0'72	25	3'9	347'539'1	5'5	5'5	33	83	10	Swallow seen, 24. Cuckoo heard, 28.				
June	56	54	45	52	1'13	1'10	9	0'35	2	0'35	2	4'4	393'537'4	5'4	5'4	42	87	3	Frost, 17. Gale, 25, 26, 28.				
July	67	60	59	62	3'81	4'34	15	1'35	14	1'35	14	4'6	410'531'8	5'6	5'6	44	81	12	Thunder heard, Lightning not seen, Remarkable Rain, 14. Thunder Storm, 15.				
August	67	64	60	64	0'99	1'10	14	0'21	31	0'21	31	4'7	427'532'0	5'9	5'9	44	83	10	Lightning seen, Thunder not heard.				
Sept.	62	68	42	57	1'33	1'42	13	0'31	14	0'31	14	4'1	367'538'4	5'0	5'0	40	87	3	Thunder Storm, 3.				
October	79	72	63	71	5'70	5'70	24	1'28	9	1'28	9	3'6	322'541'2	4'4	4'4	24	76	17	Gale, 3, 8, 9, 10. Lunar Rainbow, 18, 27, 28. Remarkable Rain, 9. Hail, 3, 4, 8. Fog, 13.				
Nov.	70	69	50	63	1'39	1'54	12	0'87	30	0'87	30	2'7	233'554'4	3'2	3'2	22	87	3	Fog, 7, 8, 9, 10, 24, 26. Frost, 3, 4, 9, 21, 22, 25, 24, 26. Remarkable Rain, 30.				
Dec.	77	78	64	73	2'90	3'64	21	0'50	1	0'50	1	2'8	244'553'4	3'3	3'3	19	68	25	Gale, 1, 2. Hail, 1, 2, 18. Snow, 2. Rainbow, 5, 6. Frost, 3, 7, 8, 10, 27, 28, 31.				
Means	72	70	58	67	39'79	42'29	200					3'6	320'543'5	4'4	4'4	29'6	45	27'4	76'6	14'8			

Cloudiness is estimated by dividing the sky into ten parts, and noting how many of these are obscured. The rain gauge at Truro is placed on the roof of the Royal Institution, at about 40 feet from the ground. Glean is recorded when the sun's disk is visible through a film of cloud. The rain gauge at Penarth, near Truro, is 190 feet above the mean level of the sea.

TABLE No. 5.

STATIONS, FROM WEST TO EAST.	Jan. in.	Feb. in.	March in.	April in.	May in.	June in.	July in.	August in.	Sept. in.	Oct. in.	Nov. in.	Dec. in.	Total 1867. in.	Average yearly total.
(a) St. Sennen, Land's End, Rev. G. L. Woolcombe.....1867 Days with rain .....1867	5.50 25	3.22 22	4.02 21	2.87 16	3.67 20	.54 6	4.12 13	1.02 16	.77 8	2.65 26	1.16 7	1.82 18	31.36 198	
(b) Penzance, Mr. W. H. Richards ..1867 Average of last nine years.....	5.57 4.98	3.52 3.43	5.14 3.49	3.12 2.19	2.84 2.17	.35 2.36	4.00 2.62	1.19 3.12	1.28 3.51	5.16 4.37	1.37 4.27	3.52 5.14	37.06	41.65
(c) Helston, M. P. Moyle, Esq.....1867 Average of last eighteen years Days with rain .....1867 Average of last eighteen years	5.12 4.27 18 20.4	3.70 2.54 18 14.7	5.70 3.19 21 16.3	3.24 2.52 15 11.8	3.68 2.40 18 12.1	1.08 2.40 7 12.9	3.78 2.58 13 13.5	1.35 2.79 11 13.3	.92 2.81 11 13.4	4.92 4.35 22 18.0	1.41 3.37 5 16.6	3.44 3.60 19 19.0	38.34 183	36.89 182.5
(d) Truro, Royal Institution of Corn., 1867 Average of last eighteen years Days with rain .....1867 Average of last eighteen years	6.74 5.07 18 21.0	3.37 2.75 20 15.1	5.44 3.21 20 16.2	3.46 2.78 17 13.6	3.53 2.74 17 13.9	1.13 2.60 9 13.3	3.81 2.51 15 13.2	.99 2.66 14 13.8	1.33 3.11 13 15.3	5.70 4.91 24 19.3	1.39 4.11 12 18.5	2.90 4.49 21 19.8	39.79 200	41.06 193.0
(e) St. Agnes, Mr. J. Opie .....1867 Days with rain .....1867	7.19 22	3.08 20	4.84 19	3.49 18	4.17 14	1.27 7	6.53 12	1.12 10	1.80 13	5.33 21	1.07 7	2.69 18	42.58 181	
(f) Newquay, Mr. Tregidgo .....1867 Days with rain .....1867	5.50 18	2.97 22	4.06 19	3.74 19	2.22 19	1.53 8	3.65 13	1.07 10	1.18 12	4.79 23	.83 4	2.43 18	33.97 185	
(g) St. Austell, Pond-dhu, A. Coode, Esq. 1867 Days with rain .....1867	7.78 20	4.25 26	5.89 23	4.16 24	4.08 20	1.14 10	4.98 17	1.28 13	1.80 19	7.27 26	1.64 8	3.83 21	48.10 227	
(h) Bodmin, Com. J. Liddell, R.N. ....1867 Average of last eighteen years Days with rain .....1867 Average of last eighteen years	7.93 5.73 19 22.2	3.97 2.84 26 18.0	5.07 3.62 21 18.3	4.59 2.85 22 15.0	4.06 2.79 18 14.6	1.64 3.33 10 15.2	5.34 3.20 16 15.7	1.61 3.53 15 17.2	1.72 3.42 15 17.8	7.45 5.29 29 20.6	1.48 4.43 9 19.1	3.76 4.72 22 23.4	48.62 222	45.38 215.0
(i) Altarnun Vicarage, C. U. Tripp, Esq. 1867 Days with rain .....1867	10.84 21	5.99 26	5.45 19	5.33 26	3.31 18	1.82 12	6.55 19	1.80 18	2.48 20	9.90 26	1.64 12	4.69 21	59.80 233	

ft. in. ft. in.

(a) Rain Gauge 4.10 above ground, 360 above mean sea level.
 (b) ditto 3 0 ditto ditto
 (c) ditto 5 0 ditto 115
 (d) ditto 40 0 ditto 56
 (e) ditto 1 8 ditto 300

(f) Rain Gauge 0.8 above ground, 150 above mean sea level.
 (g) ditto ditto 330
 (h) ditto 1 0 ditto ditto
 (i) ditto 0.7 ditto 570

Rain-fall in Cornwall in 1867, with the annual averages for some Stations, distinguishing the several Months.

CHRONOLOGICAL MEMORANDA.

1867.

January 1. The *Western Morning News* publishes an Article entitled: "Eighteen Hundred and Sixty-Six in the West of England."

January 2. The *Cornish Telegraph* publishes an "Abstract of the Weather at Penzance and its neighbourhood, for the year 1866."

January 3. The *Cornwall Gazette* publishes an Abstract of a Lecture on "Cornish Names," by Rev. Dr. Bannister.

January 4. The *West Briton* publishes a Letter signed "Tre," on "Cornish Words and Names."

January 18. *West Briton* publishes a Letter, signed "Pen Pol," on "Tre, Pol, and Pen."

January 22. Death of Sir William Snow Harris, F.R.S., at Plymouth, aged 76.

January 24. *Cornwall Gazette* publishes an Abstract of a Lecture on "The Cornish Nationality" by Rev. W. S. Lach-Sczymna, delivered at the Plymouth Institution.

January 25. *West Briton* publishes a Letter on "Cornish Names," from Rev. Dr. Bannister.

January 25. A specimen of the Iceland Gull (*Larus Islandicus*) killed in Plymouth Sound.

January 25. Annual Conversazione of the Torquay Natural History Society. There was exhibited a large case of fossils recently exhumed from Kent's Cavern, under the auspices of the British Association.

January 25. Mr. Spence Bate, F.R.S., F.L.S., &c., delivered a Lecture at the Truro Institution, on "The Flint Flakes of Devon and Cornwall, and their relation to History." Mr. Bate was of opinion that the use of flint was retained long after the use of metal was known, owing to the scarcity of the latter; that probably the flint flakes of Devon and Cornwall were of the same age as those found in the barrows containing cremated human bones; and that there was no evidence to show that they were not coeval with the period which immediately preceded the introduction of Roman civilization into this country.

January 29. *Western Morning News* publishes a Letter from Rev. W. S. Lach-Sczyrma on "Cornish Nationality," suggesting the establishment, in Cornwall, of annual meetings (*eisteddfodau*) of Cornish and other Celtic or Cymrian scholars.

January 30. *Cornish Telegraph* records that a very excellent quern had recently been found in the trench of the Fogou at Treveneague; and that it had been added to the pottery of various kinds, the spear-head and other iron instruments, the flint arrow-head and nodule, the two mullers and the tin-crusher, the celts and stone hatchets, bones, &c., already found there and in the possession of the Penzance Natural History and Antiquarian Society.—Also, that this Society had obtained a specimen of the Pintail Duck, from Mr. James Trembath of Mayon, and of the Great Crested Grebe.

January 31. *Cornwall Gazette* publishes a Letter on "Cornish Nationality," from Rev. Dr. Bannister.

February 2. *Western Morning News* publishes a Paper on "Plympton in the Olden Time," recently read by Mr. F. Hine, to the members of the Plymouth Institution.

February 6, 13, and 20. *Cornish Telegraph* publishes, from *Good Words*, papers by Mr. Robert Hunt, F.R.G.S., on "Tin Mining in Cornwall, and its traditions."

February 8 and 15. *West Briton* publishes Letters on "Tre, Pol, and Pen," from T. H. Edwards and Rev. Dr. Bannister.

February 9. Members of the Penzance Natural History and Antiquarian Society visit the recently discovered Fogou at Treveneague, in St. Hilary; and also a Jews' House, in the valley beneath.

February 13. Penzance Natural History and Antiquarian Society. At a meeting of the Council, a notice of the Fogou at Treveneague was presented; and it was reported that a specimen of the *Sordid Dragonet* had been procured.

February 14. *Cornwall Gazette* publishes a Letter, from "Christopher Cooke," on the "Priory of Truru, or Triuerue."

February 20 and 27. *Cornish Telegraph* publishes Letters on Rock-Altars, from "A Cornish Villager," and "W. B., St. Mary's Terrace, Penzance."

February 26. Miners' Association of Cornwall and Devon. Annual Meeting at Redruth; Mr. Basset of Tehidy presiding. Mr. J. St. Aubyn, M.P., elected President for the ensuing year.

February 27. The Church of St. Mary and All Saints, Plymstock, opened, after restoration.

March 1. *West Briton* publishes letters, from "Tre," on "Cornish Words," and "John Rounsevell," on "Tre, Pen, and Pol."

March 8. *West Briton* publishes letters, from Rev. Dr. Bannister, on "Cornish Names," and "T. H. Edwards," on "Tre, Pol, and Pen."

March 13. Penzance Natural History and Antiquarian Society. Council Meeting. Reported presents of Coins from Mr. Samuel Higgs, jun., and Mr. Caldwell.

March 20 and 27. *Cornish Telegraph* publishes a description of "Morwenstow," and an account of "Thomasine Bonaventure, or the Cornish Shepherdess of the 15th Century who became Lady Mayoress of London";—the former from *The Gentleman's Magazine*, and the latter from *All the Year Round*.

March 28. *Cornwall Gazette* publishes "Meteorological Observations on the Recent Gales," by Mr. Nicholas Whitley.

April 3. Died at Goodamore, Plympton, Mr. Henry Hele Treby, a scientific and practical meteorologist. Mr. Treby was a descendant, and the last male representative, of the ancient and important family of that name, who have for ages been connected with the neighbourhood of Plympton, and intimately associated with its history. They were, in conjunction with the Earls of Mount Edgcombe, possessors of the ancient and now disfranchised borough of Plympton, and always returned one member to Parliament.

April 4. Annual Meeting of the Plymouth Institution and Devon and Cornwall Natural History Society; Mr. A. P. Prowse presiding. It was proposed to publish in the Society's "Transactions," the following Papers: "A Sketch of the Life of Sir William Snow Harris"; "Plympton in the Olden Time," by Mr. James Hine; "Continuation of the list of Lepidoptera of Devon and Cornwall," by Mr. J. J. Reading; "Continuation of the Flora of Devon and Cornwall," by Mr. J. W. N. Keys.

April 18. *Cornwall Gazette* publishes a letter on "Cornish Nomenclature," from Rev. Dr. Bannister.

April 22. A Purple Crested Heron (*Ardea purpurea*), in immature plumage, killed at the Lizard.

April 24. *Cornish Telegraph* publishes an Article on "Trewooft (in the parish of St. Burian) and the Legends of the Lovells."

April 26. *West Briton* publishes a letter on "Cornish Names," from Rev. Dr. Bannister.

April 26. *West Briton* records the recent capture of a specimen of the Little Bittern, at St. Hilary.

May 1. *Cornish Telegraph* publishes a letter, signed "Old Celt," on "Cornish Drolls and Droll-tellers."

May 1, 8, and 15; June 5, 12, and 26; and July 3. *Cornish Telegraph* publishes "Chronological Memoranda relating to the town of Penzance;" by Mr. J. S. Courtenay.

May 4. A Woodcock, in fine condition, captured at Cannalidgey, St. Issey.

May 6. An extraordinary agitation of the sea, between 5 and 7 a.m., at Penzance.

May 8 and 22. *Cornish Telegraph* publishes "A Cornish Droll; Betty Toddy and her gown"; by "An Old Celt."

May 8. Penzance Natural History and Antiquarian Society. Meeting of Council. The reported presents included: Flint spear-head and bronze celt found at Leah, Sancreed; Querns found at Morvah and Tredavoe; fragment of granite basin, one perfect quern, fragments of three other querns, several mullers, a spindle-whorl, a slate disc, two whetstones, a flint nodule, water-worn quartz pebbles, charcoal, charred stone, bones, and pottery, found in the remains of an ancient structure accidentally destroyed by workmen in the course of some improvements of the Vynyeck at Boscawen-Un.—The Secretaries reported the occurrence of the Dorse, or Variable Cod, in Mount's Bay.

May 9. *Cornwall Gazette* publishes a letter on "Monumental Brasses," from Mr. H. Michell Whitley.

May 14. Royal Institution of Cornwall. Spring Meeting; Mr. Smirke presiding. The following Papers were read: Modern Practice of Alchemy; Mr. Jonathan Couch, F.L.S., &c. Ornithological Occurrences in Cornwall; Mr. E. Hearle Rodd. Notice of *Willsia Cornubica*, a new species of naked-eyed Medusæ; Mr. C. W. Peach. On some Saxon Silver Ornaments and Coins found at Trewhiddle, St. Austell, in 1774; Mr. Rogers, of Penrose. Chronicles of the Cornish Saints (I.—St. Cuby); Rev. John Adams, M.A. On the Cell-growth of Plants, &c.; Mr. Enys, of Enys. Notice of a Barrow with Kist-vaen, on Trewayas Head; Mr. J. T. Blight, F.S.A. On "Jews in Cornwall"; Rev. Dr. Bannister.—Observations made on Flint Flakes, and other subjects. (See *Journal of the Royal Institution of Cornwall*, Vol VIII.)

May 22. *Cornish Telegraph* publishes a letter from "W. B.," on "The Celtic Monuments of Bolleit."

May 23. *Cornwall Gazette* publishes a letter, from "Christopher Cooke," on "Old Cornwall," recording the Cornish Monoliths, mentioned by Dr. Borlase in his "Antiquities of Cornwall."

May 30. Re-opening of the Church of St. Michael, St. Minver, after restriction.

June 5, 12, 19, and 26. *Cornish Telegraph* publishes a legendary story: "The Smugglers and legends of Penrose" (in Sennen).

June 5, 12, and 26; and July 3. *Cornish Telegraph* publishes Papers by Mr. William Pengelly, F.R.S., "On the Insulation of St. Michael's Mount, Cornwall."

June 14 and 28; and August 2. *West Briton* publishes a series of Articles entitled "Cornubiana."

June 20. *Cornwall Gazette* publishes a letter from "Christopher Cooke" on "Cornish History."

June 26. *Cornish Telegraph* publishes a letter signed "W. N.," London; on "The Fires of Midsummer Eve."

June 27 and July 19. *Western Morning News* publishes "Historical Notes of Tywardreath," by a former Curate of the Parish.

July 3. *Cornish Telegraph* publishes a letter signed "Old Celt," on "Cornish Cousins, &c."

July 10, 17. "The Piskey's Vengeance; a Midsummer Night's Legend"; published in *Cornish Telegraph*.

July 11. Re-opening of Altarnun Church, after restoration.

July 16. The parish Church of Lanteglos-by-Camelford re-opened, after restoration, on the anniversary of St. Julitta's martyrdom, A.D. 305.

July 23. Devonshire Association for the Advancement of Literature, Science, and Art. Sixth Annual Meeting, at Barnstaple; Mr. W. Pengelly, F.R.S., &c., president.—The following Papers were read:—Devonian Folk Lore; Sir John Bowring, LL.D., F.R.S. Some popular local superstitions; Mr. J. R. Chanter. The part taken by North Devon in the earliest English enterprizes for the purpose of colonizing America; Mr. R. W. Cotton. The Priory of St. Mary's, Pilton; Mr. Townsend M. Hall, F.G.S. The Remains of Ancient Fortifications in the neighbourhood of Bideford; Mr. J. A. Parry. The Ancient History and Aborigines of North Devon, and the site of the lost Cimbric town of Artavia; Mr. J. R. Chanter. The Antiquity of Man in the southern districts of England; Mr. W. Pengelly, F.R.S., &c. The Temperature of the Ancient World; Professor Daubeny, F.R.S. The opening of an ancient British Barrow at Huntshaw; Mr. H. Fowler. The results of the opening a Barrow at Putford; Rev. J. L. May. The Evidence of Præ-historic Man found in Constantine Bay, Cornwall; Mr. C. Spence Bate. The Carboniferous Beds adjoining the northern edge of the granite of Dartmoor; Mr. Ormerod, F.G.S. The Raised Beaches in Barnstaple Bay; Mr. W. Pengelly, F.R.S., &c. Prison Discipline; Mr. E. Vivian. The Distribution of the Devonian Brachiopoda of Devonshire and Cornwall; Mr. W. Pengelly, F.R.S., &c. The Annelids of Devon; Mr. E. Parrett. The Parasitism of *Orobanche Major*; Mr. E. Parrett. Murchisonite Pebbles and Boulders in the Trias; Mr. W. Vicary. The Flotation of Clouds and the Fall of Rain; Mr. W. Pengelly, F.R.S., &c. St. John's Church, Torquay; Mr. E. Vivian. The Longitude of Places, and the application of the Electric Telegraph to determine it; Mr. Jerwood. The Deposits occupying the valley between the Braddon and Waldon Hills, Torquay; Mr. W. Pengelly, F.R.S., &c. Some Mammalian Bones and Teeth recently found in the Submerged Forest at Northam; Mr. H. S. Ellis.

July 24. *Cornish Telegraph* publishes a letter signed "W. B.," on "West Country Words."

August 8. *Cornwall Gazette* records that Rock Markings similar to those observed in Upper India in 1855, and subsequently in Scotland by Sir J. Y. Simpson, Bart., and in the Isle of Man and West Cornwall by Mr. Blight, had recently been discovered by Mr. Henwood on the highest rock of the Cheese-wring hill.

August 14. *Cornish Telegraph* publishes a letter signed "Perambulator," Carn-Galver; on "The Phœnicians in West Cornwall."

August 14, 21, 28; September 4, 25; October 2, 23, 30; November 13, 20; December 4, 11, 18, 25. *Cornish Telegraph* publishes a Series of Articles entitled "An Excursion from Penzance to Land's End," from "Old Celt." It includes notices of the following localities, &c.:—Mousehole, Mansion-house and Ghosts of the Keigwins; Dolly Pentreath, *alias* Dolly the Spring Peter Pindar, Price, and Praed, at Trevethow; Trevella Carn; Nancy Trenoweth, the fair daughter of the Miller of Alsia; The Penberth Smugglers and Algerine Pirates; Lamorna Cove and Granite Works; The Dwellers of Chenance, &c., &c.

August 16. Royal Institution of Cornwall. Special Meeting; Mr. Smirke presiding.—Exhibition, by the Queen's permission, of an Ancient Gold Cup found near the Cheese-wring, in 1837.—A Memorandum read, from Mr. Thomas Cornish of Penzance, on rock-markings at the Cheese-wring, discovered by Mr. W. J. Henwood.—(See *Journal of the Royal Institution of Cornwall*, Nos. VIII, IX.)

August 23. Royal Cornwall Polytechnic Society. 35th Annual Exhibition; Mr. Rogers, of Penrose, presiding.—The following Papers were read:—Report of proceedings in Dredging Excursions on the South-east Coast of Cornwall, in 1866; Jonathan Couch, F.L.S., C.M.Z.S., &c. Roman Coins found at Pennance Farm, near Falmouth; Thomas Hodgkin. Rubbings from Cornish Monumental Brasses; N. Hare, jun.

August 26. Miners' Association of Cornwall and Devon. Annual Meeting at Falmouth; Sir William Williams, Bart., president.

August 26. Royal Cornwall Polytechnic Society. Mr. W. P. Dymond and Mr. Alfred Lloyd Fox appointed Honorary Secretaries, on the resignation of Dr. Le Neve Foster.

September 4, and following days. Annual Meeting of the British Association, at Dundee; the Duke of Buccleuch, President.—Among the Papers read were the following:—Third Report of the Committee for the Exploration of Kent's Cavern; Mr. W. Pengelly. Mammalian Remains from the Submerged Forest in Barnstaple Bay; Mr. H. S. Ellis. Naked-eyed Medusæ; Mr. C. W. Peach. The Fructification of *Griffithsia Corallina*; Mr. C. W. Peach. Fossil Fishes of the Old Red Sandstone of Caithness and Sunderland; Mr. C. W. Peach. Report on the Fauna and Flora of the Southern Coasts of Devon and Cornwall; Mr. C. Spence Bate.

September 6. Opening of New Public Rooms at Camborne.

September 10. Opening of New Public Rooms, including Library, Geological Museum, &c., at Penzance.

September 12. At a Meeting of the Bucks Archæological Society, the Duke of Buckingham, Lord President of Council, spoke of the destruction of valuable antiquities through neglect, and suggested that these remains should be under the care of local authorities, and the supervision of a responsible Minister of the Crown.

September 13, 18, and 25. *Cornish Telegraph* publishes communications from "An Old Inhabitant," "Old Celt," and "An Ex-Inhabitant," on "Dolly Pentreath and her last resting-place."

September 18. *Cornish Telegraph* publishes a letter by "Old Celt," on "The Penzance of our Grandfathers."

September 19. *Cornwall Gazette* contains an Account of Vestiges of Ancient Tin Workings in the Loe Pool Valley.

September 20. *West Briton* publishes "Botanical Notes," by Mr. Thomas Cragoe of Penhelig, near Truro.

September 26. Egloshayle Church re-opened, after restoration.

September 27 and December 6. *West Briton* publishes articles entitled "Cornubiana," &c., concerning the parish of St. Germans.

October 2. The Church of St. Sennen, Land's End, re-opened, after restoration.

October 3. *Cornwall Gazette* publishes a letter from "Christopher Cooke," giving an account of Mr. Charles Bennett, who, blind from his childhood, was organist of Truro Church more than 40 years, and died in February, 1804.

October 4, 18, and 25. *West Briton* publishes letters from "T. Q. C.," and "Δ," concerning the birth-place of Bishop Trelawny, and the song "And shall Trelawny die?"

October 8. Philleigh Church re-opened, after restoration.

October 10. Calstock Church re-opened, after restoration.

October 11. Woodcocks shot, at Trewince, Gerrans, and Carn-Galver, near Penzance.

October 15. Penzance School of Art. Exhibition of Pictures and Presentation of Students' Prizes, at St. John's Hall, Penzance.

October 25. *West Briton* publishes a communication from "Curiosus," on "Jetwells," an ancient house near Camelford; and on means of preserving representations of antiquities.

October 30. *Cornish Telegraph* publishes a letter signed "W. N.," on "The Noyes and Mousehole."

October 30. Penzance Natural History and Antiquarian Society. Top Stone of Quern from Hendra, Breage; and Fragment of Stone Hammer, from Hea Moor; presented at a Meeting of the Council.

November 5. Royal Geological Society of Cornwall. Annual Meeting at Penzance; Mr. Charles Fox, President. The following Papers were read:—On a recently discovered Raised Beach at Chyandour; Mr. T. Cornish. Ancient Iron-works in Cumberland and Westmoreland; Rev. Edward Jeffreys, Vicar of Grasmere. The discovery of water-worn Flints in undisturbed clay near the new Esplanade Wall, Penzance; Mr. S. Higgs, jun. Notice of a peculiar formation of Granite (resembling a pillar and a wheel) found in the Garden Mine, Morvah; Mr. S. Higgs, jun. Notes on the Perseberg Iron Mine, near Philipstadt, Norway; Dr. Le Neve Foster. Some points of resemblance between iron at the Crown Rocks, Botallack, and in a Swedish Mine; Dr. Le Neve Foster. Motion in Space, and the formation of detrital and its subsequent consolidation; J. S. Enys, F.G.S. Coloured Sectional Drawings exhibited by Mr. Whitley:—of Raised Beaches, under Godrevy Farm, St. Ives Bay; at Hope's Nose, Torquay; and at Porthgwidden, St. Ives; and of Vertical Beds and Arched Strata at Hartland.

November 6. *Cornish Telegraph* publishes a statement concerning "The Noyes and Mousehole."

November 6, 14. *Western Morning News* publishes Articles on "Cornish Fisheries."

November 13. *Western Morning News* records a recent capture of *Lophius Piscatorius* in Penryn River.

November 15. *West Briton* publishes a letter from Rev. J. J. Wilkinson, Lanteglos-by-Camelford, concerning "The Holy Well at Jetwells." Also a letter from "Delta," on Bishop Trelawny, &c.

November 22. Royal Institution of Cornwall. Annual Meeting; Mr. Smirke, President, in the Chair. The following Papers were read:—Notice of Early Enclosures at Smallacombe, near the Cheesewring; Mr. J. T. Blight, F.S.A. Chronicles of Cornish Saints (II.—S. Petrock); Rev. John Adams, M.A. Correspondence (Anno 1700) between the Bishop of Exeter (Trelawny) and Mr. Charles Godolphin; from Mr. Jonathan Couch, F.L.S., &c. (See *Journal of the Royal Institution of Cornwall*, No. IX.)

November 29. *West Briton* publishes a letter from "Curiosus" on "The Well at Jetwells."

December 1. A flock of Swallows observed flying about at Newlyn, near Penzance.

December 2. *Western Morning News* publishes a letter from Mr. W. K. Bullmore, M.D., recording the recent capture, near Helston, of a Red-footed Falcon (*Falco rufipes*).

December 6. Oxford Local Examinations. Presentation of Prizes and Certificates at Truro, by Mr. Augustus Smith.

December 6. *West Briton* publishes a letter signed "Trepolpen," on "The Journal of the Royal Institution of Cornwall."

December 10. Foundation Stone of New Public Buildings at Truro, laid by Mr. Augustus Smith.

December 13. Death of Rev. Hender Molesworth St. Aubyn, of Clowance, aged 69.

December 20. *West Briton* publishes a letter from Mr. W. K. Bullmore, M.D., recording the enclosure of a mummified specimen of the Scabbard Fish, in the mesentery of a Cod Fish purchased at Falmouth. Mr. Bullmore published the following account of this phenomenon: "In the early part of last week my friend Mr. W. P. Cocks, of Falmouth, purchased at his door an unusually fine specimen of the common Cod-fish. It was evidently well fed, and to all appearance in every respect healthy. Orders were given to the servant to remove with care the stomach and its contents, and to save the same for her master's inspection. On examination, the organ appeared perfectly developed, and well filled with miscellaneous remains; its walls were of the usual thickness, and its mucous membrane quite normal. Attached to the stomach was a large portion of the mesentery, and, strangely enough, enveloped in its folds was a young mummified specimen of the scabbard fish, nearly four inches in length. The prisoner was perfectly preserved, and of the consistency of horn, shewing very plainly that it must have been entombed for some considerable length of time. The arteries in the immediate neighbourhood were of the usual size, and the surrounding tissues all in perfect health. There were no signs whatever of present or past inflammation, nor, in fact, any of the evidences generally observed to indicate the presence of a foreign body of this magnitude. The question very naturally suggests itself: how did this scabbard fish get into the peritoneal cavity of the cod; and how comes it that after so protracted a stay there were no signs of inflammatory action. A careful examination failed to reveal anything like a cicatrix either of the stomach or intestines."

December 21. *Western Morning News* records the recent discovery of an ancient road beneath the site of the New Public Rooms at Truro.

December 26. *Cornwall Gazette* publishes a letter from "Christopher Cooke," on "Cornish Cromlechs," &c.

December 26. A letter in the *Western Morning News*, signed "J. C. Blewett," Lostwithiel, publishes copy of Royal Warrant for fishing in the river Larren.

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1869.

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ROYAL INSTITUTION OF CORNWALL.

SPRING MEETING,

1868.

THE Spring Meeting of the Institution was held in the Council Chamber of the Town Hall, on Friday, the 22nd of May; the President, Mr. Rogers, of Penrose, in the Chair.

The PRESIDENT, after apologizing for not having prepared a formal address, expressed the regret which he was sure was felt by all present, for the loss which the Institution had sustained in the death of Sir Charles Lemon, one of its Trustees. He was elected to the Chair after the decease of the first president, Lord Exmouth; during a long period he continued to hold that office, and throughout his long life he cherished and supported the Institution in every possible way. He was liberal in the contribution of valuable additions to the Museum; while to its serial literature he frequently furnished Papers of the character which might be expected from such a man. Especially were the members of this Institution bound to notice the prominent part which Sir Charles Lemon took in connection with the Institution, in endeavouring to found a school at Truro for the scientific instruction of miners. The nature of the effort made by Sir Charles Lemon might be ascertained by reference to the Report of this Institution for 1840; and he (the President) thought it was due to Sir Charles Lemon's memory that they should now recall what he really did. It was in 1838 Sir Charles Lemon first proposed to assist in the establishment of means whereby miners in this County might obtain more scientific instruction than had been previously within their reach; and for the promotion of that object he proposed to provide by will a sum not less than £10,000, or, if more were wanted, he would enlarge his bequest to the extent of £20,000. Part of the scheme at that time submitted by Sir Charles was that a small contribution in aid of the proposed Mining School should be levied on ores raised in the County. Whether from fear of that small tax, or from a repugnance to the scheme itself

on the part of mine agents, the noble offer made by Sir Charles Lemon met with no adequate response, and after the School had been carried on experimentally for a period of two years, it was found that the proposed pecuniary support would not be afforded, and in 1840 that scheme was abandoned. This Institution, however, never lost sight of the importance of establishing such a school, and efforts were made, first in 1843, and again in 1854 and 1856, when, in consequence of representations made to the Board of Trade, Dr. Lyon Playfair was sent down into the county to make inquiries; and the result was that he reported to the Board of Trade that it was not probable that sufficient support would be given to a central mining school, to justify the Government in sending down trained masters, or in paying the cost of training masters in London. But this Institution itself made the attempt, by obtaining pledges of annual subscriptions for three years, for the purpose of trying a new experiment. That resulted in the establishment of a centre of scientific instruction at Truro; and, after that period of three years had elapsed, a plan for establishing local classes was organised by this Institution, and successfully worked for a further term of three years; after which it was merged, in 1860, in the present Miners' Association, mainly set on foot by Mr. Hunt. The scheme now in existence was different from that which Sir Charles Lemon sought to found, and also from that which this Institution endeavoured to establish; but, still, the origin of the existing Miners' Association might fairly be traced to the attempt first made by Sir Charles Lemon; for it was entirely due to the plan which that gentleman originated that the County had been led to view the whole matter more favourably than it had formerly done; and it was gratifying to find that, in spite of the depression in the County during the last two years, the Miners' Association was rather more flourishing now than it was three years ago. He felt that it would have been unjust to the memory of Sir Charles Lemon if he had said less of the services which Sir Charles had rendered to this Institution by his talents and his purse, and of the debt of gratitude which was due to that gentleman from the county of Cornwall (applause).— Within the last day or two this Institution had sustained another severe loss, in the death of the Reverend John Carne, vicar of Merther, who made promise of becoming a most valuable member of the Institution, particularly in the department of archæological investigation. Mr. Carne had contributed several valuable and interesting Papers which displayed considerable critical ability and careful research, and it was deeply to be lamented that he had been taken from them at so early a period in his career of usefulness.

The PRESIDENT then referred to some of the objects exhibited on the table, and particularly to the National Manuscripts of England and Scotland, photo-zincographed by Colonel Sir Henry James, through whom these handsome volumes had been presented to the Institution Library by the War Office.

The PRESIDENT also directed attention to two precious Cornish relics which he was allowed to exhibit by the kindness of their owner, Rev. Edward Duke, who had entrusted them to his care; one a bowl, of block tin, the other a brass jewelled collar. The bowl was believed to be unique. It was dug up in 1793, in the course of stream working, in St. Stephens in Branwell, passed into the possession of Mr. Philip Rashleigh, of Menabilly, was exhibited to the Society of Antiquaries, in 1807, by Mr. Reginald Pole Carew, and in Paris at the last Exposition. Nothing was known of its date or use, and Mr. Duke would value any suggestion which might throw a light upon either.*

The second of these two relics was a collar, or other circular ornament, of brass, rudely ornamented on its surface, and set with small jewels, which form the centres of ornamentation. The jewels had never been tested, and it was satisfactory to see, on comparing the collar with a careful contemporary drawing, that it was in precisely the same condition now as when found. The collar was exhibited, with the tin bowl, both in London and Paris. Mr. Albert Way considered these two relics to be among the most interesting objects of antiquity ever discovered in Cornwall, and the thanks of the Institution were due to Mr. Duke for allowing its members to see them so favourably.

MR. ROGERS next referred to the present position of the *Bibliotheca Cornubiensis*, which was intended to comprise a list of all the books, pamphlets, and other publications in any way relating to this county. This proposal, which was started in 1863, had been very favourably received and liberally supported, but it had been found that the collection of the materials for the work involved a much greater amount of trouble, and that its publication was attended with much greater expense, than had been anticipated. It had, therefore, become necessary either to increase the subscriptions or to modify to some extent the design of the work. He believed that the Council of the Institution were of opinion that the latter plan might be adopted; but

* Whilst these pages are passing through the press, the President has received a letter from Mr. Albert Way, mentioning a vessel of pewter (?), like the Cornish vase, in the Ely Museum. He also invites attention to some highly curious relics lately found near Plymouth, recommending comparison of the peculiar type of decoration with that of Mr. Duke's collar.

whichever course should be resolved upon, it was highly desirable that the work should be proceeded with as expeditiously as possible.

In conclusion, Mr. Rogers referred to the excursion which the Council thought it would be desirable to make in the course of the ensuing autumn, in the neighbourhood of Liskeard, for the purpose of archæological investigation.

DR. JAGO read the Lists of Presents :

DONATIONS TO THE MUSEUM.

Crustaceans: Palinurus homarus, Cancer pagurus, Maia squinata	Mr. W. Loughrin, Polperro.
Stone Crab (Lithodes Maia) from Northumberland	Mr. Jonathan Couch, F.L.S., &c., Polperro.
Echeneis remora	Ditto.
Insects from Brazil.....	Mr. Treloar, Brazil.
Waxtail (Urocerus juvenicus) captured in Truro, August, 1867	Mr. H. Andrew, Truro.
Kingfisher.....	Mr. G. Read, Truro.
Lumpsucker, caught at Newquay	Mr. E. S. Carus-Wilson.
Sea Mouse.....	Mr. J. W. Kernick, St. Ives.
Thigh Bone of Rhinoceros, from Ilford, Essex	Mr. N. Whitley, Truro.
Flint Implements and Shattered Flints, from the Valley of the Somme, Salisbury Plain, Eastbourne, Isle of Wight, and Thetford ..	Ditto.
Flint Flakes, from various parts of Devon and Cornwall	Ditto.
Fossil Beads and Roman Coins, from gravel pits at St. Acheul	Ditto.
Fishing Net, made by natives of Woolli, at the mouth of the Clarence River, from root-fibres of the Fig-tree (Ficus macrophylla) ..	Mr. W. Bawden, New South Wales.
Fibre of Ficus macrophylla	Ditto.
Dilly Bag, made from fibrous bark of the Kurrajong (Hibiscus heterophylla)	Ditto.
Fishing Line, made from fibrous bark of the Nettle-tree (Urtica gigas)	Ditto.
Bundle of Kurrajong fibre, used by the natives for fishing-lines, and for ropes to be immersed in water	Ditto.
Relic of the Arctic Expedition. Songs of the North. No. 4. Appeal to the Seamen and Marines of the Expedition. Sung by Lieut. R. D. Aldrich, at the close of the Royal Arctic Theatre, March 4th, 1851	Mr. J. W. Burgess, Perran-arworthal.

- Signet used by Thomas Collins, Prior of Tywardreath..... Mr. Albert Way, F.S.A.
- Impressions of some Roman Coins found, in a collection of more than 1000, at Pennance Farm, Falmouth, of the reigns of Emperors between A.D. 194 and 342..... Mr. Michell.

ADDITIONS TO THE LIBRARY.

- Fac Similes of "National Manuscripts," Parts I, II, and III; and of "National Manuscripts of Scotland," Part I. Presented by authority of the Right Honorable the Secretary of State for War From Col. Sir Henry James.
- Diagram showing the Temperature of the Sea and Air across the Atlantic; with Paper on the Temperature of the Sea, and its influence on the climate and agriculture of the British Seas.—By Nicholas Whitley, F.M.S. From the Author.
- The Origin of Civilization, and the Primitive Condition of Man.—By Sir John Lubbock, Bart., F.R.S., &c. Ditto.
- Address delivered to the Section of Primæval Antiquities, at the London Meeting of the Archæological Institute, July, 1866.—By Sir John Lubbock, Bart., F.R.S., &c..... Ditto.
- The Mineral Resources of Central Italy.—By W. P. Jervis Ditto.
- The Miners' Association of Cornwall and Devonshire. Report of Annual Meeting at Falmouth, August, 1867..... Mr. R. Hunt, F.R.S.
- Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1866-7 From the Institution!
- Report and Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art, 1866 From the Association.
- 34th Annual Report of the Royal Cornwall Polytechnic Society, 1866.
35th ditto ditto, 1867 From the Society.
- The Anthropological Review, and Journal of the Anthropological Society of London. Nos. 17, 18, 19, 20, 21 Ditto.
- Transactions of the London and Middlesex Archæological Society, 1866 Ditto.
- Proceedings of the Zoological Society of London, 1867 Ditto.
- Transactions of the Historic Society of Lancashire and Cheshire, 1866 Ditto.
- Journal of the Liverpool Polytechnic Society Ditto.

Journal of the Royal Geological Society of Ireland, 1864-65.	
Ditto, 1866-67	From the Society.
Proceedings and Papers of the Kilkenny and South-East of Ireland Archæological Society, 1866 and 1867	Ditto.
The Annual Report of the Leeds Philosophical and Literary Society, for 1866-67	Ditto.
Proceedings of the Royal Society of Edinburgh	Ditto.
Proceedings of the Philosophical Society of Glasgow, 1866-67.....	Ditto:
Transactions of the Geological Society of Glasgow, 1865	
Ditto ditto, 1866	
Ditto ditto, 1867	Ditto.
Proceedings of the Society of Antiquaries of London. Second Series. Nov., 1859, to June, 1866	Ditto.
Transactions of the Loggerville Literary Society	Mr. W. Sandys, F.S.A.
Portrait of Dr. Joseph Hallet Batten, D.D., F.R.S.; sometime Fellow of Trinity College, Cambridge, and Master of the College at Haileybury; a native of Penzance, educated at the Truro Grammar School.....	Presented by his son, John Hallet Batten, Esq., Secretary of the Royal Geological Society of Cornwall.

FLINT IMPLEMENTS, &C.—MR. WHITLEY exhibited and commented upon the “Flint Implements” and Flakes which he had presented for the Museum; remarking that they were obtained from the Drift Beds of Devon and Cornwall, from Salisbury Plain, from the Chalk Downs near Eastbourne, from near Thetford, and from the Valley of the Somme. He was of opinion that a large proportion of them were undoubtedly natural products; others had been chipped into form, ground, and polished, and they bore evidence of use. These were obviously the work of man. There was one specimen which was of great interest; it was a large and perfect Flint Flake, but the edges had been ground into form and sharpened, and without doubt it had been worked by human hands since its original formation. Some of the natural specimens Mr. Whitley pointed out as being remarkably perfect in their knife-like appearance, with marks as of chipping, and with the so-called “percussion bulbs.” He had also found, six feet deep in chalk, a bunch of “flint cores” like those from which flakes were said to have been wrought; but, evidently, they had never been handled by man, but were shattered *in situ*. Mr. Whitley also exhibited some of the so-called “fossil beads,” from St. Acheul, and which were said to have been manufactured and worn

as ornaments by præ-Adamite man. It was however now acknowledged by geologists that these "beads" were of natural formation, being fossils of the chalk; and Mr. Henwood had promised to send him a similar formation in flint.

DR. JAGO asked Mr. Whitley whether he had not to some extent modified his former views on the subject of flint-flakes. The fact of other things being found near them on the surface was of little moment; but it was matter of great interest whether they were of purely natural formation, or the effect of human handicraft; and he should like to know whether Mr. Whitley still adhered to his former statement—that he doubted their having been made by human agency.

MR. WHITLEY here exhibited, from his collection, two implements which he said had undoubtedly been made by the hand of man; but one of these clearly belonged to Sir Charles Lyell's "Second Stone Age," and the other was found on the surface. But in those which he had brought from the Valley of the Somme, where he had examined similar objects by hundreds, there was no evidence whatever that they had been made or in any way used by man. He adhered decidedly to the opinion which he expressed two years ago,—that the so-called flint implements of Lyell's "First Stone Age" had been formed by natural causes, and not by the hand of man; and that in the "Second Stone Age" there were flint flakes of natural formation which had been manipulated and used by man; while there were other flint implements of undoubtedly human make.

THE GULF STREAM.—MR. WHITLEY next exhibited and explained his Diagram shewing the temperature of sea and air between the Bank of Newfoundland and the west coast of Ireland. He observed that a vessel, crossing the Atlantic, from Newfoundland, on passing out of the Arctic current, got immediately into warm water. He was of opinion that no well-defined branch of the Gulf Stream flowed into the Frigid Zone; but under the influence of the South-west wind, the heated water was drifted northward over a large portion of the North Atlantic Ocean. Eastward from the Bank of Newfoundland the temperatures of sea and air increased; but it was not until about the middle of the Atlantic that they became equal; and on nearing the coast of Ireland the sea lost some portion of its warmth. On the coasts of Cornwall and Devon the temperature of the air in January, owing to the Gulf Stream, was equal to that on the South of France.—After some remarks from Dr. Barham and Mr. Charles Fox, Mr. Whitley observed that near the end of the Bank the sea attained a depth of five miles; and the cold water,

being heavier than that which was warm, sank below the Gulf Stream, which proceeded eastward with but slightly diminished temperature. With regard to the mildness of climate on the coast of Norway, Mr. Whitley held it to be due to a drift current from the Gulf Stream, which after striking that coast became a true ocean current and kept the sea open as far as to Spitzbergen.

THE LAOCOON.—MR. H. M. WHITLEY, assistant secretary, read the following letter from Mr. Walter H. Tregellas, of Iver Cottage, Bromley Common, Kent :

“Dear Sir; I have the pleasure of sending you herewith a copy of a wax impression from the Prior of Tywardreath’s seal, which has lately received so much attention. The circumstances of the case are briefly noted on the accompanying descriptive card, for which, as well as for the wax impression, your Institution will be indebted to that distinguished and most courteous archæologist, Mr. Albert Way. The interest which attaches to the seal is mainly due to the possibility of its having been used by the Prior of Tywardreath, who had ‘transactions with the Apostolic See under Leo X,’ before the discovery of the celebrated group of Laocoön and his sons on the Esquiline, in 1512; and to its being an accurate representation of the sculpture before it had been mutilated and subsequently inaccurately restored.* Mr. King, who says it is an article of faith with him that ‘no fine gem work was without a more celebrated prototype in statuary,’ argues from the internal evidence of the seal that it may perhaps be ascribed to the two centuries commencing with the era of Lysippus and Pyrgoteles,—that Lysippus, it is presumed, of whom we read that Alexander gave him the sole right of making his statues, 326 B.C. Mr. King thinks that, in all probability, it is the only true representation extant of that marvellous sculpture which you will remember Pliny refers to as ‘opus omnibus et pictoriæ et statuariæ artis præferendum.’ As having been the private signet of the taseful Cornish Prior, Thomas Colyns, it seemed to me that a copy of it was well worthy of a place in the interesting Museum at Truro; and I have had great pleasure, and little difficulty, in procuring it for the acceptance of the Royal Institute of Cornwall; to whom I beg you will be so good as to present it, as from Mr. Albert Way.”

MR. SMIRKE said that the impression exhibited by Mr. Tregellas, and now in their hands, was an electrotype from a wax seal, found by himself, attached to a document of the date of Henry VIII, and purporting to be sealed by the last Prior of the Cornish alien Priory of Tywardreath in this county, of which very few vestiges now remained. It clearly represented the antique group of Laocoön and his two sons, now forming one of the most valued objects in the Museum of the Vatican at Rome. It is known from contemporaneous history that the date of the

* For the nature of the errors, see *Archæological Journal*, No. 93, 1867; p. 53.

discovery of the group in the vineyard of Felice de Frédis was the year 1506, in the papacy of Julian II, when it was disinterred in a state of partial mutilation. It was remarkable that within a period so lately after as twenty years, a very admirably executed gem, or intaglio, representing that group should be found in the hands of a monk at a small and obscure religious establishment on the shore of St. Austell Bay.—This document, when examined by him about sixteen years ago, was in a collection of very curious and early muniments of that Priory, in the possession of Lord Arundel, of Wardour, by whose father it had been lent to the late Dr. Oliver, when engaged in compiling his *Exeter Monasticon*. It was shown by him (Mr. Smirke) to many friends, both sculptors and antiquaries, and was exhibited by him at Truro, at the meeting of the Cambrian Archæological Association in 1862; but it attracted little notice until it was shown by his friend Mr. Albert Way to Mr. King, a very learned amateur of glyptic antiquities, and the author of several important works on the subject of ancient gems.* The group, as represented on the seal now exhibited, varied in material points from the present statues in the Vatican. By comparing it with a photographic copy of the Vatican group, the right arm of the principal figure in the seal was found to be bent back towards the head or neck of the figure, and to grasp the serpent at a part close to that side of the head; whereas the same arm, in the Vatican group, is stretched far off the head, where it seems to be pulling the serpent's tail away from the head. Now it was well known that this right arm was found broken off and wholly wanting in the original when it was first disinterred. The restored arm, at Rome, has been attributed to Michael Angelo; but there was little or no ground for this current opinion; and it was now believed that the "restoration" was effected by a contemporary artist of less celebrity. Certain it is that the arm, as restored in the 16th century, has long been considered a mistaken attempt to reproduce the original and authentic design; and the more intelligent critics of the present day are strongly inclined to regard the attitude of the elder figure on the seal of old Prior Collins as more natural and probable than the one displayed for centuries at Rome, with which they were all familiar. Whether this be the more probable conjecture is a matter which must be considered still "*sub judice*." Mr. King was disposed to think that the gem used by the old Prior represented an

* A Paper on the Seal was contributed to the *Journal of the Archæological Institute*, Vol. 24 (1867), by Mr. C. W. King, M.A., Trinity Coll., Cambridge.

earlier and more genuine form of this group, and not the one found underground in 1506; and that gentleman thought that the intaglio by which the impression was produced was a work of higher art than could have been produced by an engraver of the date of the 16th century, to which it had been more naturally referred; and for this he assigned technical reasons, which (Mr. Smirke observed) would be unintelligible to most of his hearers. He confessed, however, that he was inclined to entertain a different opinion from that held by Mr. King, and he attributed to the seal a date later than 1506, and thought it to be a work of some engraver of the "cinque cento" period; but he could not profess so extensive a knowledge of this style of art and so cultivated a judgment on it as Mr. King. No doubt the seal was a remarkably fine work of art; but whether it represented a piece of earlier Greek sculpture, or was meant to be a copy of the then newly-discovered Vatican group, with such variation only as the oblong oval form of the seal itself made it necessary to adopt, was an inquiry on which he must leave to others to form their own judgment. He hoped hereafter to assist in the formation of that judgment by depositing a careful, enlarged, copy of the seal, which might be collated with the cast of the Vatican group that had long been in the Museum of this Institution.

REV. T. PHILLPOTTS remarked that in former times it was customary to strike commemorative medals. Julius the 2nd might have struck such a medal representing the Laocoön Group, and one of these might have been procured by Prior Collins, who might have had the design engraved on his seal. If there had been an ancient intaglio, in all probability it would have been known, and Michael Angelo would have had no difficulty in undertaking the restoration of the group.

MR. SMIRKE had never heard of any such commemorative medal struck on the occasion of this discovery, though there existed several proposed restorations of the group, and also an engraving from a drawing, by Raphael, of the group in its mutilated form.

MR. CHARLES FOX then gave a summary of a Paper, which he presented for publication in the *Journal*, on *Celtic Remains in Algeria*.

The following Papers were read:

Ornithological Occurrences in Cornwall. By Mr. E. Hearle Rodd.

The Cliff-Castle of Kenidzhek. By Mr. J. T. Blight, F.S.A.

Chronicles of the Cornish Saints. (III.—St. Constantine). By Rev. John Adams, M.A.

JOHN DE TREVISA.—A Paper on “*John de Trevisa*,” an eminent Cornish ecclesiastic in the 14th century, was presented by Mr. ROGERS, and he gave a summary of its contents.—With reference to a statement by Fuller, that John de Trevisa translated the Bible into English and that his translation was far superior to Wicliffe’s, Mr. SMIRKE stated that, about ten years ago, he made inquiry of Sir Frederick Madden, a gentleman who was likely to be the best informed on the subject, being the joint editor, with Mr. Forshall, in 1850, of Wicliffe’s Bible. Sir Frederick informed him that they were satisfied that there had been no complete translation of the Bible by John de Trevisa. That Trevisa was intimately acquainted with the original text of the Bible there could be no doubt; but, at that time, the Roman Catholic Church, which was not in the habit of altogether withholding the Bible from ordinary readers, preferred the use of *Lectiones*, i.e., “Lessons,” as we call them in our Church service. Volumes of such lessons were called *lectionaries*, of which old copies are often found in theological libraries. It was not at all improbable that John de Trevisa had translated some of these *lectiones*, or had circulated texts from them; and hence probably originated the error of supposing that he translated the entire Bible.

REV. H. S. SLIGHT exhibited a rubbing from an ancient memorial-stone in the Church of Ruan Lanyhorne, and stated that, in the opinion of competent judges, it belonged to the 13th century. The stone itself was originally of the shape of a coffin-lid, but its lower half has been broken off, and lost. Enough remains however to show the figure complete (in *alto riliebo*) as far as the waist; and it is very interesting. The features, apparently those of a man in the prime of life, are particularly pleasing. There is some appearance of the hair having been cut away to the clerical tonsure, leaving only a circle of about two inches in width around the head. The dress seems to be that of the amice, or cope, fastened at the neck by a buckle, and leaving the arms free, at least below the elbows. The hands hold, in front of the breast, what the best judges consider to be a chalice. The carved trefoil work around the head, and extending down as far as the elbows, is quite perfect, very free, and ornamental, and is said to be the surest guide to the date of the monument. The measurement of the part of the stone still remaining is, three feet in length by twenty-two inches in breadth at the widest part; its thickness about six inches. It is believed to be Caen stone.

DR. BARHAM mentioned that Dr. Winn (formerly of Truro) had forwarded, through Mr. Chilcott, an account of the remains of a remarkable marine monster, which he saw in Cochin China during his visit to that country last year. The account was as follows :

“Whilst exploring the coast of Cochin China, I went to a spot rarely visited by Europeans, where I was so fortunate as to get a sight of the remains of a most extraordinary animal. The skeleton was in a sort of temple, and appeared to be an object of worship to the natives. I could not obtain a correct notion as to the length of the animal, as the head was piled up on the ribs and vertebræ. The whole was surrounded by a brick wall and covered with silk and matting. The natives say concerning the animal, that the eyes are very large, the skin black and smooth, the tail resembling that of a lobster, and the back surmounted by two pinions. The Captain and Mate of the “John Bull” visited it at my request, and saw me measure the skeleton. The head is 16 feet 4 inches in length to the end of the beak, and 4 feet 4 inches in breadth. The socket of the eye is about 3 feet in diameter. The face (all solid bone) 4 feet 6 inches in breadth. The rib 8 feet 9 inches in length, and 5 inches in diameter. The tusks are flat, and the extremities slightly curved inward.”

DR. BARHAM said the animal would appear to be one of the *cetacea* ; and if, as was stated, Dr. Owen had seen the account and considered that the animal was distinct from any known species, much interest would attach to it.

THE PRESIDENT then requested attention to numerous drawings, executed by his brother and himself, types of monumental crosses discovered at Bakewell Church, Derbyshire, in 1842, in the removal of the central tower and transept after they had been struck by lightning. He failed to discover the spot in which any of these objects had been originally placed ; but it was clear that they had been built into the tower walls subsequently to their being used as monumental slabs. Their dates were of the 11th, 12th, and 13th centuries.

THE PRESIDENT next invited subscriptions to the Illustration Fund proposed to be established in connection with the *Journal* of the Institution.

On motion by the PRESIDENT, seconded by DR. BARHAM, thanks were voted to the Mayor of Truro, for his kindness in granting the use of the Council Chamber for this meeting.

On motion by REV. T. PHILLPOTTS, seconded by Mr. PASCOE, thanks were voted to the President for the kindness and ability with which he had presided over the meeting, and for the zeal which he had always evinced in supporting the objects of this Institution.

THE AUTUMN EXCURSION.

A NUMEROUS party of members and friends of this Institution, on Monday and Tuesday, the 10th and 11th of August, made excursions to objects of much antiquarian interest in the neighbourhood of Liskeard; in which town they received most cordial sympathy and active assistance from the municipal authorities, and from the officers and other members of the Liskeard Institution.

About one o'clock on the Monday, about 120 ladies and gentlemen started in vehicles of various kinds from the Parade, in Liskeard, and proceeded, by way of Luxstowe, to the village of Trevecca, where, in the Friends' Burial-Ground, rest the remains of the late John Allen (author of a History of Liskeard and its neighbourhood), whose memory is much esteemed among local antiquaries. Thence to the summit of St. Cleer Down, where, the weather being remarkably fine, an extensive prospect was enjoyed of varied and interesting scenery; and to St. Cleer Well, the Baptistery of which was satisfactorily restored in the year 1864,* under the superintendence of Mr. Henry Rice, architect. Mr. Rice now exhibited to the excursionists drawings which showed the ruinous state in which the structure had remained during many years. He said he thought the roof of the building had fallen in and thrown out the sides; but the old sills now remained exactly as they were found, not having been injured or misplaced by the fall. He was of opinion that there had been no central arch in the former building, and that the roof was self-supported. The pinnacles were old, and also the coping; the pillars he had again inserted. No date was found anywhere. The Cross adjoining had always occupied its present position.—The dimensions of the building (as given by Mr. N. Hare) are: length eleven feet; width nine feet eight inches; height thirteen

* The restored building bears the following Inscription:

RESTORED A.D. 1864,
TO THE MEMORY
OF THE LATE REV. JOHN JOPE,
67 YEARS VICAR OF ST. CLEER,
BY HIS GRANDCHILDREN.

feet nine inches. The tops of the pillars are enriched with the guilloche ornament.*

A brief visit was paid to St. Cleer Church, of which, in 1862, in anticipation of an intended visit from the *Cambrian Archaeological Society*, the late Mr. Pedler wrote as follows:—

“The parish church has evidently been built at various times. The tower, which is a finely proportioned granite structure, 100 feet high, is probably of the last century; the south aisle some centuries older, and the north wall of very remote date. In this there is a doorway recently opened, with a circular heading surrounded with the chevron ornament, the usual characteristic of Norman work.† An opinion prevails that through this door the novitiate was taken for baptism to the neighbouring baptistery of St. Cleer Well.”

The party next proceeded, by way of Redgate, to Doniert's Monument, or “The Other-Half Stone,” an account of which was read by Capt. Alms, of Bodmin, from Mr. Spence's “*Iter Cornubiense*”; in which it is recorded that in August, 1849, the members of the Plymouth branch of the Exeter Diocesan Society visited this monument, and, with assistance from South Caradon Mine, raised Doniert's Stone from its sunken position, and dug down by the side of the larger obelisk, to ascertain the truth of the report by the historian Hals.—After reaching a depth of about fourteen feet, a hole was discovered in the side of the shaft, which led into a cruciform vault, eighteen feet in length from east to west, and sixteen feet from north to south, the width of the vault being about four feet; the sides were perpendicular, and the roof circular, and all smoothed with a tool and as level as the rough nature of the naked rocks would permit. Nothing was found.

“The Hurlers” (three Circles of upright stones)—so called, from a superstitious tradition that they were men metamorphosed into stones for playing on the Lord's Day,—and the “Cheesewring,” or “Wringcheese,” were next visited; and also, at the summit of the adjoining hill, an ancient circular vallum, composed of loose stones, with eastern entrance. Concerning “the Hurlers,” Mr. Blight explained that the smaller circles, here as elsewhere, originally surrounded places of sepulture in their centre; the

* The Well, as it existed—a “picturesque ruin”—before its restoration, is represented in *Blight's Crosses*, vol. 2.

† Parker, in his “Introduction to the Study of Gothic Architecture,” speaking of the chevron as a common Norman ornament, says: “it is found at all periods, even in Roman work of the third century, and probably earlier; but in all early work it is used sparingly, and the profusion with which it is used in late work is one of the most ready marks by which to distinguish that the work is late.”

whole being covered with a cairn, or heap of loose stones, the use of the circles being merely to mark out the shape of the cairn. The large circles were probably erected outside the cairn, as a fence.—The visitors were gratified to find that not a stone had been removed since Borlase wrote of them in his “Antiquities,” 120 years ago. Their number now, as then, was 22.*

Descending the old cairn, a short visit to the habitation of Daniel Gumb, built of granite boulders that have now fallen into a ruin. On one of the stones was still the inscription, “D. Gumb, 1735”; and upon the surface of another which had formed the roof, was a diagram, intended probably to illustrate a problem of Euclid.

Time did not allow of the purposed visit to the interesting remains at Smallacombe;† and after the Cheesewring had been photographed with numerous visitors and natives grouped about its base, the party hastened to South Caradon Mine,—some in carriages, whilst others, preferring to make a short cut on foot along the railway, visited the barrow, at Stowes Mine, in which was discovered, in 1837, the unique Gold Cup‡ which, by permission from the Queen, was exhibited by Mr. Smirke at a special meeting of the Royal Institution of Cornwall, in August, 1867. ||

In the Account-house at South Caradon the excursionists par-

* This remark applies, of course, only to the *three* circles visited. Mr. Blight, in his recently published “*Notes on Stone Circles*,” speaks of two upright stones of a fourth circle — distant about 120 yards north-westerly from the group of three circles. He says: “Three were placed in a line running about N.N.E. by S.S.W. The northernmost is 37 yards from the centre one, from which to the southernmost the distance is 31 yards. 120 yards N.W. of these are two stones of the fourth circle. The spaces between the uprights must have averaged about 10 feet when the circles were complete. Their height is from 2 feet to 5 feet 6 inches. The diameter of the north circle is 97 feet; the centre one, 136 feet. There are no traces of internal works.”



† An illustrated notice of the “Enclosures at Smallacombe,” by Mr. J. T. Blight, is published in the *Journal of the Royal Institution of Cornwall*, No. IX.

‡ Now in the Museum of the Royal Institution of Cornwall, at Truro.

|| See *Journal of the Royal Institution of Cornwall*, Nos. VIII and IX.

took of luncheon; and on a proposition from Mr. Rogers, the President of the Institution, seconded by Rev. G. L. Church, thanks were cordially voted to the Manager and other authorities at the mine for kindly allowing the party to assemble there, and especially to Mr. William Rule, who had ably superintended the preparation of the luncheon. Mr. J. S. Dymond acknowledged the compliment on behalf of its recipients.

After an inspection of some of the workings of this successful copper mine, the carriages were once more filled, and the excursionists proceeded to Trethevy Cromlech,—the largest of Cornish Cromlechs, the covering-stone being fourteen feet ten inches long by nine feet wide. It has never been opened, so far as is known, and it appears to remain in its original completeness, except that the end stone at the west has fallen inwards so as to cover the floor of the interior, and, because of its large size, to render excavation beneath it impossible. From the cromlech, a narrow paved lane, about a furlong in length and about six feet wide, leads to Tremar Coombe. It is impassable, except to pedestrians and to pack mules. It is suggested that possibly there might have been a British village at the head of this lane, and that remains of British dwellings may be found in the vicinity.

This was the last object visited on Monday, Roundaberry being abandoned in favour of the tea and *conversazione* to which the excursionists had been invited by the Literary Institution at Liskeard. This took place at about eight o'clock, in the Town Hall; the Mayor, Mr. J. C. Isaac, presiding, in the absence of Mr. J. C. Corin, president of the Liskeard Institution.—A general *resumé* of the day's excursion was given by Mr. Rogers, after which Mr. Whitley made a few remarks, descriptive of St. Cleer Church; and Mr. Smirke made some observations on Doniert's monument, expressing his belief that it was a genuine memorial stone, of ancient date, commemorative of a Christian prince. Mr. J. T. Blight addressed the meeting on cromlechs, special reference being made to the one at Trethevy, which was entirely of granite; and as this kind of stone could not have been obtained within a mile, there must have been considerable labour in the transit of the material and in the construction of the building. By means of drawings on a black board, Mr. Blight explained the generally accepted mode by which such massive stones were raised to their position; and he made some remarks also on the supposed use of artificial holes in cromlechs.

There was exhibited at this *Conversazione* the "Liskeard inscribed stone," which, some few years since, was removed from the wall of the Grammar School, situate on what is called the Castle. The late Mr. Pedler, in his Programme for the Cambrian

Archæological Association in 1862, states that this place was once the chief manor-house of the Duchy Manor of Liskeard, and probably had been the site of a Roman Station; a portion of wall still existed which might possibly be Roman. The inscription was in Roman capitals, cut in relief, and extended to three or four lines; but, with exception of a single letter here and there, and a few letters at the beginning, it was all obliterated. Polwhele read the inscription as "*Olim Marti nunc arti*," conceiving the memorial to be modern and to contain an allusion to the change of purpose which the place had undergone;* and Dr. Cardew, who was educated at this school, had given a somewhat similar explanation, conjecturing the words to be *olim arx nunc* Mr. Pedler, however, considered it a Roman memorial. The first word was clearly *olim*, and the second might be conjectured to be *Martinus*, the name of a Roman governor of Britain near the middle of the 4th century.†—Mr. SMIRKE said he would not venture to give a definite opinion as to the inscription; but, the words appearing to have been cut in relief, he was inclined to attribute to it no very great antiquity.

Mr. N. Hare writes: "This stone, which measures two feet ten inches by nine inches, has lately been replaced in the building from whence it was taken. It has either been broken in half, or consists of two separate stones joined together. But what seems hitherto to have been overlooked is this: that the first contains only *three* lines of ten or twelve large Roman letters, whilst the second half has four, if not five, lines of fifteen to eighteen letters, these latter being much smaller, except that one or two large ones may be distinguished at the beginning of words."

SECOND DAY'S EXCURSION.

On Tuesday morning, notwithstanding unfavourable weather, a considerable number of the excursionists proceeded from Liskeard by train to Saltash, where they were joined by friends from Plymouth; and the united party was conducted by the Reverend

* Dean Ramsay, in his "Reminiscences of Scottish Life and Character," says: "John Clerk's" (afterwards Lord Eldin) "vernacular version of the motto of the Celtic Club, is highly characteristic of his humour and his prejudice. He had a strong dislike to the whole Highland race, and the motto assumed by the modern Celts, '*Olim marte, nunc arte*,' Clerk translated 'Formerly rubbers, now thieves.'"

† See *Journal of the Royal Institution of Cornwall*, No. II.

Edward Polwhele, vicar of St. Stephens by Saltash, to the church of that parish—a large building possessing some points of architectural interest, and a few curious monuments. The edifice appears to comprise remains of an original cruciform building of the Norman period, as shown in the two lower stages of the tower (situated at the north transept), in a south transept arch, and in a blocked south door to the nave. The rest of the building is of subsequent periods. The parish register is said to be one of the earliest in England; it commences with the 1st of January, 1545,* and its earliest entries appear to have been copied from a former register. It is still in its original binding. It records that in 1549, the year of Arundel's Rebellion, a serious epidemic prevailed; the deaths rising monthly, from 7 in April to 71 in July, and falling to 0 in November.

Trematon Castle was next visited; the party being conducted by Admiral Tucker over all the remains of this interesting relic of the Earldom of Cornwall. Its present appearance is very unlike that represented in Lysons' print only fifty years ago. Then the whole mound on which the Keep stands was quite bare, now it is ornamented with trees on all sides, planted by the father of the present occupier of the modern residence, whilst a flower garden adorns the only level portion of the ground adjoining the Keep. The Gate-Tower was the first part visited. This remains to the present day as it was originally built, with a few most trifling alterations, *i.e.*, in the roof, the windows, and fireplaces. All substantial parts are unaltered since the beginning of the 14th century, the period to which the ornaments of the chimney-pieces very clearly assign it. Lysons cites a survey of the Duchy in 1337 which describes "a hall, kitchen, and lodging-chamber, built by Edmund, Earl of Cornwall, and an ancient chapel *within the gate.*" Assuming, therefore, that this gate-tower is the one there referred to, it was probably erected by Edward III, between the date of his resumption of the castle into the hands of the Crown in 1275, and 1337, the date of the survey. The building consists of a double arched gateway of ample size for a carriage entrance, guarded by a portcullis both within and without, a porter's lodge below, and two stories above, approached by a newelled stair entering from the wall which connects the gate with the keep above. Each story contains only one room, with fireplaces of the same date; there it is believed the prisoners arrested within the Honor of Trematon were kept. The shafts

* The Gerrans parish register begins in 1539, the first year of registration, under Henry VIII; that of St. Michael Penkivel begins in 1547.

and capitals of the chimneys are very nearly perfect in each chamber, and are ornamented with the peculiar erect form of conventional foliage which betokens French rather than English work. The Keep surmounts the mound and is built with excellent mortar, in a form neither circular nor oval, but in irregular curves, which appear to have followed the natural figure of the summit of the rocky mound. A few corbels appear internally a little below the parapet, and may have served either to support the roofs of buildings within the Keep, or a broader parapet from which the archers shot their arrows. It seems quite within possibility that the main parts of the walls of the Keep are those which were in existence when Domesday was compiled by William the Norman. A small chapel on the S.E. side, which is referred to in Hals, adjoins the modern wall of the garden, and is the same which appears on the right in Lysons' view. Admiral Tucker offered every facility for thoroughly investigating every part of the castle, accompanying the party, and showing the collection of curiosities, chiefly ethnological, which his father placed in a museum formed by the two chambers over the gate. The Admiral also offered the hospitalities of his house to the visitors, but as a luncheon had been prepared at St. Germans, and it was necessary to get back to the station at Saltash, his liberal offer was courteously declined.

After luncheon at the Eliot Arms, St. Germans, the excursionists were accompanied by the Reverend Tobias Furneaux and his son, to his very interesting old Church, situated within the park, and adjacent to the mansion, of Port Eliot. This building exhibits the most important example of Norman architecture extant in Cornwall; whilst those parts of the original structure which had perished, have been replaced by aisles in two, if not more, subsequent styles of architecture. The enriched Norman of the 12th century is exhibited in the West Front, especially the lower stages of the two west towers, in a portion of the Nave, and in the North Transept arch. The eastern portion of the South Aisle is of good Decorated work; while the western portion of that aisle, and all that remains of the Chancel, are Perpendicular. The rest is modern.* The details of the Norman and Decorated parts are in an unusually perfect state, and prove the excellent care with which they have been preserved.—Ecclesiologists will probably agree in thinking that no part of the present Church can claim

* An illustrated Article, by Mr. J. Furneaux, on the architectural peculiarities of this Church, has been published in the *Transactions of the Exeter Diocesan Architectural Society*, Vol. III.

to be of a date coeval with the Cornish Episcopate, because the See was removed to Crediton in the reign of Canute, and the earliest part of the present fabric is of the middle of the following century. It is in fact the conventual Church of Bishop Leofric, and not the cathedral of King Athelstan. Most probably the beautiful Norman porch and tower arches were erected by Bishop Bartholomew, who was Bishop of Exeter 1161–1184, and whose tomb lies in the Lady-chapel of his cathedral. Dr. Oliver (*Monasticon Dioc. Ex.*) tells us that he favoured St. Germans Church so much as to be considered its second “founder.”

Through the kindness of the Earl of St. Germans, the excursionists were permitted to visit the interior of Port Eliot House; and subsequently, at the Railway Station, the President, gathering the excursionists around him, and producing a large ground plan of St. Germans Church, entered fully into the details of its architectural history.

Thus terminated the proceedings of a very agreeable and very instructive two-days' excursion; all who had shared its pleasures concurring in the hope that the *Royal Institution of Cornwall* will feel encouraged to repeat their attempts to popularize the objects for which it was founded, and assist in the investigation of those relics of by-gone ages with which this county abounds,—often the only history of them which we possess; and so, by instilling a feeling of reverence for them, in some degree to aid in securing them from injury or destruction.

FIFTIETH ANNUAL GENERAL MEETING

OF THE

ROYAL INSTITUTION OF CORNWALL,

Held on Monday, November 30th, 1868.

At this meeting there were present: Dr. Barham, one of the Vice-Presidents; Dr. Jago and Mr. Whitley, Secretaries; Mr. Tweedy, Treasurer; Mr. H. M. Whitley, Assistant Secretary; Rev. J. R. Cornish, M.A., Rev. J. Dungey, Mr. W. J. Henwood, F.R.S., Mr. G. F. Hudson, Mr. John James, Mr. H. Spry Leverton, Mr. W. E. Michell, Mr. S. Pascoe, Mr. H. O. Remfry, Rev. C. R. Sowell; and several ladies.

The Chair having been taken by Dr. Barham, and the Council's Report having been read,

It was resolved unanimously,

1.—That the Report now read be received, adopted, and printed.

2.—That the thanks of the Society be given to the Officers and Council for their services during the past year; and that the following gentlemen form the Council for the ensuing year:—

Mr. ROGERS, *President.*

Vice-Presidents.

MR. SMIRKE, V.W.,
MR. AUGUSTUS SMITH,
MR. ROBERTS,

REV. T. PHILLPOTTS,
MR. W. J. HENWOOD, F.R.S.

MR. TWEEDY, *Treasurer.*

JAMES JAGO, M.D., AND MR. WHITLEY, *Secretaries.*

Assistant Secretary, MR. H. M. WHITLEY.

Other Members.

MR. H. ANDREW,
C. BARHAM, M.D.,
REV. J. R. CORNISH, M.A.
MR. WILLIAMS HOCKIN,
MR. JOHN JAMES,

MR. H. S. LEVERTON,
MR. A. P. NIX,
MR. ALEXANDER PAULL,
MR. G. F. REMFRY,
MR. W. TWEEDY.

3.—That the cordial thanks of this Meeting be given to those gentlemen who have favoured the Society with Papers or other Communications in the course of the year, and also to the Donors to the Library and Museum.

4.—That the thanks of this Meeting be given to Dr. Barham, for the ability with which he has presided over the proceedings of this day.

THE COUNCIL'S REPORT.

In presenting to the members of the Royal Institution of Cornwall their Report for the year 1868, your Council would draw attention to the fact that it is now fifty years ago that this Society was instituted under the title of "The Cornwall Literary and Philosophical Institution"; its object being to stimulate research into Natural Philosophy, Natural History, and the antiquities and history of the County, and to form a nucleus around which the scientific men of Cornwall might concentrate. In the year 1821 the title of the Society was altered to that which it now bears, namely, "The Royal Institution of Cornwall"; and His Majesty King George the Fourth was graciously pleased to become its Patron. In the year 1828 a further advance was made by the acquisition of proper rooms to contain the Museum, which had now attained to considerable proportions.—In the year 1839 the Mining School was established under the auspices of the late Sir Charles Lemon, who was then and for a long time President. The necessity for the formation of such a school had been during many years apparent; and your Council regret that it did not then meet with the support that had been hoped for. A similar but less extensive attempt was made in 1854 and carried on, by the agency of this Institution, for two years, when it became merged in the present Miners' Association, with fair success. The last change of importance took place in the year 1864, when it was decided to issue a Journal, in lieu of the Annual Reports which up to that time had contained the Papers contributed and read at the Meetings of the Society. Your Council regret that

the measure of support accorded to the Journal has not been sufficient to warrant them in continuing its publication half-yearly, and that they have been obliged to revert to the annual issue.

In reviewing these fifty years past, your Council do so with satisfaction, knowing that the aim with which the Society was founded has been kept steadily in view; and they look forward with hope to a further progression in years to come.

The income of the Institution has again exceeded the expenditure; the balance in the hands of the Treasurer having been £34 2s. 1d. for 1867, and being £56 10s. 9d. The Mortgage Debt has been reduced from £245 19s. to £154 15s. 4d.

The principal event in the past year, in the history of the Society, has been the Excursion to Liskeard and neighbourhood, Trematon Castle, St. Germans Church, &c., on August 10th and 11th. So successful was it (more than 120 ladies and gentlemen joining the party) that your Council hope to make, in future years, excursions to other objects of antiquity with which our county is so thickly strewn. The benefits resulting from these visits, in their effect in preserving from mutilation or destruction the objects inspected, cannot be over-rated. Persons dwelling near, who care little for these memorials of antiquity, seeing numbers come from a great distance to view what they look at with indifference, learn to treat them in future with more respect. Your Council cannot but deeply deplore the loss of many of our ancient monuments, and would call on those landowners who may have any of these remains on their lands, to guard them from injury, with a jealous care.

During the past year the establishment of a Chemical Class, under the tuition of Mr. J. B. Collins, has been promoted by your Council in conjunction with the Truro Institution, and with a very fair measure of success; the number attending at our lecture-room, and that with much regularity, being between 20 and 30.

Your Council would here call attention to the Meeting of the British Association at Exeter next year, when we look forward to the production of Papers more particularly bearing on our local Antiquities, Geology, &c.

Although reduced to an annual issue, the Number of the Society's *Journal* last issued will, your Council trust, be found equal in interest to any of its predecessors. With a view to enhance the value of future Numbers, an Illustration Fund has been formed, in order to increase the excellence, and if possible the number, of the engravings.

During the past year the total number of free admissions to the Museum has been 6,259.

The meteorological observations have been carried on during

the past year by your Curator with his accustomed care and assiduity; and, as bearing on the Meteorology of the county, we have to record the establishment of a Government Observatory at Falmouth.

Since the last Annual Meeting, we have had to regret the loss, by death, of one of our oldest members—Sir Charles Lemon. From the foundation of the Society he took an active part in its management, and a great interest in its welfare; and he filled the office of President many years. The Reverend John Carne, well known to you from his contributions to the *Journal*, as well as Mr. Nankivell, who at one time was Secretary, and afterwards Treasurer, to the Society, and Dr. George Smith, who has been a valuable contributor to the literature of our county, and Mr. S. T. Williams, have also been removed from amongst us. Mr. John Michell, of Calenick, who died at a very advanced age a few days ago, was not a member of this Institution; but his name may properly be placed on our record, as his skill in practical chemistry, in which he was second to none in Cornwall, was always available for the service of the public. He was a pupil of the well-known Mr. Gregor, of Creed, the discoverer of Titanium.

Sir Charles Lemon bequeathed the sum of £100 to your Institution, which has been applied towards the liquidation of the Mortgage Debt.

Your Council recommend that, in consideration of the handsome contribution by the Town Council of Truro towards this Society's funds, the Mayor for the time being be, *ex officio*, a member of the Council, and that the General Rules of the Society be altered to that effect.

DR. BARHAM expressed regret that, owing to the absence of the President, Mr. John Jope Rogers, and of Mr. Smirke, the Vice-Warden, he was called upon to preside on that occasion. Mr. Rogers was unfortunately prevented from being present by the least satisfactory of all causes—ill health, which compelled him to resort to the South of France for the winter. Mr. Smirke had been obliged to return to London. Had the meeting been held at the usual time, Mr. Smirke would probably have been able to attend; but it had been found necessary to defer the meeting, in consequence of the elections. From Mr. John St. Aubyn, another Vice-President, a letter had been received stating that he should have attended the meeting but for the imperative necessity of his going to Exeter.

DR. BARHAM subsequently called attention to several of the following objects exhibited :—

Flint Implements, and Implement Forgeries, collected by Mr. Whitley at Le Grand Pressigny and elsewhere in France.

Examples of "Flint Jack's" Forgeries; from Mr. W. J. Henwood, F.R.S.

Fragments of Cinerary Urns found in Barrows on St. Brooke Downs; from Sir Paul W. Molesworth, Bart.

Cast of an ancient Inscribed Stone, formerly at the Castle at Liskeard.

A Volume of Travels, date 1623; from Colonel Browne, Trehavenne.

Specimen of Tin Ore; from Mr. T. Cornish.

Stone from Niagara and from the Giant's Causeway; from Mr. Angove.

A work on British Mosses; by and from Miss Tripp, of Altarnun.

The Stannary Laws of Cornwall, published in the 2nd year of Queen Anne; from Mr. W. G. Dix.

Copy of Inscription on a Stone at Camborne; from Mr. N. Hare, Liskeard.

Rubbing, by Dr. Alford, Dean of Canterbury, of the Sill Stone under an Early-English Doorway at Tresco Abbey Church, Scilly; from Rev. Dr. Bannister.

Drawings, by Mr. H. M. Whitley, of Inscribed Stone, at Caerwynen Cromlech, Cornwall; with Inscription on a Cromlech, at Macroom, Cork; Plan of St. Uliane's Chapel, Tintagel Castle; a Cross at Tintagel; a Cross at Tréslothan, Camborne; and Diagram of the Transit of Mercury on the 5th of November, as observed by Mr. H. M. Whitley, by projection on a screen in a darkened room.

DR. BARHAM mentioned that Mr. Whitley considered the collection of Flint Flakes in the Museum of this Institution to be now as complete as any west of Salisbury. Concerning the Inscribed Stone at Liskeard, Dr. Barham remarked that the inscription was in raised letters, and therefore, on the authority of Mr. Westropp, who stated that no Grecian, Tuscan, or Roman inscription had been cut in relief, the opinion that this inscription was Roman must be given up. There was no doubt that the inscription was in Latin; and probably it referred to some ancient story or legend connected with Liskeard.—Another inscription, seemingly of Saxon character, taken from a sort of altar-stone now in the grounds of Pendarves, and similar to the Leuitt stone at Camborne,

had been presented by Mr. Hare, of Liskeard, to whom the Institution was indebted for much valuable assistance in connection with the Excursions last August.

The following Papers were presented :—

On a new British Eschara, and on the occurrence, in Cornwall, of Sphenotracchus Wrightii, of Gosse.—By Charles William Peach, A.L.S.
Chronicles of Cornish Saints. (IV.—St. Sampson). By Rev. John Adams, M.A.

The Green Book of St. Columb.—From Mr. R. N. Worth, Plymouth.

A letter from Sir Paul W. Molesworth stated that the remains of the Cinerary Urns presented by him, were found by himself and his brothers in two Barrows on St. Breoke Downs, not far from the fine quartz menhir known as St. Breoke Beacon, the Pawton Cromlech, and other antiquities. In each barrow the fragments discovered were but a collection of potsherds; in one case not more than two or three pieces; in the other case the fragments were more numerous. They are of glazed ware, like our modern loam pitchers, and the fragments are sufficient to show the form and ornamentation of the vessel. These latter were found mixed with earth at the end of a large schist stone, about three or four feet long, three feet high, and one foot thick, standing erect, and facing north and south at the north side of the centre point of the Barrow.—One of the Barrows was described by Sir Paul Molesworth as composed of a heap of stones covered with a layer of clay and soil about three or four feet thick, and having apparently in its centre, at the level of the country, a trench east and west, flanked by a large slate stone standing on the north side of the trench, about four feet long, three feet high, and one foot thick. At one end of this stone, mixed with the in-fallen soil, were the fragments of earthenware. On the outside of the Barrow there was a considerable depression, or pit.

Concerning the Rubbing from Trescow Abbey Church, Dr. Bannister wrote as follows :

St. Day Vicarage, Scorrier,
 Nov. 28, 1868.

As I fear I may not be able to attend the forthcoming Meeting of the Royal Institution, I send for exhibition the Rubbing of the *men scryfa* at Trescow Abbey. As far as I am aware, this stone has never before been noticed. It is partly under the eastern jamb of the south doorway of the Abbey Church. The rubbing is not a good one, as the materials we had were not of first-rate order; as a consequence, it is difficult, if not impossible, to

make out the reading. It begins with a well-formed Cross, scarcely noticeable in the stone itself, but very plain in the early stages of the rubbing, though afterwards spoiled by the moving of the paper. The doorway is a plain but elegantly shaped Early-English Lancet, (not round-headed, as it is incorrectly represented in the engraving in Dr. Borlase's Essay on the Isles of Scilly). East of this doorway is a lofty arch, also plain Early-English; of two orders, chamfered, without capital or impost. This arch is represented by Dr. Borlase as belonging to a south transept which had disappeared. In his day, earth and rubbish had accumulated to a considerable height in and around the church. This has been removed by Mr. Augustus Smith from the interior and from the south side, and no mark or trace of a south transept is said to have been discovered. Dr. Borlase also marks a north transept. The bases of a north arch are noticeable, but this side has never been examined; indeed, earth and rubbish have accumulated here to about the height of the wall, and it is overgrown with plants and shrubs. Several chamfered stones of arches similar to those of the two perfect arches are lying about. Excepting these, there is nothing about the building itself to determine the date. The arch stones do not belong to the stone of the isles; the others in the building are the common granite. The stones in the arches are in no case bonded into the wall.—The inscribed stone is, if I remember aright, a lime-stone; and it appears to have been scrawled, apparently to render it less slippery to persons coming through the door. The doorway has part of a weather-moulding left over it.—While writing, I would mention another *men scryfa* discovered by me, at Whitestile, in Gwennap. Only one or two letters are decipherable. Built up in the stone hedge adjoining is half of the stone in which it was set, exhibiting a section of the socket.

The CHAIRMAN having called attention to some specimen pages of Dr. Bannister's "Glossary of Cornish Names," and to the prospectus of a new work by a "praiseworthy and trustworthy antiquary," Mr. Bottrill, the "Old Celt," upon the "Folk Lore of Cornwall,"—made some remarks upon the meteorology of the past summer, incidentally observing that Mr. Glaisher and Mr. Duncan, of the Royal Observatory, during their recent visits to Cornwall, had expressed their satisfaction with the arrangements for observation at the Institution. A full notice of the meteorology of the late summer would be given in the Annual Report of the Institution at the end of the year, but in the meantime he thought it would be interesting to notice one or two particulars respecting the unusual heat that occurred, and to contrast it with what was experienced at the Royal Observatory, at Greenwich, an account of which had been furnished by Mr. Glaisher. The summer, as they were aware, was very remarkable for its fineness, and it was nearly unique, owing to its high temperature. According to the account kept at the Royal Observatory, and furnished by Mr. Glaisher, the heat reached its highest extreme on the 22nd of July, the thermometer having registered on that day 96·6, a temperature which exceeded anything that had ever before been recorded during the 98 years over which the Greenwich

observations extend. In September the temperature was 92 in the shade, and in fact there had been no instance recorded during the last 98 years of so high a temperature as during the whole of the summer quarter. For the temperature to rise to 96 degrees in the shade in this country was unparalleled so far as they had any record. In Cornwall they had experienced another instance of the benefit which they derived from their proximity to the sea, as according to the records which they had kept at the Royal Institution during the last 31 years, they had no instance in which the temperature had risen as high as 90. The highest point reached here, this year, was 85 degrees in the shade, in July. So far as regarded extremes, therefore, the summer in Cornwall presented nothing peculiar; but when they came to the mean, they found that the past season was exceptional in Cornwall also. In May the temperature was 2.6 above the average; in June 2.2; in July 5.3; in August .3; in September 3.3; or an average of 2 7-10ths in excess of the 31 years over which the observations of the Institution extended. The mean temperature of the nights had also been high. With regard to the drying effect of such seasons, Dr. Barham pointed out that, as Mr. Glaisher had well observed, the effect of a hot summer was not to be taken by itself, but in conjunction with the rainfall of many months before, which was stored up in the ground, and drawn upwards as the heat increased. The autumn of 1867 it would be recollected was a wet one, and if the next month turned out only an average for December, the rainfall of 1868 would be two or three inches in excess of the average. If, therefore, there was a dry season in 1869, vegetation would not be seriously injured by it.

DR. BARHAM then read a letter written by Mr. Albert Way to Mr. Rogers, suggesting the collection of all the facts relating to the traces of the Romans in Cornwall, and making special allusion to certain "finds" of coins. With reference to the latter point, the Chairman observed that Roman coins found at Falmouth, and which were sold at a shilling each, had been only worth 2d. He thought they ought to have a good collection of coins, impressions where originals could not be procured, as one branch of the *Cornubia Romana* which Mr. Way suggested.

Dr. Robert Tweedy, Treasurer, in account with the Royal Institution of Cornwall. Cr.

1868.		1868.	
July 31.	£ s. d.	July 31.	£ s. d.
To Balance from last Account.....	34 2 1	By Taxes and Fire Insurance	7 19 4
Annual Subscriptions.....	86 4 0	Repairs	30 12 3
Ditto H.R.H. the Prince of Wales	20 0 0	Curator's Salary	32 0 0
Ditto Truro Town Council	20 0 0	Museum Expenses	8 3 8
Arrears of Subscriptions	9 19 0	Printing and Stationery.....	8 5 0
Rent from Library	20 0 0	Postages and Carriage of Parcels..	7 4 7
Visitors' Fees	2 16 0	Printing and Editing Journal	57 9 3
Sale of Journal and Reports.....	16 7 2	Sundries	0 14 9
Arrear due to Horticultural Society	0 10 6	Ray Society	1 1 0
Legacy from the late Sir Charles } Lemon, Bart.	90 0 0	Paleontographical Society.....	1 1 0
Ditto from the late Mr. Colliver ..	7 0 6	British Meteorological Society	1 0 0
Illustration Fund	2 10 0	Royal Horticultural Society	2 2 0
Ditto per Balance from Excursion..	6 3 4	Quarterly Journal of Science	0 10 0
		Interest on Mortgage Debt	9 15 4
		Loan Account, per Sir C. Lemon's } Legacy	90 0 0
		Ditto, Balance of Horticultural } Society	1 3 8
		Balance.....	56 10 9
			<u>£315 12 7</u>
Balance	56 10 9		

[Mem. Balance now due on Mortgage of Buildings, £154 15s. 4d.].

JOURNAL

OF THE

ROYAL INSTITUTION OF CORNWALL.

No. X.

APRIL.

1869.

I.—*Celtic Remains in Algeria.*—By CHARLES FOX.

I PUBLISHED some years since, observations on the cromlechs of Algeria, which were communicated to me by my late valued friend, Henry Christy, who was the first to investigate the so called Celtic remains in that region. I have recently, with Dr. Boujot, examined some near Guyotville, about fifteen miles west of the city of Algiers. Only a very few of the dolmens (or cromlechs) remain undisturbed. They are on a high plateau, on the border of the Ouadi H' Kalaah, and were once much more numerous. Mons. Berbrugger, a distinguished Archæologist of Algeria, informed me that several years ago he saw as many as a hundred there, and, about the centre of the group, what looked like an altar with three steps. At that period a thicket of wild shrubs made a close examination more difficult than it is now, since a colonist has roughly cultivated some patches of the ground; but he has also removed very many of the sepulchral remains. The few still visible are slabs (without marks of tools) $4\frac{1}{2}$ to 5 feet in length, resting—in some instances very irregularly—on four rough upright stones, less than 3 feet in height. Here and there, gaps below the cover are occupied by shapeless blocks of stone. The colonist led us to his hut, that we might see some bones which he had found a few days before in a dolmen, undisturbed previously. These were parts of three crania (one of them of a child) in too friable a state to admit of much

handling. The longest tibiae were shorter than those of a man of average height. The skulls appeared to Dr. Boujot and myself to be dolicho-cephalic; one of them was very thick in the occipital region. A small lower jaw was toothless and thin, from absorption by age. One imperfect calvarium reminded us of the Engis skull, which, my friend Dr. Tuke informs me, resembles one of which he has a plaster cast, supposed to be that of the Venerable Bede. There were no signs of cremation, and no flint implements; a fragment of coarse pottery and a wire-like piece of bronze, about $2\frac{1}{2}$ inches in length, having an obscure pattern worked on it, were found with the bones. On the opposite side of the ravine, there are many artificial caverns; some have fallen in, others have their entrances obstructed by rubbish; they probably were tenanted by the race that erected the dolmens for the reception of their dead. I could distinguish, far to the west, near the sea, the tomb of Juba II, 150 feet in height, which, like that of Syphax, seems to preserve (as M. Detourneux remarks) the traditional and national character of the sepulchres largely distributed throughout Algeria. M. Berbrugger shewed me a bronze fibula, in good preservation, found in one of the Guyotville dolmens. Mr. Ferrand, of Constantina, confirmed what H. Christy had told me, that the coin of the Empress Faustina,* which they found in one of the eighteen cromlechs (or dolmens) near that city, which were examined by them, lay with human bones in the black earth, and that in all probability the grave had never been disturbed. Was it the obolus for Charon, deposited between the teeth of the deceased? Colonel Feybè, of Bona, sent to the Scientific Institution at Algiers, twenty crania, which he had obtained from dolmens and similar tombs in that neighbourhood. On the eve of my departure from Algiers I had not time for more than a very cursory inspection of them, or of some of the proof sheets of Colonel Feybè's Memoir on these skulls, which he was about to publish. There are varieties in their characters, although mostly dolicho-cephalic: some have rather angular bosses on the parietal bones. Facts seem to lead to the conclusion, that through successive ages, different races

* In the time of Avitus, Emperor of the West, the tax gatherer would receive no coins but those of Faustina or the Antonines.

—or at least tribes—of men in North Africa erected those structures, (whether for burials or religious ceremonies), which in Great Britain, Ireland, and France, are ascribed to the Celts. If Druidical Vates were consulted by the Romans in Yorkshire, as late as the era of Severus, and in Gaul during the life of Diocletian, one cannot be surprised that those customary modes of burial should continue in use amongst the people whose ancestors had implicitly observed them, even until after the Christian Era, and that fragments of Roman columns should be built in with concentric layers of other stones, in steps, having on the summit slabs placed vertically to enclose the dead. These Bazinas (as the Arabs call them) are sometimes ten or twelve yards in diameter. Lieut. Payen has seen in Mount Aures and the Hodna thousands of cylindrical towers of regular beds of stone, generally surmounted by a large flat stone, under which, in the central kist, skeletons and utensils are found. The Arabs call these towers “Chouachat.” At Mount Daourouch, the hill sides are pierced with little chambers, generally cubic; the entrances to these were evidently shut by slabs or wooden doors; some still contain human bones and a greasy foetid earth. Circles of stones, menhirs as well as cromlechs, all of which specially remind us of similar monuments in this county, Wales, &c., are innumerable in Algeria. M. Detourneux shewed to me his “Two Letters to Monsieur Desors,” describing some of them, with accompanying sketches. He speaks of a dolmen at Tarf, resting on hewn stones, in the centre of a circle of rough ones, set upright; outside these is another circle of squared flat stones, which touch each other. Mons. Detourneux says the stones in avenues and squares are found by thousands on the N. East of the Hodna mountains and in the Bou Arredj section, and that Berber letters, such as are still used by the Touaregs, are seen on stones. He gives a copy of an inscription of four lines on a stone six feet high, the largest of a circle of seven, existing on the Cheffa plain, near the road to Bona. In another instance the inscribed stone is a solitary one. If the Berbers or Kabyles, 700,000 in number, who are the Highlanders of Algeria, no longer use a written language, or construct such monuments, they still erect “menhirs”—upright unhewn stones—as memorials of certain events. Eighty years ago they set up a stone named Tizi Ouquemmon, to celebrate the abolition of women’s right to

inherit, in the confederation of Aith Iatin. The Kabyles are not nomade, like many of the Arab tribes, but reside in huts, are diligent tillers of the soil, and have many workers in the metals and in pottery. The warlike Touareg tribes of the desert speak the same language, with a less admixture of Arabic words, and preserve some Berber inscriptions, viz., on a shield and bracelet. Its affinity with any known language is very obscure. Colonel Hannoteau, who has been living for several years at Fort Napoleon, in the centre of the curvilinear range of the lofty Jebel Jurjura mountains, has published a grammar of the Kabyle vernacular; a hasty inspection of it confirms one in the opinion expressed by Max Müller, that its connexion with the Semitic, or any other family, remains to be defined. The women are not veiled; their arms are tattooed, and on their foreheads may often be seen a mark, said to be that of the cross, a sign of the supposed religion of their ancestors before the Arab invasion. But as some of the stelæ which have Berber inscriptions have the form of the Phœnician votive or sepulchral stelæ, (of which I have seen many in the museum of Constantina, with the crescent of Ashtaroth), it is possible that the frontal mark may be the outline figure of a worshipper of Baal, as the sun, with both arms upraised. It is unquestionable that these emblems of Carthaginian worship were carved on christian tombs, (*vide* stones of Enchir ain Hechna), as well as D M, the “Diis Manibus” of the Romans. The sun and moon were invoked as judges, in oaths. In a Church at Carthage, which had been a temple of Astarte, Pagan ceremonies and worship were observed. Augustine says that the heathen, when asked to embrace christianity, replied, “Why should we leave the gods whom the christians worship with us.” But, unmixed with these reminiscences of heathenism, may be seen the christian monogram on sarcophagi, carefully preserved by the French. I observed the letters of one in relief, ten inches in length, cut on each end. A stone, nine feet in length, lying on a heap of stones between Setif and Zana, has this inscription, in letters about four inches long, in relief:—“DEI BEATA ☩ ET IN CHRISTO CONPARATA.” The letter N is inclined, and is perhaps a mistake for M.

Præcilius, supposed to have been a christian, prepared an epitaph on himself, of which I present a copy, inscribed in his

lately discovered family sepulchre and dwelling, cut out of the precipitous limestone rock on which Constantina is built. The mosaic pavement of the bath room and other parts, as well as of a round table, representing fish in a pond, are still in good preservation. There are several columbaria, and two large stone coffins of his wife and child on the floor. I saw there no Pagan symbol. But a much more precious vestige of christianity, is the record of five martyrs, "graven with an iron pen in the rock for ever." A Latin inscription of six lines commemorates these humble faithful men, who were gardeners, probably in the fertile vale below, where the rich leaves and flowers of the pomegranate now colour the landscape; they were tortured at Constantine, and put to death at Lambessa, probably in the reign of Valerian, or during the short persecution of Aurelian. The inscription is on a smooth piece of the cliff, about nine feet above the sloping bed of rubbish over which one scrambles to read it. May no human hands attempt to encumber by art the simplicity of this touching record!

Epitaph on Præcilius, whose mausoleum, cut out on the face of the precipice on which Constantina (ancient Cirta) is built, has lately been discovered.

Hic ego qui taceo versibus mea(m) vita(m) demonstro.
 Lucem clara(m) fruitus et tempora summa,
 Præcilius, Cirtensi lare, argentarium exhibui (sic) artem.
 Fydes (sic) in me mira fuit semper et veritas omnis.
 Omnisbus (sic) communis ego : cui non misertus ubique?
 Risus, luxuria(m) semper fruitus cum caris amicis,
 Talem post obitum dominae Valeriae non inveni pudicae (sic) /
 Vitam ; cum potui gratam, habui cum conjuge sanctum.
 Natales honeste meos centum celebravi felices.
 At venit postrema dies, ut spiritus inania mempra (sic) reli(n)quat ;
 Titulos quos legis vivus mee (sic) morti paravi,
 Ut voluit Fortuna ; nunquam me deseruit ipsa.
 Sequimini tales : hic vos ex(s)pecto venita(e) (sic).

II.—*Chronicles of Cornish Saints.*

III.—S. CONSTANTINE.

By the REVEREND JOHN ADAMS, M.A., Vicar of Stockcross, Berks.

Read at the Spring Meeting, May 22, 1868.

ALTHOUGH no ancient memoir of this Saint has been handed down to us, we are enabled, from the many scattered notices of him found in Irish, Welsh, and Scottish hagiologies, to construct the following brief outline of his life.

He was the son of Cador, Duke of Cornwall, and a nephew of the renowned King Arthur. During his early life he was a soldier, and one of

“The goodliest fellowship of famous Knights
Whereof the world holds record.”

In *Harding's Metrical Chronicle* we are told that

“Duke Cador's sone of Cornwall bounteous
Afore had been one of the table rounde
In Arthures time.”

Nevertheless, if we may credit the fierce invective against him which Gildas wrote, his early life was stained with gross iniquity. When his uncle had received his death wound on the field of Camlan, A.D. 542, he is said to have nominated Constantine his successor; and the British forces continued for several years afterwards to fight under his banner against the Saxon invaders. Some writers tell us that, to secure his supremacy, he cruelly murdered the two sons of Mordred, who, from their father's position and their relationship to King Arthur, might, he feared, lay claim to the throne. Other writers, however, intimate that those young men stirred up rebellion against him, making common cause with the Saxon foe, and thus bringing down just retribution upon themselves. “He was,” says Fabyan, “by the two sonnes

“of Mordred grievously vexed, for so myche as they claymed
 “the lande by the ryghte or tytle of theyr fater. So that
 “betwene hym and them were foughten many and sundry
 “bataylles.” At length the rebels were completely vanquished,
 and became fugitives. One of them fled to Winchester, and took
 refuge there in the Church of S. Amphibalus, but was butchered
 by Constantine himself before the altar, whilst the other escaped
 to London, was captured in a monastery, and immediately put to
 death. It was for these sacrilegious crimes that Gildas vehemently
 denounced him in his well-known Epistle, accusing him of murder,
 perjury, and adultery, and designating him a tyrannical whelp of
 the unclean lioness of Damnonia.* It has been supposed that, in
 consequence of this denunciation Constantine was brought to a
 due sense of his wickedness, and that, filled with remorse, he
 abandoned his kingdom and withdrew into private life. The
 Aberdeen Breviary, however, which contains a Collect and Lessons
 for his Feast-day, March 11th, informs us that his retirement was
 caused by the untimely death of his wife,† who was a daughter of
 the King of lesser Britain; whilst the “Buik of the Chronicles
 of Scotland” gives the following more explicit account:—

“Quhen he saw the greit calamitie
 And seruitude tha Britis war in brocht,
 He traistit weill the greit falsheid tha wrocht
 In the defrauding of the King Modreid,
 Quhilk richteous was till Uter to succeed;
 Into his mynd thairfoir he dred so soir,
 That was the caus that tha war puneist foir,
 Within himself richt havelie he buir,
 So wranguslie he take on him sic cuir,
 In the defrauding of the richteous air.
 Thairfoir his ladie, plesant and preclair,
 The quhilk he louit our all erthlie thing,
 And sonis als quhilk after him suld ring,
 The hand of God departit hes him fro,

* “Immundæ lænæ Damnoniæ tyrannicus catulus Constantinus.”

† “Constantinus, paterni regis Cornubiæ filius, regis Britanniæ minoris
 filiam duxit in uxorem, sed ecce! sinistrante fortuna moritur regina; de
 eujus mortis dolore cum rex consolari noluerit, filio suo regnum et ipsius
 regimen consultius commisit et tradidit.”

Breviarium Aberdonense, folio lxxvii.

And left himself richt destitute in wo.
 Syne quhen he knew the caus quhy and quhairfoir,
 Quhat wes the caus he puneist him so soir,
 Richt quyetlie on to Ybernia,
 Into ane bark he passit on ane da;
 Kinrik and Croun and all the world forsuik,
 And syne on him religious habit take.”

So completely did he sever himself from the world, that he was supposed by some to have been killed in battle; whilst others affirm that he was murdered by Conan, his successor.* But some say, writes Florilegus, that he became a monk, and died only in a religious sense (*et sancte demum mortuum*).† This latter hypothesis is no doubt the correct one, and it receives confirmation from the following passage in a Life of St. David, written in the 12th or 13th century: “When the fame of David’s holiness was spread “abroad, kings, princes, and men of the world left their posts and “sought his monastery. Hence it came to pass that Constantine, “King of the Cornishmen, forsook his kingdom, and submitted “his stubborn neck, which had never before been bridled, to the “yoke of humility in the cell of this father, and there he remained “a long time performing faithful services.” ‡

From Wales he removed to Ireland, no doubt for the sake of greater seclusion than he could find in the community at Menevia, “and there for the love of Christ,” relates Hector Boethius,|| “he “laboured for some time in the service of a miller, disguised as a “poor man, till at length he was induced by a monk, to whom he “had made himself known, to shave his head and devote himself

* “Nec cum pace fuit, quoniam cognatus in illum
 “Prælia dira movens violavit cuncta Conanus;
 “Proripuitque sibi regiones, rege perempto,
 “Quas nunc debiliter nec cum ratione gubernat.”

Life of Merlin, L. 1132—1136.

See also *Geoffrey of Monmouth*, Book xi, Chap. xv.

+ Alford. *Annales Ecclesiæ*, A.D. 545. Tom. II.

‡ “Audita itaque boni odoris fama David agii, reges, principes, seculares deserunt sua regna, ejusque monasterium petunt; hinc contigit ut Constantinus, Cornubiensium rex, suum desereret regnum, ac indomita ante suæ elevationis colla humilitatis obedientiæ in hujus patris cella subjugaret. Ibiq; diu fidei conversatus servitio.”

|| *Historiæ Scotorum*, l. 9.

“to a religious life in a monastery, where he lived with such piety and devotion that he became a pattern of all virtues to the rest of the monks, and after some time was sent by the bishop of that place to instruct the people of Scotland in the faith of Christ.” Of his missionary labours in Scotland no narrative has been preserved; but there are allusions to them in the Aberdeen Breviary, Fordun’s *Scotichronicon*,* and other works; from which we gather that he was a fellow-labourer with S. Columba, that he founded the Church of Govan on the Clyde, converted the inhabitants of Cantyre to Christianity, and at length in a good old age died a martyr at the end of the 6th century, and was buried in his own Church at Govan. “He is deservedly numbered amongst the Saints of both provinces,” says Colgan, “because in one he studied as a sedulous disciple, and in the other he laboured as a strenuous teacher and promoter of piety.†

With regard to his ministry in Cornwall we have no historical evidence whatever. Nevertheless, local memorials remain that he was not unmindful of the spiritual needs of his native land. In the Deanery of Kirrier there is a parish which, from time out of mind, has been called by his name; and, until recently, there were some crumbling ruins on the shore of St. Merrin, near Padstow, known as St. Constantine’s Chapel and Well.‡ In both those places we have, as it were, footmarks of the Saint, and witnesses of his personal labour and christian zeal; for it may be laid down as a general rule, as we have already stated in the

* “Contemporaneus fuit S. Columbæ S. Constantinus rex Cornubiæ, qui, relicto regno terreno, Regi cœlesti meditari cœpit, et cum S. Columba ad Scotiam pervenit; Fidem Scotis prædicavit, et Pectis. Monasterium fratrum in Gouane extruxit, juxta Cludum, quibus ipse Abbas præfuit. Totam terram de Kentire convertit, ubi ipse Martyr, pro fide, occubuit; et in suo monasterio, apud Gouane, sepelitionem accepit.”—*Scotichro.*, iii, 26.

† “Et merito inter utriusque Provinciæ numeratur sanctos, qui quum in una sedulus discipulus edidicit, in altera strenuus doctor edocuit et propagavit pietatem.”—*Acta SS. Hiberniæ*.

‡ “Adjoining St. Merran or Harlyn Warren was in ancient times a village with a chapel, or, as it is said, a parish church, dedicated to St. Constantine; some ruins of this building still remain, consisting of part of the east end, some broken arches and pillars, and a considerable part of the tower; a richly ornamented aisle is said to have been standing till about the year 1780.”—*Lysons’ Cornwall*, p. 226.

“Near this church is yet extant St. Constantine’s Well, strong built of stone, and arched over.”—*Hals*.

Chronicle of St. Cuby, that whenever an ancient church bears the name of a British Saint, that Saint was its founder; churches only which owe their origin to monastic institutions being an exception to this rule, and sometimes deriving their names from that of the parent monastery. We may believe then that on the site of the Parish Church of St. Constantine, as well as on that of the old chapel on the sands of St. Merrin, oratories of the Saint himself once stood. At what time of his life he occupied those places, we have not sufficient data to determine; but we are told in an old Life of S. Petrock that, on his return to Cornwall, a certain rich man called Constantine, who lived in the vicinity of the Saint's hermitage, was restored to health by his prayers, and afterwards became a christian teacher.* May we not venture to identify this Constantine with the Saint of that name, and suppose that he built those oratories immediately after his conversion, and before his departure to Ireland? It may be that he was attracted to the coast of St. Merrin by its contiguity to Petrock's abode at Padstow; and, as regards the other centre of his ministerial labours in the Parish which still preserves his name, there could have been no spot in his native land more likely at that time to kindle the interest and zeal of a courageous follower of CHRIST, for it was one of the strongholds of Druidism, and on the bleak granite downs in its vicinity there were many druidical monuments, which in those remote days were high places of superstition.†

* "Quadam die [Petrocus] vidit cervum ad se fugientem, quem Constantini cujusdam divitis servi venatores cum canibus sequebantur. Hunc sanctus pietatis affectu conservavit illæsum, et venatores, cervum sub tutamine Sancti tangere verentes, rem Domino per ordinem retulerunt. Qui indignatus, et acri ira permotus, cum Dei servum gladio ferire niteretur, subito stupore totis membris dirigit, quousque humilitatum interventu militum, piis Sancti precibus persolvit; et sibi et viginti militibus suis fidem Christi docens, ex tyrannis mites et ex paganis reddidit Christianos.

Vita S. Petroci; Acta Sanctorum. June 4th.

† Borlase describes three remarkable stone monuments in this Parish. "In a village call'd Mên-Perhen," he says, "in Constantine Parish, there stood about five years since a large Pyramidal Stone, twenty foot above the ground, and four foot in the ground; it made above twenty Stone Posts for gates, when it was clove up by the Farmer, who gave me this account."—*Antiquities*, p. 156. Ed. 1754.

He tells us also that he observed in the same village a stone of a very uncommon shape, somewhat resembling a Cap, or the Greek letter Omega. "It was 30 feet in girt and 11 feet high," and the ground around it appeared

Doubts have been thrown upon the identity of the Cornish Constantine with the Saint of that name who toiled and died in Scotland at the close of the 6th century.* But all the best authorities concur in designating the Scottish Constantine as the son of Cador, Duke of Cornwall; and the identity receives further confirmation from the fact that the Festival of the Saint in the Calendars both of Scotland and Ireland is March 11th; and in the Cornish parishes abovementioned his feast is still kept on the Sunday nearest to that day.

Fuller's quaint remarks on the constant migrations of the early saints may be fitly appended to this imperfect narrative of Constantine's wanderings:—"Most of these men," he says, "seem born under a Travelling Planet; seldom having their education in the place of their nativity, oftentimes composed of Irish infancy, British breeding, and French preferment; taking a coule in one country, a crozier in another, and a grave in a third; neither

to have been the site of walls or houses. Perhaps this stone also has before now been utilized for gate posts!

But the most remarkable monument in this Parish is the gigantic Tolmen known as the "Mên Rock." "It is one vast oval Peble, plac'd on the points of two natural Rocks, so that a Man may creep under the great one, and between it's supporters, thro' a passage, about three feet wide, and as much high. The longest diameter of this Stone is 33 feet, pointing due North and South; 14 feet 6 deep; and the breadth in the middle of the surface where widest, was 18 feet 6 wide from East to West. I measur'd one half of the circumference, and found it, according to my computation, 48 feet and half, so that this Stone is 97 feet in circumference, about 60 feet cross the middle, and, by the best informations I can get, contains at least 750 ton of Stone. Getting up by a ladder to view the top of it, we found the whole surface work'd, like an imperfect, or mutilated Hony-comb, into Basons."—*Antiquities*, p. 166. Ed. 1754.

This venerable monument is now, alas! overthrown, and lies at the bottom of a quarry which had been suffered to encroach upon its very foundations. In the spring of this year one of the granite rocks upon which it rested was blown up with gunpowder, and the majestic old Tolmen, which had been an object of wonder and curiosity for two thousand years, fell before the cupidity of the nineteenth century.

"Quid non mortalia pectora cogis,
Auri sacra fames!"

* Haigh conjectures that the Constantine who abdicated his throne, whose conversion is recorded in the Annals of Cambria, Ulster, and Tighearnach, who sojourned in St. David's monastery, and subsequently evangelized the Picts of Cantyre, was a son of Muircheatach, an Irish King who was banished from his own country and reigned for seven years in Britain; but his conjecture is supported by no historical evidence whatever.

The Conquest of Britain by the Saxons, page 359.

“bred where born, nor beneficed where bred, nor buried where
“beneficed ; but wandering in several kingdoms. Where
“there be many guests and little meat, the same dish must go
“clean through the board ; and Divine Providence ordered it that
“in the scarcity of preachers, one eminent man, travelling far,
“should successively feed many countries.”

III.—*Chronicles of Cornish Saints.*

IV.—S. SAMSON.

By the REVEREND JOHN ADAMS, M.A., Vicar of Stockcross, Berks.

Read at the Autumn Meeting, November 30, 1868.

IN the life of S. Petrock the name of S. Samson incidentally occurs as that of a hermit who occupied a cell somewhere in the neighbourhood of Padstow, and who was highly esteemed for his zeal and holiness. Several memorials of this Saint's connection with Cornwall still exist in the county. There is a parish in the Hundred of Powder still called by his name. It is also designated Golant, a word compounded of two Cornish words,—*Gol*, holy, and *Len*, an enclosure; and this probably was its earliest name; but in the 14th century we find it called S. Samson's;* and in subsequent times, when the sacred spot became the site of a Parish Church, the name of the holy man, who in former times had hallowed the place, was given to the Church, and Golant thenceforward became S. Samson's. The parish of South-hill also has a Church dedicated to him, and in ancient times it was known as S. Samson's de South-hill. One of the Scilly Islands too has from time immemorial borne his name; leading us to conjecture that it also was one of his traditional abodes. Furthermore, there was at one time a chapel called S. Samson's on the site of Place House, near Padstow;† and that chapel probably occupied the actual spot of the hermitage or oratory, where S. Samson dwelt at the time of Petrock's visit. These local traces of Samson entitle him to a place amongst the Cornish Saints, and give us an interest in the legendary accounts of him which have come down

* See a writ directed to the Sheriff of Cornwall, for levying a subsidy of £50,000, granted to King Edward III.—*Carew's Survey of Cornwall*, 442. Ed. 1811.

† *Davies Gilbert's History of Cornwall*, vol. iii, 281.

to us. Concerning most of those Saints but little can be said, for the simple reason that but little is known; but in regard to S. Samson there is abundance of information, such as it is, and the difficulty lies, not in the poverty of materials, but in disentangling facts from a mass of fictions in which they have been enveloped. There is hardly one of the hagiologists who has not given a sketch of Samson's life. Capgrave, Ussher, Boscius, Alford, Baillet, Vincentius, the Compiler of *Liber Landawensis*, and many others, have narrated the current legends concerning him. Moreover there are several independent manuscript Lives of him still in existence, all of which are, however, more or less overloaded with *incredibilia*. The most ancient Life, and that which was no doubt the main source of all subsequent accounts, may be found in Mabillon,—*Acta Benedictorum*, *Sæculum* i, 165; and also, in a corrected form, in the *Acta Sanctorum* of the Bollandists, July 28. It was written at the request of a certain Bishop Tigerinomalus; and the author, who seems to have been a Gallican monk of the generation immediately succeeding that of the Saint, adduces strong reasons for the authenticity of his narrative. "I wish it to be understood," he says, in the preface, "that these words are not put together thoughtlessly and rashly, or from confused and unauthorized rumours; but that they consist of information which I derived from a certain religious and venerable man, who resided for about 80 years in a monastery which S. Samson himself had founded beyond the sea, (*i.e.* in Britain), living a catholic and religious life, in times most approximate to those of the Saint, and being himself a cousin of S. Samson, and a deacon; and that no doubts may be thrown upon the veracity of my words, I call CHRIST, the Saviour of us all, to witness that I have not undertaken to hand down this very brief narrative to posterity from any fallible or uncertain conjecture of its truth, but from the statements of most holy and thoroughly competent men, and also from most accurate and elaborate documents, which I found in the same monastery, written in a true and catholic spirit, by the above-mentioned deacon."* Here then

* "2. Primo autem omnium credi a me vos volo, quod non juxta adinventiois mee temeritatem, nec juxta inordinata et incomposita audita, hæc verba collecta sunt; sed juxta hoc quod a quodam religioso ac venerabili sene, in ejus domo, quam ultra mare ipse solus Samson fundaverat, ille per

we have a biography of Samson which lays strong claims to authenticity, a biography written at the beginning of the seventh century, and within a few years of his death, embodying too an older document, drawn up by a kinsman and fellow-labourer of the Saint. Unfortunately, however, there is much in the work which cannot be reconciled with those claims. There are, for example, many strange stories of miracles wrought by Samson, which are manifestly as fabulous as the adventures of Jack the Giant Killer. But those fictions do not invalidate the genuine basis of the narrative. They are probably additions of a later age; for, if one may judge from the smooth and flowing style in which they are written, they could not have proceeded from the same hand which penned the rugged Latin of the Preface and some historical parts of the biography. As the Gallican monk adopted and expanded the document which he found in his monastery, so, in a subsequent generation, we may suppose some hagiologist clothed the rude work of the old monk with such traditional or fictitious matter as would give it a place amongst the current literature of the middle ages. In the Life before us then we may regard the supernatural stories as a mere excrescence, or as resembling the fanciful pictures which illustrate many a modern book without detracting from the veracity of its narrative; and, where no authority is specified for any statement in the subjoined sketch, it may be assumed that we are following the historical outline contained in this ancient Life.

Samson was born in the province of Demetia or Dyved, which comprised the western division of South Wales, near the close of the fifth century. His parents, Ammon and Anna by name, remained childless for many years after their marriage, and believed that he was given to them by GOD, in answer to their

octogenarios fere annos catholicam, religiosamque vitam ducens, propissimisque temporibus ejusdem supradicti sancti Samsonis mater ejus tradidisset avunculo suo sanctissimo diacono (qui et ipse diaconus consobrinus esset sancto Samsoni) mihi veraciter affirmabat Et ne quibusdam ad dubia veniant ea quæ huic stilo tradidi, Christum omnium nostrorum Salvatorem ac testem habeo, quod non pro aliqua humana, vel fallaci conjectura, sed pro his quæ apud sanctissimos ac compertos admodum viros, necnon et pro sedulissimis ac pulcherrimis litteris, quas catholice ac indubitanter a supradicto diacono, in eodem monasterio conscriptas reperi, hæc paucissima admodum verba memoriatis litteris tradere conatus sum."

Prefatio.—Ad Tigerinomatum Episcopum.

prayers for the blessing of a son. At an early age he was sent to S. Iltutus, to be educated by him in the famous monastery of Llanilltut, in Glamorganshire. There he remained till he had grown to manhood, studying with great diligence, and constantly rising higher and higher in spiritual attainments and in the love of the brethren. At the request of Iltutus, he received both deacon's and priest's orders from the hands of Dubricius, Archbishop of Caerleon," "a dove on each occasion," says the old writer, "descending from heaven, and resting on his right shoulder." There were in the monastery two nephews of Iltutus, one a presbyter, and the other the butler of the community, who were envious of Samson's popularity, and, fearing that he would be chosen Abbot after the death of their uncle, they made an attempt to poison him; but, through Divine interposition, their evil design was frustrated; for though he drank the deadly cup which they had prepared for him, he received no hurt. One of them subsequently confessed the crime to the Saint, and with grief and tears besought pardon. Soon afterwards, when the monastery had become famous throughout the land, Samson withdrew from it, with the consent of the Abbot, to a smaller and stricter fraternity, which had been recently established on a neighbouring island by an aged presbyter named Piro. He was welcomed by the old man as though he were an angel sent from God, and spent his time there in religious exercises and manual toil by day, and in profound study of the Scriptures by night. An incident, however, is recorded, which is very inconsistent with the ascetic character of this monastery. In the life before us it is tenderly characterized as a "*res inopinata*"; but all subsequent biographers of the Saint seem to have taken a graver view of the matter, for they pass it by in silence, none of them making any allusion whatever to it. "One gloomy night," so runs the narrative, "the venerable Abbot Piro took a solitary stroll into the grounds of the monastery; but, what is still more serious," adds our author, "he was in a very tipsy condition, and tumbled headlong into a deep pit. The brethren were alarmed by his loud cries for help, and, hurrying to the spot, they dragged him out of the hole in a hopeless state, and before morning he was dead." Thereupon Samson is unanimously elected Abbot of the monastery,

and holds the government of it a year and a half.* He then goes to Ireland with some eminent and learned men of that country, who had visited him on their homeward journey from Rome; and, after spending a short time there, preaching the way of eternal life to all who came near him, he returns to his own monastery on the island. Finding there his father and his uncle excelling in devotion all the other brethren, he sends the latter to take the management of a monastic institution in Ireland, and departs with the former and two other companions to a wide desert on the shores of the river Severn. Leaving his fellow travellers there in a castle which they had discovered, he goes further into the wilderness, and dwells in a secret cave which had an opening towards the east; and there he lives a life of great abstinence, holding intercourse with angels, and every Lord's day visiting the three brothers whom he had left in the castle. "At the time that I was in Britain," says the old writer, "the place was held in great reverence, and an oratory was built on the spot where holy Samson was wont to say mass and hold communion with CHRIST every Sabbath day." We are next told, that at the request of a synod, Samson became Abbot of a monastery founded by S. Germanus, and that whilst he held that office he was consecrated Bishop by S. Dubricius. In harmony with a practice of the Celtic Church, he seems to have been raised to the episcopate more on account of his distinguished merits than with a view to his exercising episcopal functions in any particular place. Shortly afterwards it is revealed to him that GOD has predestined him to depart from his own country, and to become a mighty pillar of the Church in a land beyond the sea. The Gallican martyrology, however, informs us that the immediate cause of his migration was to escape from a savage Saxon tyrant who had invaded his neighbourhood,† whilst other authorities state that he was driven away by a pestilence.‡ Bidding farewell to his weeping relatives

* His Life in the Book of Llandaff says three years and a half.

† Samson, Saxonem tyrannidem fugiens, versus minorem Britanniam, ut tutius Christo serviret, pedem retraxit.

Martyr: Gallic 28 Nov: quoted by Alford, *Annales*, vol. ii, p. 68.

‡ Surius, in his "Vie de Saint Sampson," says that a strange plague—"étrange Contagion"—having swept off the greater part of his flock, and the war with the Saxons having exterminated the rest with fire and sword, he fled to Brittany, in obedience to a divine command.

and disciples, he crossed the Severn sea with his cousin S. Maglorius and many other companions. His destination was Brittany, but on his route he appears to have sojourned awhile in Cornwall. Tradition accuses him of carrying off with him into Brittany all the manuscripts which he could collect. "Scarce am I reconciled to this Samson," says the Church historian, Fuller, "for carrying away with him the monuments of British antiquity. Had he put them out to the Bank by procuring several copies to be transcribed, learning thereby had been a gainer, and a saver had he only secured the originals: whereas now her loss is irrecoverable, principal and interest, Authenticks and Transcripts are all embezzled; nor is the matter much whether they had miscarried at home by Foes' violence, or abroad by such friends negligence." That there is some ground for this complaint, may be inferred from a statement in the life before us, to the effect that, on Samson's arrival at the coast, apparently the coast of Cornwall, he dismissed the ship, and procured a waggon to carry across the country the holy vessels and volumes which belonged to him. He also employed two horses to draw his own car, which he had brought with him on his return from Ireland.* On his journey he passed by a certain village called Tricurium, where he saw men worshipping, with profane rites, an idol standing on the summit of a lofty hill. Taking two companions with him, he hastens to the spot, and gently admonishes the idolaters and Gedian their chief, that instead of adoring an image, they ought to worship the one GOD, Who created all things. "In that mountain," says the narrator, "I have myself been, and have adored and felt with my own hand the sign of the cross, which holy Samson himself engraved with iron on a stone which stands there." After this Samson retires to a cave near a certain river, and there lives a celestial life, constantly applying himself to prayer and fasting. Two puerile miracles are connected with those incidents; one the restoration to life of a boy who had fallen from his horse in the idolatrous village, and had broken his neck, and the other the destruction of a huge and venomous

* "Plaustrum ordinans ad portanda spiritualia utensilia sua atque volumina, suumque currum in duobus imponens equis, quem de Hibernia apud se asportaverat patriam pertransiens, Domino comitante, iter suum ordinavit."

serpent, in the cave which the Saint afterwards occupied. But for the credit of the narrative, the remark which was made at the beginning of this sketch must be borne in mind, that the miracles are written in a different style from that of the historical incidents, and may therefore be supposed to have formed no part of the original Life.* It was, we may conjecture, at this period that Samson and Petrock met, as recorded in the life of the latter; and assuming that Samson was consecrated by Dubricius, about the year 550, a few years before the death of the venerable Archbishop, and that he arrived in Cornwall a year or two afterwards, the time of his abode there would just coincide with that of Petrock and Constantine; so that we may suppose those three holy men to have often held sweet counsel together on Cornish soil. Memorials of their Oratories still remain, contiguous to each other, on the northern coast, bearing silent witness of their christian fellowship and their devotion to GOD. How long Samson dwelt in Cornwall, or whether he visited it on more than one occasion, we are not informed; but we are told in *Liber Landavensis* that he directed his people to build a monastery near his cave, and that when he departed from the country he left his father Ammon

* As an example of the difference in style, compare the following narrative of one of the miracles above-mentioned, with the extract from the preface given at page 90. Sanctus Samson dixit: Quid est hoc? Comes respondit, habemus quemdam agrum egregium a quodam venenoso ac pessimo serpente occupatam, hic vero serpens in quadam impenetrabili spelunca habitat propemodum duos pagos delens, milliumque hominum habitare inibi licet. Quo audito sanctus Samson intrepide dixit: In nomine Domini nihil dubitantes eamus; si vero creditis, vestris videbitis pculis in hoc serpente Dei magnalia. Indubitanter vero inito consilio, abierunt cum sancto Samson. Juvenis autem qui nuper suscitatus fuerat, clericatum promittens, secutus est eum. Sanctus itaque Samson præcedebat exercitum, et puer ille, qui nuper fuerat suscitatus, ducatum præbebat ei, usque quo altera die post noctem illuminante, illud horribile antrum, ubi serpens erat, suis viderunt oculis. Tum puer, Electe, inquit, Dei, an vides, antrum ultra flumen in quo serpens est? At ille in Domino fisus, exercitui pariter ac suis monachis inibi manere jubens, ille solus, immo et Deus cum illo, ultra flumen transivit, suo puero insequente eum, venerunt pariter ad ostium terribilis antri. Sanctus vero Samson inspiciens puerum insequentem eum atque subridens, ita dixit: confortare, frater, et viriliter age. Isque subjuxit: Quem timebo, Electe Dei? Deus tecum est. Præcipiens vero illi, ut paulo minus staret, ille audenter antrum ingressus est; serpens vero ut vidit eum valde intremuit, volens rotare ad suam caudam furibunde rodendam, ille vero confestim apprehensam lineam zonam, qua erat accinctus, confestim in collo ejus imposuit, ac juxta se trahens, de quadam eum grandi altitudine præcipitavit, præcipiens, in nomine Jesu Christi ne amplius viveret."

and his cousin in the monastery. On his arrival in Brittany, he found the inhabitants in great misery. Jonas, their native prince, had just been murdered by a tyrannical governor, Commotus by name, who had usurped the province; and his son Judual had been sent away as a captive to King Hildebert. Moved with pity, Samson hastened to the king, hoping to redeem Judual from prison. After sundry perils and supernatural deeds he gains his object and returns to Brittany with the young Breton prince. They enlist an army on their homeward route, and enter the country prepared to do battle with the usurper. At one blow the foe is vanquished, Samson praying and fasting, and Judual fighting at the head of his warriors. After this, Samson receives great honour and large gifts from King Hildebert, and spends the rest of his days in a monastery which he founded at Dole. So ends his history as given in the oldest Life, and in *Liber Landavensis*. But we gain one more glimpse of him in his old age. He was present at the 3rd Council of Paris, held A.D. 557; and so great was his humility, we are told, that he declined to occupy the luxurious apartments which the king had prepared for him in the palace, preferring to lodge in the neighbouring monastery of S. Vincent; and his name is thus subscribed last but one in the list of fifteen bishops who signed the decrees of the council, "Samson, a sinner."* Modern writers speak of him as having been at the beginning of his Episcopate Archbishop of Menevia, afterwards Archbishop of York, and subsequently Archbishop of Dole. But none of his early biographers give him those designations, nor is there a tittle of evidence that he was ever more than a missionary bishop. His name appears in no authentic catalogues of the prelates of Menevia; whilst the Samson who was Archbishop of York in the sixth century, was a brother of Gildas, and quite a different person; and with respect to Dole, this fact settles the question of his connection with that see—that until the time of Nomenoius, in the ninth century, there was no bishopric of Dole in existence.† The truth probably is, as one of his biographers

* "Samson peccator episcopus consensi et subscripsi."

Labbe, t. v, Col. 818.

† "En effet, il semble que S. Samson soit demeuré évêque regionale toute sa vie, et que Dol n'ait été connu dans l'église en ces siècles que pour un monastère, dont il arrivoit assez souvent que les abbés étoient évêques sans diocèse."—*Baillet. Vies des Saints, Tom. xv, 396.*

intimates, that he went to Brittany to preach the gospel to his own countrymen, who had settled there in great numbers as refugees, and that he exercised episcopal functions amongst them whilst he lived in his monastery at Dole. The story too of his carrying with him the pall from Menevia, and so depriving subsequent prelates of that see of their Archiepiscopal dignity, is utterly groundless; though it has been repeated by one writer after another for hundreds of years past, and is in modern books almost the only thing commonly stated in connection with Samson's name. In no ancient Life of the Saint is there any allusion to the story; nor can it be shown that any British bishop before the time of Augustine ever received a pall from Rome, or that the symbol was even known in the British Church. Moreover, if Samson had been invested with it, and had abstracted it from Menevia, it would not have lessened the dignity of his successor, because every Archbishop had a new pall sent to him by the Pope on his consecration, and the old pall did not pass from bishop to bishop in succession.* The fiction may be traced to the twelfth century, and seems to have been invented to account for the disappearance of the metropolitan title from S. David's, and to make it appear that the early British Church was subject to that of Rome. Welsh authorities tell us that Samson returned from Brittany to Wales at the close of his life, and was buried at Lantwit;† and there is still in existence a remarkable monument which lends plausibility to this tradition. It consists of the stone shaft of a cross, nine feet in height, which was disinterred in the church yard of Lantwit, in the year 1789, and has on it this inscription in Latin:—"In the name of GOD Most High, here begins the cross of the Saviour, which Samson the Abbot prepared for his own soul and the soul of King Juthael and of Artmal the Dean."‡ "The first of those names, I am satisfied,"

* *History and Antiquities of St. David's*, by Jones and Freeman, page 264.

† Achau Saint ynys Prydain.—*Iolo MSS.*, page 105. The Book of Llandaff, however, represents him as closing his life in his monastery at Dole.

‡ A full account of this monumental stone may be found in *Turner's Vindication of the Ancient British Poems*, and in a note to the *Iolo MSS.*, page 263.

says a late Welsh archæologist of high repute,* “is that of S. Samson, who was Bishop of Dole in Brittany, in the sixth century; and also Abbot of Lantwit. The next corresponds with that of Juthael, King of Brittany, the contemporary and patron of Samson, sometimes written Judual. The last name, Artmal, I am not able to identify, but think it possible that he also may have been of Dole.” If this interpretation of the names is correct, the tradition may be true, that Samson returned to Wales and ended his days there. But, on the other hand, it must be remembered, that another learned Cambrian † takes a different view of the names on the monument, and argues that they were, probably, all names of Welshmen; so that, according to this theory, the cross might have been erected by Samson whilst he was a monk at Lantwit. At all events, none of the extant Lives of him make any allusion to his return to Wales from Armorica, but speak of his dying at Dole in a good old age; and his earliest biographer, to whom we are indebted for most of the particulars in this brief memoir, thus beautifully describes his departure.—“Being perfect in life and in age, and having, after the Apostle’s example, finished a good course, with all good qualities fully and completely adorned, he left his attenuated body to be embalmed and buried in the monastery at Dole, in the hope of the resurrection to eternal life, whilst his happy soul went full of bliss to CHRIST; and the brethren, at the time of his departure, heard the hymns and music of angelic choirs.”

* Rev. T. Price, (Carnhuanawe).

† Taliesin Williams.

IV.—*The Prior's Cross.*—By THOMAS Q. COUCH.

HALS, in his *Parochial History of Cornwall*, in reference to the Peverells of Park, in Egloshayle, says:—

“The Peverells are especially memorable here by two crosses of moorstone in the highway set up by them, still extant,” (*circa* 1700), “and called Peverell’s crosses. Not far from them is another moorstone cross, near Mount Charles, called the Prior’s Cross, whereon is cut the figure of a hook and crook, in memory of that freedom and privilege granted by him to the poor of Bodmin, for gathering for firebote and housebote such boughs and branches of oak trees in his contiguous wood of Dunmear, as they could reach to, or come at with a hook and crook without further damage to the trees thereof. From whence arose the Cornish proverb concerning filching, purloining, or taking another person’s goods overmuch, or indirectly beyond what is allowed them—‘they will have it by hook or by crook.’”

This same Prior’s Cross may still be seen by the wayfarer, between Bodmin and Camelford or Wadebridge, built into a hedge within a few feet of the doorway of the little inn at Wash-away. It is, I believe, unique among Cornish crosses. Its association with the Prior’s gift of housebote and firebote rests entirely on the authority of Hals; at all events, after much enquiry among the peasantry, who usually transmit with wondrous care and truthfulness such stories, I have failed to find it confirmed by country tradition. The antiquary will detect, on examining the cross itself, or its faithful representation in my friend Mr. Blight’s highly and truthfully illustrated book on the Crosses of East Cornwall, that the hook and crook is a *fleur de lis sans pied*, and commemorative of the Virgin.* I know of no other instance in Cornwall. That Hals’s explanation of the figure, which *may have been* suggested by the popular tradition of his day, is incorrect, seems more than likely, from the very distant resemblance which the lateral leaflets of the device bear to the woodcutter’s implements mentioned; as also from the improbability that the reverent spirit of the age would have permitted such an use of a form of

* By Mr. Blight’s kind permission, we are enabled to place the illustration at the end of this Paper.

pillar consecrated to a loftier purpose. The cross is built into the hedge, and I have not been able to obtain an opportunity of seeing the opposite side.

This derivation of a very common proverb is at least as good as any that antiquaries have offered, which is tantamount to saying that it is worthless.* Our legal readers could, I dare say, supply examples to prove that "*by hook and by crook*" was a phrase not uncommonly used in deeds conveying grants of common of estovers. Several instances of its use are to be found indeed in connection with the very grant that this stone has been supposed to refer to; and the production of them here will not only show the fallacy of the commonly received explanations of the proverb, but be of wider interest as illustrating the social insecurity of a not very distant age.

A right of housebote and firebote, as well as common of pasturage in Dunmeer wood, was actually granted to the poor of Bodmin by one of the earlier Priors, and this right, so liable to abuse, was at a later date a source of quarrel between the Prior and the people of the town. The dispute, on one occasion at least, grew from angry words to blows. Probably the Prior insisted too strongly on his rights, and the towns-folk were encroaching on their privileges. At all events, a testimonial of the town against the Prior, bearing date 1525, states "that the wood, called Dynmure wood, was ever open and common for all burgesses and inhabitants of Bodmyn till now of late, as well for all manner kind of their beasts to common therein, as to have their burden wood, to bear and carry away upon their backs, of lop, crop, *hook*, *crook*, and bagwood, without contradiction, let or disturbance of any manner persons; always reserving and saving to the Prior of Bodmyn and his successors the stems of the trees for their fuel and building." It goes on to complain that the bailiffs whose duty it was to see that matters should be "indifferently ordered according to good right and conscience," were accustomed, for

* *E.g.* "The proverb of getting anything by hook or by crook is said to have arisen in the time of Charles I, when there were two learned judges named Hooke and Crooke, and a difficult cause was to have been gotten either by Hooke or by Crooke. Spenser, however, mentions these words twice in his Faëry Queene, which is a proof that this proverb is much older than that time, and that the phrase was not then used as a proverb, but applied as a pun."—*Warton*. Quoted from *Pulleyn's Compendium*.

rewards and money given, to permit certain burgesses and others to carry away on horses the burden wood to the prejudice of both the Prior and the commonalty. The feud between Priory and Town grew serious, and the latter appealed to Henry VIII to protect them from the vengeance of Prior Vivian. This document represented that "whereas the said inhabitants have used to have common pasture, with all manner of beasts, and common fuel, in a wood called Dynmure wood, a mile from the said town, that is to say, with *hook and crook*, to lop and crop, and to carry away upon their backs and none other ways," the Prior had caused the said wood to be inclosed, the gates to be locked, and by his bailiffs had beaten, and cruelly obstructed the poor people while attempting to exercise their right of common; and that "the same now Prior hath now of late sold the said wood and made coal there, pretending it to be his several wood, not having regard to the title of common that the said inhabitants have within the said wood." * The towns-people stoutly stood upon their rights, and pulled down a hedge that they might daysler (?) † use the said ways and common. The Prior, among whose virtues forbearance could not be numbered, assumed an attitude of vengeance, and commanded those who owed him suit and service, the servants and friends of the manor of Bodmin, to repair instantly to the Priory with such weapons as they had. "By this means he gathered unto the said Priory by estimation to the number of a hundred persons and above, and charged five cart-load of ordnance with pellets to shoot into the town, and to destroy the town, and so shot into the town twenty pellets or thereabouts, which unlawful purpose the same Prior had maliciously fulfilled to his power, if by the council and advice of good men he had not been stayed; by reasons of which dealings and malicious purpose," addeth the petition, "the said poor commons standeth greatly in dread of the said Prior and were thereby greatly inquieted."

The rights of the poor of Bodmin and the claims of the Prior were soon after made the subject of arbitration, and the former were relinquished in consideration of a grant of a leet and frank pledge for ninety-nine years, at the annual rent of four pounds,

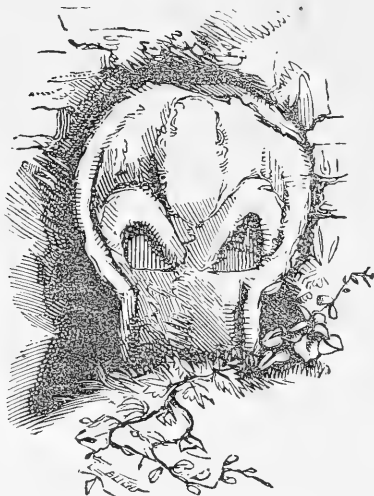
* The spelling is modernized.

† Probably *the more easily—the easilier*.

(the term at its close to be renewed for ninety-nine years more), with a licence to build a market-house in the town, and to hold a fair or mart at the Berry.

We have no record, I believe, that the people of Bodmin ever enjoyed those privileges, or if they did, it was for a short period, for very soon after this compromise,

“Bluff Harry broke into the spence
And turn'd the cowls adrift.”



The Prior's Cross.

V.—On the supposed “Saxon Slab” at Bodmin.—By the REV. W. IAGO, B.A., *Westheath, Bodmin.*

HAVING been so fortunate as to discover some additional fragments of the slab—mis-called Saxon—in Bodmin Church, it may interest those who have a fancy for inscribed stones if I give an account of the monument, and of the attempts which have been made to decipher it.

Fifty years ago the stone attracted the attention of the late Rev. J. Wallis, Vicar, when the Church was in course of renovation. He had caused the whole area of the floor to be broken up and explored in 1819, and some time afterwards he had the fragments of this slab removed from the pavement, and cemented together in a shallow box, or framework of wood, for preservation. Thus isolated they have ever since remained; and Mr. Wallis, imagining that some of the letters incised on the fragments resembled “Saxon,” was led to attach importance to the monument on account of its presumed antiquity. Writing of it in 1828,* he described it as “of slate, and probably the oldest in the Church; on it a cross florée, with an inscription apparently intermixed with Saxon characters.” Again, in 1838,† when referring to the Saxon and Saxon-Latin entries in the MS. copy of the Gospels once belonging to Bodmin, his words are—“The monument with Saxon characters, discovered in our Church about 20 years since, appears to be of nearly the same age [as the entries], and to retain the figures MVIII (1008).” Lastly, in his “Chronological List of Monuments and Inscriptions,”‡ he gives “A.D. 1008. Supposed Saxon Monument in the Church.” In his “Cornwall Register,” commenced in 1847, he mentions the Saxon antiquities in the county, but makes no mention of this stone; and during the last ten years of his life he frequently

* Wallis’s “Bodmin Register,” page 29.

† *Idem*, page 389.

‡ *Idem*, page viii.

expressed doubts as to the correctness of his original surmise with respect to its letters and date.

Being still unable to decipher it, Mr. Wallis continued to take a great interest in anything likely to throw light on the subject, and requested me to assist him in endeavouring to find a clue to the age and meaning of the inscription. With this object in view, copies of the stone were sent to archæologists, but nothing satisfactory was elicited till after his death, when investigations and enquiries began to be more successful.

The entire slab must have measured about five feet by two feet. The letters inscribed on its marginal borders are three inches in height, with the heads inward. On the interior space a cross rises from a moulded base (on which is the sacred monogram **ih̄s**). Proceeding from the shaft are two slender branches, bending upward, one on each side, terminating in square quatrefoils, set corner-wise, and having round centres. The letters are all deeply and distinctly cut; the difficulty of reading them arose merely from many of them being of unusual form or character. The monogram **ih̄s** and the letters **P** and **B** were always clearly apparent. The Rev. J. J. Wilkinson having been asked to inspect the stone, detected on it the formula "**Vx que dec**" (**Uxor quæ decessit**). J. Maclean, Esq., F.S.A., who next saw it, agreed with this reading, and deciphered the word "**nup**" (**nuper**).

All had now been read except the group of letters following a large fracture, and mistaken by Rev. J. Wallis for **ΩVIII**. On a careful examination, it was clear to me that the first curved member of the supposed **Ω** was not connected with the perpendicular stroke which followed it; and by comparing the latter part of this letter with the initials on the cross-base, I was enabled to see that the supposed **Ω** was really two letters, **ç** and **h̄**, the latter being "crested" and "top-shortened," in order that it might be kept within the prescribed margin. The next letter was evidently **y** not **v**, and somewhat shortened below for the same reason that the **h̄** was shortened above. Mr. Maclean being convinced of the correctness of this reading of the letters, found the next (consisting of three straight minims) to be a veritable **m**. Thus, all of the inscription known to exist was deciphered. The next point to be ascertained was the probable date.

At a meeting of "The Royal Archæological Institute," last year, in London, it was assigned by the prevailing opinion to a late period, when mediæval art had much declined. The style of its ornamentation was considered as in accordance with Tudor times. It was deemed to belong to the 16th, or perhaps the 17th, century. Other archæologists were of the same opinion; and a discovery shortly afterwards tended to confirm this view. On the concrete floor of the parvise, or chamber, over the porch of Bodmin Church, I found some loose fragments of slate buried beneath the remains of decaying oak bench-ends stored there. Other similar loose pieces of slate were in two square holes (near the floor) in the masonry of the wall. They were inscribed and otherwise incised, and formed no part of the wall. On examination, these pieces were found to fit each other, and the characters at once struck me as being remarkably like those on the "nuper Uxor" slab. Comparison shewed that they did form part of it, the fractured edges fitting accurately, and the pieces of stone displaying the same grain and quality. All this was declared to be the case by an experienced mason, who was called upon to test the correctness of the supposition. The pieces brought from the parvise supply portions of the sinister base-moulding, branch, quatrefoil, &c., which had been missing. These are found to agree precisely in form with those delineated on the dexter side, already cemented into the box. The largest fragment found, proved to be the most interesting; for besides a continuation of the cross-shaft, part of the date is incised upon it in Arabic numerals—" . . / 57." It fits the other portions of the slab exactly; and thus the "Saxon" theory is finally disposed of as untenable, and the "Debased Period" surmise is established.

So far, this conclusion has been arrived at by merely studying the appearance of the slab itself in its isolation, and by comparing its letters one with another. When, however, it is compared with other existing monuments, fresh proofs of its lateness are perceived. There are many ancient slabs in the pavement of the Church, and these may easily be classified according to their general characteristics. Some are dated as far back as 1455, and some, older still, are without dates. In design, distinctive types prevail, according to age; all these ancient memorials are exceedingly well wrought, are comparatively easy to decipher, and do

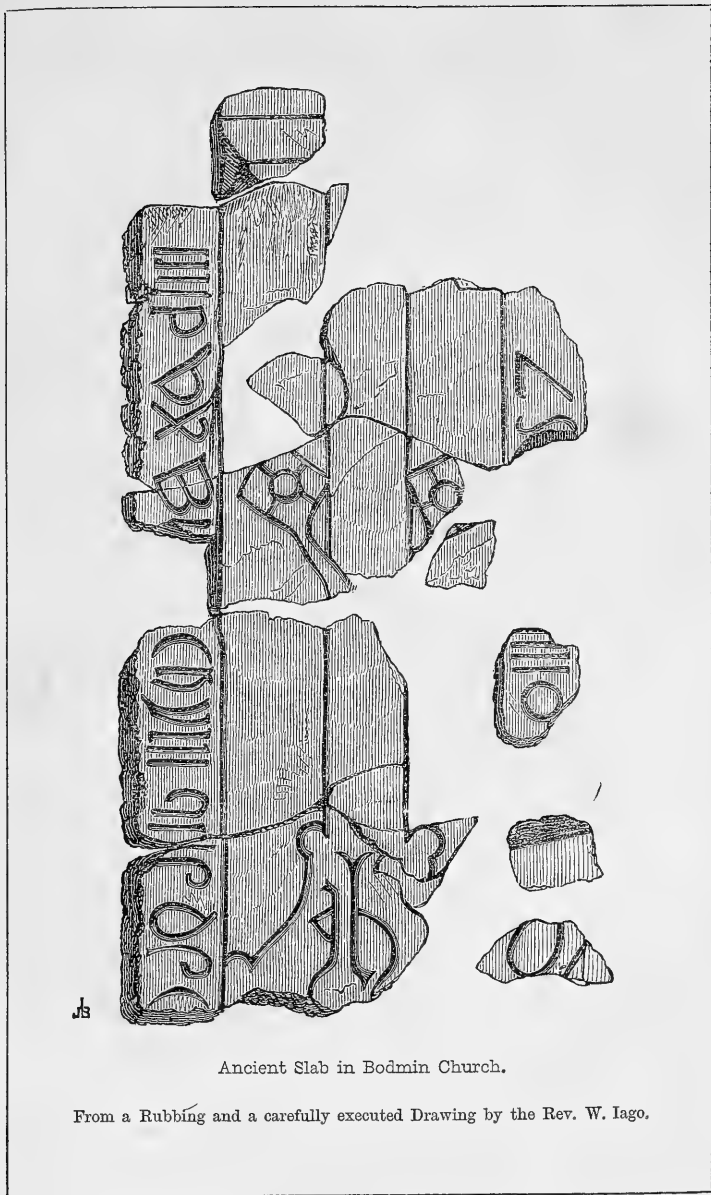
not resemble the "nuper Uxor" slab. Three monuments, however, of later date, *do* resemble it very closely in many important particulars; and there is an old stone corn-measure in the market-house on which appear letters of precisely the same form as some of those on the slab under consideration. The slabs and the measure are dated respectively 1545, 1546, 1548, 1563. The letters and figures upon them are rudely incised, and fully confirm the reading adopted above, of *all* the letters on the Uxor slab; the crested top-shortened **h**, the curtailed **y**, the three-minimed **m**, &c., being again met with in positions where they need no explanation. The dates 1545 and 1563 are written in Arabic numerals, quite agreeing with the . . . 57 on the Uxor slab, the 5 being of exactly the same shape. Each of the monuments likewise contains within the border legend a cross, with shaft rising from a moulded and initialed base, of the same character as that on the Uxor slab. Moreover, on the slab of 1546 branches of the same form as those on the Uxor slab (except that they terminate in circles charged with the Evangelistic emblems, instead of in quatrefoils) sprout upward from the sides of the cross shaft. Thus it is reasonable to conclude that the slab is of the date 1557.

No record of burials for that year is to be found amongst the Churchwardens' accounts in the possession of the Corporation, and the Parish Registers were not commenced till the year after. No entries have been made either for 1657, the pages in the Register book being blank at that date, in consequence of the disorder occasioned by the Great Rebellion. The identification, therefore, of the lady commemorated must rest wholly upon the testimony of the slab fragments. Mr. Maclean, with good reason, considers that she was named "**Achym**," as the broken remains of the legend form the following words and abbreviations:

" nup **Vx B** chym que dec domi 57."

(Probably for " nuper Uxor B[ernardi (?)] Achym quæ decessit anno domini 1557").

Achym was an old family name in Bodmin. Raffe, son of William Achym, is entered in the Register as baptized in May, 1558, and his burial is soon after recorded. The Achyms resided in Bodmin before that time; Wm. Achym's name appearing in



Ancient Slab in Bodmin Church.

From a Rubbing and a carefully executed Drawing by the Rev. W. Iago.

the list of mayors at the date 1537, and again in 1545. One of the mural monuments in the Church is to the memory of Cisely, wife of Bernard Achym, Gent. ; she was buried in 1639.

The pieces of the slab found in the parvise must have been placed there for preservation, and been long lost sight of ; their former connection with the slab having been either forgotten, or not recognized till now.

From recent investigations, detailed above, it therefore appears that the wooden framework in Bodmin Church contains, not a monument of Saxon times, but some fragments of the grave-stone of a Mrs. Achym, who died in the year 1557, or perhaps as late as 1657.

VI.—*The Cliff-Castle of Kenidzhék, in the parish of St. Just in Penwith, Cornwall.*—By J. T. BLIGHT, F.S.A.

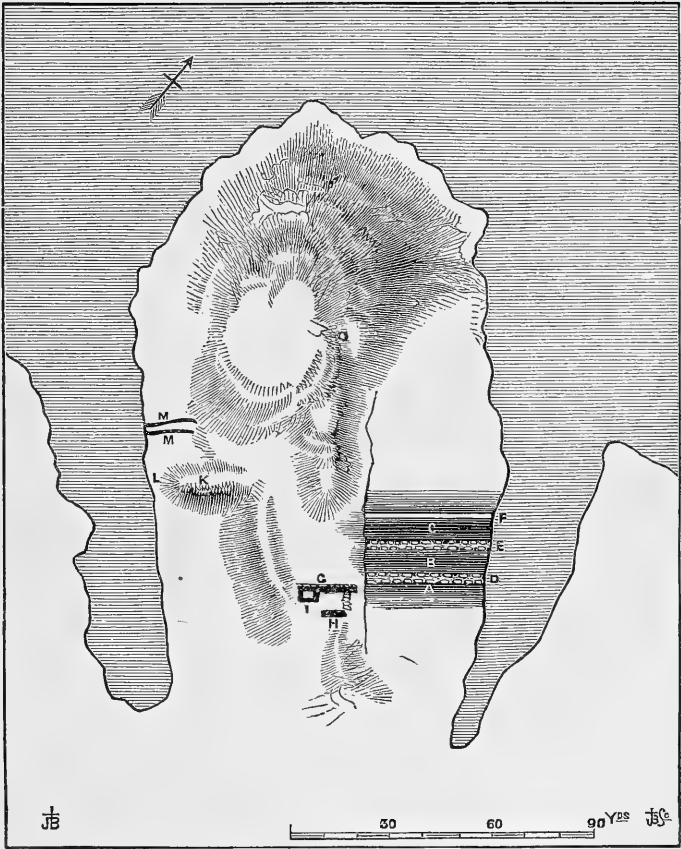
Read at the Spring Meeting, May 22, 1868.

IN my notice of the Cliff-Castle of Maen, in the parish of Sennen, printed in the Second Number of the Journal of this Institution, I referred, among the remains of other structures of this kind occurring along the coast, to that of Kenidzhék, or Kenidjack, in the parish of St. Just in Penwith.

In the month of September, 1867, I carefully examined this spot; and I hope, by my notes and sketches, to be able to convey some idea of the arrangement of the fortification.

The headland projects into the sea from the mainland in a direction about N.N.W., and stands opposite to the much bolder promontory of Cape Cornwall. The space between the two is called Porthleden Cove, the shores of which, I believe, small boats may approach in calm weather; but this landing-place would not afford direct access to the Cliff-Castle on Kenidzhék, nor to that which is stated to have existed on Cape Cornwall.

By reference to the Ordnance Map, it may be seen that Kenidzhék Headland terminates in what may be called a triple fork enclosing two narrow and deep chasms, affording the best protection to the east and west sides of the central prong, which has the work of artificial defence. The height of the cliffs of this middle slip of land may be about 100 feet; but inwardly it assumes the form of a carn, and rises considerably higher, leaving, however, on each side a smooth grassy slope, across which were constructed the lines of defence, consisting, on the east side, of three ditches (A B C on the Plan), and three vallums (D E F), extending from the very edge of the cliff to the carn, which needed no further artificial aid in this direction. The first ditch is five yards in breadth, the second eight yards, the third seven yards. The breadth of the first vallum is four yards; each of the



Cliff-Castle at Kenidzhek.

Note. The scale of yards on the plan roughly applies to the lines of fortification.

others two yards. They are chiefly of earth, but were apparently faced with stone; several large blocks still remaining along their bases.

In a line with the first ditch, where there was no natural defence, a wall (G) was carried across to a ledge of rock on the opposite side. This wall still retains some portions of its facing on the south side, exhibiting masonry of a rude kind, but still shewing that the stones were pretty regularly built up. About three yards south of this I thought I perceived traces of another wall (H), but the ground here has been interfered with in modern times, and a shed (I), now in ruins, probably connected with mining operations, had been built against the central wall (G). From the western extremity of this wall the carn extends in a northerly direction, for about thirty yards, to a projecting mass of rock (K), forming a kind of natural bastion, and leaving a space (L) of only about ten feet between its termination and the cliff on the west side. To prevent an entrance being effected through this narrow pass, two vallums (M M), ten feet apart, were constructed from the cliff to the carn. They were both formed in the same manner as those on the east side.

The skilful arrangement in the combination of natural with artificial means of defence probably rendered the place an impregnable fortress at the time it was in use.

Many of the Cliff-Castles have the defences of a curved form, projecting towards the land; but in nearly every case the conformation of the ground suggested and aided the plan of the work.

Having seen the greater number of the Cliff-Castles, or Rathes, which occur along the coasts of Pembrokeshire, I am enabled to say that they are of the same character as those in Cornwall. So striking is the resemblance between them, that they would appear to have been constructed by the same race of people, and to have answered a like purpose.

On a little plateau on the east side of the carn of Kenidzhek Castle, and occupying the whole of the patch of turf on which it was built, are still to be seen the foundations of a hut-circle (O), affording the only instance I know, in a Cornish Cliff-Castle, of provision for residence or occupation. Within the Rath on St. David's Head, however, there are several circles of this kind; thus more strongly confirming the analogy between these works in Wales and in Cornwall.

VII.—*The Green Book of St. Columb.*—By R. N. WORTH, Plymouth.

Read at the Autumn Meeting, November 30, 1868.

THE parochial records in many of our counties contain, as is well known, a large quantity of valuable inedited matter, which will yet yield a rich harvest to industrious antiquaries. This is certainly, I think, to a large extent, the case in Cornwall; and, in order to contribute somewhat towards the work of research, I desire briefly to call the attention of the members of this Institution to what is locally known as “The Green Book of St. Columb.” This “Green Book” is a large folio volume, bound in green leather, in which the accounts of the parish have been kept, with a few intermissions, from the year 1585, and are indeed still kept; the original supply of paper being, after the lapse of nearly three hundred years, far from exhausted. The book is in excellent condition, and the writing in the earlier entries is characteristic of the period, and uncommonly good. At present, the volume is merely used as a record of the parish accounts; but its former custodians occasionally jotted down memoranda of such general matters as they considered noteworthy, and consequently it contains many curious illustrations of bygone manners and customs. I purpose merely to lay before the meeting the results of a cursory examination of the volume, in the hope that some one far better qualified for the task than myself may enter upon a fuller investigation.

The book begins as follows:—“Liber Compti. The generall accompte of this p'isshe of St. Columb Major taken before the xij of the same p'isshe in the presence of the whole p'isshone^{rs} on the daye of the feaste of St. Andrewe the apostle, being the laste daye of November, in the yeere of our Lorde God 1585 and in the xxviii yeere of the rayne of our Sovraigne ladye Elizabeth, the Queenes Ma^{tie} that now is.”

Then follow the wardens' names. The “twelve” were of course

a kind of select vestry; and the form of parochial government which now obtains in St. Columb Major may be traced back, century after century. One very curious early record is a copy of the poor-rate assessment made immediately after the passing of the Act of Elizabeth. The parishioners in the days of "Good Queen Bess" used to keep stock and lend them out at so much a year. There are entries, for instance, of "sheepe" being lent at 7d. a head per year, the renter taking the increase and the wool. Cattle were lent out in a similar way; and the parish was not above advancing money, for a consideration. There was likewise a parish ladder, which was lent on hire; and a parish carriage, recorded in 1593 to have been built by Remfray Rowse and Harry Hawke, two of the oldest family names in the parish. St. Columb Church at that date boasted the possession of an organ, perhaps of more power than compass, since we find it stated "The organ do conteyine xv pipes." The Armada year affected this as well as the sea-board parishes, mention being made of a "stock of money for the trayned soldiers," "victualling for the trayned soldiers," &c. "Vermons" or "vermonts heades" formed a continual source of disbursement, the money in some cases being paid "in churche." Thus we have in 1671, "for vermons heades and give to the poore and severall other disbursmts £1. 0. 4"; in 1704, "ffor a ffox head 1s."; in 1709, "to Richard Webber for one kitt and hedgehogs 1s."; and scores, if not hundreds, of others, the payments being made according to a fixed scale. The ratepayers, in turning back to the accounts of former years, must sigh for the good old days when the rates were but a "flea bite," and envy their predecessors in 1717 who could record "Goall and Marshalsea money and a bridge rate £3. 2. 0," even though they had in addition to pay the "expenses of two men going to Bodmin about the bridge rate."

In conclusion, I would quote a few other entries, of a more or less noticeable character, taken somewhat at random. Under the date 1671 we have: "P^d for curing Cissy Grosse's legge 10s."; "for mending the wayes 13s. 4d."; in 1678, "ffor ye burying peter the sonne of S^r John Seyntaubyn Barront 13s. 4d." This 13s. 4d. was not paid, and we find it afterwards carried on as an arrear. In 1698 there were paid "to three seamen 2s."; in 1703, "to poore seamen that had a pass 2s. 6d."; whilst elsewhere there

is entered "P^d Symon Treman for entertayning two soldiers 2s." In 1699, "to George Larkin for cutting a trench and draining of belowsy water (now Belovely) 6s., and then agreed with him to keep the same in repaire for one shilling a yeare during his life." People were buried at half price when not supplied with coffins, as the following entry proves, the ordinary charge for an adult being £1. 6s. 8d. : 1680, "John Lawry without a coffin 13s. 4d." About the beginning of the last century the neighbourhood was haunted by a notorious robber, called Vigers, and several traces of his existence and his depredations are to be found in the Green Book :—1708, "P^d Mr. Arnoll for lending and clenseing armes in searching for Vigers 7s." The search was ineffectual, for in 1710 we find: "P^d Thomas Gilbert in full endeavouring to tak Vigers 5s."

The only other quotations which I shall make are: 1706, "To Xtopher Reynolds for his goods being distrayned for ye high wayes 2s. 6d."; 1715, "P^d Mr. Robert Creeper in full for transcribing the King's letter £2 10,"—not bad pay; and in 1729, "Drink give the workmen throughout the whole yeare 2s. 6d.,"—an expenditure which, if not legal, was certainly economical. The interest of the book rapidly diminishes as the 18th century proceeds.

VIII.—NATURAL HISTORY.—*Notes on the Ornithology of Cornwall from May, 1868.*—By E. HEARLE RODD.

MY last little budget on the bird occurrences in the county during the previous year, for the information of your Society, was meagre enough; and I am sorry that my story this year is not likely very much to enrich the Reports of the Institution in this department of science.

We can, however, add one British species of Pipit to the Cornish Fauna since your last meeting, by the capture, at Scilly, of the "Tawny Pipit," a species that has been well known on the continent, but it has been added only very recently to our catalogue of British birds. The "Tawny Pipit" (*Anthus campestris*) forms one of the plates in Mr. Gould's work on "The Birds of Great Britain," now in course of publication; and its value as an acquisition to our county, which is already so much indebted to the Scilly Isles for rare birds, will increase the interest attached to that locality as a most interesting adjunct to Cornwall in the advancement of the science of Natural History.

There is another interesting and rare Pipit, not often found in Britain, which also has appeared at Scilly in the last year, viz: "Richard's Pipit"; and the "Tawny Pipit" may best be described when it is said to be a miniature of "Richard's Pipit." The hind claw, however, is much shorter in proportion; and it will be only necessary to say in this paper that the specific characters in the general tawny colour of the back, without the centre dark colouring of the feather (remarkable in the *A. Richardi*) and the spotless tawny breast and under parts, are fully observable in this example.

Whilst on the Ornithology of the Scilly Isles, I have again to report the appearance of that beautiful species, the "Golden Oriole." Mr. Smith writes me word that one in brilliant plumage was observed last week; and, about the same time, another example, probably a female, in a duller state of plumage, in the hill plantation, near the Abbey. The frequent appearance of the

Oriole at the Scilly Isles in the spring months (and which, if I mistake not, has been noted for several consecutive years), in some instances three or four in number, and their appearing in pairs, gives a strong presumption that they contemplated breeding in the dense foliage of the exotic shrubs in the grounds of the Abbey, but the fact is not established.

Another bird, the "Spoonbill" (*Platalea leucorodia*), of rare occurrence in England, but now and then obtained in Cornwall, was observed last month for a fortnight, frequenting the pool adjoining Trescoe Abbey.

The large flight of Crossbills which were distributed over the whole of Cornwall, extended also to the Scilly Isles during the autumnal months.

There has been nothing of remarkable interest in the Ornithology of West Cornwall, nor in the county generally, during the past year; the peculiarly open character of the past winter has not encouraged the visits of our common wildfowl in any great numbers, and we have been without any occurrence of the rarer *Anatidæ*.

It has been a debateable point amongst the naturalists of Great Britain, especially of late years, whether the "Black Woodpecker" (*P. Martius*) which is figured in most of the illustrated histories of British birds as belonging to the British Fauna, is really entitled to a place, inasmuch as an investigation into all the alleged instances of its occurrence has failed to support the fact of the authenticity of the published records; and the following little anecdote will shew how necessary it is to be guarded in giving credence to statements of alleged facts in natural history, which may appear so plausible as not to admit of any reasonable doubt, yet are in reality utterly valueless.

Mr. Gould, who is most anxious if possible to include this fine species in his illustrations, wrote me word in December, 1868, that he thought he had at last sufficient evidence of the occurrence of the "Great Black Woodpecker" in the British Islands to warrant the insertion of a plate of the bird in his work now publishing on the Birds of Great Britain. He wrote to me as follows:—

"I have just received a letter stating that a Great Black Woodpecker (male) was shot a few days since at Benstead, in Hants. My informant

(Smithers) had the bird in his hands before it was skinned. I am none the more certain, however, that it was shot at the place mentioned, for I have known many instances of rare British birds being sent to our markets in the flesh, and from the markets sent into the country, for the purpose of deceiving the unwary; still the statement may be true, and I will leave no stone unturned to ascertain if such be the case."

Mr. Gould writes me shortly after with a copy of another letter from Mr. Smithers to him as follows:—

"December 26th, 1868.

Sir,

I regret writing to you about the Great Black Woodpecker, as Mr. ——— told me he bought it in the London market, but being so fresh, *he said, out of a joke, he shot it at Binstead.* I will be more careful for the future."

I have to observe that an unusual number of Montagu's Harriers have been captured in the county during the past year.

With regard to the autumnal migration of birds, I may mention as a curious fact, and which I have noticed for many seasons, that a great number of the British summer visitants, which are almost, and some entirely, unknown in West Cornwall during the spring and summer months, are every autumn, at the migratory season, to be found at the Scilly Isles, as a sort of resting place in their passage to southern countries. The Nightingale, however, forms an exception. Among the common warblers I may instance that the Garden Warbler, Lesser Whitethroat, Common Redstart, Reed Warbler, Wood Warbler, Pied Flycatcher, Wryneck, and also species of other families which, for some hidden cause, are scarcely ever seen in the neighbourhood of Penzance, are observed at the Scilly Isles at the autumnal migratory season.

IX.—*On a new British Eschara, and the occurrence, in Cornwall, of Sphenotrochus Wrightii, of Gosse.* — By CHARLES WILLIAM PEACH, A.L.S.

Read at the Autumn Meeting, November 30, 1868.

ON the 16th of June, 1848, I found, in a boat in Fowey Harbour which had just returned from trawling in Lantivet Bay, a small coral, which I looked at with a pocket lens, and marked as *Cellepora lævis* of Fleming. Comparatively little was then known about such objects. I intended to give it a more careful examination, but press of duty prevented me, and soon afterwards I left for Scotland. This coral was packed with many other things in a box, and there it remained until a few weeks since, when, on opening the box, it turned up and was soon put under the microscope, for I felt curious about it, knowing that our best naturalists considered that *Cellepora lævis* was a northern species only. When with Mr. J. Gwyn Jeffreys, in 1864, dredging in Shetland, specimens of *Cellepora lævis*, with several other branched corals, were brought up. As I had seen and studied the figures and descriptions of these beautiful forms published by the late lamented Mr. Alder, I at once saw that my specimen from Fowey Harbour differed, not only from *Cellepora lævis*, but also from all other British branched corals that I had seen or read of. I have therefore thought that a short notice of it may be interesting to your Society:—

Polyzoary, buff colour, dichotomously branched, the stem and branches cylindrical and rough.

Cells, arranged in six or seven rows, in a quincunx manner, around the stem, deeply immersed, and very much roughened all round by raised rounded eminences, which occasionally, in the oldest parts, almost cover the cells, and form a rough net-work around them; these wart-like eminences, as well as the cells, are covered with pit-like depressions. The young cells on the tips of

the branches are raised, and although not so surrounded, are pitted.

Apertures, moderately large, rounded above and straight below in the old, in the young occasionally bent downwards in the centre in a v-like manner. The distal lips of the apertures—especially of the young cells—have five openings on them; the two lowest are the largest, and stand upon little eminences, all very much resembling the broken-off spines on many species of *Lepralia*.

On one side of each cell—sometimes on one side, sometimes on the other—is an avicularium on a conical elevation in the young; this is perforated on the top by a triangular opening, out of which rises a golden bayonet-shaped vibraculum, which is occasionally preserved on the old cells; less so on the *very young ones*. This vibraculum occurs on some *Lepralias*. I never saw it before on a British branched coral. This, with the roughened border round the cells, and the spine-like openings on the distal lip, justifies me in making it a new species.

Although I have called it an *Eschara* (*Eschara verrucosa*) it may be a *Cellepora*, or even a new genus. This must be left to some authority to decide. Unfortunately the specimen, though perfectly fresh when I got it, was broken from its attachment, therefore I can only give the height of the fragment, which is a little more than three-quarters of an inch, the stem and branches about one-tenth of an inch in thickness. I have given it the trivial name, from its rough warty appearance.

Sphenotrochus Wrightii, of Gosse. In the same box I turned out a nice specimen of this pretty coral. It was got about the same time as the *Eschara*. I am indebted to Mr. Waller for the name; he was with Mr. Hyndman when the specimens figured by Gosse were dredged. Mr. Waller was on his way to his home in Ireland, from dredging with Mr. J. Gwyn Jeffreys, in Shetland, and instantly recognised it when I showed it to him.

As Mr. Mc. Andrew dredged *Sphenotrochus Macandrewanus*, on the Cornish coast, both the species described in the "British Sea Anemones" have now been found on your coast.

X.—*A Calendar of Natural Periodic Phenomena: kept at Bodmin, for the year 1868.*—By THOMAS Q. COUCH.

“Il semble, en effet, que les phénomènes périodiques forment, pour les êtres organisés, en dehors de la vie individuelle, une vie commune dont on ne peut saisir les phases qu’en l’étudiant simultanément sur toute la terre.”
—*Quetelet.*

N.B.—The Names printed in *Italics* indicate plants and animals marked for special observation.

fl. means flowers; fol., foliates; defol., defoliated.

The time of flowering is to be noted when the flower is sufficiently expanded to show the anthers; of foliation, when the leaf-bud is so far open as to show the upper surface of the leaves; of fructification, at the period of dehiscence of the pericarp, in dehiscent fruits; and, in others, when they have evidently arrived at maturity; of defoliation, when the greater part of the leaves of the year have fallen off.

EACH step in the development of the meanest insect is dependent on the vital processes of the plant which feeds it; and the latter, in its turn, is influenced by solar and atmospheric agencies. Indeed, it is impossible strictly to say how far the mutual correlation extends. This interdependence, which is observable throughout nature, furnishes us with an ever-changing and never-ending object of study. We must not be restrained from the pursuit, because the causes of the palpable oscillations of the balance of natural order seem, to the isolated observer, far to seek, and even impossible to find. In course of time a circle of students may amass such a number of facts as to permit some great generalizer to educe from effects their certain causes. It is for this reason that I record any marked plenty or scarcity of certain animals and plants, and indeed any noticeable departure

from the general order and due proportion in the manifestations of organic life.

Leaving the minuter record of the characteristics of this remarkable year to our meteorologists, I may broadly notice that 1868 had a notably mild and wet beginning. This continued, with insignificant interruptions, until April, when a frost occurred which did great damage to the young potatoes. The summer was hot and arid, stunting the grass, and making scanty the aftermath, so that oxen and sheep were much pinched. Early in October we had frosty nights, which brought in our winter immigrants, the Fieldfare and the Starling. Following this, we had an almost frostless and snowless, but a remarkably wet and stormy, ending of the year.

I noticed this year a great scarcity of the Cuckoo (*Cuculus canorus*); and from sportsmen I gathered that the Woodcock (*Scolopax rusticola*) did not visit us in the usual number. About the end of July a great abundance of the Cabbage Butterfly (*Pieris Brassicæ*) was observed over a large space in Cornwall. They were in many places truly like a swarm of bees. On close examination, I marked that there was an enormous preponderance of females, if entomologists are right in setting down the bimaculated anterior wings as a distinction of sex. A very hot summer may have favoured this abundance, just as a wet and cold one might have diminished the ordinary numbers.

Of our crops, I report from a collation of the remarks supplied to me by several agricultural neighbours, that

Hay was below the average, but of good quality and well-saved.

Wheat was in some places a very heavy crop, and generally above the average; some localities suffered from rust and midge.

Barley was generally below the average, but well saved.

Oats were hardly an average, but in moist spots the yield was good.

Turnips. A very slight crop, from drought, flies, and worm.

Potatoes. A fair crop, and of good quality. The disease was less marked than in any year since the appearance of the pest.

On reference to my last year's report, it will be seen that in 1867 it was never worse.

Mangold was an average crop.

Apples. Under the average.

Hazel-nuts. A slight bearing.

Plums. Under the average.

- January 12. *Snowdrop (Galanthus nivalis)*, fl.
 25. *Hazel (Corylus avellana)*, fl.
 28. *Frog (Rana temporaria)*, spawns.
- February 3. *Ranunculus hederacea*, fl.
 6. *Barren Strawberry (Potentilla fragariastrum)*, fl.
 — *Honeysuckle (Lonicera Periclymenum)*, fol.
 9. *Primrose (Primula vulgaris)*, fl.
 11. *Gooseberry (Ribes grossularia)*, fol.
 23. *Lent Lily (Narcissus pseudo-Narcissus)*, fl.
 25. *Cardamine hirsuta*, fl.
- March 1. *Privet (Ligustrum vulgare)*, fol.
 2. *Pilewort (Ranunculus ficaria)*, fl.
 3. *Elder (Sambucus nigra)*, fol.
 4. *Hares'-meat or Wood-sorrel (Oxalis acetosella)*, fl.
 6. *Whitethorn (Crataegus oxyacantha)*, fol.
 10. *Strawberry (Fragaria vesca)*, fl.
 15. *Ground Ivy (Glechoma hederacea)*, fl.
 — *Dog Violet (Viola canina)*, fl.
 22. *Horse-chestnut (Æsculus hippocastanum)*, fol.
 23. *Greater Stitchwort (Stellaria holostea)*, fl.
 25. *Blackthorn (Prunus spinosa)*, fl.
 28. *Small White Butterfly (Pieris vel Pontia rapæ)*, seen.
 30. *Lady's Smock (Cardamine pratensis)*, fl.
 — *Wood Loosestrife (Lysimachia nemorum)*, fl.
- April 3. *Great White Butterfly (Pieris vel Pontia brassicæ)*, seen.
 — *Swallow (Hirundo rustica)*, seen.
 — *Sycamore (Acer pseudo-platanus)*, fol.
 5. *Cuckoo (Cuculus canorus)*, heard.
 6. *Lime Tree (Tilia Europæa)*, fol.
 — *Man. Whooping-cough prevails about this time.*
 10. *Hazel (Corylus avellana)*, fol.
 12. *Lilac (Syringa vulgaris)*, fl.
 15. *Woodruff (Asperula odorata)*, fl.
 16. *Hyacinth (Hyacinthus non-scriptus)*, fl.

- April 16. Early Purple Orchis (*Orchis mascula*), fl.
 17. Beech (*Fagus sylvatica*), fol.
 19. Broad-leaved Elm (*Ulmus montana*), fol.
 21. Milkwort (*Polygala vulgaris*), fl.
 23. Alder (*Alnus glutinosa*), fol.
 24. Bugle (*Ajuga reptans*), fl.
 26. Narrow-leaved Elm (*Ulmus campestris*), fol.
 — Ash (*Fraxinus excelsior*), fol.
 — Bird's-foot (*Lotus corniculatus*), fl.
 — Tormentilla officinalis, fl.
 — Horse-chestnut (*Æsculus hippocastanum*), fl.
- May 1. Corn Crake (*Crex pratensis*), heard.
 3. Swift (*Cypselus apus*), seen.
 — Laburnum (*Cytisus laburnum*), fl.
 6. Mouse-ear Hawkweed (*Hieraceum pilosella*), fl.
 7. Whitethorn (*Cratægus oxyacantha*), fl.
 8. Lesser Stitchwort (*Stellaria graminea*), fl.
 15. Mountain Ash (*Sorbus aucuparia*), fl.
 18. Foxglove (*Digitalis purpurea*), fl.
 — Elder (*Sambucus nigra*), fl.
 — Honeysuckle (*Lonicera Periclymenum*) fl.
 19. Wild Strawberry (*Fragaria vesca*), ripens fruit.
 — Sauce-alone (*Erysimum Alliaria*), fl.
 22. Spotted Orchis (*Orchis maculata*), fl.
 30. Blackberry (*Rubus fruticosus*), fl.
 — Cuckoo appears in small numbers.
- June 2. Valeriana officinalis, fl.
 — Salmon Peal (*Salmo Trutta*), appears in the Camel River.
 4. Milfoil (*Achillæa millefolium*), fl.
 9. Wheat in ear.
 10. Hay harvest begins.
 11. Horse-fly (*Æstrus equus*), seen.
 13. Prunella vulgaris, fl.
 14. Wood Betony (*Betonica officinalis*), fl.
 15. Sheep's Scabious (*Jasione montana*), fl.
 30. Yellow Snapdragon (*Linaria vulgaris*), fl.
- July 7. Golden Rod (*Solidago virgaurea*), fl.
 — Black Knapweed (*Centaurea nigra*), fl.
 — Man. Whooping-cough still prevails.

July 7. *Barley harvest begun.*

- 11. Common Fleabane (*Inula dysenterica*), fl.
- 13. Hemp Agrimony (*Eupatorium cannabinum*), fl.
- 20. *Wheat harvest begun.*

August 3. Mushroom (*Agaricus campestris*), seen.

- 11. *Mountain Ash* (*Sorbus aucuparia*), ripens fruit.
- 12. Blackberry (*Rubus fruticosus*), ripens fruit.
- 14. *Honeysuckle* (*Lonicera Periclymenum*), ripens fruit.
- 16. Common House Fly appears in swarms.
- 20. *Elder* (*Sambucus nigra*), ripens fruit.
- 27. *Scabiosa arvensis*, fl.

September 10. *Ivy* (*Hedera helix*), fl.

- 12. *Swallows* (*Hirundo rustica*), congregate.
- *Chaffinches* (*Fringilla cœlebs*), congregate.
- 14. *Dog Violet* (*Viola canina*), begins autumnal flowering.

1st week. *Ash* (*Fraxinus excelsior*), defol.

Sycamore (*Acer pseudo-platanus*), defol.

3rd week. *Elder* (*Sambucus nigra*), defol.

October, 2nd week. *Lime Tree* (*Tilia Europœa*), defol.

8. *Swallow* (*Hirundo rustica*), last seen.

16. *Woodcock* (*Scolopax rusticola*), arrives.

— *Starling* (*Sturnus vulgaris*), arrives. (A few settlers have within the last few years settled and bred in the neighbourhood, but the numbers suddenly visiting us show that they are the winter migrants).

18. *Fieldfare* (*Turdus pilaris*), arrives.

— *Magpies* (*Pica caudata*), congregate.

November, 1st week. *Narrow-leaved Elm* (*Ulmus campestris*), defol.

16. *Goldfinches* (*Carduelis elegans*), congregate.

December 17. *White Deadnettle* (*Lamium album*), observed in flower.

27. *Honeysuckle* (*Lonicera Periclymenum*), fl.

— *Snowdrop* (*Galanthus nivalis*), fl.

REMARKS ON THE METEOROLOGY OF 1868.

THE most correct notion of the weather of the last year, as a whole, will be derived from a short review of the character of the several months. This will be chiefly derived from the records in my hands from this county; but these will be rendered much more interesting and instructive by comparison with other parts, on some occasions, where the phenomena are strongly marked.

January began with sharp frost, which continued till the 9th; afterwards it was generally mild, unsettled, and rather wet. The lowest temperature at Penzance was 26°; Helston, 24°; Truro, 17°; Bodmin, 22°; Altarnun, 16°. Mr. C. U. Tripp mentions that Dozmare Pool was covered with ice three inches thick on the 4th. There were 17 frosty nights in this month at Altarnun; at Truro, 11. On the breaking up of this frost on the 10th, there was a very heavy fall of rain, in the west especially. Mr. Richards states that at Penzance the gauge registered 2.50 inches in 20 hours; the heaviest fall he ever recorded. At Truro, on the same day, the fall was 1.77 inch. It blew hard at this time, but there were heavier gales from the 18th to 22nd, when the Prussian barque, *Die Sonne*, was lost on Pra Sands, with all hands except two; at Altarnun strong trees were uprooted. The remainder of the month was unsettled, and it closed with a gale from S.W.; which, however, was much more violent elsewhere; amounting at Liverpool to a hurricane, which, about noon of the 1st February, attained a velocity of from 100 to 120 miles per hour. The rainfall was largely above the average for the month at Penzance and Truro, and considerably so at Bodmin. This arose from the heavy rains; the wet days not being more than usual. It is worth noticing that Helston escaped this excess in both respects; the rainfall being slightly, the number of rainy days greatly, less than the average. The rather rare phenomenon of *ice rain*, which was witnessed on the Chilterns on the 10th, and at Bath on the 11th, was noticed by Mr. Tripp at Altarnun on the 9th. On the whole, the character of the weather was much the same during this month throughout the British Isles; but the extent of our obligation to the Gulf Stream was conspicuously shown by the severity of the season even in the South of Europe, contrasted with its mildness in this country. No farther off than Honfleur the docks and part of the outer harbour were frozen over, and enormous ice blocks floated about the bay. At Toulouse the basin of the Garonne was one sheet of ice. At Montpellier the temperature was steady at 18°, the thick layer of snow which fell at the beginning of the month remaining frozen hard. As for Paris, the Seine had not been so

completely tied up for 20 years. No marvel that between Moscow and St. Petersburg mercury was frozen, and the spirit thermometer marked 94 degrees of frost.

February needs little remark. In temperature it was distinctly above the average; in rainfall, rather below it; whilst in this county the number of rainy days was in excess. Up the country the month was still drier; but in Scotland quite otherwise: at Fort William, as a rather extreme instance, it rained every day, and the amount registered was 20·13 in. The gales of the 1st and 19th were less heavy and destructive in the west than in the north and in Ireland. Frost was noted on four nights at Truro, on thirteen at Altarnun. Vegetation was forward everywhere.

March resembled February in having a less quantity of rain falling on a greater number of days than the average. The mean temperature of the month was about 3° above the average, and frost was almost confined to the three last days. The strongest winds preceded the equinox, and no violent storm occurred. There was a heavy hail storm, with thunder, on 8th. Vegetation maintained its forwardness.

April was a fine month; the fall of rain, although above the average, being confined to ten days. On 19th the rainfall at Penzance was 1·13; at Truro and Bodmin, 1·08; at Altarnun, 1·65 inch. No remarkable electrical disturbance was recorded at Truro, or west of it, but Capt. Liddell notes a "terrific thunder storm" at Bodmin on the 28th. Similar storms occurred about the same time in many parts of England. The first half of the month was clear, and sometimes frosty,—at Altarnun eight times—at night; and the days were almost uninterruptedly fine till the 18th. The weather then became unsettled. The month was favourable to agriculture. The mean temperature was rather below the average here; rather above it at Greenwich.

May was remarkably fine throughout England. The rainfall and rainy days were both much below the average of this usually dry month; and the mean temperature was largely—at Truro 2·6 deg.—in excess. A thunder storm occurred on the 29th, which was slight at Penzance, and not heavy here, but violent at Bodmin, where ·90 inch of rain fell in 15 minutes. It was almost simultaneous at these places; and little later at Barnstaple. Great part of England, as far as the Midland Counties, was visited severely as the day went on; so were Brussels, Paris, Chambery, and Toulon. It reached London about 1 p.m., and rain fell there for a short time at the rate of six inches per hour. The record of accidents, probably not half what occurred, mentions as struck 16 men, four fatally, thirteen beasts, twelve sheep, five churches, ten houses, &c. At Altarnun and Dartmoor the storm took place the day before. The general forwardness of the season was strongly marked.

June was also a brilliant month. The rainfall was only half an inch (about one fifth of the average), and it fell on only 6 days, instead of the average thirteen. At Sennen, St. Agnes, and Newquay, all but four days were quite dry. The mean temperature was 2·2 deg. above the average. Mr. Tripp records a difference of 50° between 89° and 39°, from day to night of 23rd, at Altarnun. For Greenwich, Mr. Glaisher states that the only

instance in 98 years of higher mean temperature in the corresponding quarter, was in 1865. Its dryness latterly was unfavourable to all but the wheat crops.

July was also most unusually fine; the mean temperature was no less than $5^{\circ}\cdot3$ above the average. The rainfall was only 2-5ths of the ordinary quantity; the days on which any fell were only 8, the usual number being 13; and sunshine predominated over cloud to nearly the same excess. The thermometer did not, however, rise above 84 at Truro, whilst it reached 96·6 at Greenwich, and about the same point in many midland places:—at Helston, Mr. Moyle records 86°, and Mr. Tripp gives 90 for Altarnun, but $78\frac{1}{2}$ was the highest point noted at Penzance, 80 at Falmouth and Bodmin. The general result was great drought, but it was much less severe in this county than in the central parts of England, where the want of water, combined with the great heat, acted injuriously both on animal and vegetable life, to an extent unprecedented in this country; in many places not a blade of grass was to be seen; in those districts there were many deaths from sunstroke. The only thunderstorm was on the 26th; it extended from Penzance to beyond Truro, but was not intense. The eastern counties were visited much more severely in this way on the 11th and 12th.

August was generally fine and hot for the first fortnight, and the mean temperature of the month was thus raised slightly ($0\cdot3$) above the average; afterwards, the weather was unsettled, with a good deal of wind and rain, till the 22nd, when it became fair and rather fresh till the end. The total rainfall, just 3 inches, was rather above the average. There was a thunderstorm on the 3rd throughout the west; at Helston it was heavy, and many cattle were killed. The finer and cooler close of the month was ushered in on the 22nd by a gale, not very heavy in Cornwall, but extremely violent elsewhere, as in Guernsey, South Wales, and Hampshire. The influence of the return of moisture was marked by a rapid restoration of verdure.

September was brilliantly fine up to the 16th, and the heat was on some days unprecedentedly great, reaching on the 7th, 85 at Helston, 82 at Truro, 79 at Bodmin, and 87·5 at Altarnun; at Greenwich, on the same day, it rose to 92, the highest point ever recorded there in that month. The mean temperature at Truro was $3\cdot3$ above the average. The summer may be said to have broken up on the 17th, when a thunderstorm visited the west generally,—noted as “terrific” at Penzance, less intense at Helston and Truro. The total rainfall ($4\cdot03$) was about one fourth more than the average ($3\cdot16$); at Bodmin the quantity ($6\cdot42$) which fell after the 16th was unprecedented; up the country, the renewal of the supply of water and the restoration of vegetable life were established by the generally abundant rain.

October began and continued in contrast with the splendid season preceding it; the mean temperature was about 2 deg. less than usual, and although the quantity of rain (5 inches) was just the mean, 23 days were rainy, instead of $19\frac{1}{2}$, the average number. The fall was very heavy on the 23rd and 24th, amounting at Truro to 2·05 inches, and on the latter day to 1·3 inch in 12 hours at Penzance. At Altarnun 8 frosty nights are recorded,

at Truro there was only one. The influence of the prolonged heat of the summer was shown by renewed flowering and fructification in many places.

November had a rainfall of 5·8 inches, largely in excess of the average for that month (4·2); but the number of days on which it fell (16) was more than one-ninth less than usual. The fall was very heavy on some days; on the 21st it was particularly so, amounting at Truro to 1·76 inch, at Bodmin to 1·99, at Altarnun to 2·30, the heaviest in any one day of this year. The mean temperature was about $1\frac{1}{2}$ degree below the average: the "November cold wave" passed over us between the 6th and 16th. At Truro frost was registered 6 times, at Altarnun 17; the continued warmth of the soil was, however, manifested even now: Capt. Liddell notes that there was a second crop of pears and strawberries in his garden, and that hawthorn was in blossom at Wadebridge.

December was remarkably warm, wet, and windy, with a low and fluctuating barometer. The mean temperature of the month was about 5 degrees above the average here, and nearly 7° at Greenwich, and the thermometer never fell below 38 at Helston and Truro, or 37 at Bodmin; at Altarnun five frosty nights were noted. The rainfall at Truro (8·26 inches) was nearly twice the ordinary quantity, and the same proportion held good generally at the other stations; and there was equally little exception to the equal distribution of raininess throughout the month, one day only having been quite free from it; the fall at Altarnun was 13·23 inches, the largest amount recorded there in one month during five years. Electrical discharges were more than usually frequent; on the night of 14th-15th the thunder and lightning at Penzance are characterised as "terrific"; but at Truro "lightning was seen, thunder not heard." On the 22nd, 28th, and 29th, however, the latter locality was in close proximity to repeated explosions. Gales are registered on 10 days at Helston, on 8 at Truro; that on the 6th, although not of extreme violence, was attended with thick weather, which occasioned the wreck of the barque *North Britain* on the Eastern Green, near Penzance. The excess of warmth in December more than counterbalanced the deficiency of the two preceding months, and raised the mean temperature of the quarter, as a whole, 8-10ths of a degree above the average of the previous 97 years, as observed at Greenwich; so the surplus of rain in this last month of the year, added to some excess in October and November, made the total quantity in 1868 more than the average annual amount, by nearly 4 inches at Truro, and above 9 inches at Bodmin, notwithstanding the unusual dryness of the summer.

The following table will furnish a view, at once comprehensive and accurate, of some of the chief features of the weather during the six summer months of 1868, at Truro, compared with the same season in its average condition, as estimated from the records of a pretty long series of years. It will be seen that there was an excess of sunshine in every month beyond the ordinary proportion, and in four months this was very strongly marked.

1868.	Obscuration of Sun at 9 a.m. & 3 p.m.						Actual Weather at 9 a.m., 3 p.m., & 9 p.m.				Rainfall.			
	Sunshine.		Gleam.		Cloud.		Dry.		Wet.		Quantity in inches.		Number of days with rain	
	17 yrs.	1868.	17 yrs.	1868	17 yrs.	1868.	16 yrs.	1868.	16 yrs.	1868.	19 yrs.	1868.	19 yrs.	1868.
April . . .	31·4	34	6·7	6	22·0	20	75·8	78	14·2	12	2·83	3·61	13·5	10
May . . .	34·7	48	7·1	1	20·2	13	81·4	84	11·6	9	2·63	1·69	13·7	10
June . . .	34·1	45	8·3	6	17·6	9	79·1	89	10·9	1	2·49	·54	13·0	6
July . . .	35·4	51	8·1	2	18·5	9	83·9	89	9·1	4	2·43	1·04	12·9	8
August ..	35·7	42	8·1	3	18·2	17	82·1	83	10·9	10	2·68	2·99	13·8	14
September	28·2	40	7·5	6	24·3	14	79·3	85	10·7	5	3·16	4·03	15·3	15
Means ..	33·2	43·3	7·6	4·0	20·1	13·7	80·3	84·7	11·2	6·8	2·70	2·32	13·7	10·5

The freedom of this county generally from the intensity of heat experienced further east, is referred to in the report of the annual meeting of this Institution, and has been pointed out in this summary of monthly results. Neither animal nor vegetable life suffered materially here; but the beneficial effects of the unusually high mean temperature were clearly evidenced in the abundance and weight of the cereal crops. Little reference has been made in this summary to the occurrences of the "Natural Calendar," because a distinct record of its phenomena in 1868, as observed by Mr. T. Q. Couch, is published in this number of the *Journal*, in sequence to similar registers for several preceding years. Altarnun is the only station at which the readings of the thermometer approached those of the central parts of England; and although the stand used by Mr. Tripp, which differs little from Mr. Glaisher's, would, like our own, probably give higher results than exposure near a north wall, as adopted at the Falmouth Observatory, there is no reason to doubt that the climate of Altarnun is decidedly more extreme as to heat, as it is manifestly in regard to cold, than that of either of the other stations here compared with it.

Looking to the rainfall for the whole year, as exhibited in Table 5, one cannot but be struck with its small amount (26·19 inches) at S. Sennen; and this is the more interesting from its agreement with the general results of observation at the opposite Isles of Scilly. In both localities this condition may plausibly be attributed to the fact that the ocean winds pass over them without meeting with land of sufficient elevation to precipitate their moisture. Newquay has been usually remarkable for similarly moderate rainfall, but it was less so last year, not having escaped the torrents of December. It is worthy notice, that the total quantity of rain in 1868 was rather below the usual yearly average at Penzance and Helston, whilst it was largely in excess (nearly four inches) at Truro, and still more conspicuously so (nearly nine inches) at Bodmin.

C. BARHAM.

TABLE No. 1.

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1868, from Registers kept at the Royal Institution of Cornwall.

1868.	MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level.													Between which days it occurred.					
	Month.	Mean pressure corrected to 32 deg. Fahr.			Mean of monthly means.	Mean diurnal range.	True mean of monthly means.	Mean force of vapour.	Mean pressure of dry air.	Corrected absolute maximum observed.	Day.	Corrected absolute minimum observed.	Day.		Extreme range for the month.	Mean diurnal range.	Greatest range from 9 a.m. to 9 p.m.	Day.	Greatest range in any 24 hours.
		9 a.m.	3 p.m.	9 p.m.															
January	29.892	29.889	29.919	29.900	.004	29.896	.235	29.661	30.408	29	28.970	20	1.498	.176	.53	23	.70	21 & 22	
February	30.181	30.166	30.209	30.185	.003	30.182	.265	29.917	30.620	10	29.370	29	1.250	.147	.49	8	.55	7 & 8	
March	30.031	30.028	30.058	30.039	.007	30.032	.275	29.757	30.542	28	29.015	11	1.527	.095	.36	8	.80	11 & 12	
April	29.933	29.937	29.970	29.947	.004	29.943	.298	29.645	30.387	15	28.802	19	1.585	.102	.43	19	.47	23 & 24	
May	29.926	29.941	29.964	29.944	.002	29.942	.365	29.577	30.336	14	29.352	23	.984	.074	.34	23	.32	1 & 2	
June	30.136	30.130	30.156	30.141	.001	30.141	.436	29.705	30.315	27	29.633	22	.682	.046	.17	25	.29	23 & 24	
July	30.045	30.027	30.062	30.045	.002	30.043	.529	29.514	30.292	24	29.605	28	.687	.050	.21	29	.32	29 & 30	
August	29.873	29.888	29.910	29.890	.004	29.886	.470	29.416	30.321	28	29.382	22	.939	.079	.23	22	.64	21 & 22	
Sept.	29.731	29.713	29.756	29.733	.004	29.729	.470	29.259	30.268	1	29.122	30	1.146	.059	.28	27	.27	19 & 20	
October	29.973	29.967	29.990	29.977	.006	29.971	.361	29.610	30.415	28	29.607	1	.808	.082	.29	28	.43	1 & 2	
Nov.	30.169	30.086	30.119	30.125	.004	30.121	.253	29.868	30.609	13	28.967	22	1.642	.092	.39	23	.66	21 & 22	
Dec.	29.503	29.490	29.513	29.502	.003	29.499	.309	29.190	30.213	9	28.835	24	1.378	.173	.36	16	.61	15 & 16	
Means	29.948	29.938	29.969	29.953	.004	29.949	.355	29.593											

REMARKS.—.005 in. should be added to all the readings of the Barometer for its elevation of 43 feet above mean sea level. The Barometer used is a standard, made by Barrow, and compared with the standard Barometer at the Royal Observatory, Greenwich, by Mr. Glasher. The corrections for Index Error (.40.008) and for Capillarity (.40.013) have been applied.

TABLE No. 2.

MONTHLY MEANS OF THE THERMOMETER.

1868.	MASON'S HYGROMETER.												SELF REGISTERING.						ABSOLUTE.										
	9 A.M.		3 P.M.		9 P.M.		Mean of Dry Bulb.	Mean of Wet Bulb.	Mean correction for diurnal range.	True mean of Dry Bulb.	Mean of Wet Bulb.	Mean correction for diurnal range.	Mean temp. of evaporation.	Wet Therm. below dry.	Mean dew point.	Dew point below Dry Therm.	Mean of all the maxima.	Mean of all the minima.	Approximate mean temp.	Correction for the month.	Adopted mean temp.	Mean range.	Maximum.	Days.	Minimum.	Days.	Range.		
January.	42.0	40.4	44.8	42.8	41.8	40.6	42.9	41.3	1.1	41.2	1.3	39.9	2.6	0	47.0	37.0	42.0	0.2	41.8	10.0	0	55	14	0	17	4	0	38	
February	44.3	42.4	49.7	46.7	45.6	44.1	46.5	44.4	4.4	44.0	1.9	42.1	3.8	0	51.4	40.3	47.0	4.4	46.6	11.1	0	57	25	0	24	16	0	33	
March ..	48.4	46.0	51.5	47.6	46.3	45.0	48.7	46.2	7.7	45.5	1.7	43.8	3.4	0	54.0	41.8	47.9	1.0	46.9	12.2	0	61	31	0	29	30	0	32	
April ..	51.6	49.0	55.6	51.3	47.4	46.0	51.5	48.8	1.4	47.4	1.9	45.5	3.8	0	58.5	41.4	49.9	1.5	48.4	17.1	0	67	5	0	28	13	0	39	
May ..	58.2	54.6	62.3	56.8	53.7	52.3	58.1	54.6	2.1	52.5	3.3	49.2	6.6	0	66.0	48.0	57.0	1.7	55.3	18.0	0	78	3	0	36	7	0	42	
June ..	62.9	59.3	67.0	61.6	57.6	56.3	62.5	59.1	2.0	57.1	2.4	54.7	4.8	0	69.9	52.4	61.1	1.8	59.3	17.5	0	80	30	0	41	3	0	39	
July ..	68.5	64.5	73.1	67.3	63.2	61.6	68.3	64.5	1.3	63.2	2.9	60.3	5.8	0	76.6	57.0	66.8	1.9	64.9	19.6	0	84	14	0	45	7	0	39	
August ..	63.8	61.3	67.2	63.2	59.8	58.5	63.6	61.0	1.4	59.6	1.9	57.7	3.8	0	69.5	56.0	62.7	1.7	61.0	13.5	0	79	4	0	47	1	0	32	
Sept.	61.8	59.8	67.0	63.7	58.3	57.0	62.4	60.2	1.2	59.0	1.7	57.3	3.4	0	69.0	53.7	61.3	1.3	60.0	15.3	0	82	7	0	44	24	0	38	
October .	52.4	50.7	56.5	53.0	49.8	48.5	52.9	50.7	7.7	50.7	1.4	49.3	2.8	0	58.6	45.1	51.8	1.0	50.8	13.5	0	67	12	0	32	18	0	35	
Nov.	43.8	42.2	49.0	46.0	44.4	43.0	45.7	43.7	5.5	43.2	2.0	41.2	4.0	0	51.0	39.5	45.2	4.4	44.8	11.5	0	57	1	0	27	11	0	30	
Dec.	48.9	47.5	51.6	49.4	49.2	47.0	49.9	48.0	1.1	47.9	1.8	46.1	3.6	0	53.6	46.0	49.8	6.6	49.2	7.6	0	59	10	0	38	19	0	21	
Means ..	53.8	51.5	57.8	54.1	51.4	50.0	54.4	51.9	1.0	50.9	2.0	48.9	4.0	0	60.4	46.5	53.5	1.1	52.4	13.9	0								

The Thermometers are placed on the roof of the Royal Institution in a wooden shed, through which the air passes freely. The Standard Wet and Dry Bulbs are by Negretti and Zambra, and have been corrected by Mr. Glaisher.

TABLE No. 3.

1868.	WINDS.																														
	E.			S.E.			S.			S.W.			W.			N.W.			N.			N.E.			AVERAGE FORCE.						
Month.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	Mean.			
January	1	2	1	7	9	7	3	3	4	3	6	7	6	3	4	7	7	7	6	3	4	7	7	7	20	26	20	1.5	2.0		
February	0	0	0	6	9	8	6	10	9	10	7	7	6	3	4	0	0	1	2	0	0	0	0	0	20	25	20	1.8	2.1		
March ..	1	0	1	5	5	5	7	9	9	10	9	10	6	5	5	1	0	1	6	5	5	1	0	1	23	28	23	1.8	2.3		
April	4	3	4	4	4	5	5	8	6	5	4	6	9	7	9	0	1	0	3	3	1	0	0	2	18	28	14	2.1	2.1		
May	6	5	5	10	6	8	3	6	3	1	2	4	3	3	1	0	0	2	8	20	10	0	2	2	17	20	9	1.6	1.5		
June	2	3	2	1	1	3	5	4	2	10	11	15	8	9	5	2	0	1	4	2	3	4	7	12	12	16	4	1	2	1.3	1.3
July	7	5	2	1	4	1	1	2	2	3	4	7	12	12	16	4	1	2	8	9	5	5	2	0	1	17	20	9	1.5	1.5	
August ..	3	2	3	3	0	3	6	3	6	8	12	11	3	4	4	3	0	0	3	3	4	4	3	0	2	20	23	12	1.8	1.8	
Sept.	11	7	11	3	5	4	0	1	2	2	2	2	3	3	5	3	2	0	5	2	3	5	3	2	0	19	23	10	1.7	1.7	
October .	1	2	1	6	5	6	6	2	4	8	15	13	5	2	4	5	3	3	8	25	14	18	5	3	3	16	25	14	1.8	1.8	
Nov.	2	7	6	3	3	4	4	3	1	4	4	6	7	3	5	7	5	5	7	24	17	19	7	5	5	17	24	17	1.9	1.9	
Dec.	0	0	0	12	7	9	6	9	5	3	5	11	0	1	1	2	0	0	23	31	30	28	2	0	0	23	31	30	2.8	2.8	
Total	38	36	36	61	59	63	54	60	53	67	81	99	68	55	63	34	19	22	228	291	176	229	34	19	22	228	291	176	229	17.6	22.9
Means ..	36.7			61.0			55.7			82.3			62.0			25.0			1.9				2.4				1.5				

The force of the Wind is estimated on a scale from 0 to 6, from calm to violent storm.

TABLE No. 5.

STATIONS, FROM WEST TO EAST.	Jan. in.	Feb. in.	March in.	April in.	May in.	June in.	July in.	August in.	Sept. in.	Oct. in.	Nov. in.	Dec. in.	Total in. 1868.	Average yearly total.
(a) St. Sennen, Land's End, Rev. G. L. Woolcombe .....1868 Days with rain.....1868	3.29 19	.96 15	1.24 10	1.85 11	1.34 10	.71 4	.98 5	2.60 15	3.23 13	2.55 22	3.09 18	4.35 24	26.19 166	41.51
(b) Penzance, Mr. W. H. Richards .. 1868 Average of last ten years	6.92 5.17	2.62 3.35	2.25 3.37	2.97 2.27	1.68 2.12	.66 2.19	.86 2.44	3.83 3.19	2.55 3.41	5.40 4.48	3.99 4.24	6.48 5.27	40.21	41.51
(c) Helston, M. P. Moyle, Esq. 1868 Average of last nineteen years Days with rain .....1868 Average of last nineteen years	4.07 4.21 15 20.1	2.25 2.53 15.0	2.05 3.13 16.4	2.77 2.53 11.8	1.40 2.35 12.0	.94 2.33 7	.89 2.50 13.1	3.32 2.82 13.3	3.51 2.84 13.3	4.71 4.40 18.1	3.90 3.39 16.7	3.90 3.75 19.4	36.56 181	36.90 182.5
(d) Truro, Royal Institution of Corn. 1868 Average of last nineteen years Days with rain .....1868 Average of last nineteen years	7.15 5.18 21 21.0	2.42 2.73 15.4	2.48 3.17 17.5	3.61 2.83 13.5	1.69 2.63 13.7	.54 2.49 6	1.04 2.43 12.9	2.99 2.68 13.8	4.03 3.16 15.3	5.00 4.92 19.5	5.81 4.20 16	8.26 4.69 20.3	45.02 193	41.27 193.0
(e) St. Agnes, Mr. J. Opie .....1868 Days with rain .....1868	5.47 19	2.22 16	2.36 17	2.95 11	1.85 10	0.72 4	0.96 6	3.05 15	4.58 13	4.57 19	5.17 15	8.37 28	42.27 173	
(f) Newquay, Mr. Tregidgo.....1868 Days with rain .....1868	5.18 18	1.71 13	2.33 15	2.60 8	1.48 9	.50 4	1.80 3	2.95 13	3.08 11	4.02 17	4.05 16	8.11 29	37.81 156	
(g) Bodmin, Com. J. Liddell, R.N. 1868 Average of last nineteen years Days with rain .....1868 Average of last nineteen years	6.54 5.76 23 22	2.38 2.79 18	3.39 3.58 18	3.95 2.86 14	2.75 2.76 14	.87 3.17 15	.81 3.05 15	4.03 3.53 17	6.43 3.54 17	6.01 5.26 20	7.85 4.57 21	9.56 4.94 23	54.57 210	45.78 214
(h) Liskeard, Mr. S. Jenkin.....1868 Days with rain .....1863	6.98 23	3.14 19	3.31 22	4.65 13	2.75 11	.90 7	.83 6	3.66 18	6.22 13	5.70 22	5.96 18	9.72 29	53.82 201	
(i) Altarnun Vicarage, C. U. Tripp, Esq. 1868 Days with rain .....1868	9.18 22	4.48 25	4.80 24	5.13 17	3.29 14	1.45 10	1.21 16	5.75 23	6.57 16	8.67 23	7.37 20	13.23 30	71.13 240	

(a) Rain Gauge 5 in. diameter, 4 ft. 10 in. above ground, 300 ft. above sea level.
 (b) ditto 12 in. ditto 2 ft. 6 in. ditto 94 ft.
 (c) ditto 5 in. ditto 5 ft. ditto 115 ft.
 (d) ditto 10 in. ditto 40 ft. ditto 56 ft.
 (e) ditto 11 in. ditto 1 ft. 8 in. ditto 300 ft.
 (f) Rain Gauge 6 in. diameter, 1 ft. 9 in. above ground, 90 ft. above sea level.
 (g) ditto 5 in. ditto 1 ft. ditto 330 ft.
 (h) ditto 5 in. ditto 1 ft. 1 in. ditto 375 ft.
 (i) ditto 5 in. ditto 7 in. ditto 570 ft.

Rain-fall in Cornwall in 1868, with the annual averages for some stations, being necessary to see that the averages

CHRONOLOGICAL MEMORANDA.

1868.

January 1. The *Western Morning News* publishes an Article entitled: "Eighteen Hundred and Sixty-Seven in the West of England."

January 1. The *Cornish Telegraph* publishes an "Abstract of the Weather at Penzance and its neighbourhood, for the year 1867."

January 1, and subsequently, passim. *Cornish Telegraph* publishes, in continuation from the preceding year, a Series of Articles entitled "An Excursion," from "Old Celt." It includes notices of Lamorna Cove; The Dwelling of Chenance; Carn Bosava; Trewoof and the Old Mansion of the Lovells; The Crusaders, West-Country Folk going to the Holy Wars; Legends of the Giants of Portreath, St. Ann's, and Towednack; The building of Choon; The Fougou Hole and Celtic Monuments of Bolleit; Holed Stones; The Dawns Mayne and Garrac Zans; &c., &c., &c.

January 2. Annual Conversazione of the Plymouth Institution.

January 2. The *Cornwall Gazette* publishes a letter from Rev. Dr. Bannister, on "Tacitus the historian, and the Antiquity of Truro"; the object of the letter being to identify Truro with the "Trutulensem" of Tacitus: *Agric. Vit., cap. 38.*

January 4. About five o'clock, a.m., shocks of earthquake felt in the valley of the Parret and other parts of western Somersetshire.

January 9. *Cornwall Gazette* publishes a letter from Rev. Dr. Bannister, on "The Archbishopric of Cornwall." It asserts that Cornwall had an archbishopric prior to the founding of the metropolitan see of Canterbury.

January 15 and 30, and February 18; March 24; April 27. *Western Morning News* publishes, in continuation from the preceding year, Articles on "The Cornish Fisheries."

January 23. *Cornwall Gazette* publishes a letter signed "R. Pentreath," on "Tacitus; The Antiquity of Truro; and The Cornish Glossary."

January 23. *West Briton* publishes, under the title "Cornubiana," a notice, signed "Beta," of "A Cornish Philosopher"—a retired student and self-taught philosopher living some thirty years since in the parish of St. Keverne, and author of a pamphlet on "Light the Essence of Matter."

January 24. Death of Dr. Davy, the brother and biographer of Sir Humphry Davy, at Lesketh-how, near Ambleside. He was born at Penzance in 1790, and at the time of his decease held the rank of inspector-general of army hospitals. He was also a Fellow of the Royal Societies of London and Edinburgh, and a contributor to the "Philosophical Transactions" and to the "Transactions" of the Royal Society of Edinburgh and the Royal Medico-Chirurgical Society. He published in 1821 a quarto volume on Ceylon, wrote largely on meteorology, geology, chemistry, and medical science, and edited, in nine volumes, the collected works of his brother.

February 4. Conversazione at Torquay, in connection with the Torquay Natural History Society. There were exhibited mammalian remains found in and beneath the red earth of Kent's Cavern; and also cetacean remains cast ashore at Babbicombe Beach in 1867.

February 6. At the Plymouth Athenæum Dr. Bickers lectured before the members of the Plymouth Institution on "The natural and circumstantial development of Languages."

February 10. Death of Sir David Brewster, D.C.L., LL.D., &c., at Allerley House, near Melrose; in the 87th year of his age.

February 12. Death of Sir Charles Lemon, Bart., F.R.S., &c., at his residence, Carclew; aged 84 years.

February 19. *Cornish Telegraph* publishes the following list of books and papers, of which the late Sir Charles Lemon, Bart., was author:—

Letter to the Rev. Canon Rogers on the Appropriation of the Dunstanville Fund, 1837, 8vo.
On the Proposed Tariff as it affects Tin, Copper, and Timber used in Mines, 1842, 8vo.
A Letter to the Earl of Clarendon, on the Copper-ore Duties. London, 1847, 8vo.

Contributions to Transactions of the Royal Geological Society of Cornwall, viz:—
On the Mining Laws of Germany and some other Countries, VI. 150—172.
On the Mining Laws of France, VI. 238.
On Peculiarities in the Old Mining Laws of Mendip, VI. 327.
On a Stump of a Tree found in cutting a drain at Heligan. Plate. VII. 28. 1847.
The President's Addresses at the Annual Meetings, 1841—1850.

Contributions to Reports of the Royal Institution of Cornwall, viz:—
Agriculture in Cornwall, 1839, p. 22.
The Health of Cornish Miners, 1838, p. 50.
On the Leaden Seal of the Tinnerns of Cornwall, found at Bath, 1842, p. 31.
On a Stone Cannon-ball, dredged in Falmouth Harbour, 1844, p. 26.
Notices respecting the Dodo, 1847, p. 47.

Contributions to Journal of Statistical Society of London, viz:—
Statistics of the Copper Mines of Cornwall, I. 65—84. 1839.
On the Agricultural Produce of Cornwall, IV. 197—208. 1841.

Contributions to Reports and Sections of the British Association, viz:—
Report on the Application to Government for a Depository for Mining Records. 1839, p. 174.
The Agricultural Products of Cornwall, section. 1841, p. 83.

Contributions to Journal of Royal Agricultural Society, viz:—
Agricultural Statistics of France. I. 411. 1840.
On a Disease in Potatoes. IV. 431. 1843.
Medical Treatment of Sick Trees. V. 606. 1845.

February 20. *West Briton* publishes, under the title "Cornubiana," a reprint of "The Bonython Flagon," from the Gentleman's Magazine.

February 27. *West Briton* publishes a letter from Mr. Charles Fox, dated "Algiers," on the subject of longevity, and on antiquities in Numidia. Also, a letter from Rev. Dr. Bannister, concerning his "Cornish Glossary"; and, under the title "Cornubiana," an article on "St. Germans," with reference mainly to Walter Moyle of Bake, who died in the year 1721.

March 4. Penzance Natural History and Antiquarian Society. Meeting of the Council; Mr. J. J. A. Boase, president. The Honorary Secretary, Mr. T. Cornish, reported the presentation to the Society of a Red-headed Pochard and a Black Scoter, by Mr. James Symons, of Mayon; and a Shoveller Duck and a Teal, by Mr. Carter.

March 12. Annual Meeting of the Royal Cornwall Polytechnic Society; Mr. Rogers, of Penrose, one of the Vice-Presidents, in the chair. Mr. John St. Aubyn, M.P., elected President in place of the late Sir Charles Lemon, Bart. Mr. Augustus Smith, Mr. T. S. Bolitho, Dr. George Smith, and Mr. Jervoise Smith, M.P., elected Vice-Presidents. The nomination of Mr. Lovell Squire as meteorological observer was confirmed; and Mr. W. P. Dymond and Mr. A. Ll. Fox were re-elected honorary secretaries.

March 25. *Cornish Telegraph* publishes a letter signed "W. N., London," on the ancient family of Levelis of Trewoofe.—Also a letter signed "R. P." on "Old Celt and The Excursion."

March 25. *Cornish Telegraph* publishes "Extracts relating to Cornwall," from the Lansdown and the Cottonian MSS. in the British Museum.

March 26. *West Briton* publishes a letter signed "Curiosus," on "Brasses formerly in Crowan Church."

March 26, and May 14. *Cornwall Gazette* publishes letters signed "Christopher Cooke," concerning Padstow and its antiquities.

April 16. *West Briton* publishes a letter from "Curiosus," on "Archæology."

April 20. Seventh Annual Meeting of the Miners' Association of Cornwall and Devonshire, at Redruth; Mr. John St. Aubyn, M.P., President, in the chair. Mr. Robert Were Fox, Major Bickford, and Rev. Saltren Rogers, elected Vice-Presidents. Mr. Collins appointed lecturer, in place of Dr. Le Neve Foster, who had accepted an engagement under the Viceroy of Egypt.

May 1. Annual Conversazione of the Plymouth Institution and Devon and Cornwall Natural History Society; Mr. R. F. Waymouth, M.A., in the chair. Mr. C. Spence Bate, F.R.S., shewed and described a remarkable Ray, differing from the ordinary Ray in having two large spines close to the tail. Dr. Albert Hingston read a Paper on the health of Plymouth.

May 6. A *Puya Chiliensis* in flower, for the third time, in the gardens of Tresco Abbey, Scilly. It is stated to be the only specimen in the kingdom out of doors. It was planted in its present position about 25 years ago, when it was purchased on the dispersion of Messrs. Loddige's collection.

May 6. *Cornish Telegraph* publishes an account of the heavy sea on the 24th of April, at Mount's Bay, Porthleven, and St. Mary's, Scilly.

May 7. *West Briton* records the recent discovery of an ancient sepulchral urn in the parish of Gerrans.

May 9. Death of Lord Brougham and Vaux, at Cannes, aged 89 years.

May 20. Death, at Penzance, of the Reverend John James Carne, M.A., vicar of Eglos-Merther, aged 44 years, author of several Papers in the *Journal of the Royal Institution of Cornwall*, including "Identification of the Ridwri of the Tregothnan Charter"; "An Attempt to identify the Domesday Manors in Cornwall"; and "The Bishops of Cornwall, Saxon Period."

May 22. Royal Institution of Cornwall. Spring Meeting; Mr. Rogers, of Penrose, presiding. The following Papers were read: Ornithological Occurrences in Cornwall; Mr. E. Hearle Rodd. The Cliff-Castle of Kenidzhok; Mr. J. T. Blight, F.S.A. Chronicles of Cornish Saints (III.—S. Constantine); Rev. John Adams, M.A. John De Trevisa; Mr. Rogers, of Penrose. Observations made on some Cornish Relics; on Flint Implements, the Gulf Stream, the Laocoön, a Memorial-Stone in the Church of Ruan Lanyhorne, and other subjects. (See *Journal of the Royal Institution of Cornwall*, No. X).

June 25. *Cornwall Gazette* publishes a letter from "Christopher Cooke," on "Cornish Castles."

June 29. Death of Sir Samuel Thomas Spry, in the 64th year of his age, at Place House, St. Anthony in Roseland.

July 1. *Cornish Telegraph* publishes "The Antiquity of Bonfires on St. John's Eve, and the observance of the custom in Brittany."

July 16. *West Briton* publishes a letter from "Curiosus," concerning the disposal of a collection of Rubbings from Brasses and Monumental Slabs, the property of the late Rev. Æneas B. Hutchinson, B.D. The writer deprecates their being placed in the British Museum.

July 28, 29. Devonshire Association for the Advancement of Literature, Science, and Art. Seventh Annual Meeting, at Honiton; Mr. J. Duke Coleridge, M.A., Q.C., M.P., President.—The following Papers were read:—The Submerged Forest and the Pebble Ridge of Barnstaple Bay; Mr. W. Pengelly, F.R.S., F.G.S. Notes on the Blights of Corn, with suggestions for their prevention; Rev. R. Kirwan, M.A. The Marine and Freshwater Sponges of Devonshire; Mr. E. Parfitt. Moral and pecuniary results of Prison Labour; Sir J. Bowring, LL.D., F.R.S. The condition of some of the bones found in Kent's Cavern; Mr. W. Pengelly, F.R.S., F.G.S. Pseudomorphous Crystals of Chloride of Sodium, and their occurrence in the red rocks of Devon; Mr. G. Wareing Ormerod, M.A., F.G.S. The practical application of meteorological observations; Mr. W. W. Buller. The evidences of Glacial Action in South Devon; Mr. E. Vivian, M.A. The Science of History;

Rev. F. E. Risk, M.A. The Hill-Fortresses, Sling-Stones, and other Antiquities of South-east Devon; Mr. P. O. Hutchinson. Mont Cenis; Mr. George Neumann. The Salmonidæ of Devonshire; Dr. Scott. The Mineral Localities of Devonshire; Mr. T. M. Hall. The Literature of Kent's Cavern prior to the year 1859; Mr. W. Pengelly, F.R.S., &c. The History of the Discovery of Fossil Fish in the Devonian Rocks of Devon and Cornwall; Mr. W. Pengelly, F.R.S., &c. The Game of Chess; Mr. Jerwood. Vagrancy, Mr. E. Vivian. What is Capital?; Dr. Hodgson. Sanitary Notes; Sewer Ventilation; Mr. E. Appleton. Rainfall in Devonshire in 1866 and 1867; Mr. W. Pengelly, F.R.S., &c. There was an inspection, by members of the Association, of Tumuli on Gittisham Hill.

August 4. *Western Morning News* records a recent discovery of ancient sculptures in Carrara marble, built into a wall of Mabe Church.

August 6. *Cornwall Gazette* publishes a letter from "Christopher Cooke," on "Cornish Tenures."

August 9, 10. The Perseides or August Meteors. The average hourly number of Meteors on the 9th, observed at Penarth, Truro, was 14. They were very small, generally of a white colour, and the majority had trains. Their duration was very short. The radiant point was *Eta Persei*.

August 10, 11. Royal Institution of Cornwall, Antiquarian Excursions in the neighbourhood of Liskeard.—(See *Journal of the Royal Institution of Cornwall*, No. X).

August 18. Fifth Annual Meeting of the British Pharmaceutical Conference, at Norwich; President, Mr. D. Hanbury, F.R.S., F.L.S.

August 19. Excursion of the Penzance Antiquarian and Natural History Society to Lanyon Cromlech, the Men-an-Tol, the Men-seryfa, Trevean Barrows, Bosulow Crelley, and other antiquities.

August 19, and following days. Annual Meeting of the British Association, at Norwich; Dr. Hooker, President. Among the Papers read were the following:—Fourth Report of the Committee for the exploration of Kent's Cavern; Mr. W. Pengelly, F.R.S., &c. On the Condition of Bones in Kent's Cavern; Mr. W. Pengelly, F.R.S., &c. Artificial Rocking Stones; W. R. Grove, F.R.S. Statistics of Pulmonary Consumption; Dr. Crisp.

August 20, and following days. Third Session of the International Congress of Præ-historic Archæology, at Norwich; Sir John Lubbock, Bart., President. Among Papers read were:—On Flint Flakes and Mammalian Remains in the Submerged Forest at Barnstaple; Mr. H. S. Ellis. On Ogham Monuments; Mr. R. R. Brash.

August 21. 25th Annual Meeting of the Ray Society, at Norwich; Mr. J. Gwyn Jeffreys, President.

August 27. *West Briton* publishes a letter signed "Cromlech," on the name "Trevelly" or "Trethevly."

August 30. Death of George Smith, Esq., LL.D., F.R.S., at his residence, Trevu, Camborne; aged 68 years.

September 2. *Cornish Telegraph* records the discovery, on the 21st of August, by Mr. W. C. Borlase of Castle Horneck, of a sepulchral urn in a barrow on the top of Tredinney Hill, near Chapel Carn Brea. It was found in a kist-vaen, formed with eight stones in layers of four. It was resting on a natural granite rock, and was covered by a flat stone. The diameter was about eight inches, and the length of the vessel about thirteen. The urn was perfect, except the bottom, which appeared to have been removed before interment. There were four handles, and the urn was ornamented with a rude chevron pattern. The mouth was downwards. It was filled with human bones, which, from their size, must have been those of a woman or a small man. A few flints were found on the removal of the earth, and a considerable quantity of ashes lay around a large natural rock in the centre of the mound, on which the body was, in all probability, burned.

September 3. *West Briton* publishes a letter from "Curiosus" giving an account of a recent opening of the "Tich Barrow," popularly called "The Giant's Grave," near Camelford. In the interior of the barrow was a flat, rough, and irregular granite slab, placed over a stone case or chest, about nine inches deep, with a clay bottom; and on this were laid the bones of a human skeleton, but no urn, implements, or ornaments. The bones, which were of unusual size, were collected together, carted away to Tintagel, packed in a box, and sent to Mr. John Douglas Cook (now deceased), late Editor of the *Saturday Review*.

September 5. Death of Mr. W. R. Hicks, at his residence, Westheath, Bodmin, aged 60.

September 10. *Cornwall Gazette* publishes a letter from "Christopher Cooke," on "Cornish Churches."

September 10. A fine meteor from *Theta Pegasi* to near *20 Piscium*; colour, pale yellow; duration four to five seconds; arc traversed, about 40"; fine train.

September 29. Royal Cornwall Polytechnic Society. 36th Annual Exhibition; Mr. John St. Aubyn, M.P., presiding. Mr. Glaiser, F.R.S.A., delivered a Lecture on "Meteors"; and Mr. Frank Buckland on "Salmon and Oyster Cultivation"; and a Paper was read by Rev. C. M. Edward Collins, on the Establishment of Potteries in Cornwall.

September 30. Miners' Association of Cornwall and Devonshire. Annual Meeting at Falmouth; Mr. John St. Aubyn, M.P., President. Discussion on the subject of "Underground Temperature." Papers, &c., On the work of the Miners' Association; Rev. Saltren Rogers, M.A. On the New Deep Adit in the Upper Harz Mines; Hilary Bauerman, F.G.S. On Boring Machines; J. H. Collins. On Dynamite; Messrs. Webb and Bennetts. On a Process for the separation of Copper, Iron, and other heavy impurities,

from Tin Ore; Richard Pearce, Morfa Silver Works, Swansea. On Dressing Tin Ores; Robert Oxland, F.C.S. On a Deposit of Tin in Wendron; Charles Fox. On the Formation of Nuggets in Auriferous Drifts; J. H. Collins. On a new Calciner for Roasting Tin and other ores; Robert Oxland, F.C.S., and J. Hocking, jun. Notes on an Excursion of the Miners' Association to the St. Just District; William Argall. On Mineral Phenomena; Henry Francis. On New Cornish Minerals; Professor Church, M.A.

October 7. About 11.45 p.m., a splendid meteor seen in the S.E., from near Liskeard. "At first it appeared as an ordinary shooting star, but instantly expanded into a ball, apparently between twenty and thirty minutes in diameter, when it became dark red. In its wake followed a stream of light nearly a degree in width, and about twenty degrees in length, of a pale bluish tinge around the ball, but otherwise of a vivid red. Before disappearing, the ball turned to a bright blue, and ultimately burst, emitting a great many luminous fragments, which quickly disappeared." This meteor was also seen at Truro in the same direction, or about E.S.E.

October 29. *Cornwall Gazette* publishes a letter from "Christopher Cooke," on "Cornish Oratories."

October 30. About half-past Ten at night the shock of an earthquake was felt at various places in Devon and Somerset, and also in Warwickshire and other midland counties of England, and in South Wales.

November 3. Royal Geological Society of Cornwall. Annual Meeting at Penzance; Mr. Hugh Seymour Tremenheere, President. The following Papers, &c., were read: On the occurrence of Garnet in Belstone Consols Copper Mine, Okehampton; Mr. Warrington Smyth, F.R.S., &c. On Mineral Deposits, Mr. Robert Hunt, F.S.A. On an extraordinary commotion of the sea at the Loe Bar, on the 24th April, 1868; Mr. Rogers, of Penrose; and on a similar occurrence in May, 1867, by Mr. R. Edmonds. On Tin Streaming; Mr. J. H. Collins. On the Bones of a Hippopotamus found at Constantina, in Algeria; Mr. Charles Fox. On a recent occurrence of Fire-damp in Ding Dong Mine; Mr. S. Higgs, jun. On the Fossil Fish of Cornwall; Mr. C. W. Peach, Edinburgh. Notice of a Granite Boulder found in a deep cutting in the parish of St. Stephens in Branwell; and of a peculiar formation found in an elvan course in the same parish; Mr. W. West.

November 4. *Cornish Telegraph* publishes an account, by Mr. W. C. Borlase, of Castle Horneck, of his discovery of a sepulchral urn on Tredinney Hill.

November 5. Transit of Mercury observed at Penarth, Truro, by projection on a screen with $3\frac{3}{4}$ achromatic. No spot of light seen on disc, nor any annulus around the planet; clouds prevented the egress being observed.

November 14 and 28. *Western Morning News* publishes descriptions of "The Trefry Granite Quarries."

November 25. *Cornish Telegraph* publishes an account, by "Old Celt," of "Lanyon Quoit and Quoits in general."

November 30. Royal Institution of Cornwall. Annual Meeting; Dr. Barham presiding. The following Papers were read:—On a new British Eschara, and on the occurrence, in Cornwall, of *Sphenotrochus Wrightii*, of Gosse; Mr. C. W. Peach, A.L.S. Chronicles of Cornish Saints (IV.—S. Samson); Rev. John Adams, M.A. The Green Book of St. Columb; Mr. R. N. Worth, Plymouth. (See *Journal of the Royal Institution of Cornwall*, No. X).

December 7. Oxford Local Examinations. Presentation of Prizes and Certificates at Truro, by Mr. Tremayne, of Heligan.

December 9. *Cornish Telegraph* publishes a notice of "Lanyon," by "Old Celt."

December 9. *Cornish Telegraph* publishes, from "W. N., London," "Further Information as to the Noy, or Noyes, Family."

December 10. *Cornwall Gazette* publishes a letter from "Christopher Cooke," on "Antiquities of Helston."

December 16. *Cornish Telegraph* publishes "The Knockers, or Buccas, of the Mines"; by "Old Celt."

December 30. *Cornish Telegraph* publishes a letter signed "Ricardus Super-Sabulones," on the "Folk-Lore of Cornwall."

December 31. *Cornwall Gazette* publishes a letter from Mr. Whitley, on "Valley Fogs and their effects."

NORWICH MEETING OF THE BRITISH ASSOCIATION, &C.

AMONG the multitude of Papers read at the Norwich Meeting of the British Association, last August, and at the Third Session of the International Congress of Præ-historic Archæology, at the same place and time, were a few which may be considered especially interesting in Cornwall and Devon; and we have therefore thought it desirable to lay before readers of our *Journal* an abstract of such records of these Papers as have fallen under our notice.

BRITISH ASSOCIATION.

SECTION C.—GEOLOGY.

KENT'S CAVERN. MR. PENGELLY read the fourth report of the Committee for the Exploration of Kent's Cavern. The work of the past twelve months had been the exploration of the portions known as the Lecture Hall and South-West Chamber. In the Lecture Hall, as it was called from

lectures being often delivered there, the deposits were of the same general character and order as in those parts of the cavern which the committee had previously explored and reported upon. The Red Cave earth, of unknown depth, was completely sealed up with the stalagmitic floor, which in its turn was covered with a layer of black mould. The objects found in this mould were less numerous than in similar accumulations previously reported on. Amongst them were : several pieces of pottery, a spindle whorl, a roughly cut piece of red sandstone, a portion of a bone comb, small red earthenware pan, marine shells, small piece of smelted copper, the entire lower jaw and almost complete skull of a badger, part of a human upper jaw with eight teeth, four of which remained in their sockets, and the internal cast of a fossil shell. The articles found in the second floor, or stalagmite, included a fine molar of the rhinoceros, the præ-molar of a hyæna, two or three molars of a bear, and a large part of the humerus of a bear (probably), &c. Since the time of the rhinoceros, the increase in thickness of the stalagmitic floor had been barely sufficient to cover these relics. A few relics of charred wood were found in the same floor. The Cave Earth was reported to be of the ordinary typical character ; and a description was given of the fossils found in the Cave Earth, and of those entombed in the breccia mingled therewith. While split-bones and bones bearing teeth-marks had been found in the Red Cave Earth, no split bones had been found in the rocky breccia. The bones scored with teeth had probably been gnawed by the hyæna, and the split bone was an evidence of the presence of man. The breccia, which had been rolled by some means into the cavern, was probably older than the Red Cave Earth ; and though it had not given up any charred wood, or longitudinally-split bones, yet the committee thought it would be premature to draw at present any inference from this negative fact. But while the labours of the past twelve months had not added anything to our knowledge concerning the antiquity of man, yet up to this time no comparatively modern object had been found below its place, and no ancient one had been found within the modern niche. The lower floor of the stalagmite had kept the two apart. Probably the ancient cave men made use of unpolished flint implements, of which specimens had been found in the Red Cave Earth, split the bones of animals, employed fire in the preparation of food, and selected stones for crushers or hammers.

MR. PENGELLY then read a Paper " On the condition of Bones in Kent's Cavern." He stated that bones in four different conditions were found in the cavern, viz., entire, crushed, fractured, and split. The crushed bones were due to blocks of breccia and stalactite falling upon them ; to hyænas he attributed the fracturing of others, in corroboration of which he produced bones presenting exactly the same appearance, which had been fractured by hyænas in the Zoological Gardens ; whereas he concluded that man had split the bones longitudinally to obtain the marrow, and where recent bones had been split by the like agency they had a precisely similar aspect.—In the discussion which ensued, MR. JOHN EVANS, while not disputing the power of ancient or modern man to split bones, was of opinion that, taking the evidence given by the bones themselves, they must have been split and gnawed

by animals. Mr. Evans then gave an elaborate description of the flint flakes and tools found in these caverns, and referred to the molecular changes which took place in block flints, so as to make them actually soft.—Mr. BUSK was of opinion that the longitudinally split bones had been gnawed by hyænas, and were probably split by them during the operation.—Mr. BOYD DAWKIN referred to the fragment of calcined bone produced by Mr. Pengelly, as evidence that the ancient human occupants of the cave were acquainted with the use of fire.—Mr. PENGELLY, in reply, wished it to be understood that he only said bones could be split by men in the manner described. He maintained that man had lived in the cavern, as well as the hyæna, for he had shown, in previous years, that the hearth, with calcined bones and the tools of man, had been found therein.

ARTIFICIAL ROCKING-STONES.—AN EXPERIMENT BY W. R. GROVE, F.R.S.

Some short time ago, during an excursion in Cornwall, my attention was naturally directed to rocking-stones, and those approximations to rocking-stones which are seen in the granite where it is exposed to the action of the heat and cold, air and water. I presume that I need not argue here that rocking-stones are natural results and not superposed on their pedestals, as was once believed, by the hand of man.

Throughout the greater part of the granite rocks of the west coast of Cornwall, formations are to be seen approaching in character to rocking-stones, or to discoid piles like the Cheesewring.

If we suppose a slab of stone of a paralleloiped form lying on another, both having flat surfaces, or in other words such slabs as are formed by fissures in horizontal and perpendicular directions which are common in exposed granite rocks, the attrition and disintegration produced by changes of weather, of temperature, &c., would necessarily act to the greatest extent at the corners and next to that at the edges, because those parts expose respectively the greater surfaces compared with the bulk of the stone. This would tend to round off all the angles, and gradually change the rhomb more or less towards an oblate spheroid. This would account for the Cheesewring, &c. But, then, it may be asked, why should this process gradually work on to a rocking-stone; in other words, why should the last unworn point, points, or line, be in the line joining the centre of gravity of the upper stone with that of the earth. Such an accident, it may be said, might happen, but the chances are almost infinity to a unit against it. Not so; assume the wearing away between the slabs to reach a point which is not in the line of centres of gravity, the upper stone would then fall on one side, leaving the unworn point most exposed to climatal and probably to electro-chemical action from the water lying in the angle of the crevice, evaporation being less rapid there than at other parts. This point would then be worn away, and the stone would fall back a little; then fresh action upon new surfaces, another oscillation, and so on. The effects which I have explained as taking place by steps, would, in fact, take place by insensible progression. By assuming

this process, unless there be some interfering action, it becomes not improbable that the last point or line worn away would be the point or line on which, from its being in the line of centres of gravity, the upper stone would rock. After seeing the great Logan-stone near the Land's End, I traced so many other approximations to rocking-stones along that coast, that I became satisfied, as far as one ought to be satisfied on any subject of human enquiry, that this was a correct theory. It then occurred to me, if this view be true, may we not be able to hasten the operations of nature so as to produce artificially (if such a term may be used) the rocking-stone results. A very little thought suggested the experiment. Two parallelepipeds of iron, which had been made for keepers of magnets, were taken similar, but that one was twice the length of the other. The shorter was superposed on the longer, and both immersed in sulphuric acid diluted with three times its volume of water, some nitric acid being added at first to hasten the corrosion. The liquid was changed from time to time as it became nearly saturated, but without changing the position of the iron. At the end of three or four days the pieces of iron were taken out, washed, and examined, when the upper one was found to be a perfect analogue of a rocking-stone, so delicately balanced on two points that it could be made to rock by blowing on it with the mouth. [Result shown.] It will be observed in this experiment that the iron rocks only in one direction. Such is the case with the Great Logan-stone, and I believe with the greater number of rocking-stones. It is obviously more probable that a stable equilibrium should be obtained on two points than on one. I have not yet got a specimen to rock or spin upon one point. [Approximation to this shown by two zinc discs and explained.] If the surfaces of the slabs be in such close contact that there is not room for circulation of the saturated liquid, a formation like those near the Cheesewring will be effected, or if a number of discs or slabs be superposed and the lower ones more exposed to the weather, and to catch the dripping and drifting water from the upper, we should get a formation exactly like the Cheesewring, which may be called an incipient-compound rocking-stone, in that each slab is worn away at the edges, and the lower ones much more than the upper, so that if left alone, which it won't be, and if it does not topple over too soon, which it probably will, it might well end in a rocking-stone. I should not be surprised if it rocked now in a great storm.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

After the reading of a Paper, by DR. CRISP, on the "Statistics of Pulmonary Consumption in 623 Districts of England and Wales," MR. HOLLAND said he was employed some years ago by Government to investigate the cause of an alleged excess of phthisis in the Cornish districts. In the Registrar-General's returns all pulmonary diseases causing consumption were classed under the head of phthisis. Now, this was a great mistake, consumption and phthisis being often quite different things. Upon investigation, he found that the lives of the Cornish miners were shortened ten years on the average by pulmonary diseases, but that the proportion of phthisis was not in

excess at all. Nor did he think there was an excess of phthisis in the western towns: there might be an excess of pulmonary consumption; but the same fallacy pervaded the returns of the Registrar-General in this respect that he had noticed in the case of Cornwall.

INTERNATIONAL CONGRESS OF PRÆ-HISTORIC ARCHÆOLOGY.

FLINT FLAKES AND MAMMALIAN REMAINS.

Mr. H. S. ELLIS brought before the notice of Congress his discovery of flint flakes and mammalian remains in the submerged forest at Barnstaple. He pointed out on a diagram the position of the spot where he made the discovery. The sea had been gradually encroaching and washing inland, thus extending the beach. About 300 yards from the pebble beach, on some patches of peat which were only occasionally exposed to view, he found a few flints; and at the depth of six to eighteen inches, he found thousands of like character, comprising flint flakes, flint cores, bones, teeth, oyster shells, &c., covering a space of several square yards. When a very severe storm takes place, the trunks of large trees are observed underneath the surface.—REV. R. KIRWAN bore testimony to the above statement, and said that he discovered the stakes shewn on the diagram. They were of oak, and he followed them to about three feet below the surface, and then desisted, in consequence of not being used to the labour. He found a layer of sand three or four inches thick; then a layer of peat about twelve inches thick, and containing particles of shell, but very few bones; and under that was a deposit of blue mud.—MR. BUSK said that amongst the specimens were bones of the ox, stag, and reindeer. Most of them were broken, and he supposed it was for the marrow.—MR. EVANS remarked that of the Kjökken Mödden in Denmark, in which similar remains were found, and which were formed by the inhabitants piling up the refuse of their habitations, there was no evidence to show what was their age, but there was no doubt that they belonged to a comparatively early period. Some of those kitchen heaps were found in England, on ground which at the present time was between high- and low-water mark, and did not seem to have been well adapted for human habitations; but he accounted for this by supposing that there had been a subsidence of the land. The Danish ones, though as a rule found in close proximity to the sea, were placed on slight eminences.—MR. A. WADDINGTON observed that many of the implements exhibited on the table were similar to those at present in use among the American Indians and in Africa.—MR. ELLIS said it was well known in the North of Devon that the sea was encroaching, and it was only by adopting artificial means that the inhabitants could ever hope to save the land, which was being rapidly washed away.

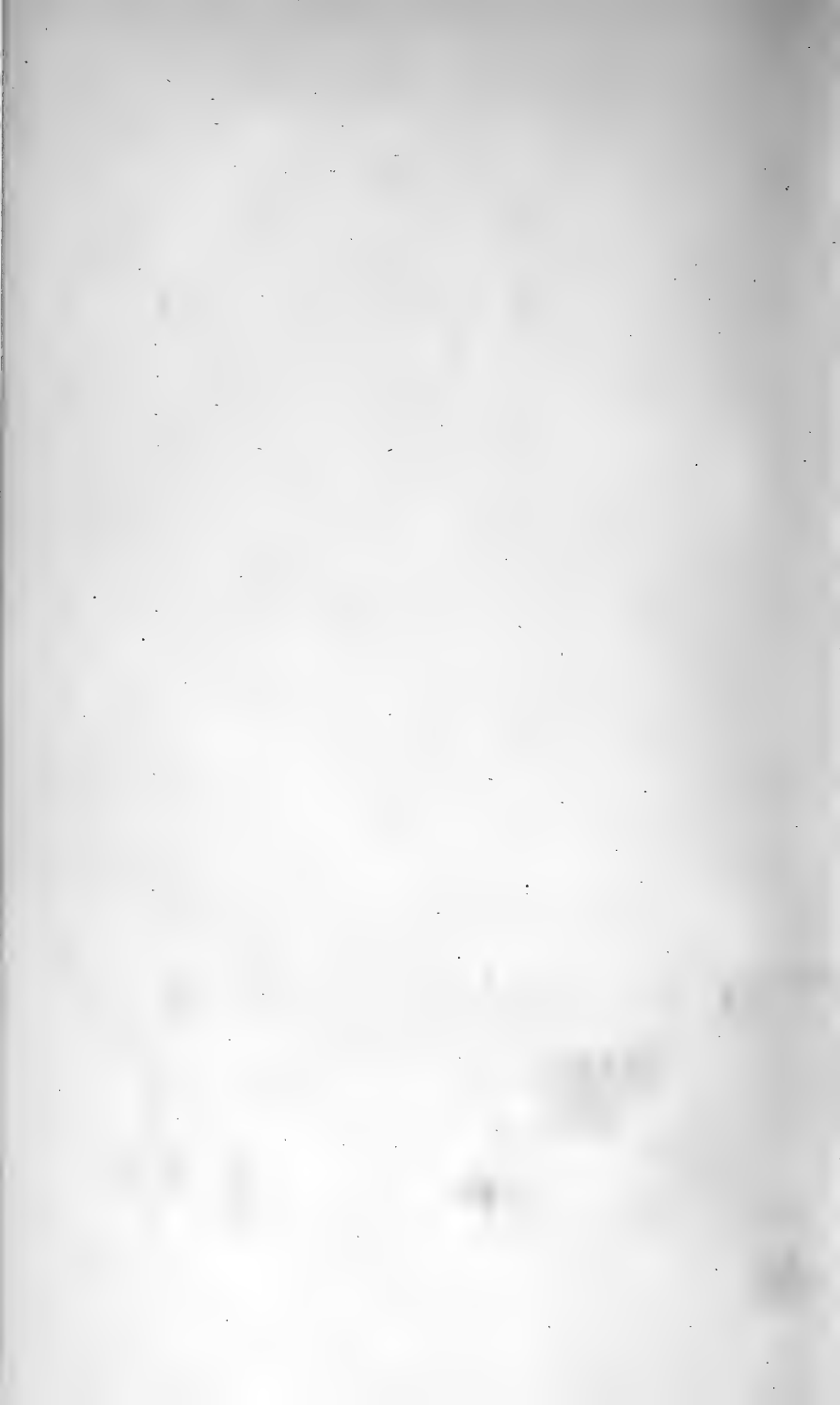
OGHAM MONUMENTS.

COLONEL LANE FOX read a Paper by Mr. R. R. Brash, on the Ogham Monuments of the Gaedhal (Gael). The Paper gave a lengthy description

of monumental stones in Ireland, inscribed with the Ogham characters; and stated that some of them were of a sepulchral or a memorial character; whilst others were termini, or boundary stones. The author regarded them as Præ-Christian in time, because the inscriptions alluded to Pagan rites and ceremonies, and because no allusions can be found in them to any Christian doctrine. He thought that the people who raised these monuments came originally from Spain, and the more so because there were striking ethnological affinities between the inhabitants on the coast of Ireland and the Spaniards.—MR. D. O'CALLAGHAN said it would be very interesting to know whether the Ogham characters were known to exist anywhere in Spain, or indeed anywhere out of the British Islands.—PROFESSOR HARKNESS said the writing on the Ogham monuments was as rude as could be conceived. They were principally confined to the counties of Cork, Waterford, and Clare. He could not conceive that a race could have settled there among a rude people who possessed no knowledge of writing, without spreading that knowledge among the people about them. He thought that every Ogham inscription indicated that the characters were of comparatively recent times. If they belonged to the high antiquity assigned them in the paper, he thought the inscriptions would have been much more worn. He considered that the Ogham characters were the runic characters of the Danes.—COL. LANE FOX defended the conclusions of the author of the paper, and expressed his opinion that the monuments were of præ-historic times. He thought the characters were derived from the primitive marks known to be made by savages upon their arrow-heads. MR. TYLOR shewed that the Runic alphabet belonged to the common stock of languages; while the Ogham alphabet was special and peculiar, and apart from everything else of the kind in the world. The theory of Colonel Fox respecting the characters being derived from arrow marks was highly reasonable.—THE PRESIDENT (Sir John Lubbock) could not see the slightest similarity between the Ogham letters and those of any other alphabet, and especially between them and those of the Danes. He did not, however, think that the arrow-marks of the savages would ever grow into letters, as Colonel Fox had suggested. The origin of letters was rather a kind of picture writing.

ERRATUM.

At page xx, third line from the top, for "he" read "his son."



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No. XI.

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Carne, W. N., <i>Rosemundy</i>	0	10	0	Roberts, Mrs.	0	10	0
Carus-Wilson, E. S. ..	1	1	0	Rodd, E. H., <i>Penzance</i> ..	0	10	0
Childs, R. W., <i>London</i> ..	1	1	0	* Rogers, J. J., <i>Penrose</i>	1	1	0
Christoe, W. H.	1	1	0	* Rogers, Reg., <i>Carwinion</i>	1	1	0
Coode, T., <i>Pond-dhu</i> ..	1	1	0	Rogers, Rev. W., <i>Mawnan</i>	1	1	0
Coode, Edward, <i>Pollapit</i> } <i>Tamar, Launceston</i> .. }	1	1	0	Rowland, Rev. W., <i>Flushing</i>	0	10	0
Cornish, Rev. J. R., M.A.	1	1	0	Sawle, Sir C. B. Graves, } <i>Bart., Penrice</i> .. }	1	1	0
Dix, W. G.	1	1	0	Sharp, Edward, jun.	1	1	0
Dungey, Rev. J.	0	10	0	Slight, Rev. H. S... ..	1	1	0
* Enys, J. S., <i>Enys</i> ..	1	1	0	Smith, Sir Montague, <i>London</i>	1	1	0
Falmouth, Viscount ..	2	2	0	St. Aubyn, J., M.P., <i>Pendrea</i>	1	1	0
Fortescue, Honble. G.M., } <i>Boconnoc</i> }	2	2	0	Salmon, W. W... ..	0	5	0
Ferguson, Henry T. ..	1	1	0	Smirke, E., V.W.	1	1	0
Ferris, T., <i>Swansea</i> ..	0	10	0	Smith, Augustus, <i>Tresco</i> } <i>Abbey, Scilly</i> .. }	1	1	0
Ford, Rev. Preb., <i>Bath</i> ..	1	1	0	Smith, P. P.	1	1	0
Foster, R., <i>Lanwithen</i>	1	1	0	Smith, W. Bickford, <i>Red-</i> <i>brook, Camborne</i> .. }	1	1	0
* Fox, C., <i>Trebah</i> ..	1	1	0	Snell, J.	0	5	0
* Fox, R. W., <i>Penjerrick</i> ..	1	1	0	Solomon, T.	1	1	0
Freeth, G., <i>Duporth</i> ..	1	1	0	† Stackhouse, Miss E.	1	1	0
Gilbert, Hon. Mrs., <i>Trelissick</i>	1	1	0	Tannahill, J.	0	5	0
Gwatkin, Mrs., <i>Parc Behan</i>	1	1	0	Taylor, R., <i>Langdon Court</i> , } <i>Plymouth</i> }	1	1	0
Hamilton, J.	1	1	0	Treffry, Rev. Dr., <i>Place</i> , } <i>Fowey</i> }	1	1	0
Harding, Lieut.-Col. W., } <i>Mount Radford, Exeter</i> }	1	1	0	Tremayne, Lieut.-Col. ..	1	1	0
Heard, E. G.	1	1	0	Tremayne, J., <i>Heligan</i>	2	2	0
Henderson, J.	0	10	0	Tremenheere, H. Seymour, } <i>London</i> }	1	1	0
Henwood, W. J., <i>Penzance</i>	1	1	0	Tucker, E. B., <i>Trevince</i> ..	1	1	0
Hill, T. J., <i>Grampond</i>	1	1	0	Tweedy, Mrs., <i>Alverton</i>	1	1	0
Hockin, Williams ..	1	1	0	* Tweedy, R.	1	1	0
Hudson, F. T.	0	10	0	* Tweedy, W.	0	10	0
Hughan, W. J.	0	5	0	* Vyvyan, Sir R. R., <i>Bart.</i>	1	1	0
Jago, James, M.D. ..	1	1	0	Vivian, Hon. Capt., M.P.	1	1	0
James, Hamilton ..	1	1	0				
† James, John	1	1	0				
Jenkins, W. H.	0	10	0				
Job, J. B... ..	0	10	6				

			£	s.	d.				£	s.	d.
Vivian, Arthur Pendarves,	}		1	1	0	Waters, J.	}		1	1	0
M.P., <i>Glenafon, South</i>						Whitley, N.						1	1	0
<i>Wales</i>						Whitley, H. M.			0	10	0
Vautier, Rev. R.			1	1	0	Williams, F. M., M.P.,	}		1	1	0
Vivian, H. H., M.P., <i>Parc</i>			1	1	0	<i>Goonvrea</i>					
<i>Wern</i>						Williams, J. M., <i>Caerhays</i>	}		1	1	0
* Williams, Sir W., Bart.,			1	1	0	<i>Castle</i>					
<i>Tregullow</i>						* Wilyams, H., <i>Carnanton</i>			1	1	0

Those marked with * are Proprietors; with † are Life Members.

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Rashleigh, W., <i>Menabilly</i>			0	5	0	<i>Goonvrea</i>					
						Wilyams, A. C.			0	5	0

The MUSEUM is open to Members and their families every day, except Sundays, between the hours of Ten and Four o'clock during the Winter, and between Nine and Six o'clock in the Summer.

The Museum is open to the public, free of charge, on the Afternoons of MONDAY, WEDNESDAY, and SATURDAY, from Noon until dusk during the Winter months, and until Six o'clock in the Summer months. On other days, and previous to Twelve o'clock on the above days, an admission fee of Sixpence is required.

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The "JOURNAL OF THE ROYAL INSTITUTION OF CORNWALL" will be forwarded free of charge to the members subscribing One Guinea Annually. To others it will be supplied on payment, in advance, of Three Shillings a year; or the several numbers may be obtained from the Curator, or from a Bookseller.

ROYAL INSTITUTION OF CORNWALL.

SPRING MEETING,

1869.

THE Spring Meeting of the Institution was held on Tuesday, the 18th of May, in the Council Chamber of the Truro Town Hall. The President, Mr. Rogers, of Penrose, being on the Continent, the Chair was taken by Mr. W. Jory Henwood, F.R.S., F.G.S., &c., a Vice-President of the Institution; and there were also present, besides many ladies :—Mr. Smirke, a Vice-President; Dr. Jago and Mr. Whitley, Secretaries; Mr. Tweedy, Treasurer; Dr. Barham, Rev. H. S. Slight, Rev. J. R. Cornish, Rev. C. R. Sowell, Mr. Carus-Wilson, Mr. Smith, Mr. Roberts, Mr. Remfry, Mr. Dymond, Mr. Pascoe, Mr. Andrew, Mr. A. Paull, Mr. Spry Leverton, Mr. J. R. Paull, Mr. E. T. Carlyon, Mr. John James, Mr. Jenkins, Mr. Peach, Mr. J. T. Blight, Mr. Michell Whitley, Captain Williams, &c., &c.

The CHAIRMAN delivered the following Address :—

We all regret the absence of our excellent President,* and lament the cause of his absence, but, happily, we are permitted to believe that his health is improving; we therefore hope to welcome him in the autumn, again presiding over us with his wonted ability.

Your Council have done me—a junior Vice-President—the honour to desire that on this occasion I would act as Mr. Rogers's substitute; kindly promising me that any deficiencies—and I fear you will discover many—on my part, shall be made good by them.

Your Officers and Council had confidently anticipated that the tenth number of the *Journal* would have been in the hands of members and subscribers before now; but some little time is yet

* Mr. Rogers, of Penrose.

requisite for its completion. It would scarcely be proper in this place, even if I were qualified, to attempt a criticism of its contents; but it may, perhaps, be permitted me to remark, that it contains a second of Mr. J. T. Blight's excellent illustrations of our cliff-castles; and we may hope that, from time to time, he will favour us with like delineations of the many similar structures, which have not yet disappeared before the so called progress of improvement on various parts of our coasts.

Just twenty years ago * Mr. Pattison favoured us with notices of somewhat similar works at Bedruthan in Saint Eval, Trevarrian in Mawgan, Kelsey in Cubert, and Trevelgué in Saint Columb-minor. His accounts, so far as they go, are excellent; but the last of them, at least, admits of amplification. Hoping that Mr. J. T. Blight might have enriched our pages with further illustrations of this spot, I have, until now, refrained from mentioning that in 1864 Mr. Nicholls, of Trevelgué, discovered, near the base of the second earthwork within "the island," a great quantity of mussel and limpet-shells, and, imbedded in the lower part of the heap, several bones, amongst which Professor Owen had recognized some of the *Bos longifrons*.† This identification may possibly give birth to speculation as to the exact period of construction; and it may not be out of place to mention that our collection displays a bronze *fibula*, ‡ and the museum at Penzance contains other Roman remains, found in the openings made by workmen of an earlier age, in a bed of stream-tin ore at Treloy, little more than a mile from Trevelgué.

It is probably known to us all that Mr. J. T. Blight has been

* *Report of the Royal Institution of Cornwall*, xxxi (1849), pp. 36—40.

† "During the Roman occupation the *Bos longifrons* was the staple meat of the country. When the Roman Empire yielded to the Teutonic invaders, who had been kept at bay for centuries by its power, and the legions in Britain were recalled for the defence of Italy, the Saxons, in a conflict which lasted for nearly 150 years, drove out the Romanized Kelts, burnt their towns and villas, and compelled them to retreat to Wales, Cornwall, and the highlands of Scotland, taking, as far as they could, their cattle along with them. . . . In this ruthless destruction of Roman civilization in Britain lies the explanation of the affinities of the small Welsh and Scotch cattle to the *Bos longifrons*. They are in all probability the lineal descendants of those which the Romanized Kelts took with them in their retreat. . . . During that war of nearly a century and a half, the variety seems to have died out in the parts of the country that were under Saxon rule; and I have sought in vain for any evidence of its re-appearance from that time to the present." —Boyd Dawkins, *Quarterly Journal of the Geological Society*, xxiii (1867), pp. 183—4.

‡ Henwood, *Cornwall Geol. Trans.*, iv, p. 65. De la Beche, *Report on the Geology of Cornwall, Devon, and West Somerset*, p. 405.

for some time engaged in preparing a work *On the Cromlechs of Cornwall*. I am happy to say the greater part of it has already passed through the press; and, saving a few of the wood-cuts, the remainder is nearly, if not quite, ready. As it will be profusely illustrated with elevations, plans, and sections, as well of many foreign, as of all our Cornish, cromlechs, it will probably be a meet companion for his works on *Cornish Crosses* and *The Churches of West Cornwall*.

The Mên rock, near Constantine*—of its kind the most interesting object in Cornwall—has been destroyed since our last meeting. Twenty years ago Mr. Edmonds warned the county † that it was menaced by the approach of the quarry-men; and within a few months attempts to interest in its preservation, gentlemen resident in that neighbourhood, were made by Mr. Cornish of Penzance, and I believe by other parties, but, unhappily, in vain. We have heard and read of selfish landowners who, annoyed perhaps by crowds of intrusive travellers, had forbidden the public from visiting objects of attraction on their grounds; but it seems difficult, if not impossible, to imagine the destruction of so great a natural curiosity as the Mên rock for mere greed of the pence and half-pence to be realized by the sale of its fragments. This act of Vandalism has, however, already set on foot measures for the preservation of other objects of general interest; and we are promised forthwith an Act of Parliament which, if it cannot restrain, will punish future perpetrators of similar atrocities.

As the coasts of Cornwall are of greater extent than the coasts of any other English county, our predecessors in office—availing themselves of this natural advantage—enriched our ornithological cabinets with one of the best local collections in the kingdom. Those of us who have been familiar with our cliffs for thirty or forty years past, are aware that several birds, almost peculiar to this part of the country—although they are unfit for food—have been almost, if not quite, exterminated; it is with peculiar pleasure, therefore, that we find these beautiful and harmless denizens of our shores are now to be protected by the law.

Annual accounts of our products must be alike interesting to the producer and the consumer. The quantities of metallic and earthy minerals exported from the county have been so accurately

* Borlase, *Antiquities of Cornwall* (Second Edition), p. 174, pl. xiii.

† *Transactions of the Penzance Nat. Hist. Society*, i (1849), p. 309, pl. v.

recorded by Dr. Pryce (*Mineralogia Cornubiensis*), Mr. Carne (*Trans. Royal Geol. Soc. of Cornwall*, i, ii, iii, iv; *Journal of the Statistical Society*, ii), Mr. Taylor (*Rees's Cyclopædia*, xxiii), Mr. Grylls (*Mining Sheets*), Sir Charles Lemon (*Journal of the Statistical Society*, i), Mr. Courtney (*Report of the Royal Cornwall Polytechnic Society*, vi), and by Mr. Hunt (*Memoirs of the Geological Survey of Great Britain*, 1848-68), that they need not be recapitulated.

The equally interesting, but less generally known, *Pilchard Circular* compiled by Messrs. Bolitho, shows that during the thirty-six years last past* the quantities of *fish* have varied from 3,145 hogsheads† in 1859, to 40,883 hogsheads† in 1847; and the prices of *fish* have varied from £1. 10s. per hogshead† in 1852, to £4 per hogshead † in 1860.

* The quantities of Pilchards exported from Cornwall (1833—1868) have been:—

Years.	Hhds.	Years.	Hhds.	Years.	Hhds.	Years.	Hhds.
1833	9,924	1842	20,714	1851	26,743	1860	3,920
4	25,084	3	8,820	2	15,141	1	10,988
5	23,184	4	13,959	3	21,275	2	17,807
6	18,718	5	29,986	4	6,704	3	26,057
7	15,364	6	34,350	5	6,102	4	22,539
8	7,627	7	40,883	6	18,833	5	9,929
9	12,824	8	7,593	7	15,915	6	14,294
1840	23,310	9	25,588	8	18,479	7	15,832
1	9,605	1850	25,823	9	3,145	8	19,998

The prices during the same periods were:—

1833..50/-	1842..40/-—50/-	1851..43/6—45/-	1860..60/-—80/-
4..36/-—55/6	3..50/-—60/-	2..30/-—50/-	1..68/6—72/6
5..35/-—40/-	4..45/-—54/6	3..36/-—42/6	2..51/-—63/-
6..36/-—40/-	5..40/-—54/6	4..37/-—50/-	3..41/-—53/-
7..40/-—58/-	6..32/6—38/-	5..42/-—54/-	4..46/-—55/-
8..55/-—60/-	7..32/-—38/-	6..40/-—75/-	5..54/-—76/-
9..55/-—60/-	8..37/-—63/-	7..42/-	6 —
1840..60/-—70/-	9..44/-—55/-	8..47/-—60/-	7 —
1..50/-—55/-	1850..44/-—60/-	9..37/-—52/6	8..59/-—68/-

Bolitho, *Trans. Penzance Nat. Hist. Society*, i, p. 445; *Pilchard Circular*, 27th Feb., 1869.

† "Each hogshead contains 50 gallons, or about 2,500 fish, weighing 476 lbs."—Courtney, *Reports of the Royal Cornwall Polytechnic Society*, vi (1838), p. 125.

"The weight of the hogshead [of pilchards] is four hundred and seventy-six pounds. . . . A hogshead contains from two thousand five hundred of these fishes, to perhaps three thousand."—Couch, *Fishes of the British Islands*, iv, pp. 92—3.

The Mackerel taken from Penzance and Saint Ives by Railway * in
 1866 amounted to 1,425 tons ;
 " " 1867 " 2,672 tons ;
 " " 1868 " 3,675 tons ;
 " " 1869 " 633 † tons ;

Of the home consumption—whether of pilchards, mackerel, or any other fish,—I have been unable to obtain accounts.

The Brocoli and Potatoes forwarded from West Penwith by Railway * have been :—

Years.	Brocoli.	Potatoes.
1866	—	1,418 tons ;
1867	1,544 tons ;	1,695 tons ;
1868	3,571 tons ;	2,732 tons ; †
1869	2,358 tons ; †	—

Of the shipments from Hayle and Penzance I can give no particulars.

During the past year the orthoclase and albite felspars, as well as the white and black micas, of our western granites, have been carefully examined ‡ by the Rev. Professor Haughton, D.C.L., F.R.S., of Trinity College, Dublin.

The first analysis of Cornish gold has, so far as I am informed, been made in the present year ; the specimen analysed was procured from Saint Austell Moor, through the kindness of Mr. Martyn, of the Higher Blowing House, and Mr. Petherick, of Saint

* For all these particulars I am indebted to Mr. J. D. Sheriff, C.E., Engineer of the Cornwall and West Cornwall Railways.

† To the 9th of May, 1869.

‡ “ During the past summer (1868) I have succeeded in proving that the second felspar that occurs in the granites of Cornwall is albite. I found this mineral as a constituent of the granite at Trewavas Head ; where it has the following composition :—

Silica	65·76
Alumina	21·72
Lime	0·89
Magnesia.....	trace
Soda	9·23
Potash	1·76
Water	0·40

99·76

Austell, for Mr. David Forbes, F.R.S., F.G.S., who found* its

“Orthoclase, from the same neighbourhood, is composed of:—

	Veins at the foot of the cliff.	Mass at the top of the cliff.
Silica	63·60	63·20
Alumina.....	21·04	21·00
Iron and manganese oxides.....	trace	trace
Lime	0·90	0·68
Magnesia	trace	trace
Soda	3·08	2·75
Potash	9·91	10·30
Water	0·40	0·40
	98·93	98·33

“Through the kindness of Mr. Argall [of Wheal Vor] I obtained from Tremearne, in Breage, a sufficient quantity of white mica (a variety of *Lepidolite*) to determine its composition, which proves to be:—

Silica	47·60
Fluosilicon	5·68
Alumina	27·20
Iron peroxide	5·20
Manganese protoxide.....	1·20
Lime.....	0·45
Magnesia.....	trace
Potash	10·48
Soda	0·72
Lithia	1·14
	99·67

“Black mica (*Lepidomelane*) from Carn Bosavern, Saint Just in Penwith, consists of:—

Silica	39·92
Fluosilicon	3·04
Alumina	22·88
Iron peroxide	15·02
„ protoxide	2·32
Manganese peroxide	1·40
Lime.....	0·68
Magnesia.....	1·07
Potash	9·76
Soda	0·99
Lithia	1·71
	98·79

“The granites of Cornwall and Devon appear all to contain the two felspars and two micas above mentioned.”

HAUGHTON, *Proceedings of the Royal Society* (7th January, 1869), xvii, pp. 209—11. London, Edinburgh, and Dublin *Phil. Mag.* (April, 1869), xxxvii, pp. 306—8. (Abridged).

* London, Edinburgh, and Dublin *Phil. Mag.*, xxxvii (May, 1869), p. 323.

specific gravity to be 16.52 at 60° Fahr., and its composition,

Gold	90.12 *
Silver.....	9.05
Silica with sesqui-oxide of iron	0.83
	100

The same accomplished analyst promises an examination of a second specimen, obligingly obtained for him from Captain Knight, of *Trecarne*, by Mr. Francis Michell, of Truro.

As of late years much has been written and said concerning the waste of copper ore by the miners, towards the end of the seventeenth century, and in the beginning of the eighteenth, it seems desirable to examine the evidence on which such statements are founded, more closely than perhaps it may have been hitherto examined. Dr. Bōrlase, Dr. Pryce, Mr. William Phillips, and Mr. Warington Wilkinson Smyth, are amongst the principal, but Mr. Carew, Mr. Hals, and Mr. Tonkin are the earliest, † writers on copper-mining in Cornwall.

Dr. Borlase, writing in 1758, said that the yellow ore, which then sold for “between ten and twenty pounds per ton, was . . . about sixty years [earlier, namely, about 1698] called *poder* (that is, dust), and thrown away as mundic.” ‡

Dr. Pryce stated in 1778 that “seventy years ago” [that is to say, in 1708] black copper-ore was thrown “into the rivers as refuse, by the name of *Poder*, which signifies dust, Mundick, or waste.” ||

Mr. Phillips, in 1814, mentioned it as “an undoubted fact that . . . within a century . . . many roads in the county were mended with copper-ore.” §

Mr. Smyth remarked in 1852, that “at the commencement of the last century Redruthite (vitreous copper) was thrown as worth-

* “The average proportion of gold in the native gold of California is 80.00
Australia 92.50.”
Dana, *System of Mineralogy* (3rd Edition), p. 5.

† Mr. Norden (*Speculi Britannicæ Pars*, pp. 9, 17, 34, 40—2) mentions the occurrence of copper-ore in several parts of West Cornwall, but he is silent as to its extraction.

‡ *Natural History of Cornwall*, p. 205.

|| *Mineralogia Cornubiensis*, p. 63.

§ *Geol. Trans.*, ii (o.s.), p. 141.

less rubbish over the cliffs of Saint Just into the Atlantic." *

Thus :—

Dr. Borlase	} states	{ Yellow copper-ore	} { to have been thrown away as rubbish; but is silent as to ..	} { Black & vitreous ore Yellow & vitreous,, Yellow & black ,,	} { having been treated in the same manner.		
Dr. Pryce		{ Black				{ ,,	{ ,,
Mr. Smyth		{ Vitreous				{ ,,	{ ,,

Now, Dr. Borlase was born at Pendeen, Saint Just, in 1695, and died at Ludgvan, in 1772. In 1722 he was instituted to the Rectory of Ludgvan, and in 1732 he was presented to the Vicarage of St. Just. His *Natural History of Cornwall*, commenced about 1738, was published in 1758.

Dr. Pryce was born about 1720–1730,† and died at Redruth, in 1790. His *Mineralogia Cornubiensis*, commenced about 1751–5, issued from the press in 1778.

Mr. Warrington Wilkinson Smyth, still (1869) in the prime of life, is Chief Inspector of the Mines of the Crown and of the Duchy of Cornwall, as well as Lecturer on Mining and Mineralogy in the Royal School of Mines.

Now, as Dr. Borlase was born in 1695, and as—according to his statement—yellow copper-ore was wasted about 1698, it is plain that at the time of this waste he must have been in his third year.

Of Dr. Pryce's birth the exact period is unknown;‡ but it is believed that at his death, in 1790, he was little, if at all, more than sixty years of age; in 1708, therefore, when it is alleged that black copper-ore was thrown away, he was yet unborn.

As Mr. Smyth is still alive, it is obvious that the rejection of vitreous copper, which he represents to have taken place at Saint Just early in the last century, must have occurred long before his birth. Moreover, Dr. Borlase—who was descended from a County family long established in the neighbourhood, who was born at Saint Just, and who was for many years Vicar of the Parish—must, at that very time, have lived on, or immediately near, the spot, yet he makes no mention of the circumstance.

Thus, each of these three authors represents a different ore

* Lecture "On the value of an extended knowledge of Mineralogy and the Processes of Mining" (delivered at the Museum of Practical Geology), p. 10.

† The Registry of his Baptism has been sought at Redruth and Camborne, in this County, and at Newtown, Llanwnnog, and Swansea, in Wales; but without avail. He was descended from an eminent family, long established at Newtown Hall, in Montgomeryshire; of which, Sir Edward Manley Pryce, the last Baronet, died in 1791, without issue.

‡ *Supra*, †.

(of copper) to have been wasted; but in all cases from the ignorance of the workmen.

Mr. William Phillips, a descendant from one of the families by whom, under the firm of Fox, Phillips, and Fox, an import trade was established at Perranwharf, was born in London, in 1773, and died there in 1828. As his Memoir *On the Veins of Cornwall*—commenced in 1800, and published in 1814 (*Geol. Trans.*, ii, o.s.)—mentions that in many parts of Cornwall copper-ore had been used as *road metal* within a century, and as he died at the comparatively early age of fifty-five, there seems little or no doubt that he must have referred to a period beyond his recollection, if not indeed before his birth.

Furthermore, it must be remembered that all *lodes* partake, more or less, the nature of the adjoining rocks; and thus consist, in great measure, of earthy minerals.

It was calculated by Dr. Price* } (crude vein-stone from)	} { one-sixth } { its weight of ore
that from 1698 to 1778 } (the copper <i>lodes</i> of		} { one-third } { fit for the market.
It was calculated by M. Moissenet† } (Cornwall afforded on	
that in 1862 } (an average)	

Of the principal Cornish vein-stones and ores the comparative hardness is :—quartz, 7; felspar, 6–6·5; hornblende, 5–6; fluor, 4; chlorite, 2–2·5; oxide of tin, 6–7; iron pyrites, 6–6·5; copper pyrites, 3·5–4; vitreous copper, 2·5–3; black copper-ore mostly occurs in an earthy state.

The ores of copper are, therefore, amongst the scarcer and softer, and for *road metal*, they are some of the least suitable, ingredients of the *lodes* of Cornwall.

From the foregoing comparison it follows that if this alleged waste of copper-ore took place, it must have taken place when (the future Dr.) Borlase was still in his childhood, and whilst the other writers on the subject were as yet unborn.

The early progress of copper-mining in Cornwall, however, had not escaped the notice of contemporary authors.

Mr. Richard Carew was born at Antony, in 1555, and died there in 1620. His *Survey of Cornwall*, having been privately circulated some years earlier, was published in 1602.

Mr. William Hals was born at Tresawsen, Merther, in 1655, and died at Saint Wenn, in 1737. His collections for a *Parochial History of Cornwall* were commenced in 1685, and brought down to 1736.

Mr. Thomas Tonkin, M.P., was born at Trevaunance, Saint

* *Mineralogia Cornubiensis*, p. 186.

† *Annales des Mines*, 6me Série, ii, p. 252.

Agnes, in 1678, and died at Pol Gorran, Gorran, in 1742. His *Notes, illustrative of the History and Antiquities of Cornwall*, were commenced in 1702, and continued to 1742.

Mr. Carew observes * that "copper is found in sundrie places, but with what gain to the searchers, I haue not been curious to enquire, nor they hastie to reueale. For at one Mine (of which I took view) the Owre was shipped to be refined in *Wales*, either to saue cost in the fewell, or to conceale the profit."

Mr. Hals remarks † that "the waste land [of Blanchland, in Kea] is not only abounding in tin and tin mines, but for about twenty years past hath yielded its owner about twenty thousand pounds out of its copper mines, though the waste or down lands in which it is found, is in many places scarce worth eighteen pence per acre."

Mr. Tonkin states ‡ that "within these sixty years, Copper has turned to very great account in this county; and there have been very great discoveries made therein, both in the eastern and western parts of it; which have produced . . . Yellow (which is the most plentiful and common of any), Green, Blue, Black, Ash-colour [vitreous], and Solid ore. . . . This variety of ores, and great increase of the mines, has occasioned the setting up of six several companies for the buying of the ore."

With regard to the mode and time of wasting, and the nature of the ore wasted:—

The mode of waste mentioned by Mr. Phillips—a Mineralogist second to no one in his time—seems to indicate that (the ores ||) the scarcer and softer ingredients of the *lodes* had been preferred to the harder and more plentiful (quartzose and felspathic) portions for the roads; where certainly cheapness and durability must ever be chief recommendations; a preference it is perhaps hardly necessary to discuss.

The periods of waste are spoken of by Mr. Phillips and Mr. Smyth in terms scarcely definite enough to admit of their being compared either with each other, or with the somewhat different dates assigned to the waste by Dr. Borlase § and Dr. Pryce; §

* *Survey of Cornwall*, fol. 6.

† Hals, *Parochial History of Cornwall*, Edited by Davies Gilbert, D.C.L., P.R.S., &c., ii, p. 300.

‡ *The Survey of Cornwall*, Written by Richard Carew, of Antonie, Esquire; with Notes by Thomas Tonkin, Esq.; Edited by Francis Lord De Dunstanville, p. 21.

|| *Ante*, p. xvii.

§ *Ibid.*, p. xv.

Mr. Smyth,* however, refers it to a time when Dr. Borlase—himself a native of Saint Just, and his whole life a resident in the immediate neighbourhood †—must unquestionably have been on or near the spot.

The kind of ore wasted is said by Dr. Borlase to have been yellow; * by Dr. Pryce to have been black; * and by Mr. Smyth to have been vitreous (redruthite).*

By references to the periods of their birth, † it has been shown to have been impossible that Dr. Borlase, Dr. Pryce, Mr. Smyth, and Mr. Phillips *could have been eye-witnesses* to the waste they respectively describe.

Nor can it be without significance in this enquiry that Mr. Carew, ‡ a freeholder in one of the first-wrought and richest of our copper districts, || as well as Mr. Hals † and Mr. Tonkin, ‡ himself a mine owner, describing the nature and disposal of the ores, and the profits realized by copper miners *in their own time*, are all alike silent on the subject.

It is not maintained that these conflicting statements of writers who could not have witnessed the matters they mention, and the silence of contemporary authorities, actually disprove the alleged waste; but they certainly throw such doubt on the allegation as to render further evidence necessary to establish it.

The ancient method of mining is described by no one better than by Dr. Pryce; § who says:—

“The mine being supplied with power for the discharge of the water, and the adventurers resolving to prove it at a good depth, they sink the engine Shaft continually, or keep it lower than their workings on the Lode . . . that the water may readily flow to the pumps, and be drawn to the Adit. The bottom of the engine Shaft . . . is properly the Sump or Sink of the mine. . . . Now if the Sump proves good for Ore, they not only . . . lengthen the bottom of the Mine, but they likewise stope or break away the Lode in the following manner: the Sump being in the Lode, one man breaks away about two feet of the upper part of the pit, still driving on, on the course of the Lode; and when he makes room, another follows him in like manner, and then others; so

* *Ante*, p. xv.

† *Ibid.*, p. xvi.

‡ *Ibid.*, p. xviii.

|| “*Gwynop. Pensignance*.—A howse and Mannor of Richard Carew of Antony, esquire.”—Norden, *Speculi Britannicæ Pars*, pp. 45—9.

§ *Mineralogia Cornubiensis*, pp. 160—1.

that this stoping is not unlike the hewing a flight of steps in a rock, where each man works away the step above that which he stands on."

According to Mr. Carne,* "the system which at present generally prevails, is that of driving *levels* and *stopping* upwards; by this system, as soon as the shaft is sunk to a sufficient depth, . . . a level is extended [on both sides of it] on the lode. If the lode is rich at the commencement of the level, as the workman goes forward, another is employed to *stope* or dig down the ore *above* the level; and as he makes progress, a third follows him in another stope; and so they proceed until the intermediate part of the lode (or as much of it as is productive of ore) is wholly taken away; meantime the shaft continues to be sunk, and [sometimes] becomes deep enough for several other levels, before the ore above the first is exhausted."

The advantages of this system have been so long and so generally recognized, that they need no recapitulation. At present, therefore, it is intended merely to enquire *where, when, and by whom*, it was introduced; an enquiry of perhaps no great practical value, yet one not without interest as regards the History of Copper-Mining in Cornwall.

The former mode of working was described by Dr. Borlase,† in 1758, and by Dr. Pryce,‡ in 1778. Their sections of the *Pool* || (*East Wheal Crofty Mine*) mine, and of *Bullen Garden* § (*Dolcoath*), represent the deepest parts to have been wrought *underhand*, but show no more than one—if indeed even a single—*back stope*.

When, sometime before 1775,¶ ** Dr. Pryce's Section § was made, the works were rather more than ninety fathoms deep. In 1788,** however, they had reached a depth of about one hundred and eighty-five fathoms; when, the Adventurers believing them to be no longer worth prosecution,†† they were abandoned. In

* *Cornwall Geol. Trans.*, iii, p. 60.

† *Natural History of Cornwall*, p. 168.

‡ *Mineralogia Cornubiensis*, p. 170.

|| *Natural History of Cornwall*, pl. xviii.

§ *Mineralogia Cornubiensis*, pl. iv.

¶ From an original copy of the Prospectus, with a Table of Contents, in Dr. Pryce's handwriting, now in my possession.

** The father of Mr. Trevithick, the inventor of the locomotive steam-engine and of the cylindrical boiler, was manager of *Dolcoath* from 1766 to 1788.—MR. FRANCIS TREVITHICK, of Penzance, MS.

†† Captain Charles Thomas, late Manager of *Dolcoath*, MS.; *Cornwall Geol. Trans.*, viii, p. 448.

1800 operations were resumed; and it was then found* that before the mine was relinquished in 1788, beside *levels* and *winzes*, *back stopes* had already been opened. This is the earliest record of the present system of working with which I am acquainted.

But whilst the mines of Cornwall were still wrought on the ancient system of *underhand stopes*, and before the works of Dr. Borlase and Dr. Pryce were even contemplated, the mines of Clausthal and Zellerfeld in (the Hartz) Hanover, and the works at Illmenau in Saxe Weimar, had not only been wrought by aid of shafts, *levels*, *winzes*, and *back stopes*, but had also been described by Brockmann and Tromler, as early as 1730.†

It has been shown that the ancient system prevailed as late as 1775–8,‡ but that the present mode, which had been adopted and described in Germany in 1730, was followed at *Dolcoath* before 1788.

Mr. Rudolph Erich Raspe,|| who was born at Hanover, in 1737, published several scientific works in various languages, and became successively Librarian, Professor, and Curator, of the Museum of Antiquities and Coins, at Cassel, having been compelled to leave his country, was employed, I believe, as Assay-master and Store-keeper at *Dolcoath*, from 1782 or 1783 to 1786, if not indeed until the mine was abandoned in 1788.

This evidence—circumstantial rather than positive—seems to show that the mode of working which had been practised in Hanover and Hesse more than thirty years earlier, was unknown at *Dolcoath* in 1778; that it was adopted there before 1788; and that during (1782–3–6) at least a portion of the interval, Mr.

* John Rule, Esq., of Parc-Brackett, Camborne, at that time Surveyor of *Dolcoath*, MS.

† Brockmann, *Magnalia Dei in Locis Subterraneis* (Wolfenbüttel, 1730), pl. iv, xii, pp. 172–6, 225–6.

‡ The ancient mode of working was followed at *Wheal Alfred* as lately as 1816.—Carne, *Cornwall Geol. Trans.*, iii, p. 69.

|| “Rudolph Erich Raspe, distinguished henceforth as the first collector of Baron Munchausen’s Adventures, . . . was born in Hanover in 1737, studied at Göttingen and Leipzig, and held for some time the position of Librarian in his native town. He was afterwards a professor and curator of the Cabinet of Antiquities and Coins at Cassel. Between 1764 and 1765 he published several scientific treatises in Latin, German, and English, and a poem called *Hermin and Gunilde*. . . . He also reviewed *Ossian’s Poems* and *Percy’s Reliques*, with translations from each. His career at Cassel ended [untowardly]; but, having made his escape, he at length settled in this Country, although his name was erased from the list of the Royal Society, of which he had previously been a Foreign Member: his previous conduct did not interfere with his success as a *foreigner of merit and reputation*. He is so described in the *Catalogue of 500 celebrated Authors in Great Britain*

Raspe, an eminent literary and scientific Hanoverian, was employed on the spot.

The precipitation of copper from the salts contained in *mine-water*,*—observed at the *Chacewater (Wheal Busy)* mine by Mr.

(London, 1788), and he continued his active literary labours without intermission. In 1782 or 1783 he had some appointment as overseer of mines in Cornwall, which he soon after abandoned."

Gentleman's Magazine, cci (1856), p. 588.

"At Huel Rock in Saint Agnes there has been found a metallic vein, nine feet wide, and twenty yards beneath the surface. The constituent parts of this ore, although experiments had been made upon it, were still unknown. Mr. Raspe, who now (1786) lives in Cornwall, is the first who discovered this unknown ore to be sulphuret of tin."—Klaproth, *Mineralogical and Chemical History of the Fossils of Cornwall*, p. 21.

"Mr. Raspe, who resided in Cornwall about 40 years ago, discovered a vein of the sulphuret of tin from 3 to 5 inches wide, some twenty yards beneath the surface, in Huel Rock."

Michell, *Manual of Mineralogy* (Truro, 1825), p. 73.

"One of the oldest Mining Captains of *Dolcoath* often spoke of the wonderful chemical experiments made in the Assay-Office by Mr. Raspe."

Captain Charles Thomas (late Manager of *Dolcoath*), MS.

"In 1861 the late Marquis of Breadalbane permitted me to examine, in the Muniment-room at Taymouth Castle, a Report on his mine of *Tyndrum*, made by Mr. Rudolph Erich Raspe on the 10th of December, 1791. The technicalities of this document afforded evident traces of their Cornish origin.

"In 1794 Raspe accepted the office of manager of Mines at Muckcross, in the County of Donegal; and he died in Ireland in the same year."

Gentleman's Magazine, cci (1856), p. 590.

"In 1785 the first edition of *Baron Munchausen's Narrative of his Marvellous Travels and Campaigns in Russia* was published in London by Smith. A second edition came out in the following year, printed at Oxford, but with the same publisher's name. . . . A third edition published in London in the same year, by Kearsley, bore the additional title of *Gulliver revived*. In 1787 and 1788 a fourth and fifth edition appeared in England, still without any name of author or compiler.

"In 1787 the work first issued in a German form, with some additional stories under the auspices of the poet Bürger. . . .

"In 1824, after Bürger's death, Karl von Reinhard, a friend of Bürger's, first mentioned the true author of Munchausen. '*The Collection had*'—he writes—'*for its compiler the late Professor Raspe, who published it after his flight from Cassel to England.*'"—*Ibid.*, p. 590. (Abridged).

"Perhaps thirty years ago, the late Captain William Petherick, Manager of *Dolcoath*, informed me that *Baron Munchausen's Travels* had been written by a German whilst he performed the duties of Storekeeper at that mine."

Henwood, *Gentleman's Magazine*, ccii (1857), p. 2.

* The difference between such slightly impregnated streams as issue from the *lodes* and rocks, and the rich solutions obtained by lixiviating calcined ore, must not be overlooked.

Coster, about one hundred and fifty years ago,* and made subject of experiment at *Wheal Crofty* shortly afterwards,†—seems to have been lost sight of (save in a very few instances) in Cornwall, until within some twelve or fifteen years since.

Within a short time after Mr. Coster's discovery at the *Chacewater* mine, however, several workmen migrated from that neighbourhood to the county of Wicklow; where they obtained employment at the *Cronebane* mine, which was then superintended by Captain Thomas Butler, a native of Redruth. At his suggestion the precipitation-works were established,* which, with gradually diminishing produce, have been carried on there from that time to this.

About a century since an enormous deposit of copper-ore was discovered at the Parys mountain in Anglesea;‡ and shortly afterwards the water which percolated through it was found to be richly charged with the sulphate of copper. By that time the works at *Cronebane*—less than eighty miles distant—had been more than fifty years in operation; and published descriptions of them || had made the treatment adopted, and the produce obtained, well known. Similar proceedings, but on a much larger scale, were forthwith commenced in Anglesea; and these, although their produce has gradually declined, are still carried on to great advantage.§ On the eastern slope of the Parys mountain the *Mona* works were superintended for many years by the late Mr. Treweek, of Gwennap; and by his son, Mr. Treweek of Mawnan, the same system was established in Cuba.

It is a remarkable, perhaps a characteristic, circumstance, that notwithstanding the *Great Adit*—commenced in 1748 by Mr. Williams, of Burncoose (great-grandfather of Sir William Williams, Bart.)—had been extended, before the commencement of the present century, to most of the principal mines in the Gwennap district,¶ as well as to the very (*Chacewater*) mine in which Mr. Coster had so long previously observed the progress of precipitation,* * it was not until some fifteen years ago that attempts

* Pryce, *Mineralogia Cornubiensis*, p. 231.

† *Ibid.*, p. 232.

‡ Pennant, *Tours in Wales*, iii, p. 60. Hawkins, *Cornwall Geol. Trans.*, iii, p. 284. Henwood, *Ibid.*, viii, pp. 581—4.

|| Henry, *Phil. Trans.*, xlvi (1752), p. 500.

§ Mr. T. F. Evans, of Mona Lodge, Anglesea, MS.

¶ Exceptionally strong solutions of copper oozing from the *lodes*, and received in tanks placed underground, have yielded small quantities of rich precipitate for many years past.

* * Nearly thirty years ago, Mr. Treweek, of Mawnan, obtained several parcels of precipitate at *Wheal Falmouth*, by the use of lime.

—successful attempts at least—were made to precipitate the copper held in solution by the adit water.* About 1854, however, a person who had gained some experience in the works of Cuba, commenced operations on the stream. The success of his experiments stimulated his neighbours; and, in course of eight or ten years, at least a dozen other parties had set themselves to work on its bank, between the mouth of the *Adit* near Fernysplat † and the tide at Tarnon-dean, a distance of perhaps a mile and a quarter.

The quantity of water discharged by the *adit*, averages about 1,450 cubic feet (8,800 gallons) per minute; ‡
 ,, saline matter || contained in it averages about 735 grains (1 $\frac{3}{4}$ ounce) per cubic foot; §
 ,, precipitate collected for some time past, has ranged from 80 to 100, and averaged perhaps 90, tons a year. ¶

The proportion of fine copper contained in the precipitate varies from about $6\frac{1}{4}$ to $61\frac{1}{2}$, and averages nearly 40 per cent.* *

thus.....423 parts of precipitate } { are, on an average, extracted from
 containing.. 165 ,, fine copper } { 100,000,000 parts of water.

in other words,

3,784 cubic feet, or about 175 tons of water yield 1 lb. of precipitate;
 or 9,693 ,, ,, 270 ,, 1 lb. of fine copper.

The capacity of this fine Room †† is about 24,000 cubic feet; a volume of the *adit* water of the same dimensions and average richness would, therefore, yield less than two shillings worth of metallic copper.

Before the establishment of precipitation-works, therefore, the

* "In 1839—1840 the adit effected, in the mines it unwatered, a saving of about £19,000 a year in fuel alone."

Henwood, *Cornwall Geol. Trans.*, v, p. 420.

† Written Furnace-plot in the Ordnance Map, Sheet xxxi.

‡ Thomas, *Cornwall Geol. Trans.*, v, p. 422. Henwood, *Ibid.*, p. 423.

|| Principally the salts of Sodium and Calcium. Fox, *Cornwall Geol. Trans.*, iii, pp. 323—4. Miller, *Reports of the British Association for 1864*, Part ii, p. 36.

§ Henwood, *Cornwall Geol. Trans.*, viii, p. 586.

¶ For this information I am indebted to the kindness of Mr. Henry Williams, of Alma, near Truro.

* * These assays have been obligingly communicated to me by Mr. Howard Bankart, of the Red Jacket Copper Works, near Briton Ferry.

†† The Council-chamber of the Truro Corporation.

adit water had already carried with it into the sea at Restronguet, from £150,000 to £200,000 worth of copper.

It is well known that precipitation takes place more rapidly in warm than in cold weather; that the precipitates are both richer and more plentiful in winter than in summer; that at all seasons they are of better quality in the upper than in the lower part of the works; and that when tinned-iron is used as a precipitant, the precipitate obtained affords metal of much the same kind as that smelted from *tinny* copper-ore.*

The foregoing statements make no pretension to minute accuracy; they show, however, the remarkable means by which many industrious families earn a comfortable livelihood.

Similar operations are now conducted with equal success, although on a smaller scale, in several other parts of Cornwall and Devon; and it may not be unworthy of remark, that in many of these mineral waters the (*Alga*) *Mugeotia* flourishes.†

I should like to have said something on the relations of various rocks to the *lodes* and *cross-veins* which traverse them; and on the manner in which practical Miners and Geologists may instruct and benefit each other. Such an enquiry, however, could scarcely have been dismissed very briefly; and, although the officers and council, when conferring this honour on me, kindly gave me as long a notice as it was in their power to give, even that time would have been insufficient for the discussion of so long and so important a subject.

In larger Societies, which hold weekly or fortnightly meetings, an entire sitting is commonly given once a year to a review of their proceedings, and to tracing the relations they bear to the general knowledge of the subjects they embrace. With us, who meet so much less frequently, however, such summaries must of necessity be much shorter, in order that we may hear, from the gentlemen who honour us with their support, the communications which will hereafter enrich our *Journal*.

* This information was given me by Mr. Henry Williams, of Alma, whose kindness has aided me in another part of this enquiry.—*Ante*, p. xxiv, Note ¶.

† Eels thrive as well in pools (*sinks*) underground as in the stream pumped out of Botallack mine into the Engine-tank at the surface; in both cases, however, the water may be supposed to be more highly charged with sea than with mineral salt.—Mr. Stephen Harvey James, Purser of the Mine, MS.

DR. JAGO read the Lists of Presents :

DONATIONS TO THE MUSEUM.

Ancient Intaglio used for a Seal by Thomas Arundell, and attached to a counterpart deed of grant to him by Prior Collins, of the patronage of the Vicarage of St. Anthony in Meneage, near Falmouth.....	Mr. Smirke, V.W.
Egyptian Slab, with hieroglyphics	Mr. G. F. Remfry, Truro.
Roll of the Book of Esther, in Hebrew	Ditto.
Sponge grown on Shell, from Syria.....	Mr. Alfred Lloyd Fox, Falmouth.
Fossils from Lebanon	Ditto.
A Jay	Mr. G. Read, Truro.
Medal to commemorate the taking of Porto Bello by Admiral Vernon, 1742	Mr. G. Woolley, Truro.
Carbonate of Iron (Siderite).....	Mr. T. Cornish, Penzance.
Native Gold, from Baldonan, Sutherland	Mr. W. J. Henwood.
Bones from the ancient encampment at Trevelgué, St. Columb.....	Mr. N. Nicholls.
Skeleton of a Mouse	Mr. Luke Wade, Truro.
A Praying <i>Mantis</i> , worshipped as a god by the Hottentots	Miss Winn, London.
Rubbing of an Inscribed Altar Stone at Trelothan, Camberne.....	Mr. N. Hare, Liskeard.

ADDITIONS TO THE LIBRARY.*

The Ancient British Sculptured Rocks of Northumberland and the Eastern Borders, &c.; by George Tate, F.G.S., &c., &c.	From Mr. Henry M'Lauchlan.
Cavernes du Périgord. Objets Gravés et Sculptés des Temps Pré-Historiques dans l'Europe Occidentale, par MM. Ed. Lartet et H. Christy	From Mr. Charles Fox.
An Account of Anglo-Saxon Coins and Gold and Silver Ornaments found at Trewiddle, near St. Austell, A.D. 1774; and some remarks on other Anglo-Saxon Hoards	From Mr. Jonathan Rashleigh.
The Ancient Inscribed Stones at Tregony and Cubert, Cornwall	From Dr. Barham.

*It was announced that a communication had been received from Colonel Sir Henry James, that by direction of the Secretary of State for War, Part IV of the Photozincographed Fac Similes of National Manuscripts would be forwarded shortly.

- On the Temperature of the Sea, and its influence on the Climate and Agriculture of the British Isles. By Mr. N. Whitley, F.M.S. From the Author.
- On the Phœnician Tin Trade of Cornwall. With remarks on the great irruption of the sea in the Eleventh Century, Sand-Hillocks, "Raised Beaches," the Causeway between Marazion and St. Michael's Mount; and on the Origin of the names Marazion, Market-Jew, Iktin, and Britain. By Richard Edmonds From the Author.
- 65 Numbers of the Archæological Journal; commencing September, 1845, No. 7, and concluding December, 1866, No. 92. From Lieut-Col. Tremayne.
 [Carent: Nos. 9, 10, 11 .. 1846
 ,, 14, 15, 16 .. 1847
 ,, 17, 18, 19, 20 .. 1848
 ,, 54, 55 1857
 ,, 72 1861
 ,, 83, 84 1864
 ,, 85, 86, 87, 88 .. 1865
 ,, 89, 90 1866
- 71 Parts of the Journal of the Statistical Society of London; commencing March, 1850, Vol. XIII, Part I, and concluding December, 1867, Vol. XXX, Part IV. Ditto.
 [Carent: Vol. XXVIII, Parts III and IV, 1865.
 Vol. XXIX, Parts II and III, 1866
- Journal of the Statistical Society of London. General Index to the First Fifteen Volumes. Ditto.
- List of Fellows of the Statistical Society of London.—1853—54.
 1854—55.
 1856—57.
 1867 Ditto.
- Statistical Papers based on the Census of England and Wales, 1851, and relating to the Occupations of the People, and the increase of population, 1841—51. By Thomas A. Walton, F.S.S. Ditto.
- First Report of the Committee on Beneficent Institutions. I.—The Medical Charities of the Metropolis, 1857 Ditto.
- Archæologia Cambrensis, 1862 (Report of Swansea Meeting).
 Ditto, Third Series, No. XXXIII, January, 1863
 ,, " XXXIV, April, "
 ,, " XXXV, July, "
 ,, " XXXVI, October, " Ditto.
- The Miners' Association of Cornwall and Devonshire. Report, 1868 Mr. R. Hunt, F.R.S.

Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society, 1867—68.....	From the Institution.
Report and Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art. Vol. II, Part II, 1868.	From the Association.
The Journal of the Historical and Archæological Association of Ireland: Nos. 55 and 56, 1867, and 3rd Series, Nos. 1, 2, 3, & 4, 1868.	Ditto.
Surrey Archæological Collections, relating to the History and Antiquities of the County. Vol. IV.	From the Surrey Archæological Society.
36th Annual Report of the Royal Cornwall Polytechnic Society, 1868	From the Society.
The Anthropological Review, and Journal of the Anthropological Society of London, Nos. 22, 23, 24, 25	Ditto.
Transactions of the London and Middlesex Archæological Society, Volume III, Part IX.	Ditto.
Proceedings of the Scientific Meetings of the Zoological Society of London, 1868; and Index, 1848—1860	Ditto.
Proceedings of the Society of Antiquaries of London. Second Series, Vol. IV, Nos. I & II. November, 1867, to March, 1868	Ditto.
Proceedings of the Philosophical Society of Glasgow. Vol. VI, No. 4. 1867—68.....	Ditto.
Transactions of the Edinburgh Geological Society. Vol. I, Parts I and II.	Ditto.
Journal of the Liverpool Polytechnic Society. From September, 1868, to April, 1869	Ditto.
Annual Report of the Leeds Philosophical and Literary Society. 1867—68.....	Ditto.
Proceedings of the Royal Physical Society, Edinburgh. 1854 to 1866.....	Ditto.
Report of the Liverpool Naturalists' Field Club, 1867—68	From the Club.
Abridgments (in Classes and Chronologically arranged) of all Specifications of Patented Inventions, from the earliest enrolled to those published under the Act of 1852	From the Commissioners of Patent Inventions.

The following Papers were presented :—

Notice of Enclosures which existed at Boscarewen-an, in St. Burian, Cornwall.—By Mr. J. T. Blight, F.S.A.

Notes on the Ornithology of Cornwall, from May, 1868.—By Mr. E. Hearle Rodd.

Indications of Glacial Action in Cornwall.—By Mr. Whitley, F.M.S.

An Inquiry into the association of the dialects of Devon and Cornwall.—By Mr. R. N. Worth.

Chronicles of the Cornish Saints. (V.—S. David).—By Rev. John Adams, M.A.

Extracts relating to Cornwall, copied in the British Museum.—From Mr. Jonathan Couch, F.L.S., &c.

THE LAOCOON. MR. SMIRKE presented two Photographs illustrative of the differences between the Vatican group of the Laocoön, and the representation of that celebrated piece of sculpture as given in an impression from a seal attached to a deed of the last Prior of Tywardreath, and exhibited at the Spring Meeting of this Institution in 1868.* Mr. Smirke stated that the seal, which was evidently of early date and execution, must have been a gem representing the well-known group; and its impression was found attached to a deed by which the Prior of Tywardreath conveyed to one of the Arundell family—a retainer of Cardinal Wolsey—the vicarage of St. Anthony-in-Meneage; the seal itself being, in all probability, the property, not of the Prior and Convent, but of Thomas Arundell, to whom the grant was made, of which this deed was only the counterpart. It was remarkable that there was still extant, in the Priory papers, a document purporting to be a license to a monk of the Priory to visit Rome, at a time not long before the date of this grant; and the gem may have thus come into the possession of the Prior or his friends. On the discovery of the Laocoön group in 1506, the Pope, who obtained possession of it, consulted Michael Angelo and others as to the proper mode of restoring the missing and mutilated parts of it, especially the right arm of the Laocoön himself. They considered that the lost portion of the figure did not leave enough behind to indicate the original position of the arm; but the task was afterwards undertaken by another sculptor, Baccio Bandinelli, whose work has been pronounced by all subsequent connoisseurs to be ill conceived and erroneous. The present seal is, by general consent, regarded as a better design for such restoration, and has been considered by some competent judges to have been copied from the original group while in a more perfect state. The design presented to the

* See *Fifty-first Annual Report of the Royal Institution of Cornwall*, p. xvi.

Institution is a photograph of a careful drawing by Mr. A. Mulready, copied on an enlarged scale, and in the possession of Mr. Smirke. It is, in fact, a proposed restoration founded on the seal, and not on the work of Bandinelli as now seen at Rome.

SCULPTURED ROCKS. DR. BARHAM, referring to a communication which he had received from Mr. Mac Lauchlan, and to that gentleman's book on the Sculptured Rocks of Northumberland, &c., remarked that the only instance in which anything of the kind had been found in Cornwall, was where Mr. Blight had discovered five or six cup-markings on a rock. With that single exception, there was no known instance of the occurrence in this county, of those peculiar inscriptions, which would appear, in the North of England, to have constituted a species of language. In the North they were found sculptured on Sand-stone; but he thought the difficulty of inscribing the harder rocks of Cornwall would have been overcome, had its inhabitants been of the same race as the northern people. Possibly the early association and metal trade of Cornwall with the Phœnicians, really did away with that comparatively barbarous age in which those inscriptions were made in other parts of Britain and in Ireland.

COINS. After reading a note from Mr. Rogers, of Penrose, concerning the discovery of Anglo-Saxon Coins, &c., at Trewhiddle, in 1774, DR. BARHAM reminded the members and friends of this Institution, of Mr. Albert Way's suggestion that a collection of coins (or impressions, where originals could not be procured) in illustration of any traceable connection of the ancient Romans with Cornwall, would form a very interesting addition to the Museum of this Institution.

OSTEOLOGY. Speaking of the prepared skeletons presented by Mr. Luke Wade, DR. BARHAM suggested that further donations of the same kind, and particularly of the smaller animals, would be very acceptable; the Museum being at present somewhat deficient in its illustrations of Osteology.

DR. JAGO read a note from Mr. T. A. Cragoe, of Penhellick, speaking of his visit, in June, 1868, to the "Peaks of Otter," one of the highest of the Alleghany Range of Mountains, in Virginia. Near its summit, at an altitude of about 5000 feet, where large trees fail, and which impinges on the region of eternal snow, the Rhododendron was in full bloom, forming, with the luxuriant blossoms of the Mountain Laurel, a charming sight. The apex of this mountain (Mr. Cragoe adds) is granite, huge cubes piled upon each other, not only resembling the Tors of

Cornwall in that respect, but bearing to some extent the same vegetation. He looked carefully, but could find no circular basins, for which our Tors are so famous; but from the tone of a letter which he received from the Secretary of the "Smithsonian Institution," it would seem they are occasionally met with on the western continent.

MR. REMFRY exhibited and explained a large collection of photographic views of remarkable places which he had visited during a recent tour through Spain, up the Nile, and through Palestine and Syria. He also made some observations concerning his presents to the Museum, recorded in the above list.

PROOFS OF GLACIAL ACTION IN CORNWALL. MR. WHITLEY, presenting a Paper on this subject, directed attention to some illustrative diagrams, and expressed his opinion that probably Cornwall was, during many ages, covered with a mantle of ice, as Greenland is at the present time, and that that glacial covering was perhaps some two to three thousand feet thick; the indications of glacial action referred to, and represented in his diagrams, being caused by the movement of super-incumbent masses of angular rocks down the hill-slopes, and now resting on newer strata below.

MR. PEACH, from Scotland, professed to be conversant with the effects of ice action in North Britain; and he was satisfied that the scattered blocks in the Meneage district afforded proof that glacial action had been as prevalent in Cornwall as in Scotland. Although he had not found any *striae* on rocks in the Meneage district, yet he was satisfied that the scattered blocks of which he spoke had been deposited from the ice which formerly mantled the whole district. At Gorran he had found slight marks of glacial action in rocks both grooved and polished on their surfaces; as were met with in Scotland. But this most reliable proof of glacial action might be less readily found in Cornwall, from the fact that the surfaces of Cornish granite were often defaced by decomposition of its felspar. If, however, the surfaces of granite in this county were carefully observed when quarries were first opened, and the granite first denuded of the incumbent soil, he had no doubt that *striae* would be found such as were met with in Scotland. That the blocks shown in Mr. Whitley's diagram were not rounded, might be due to the circumstance that, apparently, they had been transported but a very short distance,—seemingly not half a mile; while in Scotland there was evidence of blocks having been transported some 40 or 50 miles.

CORNISH FOSSILS. MR. PEACH stated that having recently

visited the Geological Museum at Penzance, he examined a specimen in Dr. Boase's collection (No. 733) said to have been found at Porthalla, in the parish of St. Keverne. He at once pronounced it to be fossiliferous, and, on having it polished, he saw that it contained encrinites and coral. Years since, he had expressed an opinion that fossiliferous rocks would be found in the vicinity of the Nare; and if the specimen he had referred to was really found *in situ* at Porthalla, it confirmed his opinion that that district was fossiliferous. The quartz and calcareous rocks there were similar in character to the fossiliferous rocks of Gorran Haven.

MR. PEACH next stated that, some seven-and-twenty years since, he pronounced that certain fossils discovered in the neighbourhood of Fowey and Polperro were fishes; and that opinion was confirmed by Murchison and Forbes. But Professor M. Coy, after microscopic examination of the fossils, declared that they were sponges, and not fishes. More recently, however, he (Mr. Peach) had re-examined these fossils from the Devonian or Old Red Sandstone of Cornwall; and the result—(he had found among them *Pteraspis* and *Icthyodorulites*)—confirmed his former opinion that the fossils were, in fact, fishes; and fishes they had been pronounced to be, by Professor Huxley and others. They were of gigantic size, in comparison with similar species found in the Old Red Sandstone of Hereford and Scotland.

MR. PEACH further mentioned, that he had recently found in a collection of zoophytes belonging to Miss Elizabeth Carne, of Penzance, a specimen of branched coral which in some measure resembled a coral that he had found, some time since, when dredging with Mr. Jeffery, off the coast of Shetland; he had reason to believe the one he now exhibited was a new species.—Mr. Peach then exhibited a beautiful specimen of *Gorgonia*, which had been given to him very recently by a fisherman at Gorran Haven, on which were suspended padlock-shaped *nidi* of a marine animal; the bow of the lock was clasped round the branches of the *Gorgonia*.

METEOROLOGY. DR. BARHAM made some observations, illustrated by tabulated records, concerning the exceptionally hot summer of 1868 in this country, contrasted with the extraordinary cold which prevailed contemporaneously on the northern shores of France and in various other parts of the continent. The sunshine, in this county, in every month from April to September, had exceeded the average of the previous 17 years; but, notwithstanding the summer drought, the rainfall during the year had been four inches above the average. In some parts of Cornwall,

however, eight-tenths of a heavy fall of rain flowed off rapidly seaward; while on a large plateau such as Dartmoor, and in districts farther up the country, a similar downfall was retained as in a sponge, stored up for future necessities of vegetation. These were considerations which had not been sufficiently attended to in connection with barometrical observations.—On the equability of temperature in Cornwall, DR. BARHAM stated that during the hottest part of the summer of 1868 the thermometer at this Institution never exceeded 85, whilst that at Greenwich reached 96·6 in the shade.

MR. DYMOND added that at the Government Observatory, at Falmouth, the thermometer last summer never touched 80, and in the winter it never fell to 32.

MR. TWEEDY said he had been informed, as the result of the experience of two brothers, that the weather in New Zealand was repeated in England six months afterwards. One of the brothers was a farmer, and resided in Lincolnshire, and the other in New Zealand; and the former, by attending to the advice which he received from the latter as to the weather, was able to make the necessary preparation. He had thus a considerable advantage over his brother farmers.

The CHAIRMAN stated that in mines worked in granite the effect of rainfall was felt immediately,—in mines worked in slate, only after an interval of some months.

DR. BARHAM made announcement of an intended Autumnal Excursion by Members and Friends of this Institution, in connection probably with the Falmouth Polytechnic Society and the Penzance Natural History and Antiquarian Society; and also, that the completion and publication of the *Bibliotheca Cornubiensis*, originally projected by this Institution, had been taken in hand by Mr. George Boase, of London—a brother of Mr. Charles Boase, Fellow of Exeter College.

THE AUTUMN EXCURSION.

ON Tuesday, the 31st of August, a numerous party of ladies and gentlemen—members and friends of this Institution and of the Royal Cornwall Polytechnic Society—made an Excursion to Dolcoath Mine and Carn Brea.

Waiting the arrival of their Falmouth friends, Mr. Henwood, F.R.S., one of the Vice-Presidents of the Royal Institution of Cornwall, and other officers and members of its Council, assembled in the Museum, where various examples of its interesting contents, illustrative of our mining and antiquities, were displayed for the gratification of expected visitors. Among these objects were :

The Gold Lunulæ and Bronze Celt found at Harlyn, in 1863, and presented to the Museum by H.R.H. the Prince of Wales.

Tin Slab from the Island of Billiton.

An Ancient Block of Tin found in Falmouth Harbour, in 1829.

Slab of Tin found on the barton of Carnanton.

An Ingot of Banca Tin.

Chlorite, and Pebbles cemented by Tin, from Relistian.

Fluor Spar from Wheal Trelawny, Liskeard.

Characteristic Examples of Cornish Tin and Copper Ores, and illustrations of Smelting Products.

Specimens of Tin Stone from Dolcoath, and, from the same mine, Oxide of Tin prepared for smelting, and specimens of Granite.

Jews' House Tin found near St. Austell ; part of a slab weighing about a cwt., and containing about 90 per cent. of first quality metallic tin.

Various kinds and qualities of Tin-Ore and of Tin in a marketable state.

Copper Ores, prepared for smelting, and for crushing ; each producing 20 per cent. of metal.

Specimens illustrating the smelting of copper ores.

China Stone and Clay, in a marketable state.

Specimens of Arsenic : White Oxide (as sublimed in flues, and in closed vessels), Orpiment, and Realgar.

A Bronze Bull, supposed to be Phœnician, found at St. Just Vicarage, in 1832 ; and an enlarged drawing of the same, and a

drawing from a cippus, of the age of Hadrian, in the British Museum, by Captain Henderson. There were also contributed by Captain Henderson, enlarged drawings from plates in Sir Gardner Wilkinson's Memoir on Carn Brea, and that of Sir Henry James on the Block of Tin found in Falmouth Harbour.

A Cross Section of Dolcoath Mine, by Mr. Richard Pearce.

A Book of Sketches and Drawings illustrative of Antiquities in Cornwall.

Drawings (by Mr. T. Q. Couch) of various Antiquities at and near Brown Willy.

On the arrival of a numerous party of ladies and gentlemen from Falmouth and its vicinity, a cordial welcome was given them by Mr. Henwood, from the president's chair; and subsequently, observations on several of the objects exhibited, and especially on those having relation to the localities about to be visited, were made by the Chairman, and by Dr. Barham and Mr. Richard Pearce of Swansea.

The united parties then proceeded to the Truro Railway Station, and by the 12.44 train journeyed to Dolcoath; the excursionists, as well as numerous friends joining them from the west, being, by the courtesy of the railway authorities, put down at a spot immediately contiguous to the mine. Here the visitors, nearly two hundred in number, were received by Captain Josiah Thomas, Captain Pearce, and other agents, and were conducted through the various parts of the works, being initiated, so far as circumstances allowed, into the mysteries of cobbing, spalling, stamping, buddling, tossing, packing, calcining, chimning, and the like. There was no opportunity for any of the party to go underground; but much interest was shewn in the man-engine, and the descent of a number of miners thereby. The engine-houses and the engines, so trim and clean, working with such calm, effortless power, were also eagerly inspected. A new engine, of 85 inches cylinder, was in course of erection; and Doering's Boring Machine was also being fitted up at the patentee's own charges, it being understood that he should be paid for the work done at the same rate as the miners, with an addition of 12½ per cent. if the driving were carried on twice as fast.

No mine in the county so well repays a visit as Dolcoath. It is the richest tin mine in the world, having produced, though the sett is only one thousand yards long, ores to the value of five and a half millions, or over £5000 for every yard. Over a thousand hands are now employed underground and at surface. Dolcoath is also the deepest tin mine, as well as the most productive, being worked to a depth of 340 fathoms. To all appearances it is as

rich as ever. Its dressing floors are likewise the most extensive and the best arranged. There are two hundred head of stamps constantly at work crushing the ore, of which it takes fifty tons to yield one ton of black tin. Most of the stamps are worked by steam, one engine driving 120 heads, the noise of which (each weighs six hundred-weight) is absolutely deafening.

After the perambulations the party met in the account-house, where an excellent lunch had been provided, with a generous regard to the interests of the two societies concerned, by the Adventurers of Dolcoath. Mr. Henwood, who had taken a very active part in explaining the mining processes, occupied the chair. Mr. Pendarves Vivian, M.P., in responding to the toast of the county members, referred to Dolcoath as having the best system of dressing operations in the kingdom. There were still, however, many improvements that would in the course of time be introduced, and for these improvements they must be on the watch. Mr. Warington Smyth spoke for the visitors; and Captain Josiah Thomas for Sir William Williams, the adventurers, committee, and agents, in turn proposing the president. Mr. W. Copeland Borlase, in a very happy manner, returned thanks for the ladies.

Lunch being over, the excursionists set off for Carn Brea. The ascent taxed their powers somewhat severely, but they were repaid by the delightful prospect which awaited them, to say nothing of the archæological treat in store. The one defect of the arrangements was that sufficient time had not been allotted to the exploration of this most interesting of Cornish hills. Under the able guidance of Dr. Barham, the party were, however, rapidly brought acquainted with the chief points of interest, which include rock basins, so-called sacrificial stones, a British fortress, remains of a British town, with several hut circles, an ancient Roman mine, quaintly called "the house of water," and a mediæval castle.

At the conclusion of the day's proceedings, Mr. Pendarves Vivian expressed the thanks of the company to Dr. Barham, for the great treat which had been afforded them; Mr. Remfry paying him the same compliment on behalf of Truro, and Mr. R. R. Broad for Falmouth.

FIFTY-FIRST ANNUAL GENERAL MEETING

OF THE

ROYAL INSTITUTION OF CORNWALL,

Held on Monday, November 15th, 1869.

There were present at this meeting :—Mr. Smirke, V.W., and Mr. W. J. Henwood, F.R.S., Vice-Presidents ; Dr. Jago, one of the Secretaries ; Mr. Tweedy, Treasurer ; Mr. J. St. Aubyn, M.P., Dr. Barham, Mr. Chilcott, Rev. J. R. Cornish, Mr. J. H. Collins, Mr. A. C. Glubb, Mr. W. H. Jenkins, Mr. J. B. Job, Mr. H. Spry Leverton, Mr. M. Loam, Mr. A. P. Nix, Mr. Alexander Paull, Mr. G. F. Remfry, Mr. H. O. Remfry, Mr. E. Sharp, junr., Rev. H. S. Slight, Mr. E. G. Spry, and Mr. Snell.

In the absence (through illness) of the President, Mr. Rogers of Penrose, the Chair was taken by Mr. Smirke, a Vice-President.

The Council's Report was read ; and it was resolved unanimously, that it be received, adopted, and printed.

Mr. Smirke then vacated the Chair, and it was taken by the President Elect, Mr. W. J. Henwood, F.R.S., who said :—When, two years ago, I had the honour of proposing to you the choice of Mr. Rogers as President of this Institution, it had never once occurred to me as possible that I could ever occupy the position to which your kindness has now called me. Indeed, the first mention of it took me as much by surprise as, without doubt, it has now taken you. I beg you to bear with me whilst I mention that I at once represented to the officers and council that other members of the Institution, who had not yet passed the chair, were far better qualified to fill it than I could pretend to be—that of the several subjects within the scope of our inquiry, my life had been devoted to but one—that though I have occasionally written, I have rarely ventured to speak even of this,—and, probably of much more importance, than any of these, to the future welfare of the Institution—that my social position is a widely different one to that from which the Presidents of our

several county institutions have been hitherto invariably chosen. Such of these objections as seemed to need explanation were explained, and it was considered that the others were not material ones; but I deem it due to you, the officers and council, no less than to myself, that I should satisfy you that these, and, indeed, several other matters, were not forgotten. But a review of one's short-comings, however useful to the individual himself, can scarcely interest any one else. As you, gentlemen, are pleased to confirm the choice made by your officers and council, I gratefully accept the appointment. All I can promise you will be zeal and industry in your service; for I can pretend to bring before you but one subject, and this, however important to the welfare of the neighbourhood, can hardly be made generally interesting. If the duties which your officers and council thought fit to devolve on me during the past season were performed to your satisfaction, it was to them we owed our success; and I trust we shall not appeal to them in vain for a continuance of the same invaluable assistance whilst I attempt to discharge the graver duties your kindness has now assigned me. Permit me, gentlemen, to offer my warmest and most grateful thanks for the honour you have been pleased to confer on me. That honour, however, derives a ten-fold value in my eyes, from having been conferred in the neighbourhood of which I am a native, and by those who have known me from my youth.

The following Resolutions were passed unanimously:—

That the thanks of the Society be given to the Officers and Council for their services during the past year; and that the following gentlemen form the Council for the ensuing year:—

MR. HENWOOD, *President*.

Vice-Presidents.

MR. SMIRKE, V.W.,
MR. AUGUSTUS SMITH,
MR. ROBERTS,

REV. T. PHILLPOTS,
MR. HUGH SEYMOUR TREMENEERE.

MR. TWEEDY, *Treasurer*.

JAMES JAGO, M.D., AND MR. WHITLEY, *Secretaries*.

Assistant Secretary, MR. H. M. WHITLEY.

Other Members.

MR. H. ANDREW,
C. BARHAM, M.D.,
REV. DR. BANNISTER,
REV. J. R. CORNISH, M.A.,
MR. JOHN JAMES,

MR. A. P. NIX,
MR. ALEXANDER PAULL,
MR. G. F. REMFRY,
REV. H. S. SLIGHT,
MR. W. TWEEDY.

That the cordial thanks of this Meeting be given to those gentlemen who have favoured the Society with Papers or other Communications in the course of the year, and also to the Donors to the Library and Museum.

That the thanks of this Meeting be given to Mr. Henwood, for the ability with which he has presided over the proceedings of this day.

THE COUNCIL'S REPORT.

The Council of the Royal Institution of Cornwall, in fulfilling, to the best of their power, the duty of preparing their Annual Report of the Society's progress, for the consideration of the members, have the satisfaction of feeling that the usefulness of the Society remains unimpaired. The Papers contributed to the Journal of the Institution, and the oral remarks made at its meetings during the past year, may be fairly regarded as equalling in interest those of previous years; the only drawback being that, through the indisposition of their President, they were deprived of his presence at one or two of their gatherings, where they would have had opportunities of receiving instruction from his well-stored mind, whilst his genial disposition would have enhanced their enjoyment.

Such an occasion was that of your Annual Excursion, which was this year on a scale of unusual magnitude. In the hope that some members of the British Association, then holding its meeting at Exeter, might be tempted to extend their trips into Cornwall, an excursion was got up by this Institution, assisted by the Royal Cornwall Polytechnic Society, to Dolcoath Mine and Carn Brea, with the view of inviting any members of the Association who might be in the county, to become their guests on the occasion, and thus see somewhat of mining operations in Cornwall, and also one of its most remarkable antiquities. Though only few members of the Association were among our party, it was efficiently represented by one whose great acquaintance with metalliferous mining is universally acknowledged; whilst the explanations of the modes of working tin mines and of the preparation of tin ores given by the captains of Dolcoath, the history of the mine by one of your Vice-Presidents, and the description of the antiquities on Carn Brea by one of the oldest members of this Institution, and who has filled all its chief offices, were all that could be desired.—At Dolcoath a most substantial and liberal luncheon was provided, at

the sole expense of the adventurers in that celebrated mine, on the recommendation of its ever hospitable committee. The reduction thus effected in the cost of the Excursion, rendered it profitable to the Societies concerned in its promotion.

Turning from this pleasant topic to the future prospects of your Institution, we have to refer to a change in its circumstances, consequent primarily on an event which will form an era in the history of Truro—the completion of new Public Rooms by a Company which aims at providing accommodation for many of the local societies, and for the holding of public meetings. Thus it has happened that the Cornwall Library, which has hitherto rented two rooms from your Institution, has given notice to quit them at Christmas, having preferred to remove to the Public Buildings. In consequence of this you will lose the rent, £20 a year, which the Library pays you; whilst you will be under the necessity of increasing the salary of your Curator, who will lose the payment he has received from the Library, without getting, within these doors, any income towards supplying that loss.

Of course it is open to you to seek another tenant for the two rooms that will be vacated at Christmas; but your Council, after maturely considering the state of your finances and your probable income, think you had better try to carry on your work without having recourse to that expedient. You have always been much inconvenienced by your having no suitable room for your annual and other meetings; and it has long been desired by the friends of the Institution that these two rooms could be turned to account for its own purposes. Thrown into one, as they may easily be by removing the partition between them and supporting the ceiling by an iron girder, you would have a room of ample convenience for the purposes mentioned. The light may be increased by cutting down the windows; and it may, at no large expense, be made a comfortable scientific reading-room, as well as a convenient hall for receiving our visitors on our own premises. Besides, you have long been cramped for space to exhibit many of the presents in mineralogy, natural history, and antiquities, which are now within these walls; whilst your friends are continually adding to your stores, and no doubt would even do so more freely still if they were to find that their gifts were well displayed. Towards the fund which, it is clear, must be required for carrying out this design, we have already a nucleus of about £10 in the surplus receipts of this year's excursion; and you could hardly appeal in vain to your friends to subscribe specially in augmentation of it, recognizing, as they immediately will, the great desirability of enabling you to accomplish this end.

This once done, we are of opinion that you will be in a posi-

tion to pay your way without diminishing your literary and scientific publications. Since the issue of your *Journal* has been limited to one Number annually, there has been a yearly surplus, of about £30 or £40, of income over expenditure, and you would be able to live within your means, in your altered circumstances, without any accession of income; whilst you can scarcely deceive yourselves in calculating that a more attractive aspect will induce increased support.

It having been represented to your Council that the stability of the Cheesewring is endangered by the mode in which the working of the adjacent quarries has been extended, a sub-committee was appointed to examine into the facts on the spot; and on their report a memorial was addressed to the Duchy of Cornwall, requesting that steps might be taken for preservation of this very interesting mass of rocks. No answer has hitherto been received.—The attention of the landed proprietors concerned has also been called to the risk of injury threatening some other important antiquarian relics in the county; and, from the reply received from Mr. Foster, one of the principal landowners, it is hoped that the efforts employed may be more successful in these cases than they proved in the instance of the Tolmên, which was sacrificed at the beginning of the year.

In consideration of his scientific eminence, and his long-continued and valuable support of this Institution, in the way both of communications and presents, your Council suggest that Colonel Sir Henry James, R.E., be elected an honorary member.

The Curator, Mr. Newcombe, merits our thanks for the assiduity with which he has continued to make, register, and tabulate the meteorological observations. The instruments have been recently inspected by Mr. Symons, the well-known investigator of the British Rainfall. He has approved our arrangements generally, and at the same time offered some suggestions, which your Council think it advisable to adopt.

The Course of Lectures on Chemistry, conducted by Mr. Collins in this place, during last winter, was well attended; and you will, no doubt, be desirous that this source of solid instruction shall be maintained; and further, that other classes may be formed for teaching some of the more directly useful subjects included in the system of the Science and Art Department. The charge entailed by our support in such cases is almost nominal, whilst our countenance, and the accommodation afforded, are of great value.

The absence of our President, Mr. Rogers, from the meetings of the Institution during the present year, has been already referred to with regret—regret much the greater because ill-health has been the cause. He has now held the office two years, the term

to which its tenure is limited; and your Council are confident that every member will regard it as a matter of course that Mr. Henwood should be invited to be his successor, and will rejoice that he has consented to be nominated for the chair. That nomination has been earned by the conspicuous zeal and ability he has manifested as the deputy of Mr. Rogers; but independently of that claim, we must regard it as a privilege to be able to mark our sense of the merit of honest and sterling labour, and consequent immense additions to previous knowledge, in a department of science especially Cornish and our own, by conferring on Mr. Henwood the highest honour we have to bestow.

The number of visitors to the Museum during the year ending July, 1869, was—admitted free, 6,735; by ticket, 141; at sixpence each, 101. Total, 6,977.

On the subject of the Cheesewring, as referred to in the Report, Mr. CHILCOTT said he had just been informed by his friend Mr. Glubb that there was reason for believing that measures for ensuring its safety had been adopted by the Duchy.

Mr. GLUBB explained that, on a recent visit to the Cheesewring, he saw that it was propped up on the side where it had been giving way, and that stones had been placed round it for its protection.

Dr. JAGO said the propping spoken of had been done before the state of the Cheesewring had been examined and reported on by a Committee of this Institution; but the Committee thought that the accident that was apprehended might occur nevertheless.

Mr. ST. AUBYN remarked that it was highly desirable that they should have definite assurance with regard to the Cheesewring. When he heard that the Tolmên was in danger of being destroyed, he put himself in communication with certain parties, and urged the desirability of taking steps to prevent this; and he was assured that the Tolmên was in no danger. Within a fortnight, however, it was blown up.

Mr. SMIRKE explained that the reason why no answer had been received from the Council of the Duchy in reply to the memorial was that only one short meeting had been held by that body since it was presented. He congratulated Mr. Henwood on his appointment as President, and expressed his concurrence in that gentleman's opinion, that there was really no evidence in support of the current opinion that ores of copper had been in former times commonly thrown away as worthless. Further, there

were historical references to the existence of copper mines in the county in the 14th century.

Dr. BARHAM would ask the Vice-Warden whether the bronze celts found was not another evidence of the fact that copper was at a very early period raised and worked in this county?

Mr. SMIRKE replied that there was no evidence that the celts referred to were made in Cornwall, or that the copper used was Cornish copper.

Dr. BARHAM said it was known that they all contained tin, and no doubt that tin was Cornish; and it was reasonable to assume that the copper contained in celts found in this county was also Cornish. The finding of stone moulds for celts in this county proved conclusively that they were made here.

Mr. ALEXANDER PAULL read the Lists of Presents :—

DONATIONS TO THE MUSEUM.

An Egyptian Mummy	From His Royal Highness the Prince of Wales.
Bust of John Lander, the African Traveller..	From Mrs. Elsom, Hornsey.
Three Specimens of Ancient Pottery, from the Catacombs of Arica	Mr. Henwood.
Two Old Shovels found in a stream-work at Boscarne, in the parish of Bodmin.....	Mr. John Robins.
Sandstone, from a Silver Lode 150 fathoms from surface, in the Pachuca mining dis- trict, near the city of Mexico, 9000 feet above the sea	Mr. Richard Stephens.
Deposit on the inner surface of a steam boiler, at Wheal Mary Ann, in Menheniot..	Mr. W. S. Nettle, Liskeard.
Cloth from the South Sea Islands, made from the inner bark of a tree.....	Mr. W. Polkinghorne, Win- chester.
A Saw-fish, caught by Capt. R. Whitburn, at Annesley Bay, March, 1868	Capt. R. Whitburn, Devoran.
A Locust, caught at Breage, October, 1869 ..	Mr. J. H. Collins.
Specimens of Arsenic (White Oxide, Orpiment, and Realgar)	Ditto.
Calamine, from Carthage.....	Mr. B. Kitto, Breage.
A Russian Knapsack, found on a field of battle, in the Crimean War, 1854	Major-General Aylmer, R.A.

CONTRIBUTIONS FOR THE ALBUM.

Etchings; South Entrance, Mabe Church; Silver Chalice and Cover (1276), part of the Holy Communion plate at Mabe Church; Tolmèn, at Constantine.....	From Miss Annie Shilson, Tremough.
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ADDITIONS TO THE LIBRARY.

- Catalogus Plantarum in Algeria spontè nascentium ; auctore G. Munry..... From Mr. Rogers of Penrose, President, 1869.
- Catalogue des Végétaux et Graines disponibles et mis en vente au Jardin d'Essai (au Hamma, près Alger, Algérie). Etablissement générale d'Horticulture, 1869 Ditto.
- Royal Institute of British Architects. Sessional Papers, 1868—9, No. 4.—Notes on the Celtic, Roman, Moorish, and other Remains in Algeria. By Professor T. Hayter Lewis, F.S.A., Fellow..... Ditto.
- Notes on the Great Pyramid of Egypt, and the cubits used in its design. By Colonel Sir Henry James, R.E., F.R.S., Director General of the Ordnance Survey, 1869 From the Author.
- The Origin of Civilization and the Primitive Condition of Man. By Sir John Lubbock, Bart., F.R.S., Pres. Entom. Soc. (Reprinted from the Proceedings of the Ethnological Society) From the Author.
- Notes not included in the Memoirs already published on Roman Roads in Northumberland. By Henry Maclauchlan, F.G.S., Honorary Member of the Society of Antiquaries of Newcastle-upon-Tyne From the Author.
- Remarks on the Coins of the Anglo-Saxon and Danish Kings of Northumberland. Communicated to the Numismatic Society of London, by J. Rashleigh, Esq. May, 1869.
Ditto ditto ditto June, 1869 From the Author.
- Journal of Botany. From No. 1, January, 1863, to No. 77, July, 1869 From Miss Emily Stackhouse
Carent: Nos. 2 to 12
 28 to 48
 54
 71
 74
- Hydriotaphia Cambrensis. Ancient Interments and Sepulchral Urns found in Anglesey and North Wales. From Notices collected by the Hon. William Stanley, M.P., with additional observations by Albert Way, M.A., F.S.A. (Reprinted from *Archæologia Cambrensis*, Third Series, Vol. xiv)... From Mr. Albert Way.
- Remarks on the Intensity and Quantity of the Junction Changes of Sussex and Cornwall, considered as Mining Districts. By John S. Enys From the Author.

Index to the Native and Scientific Names of Indian and other Eastern Economic Plants and Products. By J. Forbes Watson, M.A., M.D., F.L.S., &c., &c.	From the Author.
The Midnight Sky. Familiar Notes on the Stars and Planets. By Edwin Dunkin, of the Royal Observatory, Greenwich, and Fellow of the Royal Astronomical Society, London.....	From the Author.
Remarks on the Stone Circles at Boscawen-Un and Boskednan, in West Cornwall. By E. H. W. Dunkin	From the Author.
Catalogue of the Library of the Athenæum, 1845—1859	From Sir Montague Smith.
The Antiquity of Man. An Examination of Sir Charles Lyell's recent work. By S. R. Pattison, F.G.S.	From the Author.
New Facts and Old Records: A Plea for Genesis. By S. R. Pattison, F.G.S.	From the Author.
Nathaniel Spencer's "Complete English Traveller," 1773. The County of Cornwall ..	From Mr. S. R. Pattison.
Miscellaneous Cuttings, relating to Cornwall, from books, periodicals, and newspapers ..	Ditto.
Address delivered at the Spring Meeting of the Royal Institution of Cornwall, on the 18th May, 1869. By William Jory Henwood, F.R.S., F.G.S., Member of the Geological Society of France. Sometime Her Majesty's Assay Master of Tin in the Duchy of Cornwall; Vice-President of the Institution....	From the Author.
Map of Carn Brea, enlarged by Capt. Henderson, from a Plate in Sir Gardner Wilkinson's Memoir.....	From Capt. Henderson.
Anthropological Review, Nos. 26 and 27, 1869	From the Anthropological Society.
Proceedings of the Zoological Society of London, 1868 and 1869.....	From the Society.
Transactions of the Historic Society of Lancashire and Cheshire. New Series, Vol. viii, Session 1867—68	Ditto.
Journal of the Liverpool Polytechnic Society	Ditto.
Proceedings of the Geological and Polytechnic Society of the West Riding of Yorkshire, 1863—4, 1864—5, 1865—6, 1867, and 1868	Ditto.
Journal of the Historical and Archæological Association of Ireland. Vol. i, Third Series, April, 1869	From the Association.
Report of the National Academy of Sciences; Washington, March, 1867	From the Smithsonian Institution.
Ditto July, 1868	

Annual Report of the Board of Regents of the Smithsonian Institution, for the year 1867	Ditto.
Tenth Annual Report of the Columbia Institution for the Deaf and Dumb, for the year ending June 30, 1867.....	Ditto.
Report of the Miners' Association of Cornwall and Devonshire, 1868.....	From the Association.
51st, 52nd, 53rd, and 54th Annual Reports of the Council of the Royal Geological Society of Cornwall.....	From Mr. Henwood.
55th Annual Report Ditto	Ditto.
Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society. Vol. iii, Part ii, 1868—9	From the Society.

Dr. BARHAM read the following letter from Mr. Albert Way :

" Wonham,
Reigate, June 18.

Dear Sir,

I have just had the pleasure of receiving your April Number... I see much interesting matter in this Number. I notice Mr. Iago's account and representation of the "Saxon" Slab at Bodmin, regarding which I have corresponded with Mr. Maclean, and have a rubbing on my table. There can, I imagine, be no question as to its being 16th century work; every detail is of that period. Such a design must be referred to 1557; the design and lettering cannot be of the time of Cromwell, according to the "perhaps" at p. 107. The monogram on the foot of the foliated cross would alone make the memorial quite unsuitable to 1657. May I request you to present from me to the Library a reprint (with some additions) of two memoirs by Mr. Stanley and myself, on Celtic Urns and other matters of Cambrian Antiquity that may, I hope, be worthy of a place in your collection of books. Would you inform me whether you have in the Library the entire set of the *Archæological Journal*, and our other publications. We cannot offer the first five volumes of the *Journal*, but if there should be any portions, previous to Vol. 24, that you have not got, the Council would, I am sure, gladly present them, and also any of our yearly volumes that we have in stock... With the Volume on Cambrian Antiquities, I beg to offer a Photograph (full size) of a "Palæolithic" implement of flint, found by me last year at Bournemouth, Hants, in the Drift gravels. Sir C. Lyell considers it to be the best of the examples hitherto found there.

I remain,

Yours faithfully,

ALBERT WAY."

Mr. R. N. WORTH read, from a Paper which he had prepared for publication in the *Journal* of the Institution, portions of a

MS. history of the Killigrew family, written in 1738, by Martin Killigrew.

The PRESIDENT stated that Captain Josiah Thomas, of Dolcoath, who had been elected an Associate of the Institution, had promised to furnish an account of the objects of interest at that mine, which the excursionists visited last autumn. It would, no doubt, form one of the most interesting contributions to the *Journal*.

Dr. BARHAM stated that it was proposed that next year the excursion should be to Tintagel, by way of Bodmin, in each of which districts there were many very interesting remains. Two days would be required. At Bodmin the excursionists would have a very excellent *cicerone* in Mr. T. Q. Couch ; and the Reverend R. B. Kinsman, who, he believed, was constable of the old castle at Tintagel, had promised that, should an excursion into that neighbourhood be organized, he would do all in his power to make it interesting and agreeable.

Dr. Robert Tweedy, Treasurer, in account with the Royal Institution of Cornwall. Cr.

	£	s.	d.
1869.			
July 31. To Balance from last Account	56	10	9
Annual Subscriptions	87	5	6
Ditto H.R.H. the Prince of Wales	20	0	0
Ditto Truro Town Council	20	0	0
Arrears of Subscriptions.....	10	9	0
Rent from Library	20	0	0
Visitors' Fees.....	2	10	6
Sale of Journal and Reports	13	0	9
Sale of Fauna	4	7	4
Illustration Fund	7	4	0
	£241	7	10
1869. Balance.....	£76	12	2

	£	s.	d.
1869.			
July 31. By Taxes and Fire Insurance	7	9	0
Repairs	9	9	7
Curator's Salary	32	0	0
Museum Expenses	8	3	7
Printing and Stationery	5	17	8
Postages and Carriage of Parcels ..	8	10	4
Printing and Editing Journal.....	78	4	6
Sundries.....	2	5	5
Ray Society	1	1	0
Palaeontographical Society	1	1	0
British Meteorological Society	1	0	0
Royal Horticultural Society	2	2	0
Quarterly Journal of Science	1	0	0
Interest on Mortgage Debt	6	11	7
Balance	76	12	2
	£241	7	10

JOURNAL

OF THE

ROYAL INSTITUTION OF CORNWALL.

No. XI.

APRIL.

1870.

I.—*Notice of John de Trevisa, a Cornish mediæval author.*—A.D. 1342–1412.—By JOHN JOPE ROGERS, *Penrose.*

TO many Cornishmen now living the name of John de Trevisa is probably unknown; and I should have continued in ignorance of the history of this county worthy, but for an enquiry made of me some time ago by our learned Clerk of the Peace, Mr. Henry Sewell Stokes, who, from a connection formed by one of his family with Queen's College, Oxford, where Trevisa received a part of his education, felt an interest in investigating his history.

Mr. Stokes has permitted me to make this attempt, which the duties of his office do not allow him sufficient leisure to accomplish, and I hope that the interest which every Oxford man and every Cornishman should feel in the relation which they bear to the literature of the Middle Ages, will serve as my excuse for intruding this notice upon the pages of the *Journal*.

The materials of illustration are, however, necessarily meagre, owing to the remote date at which Trevisa flourished; and I must beg that this notice may be regarded rather as a peg whereon a fuller memoir may at a future time be hung, than as at all pretending to the character of completeness.

Indeed, since the present Master of the Rolls first began to open to the public the vast treasures of historical details which have so long been buried in the great Record Office, so much has been added to English History, both personal and political, that we may reasonably hope that further materials for the life of so

comparatively obscure a person as Trevisa may yet be brought to light.

John de Trevisa was born, according to our county historian, Carew, at Crocadon, near Saltash,* a mansion which was the residence of his family for many generations afterwards, until it was purchased of the last of the family, William Trevisa, about the year 1690, by Sir Wm. Coryton.† Carew gives the arms of the family of Trevisa as “gules, a garb or.”‡

Born in the year 1342, John de Trevisa was educated at Oxford—first at Exeter College and then at Queen’s, where he became a fellow, and afterwards a secular priest. He was appointed domestic chaplain at Berkeley Castle by Thomas Lord Berkeley, who subsequently presented him to the Vicarage of Berkeley, where he is believed to have died, A.D. 1412,|| at the ripe age of 70.

If it be too much to say of Trevisa that he was a man in advance of his time, it may at least be truly said of him, that his literary works which have come down to us are sufficiently numerous and varied in character to stamp him as a man of no ordinary attainments and industry. Bishop Tanner enumerates no less than eleven separate works of Trevisa, some of which were printed after his death, though now of extreme rarity, and others remain in MS. in the British Museum, Bodleian, and in private libraries. Some of these works are composed in Latin, others are translations of Latin books into such English as prevailed at the time, and which, according to Fuller,§ he was instrumental in improving and purifying. Trevisa did not confine his labours to subjects connected with his sacred calling,¶ for besides descriptions of Britain and Ireland, he gave a genealogy of David II, King of Scotland, and of our own King Arthur; wrote on the virtues of the Bath waters, comparing them with those of Aix la Chapelle;

* *Carew's Cornwall*, ed. 1811, p. 269.

† *Wallis's Cornwall Register*, 1847. “Crocadon.”

‡ This coat is confirmed by a MS. note book of the Herald's Visitation of Cornwall in Camden's time, in possession of Mr. Borlase, of Castle Horneck.

|| Bp. Tanner, *Bibliotheca Britann.* (folio), 1748, p. 720.

§ *Fuller's Worthies*, i, 217.

¶ See list of works at end.

whilst among his translations we find a treatise "De re Militari," and the once famous periodical, "Ranulphi Polychronicon," which he translated in the year 1387, appending to it a treatise in Latin on the special value of translations.* He also translated the work which has been called "The Great Cyclopædia of the Middle Ages," viz., "Bartholomæus de Glanvilla de proprietatibus rerum."†

But the work which will probably be deemed by his countrymen in the present day to be the most important and interesting, as connected with Trevisa's name, is his reputed translation of the Bible into English. If he did really execute this important work, it was one of the first translations into English, and preceded only by that of Wyckliff; but authorities are by no means agreed that Trevisa ever did translate the whole Bible, and the better opinion seems now to be, that he did not carry his translation beyond selected texts or other portions of the Holy Scriptures, which were used for the embellishment of the Chapel of Berkeley Castle, or of his own parish Church, near it.

It is perhaps worth while to examine the principal authorities upon this very interesting question.

Both Fabricius ‡ and Bishop Tanner,|| who wrote before Fuller, speak of an undoubted translation of the whole Bible; whilst Fuller writes as if he had seen the translation itself, and compared it with Wyckliff's. His language deserves to be quoted.

After saying that Trevisa was Chaplain to Thomas Lord Berkeley, he proceeds:—"at whose instance ... he translated the Bible into English: a daring work for a private person in that age, without particular command from Pope or publique council. Some much admire he would enter on this work, so lately performed (about fifty years before) by John Wicklife; what was this but 'actum agere,' to do what was done before? Besides,

* This work has been re-edited by Mr. Churchill Babington, in vol. i of the Master of the Rolls' series of Chronicles of the Middle Ages.

† The Early English Text Society have recently announced their intention of re-editing this Cyclopædia from the MS. The task is committed to the care of Mr. Edward B. Peacock, who proposes to devote two or three years to the work, and to follow out the quaint notions contained in the book to their original sources.—*Athenæum*, Oct. 2, 1869.

‡ *Bibliotheca Medix et Infimæ Latinitatis*, vol. ii, p. 154.

|| *Bibliotheca Brit. Hib.* (folio), London, 1748, p. 720.

“Wickliffe and Trevisa agreeing so well in their judgments, it was
 “much he would make a re-translation. Such consider not that
 “in that age it was almost the same pains for a scholar to translate
 “as to transcribe the Bible; secondly, the time betwixt Wickliffe
 “and Trevisa was the crisis of the English tongue, which began
 “to be improved in fifty, more then * in three hundred years
 “formerly. Many course † words (to say no more) used before,
 “are refined by Trevisa, whose translation is as much better than
 “Wickliffe’s, as worse than Tyndal’s.” ‡ After so circumstantial a
 statement of his belief as this of Fuller’s, it is certainly surprizing
 that no portion of Trevisa’s English Bible is known to have been
 printed, nor is the MS. known to exist in any library.

The Rev. J. Hughes, indeed, in a letter, dated Berkeley Castle,
 November 7th, 1805, cited by Dibdin in his edition of “Ames’
 Typogr. Antiq.,” || speaks thus of the then Lord Berkeley’s belief in
 the existence of the MS. :—“Lord Berkeley has informed me
 “that *the book* given by his ancestor is at present (as he has reason to
 “believe) in the Vatican at Rome; when he was there, several
 “persons had mentioned their seeing such a book written by
 “Trevisa, but he had not an opportunity to go and examine it
 “himself, therefore [I] *cannot ascertain that it was the Bible.*” Mr.
 Hughes was Chaplain at Berkeley Castle. The belief, however,
 in Trevisa’s translation, which Dibdin traces up to Caxton, is
 found to be shared by Bale and Pits [who, as Dibdin thinks,
 derived it from Caxton], by Sir Robert Atkyns, in his “History of
 Gloucestershire,” Berkeley, A.D. 1712, and by our own learned
 historian of Cornwall, Carew; the latter author, indeed, speaks of
 it critically, as Fuller does.

On the other side of the question the authorities are less
 numerous, but they are of more recent date, not so easily satisfied
 of facts without evidence to support them as writers of earlier
 periods have sometimes been, and so long as the MS. remains
 hidden from view, they certainly have the best of the argument.

* *Sic.*

† *Sic.*

‡ *Fuller’s Worthies*, ed. 4to, 1811, vol. i, 217.—“Cornwall.” See also
Carew’s Cornwall, ed. 1811, p. 269.

|| Vol. i, 142—3.

Dibdin says, "This opinion" (*i.e.*, that Trevisa translated the Bible) "was first taken up by Bale and Pits, from a loose assertion "of Caxton, in the proeme of the above work" (the Polychronicon); "but upon what authority our printer asserted it, or, if he saw "such a translation, why he did not think it at least as deserving "of publication as the Polychronicon, are questions which may "be thought to press hard upon the probability of its existence." *

Hartwell Horne writes on the subject as follows :—"As no part "of this work appears ever to have been printed, the translation "ascribed to him is supposed to have been confined to a few texts, "which are scattered in some parts of his works (several copies of "which are known to exist in MS.), or which were painted on the "walls of his Patron's Chapel, at Berkeley Castle." †

This was written whilst Hartwell Horne was in the Library of the British Museum, and had every facility for full research amongst its treasures; and although it is remarkable that he should make no reference to Fuller's statement—and it is impossible to suppose that he was ignorant of it,—yet the fact of his having devoted the whole of his long life mainly to Biblical study, gives authority to any statement of his upon the subject.

Mr. Thomas Watts also, the late head of the printed book department in the British Museum, and whose recent death is a great public loss, was not aware of any part of the reputed translation having ever been printed, nor did he know of the existence of the MS. ‡

The most recent authority, who, so far as I am aware, has thrown any light upon the subject, is Mr. Churchill Babington, of St. John's College, Cambridge; who, in a long note on Trevisa's works, at page liv. of the 1st vol. of the Master of the Rolls' series, which he edited, says :—"Of his other translations, that of "the Bible, said by Caxton, Bale, and others to have been made "by Trevisa, *and possibly still extant at Rome*, is the most important "on all accounts. It is not, however, certain, though by no means "improbable, that Trevisa ever translated the Bible at all."

* Dibdin's *Ames. Typogr. Antiq.*, i, 142—3.

† Rev. H. Horne's *Biblical Bibliography*, 1839, p. 66.

‡ Mr. Watts died Sep. 9, 1869, at 58. See a brief but interesting notice of his life and services, in the *Athenæum* of Sep. 18, 1869.

Further, no mention is made of Trevisa's translation in the preface to Forshall and Madden's Wycliffite versions of the Holy Bible.

We find, then, upon this the most important point in our hero's history, this strange difference, rather than conflict, of authority, that whilst Caxton, Bale, Fabricius, Bp. Tanner, Fuller, and Carew, accepted the tradition of his translation of the Bible as a fact, all modern writers either disbelieve it, or consider the matter to be at least doubtful.

I have therefore endeavoured, through a friend, to search for "the book" which Lord Berkeley mentioned to Mr. Hughes as given by his ancestor, and possibly still in the library at the Vatican. I regret to say that the search has not been attended with success, owing to the very imperfect way in which its contents are catalogued.

I can only express a hope that if at a future time a catalogue should be completed, some Cornishman may remember that this "last stone" has still "to be turned."

I have said that some of Trevisa's works are to be found in MS. in public and private libraries in England. Two are preserved in the library of Mr. Tollemache, M.P., at Helmingham Hall, Suffolk; and I am indebted to the Hon. Captain Jolliffe for a note of his personal examination of them. One is a translation of "*Bartholomæus de Glanvilla de proprietatibus rerum*," beautifully illuminated on vellum, and very handsomely bound, with large metal bosses and clasps, and in excellent preservation; it is dated 1398, and written in Old English Text.*

Watt, in his "*Bibliotheca Britannica*," gives no less than nine editions of this work, inclusive of the translations.

The other MS. of Trevisa, at Helmingham, is that of "*Polychronicon Ranulphi*."

Both these works were printed by Wynkyn de Worde, in 1495, and a most interesting copy of the former is exhibited in one of the specimen cases on the floor of the King's Library, in the British Museum.

It is there described as "printed at Westminster, by Wynkyn

* This beautiful mediæval Encyclopædia was exhibited by Mr. Tollemache, at the Annual Meeting of the Archæological Institute, at Bury St. Edmunds, July, 1869.

“de Worde, about 1495, the first book printed on paper of “English manufacture.”*

A full table of these and other works of Trevisa is given at the end.

Bishop Tanner fixes his death at A.D. 1412,† which, as he was born in 1342, makes him 70 years old at the date of his death. It is supposed that he died at Berkeley, but, as Mr. Hughes, whose letter to Dibdin has been already quoted, says, “not one “certain vestige of him remains here (Berkeley), nor is even his “grave in the church known.” When the parish church was restored, not long ago, search was made for the grave; and all that could be discovered was, that near the altar there was a stone, which was evidently set over an ecclesiastic, but the brass was gone, and no date or name could be found upon it.

In presenting this meagre summary of all that I can discover on the subject, I will only add that, having failed to establish the most important point in the history of our Cornish Worthy, I must request that this may be accepted as the humble attempt of a countryman to rescue his fame from oblivion, whilst I shall continue to hope that some one under whose eye this paper may fall, may obtain access to fresh materials for illustrating the life and times of John de Trevisa.

LIST OF ORIGINAL WRITINGS AND TRANSLATIONS OF JOHN DE
TREVISA. ~

1.—*Original Writings.*

De calore thermarum Bathoniensum.

De utilitate translationum, dialogus inter patronum et clericum.

lib. i.

Gesta Regis Arthuri. *lib. i.*

Britanniæ descriptio. *lib. i.*

Hiberniæ descriptio. *lib. i.*

De memorabilibus temporum. *lib. i.*

Genealogia Davidis Regis Scotiæ.

* I am indebted to Mr. Edwin Netherton, of Truro, for a notice of a copy of the *Polychronicon*, printed subsequently by Peter Treveris (1527), which was lately offered for sale by Quaritch, the London bookseller, for £42.

† Carew says “about 1410” (*ubi supra*). Fuller says “about 1400.”

2.—*Translations into English.*

Polychronicon Ranulphi Higden, Monachi Cestrensis.*

Bartholomæus de Glanvilla de proprietatibus rerum.†

Richardi Armachani defensorium curatorum.

Vegetii de re militari.‡

Ægidii Romani de regimine Principum.

Gulielmi Occam dialogus inter militem et clericum. ||

Sermon by Fitzralf, Archbp. of Armagh, preached in the year 1357, at Oxford, against the Mendicant Friars.

A spurious production "on the beginning and end of the world," ascribed to Methodius.

* Printed by Wynkyn de Worde, 1495. See page 152 of this notice. Reprinted page for page in 1527, from this edition, by Peter Treveris, in Southwerke. See note * at page 153, of a copy offered for sale by Quaritch, who says that another copy of Treveris's edition was sold in 1864, by Sotheby, at a very high price. It is printed in black letter, folio, with some woodcuts, title in red, with woodcut of George and the Dragon, which is also on the last page. MS. copies of this are in the British Museum and at Helmingham Hall [see note * page 152], and elsewhere. See Mr. C. Babington's recent edition of this once popular work, in vol. i of the Master of the Rolls' series of Chronicles of the Middle Ages.

† MS. copies of this curious translation of a Cyclopædia of the Middle Ages are to be found in the British Museum, Cambridge University Library, and at Helmingham Hall. Watt enumerates nine editions of it in print, including original and translations [*Bibliotheca Brit. in loco*]; and the Early English Text Society are about to issue a reprint from the MSS.

‡ Bishop Tanner mentions this as attributed to Trevisa, in Codd. Bodl. Digby, 233.

|| This also is attributed to Trevisa by Bishop Tanner, in these words, "Forte Trevisa ejus auctor."

II.—*Chronicles of Cornish Saints.*

V.—S. DAVID.

By the REVEREND JOHN ADAMS, M.A., *Vicar of Stockcross, Berks.*

Read at the Spring Meeting, May 18, 1869.

TO place S. David in the category of Cornish Saints will perhaps kindle the indignation of Welshmen, and appear to them almost like a moral violation of the commandment "Na ladratta." But, though he is justly regarded as the glory of their nation and their own patron saint, their Celtic brethren on the opposite shores of the Severn sea may venture to claim a share in his renown; for we are told by William of Worcester* that he was a native of Cornwall, and that Alternun was the place of his birth; whilst Leland asserts that his mother was the daughter of a Cornish chief.† If those statements are reliable, we may almost use the words which the men of Israel addressed to the men of Judah concerning his Hebrew namesake: "We have more right in David than ye." But, apart from those statements by William of Worcester and Leland, which, it must be admitted, are somewhat incompatible with the general tradition of the Saint's nativity, there is abundant evidence that he was intimately connected with Cornwall, and that we may fairly reckon him amongst the foremost apostles of the ancient Cornish church.

There is in the Deanery of Trigg Major a parish which from

* "In Kalendario ecclesiæ Mont Myghell."

"Sancta Nonnita mater Sancti David jacet apud ecclesiam villæ Alternoniæ per 6 miliaria de Launceston, ubi natus fuit Sanctus David."

William of Worcester came into Cornwall in the year 1478, and travelled as far west as S. Michael's Mount. The above note is one of the memoranda which he copied from the register of the Mount.

† "Nonita, mater Davidis, fuit ut aliqui adfirmant, filia Comitum Corniæ."
—*Collectanea*, vol. ii, 107.

time immemorial, has borne his name and claimed him as the founder of its church. A few miles west of this parish lies Tintagel, the stronghold and birthplace of the famous King Arthur, to whom he was closely related; and adjoining it on the east is the wide parish of Alternun, where, tradition tells us, his mother abode, and where her well remains to this day. Davidstow therefore is just the spot where we might expect to find some memorials of the Saint's labour; and it must have been in his day a post well deserving such a soldier of the Cross as S. David; for in its immediate neighbourhood King Arthur and his veterans were wont to seek brief respite from the toils of war, and thither must have swarmed refugees from all parts of Britain, whose homes had been wasted by the Saxon invaders, and who would naturally flee for shelter to the wild hills and cliffs which flanked the impregnable fortress of their hero.

With regard to the historical records of David's life, few men of renown have been more unfortunate in their biographers than he; for all the memoirs of him which have come down to us from the middle ages are so filled with superstitious fables that their historical authority is regarded as of little value. It is however a noteworthy fact that though there are at least half a dozen of those old lives extant,* each having some minute details and mendacious embellishments peculiar to itself, they nevertheless agree with each other in the general outline of the Saint's life. Divested of what is manifestly fabulous, there is a residuum common to all of them; and this residuum, to which some credit may fairly be attached, forms the substance of the following brief sketch.

* The Bollandists have published that which they consider the most ancient of those lives, *Acta Sanctorum*, i, March 1, 41. It belonged, they tell us, to the Church of S. Saviour's, at Utrecht, and was brought originally from Britain. Colgan also, because David's mother was said to have been an Irish woman, and because he cultivated the friendship of many Irish Saints, published a life of the Saint, with an account of his monastery at Menevia in his "*Acta SS. Hiberniæ*." Another life was compiled by Ricemarch, a bishop of S. David's, who died about the year 1096. It is more tedious and prolix than the Utrecht life, and the great aim of its compiler was to make it appear that S. David and his See held supremacy over the whole British Church. An abridgement of this life is given by Capgrave in his "*Legenda Nova*," and also by Giraldus Cambrensis with a few unimportant additions. The Welsh life too, published by the Welsh MSS. Society, seems to have been derived from the same source.

David was the son of Sandde, or Xantus, King of Ceretica, a province of South Wales. Thirty years before his birth S. Patrick passed through the country, and, being struck with the beauty of the vale of Rhos, or Rosina, the subsequent site of David's monastery, he determined to spend the rest of his days there; but supernatural intimation was given to him that GOD had designed that spot, not for him, but for an illustrious saint not yet born. Whatever we may think of this alleged prophecy, it was so commonly believed in the middle ages that reference to it was made in the Collect for S. David's day in the Sarum Missal. David's mother, Non or Nonnita by name, is usually designated a nun; but in the oldest and most consistent life of the saint, and also in the life given by Colgan, she is spoken of as a lovely and beautiful girl, whom the chieftain met as he journeyed into Demetia, and of whom he became passionately enamoured. She seems to have been a woman of great Christian zeal, for there are four religious edifices in Wales dedicated to her memory, all of which, like her church in Cornwall, are situated in the immediate neighbourhood of churches ascribed to her son. David spent his early days in a place called in Welsh, "Henmenew," and in Latin, "Vetus Menevia," and he was educated in the College of S. Iltutus at Lantwit Major; Samson, who afterwards occupied a cell at no great distance from his abode in Cornwall, being one of his fellow students. After his ordination he sought further instruction from Pawl Hên, or Paulinus, who at that time was in high repute as a teacher of divinity at Ty-gwyn, or Whiteland, in Carmarthenshire. His most intimate associates there were Teilo and Padarn; and when, after ten years sojourn, he left that place, he travelled about the country with those renowned men, uprooting error, and sowing the good seed of the Word of GOD. Hence those three fellow-labourers are called in the Triads "the three blessed visitors of the Isle of Britain," because "they went as "guests to the houses of the noble, the plebeian, the native, and "the stranger, without accepting either fee or reward, or victuals "or drink, but what they did was to teach the faith in Christ to "every one without pay or thanks. Besides which, they gave to the "poor and needy gifts of their gold and silver, their raiment and "provisions.* It is said that they visited Jerusalem together, and

* *Myv. Arch.*, ii. 12, 61.

that David was there raised to the episcopal order by the Patriarch. In another Triad David is spoken of as Primate in the Welsh Church at the same time that Bedwini* held a similar office in Cornwall, and Kentigern in North Britain. There is also a tradition that he made a pilgrimage to Glastonbury Abbey, accompanied by several of his bishops, with a design, which he was not permitted to accomplish, of rebuilding and re-dedicating it. After making known to the monks the object of his visit (so runs the legend), Christ himself appeared to him in a dream, and commanded him to abandon his purpose, at the same time puncturing his hand as a sign of the reality of this supernatural prohibition. The holy man, after this, remained some time in the monastery, and his fame attracted great numbers to the place. He therefore added a chapel, at his own cost, to the east side of the church, consecrating it in honour of the virgin, and the altar thereof was adorned with an inestimable sapphire in honour of the deed.

But the memory of S. David is not perpetuated merely by such doubtful legends as these, for there are no less than 53 churches and chapels in South Wales, Devon, and Cornwall which are ascribed to his zeal; and in them we have indisputable witnesses of his unwearied activity. The work which all his biographers unite in extolling most highly was the establishment of the famous College or Monastery of Menevia; and some of the rules which he laid down for the regulation of the cœnobitical life show how genuine that institution must have been, and how vastly superior to the monasteries of the middle ages, and even to many in our own day. The fundamental principle of his discipline seems to have been that of S. Paul: "if any work not, neither should he eat." The brethren were required to rise at cock-crowing, and, after spending three hours in religious exercises, to earn their bread by labour in the fields. On their return to the monastery they engaged in silent study, or in works of charity; after which, at the sound of a bell, they all repaired to the church, where they remained till dark; and then they closed the day with a frugal meal of bread, herbs, and roots. Their garments were skins of beasts; and the

* Hughes conjectures that Bodmin derives its name from this Bedwini, and that he may perhaps be no other than S. Petrock.—*Horæ Britannicæ*, ii, 357.

most perfect obedience to their superior was enjoined. So great was the fame of the institution that kings and princes, we are told, left their posts to submit to its discipline, and amongst them we find the name of Constantine, the Cornish king, who abandoned the sceptre in remorse for his evil deeds, and became, in his old age, a zealous preacher of the Gospel. In the establishment of this monastery David was greatly hindered by a potent magician called Boya—probably a Druidical Chief—who occupied a strong fortress in the neighbourhood; and there is a precipitous rock near the site of the old monastery which still bears the name of this Chief. There is also a contiguous creek which preserves the name of a contemporary Chief called Lisci, whose son, according to some of the old lives of David, beheaded the magician.

One other well authenticated fact may be found in the mass of hazy legends which envelope the memory of the saint. He was present at the famous Synod of Brevi, A.D. 519, and so distinguished himself by his eloquence that he was chosen primate of the Cambrian Church by universal acclamation, Dubricius having resigned that office in consequence of the infirmities of old age. The following description is given us of his appearance at the time: “He was about six feet in height, having an amiable and pleasant countenance, and a distinguished presence.” Ten years afterwards he assembled another Council, at Caerleon, which is designated the Synod of Victory. This, as well as the former one, is commonly said to have been held for the suppression of Pelagianism, which had again revived in the British Church; and great stress is laid by Romish writers on a statement by Giraldus Cambrensis, that the decrees of those Councils were confirmed by the authority of the Roman Church, and thenceforward became the rule and directory of all the British churches. But the statement of Giraldus is manifestly a fiction, invented in the middle ages for the purpose of showing that there was some foundation for the utterly groundless assumption that the British Church, before the time of S. Augustine, rendered allegiance to Rome; and, in proof of this, it may be mentioned that there is no allusion whatever to the authority, or even the existence, of the Church of Rome, in the most ancient life of the Saint. The decrees of those Synods, though hitherto lost sight of, and unknown

to all ecclesiastical writers in this country,* have it appears been preserved in France, no doubt through the intimate connection between Wales and Brittany in the Sixth and Seventh Centuries. They have lately been printed in a work of great value, entitled "Councils and Ecclesiastical Documents relating to Great Britain and Ireland. Oxford, 1869;" and they show that the main purpose of both Synods was not to define points of doctrine, but to restrain the sensuality of a barbarous and half Christianized people.

At what period of his life David sojourned in Cornwall there is no record; but his visit, probably in the early part of his life, is alluded to in the following lines by Gwynfardd,† a Welsh poet of the 12th Century :

"He endured buffetings, very hard blows,
From the hands of an uncourteous woman, devoid of modesty,
He took vengeance, he endangered the sceptre of Devon,
And those who were not slain were burned."

There are three churches in Devon and Cornwall of which he is the patron Saint; and many others, no doubt, were in their infancy aided by his presence and counsel; for Cuby, Constantine, Samson, and Sennen were all associated with him in their respective Cornish parishes, when he laboured to win souls to Christ, on the bleak hills of Davidstow.

Geoffry of Monmouth states that he died in the monastery which he had founded at Menevia, and was buried there under the direction of Maelgwn Gwynedd. According to the computation of Ussher, this took place A.D. 544, at the age of 84; but Lanigan and other authorities think that he died at least twenty years later. He was canonized by Pope Calixtus in the 12th Century; and his shrine at Menevia became a popular object of

* Giraldus Cambrensis attributes their disappearance from Wales to the incursions of Northern pirates who were wont to infest the Welsh coasts. "Decreta, quæ ore promulgaverat, Præsul David suâ quoque sanctâ manu literis mandavit; suæque ecclesiæ aliisque per Kambriam pluribus reservanda commendavit. Quæ quidem, sicut et alii quamplurimi nobilis bibliothecæ thesauri egregii, tam vetustate quam incuriâ, Piratarum quoque crebris insultibus, qui de Orcadam insulis æstivo tempore longis navibus advecti maritimas Kambriæ provincias vastare consueverant, evanuerunt." De Vita S. Davidis.

† *Myn. Arch.*, i, 270. Rees' *Essay on the Welsh Saints*, 199.

reverence, and was visited for centuries by pilgrims from all countries. Two journeys to Menevia were in the middle ages accounted equal to one pilgrimage to Rome. “Roma semel quantum dat bis Menevia tantum.” And three English Kings, viz., William the Conqueror, Henry II, and Edward I, accompanied by his Queen, Eleanor, are recorded to have taken this journey. Such reverence for the memory of S. David, however superstitious it may now be thought, shows that he left behind him a glorious and imperishable name, and that we may accept the eulogy which Giraldus bestows upon him, as a sober and truthful summary of his merits:—“He was to all a mirror and pattern of life, instructing his disciples by precept and example, mighty in his preaching but mightier in his works. He was himself a doctrine to his hearers, a guide to the religious, a life to the poor, a shelter to orphans, a support to widows, a father to the fatherless, a rule to monks, and a directory to worldlings, becoming all things to all men that he might win all to God.”

III.—*Mylor Church ; its Crosses, Frescoes, &c.*—By the REV. W. IAGO, B.A., *Bodmin.*

THE restoration of the old fabric of Mylor Church, Cornwall, has brought to light many long-hidden traces of its original arrangement and early adornment. The peculiar characteristics of the various parts of the building have been carefully noted by the present Vicar (Rev. J. W. Murray) who, with praiseworthy zeal for the well-being of the church, has preserved as far as possible, or replaced—stone for stone—everything that was interesting or venerable in the structure ; late incongruities only, which marred all beauty and blocked up space, being swept away.

Before entering upon a detailed description of the church, and of the discoveries which have been made within and about the edifice, it may be well here to refer briefly to a few points connected with the history of the locality.

Mr. Murray has deduced from various sources* that this place was the scene of the martyrdom and burial of a British Christian named Meilyr, in the 5th Century. He considers that the neighbouring parish of Mabe was founded, as a daughter-parish, in the following Century, (we know that the two were ecclesiastically united until very recently), and that the patron saints of Mylor, Mabe, and Budock were, by kindred or alliance, of one family.†

Meilyr (A.D. 400–488) is said to have been one of the sons of Gwron, or Guron, whose pedigree is traced upward through

* Calendar of the Early British Church, as used in Wales, which gives :
St. Melor, Martyr, and Remigius, Bishop of Lyons, August 28.

Cressy's Church History of Brittany.

Professor Rees's Welsh Saints.

Usher.

Polwhele's History of Cornwall.

Camden's Magna Britannia.

† According to Welsh records, Mr. Murray points out, Conetoc's great grand-daughter Anaumed was married to Budic (A.D. 500). Her brother Teilo, Archbishop of Llandaff, was succeeded by her son (his nephew) in his See ; and when St. Teilo had come from Dol, in Brittany, to visit his dying relative Gerennius (Gerrans), Budic, his own brother-in-law, met him, being Cornish Prince of the district about Budoc, Mylor, and Mabe.

Conetoc,* Edeyrn, and Vortigern. Cornish historians have stated, on other authority, that Milor, Melor, or Melorus, was the son of Melianus, Duke of Cornwall, and that he was slain on the 28th of August, A.D. 411, by his pagan brother Rinaldus or Remigius, who cut off, first Mylor's right hand, then his left leg, and finally his head. After his relics had been declared instrumental in the performance of miracles, he was enrolled in the Calendar as a Saint. Considering that the Latin mode of spelling the names in this last account was adopted merely by English mediæval writers, and that the mention of Remigius arose from some confusion caused by the transfer and coincidence of Festivals,† Mr. Murray relies chiefly on the British records. In any case (to quote his own words) "the dates of period agree, and many historians record the fact of the martyrdom of Melorus in that age."

A granite Cross, more ancient than, or perhaps coeval with, the oldest portion of the present church, has been found in the churchyard. Till lately its character was not observed. It appeared to be merely a long stone post, rather more than a foot square, thrust against the south wall of the church to serve as a prop or flying buttress. On careful examination it was discovered to have its head downward, buried in the earth. With assistance from H.M.S. "Ganges," this ponderous monolith was raised and righted. It was then found to measure 17ft. 6in. in length ! It now stands 10ft. 9in. above the surface of the ground, with head erect, by the South Porch. It is of the round-headed type ‡ with projections at the neck. Both sides are alike. The head displays, on each face, a Greek Cross with central boss; the cross bounded by a circular rim. Deep panels are sunk between the cross-members, on both sides of the stone. Thus it is a near approach to a four-holed cross. (The cross sculptured on its west face, tilts slightly towards the north).

* Conetoc, Cunedda, or Cunedagius, whose memorial stone was found at Cubert.

† See Foot-note (*), page 162. Mylor Feast is now on the nearest Sunday to October 25. It may have been postponed till after harvest.

‡ Resembling in character those at: (1) Penzance (Market-place); (2) St. Cleer (Longstone); and (3) Trelaske; more nearly than any others which I have seen, or can find figured by Blight or those who preceded him. One of very similar form, about 7 feet high, formerly stood beside the road between Penryn and Helston (for sketch and description of it, see Mr. Thomas's paper, R. I. Rep., 1849, p. 58).

Rude concentric rings, and margin-lines, forming an oblong panel, adorn the upper part of the shaft. Tradition in the parish declares that the Cross* stood originally at or near its present site, marking St. Mylor's grave.

Two other granite stones (of later workmanship, but much weatherworn) were found preserved by being built into a wall on the other side of the church. Together they represent,† in relief, Our Blessed Lord on the Cross, beneath a cusped canopy, or trefoil arch. The head of the figure is inclined towards the north, resting on the right shoulder.

A detached Campanile,‡ larger than the Tower of the Church, stands in the Churchyard against the rising ground.

Mylor is not mentioned, by name, in Domesday Book.

The Church, in its oldest part, seems to date from about the reign of William Rufus, or Henry I., c. A.D. 1100. About 1400 it was enlarged and partially reconstructed; and this process was carried still further about 1500. Thus the edifice displays the Norman, Decorated, and Perpendicular styles of Architecture, prevalent during the periods of its successive alterations. Sculptured stones belonging to each former style have been discovered scattered amongst and incorporated with the rough masonry of each later erection, having been used as old building materials in their construction.

The main portions of the Church itself consist of Chancel,|| Nave,§ Tower,¶ (at the West End, embattled), South Aisle** (with elaborate Porch), North and South Transepts, and a Vestry. This

* Plate I, fig. 2.

† Plate I, fig. 1.

‡ Erected probably to afford better accommodation for bells, the Church Tower being very small. There are three bells in the Campanile (two of them badly cracked). Their legends are the following:

✠ IN: HONORE: SANTI: GEORGII:
 EGO: ME: PRECO: SE: CLAMANDO: CONTERIMVS: AVDITE:
 VENITE: 1637:

1664:

|| Late Perpendicular.

§ Norman and Perpendicular.

¶ Late Decorated, surmounting Norman west wall.

** Late Perpendicular.

last is new, and stands between the Transept and Porch on the south. Of the Transepts, one is new, viz., that on the south side; the other,* which is not so far east, runs northward, and forms the Carelew Chapel or Aisle, communicating with the Church through a wide and lofty pointed arch, chamfered below at the sides. An Arcade of six bays† separates the South Aisle from Nave and Chancel. Its arches are semicircular, and the pillar-capitals are enriched between the upper mouldings with a garland having a zigzag stem; the triangular spaces on each side of the stem being filled with fruit (on some) and leaves (on others). Before the whitewash was removed, these ornaments were not known to exist.

The Church during the Decorated period appears to have been cruciform; for, besides the discovery of a gargoyle designed to fit a junction of roofs, foundations have been traced with the stones set on their edges along under the present Arcade, and branching off towards the south.

In the east wall of the Chancel Aisle a plain Aumbry has been disclosed. Between this Aisle and the Sacarium a Hagioscope, of suitable design, has lately been constructed. A Benatura or Stoup‡ was found on the east wall within the Porch; the Arch and part of the moulding remain, but the Caen-stone bowl is broken.

The entrance to the Rood Loft was discovered in the north wall of the Church; at the angle between the Carelew Transept

* Late Decorated.

The *Norman* work is executed in granite, Caen stone, elvan, clay-slate, greenstone, and dark basaltic stone; yellow clay, coral and shells, with a little lime, being used for mortar and plastering.

The *Late Decorated* work is done in coarser grey granite and clay slate and old Norman materials.

The *Late Perpendicular* in fine close white Caen stone (in arcade and windows) with old Norman and Decorated materials; and with granite (for the east window of Chancel and two Eastern shafts of Arcade); the mortar used being bad—merely churchyard earth, or little besides.

† Late Perpendicular.

‡ On the stones within the Porch, and in other parts of the Church, many names and dates have been cut. Upon the upper part of the face of the Benatura arch appears a monogram similar to a Mason's or a Merchant's mark; though probably incised by some one in an idle moment. Another somewhat similar, also in the Porch, is dated 1604.

and the Chancel. It was a small doorway* with Norman jambs, leading to a straight staircase ascending in the thickness of the wall. The Priest's door is in the south wall of the Chancel Aisle.

Between the Carelew Arch and the western end of the Nave, the north wall of the Church is pierced with a Norman doorway† opening 3 ft. wide; and two new windows, to correspond, have lately been added—one on each side of it. The rounded arch of this doorway is spanned externally by a serpent, keyed with a gargoyle. The side pillars have ornamented capitals, detached shafts, and moulded bases. The lintel and jambs are decorated with zigzag bead-moulding and round bosses; the tympanum displaying a Greek Cross in circular sunk panel. A similar tympanum with cross was found built into the gable of the South Porch; and a third Norman tympanum was discovered serving as a lintel for the Priest's door, and containing cross and circle curiously combined. Upon the lower edge of this stone was a straight smooth bead-moulding, returned, so as to fit a doorway 2 ft. 10 in. wide. Several stones, bearing the same plain single bead or pillar form of moulding on their edges, were found scattered about in various places, such as the walling of the arcade, porch, &c. When collected,‡ they proved to be portions of the jambs pertaining to this tympanum. With it they have now been restored to what is, with good reason, deemed to be their original position, being placed in the basement of the Tower, so as to form the western entrance to the Church. The rebuilding of them in this spot was suggested by the appearance of some stones of their relieving arch which were still "in situ." When some of the substituted and encumbering masonry was removed, the old beam-sockets for securing the door were also revealed. These, having been preserved, will be used as of yore. Two Norman bases|| were found at the South entrance; one sculptured to represent three grim human faces; the other a pig or dog biting a bone.

* A round Turret, of Norman design, has just been constructed near this spot for heating purposes. The old jambs have been used at its entrance, capitals being formed for them out of a semicircular conglomerate stone, cut in two for the purpose. This stone was originally half a Norman capital, and is still ornamented, as when found, by diaper work merging into zigzag.

† Plate I, fig. 5.

‡ Plate I, fig. 4.

|| Plate I, fig. 4.

Some portions of the oak Roodscreen (15th Century) have been preserved, through having been used in the construction of the Reading-desk, and to form wall-plates, wedges, joists, and sleepers for the roof, gallery, and new floors. Its carving is enriched with gold and colours, portraits of saints, &c., and inscriptions. On one part Mr. Murray has read the Cornish words "Carws Adonai Gesu Grist," signifying "The Grace (or Love) of our Lord Jesus Christ." A fragment of an Angel's wing, carved in wood and gilded, was found in the roodloft stairs, and a small piece of stained glass* (white, black, and yellow). Two stone corbels were found in the church, one formed as a plain bracket, the other as an Angel (now headless) winged, and holding between his hands a smooth shield emblazoned with the red cross of St. George. The figure of the Angel also shews distinct traces of colour. Beneath the Altar was seen a leaden coffin, without name but not ancient, probably containing the body of a former Vicar. The Piscina is of the detached pillar form, exactly like that at Bodmin, † but rather larger, being 2ft. 6in. high, and 1ft. 6in. across the top. There are no remains of Sedilia. The Font, ‡ perhaps Late Norman, displays on its faces (within circular panels||) Greek crosses of various forms, "three chevrons in pale," "a saltire between two transverse chevrons pointing inward, *i.e.* sinister and dexter respectively"; and "side curves meeting between two quatrefoils," probably to represent "flanches charged with quatrefoils."

In the masonry of the Carclew Transept, several fragments of door and window jambs, capitals, and tracery were met with, Mr. Murray states, and also the figure of a lion with his tail turned under and brought up with the tuft upon his back, wherein a hole was cut. This has since been fixed as a dripstone; and there are

* Stained glass windows are about to be inserted in the Church—one at the East End, by Gibbs of London, and three in the Carclew Transept, by Hardman of Birmingham—and behind the Altar is about to be erected a Reredos, with Mosaics by Salviati of Venice, through the munificence of Colonel Tremayne (a great benefactor of the Church) and others of the Lemon family.

† Figured by Lysons, and by Blight; measuring 2ft. 4in. by 1ft. 4in.

‡ At Mabe, the daughter parish, I am informed, was an old Font of dark basaltic stone, adorned with quatrefoils. It was broken, but could have been rivetted together, and a zinc lining could have been fitted within it. Instead of this, the Font has been buried in the church, and another substituted.

|| Plate I, fig. 3.

several other grotesque heads on the exterior of the church. A shallow stone bowl of Norman work, with a human face for spout, was found loose in the Tower.

The Roof of the Church was of oak, waggon-form—constructed perhaps late in the 14th Century; but too much decayed to be capable of preservation. About one-third of it remained between the Chancel and the Tower. A handsome new roof, of pitch-pine, has just been constructed.

The Norman North Wall of the Nave was an object of chief interest during the renovation process, as Frescoes were discovered upon it.*

The Frescoes and other wall-paintings were so much damaged when discovered, that they were almost beyond description. Age, decay, and successive coats of whitewash had greatly injured them, and they had been broken and pierced in so many places, for the erection of mural tablets, &c., that not one entire design was discernible. They extended in great profusion from the apex of the Carclew Arch to the western extremity of the wall. On scaling off the whitewash with the utmost care, several layers of designs were found, one over another; innumerable personages and several inscriptions being depicted. The following is as clear an account of them as repeated inspection rendered possible.

(1). On the surface of the original plastering of the wall and close to the point of the Carclew Arch, the figure † of a woman clothed in a red garment (cloak ?) open at the bosom. Her hair arranged in a horizontal roll of yellow curl protruding beneath the lower edge of a tightly fitting cap encasing the head and coming closely round the face, which was turned slightly upward. The countenance was coloured pale pink, the features being delineated in dull red. There was no nimbus about her head. This figure formed one of a group, as the lower part of her robe was half concealed by the red robe of another which projected somewhat in front of her; this last not being further traceable.

(2). On the lower part of the wall, close to the Norman doorway and east of it, was another fresco,—of dim appearance. A right arm could be traced, figured in black upon the grey

* Plate II.

† Height of figure 2 ft. 10 in.

surface of the wall; the elbow flexed, the hand grasping the middle of a staff (slanting upward toward the East, and whitened), the ends of the staff not distinguishable. Between the upper part of the arm and the staff was the white page of an open book with two black clasps (or perhaps a straight white skirt* with two black feet appearing from beneath it?), and other devices.

(3). On a rich yellow-coloured back-ground were depicted a multitude of long-skirted figures represented by means of black and red lines on the yellow; the folds of the drapery shewn gathered in, as by a cord,† at the waist; the sleeves tight; one figure with the right arm raised, and the hand close to the face. This last (like most of the others in the same long row near the top of the wall) much injured by the lowering and levelling of the upper portion of the masonry to receive the roof at some period subsequent to the painting; all these upper figures being thus deprived of their heads.

(4). Fragments of apparently similar figures, coloured deep yellow, black, and red, were scattered over the whole surface of the wall, but too much injured to be identified; no faces nor hands being visible.

(5). Between the Carclew Arch and the Norman door, on the main wall-space, were Inscribed Labels, or ribbon-scrolls, overlying red, black, and yellow subjects like those described above. These scrolls were upon a white ground, done in black; the letters well-formed church-text; no capitals being met with. Several of the letters were made to coalesce in diphthong style. The following only were decipherable:

..... [postremum?] die' (contracted for "diem").
q'd ad morieris
[m?] ei vit'...e videas

(6). A Church Tower (with spire rising above an embattled parapet, and a belfry-window) close beside the inscribed labels, but further east, was clearly drawn in black upon white; the yellow, red, and black figures being found underneath,

(7). Towards the lower part of the Carclew Arch were more of the same series of designs, overlying the coloured figures; but

* Perhaps of St. Katherine, with wheel? Plate II, fig. 1.

† Like surcoats of Norman Knights. Plate II, fig. 3.

only a slender rod, erect,* surmounted by a fir cone, drawn in black, could be recognized.

On a buff back-ground, painted upon and obliterating the Latin scrolls, were comparatively modern devices; a rectangular white tablet, bordered red, containing, in black-letter, words from I Cor., vi, 9, in English. On the opposite side of the church, a similar tablet was found, under the whitewash, quoting Eccles. v, 1, and displaying the date "1638." These had been in their turn obliterated by more recent text-tablets, such as may be seen in most of the old churches which have not been restored. The successive layers of washes and designs being so numerous, it became a matter of difficulty to scale off each from the other; any partial clearance at once producing complication and confusion, from the mixture of letters, &c. Remains of colour have also been found on stones in other parts of the Church.

The mural monuments are not ancient—on some are shields of arms.† The oldest (which was built against the splay of the east window in the Trefusis Aisle)‡ exhibits a kneeling effigy of the deceased, a shield of arms, and a varied inscription, commencing "EN ΤΩ ΤΑΦΕΣΘΑΙ ΕΙΣ ΣΠΑΝΟΝ ΑΝΑΒΑΣΙΣ, *Exuvie ffraucisci Trefusis, &c., &c.,*" Latin and English verses being introduced and the dates thus given—"Natus 8 July 1650, Denatus

* A sceptre appeared also in one of the wall-paintings discovered at Lanivet in 1864. The bearer of it was there represented as a female figure crowned—an inscribed label charged with the name "S. Crede" (?) being above her head, in letters much like those observed at Mylor. Through the kindness of Rev. H. J. Borrow, Rector of Lanivet, I have been enabled to copy this figure from a photograph in his possession (see Plate III).

For a good account of the Lanivet Frescoes, see Mr. Couch's Paper in the R. I. Journal, No. IV, page 79. For Talland Frescoes, see R. I. Report for 1849, p. 32.

† Bonython (Arg. 3 fleurs de lis sab:) impaling Hele (Gules a bend lozengy)	} In Carelew Transept.
Kempe (3 garbs) impaling Bonython	
Pellew (Arg. a chevron gu: on a chief of the 2nd, 3 mascles of the first "Deo adjuvante" on scroll above. "Fortuna Sequatur," motto below).	

Yescombe (Sable a cross moline. Crest, &c.).

‡ In the Trefusis Aisle, against a pillar, was a modern Hatchment, displaying, beneath a Baron's coronet, and with greyhounds for supporters, these arms quarterly, viz: Trefusis, Rolle, Clinton, Saye, Cotton; with two impalements, viz: "Argent a lion's head coupé" and "Or a castle turreted gules," motto "Tout vient de Dieu" (Trefusis arms—"Arg. a chevron between 3 wharrow spindles sab:).

5 Nov: 1680." The arms on the shield are marshalled in 16 quarterings and 2 impalements. The first impalement is "a fess wavy between 2 suns," the second "On a fess dancettée between 3 billets, each charged with a lion, as many bezants," for Rolle. This last impalement is of interest, representing as it does, the marriage* connexion, in 1672, of Francis Trefusis (the deceased here commemorated) with Bridget Rolle; in right of whom, some generations later, the Barony of Clinton and Saye (on the death of the Earl of Orford) passed to the Trefusis family.

The walls of the North Transept were found to contain four apertures (each about 6 inches square) carefully built with Norman fragments. They may have been, as Mr. Murray the Vicar suggests, holes for the use of lepers or others who might thereby be enabled to view or hear Divine Service from without; two of these openings have been preserved.

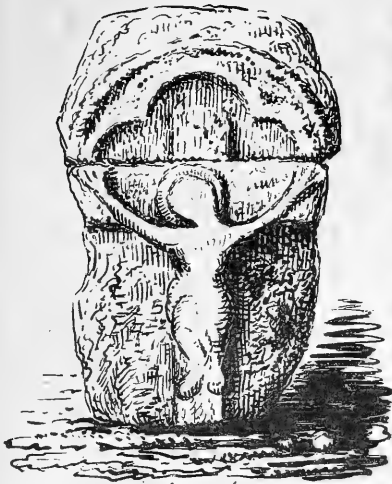
The Church when completed will represent, in one harmonious combination, the three fabrics—Norman, Decorated, and Perpendicular, which by erection and transformation (as Mr. Murray has pointed out) have successively occupied the same Church site, and remained, as an interesting relic of the past, for so many centuries. Time had reduced the venerable pile to a grey, sinking, tottering mass, almost ready to fall. It was, as the Vicar aptly expressed it, "the very picture of gradual but calm decay." Now, re-edified, —under his own personal direction and supervision (after a careful study of the whole)—the leading features of the various parts become distinctly traceable. His aim has been to preserve and reproduce, not to force the whole nor any part into a new mould. Additions and improvements have been effected in exact accordance with the style of their several positions. It is therefore a subject for congratulation, that the restoration should have been undertaken by one so well skilled as Mr. Murray is, in the requisite architectural knowledge, and so fully possessing the faculty of close observation combined with archæological taste. With regard to the other ecclesiastical and parochial connexions of Mylor, a few words must suffice, it being beyond the province of a sketch like the present, to particularize the resident benefactors, of whom there are several.

* See Stockdale, Burke, &c.

To the College of Glasney,* at Penryn, in the parish of Gluvias, Mylor became a dependency, it appears, with certain privileges; and the Church was served by clergy sent from that College; but King Henry VIII suppressed both Glasney and also the Chantry in Mylor Church in connection with the Trefusis Aisle (south of the Chancel). At the Manor of Restronguet, in this parish, was a Religious House (with its own Chapel probably). Its Cemetery, about $\frac{1}{2}$ acre, (now part of a grass field) is still pointed out, being not liable to tithe. Remains of the building may possibly exist in some of the walls of the farm, now occupied by Mr. Rowe.

The Church-town contains, besides the Vicarage and Cottages, a Royal Dockyard. Within the parish of Mylor, are also the populous villages of Flushing, Mylor Bridge, and Restronguet. At the first named is a modern Chapel of Ease—St. Peter's. A Private Chapel is attached to Carclew House, the mansion of Colonel Tremayne. Trefusis has long been possessed by the Clinton family, and its Courts Baron continue to be held as in Feudal times.

* Mr. Murray conjectures that the Late Perpendicular work, consisting of Caen-stone Arcade, windows, and entrance-doorway of the South Aisle and Porch, may have been used originally at Glasney Collegiate Church, and been removed to Mylor on the suppression of the College. The handsome leaf moulding, the pierced tracery, and the cusped panelling of the entrance, are so very superior to the stone-work around, and to the mode of the setting, that Mr. Murray is at a loss how to account otherwise for the manifest incongruity.



(1ft 4in x 1ft 11in)

Fig. 1.

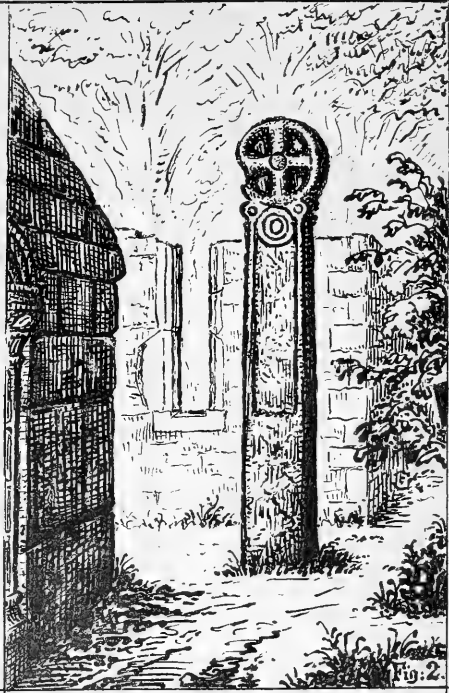


Fig. 2.



Fig. 3.

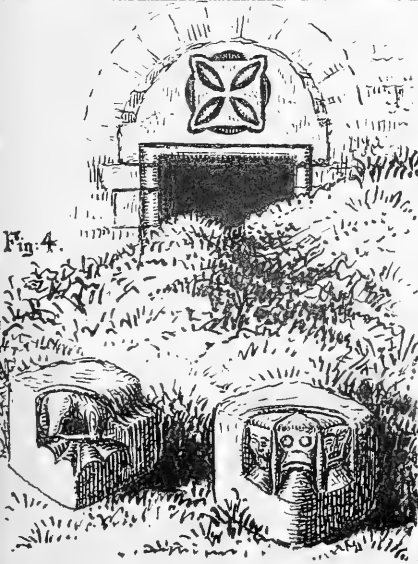


Fig. 4.

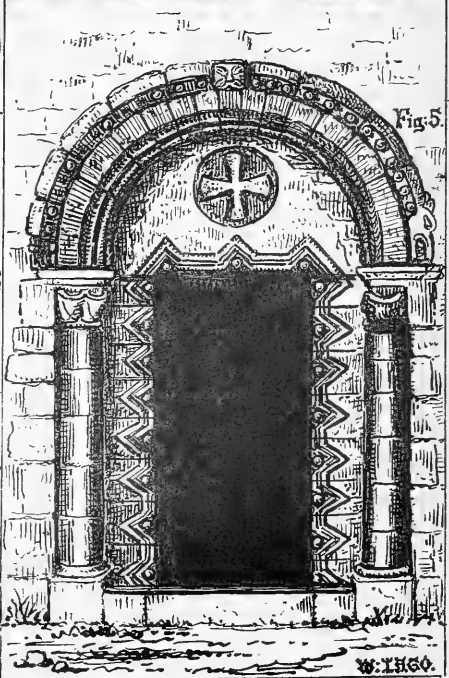


Fig. 5.





Fig. 1.



Fig. 2.



Fig. 3.

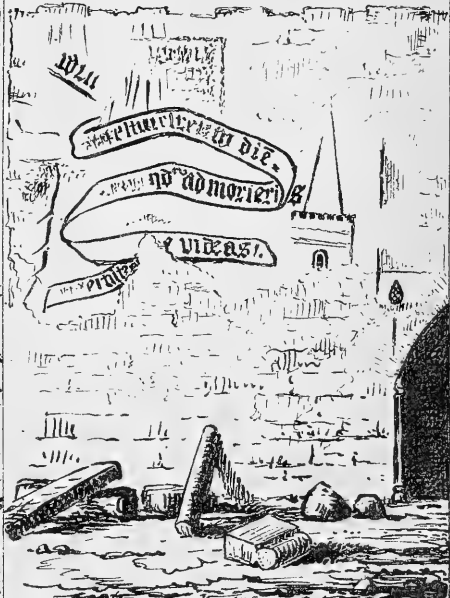


Fig. 4. Tower slanting and the winged figure (Letter A outside as shewn) W. I. A. I.





Discovered at Lanivet Church. 1864.



IV.—*Appendix to a List of Obsolescent Words and Local Phrases in use among the folk of East Cornwall.*—By THOMAS Q. COUCH.

SINCE the publication of my Glossary of East Cornwall words in our *Journal*,* I have collected others in sufficient number to warrant my offering them as an Appendix.

I have altered the title of my collection in compliance with some criticism on its inapplicability. I could, I believe, defend my use of the word *obsolete* (*ab obsoleo*; grown out of use, old fashioned) as indicating phrases not *dead*, but simply *antiquated*. The word *obsolescent* is a fair compromise. My main incentive in the gathering and publishing of this list and its accompanying notes, was to show how many good words have slipped out of use in modern Book-English, though indelibly fixed in some of the master-pieces of our earlier English literature, and living still in the colloquial talk of our peasantry. By a strange misconception, I am supposed to claim these words as exclusively of local use, whereas, in my prefatory notes and subsequent illustrations, I have shown that their chief value consists in their width of distribution. For want of many of these *words* we can now only express the *ideas* by tedious periphrasis. It is to me inexplicable how such apt exponents of thoughts could have thus fallen into desuetude, except in the vulgar tongue.

A.

AGATE. Descriptive of earnest attention.

APSEN TREE. The aspen, *Populus tremula*.

B.

BALCH. A stout cord used for the the head-line of a fishing-net.

BEAN. A withy *band*.

BLACK-HEAD. A boil or furuncle.

BLACKWORM. The cockroach.

* No. I, March, 1864.

- BLOODY WARRIOR. The wall-flower, *Cheiranthus cheiri*.
- BLUE-POLL. A species, or more probably a variety, of Salmon, remarkable for the steel-blue colour of its head, and for ascending our rivers (*e.g.*, the Camel) about Candlemas-day; hence, when occurring in numbers, they are called "the Candlemas school." It is observed by fishermen that the great majority are males or kippers.
- BOWERLY. Stately and comely.
"A bowerly woman."
- BOY'S LOVE. Southernwood.
- BROWTHY. Light and spongy bread is "*browthy*."
- BUSSY-MILK. The first milk after calving.
- BUTT. A heavy two-wheeled cart.
- BUTTER AND EGGS. The *Narcissus poeticus*.

C.

- CANNIS. To toss about carelessly.
- CAPER-LONGER. The shell-fish, *Pinna ingens*.
Tonkin applies the name *Capa longa* to the Razor-shell, *Solen siliqua*.
- CAUCHY. Wet, sloppy.
"The roads are cauchy."
- CHOP. To barter. A.S., *Cyppan*, to bargain.
Bacon says, "as for the chopping of bargains."—*Essay of Riches*.
"Chopping and changing, never pleased with a bargain."—*Gosson's School of Abuse*, 1579.
- CHOW. To chew. A.S., *Ceow-an*.
- "CHUCK-CHILDERN." The Allis Shad, *Alosa vulgaris*; so called probably from the bony nature of the fish, and its ineligibility as an article of infant diet.
- CLIP. A smart and sudden blow.
"A clip under the ear."
- CLITTER. To flutter.
- COMB. An unturned ridge left at intervals in ploughing.
- CONGERDOUCE. ? Sweet Conger.
The fish, *Conger vulgaris* was, within the memory of man, and for reasons that might well be inquired into, very much more abundant than now. Up to the beginning of the present century, a large trade existed between Cornwall and the Continent in Conger-douce, which trade is now extinct. For further information see *Couch's Fishes*, Vol. iv, p. 345.

CRUMPLING. A stunted apple.

CULLERS. The same as hollibubber (Delabole).

CUSTIS. A smart blow on the open hand, a common school punishment.

D.

DAFTER. Daughter.

DEAF, or DEAVE. Barren, empty.

A nut without a kernel is 'deave.'

DEW SNAIL. The Slug, *Limax agrestis*.

DISH. "The Lord's dish." *Vide* Pryce.

DÔL, TOLL. A tribute raised by the Lord of the sett. *Tollere*.

DOWSE. To throw on the ground.

DRAXEL. Threshold.

DREDGE-CORN. A mixed crop of barley, oats, and wheat.

DRINGED-UP. Crowded.

DRUMBLE-DRANE. The humble bee.

DUMBLE-DORY. The cockchafer.

E.

EAR-BUSSUMS. The tonsils.

EASY. Idiotic.

ELLECK. A species of Gurnard, *Trigla cuculus*.

Carew, in his enumeration of the fishes of Cornwall, mentions the "Illek."

EVAL. A dung-fork.

F.

FITCHET. A polecat.

FLIKKETS. Flashes or sudden and rapid changes of colour.

FORTHY. Officious, forward.

FRAPE. To bind.

G.

GO-A-GOODING. On the day before Christmas-day poor women go round to their richer neighbours asking alms; this they call "going a gooding."

GOAL. Slow, heavy, aching pain.

GOOG or GÜG. A sea-side cavern. N.E. Cornwall.

GORE. A gore of blood (?).

GREEN-SAUCE. The herb *Rumex acetosa*.

GULGE. To drink gluttonously.

H.

- HANSEL. To use or handle for the first time.
- HANGE. The heart, lungs, and liver of an animal.
"Head and hange."
- HARDAH. Elvan.
- HARESMEAT. Woodsorrel, *Oxalis acetosella*.
- HEAL. To hide or conceal. A.S.
"The *healer* is as bad as the stealer." Old Proverb.
- HOBBIN. A sort of pasty commonly forming the hedge repast of the husbandman.
- HOLT. Hold, place of retreat. ?From *helan*. A.S.
- HOMER. Homeward.
- HULSTER. A hold or retreat.
"This rubbish is only a hulster for snails."

J.

- JACK-O'-LANTERN. *Ignis fatuus*, the Pisky Puck.
- JOWTER. A travelling fishmonger.
Carew says of Polperro, that there "plenty of fish is vented to the fish drivers, whom we call Jowters."

K.

- KEENLY. Deftly, as "he does it keenly"; also kindly, favourable, "brave keenly gossan."
- KIB. To *kib* a gap, is to mend a gap in a hedge with thorns, and put *tabs* to keep them in place.
- KIEVE. A large tub.
- KIMBLY. The name of a thing, commonly a piece of bread or cake, which was, in the memory of people now living, given to the first person met on going to a wedding or christening. My father, who remembers this as a Polperro custom, interprets it to have some reference to the idea of averting or deprecating the evil eye. The *kimbly* is also given to the person bringing the first news to persons interested in the birth.

L.

- LAMPERED. Mottled, "lamper'd all over."
- LANK. The flank.

LENT-LILY. The Daffodil. *Narcissus pseudo-Narcissus*.

LIDE. The month of March.

Vide "Tinner's Folk-lore," R. I. Journal, No. VI.

LIGGAN. The manure composed of autumnal leaves washed down by a stream and deposited by side eddies. (Fowey.)

LIGGY. Sloppy, drizzly weather.

LOADER. A double apple.

M.

MAWNGE, or MUNCH. To chew.

MIS-MAZE. Bewilderment.

N.

NECK. A miniature sheaf of wheat with four plaited arms, intertwined with "everlasting" and the more durable of flowers.

The stalks of wheat brought down by the last sweep of the scythe are brought home in thankful triumph, and woven as described, and, in the evening, taken into the mowhay, where are assembled all the harvest party. A stout-lunged reaper proclaims, loudly and slowly:—

"I hav'en! I hav'en! I hav'en!"

Another loud voice questions:—

"What hav'ee? What hav'ee? What hav'ee?"

"A Neck! A Neck! A Neck!"

is the reply; and the crowd take up, in their lustiest tones, the chorus of "Wurrah."

General merriment follows, and the songs are loud, and the draughts of ale or cider deep.

The *neck* may be seen hanging to the beam in many of our farm-houses between harvest and Christmas-eve, on which night it is given to the master-bullock in the chall.

"Hollaing the Neck" is in some parts of Cornwall still heard, and is one of the cheerfulest of rural sounds.

NEW-FANG, or VANG. Something newly got. *Vide* FANG.*

O.

OAKWEB. The cockchafer.

P.

PILL. A pool in a creek.

"Even as a sturgeon or a pike doth scour

The creeks and *pills*, in rivers where they lie."

Silvester's Du Bartas.

* *Journal of the Royal Institution of Cornwall*, No. I.

PISKY. An elf or fairy.

PLASHET. A moist place, where a brook begins.

PLUFF. Soft and out of condition. Fur, as hare's pluff.

POP-DOCK. *Digitalis purpurea*.

PULT. The pulse.

Q.

QUAILAWAY. A sty on the eyelid.

R.

REESE. Grain is said to reese when from ripeness it falls out of the ear.

RODELING. Helpless.

ROPER'S NEWS. News told as new, but heard before.

"That's Roper's news."—*Cornish Adage*.

RUMMET. Dandriff.

S.

SCANTLE. Small irregular slate, too small to make "size slate."
(Delabole.)

SCHUTE. N. A conduit or fountain of *falling water*.

SCLOW. To scratch.

SCOLLUCKS. Blocks of refuse or indifferent slate. (Delabole.)

SCRANNY. A scramble. (Saltash.)

SCROACH. To scorch.

SCRY. The report of the approach of a great body of fish; formerly applied to wild-fowl.

"The blastes of hornys, and the serye of foules." *Dame Juliana Berners*.

SHENAKRUM. A drink composed of boiled beer, a little rum, moist sugar, and slices of lemon. (Quere Snack o' Rum.)

SHORTAHS. Masses of loose rubbish which have fallen in and filled up cracks and rents. (Delabole.)

SKERRISH. The privet.

SMITCH. Fine sooty dust in motion.

SOUND-SLEEPER. The common name for a moth.

SPENCE. A.N. A cupboard or pantry under the stairs.

STANDARDS. A term used in wrestling for a man who has thrown two opponents, and thereby secured a chance of trying for a prize.

STARE. The starling.

STIDDLE. The upright pole to which the ox is tied in the stall.

STOITING. The leaping of fish, or the colour they impart to the surface.

STRIKE. To rub gently, to anoint.

T.

TIFLING. The frayed out threads of a woven fabric.

TRONE. In describing heavy rain, a country man said, "the streams were like *trones* from the *tids* of a cow."

TURF-TIE. The bed on which the turf-rick is piled. (*Bed-tie*, a feather bed.)

U.

UPROSE. She was uprosed. *i.e.*, churched.

V.

VOLYER. Supposed to be a corruption of *follower*. The second boat in a pilchard sein.

W.

WILK, WELK, sometimes WELT. A ridgy hump or tumour.

"Little low hedges round like welts."—*Bacon's Essay of Gardening*.

WILVER. A baker or pot under which bread is baked, by being buried in burning embers. (N.E. Cornwall.)

V.—*Some Inquiry into the Association of the Dialects of Devon and Cornwall.*—By R. N. WORTH.

Read at the Spring Meeting, May 18, 1869.

IN the earlier Numbers of the *Journal* of this Institution there appeared a series of Papers on the peculiarities of the Cornish dialect; Mr. T. Q. Couch, of Bodmin, contributing a Glossary of Words in local use in East Cornwall, and the late Mr. Garland discharging a similar office for the common speech of the Western portion of the county. It struck me at the time that there was nothing distinctively Cornish in a number of the words adduced; but it was not until recently that I made a more careful examination of them, with the view of selecting therefrom such as I knew to be in current use in the county of Devon. Of course it does not always follow that the employment of a peculiar word, the use of an ordinary word in a peculiar sense, or the existence of a well-defined peculiarity of pronunciation, in both of the sister counties, is a proof that either did not originate to the west of the Tamar. The interchange of population and the course of traffic must in the progress of centuries have established many Devonshire words in Cornwall, and have introduced many Cornish words into Devon. And of late years the process has been, on one side at least, greatly accelerated by the inducements held out to large bodies of the Cornish industrial classes to settle in the Three Towns of Plymouth, Devonport, and Stonehouse, and their neighbourhood. I offer no opinion as to the origin of the words contained in the list which I have the pleasure of laying before the Institution. Many of them are undoubtedly national, and not in any true sense provincial; others are the common property of the West of England; but when these are eliminated, and those about whose Devonian origin there can be no dispute also set on one side, there will still remain a large number of a more or less unsettled character.

My object has been to direct attention to the fact that large proportions of the words in the lists of Mr. Couch and Mr. Garland are current speech in the two counties, in order to assist if possible in the work of forming a full and exact glossary of the dialect of Cornwall, as it is now spoken. Such a glossary would be imperfect did it not distinguish between words which are legitimately and those which are accidentally in use in the county. It has been my endeavour to supply some materials for the prosecution of this task, leaving it to other hands to carry out the work of discrimination.

The lists published in the *Journal* contained, allowing for repetitions and variations in pronunciation only, about 700 words. Of these I have identified nearly a third as in common use in Devon, the larger quota coming naturally from East Cornwall. Wherever the Devonshire form differs from the Cornish I have enclosed it in brackets, with the letter D appended. The letters E and W are in like manner used to distinguish between forms employed in East and West Cornwall respectively, where such a distinction is necessary to be drawn. Where there are two or more words of similar sound but differing in sense, the meaning of the one referred to is also given within a parenthesis. In all other cases the glossaries of Mr. Couch and Mr. Garland, to which what I have done is merely supplementary, will supply the information that may be required. No doubtful words have been dealt with, excepting in a few instances where suggestions, which are given, appeared to arise. It will be observed that in some cases the Devonshire pronunciation of a word is somewhat sharper than the Cornish.

*Words contained in the Glossaries of Messrs. Couch and Garland,
common to Devon and Cornwall.*

Afeard; 'agg; angletwitch (used in East Cornwall for the earth-worm, in Devonshire for the blind-worm or slow-worm); arrish W, errish E (arish D); athirt; anist; anker; appledrane; arg.

Bal (to bawl); ballywrag E, balarag W (ballyrag or bullyrag D); belk (to belch, bulk D); bucca (a scarecrow or goblin—

query, is not this word related to the common term bogie?); beat (burnt turves—in Devonshire burnt garden refuse is called beat or peat); bever (biver D); belve; biddicks (bittacks D); bobble E (a pebble—popple D); bran-new; briming' (briny D, as Carew has it); bullum; bultys or boulder (bolter D); butts (bots D); buckhorn; barm.

Cab; cabby; chibbals; chuck; chuff; clam (a foot bridge); clome E, clomen W (clomb D); clibby; clickpawed (clickypaw D); clout; cluck (to crouch—cruck D); cluck (of a hen); clusty (sometimes in Devon clisty, which in West Cornwall means soft or sticky); clunk; colewort; coign (commonly spelt quoin); coomb; creem (to creep, *i.e.* of the flesh); crib; cricket (a low stool, seldom used in Devon, but common in the North of England); crock; crumped; chet W (a kitten—not used in Devon; but forward children are sometimes called chits); chur; clack; clubbish (occasionally D); cob; crease.

Daps; davered; derns (sometimes in Devon dorns); dish-water; disle; drule; dig (a rap); dust (chaff; also to yield, give up—this word is included in both glossaries, but in each case only in one sense; it is used in Devon in both); dribs; drumble-dory W (a cockchafer—compare drumble drone, a bumble bee D).

Evet.

Faggot (a feminine term of reproach); fang (to take—vang D); fitty (vitty D); fouse; flasket; flop; freath E (a wattled gap in a hedge—vreath D, a low hedge); flink.

Gawky; gladdy; grab; grainy (proud, haughty—in Devon it has also the meaning of cross-tempered); greet (earth, soil—*query* grit D, sand, small hard particles); grizzle; gumptious; girts or gerts; gulge; glow W (to look sullen—glower D); glump W (sulkinness—glum D); gammets.

Hack (to dig lightly); hallnut, also nuthall E (the hazel—nutall D); haveage (W habit, E lineage—Devon, lineage); head and henge; hekkymal (akkymal D); holm scritch (home screech D); home (near to, close); hurts; haps; heap (“knacked al ov a heap”); hood (wood, occasionally D).

Jakes.

Kern; killick; knap; keyls (keels D); kicklish (ticklish D); kink.

Leary; Lawrence (to idle—“Miky Lawrence’s fever,” to be

lazy D); leat; lerrup E (to beat—the word is used in Devon in the same sense, and to signify trailing or dragging about,—lerrick also in Devon means to beat); lew (lewth not used); linhay; locus E (locust D); longeripple (used in East Cornwall sometimes of a lizard, in Devon generally of a viper); lug; likes; lattin (this word is not much used now in Devon, but lattin cup used to be the general name for a tin mug); louster.

Malkin E (mawkin D); mazzard; mazed; miche; muggets; moil (for mule); mange; mores.

Niff; nutall; nuddick E (niddick D); nesselbird E (the last bird in a nest—compare nesselcraft D, the last pig in a litter).

Oreweed (query oarweed); ozel; overlook.

Peendy E (pindy D); pillem; planchen; plum (soft); plumming (the rising of bread); proud flesh; pluff; purgy E (*query* pudgy D); pinnikin; prinked; piskey (pixie D); punkin or punion end E (puggin end D); puke E (pook D).

Quarry W, quarrel E (a pane of glass—quarril D); quilting (a thrashing).

Raffle (refuse—compare riff-raff D); ream; rig; runner (a jack towel).

Scat; school (of fish); sclum; sconce; scovey; scud; scudder E (skitter D); scute; shammick; skit; skiver; slip (a young pig); slock; spell (of work); squat; stean; steer; seine; stogg E (stugg D); stound; strike (to anoint); sloan; stroil; strub; stub; stuggy; swop; suent; sharps (shafts); shrimmed W (shrammed D); slammikin; slewed; sour-sops W (sour-sass D) squab pie; scruff (of the neck); sight (a large quantity); stirridge; smeech W (smitch D); spall (a mining term); slewed; sker.

Tang; tap; tail E (teel D); thirl; tiddy; tine; town-place (some of the farms on Dartmoor are called towns); traapse; trig; tacle W (a windlass—teekle and fall D), a pulley and rope; tack (to clap hands); totalish; towse; train oil.

Upraising; uzzle W (ozel D).

Vady; vinnied.

Wad; wadge E (to wager—wedge D); want; wettel E (wit-tle D); wisht; wornal (sometimes in Devon wormhole); wrinkle; walve E (to wallow—compare walving D, rolling); well-a-fine; wallop; withy; wizen; wop.

Yap; yock.

VI.—*Indications of Glacial Action in Cornwall.*—By NICHOLAS WHITLEY, F.M.S., one of the Honorary Secretaries of the Royal Institution of Cornwall.

Read at the Spring Meeting, May 18, 1869.

THE evidence of glacial action, so abundant and conclusive in the northern parts of Great Britain and Ireland, is much less obvious in this extreme south-west of England; and has been supposed to be altogether wanting. It has therefore been assumed that while Wales was submerged in the glacial sea full 2000 feet below its present level, Cornwall, Devon, and the South Coast of England remained, as now, dry land.

There has, however, of late years been a gradual accumulation of evidence tending to a contrary conclusion. The "boulder-clay" is said to form an extensive deposit, a considerable height above the sea, at Fremington, near Barnstaple; boulders of granite, trap, and basalt, with water-worn chalk flints, are found in the "drift beds" on the shores of Barnstaple Bay, and may be traced up to their parent rocks in the north of Ireland; and the large mass of "diluvium" on Crowsa Downs, 300 feet above the sea, appears to indicate that that part of our county was sunk to at least that depth in the glacial ocean.

I propose in this Paper to offer some additional evidence on this subject, tending to the same conclusion.

The submarine "forest beds" which may be traced around the coasts of Cornwall and Devon are found under similar circumstances along the coasts of England, Ireland, Wales, and France; and the subsidence of the land by which they were submerged was therefore very uniform over an extensive area; and it is thus most improbable that Wales should have sunk 2000 feet in the Glacial Sea and the contiguous land of this south-west peninsula have remained stationary. The structure of the so-called "raised beaches" which fringe our bays differs in many respects from the

present beaches below them, and shows an arrangement of their materials mainly agreeing with the "drift beds" of Northern Britain.

Fig. 1 represents a typical section of these beds at Porthgidden Cove, St. Ives; its lower part is composed of waterworn pebbles of granite and hornblende, with a few chalk flints, and of coarse gravel mixed with brown siliceous sand. On the top of this stratum is a bed of fine sand; and resting on the whole are large angular blocks of hornblende rock embedded in loam, both of which have obviously been derived from the adjoining higher ground. These rocks have all their angles on and show no indication of removal by water, and many of them are of considerable size and weight, so that it is difficult to conceive how they could have been removed to their present position without the carrying action of a great sheet of land-ice descending by gravitation from the land above.

Again in the bed of "drift" (Fig. 2) exposed in the cliff under Godrevy Farm and resting on a similar bed of siliceous sand, I found a large mass of slate which appeared to have been gouged out from the hill above and pressed into the sand-bed by ice action, and then covered by angular débris from the high land adjoining. An illustration on a much larger scale is afforded by the country between St. Ives and St. Just. The high granite hills of the interior slope rapidly towards the sea on the north, having a broad terrace at their foot mainly composed of granite, with patches of killas near the coast, as shown by Plate No. II. The decomposed granite has formed on the surface a bed of loam, which is scanty on the steep hill-side, but gradually thickens to six and ten feet on the more level surface of the terrace below. The loam contains some waterworn pebbles of rock brought from a distance, indicative of an alluvial formation. At the foot of the steep portion of the hill the boulders of granite are most abundant and are piled up in great confusion; but further down the slope they rest chiefly upon the surface of the loam and are very seldom embedded in it. The boulders are scattered over the surface of the granite and of the killas beyond.

It is obvious, from the section, that during the formation of the loam there was an alluvial action in operation, but not powerful enough to remove heavy blocks of stone, and that

afterward these large masses of granite, many of them weighing from 10 to 20 tons, were brought into their present position by a more powerful agent than running water; and the carrying power of land-ice is the only known natural agency by which such masses of rock could have been removed so far from their parent beds.

The Stream Tin which has been swept into our valleys,—the drift beds which fringe our bays,—and the massive blocks of granite and trap which have been dislodged from the hills and scattered over the lands below, all tend to show that our county was not exempt from those powerful agencies which modified the surface of the land and impressed its seal on the landscape at the glacial period.



REFERENCES TO PLATE I.

PLATE I, FIG. 1.

1. Greenstone soil.
2. Head of large angular blocks of hornblende rock.
3. Fine sand and loam.
4. Pebbles of hornblende rock. Quartz (most abundant). Granite, and some water-worn chalk flints, mixed with sand and with layers of fine brown sand 3 to 12 inches at the bottom, about 5 feet above high water.

FIG. 2.

1. Soil of brown loam, 6 to 18 inches deep.
2. Clayey loam abundantly mixed with angular shattered quartz from 6 to 16 feet thick, but thickest in the lowest dip of the open valley under Godrevy farm-house.
3. Portions of a bed of slate much contorted, probably grooved out of the hill above and pressed into the sand-bed by ice action.
4. Sandy loam from the clay-slate, mixed with siliceous sand.
5. Red and White siliceous sand, in fine quartz grains, partly rounded by water action.
6. Boulders of blue grit, granite, quartz, vesicular trap (From St. Minver?) and clay-slate, mixed with some rounded flints and sand, cemented into a hard conglomerate by oxide of iron and manganese.

PLATE I.

FIG 1. SECTION OF DRIFT, PORTHWEDDEN COVE,
ST IVES.

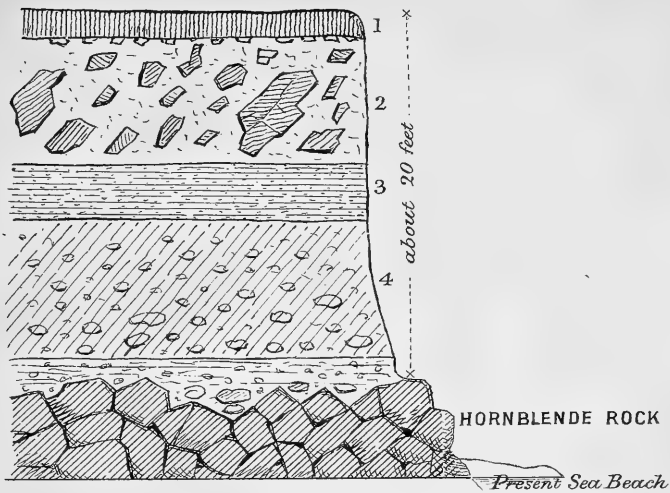


FIG. 2. SECTION OF DRIFT UNDER
GODREVY FARM, ST IVES BAY.

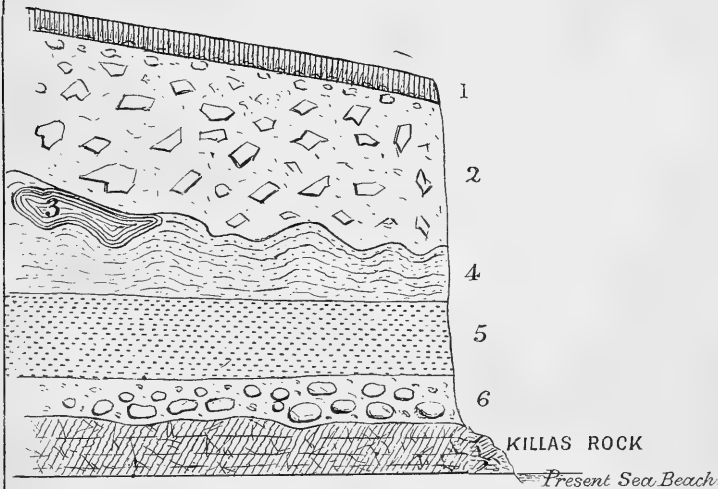
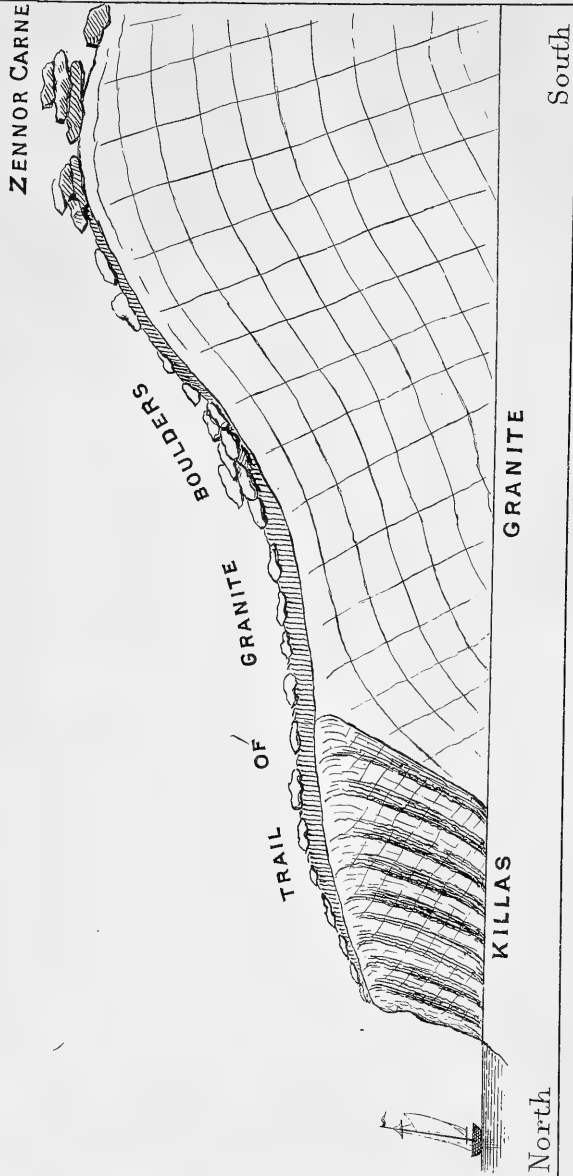


FIG. 3. SKETCH SECTION FROM THE SEA TO ZENNOR CARNE.

about $\frac{3}{4}$ of a mile.



VII.—*A Calendar of Natural Periodic Phenomena: kept at Bodmin, for the year 1869.*—By THOMAS Q. COUCH.

“Il semble, en effet, que les phénomènes périodiques forment, pour les êtres organisés, en dehors de la vie individuelle, une vie commune dont on ne peut saisir les phases qu'en l'étudiant simultanément sur toute la terre.”
—*Quetelet.*

N.B.—The names printed in *Italics* indicate plants and animals marked for special observation.

fl. means flowers; fol., foliates; defol., defoliate.

The time of flowering is to be noted when the flower is sufficiently expanded to show the anthers; of foliation, when the leaf-bud is so far open as to show the upper surface of the leaves; of fructification, at the period of dehiscence of the pericarp, in dehiscent fruits; and, in others, when they have evidently arrived at maturity; of defoliation, when the greater part of the leaves of the year have fallen off.

- January 2. *Hazel (Corylus avellana)*, fl.
— *Potentilla fragariastrum*, fl.
4. Wild Primrose (*Primula vulgaris*), fl.
5. *The Little Bat (Vespertilio pipistrellus)*, active.
12. *Cardamine hirsuta*, fl.
14. *Elder (Sambucus nigra)*, fol. This and other natural appearances of unusual precocity, such as the full flowering of the Garden Strawberry, show the unusual mildness and forwardness of the season.
26. *Pilewort (Ranunculus ficaria)*, fl.
— *Frog (Rana temporaria)*, spawns.
27. *Daphne mezereum*, fl.
28. Sulphur Butterfly (*Gonopteryx rhamni*), seen.

- February 3. *Lent Lily* (*Narcissus pseudo-Narcissus*), *fl.*
 9. *Chrysopenium oppositifolium*, *fl.*
 — *Privet* (*Ligustrum vulgare*), *fol.*
 12. *Larch* (*Larix Europæa*), *fol.*
 — *Gooseberry* (*Ribes grossularia*), *fol.*
 — *Blackthorn* (*Prunus spinosa*), *fl.*
 15. *Wild Strawberry* (*Fragaria vesca*), *fruits.*
 23. *Stellaria holostea*, *fl.*
 27. *Dog violet* (*Viola canina*), *fl.*
- March 6. *Whitethorn* (*Cratægus oxycantha*), *fol.*
 8. *Ground Ivy* (*Glechoma hederacea*), *fl.*
 25. *Horse-chestnut* (*Æsculus hippocastanum*), *fol.*
 — *Birch* (*Betula alba*), *fol.*
- April 1. *White Butterfly* (*Pieris brassicæ*), *seen.*
 — *Adder* (*Pelias berus*), *seen.*
 — *Sycamore* (*Acer pseudo-platanus*), *fol.*
 3. *Oxalis acetosella*, *fl.*
 5. *Cuckoo* (*Cuculus canorus*), *heard.* (Seen several days before).
 8. *Ash* (*Fraxinus excelsior*), *fol.*
 — *Swallow* (*Hirundo rustica*), *seen.*
 — *Corylus avellana*, *fol.*
 11. *Luzula campestris*, *fl.*
 12. *Oak* (*Quercus robur*), *fol.*
 13. *Orchis mascula*, *fl.*
 20. *Syringa vulgaris*, *fl.*
 23. *Swift* (*Cypselus apus*), *seen.*
 24. *Corn Crane* (*Crex pratensis*), *heard.*
 29. *Whitethorn* (*Cratægus oxycantha*), *fl.*
- May 6. *Bugle* (*Ajuga reptans*), *fl.*
 8. *Elder* (*Sambucus nigra*), *fl.*
 10. *Salmon-peal* (*Salmo trutta*), *ascends the Camel River.*
 17. *Earth-nut* (*Bunium flexuosum*), *fl.*
 21. *Mountain-ash* (*Sorbus aucuparia*), *fl.*
 26. *Fox-glove* (*Digitalis purpurea*), *fl.*
 27. *Bees swarm.*
- June 1. *Hieraceum pilosella*, *fl.*
 3. *Horse Daisy* (*Chrysanthemum leucanthemum*), *fl.*
 6. *Honeysuckle* (*Lonicera periclymenum*), *fl.*
 7. *Stellaria graminea*, *fl.*

- June 8. *Hay Harvest begins.*
 9. *Valeriana officinalis*, fl.
 10. Horse-fly (*Æstrus equus*), seen.
 15. *Wheat in ear.*
 22. *Milfoil (Achillea millefolium)*, fl.
 — *Epilobium roseum*, fl.
 30. *Betony (Betonica officinalis)*, fl.
- July. The White Butterfly (*Pieris brassicæ*), which was remarkably abundant last year, is this year very scarce.
14. *Oats cut.*
 24. *Golden Rod (Solidago virgaurea)*, fl.
- August 10. *Serratula tinctoria*, fl.
- September 9. *Elder (Sambucus nigra)*, ripens fruit.
 — Man. Measles (*Morbilli*) prevails.
 In consequence of long drought, the leaves assumed very early their autumnal tints, and dropped their leaves prematurely. By the end of August the sycamore, horse-chestnut, ash, and broad-leaved elm had in some situations lost their leaves; defoliation was most irregular, and no notes were kept of it.
- October 1. *Woodcock (Scolopax rusticola)*, seen.
 6. Immigrant Starlings (*Sturnus vulgaris*), appear in flocks.
 13. Locust (*Locusta migratoria*), several specimens caught in this neighbourhood. They were tolerably vigorous. The wind for some days before blew about E.S.E., but not boisterously. There are many previous records of their appearance among us in scattered numbers about this time.
 — Man. Fever (*Synochus*) prevalent.
 19. *Swallow (Hirundo rustica)*, seen.
- November 6. A brilliant meteor seen.

The Spring was very mild and forward. The grass was unusually plentiful, and vegetation generally in a state of prematurity. Butter was however very dear. Several farmers have, independently of each other, accounted for this by the infecundity

of the cow, and the consequent deficiency of milch animals. The previous hot and arid summer may have here had influence on both sexes. This forwardness was much damaged by a bleak, wet, and windy March. The cold and rough weather of April and May almost completely destroyed the apple-crop, although the blossoming was fine. The potato crop was scanty and most irregular. Hay, generally good and well saved. Wheat, not equal to 1868 either in sample or quantity. Barley, an average crop, and generally well harvested. Oats, generally light in quantity and poor in quality, affected by the dry July, and here and there much rusted. The mangold and turnip crop, which at an early period looked bad from want of moisture, by the latter rains, turned out a full average. The crop of onions was deficient and the bulbs very small.



NOTES AND QUERIES.

Henry Grenfield. Is anything known of this writer, who was a native of Truro? I have a volume of his poetry, entitled "God in the Creature, being a Poem in Three Parts," &c. London, printed for George May, and are to be sold at the Peacock, in St. Paul's Churchyard. MDCLXXXVI. The Epistle dedicatory is addressed to the Mayor, Recorder, Justices, Aldermen, and Capital Burgesses of the "Reformed and Loyal Corporation" of Truro; in which Ancient Corporation, he says he "first drew breath."

T. Q. C.

VIII.—*Description of the operations at Dolcoath Mine.*—By MR. JOSIAH THOMAS, *the Managing Agent.*

ON the 31st August last the members and friends of the Royal Institution of Cornwall honoured us with a visit to this mine; and having accompanied them with much pleasure through the various surface and dressing operations, I have since been asked to write a short description of the mine for the pages of the *Journal*,—a request which I gladly accede to in pleasant remembrance of the day.

The chief geological features of the district, as well as the general character and composition of the lodes in this mine, having been so clearly and correctly described by Mr. Henwood* in the

* The ancient mine of Dolcoath is wrought at the foot of Carn Entral and Camborne-beacon, granitic hills surrounded by slate at the surface, but is probably connected downward with the body of granite which extends from Illogan and Camborne to Constantine, Wendron, and Crowan.

In the southern and central parts of Dolcoath, the granite, which consists of the usual ingredients, and presents the ordinary structure—is generally overlaid by greenish, deep blue, or brownish slate, of thick lamellar structure; and this is, in one case, interlaid by a thin, but rather extensive, bed or floor of granite.

Both granite and slate are intersected by broad bands of felspathic and quartzose porphyry (elvan-courses), which display marked changes of character in passing from one rock to the other; their usual direction is about N.E.—S.W., and, in Dolcoath, at least they dip towards the N.

The principal lodes bear 10 degs. to 30 degs. N. of E.—S. of W.; the main lode of Dolcoath, however, takes much the same direction as the elvan-courses, whilst lodes of a second series (the caunter lodes) range from 10 to 30 degs. S. of E.—N. of W. In the southern part of the mine the lodes mostly dip (S.) towards—but in the northern part they decline (N.) from—the granite. In width they vary from a mere parting between opposite (walls) faces of rock to at least 20 feet; but on an average they are perhaps 3 or 4 feet. Their principal ingredient is quartz; but slaty or granitic matter, as the neighbouring (country) rock is of slate or granite, also abounds, as well as larger or smaller quantities of other earthy substances. Most of the rarer Cornish Minerals have been, from time to time, found in the lodes of Dolcoath. Near the surface earthy brown iron ore, iron pyrites, and earthy black copper ore were mixed with vitreous copper, copper pyrites, and several of the less plentiful ores of copper, and in such parts crystallized minerals were often obtained; but in some places, particularly in the eastern parts of the mine, much tin-ore was procured. At greater depths, however, the ores of copper were so abundant that Dolcoath was for some time the richest copper mine in Cornwall, and for a far longer period its returns were

paper furnished to the excursionists, it will not be necessary to add much on those points. I may remark, however, that although all the lodes which have been extensively worked have produced large quantities of *copper ore*, yet only the main lode and those lodes to the south immediately connected with it, and which fall into it, have been rich for *tin*. The other lodes which are smaller, or not connected with the main lode, have nowhere, so far as explored, produced tin enough to be profitably worked.

It would probably be difficult to find a richer piece of mining ground than this. The sett, which is about 550 fathoms in length, has already produced copper and tin ores to the value of five and half millions sterling; being about £5000 for every yard, or nearly £140 for every inch in length. The mine too is still in a prosperous condition, and bids fair to continue so for many years to come. I believe at the present time we are working to a greater depth,

second to those of the Consolidated mines only. After a while the deepest works began to give gradually diminishing returns of copper ore; and notwithstanding the appearance of tin-ore in them, they were at length suspended. After a considerable interval, the superintendency devolved on the late manager, who resumed operations at greater depths, and brought them to a successful issue. Dolcoath having been formerly the richest copper mine, is now the most productive tin mine in Cornwall. It may not be unworthy of remark that the upper part of this deeply-seated tin-ore, like the shallower portions of the copper deposit above it, afforded an abundance of crystallized mineral. Ores of cobalt and bismuth have been obtained in small quantities from the principal southern and central lodes; whilst in the northern part of the mine Entral south lode has afforded a large amount of silver.

But the lodes as well as the rocks are traversed by another system of veins (the cross-veins). These usually range from N. to S., to perhaps 30 degs. S. of E., N. of W.; and dip, whether E. or W., at a considerably higher angle than the lodes or the elvans. With the exception of the cross-course which divides Dolcoath from Cook's-kitchen, they measure from less than an inch to about three feet, and average, say one foot and a half in width. Their principal ingredients are quartz and clay; but on passing from one rock to another their mineral character—like that of the lodes—undergoes a change, and they assume a certain resemblance to the rock adjoining.

Where two lodes of different series interfere, the one of them which intersects at one level is, sometimes, itself intersected at another.

The lodes interfere with numerous cross-veins, which produce simple intersections in some, but displacements (heaves) in other places. Such, however, we have not opportunity to describe here.

	The works of Dolcoath are about 550 fms. in length,	
	by 150	in breadth.
In 1758 they were some	88	in depth,
„ 1788 „ „	183	„
„ 1824 „ „	240	„
And now they are	340	„

and raising a larger quantity of tin, as well as making greater profits, than any other tin mine in the world.

The total length of levels driven on the lodes, together with cross-cuts, is about fifty miles, in addition to twelve miles of shafts and winzes. Our present rate of sinking and driving is about a mile per year.

The ground generally, especially in the deeper parts of the mine, is very hard, and but little stuff can be broken except by blasting. The average cost of driving an end 8 feet high and 6 feet wide (our usual size) is upwards of £20 per fathom. Where the lode throughout is of similar quality we usually set it to be raised at a certain price *per ton* of *stuff* (veinstone and crude ore), the condition being that the men breaking it are only to be paid for that which will produce at least three-fourths per cent. of tin ore. The total average cost of breaking the *stuff* and sending it to surface in this manner is about five shillings and sixpence per ton. Where the lode varies much in quality, requiring selection and greater care in working, we usually set it to be worked on *tribute*.

The mine has been producing of late about 87 tons of black tin (or tin ore) per month, or 1050 tons per year; in order to obtain which we raise and stamp about 1000 tons per week, or 52000 tons per year; so that the average produce of our tin stuff as raised from underground is as near as can be two per cent. of tin ore—or, in other words, only one part in 50 (except a little arsenic) is of any value, the other 49 parts being worthless.

To work so deep a mine (nearly 2000 feet from surface) and to raise so large a quantity of tin from so hard a rock is necessarily attended with great labour and expense. There are two steam engines, respectively of 85 and 60-inch cylinder, employed in pumping water for draining the mine, and three steam whims drawing *stuff* (but of these one only works occasionally). There are also two steam engines employed in stamping and one in working the "man engine" for lowering and raising the miners.

Our man-engine* consists of a single-rod working 12 feet

* Loam, *Reports of the Royal Cornwall Polytechnic Society*, II, p. 35. Phillips, *ibid*, p. 43; IV, p. 57. Jones, *ibid*, VI, p. 63. Basset, *ibid*, VIII, p. 59. Gordon, *ibid*, IX, Part II, p. 6. Lemon and others, *ibid*, p. 12.

stroke, which in some respects is preferable to a double-rod engine; for although a longer time is occupied in ascending and descending, yet it can be erected at a much less cost and is attended with less danger than the double-rod. About 30 minutes are occupied in ascending from the 212-fathoms level (240 fathoms from surface), but it is in contemplation to erect a more powerful steam engine shortly by which the rod can be worked faster, and the ascent accomplished in much less time. We find the man-engine to be a great improvement on the old system of climbing ladders; for not only can the miners do more work, but older and more experienced men can now work in the deepest parts of the mine who could not otherwise have done so.

Our *stuff* is drawn to the surface by *kibbles* and wire ropes. The *kibble* will contain one ton of stuff, and the ropes are made of steel wire, $3\frac{1}{4}$ inches in circumference. One steam whim draws from two shafts at the same time, there being one kibble in each shaft; so that whilst the empty kibble is being sent down in one shaft the full kibble is being drawn to surface in the other. Under some circumstances "skips" would undoubtedly be preferable to kibbles, but our shafts being so small and deep, considerable time and expense would be required to make the change, and we have therefore endeavoured to make the best of our present circumstances. In ordinary working we can easily draw with one steam whim from the bottom of the mine 6 tons per hour.*

On being drawn to surface the rocks are "spalled" or broken into small pieces of two to three inches in diameter, to prepare it for being stamped. The large rocks are broken into smaller pieces by men, but the "spalling" is principally done by girls with small steel sledges, at a cost of about fourpence halfpenny per ton. A strong and experienced girl will spall from 2 to 3 tons of hard tin-stuff per day. We have made some trial of Blake's Patent Stone Breaker, which we believe will be found more economical in some

Taylor, *ibid*, X, p. 65. Lemon, Francis, Richards, and Jennings, *ibid*, XI, pp. 15—27. Francis, *ibid*, XIII, p. 22. Puckey, *ibid*, XIX, p. 38. Moissenet, *Annales des Mines*, Fifth Series, XV, pp. 1—45. *Mining and Smelting Magazine*, I, p. 366. Leifchild, *Cornwall, its Mines and Miners*, p. 155. *Epitome of Evidence collected by the Royal Commissioners on Mines*, pp. 24—33. Twite, *ibid*, Appendix B, pp. 296—7.

* Moissenet, *Annales des Mines*, Sixth Series, II, pp. 155—272. *Mining and Smelting Magazine*, III, pp. 161, 225, 272, 350; IV, pp. 19, 88, 151, 327.

situations, and where the tin stuff to be operated on is of similar quality, requiring little or no selection.

The particles of tin being generally small, it is necessary to reduce the stuff to a very fine powder before the worthless parts can be separated from it. For this purpose two steam stamps are employed, one of them of 120 heads and the other 60, besides 20 heads worked by water power in the winter months. In ordinary working each of these heads of 6 cwt. is lifted 10 inches high 70 times per minute, and each head will stamp about one ton of *hard* stuff in 24 hours, and proportionately more according to the softness of the stuff. Much of the stuff is stamped fine enough to pass through a grating containing 150 holes to a square inch; but when the particles of tin are larger, rougher grates are used.

Our dressing operations* are all performed by the aid of the "buddle" and the "kieve"; trunks and frames of all kinds, which were so extensively used a few years since, being entirely dispensed with. The form of buddle we have adopted is that generally known as the "centre cone buddle," its extreme diameter being from 16 to 22 feet, and the diameter of the cone or centre from 5 to 8 feet, according to the nature of the stuff to be dressed. On the top of the centre is a funnel with an iron plate attached for distributing the stuff equally over the centre, and also three or four arms for brooms or sweeps, which, together with the plate and funnel, are made to revolve by machinery driven by a water-wheel, whilst around the buddle is a trench filled with water, into which, whilst the buddle is being worked, the tails or worthless parts of the stuff are thrown to be washed away after being separated from the tin in buddling. The "stirring" and "packing" in the kieves are also performed by water power.

As arsenic is either mixed or combined with most of our tin ores, it is necessary to calcine the ore in order to separate the tin. This is effected by three of Brunton's *Calciners*, which need not be particularly described, as they are in general use throughout the county. The arsenic being driven off in fumes, is deposited in flues above, and the tin stuff left behind is again dressed in *buddles* and *kieves*, to free it from the remaining waste. When

* Moissenet, *Annales des Mines*, Fifth Series, XIV, pp. 77—276. *Mining and Smelting Magazine*, I, p. 16. Pearce, *ibid*, IV, p. 79.

ready for sale, our tin ores will produce nearly 70 per cent. of metal.

Attention is paid to the health and comfort of the various work-people employed in the mine. A large house is provided for the miners to change their clothes, in which there is a constant supply of hot water for washing, and a man always in attendance to keep up fires and dry the underground clothing when necessary. There are also four dinner houses in various parts of the mine, each provided with a large slab and cooking apparatus, and a plentiful supply of hot water for those of the surface labourers who wish to provide themselves with tea. Most of the dressing floors are roofed, in order to protect the work-people from the sun in summer and from the rain and cold in winter; so that the dressing operations can be carried on with advantage to the proprietors and comfort to the work-people, in almost any weather.*

* Lady Basset, of Tehidy, adopting a suggestion offered by Dr. Carlyon (*Report of the Royal Cornwall Polytechnic Society*, III, 1835, p. 42), has maintained for some time at *Dolcoath* a kitchen, from which every man and boy employed underground has, on reaching the surface, whether by day or night, been supplied with half-a-pint of hot soup. It was prepared at one spot only, but some was taken to a distant part of the mine for distribution. It is made of faces and houghs of beef stewed with small squares of Swedish turnip; and pepper and salt are at hand, so that each person may flavour it to his taste. The digesters in which it is made ready are emptied about twice in the week, when the meat is found to be almost entirely dissolved. "I tasted it, and found it very palatable, . . . and several men and boys who had just come from their work below, said they found it very restorative." It has chiefly been supplied in the winter months; but it is continued as late in the spring as the men wish it. Mr. Petherick, the Manager, states that the number of men at *Dolcoath* is 404, and of boys working underground, 47. The account is as follows:—

DOLCOATH MINE SOUP ACCOUNT.

Half-pints delivered to men and boys.

1839, January . . .	2,598	1840, January . . .	2,640	1841, January . . .	3,256
February . . .	2,837	February . . .	2,245	February . . .	3,579
March . . .	2,751	March . . .	2,236	March . . .	4,092
	8,186		7,121		10,927
The average expenditure per month)	Paid for the Soup . . .		£1 15 0		
is £5 10s., viz:— }	" " delivery of it		3 15 0		
				£5 10 0	

1841. ABSTRACT OF ONE WEEK'S DELIVERY.

April 1st, delivered in the day to	94 men	2 boys;	in the night to	75 men	3 boys.
2nd, " " "	88 "	6 "	" "	77 "	3 "
3rd, " " "	87 "	5 "	" "	" "	" "
5th, " " "	82 "	5 "	" "	77 "	5 "
6th, " " "	86 "	6 "	" "	77 "	2 "
7th, " " "	84 "	5 "	" "	87 "	2 "

He also says, "As the time since the introduction of the delivery of soup in

In bringing this imperfect sketch to a close, I may perhaps be allowed to express the hope that this old and productive mine may long continue to be a source of wealth to the proprietors, and the chief means of support to the large labouring population of the neighbourhood.

the mine is short (three years), we must not speak positively as to its effect as a preventive of consumption; but we have all remarked that our men are not laid up with colds in the manner they used to be; neither have we had but two cases of miners' consumption within the last three years.'

Barham, *Report on the Condition of the Children and Young Persons Employed in the Mines of Devonshire and Cornwall*, pp. 16, 84, s. 18 (Abridged).

IX.—NATURAL HISTORY.—*Notes on the Ornithology of Cornwall from May, 1869.*—By E. HEARLE RODD.

I THINK my last annual chronicle of the production of rare and interesting birds in Cornwall—up to May last, when your Spring Meeting was held—recorded that the “Spoonbill” had been observed on Tresco Ponds, Scilly, during some days previously. From that time, for several months, I find nothing of any note in my Journal; certainly nothing of any special interest turned up, neither do I see in the pages of the *Zoologist* any notes from other ornithologists which will add to the already extensive list of Cornish British Birds.

There is a beautiful little bird, the “Dartford Warbler,” which is found locally distributed in different parts of England, and which I have been looking out for during the last thirty years in Cornwall, being convinced that, from one or two well authenticated instances of its occurrence in the neighbourhood of Penryn many years since, similar localities in most parts of West Cornwall, viz., furzy heaths, offered the same attractions and chances for it as the Penryn country. The past year has been the first to reward my curiosity, and I am glad to record the first that has come under my notice, from a specimen or two captured on the grounds of the Rev. J. Daubuz, at Killiow, in your immediate neighbourhood. This took place, I think, in the fall of last year. Since that period, and in the autumnal months, several were observed at Trevider, a wild furzy valley in the parish of St. Buryan; and I have no doubt that there was a pretty general distribution of them throughout, at least, the West of Cornwall. This little warbler is one of the most diminutive of our soft-billed birds, and is remarkable alike for the uniform and peculiar vinous-purplish tint of the whole plumage, as also for its slender and elegant shape, with an elongated tail, which rather adds to its elegance.

Some time after your last Spring Meeting a male and a female “Night Heron” were obtained from the neighbourhood of Hayle. The Night Heron has occurred on several occasions in Cornwall, in the Land’s End, the Lizard, and the Scilly Isles dis-

tricts. Those obtained from Hayle were adult-plumaged birds. The Female varies in her adult plumage from the Male, only in a duller tone of plumage. There are characters in this species which shew an affinity to both Herons and Bitterns; and the Night Heron may with propriety be regarded as a connecting link between the *Ardeadæ* and the *Nycticoracidæ*. The plumage of the immature Night Heron is so dissimilar to that of the adult that our older authors regarded it as specifically distinct, under the name of the "Gardenian Heron." The colour of its plumage in this state may be described as a lavender brown studded all over with distinct and large white spots.

From this period nothing of any great interest occurred to my notice throughout the past Summer. The opening Autumn produced on our Eastern Moors, from Kilmar to Brownwilly, large flocks of Ring Ouzels in their southern migratory flights; flocks of thirty or more were observed on the Mountain Ash, which they sought for the sake of its berries. Although the Ring Ouzel's migratory movements are every year observed, it must not be forgotten that a great number remain on the Dartmoor and Bodmin-moor ranges of hills, and breed.

In the following month of October the Lizard district gave us a very good specimen of a rare and beautiful British Bird in the "Little Bustard." The plumage was entirely plain underneath, shewing no traces of the crescentic black markings which characterize the bird in its Summer plumage on the throat and breast. There is one curious character in tone of colour which pervades the base of the plumage of this species throughout, and that is a delicate roseate tint which is equal in intensity to the pink tone of colour in the breast of the Roseate Tern. The Lizard district has thus afforded specimens of the two British species of Bustard, within a recent period, viz: the Great Bustard and the Little Bustard, both rare and valuable British Birds.

Amongst the *Raptors*, a very perfect and adult specimen of the Common Kite, which is the first that has come under my notice in the last 40 years, came into my hands, having been observed about the Moors near Trebartha, in the early part of the winter. There are I think, two specimens in your Museum, presented by the late Mr. Jackson of Looe, and which were reported to have been killed in the eastern part of the county.

This species may always be known from the other birds of prey by its *forked* tail, which is plainly distinguishable when the bird soars to a great height, and which is continually the case. At these high elevations the Kite may be seen wheeling on motionless wing in wide circles, the forked tail being very distinguishable against the clear sky. For the size and weight of its body, the enormous expanse of wing and length of tail fully explain its powers of sustained flight. Amongst our larger raptores this is by far the most beautiful in plumage. No hawk was better known in the large woodland districts of the central part of Devon when I was a school-boy at Buckfastleigh, than "the fork-tail'd kit," as it was commonly called; but since that period they have gradually decreased in numbers, and are now amongst our rarest birds. They used to be ranked amongst the ignoble birds of prey, as distinguished from the high-couraged or nobler Falcons. They may be regarded too as one of Nature's scavengers, and unworthy of persecution, as they prefer offal and carrion to living prey, except when disabled or helpless objects-present themselves.

Amongst the smaller birds of prey, we are often visited in the winter (and the winter only) by one of the smallest of our Falcons, viz: the "Merlin." It is a true Falcon, and inferior to none in courage and sagacity. When they become old, the brown plumage yields to another and very different tone; the upper parts are of a fine clear blue, the shaft of each feather having a distinct black line. This is the state of plumage which induced Bewick to figure the bird as a distinct species under the name of the "Stone Falcon." A perfect specimen in this state of plumage was obtained this winter on the grounds of the Hon. and Rev. S. Lawley, at Trevayler.

The late severe frost, although of short continuance, afforded to this district a good supply and variety of wild fowl. Amongst the Ducks we had the Scaup, Golden Eye, Shieldrake, Tufted Duck, and Pochard, besides the commoner species. If the frost had continued in its intensity, probably we should have had the different Wild Geese, Wild Swans, and other hyemal species; but the Brent Goose was the only Wild Goose that came under my notice. We were visited by the Red-breasted Merganser, in its adult plumage; it is generally observed in its perfect and ornamental plumage in the Summer; but I am inclined to lean to

the opinion that, although this state of plumage may be regarded generally as the Summer plumage, very old birds may probably retain this plumage *perennially*. The Grebes too, which were generally distributed in the South and Western Counties of England during the late winter, have the same seasonal change of plumage, losing their tufts and ruffs in winter. I may here mention that a good deal has been said in the papers about the appearance of the Slavonian or Horned Grebe as a rare bird; but in the different inlets and creeks of Falmouth Harbour, where rushes and reeds offer a suitable retreat, such as St. Just Creek, under Mesack, the Lamorran Creek, the Tresillian River, the Fal up to the morass and rushes under Trewarthenick, the various species of Grebe, from the Great Crested to the little Dabchick, may be seen every year and throughout the year.

The only species of Duck which appears in the Southern Counties in the Spring and Summer is the little Garganey, or Summer Teal. It is only occasionally that they make Cornwall a resting-place on their journey to the Eastern and Midland Counties to breed; but the Penzance Museum has been favoured, this Spring, with beautiful specimens presented by J. Symons, jun., Esq., of Mayon House, near the Land's End, where they were shot on the 30th of March.

There is no other ornithological occurrence that suggests itself to me as being worthy of notice this year.

REMARKS ON THE METEOROLOGY OF 1869.

It will be convenient to follow the course adopted in former years, by giving first a summary view of the character of each month separately, as illustrated by the returns from the several stations in the county, and appending any more general remarks which may seem called for.

January was a mild and wet month. At Truro only four nights were frosty, and the lowest temperature was 28°; at Falmouth, 36. The rainfall (6·84 inches) was one fourth above the average of the last 20 years; and it was in excess at the other stations, except Helston, where the fall was only 3·56, the average being 4·18. At Penzance the fall was 6·93, the average being 5·33. The smallness of the fall at Helston, an intermediate station, is very remarkable. The difference was in great part due to its escaping some very heavy rain; thus on the 4th, while 1·23 was measured at Truro, there was only ·04 at Helston; and on 28th, 1·25 at the former place is contrasted with ·73 at the latter. The number of days on which rain fell (from 20 to 23) was about the average for the month at all the stations. There were very heavy gales at the end of the month, with thunderstorms; some wrecks occurred on the shores of Mount's Bay, and much damage was done near Penzance by the breaking of the waves over the Greens, east and west.

February maintained the same character; the quantity of rain (3·88 inches) being again one fourth above the average, and the number of rainy days (21) equally in excess. The forwardness of vegetation was noted everywhere. The blossoming of peaches and pears at Helston, on the 10th, is recorded by Mr. Moyle; and Mr. Tripp mentions that two vipers were killed on the 23rd, near Altarnun.

With *March* a colder and drier season commenced, and continued, with about a week's interruption in April, till the beginning of May. There were five frosts at Truro, twenty-three at Altarnun. At this place, Mr. Tripp notes for the 20th, "Bright, cold day, wind N.E. At 4.30 p.m. thunder; immense hailstones fell for four or five minutes; one, when measured, of circular shape, was 3-4ths of an inch in diameter; the others appeared mostly of the same shape and size"; and for the 27th he records "three inches of snow, with hail, thunder, and lightning during the day." Snow fell at Truro on the same day. The *Mining Journal* relates a strange occurrence at Carnyorth Mine, St. Just, during an awful thunderstorm. The lightning struck the engine-house, cleaving the spring-beam, a balk of timber 9 inches square, knocking the stair to pieces, with the windows, roof, and stack. The fluid went down the shaft, at 50 fathoms striking H. Boyns in the arm, and rendering H. Lanyon speechless. They thought a gun had been fired at

them. On finding the arm not broken, they proceeded up with great difficulty. The lightning went down altogether 300 fathoms, and ran along the tramroad 300 fathoms more, striking R. Angwin in the foot, and W. Tresise in the chest. All the men underground received a severe electric shock. The ozone was suffocating. No death occurred, nor injury to the ironwork of the engine. A man called Archer, working at the stamps engine, was knocked backwards, and the arms of the round buddle machine were knocked away. Mr. G. J. Symons refers to two similar cases, recorded by De Fonvielle, in his popular work, *Thunder and Lightning* (p. 172, English ed.), one of which occurred on the 26th of May, 1845, at Freyberg, the other on the 5th July, 1855, at Himmelsfurth.

The rainfall in *April* was only 1·3rd the average at Truro. There was a burst of summerlike weather between the 8th and 14th, the temperature rising above 70° through the country.

May had, at Truro, a rainfall (5·42 in.) double the average, and the number of rainy days was 1·3rd greater than usual. The proportion was much the same at Helston and Bodmin; and the excess was still more marked at Altarnun, where 7·45 inches fell in 24 days. It was a cold and very unseasonable month. On the 10th a house was struck by lightning at Plymouth, and much damaged; and on the 17th, 18th, and 19th, destructive thunderstorms were very general up the country.

In *June* the rainfall (·26) was 1·9th the average at Truro, and only on seven days was there any rain at all. But, though fine, the weather was ungenial; less so, however, than in many parts, especially in the midland and northern counties. On the 15th there was a thunderstorm in London; and snow on the Cumberland Hills and in Scotland.

July was marked by continued dryness; the rainfall (·35 inch) was only 1·7th the average at Truro. The temperature rose considerably on the 3rd, and the month was warm throughout, and everywhere. At Penzance the therm. did not rise above 74, but it reached 86 at Helston, 79 at Falmouth, 81 at Truro, 79 at Bodmin, 90·5 at Altarnun, and 85 at Liskeard. It is remarked by Mr. Richards, for Penzance, that although the season was so dry, the prevailing winds were S.W. to N.W., usually the moist quarter. Barley was cut at Helston on 16th, oats on 17th.

August again was unusually dry; the rainfall at Truro (·48 inch) was less than 1·5th the average. In his note for Bodmin, Capt. Liddell records "unexampled drought, which lasted 15 weeks." The highest temperature was 86 at Helston, 74 at Falmouth, 85 at Truro, 84 at Bodmin, 88 at Altarnun, and 86 at Liskeard. It was on the whole a very fine season for harvest; wheat was cut at Helston on the 3rd.

The long continued drought ended on the 3rd of *September*, and this month was very wet, stormy, and mild. There was rain at Truro on 24 days, the average being 15·7; and the rainfall (4·46 in.) was one fourth in excess. The gale on the 11th is recorded as "terrific" throughout the county. This was attended with a fall of the barometer of nearly an inch in 12 hours (to 28·87) at 43 feet above the sea, and a rise equally rapid to its previous height. Mr. Glaisher remarks for the country generally, that from the 9th to 20th violent

gales raged from the S.W., causing great destruction to life and property. On numerous occasions pressures were registered above 30 lbs. on the square foot. At the Falmouth Observatory, 10 lbs. was the highest average pressure recorded for 12 consecutive hours. Mr. Richards mentions that, on the 29th, "from 6 to 9 a.m., Mount's Bay was visited by an extraordinary action of the tide, which rose and fell five feet in about as many minutes, several times." On the same day thunderstorms were very general in Cornwall and further east, and they occurred in the midland counties on the following day.

The rainfall in *October* was 2·27 inches at Truro, less than half the average amount, although there were 19 more or less rainy days,—just the usual number. The first half of the month was generally fine and genial, and the temperature was very high for the season, reaching 75 on the 9th at Truro and Bodmin; the greatest heat, Capt. Liddell remarks, ever recorded there in October; at Altarnun it reached 79·5. On the 17th the weather suddenly changed, and there were gales from the north with heavy rain. On the 18th, Capt. Liddell notes that ·35 in. fell at Bodmin in 18 minutes, and Mr. Tripp states that, on the same day, 96 in. fell at Altarnun between 4 a.m. and 9 a.m. On the 2nd he records a mock sun, red with prismatic colours, near sunset; and on 6th, a large meteor followed by aurora.

November must be accounted a rather wet month, the quantity of rain (4·81 in.) being above the average, and the number of rainy days, 23, being nearly one quarter in excess. The rains were very heavy on the 27th and 29th. Capt. Liddell notes that the river flood on 27th was the greatest since Oct., 1847. The temperature fluctuated much and rapidly: thus the 10th, 11th, and 12th days were very cold, whilst the four following were remarkable for warmth. As a whole, the month was nearly 2 deg. above the average. The minimum at Helston was 34, at Falmouth 36, at Truro 27, at Altarnun 23. A splendid meteor, stretching from east to west, leaving a luminous band visible for nearly 20 minutes, was seen throughout the county and beyond it about 7 p.m. on the 6th.

December had a rainfall (5·62 inches) more than one-fifth in excess of the Truro average, and the number of more or less rainy days (22) was also greater than usual. There were two cold periods, the first less marked, from the 1st to 8th, when the lowest temperature at Truro was 28, that at Altarnun being 13; the second commencing on the 20th, and culminating on the 27th and 28th, when the cold was very intense. The minima were as follows:—at Penzance, 25; Helston, 23; Falmouth, 25; Truro, 10; Bodmin, 18; Liskeard, 18; Altarnun, 8·5. At Greenwich it was 21·3. The interval between these cold periods was rather mild, but very stormy and wet. *Hail* was unusually frequent, it was registered on nine days; *snow* on four other days. Mr. Glaisher states, for Greenwich, that upon the whole quarter of 92 days, the temperature was below the average to the amount of 19·15 daily.

The characteristic features of the last summer season may be accurately appreciated by an examination of the following table, which presents a numerical comparison of those six months in 1869 with the same in a long series of years, in regard to the important qualities of amount of sunshine, proportion of dry weather to wet, and the quantities of rain which fell.

1869.	Obscuration of Sun at 9 a.m. & 3 p.m.						Actual Weather at 9 a.m., 3 p.m., & 9 p.m.				Rainfall.			
	Sunshine.		Gleam.		Cloud.		Dry.		Wet.		Quantity in inches.		Number of days with rain	
	18 yrs.	1869.	18 yrs.	1869.	18 yrs.	1869.	17 yrs.	1869.	17 yrs.	1869.	20 yrs.	1869.	20 yrs.	1869.
April	31·8	38	6·6	4	21·6	18	76·1	81	13·9	9	2·74	·97	13·4	12
May	33·2	28	7·1	7	21·7	27	80·9	73	12·1	20	2·77	5·42	14·0	20
June	34·7	44	8·3	8	17·0	8	79·6	87	10·4	3	2·38	·26	12·7	7
July	35·8	42	8·1	8	18·1	12	84·3	90	8·7	3	2·33	·35	12·7	9
August ..	36·3	46	7·9	5	17·8	11	82·4	88	10·6	5	2·57	·48	13·6	10
September	28·6	35	7·3	4	24·1	21	79·4	81	10·6	9	3·23	4·46	15·7	24
Means ..	33·4	38·8	7·55	6·0	20·05	16·2	80·5	83·3	11·1	8·0	2·67	1·99	13·7	13·7

It is hardly necessary to point out the very unusual continuity of splendid weather through June, July, and August. Had the early spring been seasonable, the crops and fruit would no doubt have been more abundant; but vegetation, prematurely pushed on by the mildness of January and February, was rudely checked in March, to the general blighting of wall trees, and the serious injury of all forward plants.

The above monthly summaries exhibit in a strong light the great differences of climate found within the limits of the county. This becomes very remarkable where the places concerned are only a few miles apart. Thus, while the summer heat at Helston and Truro was 85 or 86, it was only 79 at Falmouth; and whilst the thermometer fell to 10 in December last at Truro, it was not below 23 at Helston, and 25 at Falmouth. It has been asserted by a recent writer that the proximity of the sea does not affect the temperature of the land adjacent, except when the wind is blowing over the water towards the shore. This is probably nearly true in regard to the continent and the eastern districts of England; but it does not apply at all strictly to our peninsular county; for example, in the case just mentioned, where Falmouth escaped so entirely the extreme cold noted at Truro, the wind was steadily north, or from land to sea. In fact this difference is constant in all very intense frosts.

A large proportion of the rain gauges in Cornwall were inspected last year by Mr. Symons, and we are indebted to him for valuable suggestions in regard to them and other instruments. He has published an interesting estimate of the Rainfall at the Isles of Scilly, which he computes at about 33 inches; but further observations are required.

It is matter of much satisfaction that the velocity and pressure of the wind is now accurately registered at the Falmouth Observatory. I would refer to an interesting table and diagram of results in the Report of the Cornwall Polytechnic Society for 1869.

C. BARHAM.

TABLE No. 1.

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1869, from Registers kept at the Royal Institution of Cornwall.

1869.	MONTHLY MEANS OF THE BAROMETER. Cistern 13 feet above mean sea level.																		
	Month.	Mean pressure corrected to 32 deg. Fahr.			Mean of monthly means.	Mean correction for diurnal range.	True mean of monthly means.	Mean force of vapour.	Mean pressure of dry air.	Corrected absolute maximum observed.	Day.	Corrected absolute minimum observed.	Day.	Extreme range for the month.	Mean diurnal range.	Greatest range from 9 a.m. to 9 p.m.	Day.	Greatest range in any 24 hours.	Between which days It occurred.
		9 a.m.	3 p.m.	9 p.m.															
January	29.949	29.936	29.916	29.934	.004	29.930	.298	29.632	30.448	8	28.868	28	1.580	.130	.39	5	.59	5 & 6	
February	30.011	30.008	30.031	30.017	.003	30.014	.276	29.738	30.517	13	28.863	1	1.654	.120	.50	1	.81	1 & 2	
March	29.874	29.849	29.869	29.864	.007	29.857	.225	29.632	30.301	6	29.258	17	1.043	.116	.41	17	.69	18 & 19	
April	29.993	29.975	29.997	29.988	.004	29.984	.299	29.985	30.335	12	29.370	16	0.965	.070	.29	4	.53	3 & 4	
May	29.773	29.759	29.792	29.775	.002	29.773	.310	29.463	30.256	31	29.067	7	1.189	.099	.46	8	.62	5 & 6	
June	30.106	30.108	30.114	30.109	.001	30.108	.351	29.757	30.374	16	29.531	13	0.843	.063	.25	15	.50	15 & 16	
July	30.093	30.098	30.103	30.098	.002	30.096	.443	29.653	30.410	10	29.803	26	0.607	.041	.13	9	.18	10 & 11	
August	30.166	30.168	30.186	30.173	.004	30.169	.456	29.713	30.380	16	29.820	9	0.560	.034	.13	4	.30	7 & 8	
Sept.	29.824	29.808	29.811	29.814	.004	29.810	.421	29.389	30.386	1	28.877	11	1.509	.116	.63	11	.80	11 & 12	
Oct.	30.067	30.072	30.105	30.081	.006	30.075	.334	29.741	30.499	22	29.434	16	1.065	.075	.34	19	.60	19 & 20	
Nov.	30.013	30.001	30.021	30.012	.004	30.008	.285	29.723	30.487	18	29.185	22	1.302	.134	.45	21	1.01	21 & 22	
Dec.	29.809	29.767	29.799	29.792	.003	29.789	.225	29.564	30.467	5	29.210	13	1.257	.154	.50	16	.50	17 & 18	
Means	29.973	29.962	29.979	29.971	.004	29.968	.327	29.641											

REMARKS.—0.05 in. should be added to all the readings of the Barometer for its elevation of 43 feet above mean sea level. The Barometer used is a standard, made by Barrow, and compared with the standard Barometer at the Royal Observatory, Greenwich, by Mr. Glasher. The corrections for Index Error (+0.008) and for Capillarity (+0.013) have been applied.

TABLE No. 2.

1869.	MONTHLY MEANS OF THE THERMOMETER.																						
	9 A.M.						3 P.M.						9 P.M.										
	Dry Bulb.		Wet Bulb.		Mean of 1. n.		Mean correction for diurnal range.		True mean of Dry Bulb.		Mean of Wet Bulb.		Mean correction for diurnal range.		Mean temp. of evaporation.		Wet Therm. below dry.		Mean dew point.		Jew point below Dry Therm.		
January..	46.0	44.6	49.7	47.5	47.7	4	47.3	46.0	1	45.9	1.4	44.5	2.8	51.4	42.8	47.1	2	46.9	8.6	0	28	31	28
February .	48.0	46.1	51.8	48.4	49.2	6	48.6	46.9	4	46.5	2.1	44.4	2.2	53.2	44.1	48.6	4	48.2	9.1	0	31	5	31
March ..	43.4	40.7	46.0	42.5	43.8	1.5	42.3	41.1	7	40.4	1.9	38.5	3.8	48.8	37.0	42.9	1.0	41.9	11.8	0	27	18	28
April	52.7	49.4	57.1	51.6	53.2	2.2	51.0	49.6	1.4	48.2	2.8	45.4	5.6	59.9	44.9	52.4	1.5	50.9	15.0	0	27	27	40
May	54.0	50.7	57.1	52.3	51.0	2.3	51.7	50.7	2.1	43.6	3.1	45.5	6.2	59.4	46.7	53.0	1.7	51.3	12.7	0	27	27	32
June	60.8	56.0	63.8	57.0	60.1	3.0	57.1	55.5	2.0	53.5	3.6	49.9	7.2	66.7	48.0	57.3	1.8	55.5	18.7	0	27	27	38
July	65.3	61.0	69.1	62.3	64.8	2.2	62.6	60.5	1.3	59.2	3.4	55.8	6.8	71.3	53.0	62.1	1.9	60.2	18.3	0	16	16	40
August .	64.6	60.5	69.6	62.6	64.4	2.1	62.3	60.0	1.4	58.6	3.7	54.9	7.4	71.7	52.5	62.1	1.7	60.4	19.2	0	26	26	46
Sept.	59.9	57.7	63.2	59.5	60.0	1.7	58.3	57.7	1.2	56.5	1.8	51.7	3.6	65.0	53.3	59.1	1.3	57.8	11.7	0	1	1	30
Oct.	54.0	51.5	57.5	52.7	54.5	8	53.7	51.4	7	50.7	3.0	47.7	6.0	59.6	48.7	54.1	1.0	53.1	10.9	0	9	9	37
Nov.	47.0	45.3	52.0	48.6	48.5	5	48.0	46.2	5	45.7	2.3	43.4	4.6	54.3	40.2	47.2	4	46.8	14.1	0	1	1	31
Dec.	40.5	38.6	44.6	41.9	42.0	2	41.8	40.0	1	39.9	1.9	38.0	3.8	47.0	36.3	41.6	6	41.0	10.7	0	18	18	28
Means ..	53.0	50.2	56.8	52.2	53.5	1.5	52.1	50.5	1.0	43.5	2.6	46.9	5.0	59.0	45.6	52.3	1.1	51.2	13.4	0			

The Thermometers are placed on the roof of the Royal Institution in a wooden shed, through which the air passes freely. The Standard Wet and Dry Bulbs are by Negretti and Zambra, and have been corrected by Mr. Glaisher.

TABLE No. 3.

1869.		WINDS.																											
		E.			S.E.			S.			S.W.			W.			N.W.			N.			N.E.			AVERAGE FORCE.			
Month.		9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	Mean.			
		January..	2	3	1	6	9	7	3	2	1	13	8	5	5	3	3	2	0	0	1	1	0	1	1	0	1	1.7	2.7	2.0	2.1
February.	1	1	0	1	1	2	1	1	2	9	3	5	6	3	7	11	4	3	2	1	1	2	1	2	2	2.5	3.0	2.0	2.8
March ..	1	2	0	2	1	1	1	1	1	0	2	3	1	6	7	7	5	10	7	13	7	12	1	0	1	2.8	3.1	2.1	2.7
April	9	7	8	1	2	1	0	1	0	6	5	4	5	7	3	2	3	6	6	1	1	0	1	0	1	2.3	2.8	1.4	2.2
May	6	6	7	5	6	4	2	1	0	2	3	4	2	5	3	6	3	6	4	5	2	3	2	3	2	2.2	2.5	1.4	2.0
June ...	5	2	1	4	5	4	0	1	2	3	1	2	1	6	9	7	8	8	12	2	3	2	2	3	2	2.0	2.2	1.0	1.7
July	7	4	4	3	5	2	1	1	1	5	5	5	3	3	6	6	3	7	10	4	0	0	0	0	0	1.6	1.5	1.0	1.4
August ..	9	5	6	0	3	0	0	0	0	1	1	6	4	4	6	4	10	11	13	1	1	3	1	3	1	1.6	2.2	1.2	1.7
Sept.	3	3	1	2	3	2	2	1	2	9	11	7	8	6	5	5	0	1	2	2	0	1	2	0	1	2.2	2.8	2.0	2.3
Oct.	4	6	5	4	2	1	1	2	3	3	1	1	0	0	8	10	10	11	10	3	1	1	1	1	1	1.9	2.6	1.6	2.0
Nov.	0	0	0	0	0	0	0	0	0	3	3	7	11	3	9	15	7	5	15	4	3	5	3	5	2	2.0	2.5	1.8	2.1
Dec.	4	2	2	0	3	2	3	3	2	3	4	3	3	5	3	4	4	1	1	1	11	10	11	11	2	2.0	2.8	2.0	2.3
Total.....	51	41	35	28	40	26	14	14	14	55	53	54	54	50	68	80	60	69	83	48	29	41	48	29	41	24.8	30.7	19.5	25.3
Means ..	42.3			31.3			14.0			54.0			49.0			67.7			70.7			39.3			2.1				

The force of the Wind is estimated on a scale from 0 to 6, from calm to violent storm.

TABLE No. 4.

WEATHER.

1869.	Month.	AVERAGE CLOUDINESS.			RAINFALL.				WEATHER.				REMARKS.						
		9 a.m.	3 p.m.	9 p.m.	Amount in inches.		Greatest Fall in 24 hours, Truro.	Depth.	Mean weight of vapour in a cubic foot of air.	Mean humidity of atmosphere.	Mean elastic force of vapour.	Mean weight in Troy of a cubic foot of air.		Amount of water in a vertical column of air.					
					Truro.	Fenarth.									No. of days in which rain fell.	in.	in.	gts.	in.
	January	7.8	8.2	8.0	6.84	5.94	1.25	28	3.4	93	298.530	3	4.1	16	2	75	69	24	Frost, 1, 22, 24, 25. Remarkable Rain, 1, 4, 28. Thunder Storm, 5. Hail, 4, 28, 29. Gale, under Storm, 5. Fog, 10, 11, 12, 28. Frost, 19, 20, 22. Gale, 1, 8, 9, 16, 12, 13, 28. Hail, 27.
	February	7.8	7.3	6.2, 7.1	3.88	3.42	0.45	10	2.9	79	276.546	0	3.8	24	3	57	62	22	Frost, 11, 12, 14, 15, 16. Gale, 1, 2, 19, 20, 21, 28, 29. Hail, 17, 19, 20, 27, 28. Snow, 27, 28, 29. Hail, 3, 4. Gale, 16, 17. Cuckoo heard, 12. Swallow seen, 18.
	March	6.2	7.0	6.1	2.46	2.51	0.61	16	2.6	85	225.535	7	3.1	33	6	54	80	13	Frost, 11, 12, 14, 15, 16. Gale, 1, 2, 19, 20, 21, 28, 29. Hail, 17, 19, 20, 27, 28. Snow, 27, 28, 29. Hail, 3, 4. Gale, 16, 17. Cuckoo heard, 12. Swallow seen, 18.
	April	6.2	5.7	5.1	0.97	1.21	0.22	15	3.4	80	299.543	8	4.0	38	4	48	81	9	Hail, 3, 4. Gale, 16, 17. Cuckoo heard, 12. Swallow seen, 18.
	May	7.5	7.0	6.9	5.42	4.77	1.20	3	3.5	80	310.524	6	4.2	28	7	58	73	20	Gale, 13, 14, 15. Remarkable Rain, 3.
	June	5.7	5.6	5.2	0.26	0.29	0.08	14	3.9	75	351.537	1	4.8	44	8	38	87	3	Lightning seen, Thunder not heard, 25.
	July	6.0	5.5	3.9	0.35	0.35	0.14	25	4.9	77	443.530	3	6.1	42	8	43	90	3	Fog, 27.
	August	4.6	4.6	3.8	0.48	0.38	0.11	12	5.1	82	456.531	3	6.3	46	5	42	88	5	
	Sept.	6.8	7.3	5.9	4.46	4.50	1.03	18	4.7	87	421.517	8	5.8	35	4	51	81	9	Gale, 11, 12, 13, 14, 15, 28. Remarkable Rain, 11, 18. Thunder Storm, 29. Aurora Borealis, 6. Hail, 19, 27.
	Oct.	7.8	6.4	6.0	2.27	2.47	0.60	18	3.8	80	334.540	3	4.6	27	9	57	81	12	Gale, 4, 27, 28. Frost, 11, 12, 17, 18, 23, 24, 25. Hail, 20.
	Nov.	7.9	7.3	6.5	4.81	4.79	0.96	27	3.3	86	285.547	0	3.9	24	7	59	71	19	Frost, 11, 12, 17, 18, 23, 24, 25. Hail, 20. Gale, 4, 27, 28. Fog, 12. Remarkable Rain, 27, 28.
	Dec.	7.0	7.3	6.8	5.62	5.24	1.07	16	2.6	85	225.535	7	3.1	21	5	67	74	19	Frost, 2, 4, 5, 12, 25, 26, 27, 28. Snow, 25, 26, 27, 28. Hail, 3, 4, 12, 13, 14, 19, 20, 21, 22. Gale, 13, 3, 16, 17, 18, 30. Remarkable Rain, 16, 30.
	Means	6.8	6.6	5.9	3.7	3.87	0.82	16	3.7	82	327.535	4.4	4.4	30.1	5.1	54.0	78.0	16.1	

Cloudiness is estimated by dividing the sky into ten parts, and noting how many of these are obscured. The rain gauge at Truro is placed on the roof of the Royal Institution, at about 40 feet from the ground. Glean is recorded when the sun's disk is visible through a film of cloud. The rain gauge at Fenarth, near Truro, is 190 feet above the mean level of the sea.

TABLE No. 5.

STATIONS, FROM WEST TO EAST.	Jan. in.	Feb. in.	March in.	April in.	May in.	June in.	July in.	August in.	Sept. in.	Oct. in.	Nov. in.	Dec. in.	Total 1869, in.	Average yearly total.
(a) St. Sennen; Land's End, Rev. G. L. Woolcombe 1869 Days with rain..... 1869	3·88 21	1·53 20	2·20 13	·68 10	2·97 16	·56 8	·46 7	·39 7	3·18 19	1·84 18	2·48 19	4·25 23	24·42 181	
(b) Penzance, Mr. W. H. Richards. 1869 Average of last eleven years.....	6·93 5·33	3·98 3·41	2·82 3·32	1·42 2·19	4·15 2·30	·50 2·04	·65 2·28	·80 2·97	4·83 3·94	2·35 4·29	4·90 4·30	5·69 5·31	39·02	41·28
(c) Helston, M. P. Moyle, Esq. 1869 Average of last twenty years Days with rain. 1869 Average of last twenty years	3·56 4·18 23 20·2	3·33 2·57 23 15·2	2·33 3·09 16 16·4	1·22 2·46 14 11·9	4·09 2·44 19 12·1	·55 2·24 7 12·4	·43 2·40 7 12·8	·77 2·72 8 13·0	4·72 2·93 21 13·7	2·65 4·32 18 18·1	4·64 3·45 22 17·0	4·31 3·78 22 19·5	32·60 197	36·69 183·2
(d) Truro, Royal Institution of Corn. 1869 Average of last twenty years Days with rain. 1869 Average of last twenty years	6·84 5·26 20 21·0	3·88 2·79 20 15·7	2·45 3·13 15 17·4	·97 2·74 12 13·4	5·42 2·77 20 14·0	·26 2·38 7 12·7	·35 2·33 9 12·7	·48 2·57 10 13·6	4·46 3·23 24 15·7	2·27 4·79 19·5	4·81 4·23 18·6	5·62 4·74 20·4	37·82 202	41·10 193·1
(e) St. Agnes, Mr. J. Opie 1869 Days with rain 1869	6·64 18	3·95 20	2·00 15	1·42 10	4·86 19	·56 9	·45 5	·55 7	4·88 20	2·91 13	5·24 20	5·64 22	39·11 178	
(f) Newquay, Mr. Tregidgo 1869 Days with rain..... 1869	4·82 12	4·23 17	1·87 12	1·35 10	5·30 17	·53 6	·30 3	·76 6	4·53 16	1·58 12	3·95 16	4·25 17	33·47 144	
(g) Bodmin, Com. J. Liddell, R.N. 1869 Average of last twenty years Days with rain. 1869 Average of last twenty years	7·36 ·81 22 22·0	4·56 2·87 22 18·2	2·85 3·53 14 17·5	1·51 2·79 13 14·0	6·28 3·09 20 14·2	·54 3·02 10 14·8	·96 2·94 10 14·8	·78 3·39 23 16·7	5·87 3·64 30 17·3	3·76 5·19 23 20·1	4·29 4·54 24 21·1	5·68 4·97 23 23·0	44·44 216	45·72 213·7
(h) Liskeard, Mr. S. Jenkin 1869 Days with rain..... 1869	6·27 20	5·19 22	3·53 14	1·85 11	8·07 20	·43 9	1·01 10	·99 9	5·76 24	3·27 19	4·42 23	5·38 21	46·17 202	
(i) Altarnun Vicarage, C. U. Tripp, Esq. 1869 Average of five years. 1864—1868 Days with rain. 1869 Average of five years. 1864—1868	9·23 8·92 20 20	6·93 5·31 26 21	2·65 4·93 18 21	2·12 3·13 11 16	7·45 2·90 24 14	1·06 2·21 12 12	·60 3·45 5 15	2·28 4·83 7 18	8·89 5·37 25 21	4·73 7·16 21 19	6·61 5·65 25 19	7·97 7·37 20 21	60·52 213	61·23 216

(f) Rain Gauge 6 in. diameter. 1 ft. 9 in. above ground, 90 ft. above sea level.
 (g) ditto 8 in. ditto 2 ft. 6 in. ditto 388 ft. ditto.
 (h) ditto 5 in. ditto 1 ft. 1 in. ditto 375 ft. ditto.
 (i) ditto 5 in. ditto 5 in. ditto 570 ft. ditto.

CHRONOLOGICAL MEMORANDA.

1869.

January 1. The *Western Morning News* publishes an Article entitled: "1868 in the West of England."

January 6. The *Cornish Telegraph* publishes an "Abstract of the Weather at Penzance and its neighbourhood for the year 1868"; by W. Hosken Richards.

January 6, and subsequently, passim. *Cornish Telegraph* publishes, in continuation from the preceding year, a Series of Articles entitled "The Excursion," by "Old Celt"; including the Tin-Streamer's Story; Witchcraft; the Witch of Zennor; the History of the Sailor; Margaret's Feast; the Privateer's Adventures, &c., &c.

January 8. Annual Meeting of the Royal Cornwall Polytechnic Society; Mr. John St. Aubyn, M.P., President, in the chair. Lord Eliot, Colonel Tremayne, Rev. Saltren Rogers, Mr. John Freeman, and Capt. W. Teague elected Vice-Presidents. Mr. Glaisher and Mr. Frank Buckland elected Honorary Members.

January 14. The *West Briton*, in a notice of the Restoration of Wendron Church, states that, "on uncovering the face of the wall in the north transept, a series of holes with occasional corbels, was discovered at a uniform height of about six feet from the floor, and it has been suggested, with some appearance of probability, that it was in this portion of the building that the stage was erected periodically in mediæval times, for the performance of miracle plays."

January 27. Death of Mr. Richard Foster, of Castle, Lostwithiel.

January 28. *Cornwall Gazette* states that a magnificent eagle had been seen twice within the last few days at Tregothnan.—It also records the recent discovery of a fossil reptile, about 20 inches long, at Trebarwith Downs, Tintagel.

February 4 and 18, and March 4. Letters in the *West Briton*, from "Cornubiensis," "N," and "H. H. Drake," concerning the Hext pedigree and the families of Tredenham, Hawkins, and Scoble.

February 9. Death of Mr. John Francis Basset, of Tehidy, aged 37.

February 24. *Cornish Telegraph* records that, a short time ago, a young

man working in the 180-fm. level east, in Botallack, about half a mile from the sea, after blasting a hole in a hard rock of secondary granite, about eight inches off from a lode composed of quartz and iron, and five feet thick, discovered a substance jutting up three inches above the rock he had blasted. It was flexible, and, cutting it out with a chisel, he found it was a vegetable substance, about four inches in length and $1\frac{1}{2}$ inch in diameter; and it had the smell and appearance of common ore-weed.

March 9. Destruction of the "Tolmên" (or Maen Rock), in the parish of Constantine, near Penryn. Communications on the subject in the *West Briton*:—*March 11, 18, and 25*; *April 8*, bearing signatures, "Constantine," and "W," Truro; and *June 3* (copied from the *Times*) from Mr. W. Hosken of Penryn, on whose estate the Tolmên was destroyed. Mr. W. Hosken writes: "I distinctly state that I have always felt too great a pride in this ancient monument to wantonly throw it down, and each member of our family, to whom the estate belongs, very deeply regrets the loss of this fine object of interest. Had it not been for a direct breach of duty on the part of a servant, the rock would have been even now adorning the estate."

March 18. *Cornwall Gazette* publishes a letter from "F. G. S.," Helston, on the destruction of the Constantine Tolmên; and letters on the same subject subsequently, viz: *April 1 and 15*, from "Christopher Cooke," of London; and *April 8 and 22*, from "S. J. Wills," of Sithney.

March 19. Death, at Newquay, of Mr. William Michell, of Newham, Truro, Registrar of the Stannaries of Cornwall and Devon.

March 25. *Cornwall Gazette* records the recent discovery, in the churchyard at Padstow, of remains of an ancient cross, supposed to have been fixed at the time when the church was first built, and, on that supposition, more than a thousand years old; and to have been broken during the occupation of Cornwall by Puritan soldiers.

March 25. *West Briton* publishes a letter from "W. Hewett," Fowey, urging the necessity of measures for preservation of rock antiquities, at Carn Grey, in the parish of St. Austell, and Elmantor, in Lanlivery.

April 1. Mr. Thomas Gill of St. Austell, in a letter in the *West Briton*, gives assurance that ample provision had been made for preservation of Carn Grey Rock.

April 14. *Cornish Telegraph* contains the following: The interesting pile of rocks situated at Carne, St. Mewan, known as the Beacon, has been much defaced by large portions of it being removed by the proprietors of the China-Clay Works, to be used by them as "grinders." It is stated however that Mr. Hawkins, through Mr. Trethewey, his steward, has stopped the further destruction of the rocks.

April 15. *Cornwall Gazette* and *West Briton* publish a letter from Mr. H. Michell Whitley, on the "Preservation of Antiquities."

April 15. *West Briton* records that "in consequence of Sir John

Lubbock's appeal on the late destruction of the great Tol-maen, in Cornwall, the Council of the Ethnological Society have appointed a Committee to investigate the pre-historic monuments of these Islands, and the measures to be taken for their preservation."

April 15. *West Briton* publishes a Letter from "S. Treveil," Luxulyan, urging the preservation of the "logging rock," at Tregarden Down, in the parish of Luxulyan.

April 22. *West Briton* published a letter signed "Cornubiensis," concerning the Carlyon pedigree and the connection between the Seymour, Tredenham, and Scobell families.

April 22. Mr. T. Q. Couch publishes in the *West Briton* a letter on "The Preservation of our Antiquities." In it he states: "In my own neighbourhood, when an antiquity has been threatened, I have been able to save it by merely acquainting the owner or the steward of the fact. In this way the curious circles at Caerwen, in Blisland, and the Romano-British stone at Well-town, in Cardinham, were saved. The latter is now restored by Mr. Robartes to its original position, and surrounded by rails. I know that some of our wayside crosses have fallen at the requirement of late highway improvements. It is desirable that these and similar objects should stand on their original sites, but it is better that they should be removed to some near place of safety than utterly destroyed.

April 30. Death of Sir Arthur William Buller, M.P. for Liskeard, aged 61.

May 6. *West Briton* publishes a letter signed "Beta," on the "Preservation of Antiquities." It suggests that in Cornwall, "so parcelled out into parishes, unions, &c., there could be no very great difficulty in obtaining information of the localities, and descriptions of every antiquity or interesting natural object existing at the present time." By this means, a map might eventually be constructed, on which all the antiquities of the county might be laid down in their true positions; "and by engaging and interesting a number of persons in different parts of the county, a sort of guardianship or association for the protection of such valuable objects would be established."

May 6. Annual Meeting of the Plymouth Institution and Devon and Cornwall Natural History Society; Mr. Spence Bate presiding. The following Papers were read: On the occurrence of some rare plants near Plymouth; Mr. T. R. A. Briggs. On the influence which temperature has on the rate of mortality in Plymouth; Dr. Albert Hingston.

May 13. *West Briton* publishes a letter signed "Curiosus," on "Antiquity Destruction." The writer suggests that, by communication with clergymen, registers and charts of antiquities and other objects of interest in the several parishes in Cornwall might be prepared, and these being printed for circulation or sale, would be a sort of check on the proceedings of future intending destructionists.

May 18. Royal Institution of Cornwall. Spring Meeting; Mr. W. Jory Henwood, F.R.S., F.G.S., &c., in the chair. The Chairman delivered an elaborate address, mainly on subjects connected with mining in Cornwall; and the following papers were read: Notice of Enclosures which existed at Boscawen-ûn; Mr. J. T. Blight, F.S.A. Notes on the Ornithology of Cornwall; Mr. E. Hearle Rodd. Indications of Glacial Action in Cornwall; Mr. Whitley, F.M.S. An Inquiry into the association of the dialects of Devon and Cornwall; Mr. R. N. Worth. Chronicles of the Cornish Saints (V.—S. David); Rev. John Adams, M.A. Extracts relating to Cornwall, copied in the British Museum; Mr. Jonathan Couch, F.L.S., &c. Observations made concerning the Laocoön; Sculptured Rocks; Glacial Action in Cornwall; Cornish Fossils; Meteorology, and other subjects. (See *Journal of the Royal Institution of Cornwall*, No. XI).

May 20. *Cornwall Gazette* publishes a letter from "Christopher Cooke," concerning "John Busvargus (1598—1637) and his goods and chattels."

May 26. *Cornish Telegraph* publishes a notice of "Enclosures which existed at Boscawen-ûn, in St. Buryan; by Mr. John T. Blight, of Penzance.

May 27. *West Briton* publishes a letter signed "Cornubiensis," on "Cornish Antiquities"; with references to the Dawney effigies in Sheviock church, and to an ancient carved oak screen in St. Austell church, the latter containing the escutcheon of the ancient Cornish Knights, the Ercedecknes, joined with that of the old Crusader, Sir Jordan de Haccomb.

May 27. Mr. Thomas Q. Couch publishes in the *West Briton* a letter on "Provincial Words."

June 10. *West Briton* publishes a letter from "Curiosus," on "The Destruction of Antiquities," and especially on "the destruction of Cornish Churches under the plausible plea of restoration."

June 17. *West Briton* publishes a letter from "H. H. Drake," St. Austell, on "Cornish Antiquities," with especial reference to the shields of L. Ercedekne and Haccomb in St. Austell church.

June 24. *Cornwall Gazette* publishes a letter from "Christopher Cooke," London, concerning "Margaret Keigwin" and the "curious ring," with a miniature of Charles the First, described in the *Gentleman's Magazine*, Vol. 3, pt. 2, pp. 36—7.

July 3. *Cornwall Gazette* records a recent visit to the Cheesewring by Captain Simmons, agent for the Duchy of Cornwall, in company with Mr. John Freeman and his two sons and partners, the lessees of the Cheesewring Quarries; and the adoption of means for preservation of this natural curiosity.

July 8. *West Briton* publishes an account of Carn Marth, by "Tre."

July 13. *Western Morning News* publishes an article entitled "Life in the Two Counties"; and afterwards, under the same heading, descriptive

accounts of various places in Cornwall and Devon, viz:—

- Truro : July 15, 16, 17, 19, and 20.
 Exeter : July 31, and August 2, 4, 6, 9, 10, 11, 12.
 Liskeard : August 14 and 17, and September 2.
 Torquay : September 21, 23, 28, 30.
 Penzance : October 11, 22, 28.
 Tavistock : November 3, 4, 8.
 Falmouth : November 15, 17, 18, 22.
 Helston : November 24, 26.
 Totnes : December 7, 18.
 Dartmouth : December 27, 30.

July 15. Mr. John Bellows, of Gloucester, publishes in the *West Briton* a letter on "The real meaning of the word Marazion."

July 20. Devonshire Association for the Advancement of Science, Literature, and Art. Eighth Annual Meeting, at Dartmouth; Mr. G. Bidder, C.E., President. The following Papers were read:—The Submerged Forest at Blackpool, near Dartmouth; Mr. W. Pengelly, F.R.S., F.G.S. Notice of the discovery of Scapholite at Chagford; Mr. G. Wareing Ormerod, F.G.S. On Statistics as applied to Social and Scientific Questions; Sir. J. Bowring, LL.D., F.R.S. The Literature of Kent's Cavern, Torquay, Part II; Mr. W. Pengelly, F.R.S., F.G.S. On a Chart of the Excavations in Kent's Cavern; Mr. E. Vivian, M.A. Notice of Two Molars of Hippopotamus major, stated to have been found in Kent's Cavern; Mr. G. Wareing Ormerod, F.G.S. On the alleged occurrence of Hippopotamus major and Machairodus latidens in Kent's Cavern; Mr. W. Pengelly, F.R.S., F.G.S. On the origin and appropriation of Stonehenge; Rev. R. Kirwan, M.A. On the Government Schools of Science and Art, with special reference to Devonshire; Mr. E. Vivian, M.A. The Foraminifera of Devonshire; Mr. Parfitt. On the practicability and advisability of holding Industrial Art Exhibitions at the yearly meetings of this Association; Mr. J. Phillips. The Rainfall in the St. Marychurch road, Torquay, during the five years ending 31st December, 1868; Mr. W. Pengelly, F.R.S., F.G.S.

July 22. Rev. Dr. Bannister publishes in the *West Briton*, a letter on the meaning of "Carnmarth."

July 22. *West Briton* publishes a letter from "Inquirer," Liskeard, on the word "Marazion," &c.

July 28. *Cornish Telegraph* records the recent discovery of a Silver Penny, temp. Edward I, on the Longships, by Mr. Smith, the principal officer of the Longships Lighthouse. *August 4.* *Cornish Telegraph* publishes a communication on the subject, from Mr. J. J. A. Boase; it comprises "Robert de Brunne's Account of the alteration of the Coinage by Edward I, in 1282."

July 28. *Cornish Telegraph* publishes a letter signed "E. M.," on "Antiquities in Cornwall," especially in the parish of Gulval.

July 28. Penzance Natural History and Antiquarian Society. Meeting of Council. Among the reported presents were:—A quantity of dust (probably organic) dredged at above 1100 fathoms in the Atlantic by H.M.S. Porcupine; from Mr. Jonathan Couch, F.S.A. Querns and Rubbers, from Bollowal, in St. Just; Mr. Alfred Chenhalls. Two balls, resembling cannon-balls, one an amalgam of some sort, the other iron, found at Lanjisaal Cove; Mr. John Symons. A Spindlewhorl, found at Zennor; Mr. Henry Nicholls.

July 29. *West Briton* publishes an account of "Gulval Carn," by "Tre."

August 10. *Western Morning News* publishes an account of the Coffin and Mummy presented by H.R.H. the Prince of Wales to the Museum of the Royal Institution of Cornwall.

August 12. *West Briton* publishes a letter on "Carn Marth," by "Tre."

August 18, and following days. Annual Meeting of the British Association, at Exeter; President, Professor Stokes. Among the Papers read were the following:—On the Granite of the northernly and easternly sides of Dartmoor; Mr. G. W. Ormerod. On the Source of the Miocene Clays of Bovey Tracey; Mr. W. Pengelly. On Brachiopoda from the pebble-bed of Budleigh Salterton; Mr. Davidson. On the Devonian Group considered geologically and geographically; Mr. Godwin-Austen. Fifth Report of the Committee for the exploration of Kent's Cavern; Mr. W. Pengelly. On the alleged occurrence of Hippopotamus major and Machairodus latidens in Kent's Cavern; Mr. W. Pengelly. Rainfall in the Western Counties; Mr. G. J. Symons. The occurrence of Terra Cotta Clay at Watcombe, Torquay; Mr. R. Etheridge. On Chalk Flints and Flakes in Devon and Cornwall; Mr. N. Whitley. Discovery of Organic Remains in the rocks between the Nare Head and Porthalla Cove, Cornwall; Mr. C. W. Peach. The Salmon Rivers of Devon and Cornwall; Mr. Frank Buckland. Marine Fauna and Flora of Devon and Cornwall; Mr. Spence Bate, F.R.S. Flint Flakes; method of forming those used by inhabitants of Devon in pre-historic times; Mr. T. M. Hall, F.G.S. Whale Remains at Babbicombe; Mr. W. Pengelly. On a Crannoge, or Stockaded Island, in Llangorse Lake, near Brecon; Rev. E. N. Dumbleton, M.A., vicar of St. Paul's, Truro.

August 19. *West Briton* publishes an account of Carn Galva, in the parish of Zennor; by "Tre."

August 27. Royal Cornwall Polytechnic Society. 37th Annual Exhibition; Mr. Warrington Smyth presiding. Rev. Dr. Bannister delivered a Lecture on "Cornish Names."

August 30. Miners' Association of Cornwall and Devonshire. Annual Meeting at Falmouth; Mr. A. Pendarves Vivian, M.P., presiding. The following Papers were read:—On the Mineral Productions of Cornwall and Devonshire; Mr. R. Hunt, F.R.S. Account of an Excursion by the Redruth and Carharrack Class; Mr. A. K. Barnett. On a Ventilating Air-pump for Mines; Mr. S. Oke. On Mineral Veins; Mr. B. Kitto. On Mineral Phe-

nomena; Mr. Barnett. On an Improved Piston for Steam or other Engines; Mr. J. H. Martin, Swansea.

August 30. Excursion of the Penzance Natural History and Antiquarian Society to Boscawen-ün; Careg Tol; Crous-an-Wra; Sennen Church; The Holed Stone at Mayon; A Barrow at Pedn-men-du; Land's End; Treryn Castle; St. Buryan Church; The Merry Maidens, and the Pipers; and a remarkable cave near Trewoof. Memoranda for this Excursion were published in the *Cornish Telegraph* of August 25.

August 31. Excursion by members and friends of the Royal Institution of Cornwall and of the Royal Cornwall Polytechnic Society to Dolcoath Mine and Carn Brea. (See *Journal of the Royal Institution of Cornwall*, No. XI, and 52nd Annual Report). Preparatory Notices of Dolcoath and Carn Brea were published in the *Cornwall Gazette* of August 28th.

August. The *Leisure Hour* publishes an article by Mr. S. R. Pattison, F.G.S., on "Devonshire Geology."

September 2. *West Briton* records effectual means adopted by Mr. Bevan, of Boskenna, for preservation of an ancient cross near his mansion.

September 3. *Western Morning News* publishes a letter by "William Beale," giving Gaelic etymologies of local names in East Cornwall.

September 9. *West Briton* records that Dosmary Pool, on the Moors between Bódmín and Launceston, was perfectly dry.

September 9. *West Briton* publishes an article signed "Inquirer," on the origin of the word "Liskeard," and of the names of places in the vicinity of that town. Other communications, on this and similar subjects, were published in the *West Briton* of the following dates:—

September 23. Signed "H," and dated at "Liscarraig."

September 30. Signed "Beta."

September 30, October 14 and 21, November 11, and December 23.

Signed "Ap Kedna."

October 7. Signed "B," dated at Liskeard.

October 28. Signed R. A. S., Llanstadwell, South Wales.

October 28, and December 9. Rev. Dr. Bannister.

November 25. Signed "Sean Bhen Voc."

September 15. At a Council Meeting of the Penzance Natural History and Antiquarian Society, there was presented a document of 1776, in which Market-jew Street, Penzance, is mentioned as "Street-Mehal," or "Michael Street." Attention was called to a recent wilful destruction of Trehwella Cross, in St. Hilary, and it was mentioned that Mr. Hawkins, the proprietor, was willing to assist the Society in prosecuting, if the offender could be discovered.

September 16. *West Briton* publishes a description of Chapel Carn Brê, in the parish of St. Just in Penwith.

September 18. *Cornwall Gazette* publishes a letter from "Christopher Cooke," concerning the Truro Grammar School. Also a letter signed "P," St. Stephens in Branwell, concerning the draining of Dosmary Pool.

September 18. Death of Henry Phillpotts, 60th Bishop of Exeter, in the 93rd year of his age and the 38th of his episcopate.

September 20. *Western Morning News* publishes a letter signed "Inquirer," Liskeard, on "Herles, Hurlers, Circles, &c."

September 30. *West Briton* publishes "An Antiquarian Ramble, descriptive of Hangman Barrow," in the parish of Crowan; from S. J. Wills, Crown Town, Sithney.

October 4. Death of Mr. William Carne, of Falmouth.

October 7. *West Briton* publishes a letter signed "Robertus," on "The Lost Church found"; urging the duty of preserving the remains of Piran Old Church and of Perran Round.

October 11. *Cornish Telegraph* publishes a letter entitled "A Plea for the preservation of Cornish Antiquities," from "E. H. W. Dunkin," Greenwich.

October 14 and 21. *West Briton* records the capture of Locusts (*Locusta migratoria*) at St. Austell, Truro, Marazion, Wendron, and at Killigarth in the parish of Talland.

October 22. Annual Meeting of the Penzance Natural History and Antiquarian Society; Mr. D. P. Le Grice presiding. Mr. John St. Aubyn, M.P., elected President for the ensuing year; and Messrs. J. J. A. Boase, E. H. Rodd, J. Ralfs, W. C. Borlase, and D. B. Bedford, Vice-presidents. Mr. J. T. Blight, F.S.A., described some Crosses discovered since his books on the Ancient Crosses of Cornwall were published. On one of them, found bridging a stream at Trevear Bottom, Sennen, was represented a Calvary, the only instance of the kind yet observed by him among the Crosses of Cornwall. He also mentioned a remarkable Granite Cross, with rich symbols and ornamentation, which he had seen in a garden at Merthyr Uny, Wendron.

November 3. *Cornish Telegraph* publishes a communication from "William Bottrell," entitled "Our District; its former isolation, its people, and its traditions."

November 4. "A Young Cornubian," writing to the *West Briton* from St. Day, seeks information on the origin of the Cornish Arms and of the motto "One and All."

November 5. Royal Geological Society of Cornwall. Annual Meeting at Penzance; Mr. H. Seymour Tremenheere, President. The following were among the Papers received:—On Organic Remains in Cornwall; from Mr. C. W. Peach, Edinburgh. The Geology of Lundy Island; Mr. Whitley. On Tidal Waves and Earthquakes; Mr. Richard Edmonds, Plymouth. On the discovery of Gold in Sutherland; Mr. Warrington Smyth. On Microscopic Mineralogy and Geology; Mr. W. Vivian, South Wales.

November 6. A Meteor, of unusual size and brilliancy, observed in all parts of Cornwall and Devon about 6.50 p.m. Accounts of the Phenomenon, from various places, are given in "Symons's Meteorological Magazine," No. xlvii, Vol. iv, and in "Proceedings of the Meteorological Society," Vol v, No. 45. A correspondent at Ramsgate "R. Cramp, F.M.S.," writes: "It started just below Vega at 55' altitude, passing through arm of Hercules and between head of Hercules and Ophiuchus, *a* Itas Alhague and *a* Ras Algethi, exploding at 15° from horizon; trail lasted over twelve minutes. Colour at first yellow, then blue, followed by red, orange-red, after explosion to violet, &c.; no noise heard; at first the size of the planet Jupiter, but afterwards half the size of a full moon; trail perpendicular, but at finish turned to right hand, observer being face to W."

November 10. Oxford Local Examinations. Presentation of Prizes and Certificates at Truro, by Mr. Eastwick, M.P.

November 15. Royal Institution of Cornwall. Annual Meeting. In the absence of the President, Mr. Rogers of Penrose, the chair was at first occupied by Mr. Smirke, V.W., and afterwards by the President Elect, Mr. W. Jory Henwood, F.R.S., &c. A MS. History of the Killigrew family was presented by Mr. R. N. Worth of Plymouth. (See *Journal of the Royal Institution of Cornwall*, No. XI, and 52nd Annual Report).

November 24. *Cornish Telegraph* publishes "Remarks and Enquiries about Ancient Stone Structures"; by "R. Sandys."

November 25. *West Briton* records the discovery of a large number of ancient coins on an estate in the parish of St. Michael Carhayes, the property of Mr. J. M. Williams of Carhayes Castle.

November 25. *West Briton* publishes a communication from Mr S. R. Pattison, F.G.S., on the "Slate Quarries of Cornwall"; and also a Paper, by S. J. Wills of Crown Town, Sithney, on "Antiquities on Crowan Beacon."

December 2. *West Briton* publishes a communication signed "Tre," entitled "A Brief Account of some Ancient Barrows and Encampments on Pradanack Downs, in the parish of Mullion."

December 9. *West Briton* publishes a letter from "E. H. W. D.," Greenwich, entitled "The Cheesewring, near Liskeard.—Who will rescue it from the Quarrymen?"

December 15 and 29. *Cornish Telegraph* publishes letters signed "Ap Kedna," on "Druidic Remains."

December 18. *Cornwall Gazette* publishes a letter signed "Lector," on "Cornish History."

December 29. *Western Morning News* publishes an account of "The Collegiate Foundation of St. Buryan."

December 30. *West Briton* publishes an account by S. J. Wills, Crown Town, Sithney, of "Giants' Quoits" on Prospidneck Hill, in the parish of Sithney.

EXETER MEETING OF THE BRITISH ASSOCIATION.

THE following were among the Papers read and subjects discussed at the Exeter Meeting of the British Association in August, 1839.

KENT'S CAVERN. MR. PENGELLY, F.R.S., &c., read the "Fifth Report of the Committee on the Exploration of Kent's Cavern," with notes on the mammalian remains. He said that beneath that part of the cavern known as the "vestibule" was a layer of black soil from six to nine inches thick, and known as the "Black Band," which had yielded 366 flint implements, chips, bone tools, bones and teeth of recent and extinct animals, some of which were partially charred. The theory was that they indicated the residence of an ancient British family. To test the disputed question whether it could be used as a cooking place without suffocating the animals, half-a-dozen faggots were lighted, and five persons who acted as the judges decided that the objection on that score was not tenable. In the exploration of the cavern, a daily journal had been kept, and every circumstance was noted down. 3,948 boxes of fossil bones had been found; and all the bones, over 50,000 in number, had been separately packed and labelled, shewing their original position; and Professor Boyd Dawkins undertook to examine them for the purpose of determining the species to which they severally belonged. Among other objects, a bone needle was found on the 4th December, 1866, in the Black Band beneath the stalagmitic floor; it was broken, but was supposed to have been originally $2\frac{1}{2}$ inches in length; the eye was capable of carrying a thread the thickness of small twine. A bone harpoon, or fish spear, forked on one side only, was also found beneath the Black Band; and other undoubted evidences of early human art had been met with. During the years 1868-9, Mr. Everett, who is engaged by the Rajah of Sarawak to explore the caves of Borneo, visited Kent's Cavern for the purpose of familiarising himself with the mode of operation.—Proceeding to notice the researches made during the present year, Mr. Pengelly described, and illustrated by diagrams, the various layers underlying the stalagmitic floor. He stated that there was a perennial spring which a mercantile company had proposed to utilise for the purposes of a brewery; and, describing the narrow passages leading from certain portions of the cave to other portions, he said that, in some cases, they were so small as to require explorers to progress in a recumbent position and by a vermicular motion. The cave earth, or floor, underneath the stalagmite, was full of flint implements, teeth of the mammoth, bear, hyæna, &c., and gnawed and split bones. In the cavern were found initials of individuals, and names and dates. One remarkable inscription was "Robert Hedges, of Ireland, February 20, 1688," and it was believed that the date was genuine. The inscription was on the stalagmite, and proved that the drip of two centuries had not sufficed for its obliteration. Beneath the earth was a breccia, and up to last year not the slightest traces of man had been found; but this year, on the 5th of March, there was found

in the "lower cellarage," in the remote portion of the cavern, a flint flake which there could be no doubt had been produced by human agency. The flake had been laid before Mr. Evans, F.R.S., who had examined and reported upon it. He said it was undoubtedly of human workmanship, and carried on it evidence of its having been used as a tool, the edge being slightly worn away and jagged. Associated with the flake were remains of the cave-lion, the cave-bear, mammoth, &c. Mr. Pengelly caused some amusement by exhibiting a collection of modern articles found in the lake, which had been emptied: among them a ginger-beer bottle, a mutton bone, an oyster shell, a hammer, a chain, candle, and candle sconce; an elephant's tooth was also found. The depth of the lake was said to be about 5 feet. The stalagmitic floor was said to be in some places as much as 12 feet thick. The hill was tunnelled by burrows of foxes and other animals; and a small bell had been found such as was used to tie on a terrier when sent into a burrow.

Professor BOYD DAWKINS made some remarks on the mammalian remains found in the cavern. The various strata, he said, contained remains of animals of different epochs from the post-glacial upward. During the time the "Black Band" was being formed it would appear, from the remains found, that the cavern was inhabited by a race of men who lived, not only on other animals, but on their own race. The older deposits contained indisputable traces of the glutton, a species of hare known to the French palæontologists and larger than the existing type, the beaver, &c. Mr. Dawkins concluded by remarking on the antiquity of the human race indicated by the facts mentioned in the report.

MR. PENGELLY next read a paper "On the alleged occurrence of *Hippopotamus major* and *Machairodus latidens* in Kent's Cavern." It was of an almost purely technical character. Mr. Pengelly thought there was no reliable evidence as to the occurrence of the *Hippopotamus*, but the *Machairodus* was undoubtedly associated with other remains.

THE DEVONIAN GROUP CONSIDERED GEOLOGICALLY AND GEOGRAPHICALLY.

MR. GODWIN-AUSTEN read a paper on this subject. It dealt with the probable distribution of land and water during the Devonian period, its fossil zoology and botany, and the physical changes which have taken place subsequently. The Devonian rocks had a wide geographical extent in Europe, Asia, and America. In the latter country there was a broad band of Old Silurian rocks which existed as dry land during the Devonian epoch. In Great Britain the Devonian rocks had a general direction from north-east to south-west. From the nature of the fossil fishes of these rocks, Mr. Austen came to the conclusion that the Old Red Sandstone was of fresh water origin, as of all the existing fishes, only six genera were related to the Ganoid family, and all of these were of essentially fresh-water habits. The dry land was covered with a series of great fresh-water lakes, like those of North America. Besides the strata deposited along the bottoms of these lakes, there was a series of vast marine deposits, which are termed Devonian. The

Old Red Sandstone group was a very perplexing one, and passed down into the Silurians at its base, and into the Carboniferous towards its upper portion. The most northern portion of Devonshire where rocks containing true Devonian fossils came up was Linton. The author then traced the easterly direction of the Devonian group, showing how they cropped up beyond the chalk of Boulogne, and thence across Belgium and Prussia, into Bohemia and Russia.—Professor PHILLIPS said the division of Old Red Sandstone as fresh-water, and Devonian as marine, made by Mr. Godwin-Austen, was very distinct. The former extended towards the north, and the latter towards the south. He expressed himself however, as opposed to the fresh-water origin of Red Sandstones, simply because few fossils were found in them.—Mr. PENGELLY said he had found 300 specimens of *Pteraspidian* fishes in the Devonian rocks, as well as *Cephalopoda*.—Mr. EDWARD HULL, F.R.S., expressed his hope that geologists would withhold their decision on Mr. Godwin-Austen's separation of the Old Red Sandstone and Devonian, and pointed out the three sub-divisions of these formations in various places. He thought the evidence of fossil fish was not sufficient to establish the fresh-water origin of Old Red Sandstone.

THE GRANITE OF THE NORTHERNLY AND EASTERNLY SIDES OF DARTMOOR.—
By G. W. ORMEROD, F.R.S., &c.

This paper was intended to serve as a guide to geologists visiting Dartmoor. Schorl and tourmaline are of frequent occurrence in the granites. South of Torquay are rock basins, of various shapes and sizes. Throughout the whole of Dartmoor the granite is much jointed, and sudden changes in the joints and stratification frequently occur. On the north of Dartmoor, near Belston, the granite bends under schistose rocks, and the present contour of the country may be attributed to this phenomenon. It was an uncertain point whether the Dartmoor granite was all of one age, but the "elvans," or veins crossing the mass, were of undoubtedly later age. A vein of fine porphyry may be seen on the road from Okehampton to Exeter. Mr. Ormerod said geologists visiting Dartmoor could not help asking what had become of the overlying rock masses, and what had been the agents which had cut it down to its present form. Mr. Pengelly had stated that some of the beds in the Isle of Wight had been formed out of the wear and tear of the granites of Dartmoor. The author had not found any glacial scratchings, but last year professor Otto Jorell had visited with him the gravels near Hunt's Tor, and that geologist had declared it as his firm opinion that these were remains of *moraines*.

TERRA COTTA CLAY AT WATCOMBE, TORQUAY.—MR. R. ETHERIDGE.

The author of this Paper described the discovery, some years ago, in boring, of a large deposit of Terra Cotta Clay at Watcombe, resting on New Red Sandstone. This clay was mineralogically similar to that formerly used

by the Etruscans, and was very superior to that in which the works of Thorwaldsen and others were being copied at Copenhagen. He had no doubt it had accumulated by being washed from the surface of the granite into a large lake; and he was not aware that any other combe in the neighbourhood possessed the same sort of clay. There were indications of the Romans, or early Britons, having been acquainted with the bed, and of their having worked it. The clay was very fine, and free from organic remains or other extraneous matter; it contained above 60 per cent. of silica and 20 per cent. of alumina, with 7 per cent. of peroxide of iron, and considerable quantities of soda and potass. In fact this clay was, in its mineral constituents, superior to any other known to the Romans; and he had no doubt that many Roman *Amphoræ* had been manufactured out of this identical deposit. Its thickness, in some parts, was above 80 feet, and he thought the valley had formerly been covered with this clay to its very summit.—Mr. PENGELLY said that clay of the same character, but not quite so fine, had been found further up the valley, and had been used for brickmaking. One bed, 12 feet thick, was underlaid by a layer of pebbles, in which the remains of man were abundant; and under the layer of stones was a still finer clay.—Mr. G. MAW, who had examined the clay to ascertain what heat it would stand, stated that one peculiarity about it was its extremely fine sub-division; it was almost impalpable.

THE FLINT FLAKES OF DEVON.

Mr. T. M. HALL, F.G.S., read his paper on the "Method of forming the flint flakes used by the early inhabitants of Devon" in pre-historic times. The flint flakes and chippings found distributed throughout the soil in several parts of North Devon, and those associated with the submerged forest at Northam, occur so abundantly, that the question has sometimes been raised whether or not they may have been naturally formed, or whether they may be the results of some unknown kind of accidental fracture. In about ten different localities flint cores have been found buried with the flakes, and from a careful observation of them it appears that they are of great importance in deciding this point; for whilst a flake may possibly in some cases be caused by an accidental blow, the cores show unmistakable evidence of design. They show also that owing to the extreme scarcity of flint all through the northern parts of northern Devon and Cornwall, the early inhabitants appear to have adopted in these districts a somewhat peculiar method of forming the flint flakes, which were probably used by them as knives and scrapers for domestic purposes, or as darts and arrow-heads for war and the chase. All the flint flakes and cores from the ten different stations along the coast from Croyde to Bude show a singular uniformity in their design, and the method by which they were formed appears to have been as follows:—A model having been selected, a flat surface or base was then formed by striking off the flattest end as near the point as possible. If the flint was cherty or showed an uneven and hackey fracture, it seems to have been rejected in this first stage of its manufacture; but if on the other hand

it split with a smooth conchoidal fracture, a series of blows was administered from the flat surface, at intervals round the margin, so as to peel off the rough coating of the nodule on three sides. The second series of blows produced the largest flakes, and a third, or even a fourth set of flakes would successively be obtained in this manner before the core was used up. This peculiarity was incidentally noticed by me about two years ago, in the course of a communication to the society of antiquaries, and a subsequent examination of many hundred flakes and cores has served to prove that the same process was in use throughout the whole of this district. The largest flakes hitherto found in North Devon are about three inches in length, but between these and the smallest, which measure not more than three parts of an inch, there are innumerable gradations in size. The result of the principal excavations which have been made at Croyde and Northam shows that the average proportion of cores to flakes is about fourteen per cent.—Sir JOHN LUBBOCK did not see that there was any difference in the formation of the flakes found in North Devon and those found in other parts of the country.

NOTES ON BRACHIOPODA OBTAINED FROM THE PEBBLE-BED OF BUDLEIGH
SALTERTON.

The Author, Mr. T. DAVIDSON, F.R.S., stated that he had examined the specimens forwarded to him by Mr. Vicary and others. None of the rocks known to occur in England presented such a fauna, although in Normandy we have a bed of Silurian rock extant containing the same. Mr. Davidson could not account for the extraordinary mixture of Devonian and Silurian forms, except by supposing that some old land had been broken up. There were ten Silurian, ten Devonian, and fifteen undescribed species of brachiopoda.—Mr. SALTER was of opinion that when these "pebble beds" were formed there was no break between England and Normandy. The fossils were derived from rocks which occur nowhere else than in Normandy.—Mr. DAVIDSON thought that at least one-half of the fossils found in the pebbles had been derived from local sources.—Mr. GODWIN-AUSTEN said that Lower Silurian fossils were found on the south coast of Cornwall.—Mr. PATTISON thought that the remarks which had been made, only bore out the theory of Mr. Godwin-Austen, that a reef of palæozoic rocks had formerly stretched across what is now the English Channel.—Mr. ETHERIDGE pointed out that the Budleigh pebble-bed lay on the triassa of Teignmouth, and thought that the pebbles had come from Normandy.—Mr. PENGELLY having found pebbles on the sea coast at a place distant from Budleigh Salterton of the same kind as those at Budleigh, he walked up the country about half a mile, and there found the same *in situ*—a quartz bed containing fossils which he was not without a degree of belief might have furnished some of the beds at Budleigh. He thought the pebbles of Budleigh must have travelled a long distance on account of their round form and high polish.

The Late Mr. Jonathan Couch.



It is with regret we record the death of Mr. Jonathan Couch, of Polperro, F.L.S., Corr. Mem. Z. S., &c., on the 13th April instant, in the 82nd year of his age; and we feel assured that all friends and supporters of the *Royal Institution of Cornwall* will concur in expressions of affectionate regard for the memory, and lasting gratitude for the services, of one of the most distinguished of its members. Throughout, we believe, nearly the whole period of its past existence, he was a liberal and most valued contributor to its literature and its museum, in their departments of Natural History and Antiquities; and as long since as the year 1835, in a Report which reviewed the progress of the Institution from its establishment in 1818, we find the Council bearing the following testimony to his ability and zeal in promoting its objects:

“From Mr. Couch of Polperro, the distinguished Ichthyologist and Naturalist, whose indefatigable zeal in the study of the Natural History of this County has rendered his name illustrious in the scientific world, in addition to some interesting presents, we have received a valuable outline of the Fauna of the County, accompanied by some suggestions respecting the further prosecution of those studies in which he is most interested, and for the promotion of which this Society was principally established, which deserve consideration. The essential point from which the others spring is, printing a *Catalogue Raisonné* of the Natural History of the County in all its branches, particularly distinguishing those objects, of which specimens are in our collection, and accompanied by remarks on those which present any peculiar features.”

In subsequent years we find him still actively co-operating in aid of these purposes; and that, not only as “a distinguished Ichthyologist and Naturalist,” but also as an inquirer into subjects connected with Cornish Archæology and Antiquities; his various communications evincing careful observation, with accuracy in description and delineation. His most important labour in connection with this Institution, and that which perhaps more than all else linked his local with his universal fame, was in relation to the work which appears to have been forthshadowed in the extract we have cited, viz: “The Cornish Fauna; a Compendium of the Natural History of the County.” Of this comprehensive work, published by the Institution, Mr. Jonathan Couch prepared Parts I and II, containing the Vertebrate, Crustacean, and part of the Radiate Animals, and Shells; a “Third Part, containing the Zoophytes and Calcareous Corallines,” being added by his eldest son (since deceased), Mr. R. Q. Couch, who, inheriting his father’s love for natural science, followed the paternal example of zealous industry in the acquirement and communication of scientific knowledge. Mr. Jonathan Couch was also a contributor to the Royal Cornwall Polytechnic Society and the Geological Society of Cornwall; his communications to the former Society including “A Treatise on the Natural History of the

Pilchard," which gained a Prize offered by Mr. John Buller of Morval. In his larger sphere of publication, his *maximum opus* was his "History of the Fishes of the British Islands," the result of the patient and unremitting labour of a life-time; occupying four volumes of careful description of the habits and structure of British fishes, and illustrated by upwards of 250 portraits drawn by the author. In early life he largely assisted Bewick in his projected "Natural History of British Fishes," and Yarrell in his "British Ichthyology"; and he also edited an annotated translation of "Pliny's Natural History." Another of his works—a very readable and suggestive book—was entitled "Illustrations of instinct deduced from the habits of British Animals." He also contributed to the *Imperial Magazine*, to *Loudon's Magazine of Natural History*, the *Intellectual Observer*, *The Student*, and the Transactions of the Linnæan, Zoological, and other Societies; besides all which, he kept a MS. Journal of observations in Natural History, which, continued until his death, now consists of several volumes.—Mr. Couch received his early education at the Bodmin Grammar School, and afterwards became a student in medicine, at first under Dr. Rice of Looe, then under Mr. Lawrence of Liskeard, and finally at the united hospitals of Guy's and St. Thomas, where, as in early years, he was a diligent student, and gave proofs of more than ordinary ability. He then returned to his native village, Polperro, and residing there in one and the same house during a period of 55 years, he continuously devoted himself to his professional duties and scientific labours with an unflagging enthusiasm that ended but with his last day of life; still, however, finding or making time to take active part in promoting the material and moral welfare of his neighbours, and rendering much valued help in protecting and advancing the interests of Cornish fisheries and fishermen.

In 1856 Mr. Couch was honoured by a presentation copy of the "Natural History of Deeside and Braemar," privately printed for Her Majesty. In 1867 he received a gold medal and a diploma for a communication on Ichthyology, from the Committee of the Exposition Internationale des Pêches, &c., at Arcachon.

We understand that his eldest surviving son, Mr. T. Q. Couch of Bodmin (to whom this Institution is largely indebted, especially for his frequent and valuable communications to its Journal), becomes, by will, the possessor of his father's literary and scientific remains. We may therefore hope to receive from him, as the result of his researches amongst those treasures, the communication of many recorded facts and observations, valuable in themselves, and as further illustrating the character of one of the most remarkable of modern Cornish Worthies: but we have thought it right to avail ourselves of the very earliest opportunity of devoting a commemorative page to his honour and our regret for his loss.

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JOURNAL

OF THE

Royal Institution of Cornwall,

WITH THE

FIFTY-THIRD ANNUAL REPORT.

No. XII.

APRIL, 1871.

188642

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JAMES R. NETHERTON, 7, LEMON STREET.

1871.

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THE
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OF THE
ROYAL INSTITUTION
OF
CORNWALL.

INSTITUTED ON THE FIFTH OF FEBRUARY, 1818.

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1871.

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ROYAL INSTITUTION OF CORNWALL.

SPRING MEETING,

1870.

THE Institution held its Spring Meeting on Tuesday, the 17th of May, in the Council Chamber of the Truro Town Hall. The Chair was occupied by the President, Mr. W. Jory Henwood, F.R.S., F.G.S., &c. ; and there were also present, besides many ladies :—Mr. Smirke, V.W., a Vice-President ; Dr. Jago and Mr. Whitley, Secretaries ; Mr. H. M. Whitley, Assistant Secretary ; Mr. Tweedy, Treasurer ; Dr. Barham, Rev. J. R. Cornish, Mr. Alexander Paull, Mr. G. F. Remfry, and Rev. H. S. Slight, Members of the Council ; and Mr. Vacy Ash, Rev. Dr. Bannister, Mr. J. G. Chilcott, Mr. G. Clyma (Mayor of Truro), Mr. J. H. Collins, F.G.S., Mr. T. S. Cragoe, Mr. R. W. Fox, F.R.S., Mr. J. B. Job, Mr. J. R. Paull, Mr. W. Pengelly, F.R.S., F.G.S., Mr. H. O. Remfry, Mr. E. Sharp, jun., Mr. Sheriff, Mr. Snell, Mr. A. E. Tweedy, and Capt. Williams, St. Austell.

The PRESIDENT delivered the following Address :—

Of the duties it has been your pleasure to assign me the first and most painful is to enumerate our losses during the past twelve months.

Miss Emily Stackhouse enriched our *Journal*,* from time to time, with admirable contributions relating to a branch of science seldom treated of in its pages, but which she had long studied with singular zeal and success.

Major John Solomon Bickford (son of Mr. William Bickford †

* *Journal of the Royal Institution of Cornwall*, Vol. I (No. III), p. 58 ; Vol. II (No. III), p. 245.

† Mr. William Bickford, inventor of the *Safety-fuse*, and author of “ *An Appeal to practical Miners on the Utility and general advantages of the Miners’ Safety-rod, for blasting rocks, &c.*,” was born at Ilington, near Ashburton, 16th of May, 1774, and died at Tuckingmill, 3rd of October, 1834.

who invented the *Miners' Safety-fuse**) was for several years a member of the Institution; but, I believe, he took no part in its publications. His mathematical acquirements and his acquaintance with the science of music were very considerable. His genial disposition and unostentatious benevolence won him the esteem of all classes.

Sir William Williams, Bart., an original member of the INSTITUTION, often accepted office as a Vice-President, and frequently served on the Council. No paper from his pen appears in our publications; but the propagation of the land-tortoise at Tregulow has afforded subject for several most interesting memoirs by Lady Williams,† Dr. Barham,‡ and Mr. Rodd.|| The *Transactions of the Royal Geological Society of Cornwall* § contain frequent acknowledgement of invaluable information regarding matters of interest and importance on which Sir William Williams—the last surviving great-grandson of that eminent public benefactor by whom the Great Adit was commenced in 1748 ¶—remained for several years

* “Lorsque le roc fournit beaucoup d'eau la poudre est renfermée dans un sac de toile goudronnée imperméable. Le feu est mis par un tube rempli de poudre: ce tube est à deux enveloppes formées de petites bandelettes en toile goudronnée, enroulées en spirale, l'une sur l'autre, et en sens inverse l'une de l'autre.... Ces objets se fabriquent à Camborne.... Un sac goudronnée pouvant contenir un livre de poudre est vendu 4 pence, et les tubes remplis de poudre, 2 pence per yard de longueur.”—COMBES, *Annales des Mines*, 3me Série, v, p. 348.

“Les fusées de sûreté ont été inventées.... par William Bickford.... La patente accordée est en date du 6 septembre 1831.... Cette ingénieuse invention résume les perfectionnements les plus importants apportés à l'opération du tirage à la poudre.... Les fusées renferment 11 à 12 grammes de poudre par mètre courant (from 51 to 56 grains per foot). Deux échantillons de poudre analysés à l'Ecole des Mines ont donnée approximativement les dosages suivants;—

	Fusées ordinaires.	Fusées spéciales.
Nitre	73·0	77·0
Charbon	15·5	13·5
Soufre	11·5	9·5
	100·	100·

CHATELIER, *Annales des Mines*, 4me Série, iv, pp. 1, 5, 6.

† *Report of the Royal Institution of Cornwall*, XLV (1863), p. 42; *Journal of the Royal Institution of Cornwall*, Vol. II (No. VI), p. 173.

‡ *Report of the Royal Institution of Cornwall*, XLV, p. 42.

|| *Ibid*, p. 41; *The Zoologist*, XXI, pp. 8333, 8693, 8857.

§ VIII, pp. 114, 445,—51,—7.

¶ Henwood, *Cornwall Geol. Trans.*, V, p. 89*; VIII, p. 586; *Journal of the Royal Institution of Cornwall*, Vol. III (No. XI), p. xxiii.

the only living authority. In the principal copper-mine,* as well as in the most ancient and most productive tin-mine,† in Cornwall he was the largest individual shareholder; and in most of the mines in the neighbourhood of both he was also deeply interested. Of his neverfailing bounty to the old and infirm, and of the beneficence—in its best and kindest form—which led him to give thousands of honest, able, and industrious workpeople the means of contributing to the general welfare, and, at the same time, of helping themselves, it is unnecessary to speak here, as they have been eloquently and gratefully acknowledged by every individual of the public press in the Western Counties.

Mr. Jonathan Couch, F.L.S., our oldest and most constant correspondent, has been taken from us so lately, that the loss we, in common with all cultivators of Natural History, have suffered, can scarcely yet be appreciated. We owe to him the first and second parts of the *Cornish Fauna*, published by the INSTITUTION; and the *History of British Fishes* is enriched with so many of his researches, that we may, perhaps, consider him to have contributed to its distinguished success almost as much as even Mr. Yarrell himself. The great work of his life, however, was *A History of the Fishes of the British Islands*, which, consisting of four thick octavo volumes illustrated by his own sketches, was completed after he had entered his seventy-eighth year. And beside these accurate and voluminous publications, the *Transactions, Reports, Proceedings, and Journals* of several metropolitan, as well as of all our local, Societies, and many scientific periodicals, contain memoirs, almost without number, on Geology, History, and Archæology from his accurate and ready pen; yet this, together with other equally important, labour—sufficient, it may be thought, to have given a man of letters constant occupation—was performed during intervals of leisure in a busy professional life.

To Sir William Williams, Major Bickford, and the other members of the Financial Committee, as well as to the Manager and the other Agents of *Dolcoath*, we were indebted for the kind and hospitable reception we, our Friends of the *Royal Cornwall Polytechnic Society* and our other visitors, met with on our pleasant excursion to that mine and to Carn Bré, in August last. The admirable and instructive lecture with which Captain Thomas favoured us, on the spot, is fully reported in the last number of our *Journal*.

* In 1869 the work- } *Clifford* mines numbered 1,100, and the gross returns
people at the } amounted to £37,764.

† „ „ *Dolcoath* . . . „ 1,000, „ £78,413.

For at least thirty years Mr. Rodd has continued to delight us with his inimitable notices, both of the birds which remain with us throughout the year, and of our merely occasional visitors, several of which he has, himself, added to the list of the British *Fauna*. Some six years ago these exquisite sketches, with other equally interesting extracts from his note-books, were embodied in a separate work,* which has, without doubt, a place in the library of every British ornithologist. As the ground-work of this publication is to be found in our pages, we may be permitted to congratulate ourselves and the author on a second edition having been called for during the past year. It has caused general regret that Mr. Rodd has never received in person the thanks which have been so frequently and so cordially offered him.

Mr. Maclean—for whose valuable assistance we have already been,† and still are, very much obliged—has undertaken a *Parochial and Family History of Trigg Minor*. Of this work, the first part, which illustrates the Parish of Blisland, was published in 1868; a second portion, devoted to the Parish and Town of Bodmin, has appeared within the present month; and other sections, relating to remaining parishes of the Deanery, will follow at intervals. On the value of this work I can pretend to offer no opinion of my own; but I am assured, on excellent authority, that it is of very great merit. I hope no susceptibilty will be offended by the remark that Mr. Maclean's list of subscribers comprises scarcely half a score names from West Cornwall.

The zeal with which Dr. Bannister has studied the language anciently spoken in Cornwall, is universally acknowledged.‡ His *Glossary of Cornish Names*—the result of many years' industry—has reached the initial letter M; and the remainder of the work is ready for the press.

Descriptions of the scenery, natural phenomena, antiquities, various industries, and productions of Cornwall; its history, and the biographies both of Cornishmen and of others whose works afford illustrations of the county, are scattered through so many books, that their extent is known to but few; whilst, perhaps, scarcely an individual enjoys access to them all. The benefit a catalogue of them would confer on the student can scarcely be over-rated. The importance of such a work, frequently urged

* *A Guide to the Ornithology of Cornwall, especially in the Land's-end District* (London, Simpkin; Penzance, Cornish). First Edition, 1864, pp. 1—42; Second Edition, 1869, pp. 1—51.

† *Journal of the Royal Institution of Cornwall*, Vol. I (No. III), p. 36.

‡ *Ibid.*, Vol. II (No. VI), p. 104; (No. VIII), p. 324.

on us by our former excellent President, Dr. Barham, was, in fact, long since recognized by the Institution.* As early as 1862 Mr. Thomas Quiller Couch, with the same object in view, had already begun to collect materials. These he kindly placed at our disposal; and thenceforward he cooperated with Mr. Chorley and the Officers of the Institution in preparing a *Preliminary Catalogue*; of which copies were forwarded in 1865 to parties from whom assistance towards completing the undertaking might have been expected. At much the same time when Mr. Couch commenced his labours, yet without concert or, so far as I am aware, without knowledge of his purpose, Mr. George Clement Boase, of Penzance, undertook a similar task. The materials collected by Mr. Couch, Mr. Chorley, and the Officers of the Institution, an enormous mass of other rare and valuable matter obtained by Mr. Kinsman of Penzance, and smaller contributions from other persons, have lately been entrusted to Mr. Boase and Mr. William Prideaux Courtney; and I believe the manner in which they exercise their editorial duties proves how wisely this important task has been assigned. The work (put to press by Mr. Netherton, the printer of our *Journal*) has already reached the letter C; and the editors hope that two or three years will suffice for its completion. Having been privileged with a sight of the work during its progress, I can speak with confidence of the labour and research already bestowed on it, and of the zeal and industry with which it is pursued.

* "No greater service could be rendered to those who may occupy themselves in researches on the subject than to bring into one central depository....a full collection of the works, records, and drawings relating to the history of the county;....and as a preliminary—in itself a most valuable acquisition to the student—a complete catalogue of such documents may be at once prepared. Indeed considerable progress has been already made in the collection of materials for such a work, by Mr. T. Q. Couch, of Bodmin, who has kindly placed them at our disposal."—*Report of the Royal Institution of Cornwall*, XLV (1862), p. 10.

"The design of the *Bibliotheca Cornubiensis*, the projected catalogue of all writings relating to Cornwall...has been vigorously followed up. Mr. T. Q. Couch has been diligently prosecuting his voluntary editorship, and Mr. Chorley has actively devoted himself, with your officers, to the business arrangements."

Journal of the Royal Institution of Cornwall, Vol. I (No. I), p. xvii.

"A great deal of labour has been spent on the *Bibliotheca Cornubiensis* during the past year, by Mr. Couch and Mr. Chorley especially; and, about six months ago, a Preliminary Catalogue, with Short Titles, was printed and sent to certain parties from whom aid towards its completion might be looked for. Measures are now being taken for collation of our materials with the Catalogue of the Bodleian Library at Oxford."—*Ibid*, Vol. II (No. V), p. ix.

Traditions, Tales, and Folk Lore fall, I believe, rather beyond the limits prescribed to us; nevertheless, as the commencement and progress of Mr. Bottrell's entertaining volume have been recorded in our pages,* I hope I do not greatly transgress by mentioning its publication in the present year, and that its success has induced Mr. Bottrell to commence a second series.

Notices and descriptions of the scenery, natural productions, antiquities, and industries of Cornwall, which may have appeared in various magazines and newspapers, will be found recorded in the Chronological Memoranda prepared for us with such skill and perspicuity by Mr. Chorley at the end of every year.

The unstable condition of the Cheesewring having become an object of remark in the newspapers, the Chief Inspector of Duchy Mines, and his assistants, received on the ground a sub-committee of your officers. It appears, from their Report, that a quarry, long since worked on the north-east slope of the hill, has, of late, been materially enlarged; that enormous charges of gunpowder are occasionally fired within short distances of the Cheesewring; and that blocks of granite, placed to prop its overhanging slabs, have materially interfered with their picturesque appearance. A representation, embodying this Report, was placed by your Council in the hands of Mr. Warington Wilkinson Smyth, F.R.S., with a request that he would submit it to the proper officers of the Duchy; and we learn that they are about to take it into consideration.

Agès ago many parts of the moor were furrowed by still earlier open-works; and, during the last half-century many profitable mines, worked within short distances, brought a large and an industrious population into the neighbourhood. For the walls of cottages and the fences of paddocks, all stones—whatever their picturesque or traditional character,†—whether on Duchy, or on other private, property—even portions of (*the Hurlers* ‡) ancient rock circles, if suitable for the mason and the hedger, have been broken and carried off. As this indiscriminate havoc has continued for time beyond memory, the moor has gradually lost that

* *Journal of the Royal Institution of Cornwall*, Vol. I (No. IV), pp. 92—94; Vol. III (No. IX), pp. 70, 71, 73; (No. X), pp. 133, 140.

† The cap-stone of a cromlech, at Merivale-bridge, on Dartmoor, had for some time been dismounted; but during the past summer it was split in two, and a part of it was removed by a stone-mason.

BATE, *Western Morning News*, 29th June, 1869.

‡ Borlase, *Antiquities of Cornwall*, p. 199, Pl. XVII, Fig. 6.

character of stern loneliness which harmonized so well with the wild crags of Kilmarth and the Cheesewring. But, in their turn, these too must give way, as other and yet more venerable objects have already given way, to the convenience and the comfort, the wants and the welfare, of mankind.

Since our last meeting in this place, a law for the protection of sea-birds has been enacted; and a Society, already established at Bridlington for enforcing its provisions, has posted many of our ports and seaside villages with advertisements setting forth the penalties incurred by transgressors, and the rewards claimable by those who bring them to justice. Measures now before Parliament, for compelling every bearer of a gun to take a licence for doing so, may probably tend to diminish the numbers of thoughtless and cruel sportsmen.

The pilchards cured and exported during 1869 amounted to 15,139 hogsheads; the prices ranged from 64s. to 72s. per hogshead.*

The mackerel fishery is just now in full activity. Accounts to the present time, therefore, although sufficient for comparison with similar periods, give an insufficient idea of the year's return.

During 1869 the quantity taken from Penzance	}	71,959 <i>packs</i> , or 1,617 tons;
and St. Ives by Railway amounted to		
to the 1st of May, 1870	40,133	871

The quantities of pilchards, mackerel, and other fish taken for home consumption, I have been unable to ascertain.

* The Fishery of 1869 yielded;—

Summer fish (caught before 15th Sept.)	700	hogsheads;
Autumn " (" " 16th " and 1st of Nov.)	7,000	" "
Winter " (" after 1st of November	7,439	" "
The Summer fish were of meager quality. The average	} 64s. to 66s. p^{h} hhd.;	price was from
" Autumn " were, on the whole, of		
indifferent quality..	" 68s. " 69s. "	;
" Winter " were in better condition,	} " 70s. " 72s. "	;
and some parcels were		
very fine		

4,538 hogsheads were caught in Mount's-Bay;
 8,685 " " at, and N. of, Saint Ives;
 1,916 " " E. of the Lizard.

BOLITHO, *Pilchard Circular*, for 1869.

A considerable *schul* was taken near Mullion at Christmas last.

Oysters, in considerable abundance, are occasionally exported from certain parts of Falmouth harbour; but the extent of this traffic, during the past year, I have failed to learn.

The brocoli and potatoes forwarded from West Cornwall by railway have been :—

<i>Years.</i>	<i>Brocoli.*</i>	<i>Potatoes.*</i>
1869.....	2,358 tons.....	1,918 tons.
1870.....	2,532 ,,	

It has been calculated by experienced market-gardeners that at least one thousand pounds' worth of Brocoli was destroyed by the frosts and snows of the last winter. Of the shipments from Hayle and Penzance I have obtained no accounts.

Plants hitherto unknown in Cornwall have, within the past year, been discovered in West Penwith; but the discoverer declines to announce his discovery.

The quantities of earthy and metallic minerals, afforded by our quarries and mines, are so accurately and so regularly ascertained by Mr. Hunt † that it would be mere supererogation, on my part, to speak of them.

The Meeting of the British Association at Exeter was attended by two of our members; of whom one was Vice-President of the general body, and the other served on the committee of the Geological Section; but no paper, from either of them, appears amongst the Reports and Proceedings. So far as I know, the only visitor who extended his journey to Cornwall was the Prussian gentleman who joined our excursion to *Dolcoath* and Carn Bré. Mr. Peach, however, supplied descriptions of the fossils he, last year, detected in specimens obtained by Dr. Boase from the Lizard district in 1832; ‡ as well as accounts of his own more recent discoveries in the same neighbourhood.||

As we considered, twelve months ago, the proportion of copper

* For these particulars, and for those in the preceding page concerning the mackerel fishery, I am indebted to Mr. J. D. Sheriff, C.E., Engineer of the Cornwall and West Cornwall Railways.

The *Western Morning News* has lately published (17th March, 29th March, and 21st April, 1870) several admirable articles on the Natural History of the Mackerel and on the Mackerel Fishery, by Mr. Bettany of Penzance.

† *Memoirs of the Geological Survey of Great Britain* (Mineral Statistics), 1869.

‡ *Cornwall Geol. Trans.*, IV, p. 324.

|| *Reports of the British Association*, XXXIX (1869), Part ii, p. 99.

precipitated from water flowing through the Great Adit, it can scarcely be out of place to mention the quantity of detrital matter deposited in the same neighbourhood; a subject to which our attention was directed from the chair, by Dr. Barham, in 1860.*

The valley of Carnon and its subordinate glens† drain an area of nearly ten thousand acres; ‡ within which some thirty or forty mines have been wrought, to greater or less extent, at different times. In most of the water, whether mere drainage of the County or purposely pumped to the surface, enormous quantities of various ores are stamped and (*dressed*) washed; the entire stream is, therefore, heavily charged with gravel, sand, and mud. || And, whilst copper-mines were so largely worked in the district as they have been of late, the rate of deposit was probably even more rapid than it had previously been. At Higher Carnon, nearly two miles above the present navigation, § some rather remarkable slabs

* "In 1812 a crucifix [now in our museum] was found [in] Carnon stream-works, about 30 feet under the bed of the river. You are aware that crucifixes are, geologically speaking, of very modern date. The fact of its being found 30 feet below the then existing bed of the river, seems to show, more than anything else, the extreme rapidity with which deposits are formed in certain favourable circumstances. We know that Carnon Valley is situated at the outlet of the great mining districts, from which the amount of silt washed down is very considerable. The silt and gravel is from 40 to 50 feet deep. So that in this comparison of articles found, in connection with the geological conditions in which they are found, we have two things to take into consideration. First, the period during which the former sea-level has subsided below the existing sea-level; and in some places it appears that the former was from 30 to 50 feet below what it is now. And, then, there is another branch of enquiry. How long it would take to fill up these valleys with this kind of silt?"—BARHAM, Address to the Royal Institution of Cornwall, *Report XLII*, (1860), p. 16.

† Long within my recollection a tradition remained that cherry-trees throve in the glen below Croft-handy.

‡ Thomas, *Map of the Mining District between Camborne and Chacewater; History of Falmouth*, p. 19.

|| "I have been told that about 70 years back [*i.e.* 1708] the low lands and sands under Perran Ar Worthal, which are covered almost every tide with the sea, have on its going off, employed some hundreds of poor men, women and children washing the tin-ore out of them."

PRICE, *Mineralogia Cornubiensis*, p. 136.

"If these waters be charged ordinarily with one part in three hundred of earthy matter (sometimes they contain more than double that quantity) there will be brought annually into Restrongt Creek about two millions and a half of cubic feet. . . besides immense quantities of gravel, which in times of heavy rain are swept along the beds of the streams and ultimately into the navigation."—THOMAS, *History of Falmouth*, p. 51.

§ "There is a tradition prevalent in the place and in its neighbourhood, that the tide formerly flowed considerably farther up than Bissow-bridge."

FRANCIS, *Gwenmap*, p. 7.

of granite formed a narrow road, from 1815 to 1820, or thereabout, some three or four feet above the ordinary level of the stream; in 1867, however, this ancient bridge had become buried beneath about two feet of detritus. Within about fifty years, therefore, a body of rubbish, brought down by the river, has raised the surface of the valley five or six feet; that is to say, at the rate of about one foot in ten years. As I speak in the presence of gentlemen much better acquainted than I can pretend to be regarding the effects of this remarkable stream, both on the navigation of Restronguet creek* and on the depth of water in Falmouth harbour† generally, I will only allude to them. Anciently, however, the exercise of stringent laws, as well of the realm‡ as of the Stannaries,|| re-

* "By the constant accession of matter, the bed of the whole of this creek, except the anchorage of Restrongett Pool, is now [1827] above the level of low water at spring tides. This anchorage continues deep (about six fathoms at the deepest part) owing to the narrowness of the river here, which necessarily increases the rapidity of the tides and prevents any matter from being lodged; but immediately outside the creek, where the water having more room is less rapid, it allows matter to deposit, and the depth is only two or three feet, except at a sort of tide channel... where it has a depth of about eight feet."—THOMAS, *History of Falmouth*, p. 48.

† "The finer matter is kept some time in suspension, and much of it settles in the body of the harbour, at the still time of low water; and supposing it to be distributed regularly throughout the whole bed of the harbour including its branches, [it] would form a layer of one foot thick in about 43 years."—*Ibid.*, p. 51.

‡ "The King's Majesty, minding and intending the Supportation and Maintainance of his Towns and Havens, of Plymouth, Dartmouth, Tinmouth, Falmouth, and Fowey, in the counties of Devon and Cornwall, . . . and the Animadversion and Correction of . . . Offenders, hath by the Assent of the Lords Spiritual and Temporal, and the Commons in the present Parliament assembled, and by the Authority of the same, ordained . . . that no Person or Persons hereafter shall labour or work . . . in any manner of Tin-works, called Stream-works, within the said Counties . . . nigh to any . . . fresh Waters, Rivers, or low places, descending or having Course unto the said Havens or Ports, nor shall labour, dig, or wash any Tin in any of the said Tin-Works called Stream-Works, unless the said Digger, Owner, or Washer, shall make . . . sufficient Hatches and Ties in the End of their Buddels and Cords, and therein put and lay . . . all the Stones, Gravel or Rubbel, digged about the Ensearching, Finding and Washing of the said Tin, . . . so that the said Sand, Stones, Gravel and Rubbel, nor any part thereof, be for lack of such Hatches, or Ties conveyed into the said Ports or Havens, . . . upon Pain to forfeit for every time that any Owner, Digger, Turner, or Labourer shall dig or wash . . . any Tin contrary to the Form aforesaid, £20." (23 Henry VIII).—PEARCE, *Laws and Customs of the Stannaries*, p. 156.

|| "At the Court holden for the Stannaries of Cornwall in the County of Devon, on the 27th of August in the Thirteenth Year of the Queen's Majesty's Reign, our Sovereign Elizabeth, . . . before the Right Honourable Lord Edward Hastings . . . High Warden of the said Stannaries . . . and other the Queen's Majesty's Commissioners there, it is Enacted, Whereas there have

strained tin streamers from works prejudicial to navigation ; but these provisions, if not repealed, have long fallen into desuetude ; nor do they seem, when in force, to have applied to copper-mining. Yet, even now, the principal proprietor of mines in the adjoining county requires his tenants to intercept all sand, gravel, and mud escaping from their works ;* and the influence of this measure on

been heretofore two sundry Statutes and Acts of Parliament at *Westminster*, one in the Twenty seventh Year, the other in the Twenty third Year of our King *Henry the Eighth*: In the which said Statutes it hath been ordained, that no Person . . . should labour any . . . Tin-Works called Stream-Works, within the County of *Cornwall*, nigh to any of the fresh Water Rivers there, . . . unless the Digger, Owner or Washer, did make sufficient Hatches or Ties in the End of their Buddels and Cords, and therein put . . . all their said Stays, Gravel or Rubbel . . . there to be wholly and surely kept, on and from the fresh Water Rivers aforesaid, upon certain Penalties mentioned. To the end that the contents of the aforesaid several Statutes . . . may be the better hereafter performed, It is further Enacted over and besides the Penalties . . . already ordained . . . for any Person or Persons for any Offence done contrary to the Provision of the said Statutes, and that Person or Persons so offending be thereof duly convicted either by Verdict of Twelve Men or more, by his or their own Confession, or any other lawful Way or Means, for the first offence shall . . . incur the penalty of Forty Marks, to be levied by *Fieri facias* of his Goods and Chattels . . . ; and if the Party do oftentimes offend, and be thereof convicted . . . that then he is to lose all such Interest and Estate as he hath in the said Works ; and if the Party or Parties so offending as aforesaid, be not able to pay the Penalty of Forty Marks, that then the said Party or Parties shall be committed to the Prison of *Lostwithiel*, there to have their Imprisonment for one Year, without Bail or Mainprize. And be it also furthermore Enacted, That if the Steward of the said Stannary-Courts of *Cornwall* . . . do not at each Law-Day . . . give those Statutes and Ordinances to the Jury of the same Court, that then the said Steward shall for his Negligence incur the Penalty of Five Pound at each Time so offending, to be levied by *Fieri facias*."

PEARCE, *Laws and Customs of the Stannaries*, pp. 154—5.

* " And shall dig and construct for the interception and cleansing of the mineral-water coming from the dressing-floors or any of them before such water shall fall or be permitted to flow (directly or indirectly) into the River — six several pits each not being less in dimensions than thirty feet in length twenty feet in breadth and four feet in depth and of such construction in all respects as shall be best adapted for purifying and cleansing the said mineral-water, and in case of such pits being insufficient or inefficient for that purpose will take and carry out such further or other necessary and reasonable means as may be required for the efficient purification of the said mineral-water before the same falls or is permitted to flow into the River —, the choice of the proper means for that purpose and any incidental question in relation thereto or of the use of such means if not settled by agreement between the parties to be settled by arbitration under the provision hereinafter in that behalf contained."

Extract from Mineral Lease by His Grace the Duke of Bedford ; Report of the Salmon Fishery Commissioners, VIII, p. 20.

the condition of neighbouring rivers,* is shown by the increase of salmon † in them.

Mr. Foster of Lanwithen, one of our members, has been, and still is, zealously cooperating with Her Majesty's Commissioners; and, I believe, he has been eminently successful in arresting much of the sand and mud which had long been finding their way into the Fowey; no less to the injury of the navigation, than to the prejudice of the salmon, which, we know, appear in condition there at a period different from that at which they reach maturity in most other places.

In Sweden, at the beginning of this century,‡ and in the Himalaya some fifteen years ago,|| the labourers obtained light (and sometimes were almost suffocated) when at their work, by smoky flames from burning splinters of resinous pine. In Brazil, oil, expressed from nuts of the *Palma Christi*, is commonly used by the miners.§

An experiment, made at *Balleswidden*, near Penzance, during several months of 1856-7, attracted at the time much less attention than might have been expected, and is now almost forgotten. Coal-gas was made at the surface, and conveyed down one of the shafts to a depth of more than one hundred and twenty fathoms, through a two-inch wrought-iron pipe; from which branches, varying from three-quarters of an inch to one inch in diameter, were laid—in some cases for at least one hundred and seventy fathoms—along the several (*levels*) galleries; and similar tubes extended, occasionally as much as ten fathoms above the *levels*, to the various (*backs* or *itches*) parts in progress. Flexible pipes,

* “At *Wheal Crelake* we find that, if the inflow of the water be rather slow, the first, second, and third pits cleanse it pretty effectually. The pits nearest to the *Dressing-floors* require to be emptied about once in six weeks The whole set of six pits, with launders at each side for regulating the ingress of the water, cost rather less than Twenty five Pounds.”—JOSIAH PAULL, ESQ., Chief Mineral Surveyor to His Grace the Duke of Bedford, MS.

† “At the *Devon Great Consols* several acres of catch pits for the cleansing of mineral waters, have been made and are in daily use. The water which falls into the Tamar from these mines may be considered harmless to fish. Since the close of the last [1869] fishing season, salmon have ascended the Tamar in greater numbers than for twenty years before.”—*Ibid.*

Between fifty and sixty years ago I saw a salmon killed in the *Dock* at Perran Wharf, on Restronguet-creek.

‡ Clarke, *Travels in Europe, Asia, and Africa*, X, p. 187.

|| Traill, *Asiatic Researches*, XVI, p. 138.

§ Burton, *Explorations in the Highlands of the Brazil*, I, p. 250.

of gutta-percha, were, on occasion, carried to individual labourers; but, where four men worked together, a single jet of gas gave light enough for them all. "In the shaft, levels, and pitches it answered [so] exceedingly well as to leave no doubt of its serving all the purposes for which it was intended."* It was computed that the works were lighted by gas one-third cheaper than by candles.†

These have been our losses, and the objects of our labours, during the past twelve months; other matters of, perhaps, equal importance invite attention, but we have scarcely time to consider them now.

DR. JAGO read the Lists of Presents:—

DONATIONS TO THE MUSEUM.

A large collection of Botanical Specimens . . .	Bequeathed by the late Miss Emily Stackhouse.
Roman Coins, found near Caerhays Castle, viz :	
Gallienus (A.D. 260—268) . . .	<i>Six</i>
Claudius 2nd (A.D. 268—270) . .	<i>Six</i>
† { Victorinus	<i>Six</i>
Tetricus, sen.	<i>Six</i>
Tetricus, jun.	<i>Six</i>
Organic Remains from Delabole Quarry . . .	Mr. Whitley, F.M.S.
Typical Pebbles, from the Pebble Bed (Trias), Budleigh Salterton	Mr. Pengelly, F.R.S., &c.
Top-Stone of Quern, or Ancient Hand Mill . .	Mr. H. M. Whitley.
Part of a Chipped Flint Celt, from Birling Gap, Sussex	Ditto.
Title Deed of a Mine, Cape of Good Hope . .	Ditto.
Felspar, from Breage	Mr. W. Tyack.
Pink Marble, with Crystals of Sahlite, a variety of Augite, from Tیره, one of the Hebrides.	Mr. J. H. Collins, F.G.S.
Crawfish, from Port Loe	Mr. John Dunstone.
Egyptian Mummy of the sacred Ibis	Mr. G. F. Remfry, Truro.
A Mummy Hand	Ditto.

* Report of Captains Tredinnick, Clemens, and Trahair, *Cornish Telegraph*, 20th May, 1857.

† For this statement—compiled from Books kept at the mine—I am indebted to Mr. Alderman James of Penzance, a considerable shareholder in *Balleswidden*.

‡ Usurpers, *temp.* Gallieni, in Gaul and the western provinces.

Unburnt Brick of Sesostris, stamped with his cartouche, from the Memnonium, Thebes ..	Mr. G. F. Remfry, Truro.
Specimen of Stone from the royal quarries under Jerusalem, of which Solomon is said to have built the Temple	Ditto.
Fossils	Ditto.
Printed Paper for Blind Readers, from Mrs. Thompson's Syrian School, Beirût	Ditto.

CONTRIBUTIONS FOR THE ALBUM.

A coloured drawing of a variety of <i>Galanthus nivalis</i> , found at Altarnun, Cornwall, March, 1870 *	From Miss Tripp, Altarnun.
Etchings :—†	
1. Deer's-Horn Pick, found in the Carnon Stream Works.....	} From Miss Annie Shilson, Tremough.
2. The (Penryn) Mayor's Cup.....	
3. Menacuddle Well, St. Austell.....	
4. Senar Cromlêh ; Lanyon Cromlêh ; Mên-an-Tol ; Chûn Cromlêh ; and Mölfra Cromlêh	

* Accompanying this Contribution was the following note: "Enclosed is a sketch, made by Miss Tripp, of a variety of the Snowdrop found this year by her for the first time; she ventures to offer it to the portfolio of the Royal Institution, as she has been told that a variety of the Snowdrop is extremely rare. If such things are acceptable, it will give Miss Tripp great pleasure to send from time to time any other that may come in her way—either drawings of them or specimens—as they will be much more useful in a public than in a private collection."

The peculiarities of this specimen are: On the three outer petals is a notch-shaped green spot, somewhat fainter than that on the inner, but resembling it; and the seedvessel and stem are of a yellower shade of green than in the ordinary variety.

† Miss Shilson writes as follows: "Miss Shilson forwards to Mr. Whitley a donation to the Royal Institution of Cornwall, of four of her sketches which she has just had printed. Of the "Deer's Horn Pick" and "Mayor's Cup" she has written and enclosed an account; "Menacuddle Well" is one of the oldest Baptistery Chapels; and of the fourth sketch (Cromlêhs and Mên-an-tol) a full description will be found in Borlase's Antiquities of Cornwall."

"DEER'S HORN PICK. This valuable relic, the property of R. W. Fox, Esq., was found lying on a bed of tin, between 30 and 40 feet below the surface, in the Carnon Stream Works, at the head of Restronguet Creek, near Devoran, Cornwall, about 70 years ago. A human skull, stags' horns (one of which measured three feet), skulls and other bones of various animals, together with a wooden shovel, around which a piece of decayed string still remained tied, were also found there at a great depth; thus rendering it apparent that this bed of ore was known and worked at a very early period. The pebbles from which the metal was extracted, were embedded about 36 feet below the surface, in a compound of marl and marine

ADDITIONS TO THE LIBRARY.

Parochial and Family History of the Deanery of Trigg Minor, in the County of Cornwall. Part I, 1868	} Presented by the President.
Ditto. Part II, 1870 (Bodmin). By John Maclean, Esq., F.S.A., Member of the Royal Archæological Institute of Great Britain and Ireland, &c.	
Notarial Instrument dated A.D. 1322, relating to Saint Nectan's Chapel, in the parish of St. Winnow, near Lostwithiel, Cornwall. By John Maclean, F.S.A. (From the Archæological Journal)	From the Author.
On the Chemical and Mineralogical Construction of the Dhurmsalla Meteoric Stone. By the Rev. Samuel Haughton, M.D., F.R.S., Fellow of Trinity College, Dublin. (From Proceedings of the Royal Society, No. 85, 1866).....	From the Author.
Notes of a Comparison of the Granites of Cornwall and Devonshire with those of Leinster and Mourne. By the Rev. Samuel Haughton, M.D., D.C.L., F.R.S., &c. (From Proceedings of the Royal Society, No. 108, 1869).....	From the Author.
On some Elementary Principles in Animal Mechanics (No. II). By the Rev. Samuel Haughton, M.D. Dubl., D.C.L. Oxon., &c. (From Proceedings of the Royal Society, No. 114, 1869).....	From the Author.

substances; hence it appears that the whole area over which the Carnon stream extends, was originally covered by the tide, against which an embankment was formed in order to secure the ore which lay below. The late workings began in 1785, and were continued for several years, until the riches of the vale were exhausted, so far as the sea could be driven back."

"THE MAYOR'S CUP. This silver cup, very massive, and more than two feet high, was presented to the Corporation of the Borough of Penryn by Lady Jane Killigrew, whose "great misery" seems to have originated in her own base conduct. According to Hals, whilst this country was engaged in a war with Spain, two Dutch ships belonging to the Hanse Towns, always free traders in times of war, were driven into Falmouth Harbour by contrary winds. They were laden with merchandise, the property, it was thought, of the Spaniards. To secure some part of this valuable booty, Lady Jane, attended by a party of ruffians, boarded the vessels, murdered the Spanish merchants, their owners, and seizing two hogsheds of Spanish pieces of eight, carried them on shore and converted them to her own use. For this offence her accomplices were taken into custody, tried, condemned, and executed; whilst her ladyship, through the interest which she was enabled to make, found means to evade the sentence of the law, and, amid the execrations of the unhappy wretches whom her artifices had brought to the gallows, she fled for protection to the inhabitants of Penryn. Lady Jane was divorced from her husband, and died in the year 1648."

- A List of British Birds, as a Guide to the Ornithology of Cornwall, especially in the Land's End District; with remarks on the capture, habits, &c., of some of the rare species, and species new to Britain; and an Appendix, with a list of some of the rarer and interesting British Birds observed at Scilly since 1843. By Edward Hearle Rodd, Esq. From the Author.
- Archæologia Cambrensis, Third Series, Nos. 42—44, 1865; 45—48, 1866; 49—52, 1867; 53—56, 1868; 57—60, 1869. [*Carent*, Nos. 37, 38, 39, 40, 41] From the Cambrian Archæological Association.
- The Miners' Association of Cornwall and Devonshire. Report, 1869 Mr. R. Hunt, F.R.S.
- Report and Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art. Vol. II, Part I, 1867. Ditto, Vol. III, 1869 From the Association.
- The Journal of the Historical and Archæological Association of Ireland. Third Series, Vol. I, January, 1869, No. 5; and July, 1869, No. 7 Ditto.
- The Journal of the Royal Historical and Archæological Association of Ireland. Fourth Series, Vol. I, January, 1870, No. 1 Ditto.
- The Anthropological Review. No. 28, January, 1870. No. 29, April, 1870 From the Anthropological Society.
- 37th Annual Report of the Royal Cornwall Polytechnic Society, 1869 From the Society.
- Transactions of the London and Middlesex Archæological Society. Vol. III, Part X, 1870. Ditto.
- Proceedings of the Society of Antiquaries of London.* Second Series, Vol. IV, Nos. III, IV, V, and VI; from March, 1868, to June, 1869 Ditto.
- Transactions of the Edinburgh Geological Society. Vol. I, Part III, 1870 Ditto.
- Transactions of the Geological Society of Glasgow. Vol. III, Part. II, 1869 Ditto.
- Journal of the Royal Geological Society of Ireland. Vol. II, Part I, 1867—68.† Fourth Session. Ditto.
- Ditto. Vol. II, Part 2, 1868—69. (New Series). Ditto.

* No. IV contains "An Account, by William C. Borlase, Esq., of the excavations and discoveries made in subterranean chambers of Chapel Euny, in the parish of Sancreed, Cornwall, between the years 1863 and 1867."

† Containing "Notes on parts of South Devon and Cornwall, with Remarks on the True Relations of the Old Red Sandstone to the Devonian Formation. By J. Beete Jukes, M.A., F.R.S."

Journal of the Liverpool Polytechnic Society. From November 20, 1869, to March, 1870 (including Annual Report for 1869).....	From the Society.
Transactions of the Historic Society of Lan- cashire and Cheshire. New Series, Vol. IX, Session 1868—69	Ditto.
Laws and Rules of the Royal Geological Society of Cornwall, 1869	Ditto.

From the University of Christiania:—

De Vi Logicæ Rationis in describenda philosophiæ historia ad Eduardum Zellerum Professorem Marburgensem celeberrimum Epistola quam scripsit Marcus Jacobus Monrad Professor Christianiensis. Programmatis nomine edidit Academia Regia Fredericana.

Memoires pour servir à la connaissance des Crinoïdes Vivants, par Michael Sars, Docteur en philosophie et médecine, Professeur de Zoologie à l'Université de Christiania.

Etudes sur les Affinités Chimiques, par C. M. Guldberg, Professeur de mathématiques appliquées à l'Ecole Royale d'artillerie et de génie de Norvège, et P. Waage, Professeur de chimie et directeur du laboratoire de chimie à l'Université Royale de Norvège.

Traité Élémentaire des Fonctions Elliptiques par Dr. O. J. Broch, Professeur de Mathématiques à l'Université Royale de Christiania, membre des Académies des sciences à Trondhjem, Christiania, Stockholm, et Copenhague, membre de la société physiographique de Lund, et de l'institution géologique impériale et royale à Vienne.

Boiumbræen i Juli 1868, af S. A. Sexe; med Træsnit.

Le Glacier de Boium en Juillet 1868, par S. A. Sexe; avec gravures sur bois.

Norges Ferskvandskrebssdyr. Forste Afsnit Branchiopoda. I. Cladocera Ctenopoda (Fam. Sididæ & Holopedidæ). Af Georg Ossian Sars. Cand. Philosoph.

En Anatomisk Beskrivelse af de paa Over- og Underextremiteterne forekommende Bursæ Mucosæ, støttet paa egne iagttagelser og ledsaget af tegninger efter udforte præparater. Prisbelønnet Afhandling af A. S. D. Synnestvedt, Stud. Med.

Om Siphonodentalium Vitreum, en ny slægt og art af dentalidernes familie, af Dr. Michael Sars, Professor ved Christianias Universitet.

Oversigt af Norges Echinodermer ved Dr. Michael Sars, Professor ved Christianias Universitet.

Undersogelser over Christianiafjordens Dybvandsfauna, anstillede paa en i Sommeren 1868 foretagen zoologisk Reise, af G. O. Sars.

Beretning om en i Sommeren 1865 foretagen zoologisk Reise ved Kysterne af Christianias og Christiansands Stifter, af G. O. Sars.

Beretning om en botanisk Reise i Omegnen af Fæmundsoen og i Trysil. Af H. L. Sorensen, stud. real.

Ezechiels Syner og Chaldæernes Astrolab. Af C. A. Holmboe.

The following Papers were presented:—

Copy of a Letter in the British Museum, concerning the state of Ports in Cornwall, in 1593-5.—From Mr. Henry Lee Rowett, London.

Notes on the Ornithology of Cornwall, from May, 1869.—By Mr. E. Hearle Rodd.

Notes concerning the Leech (Hirudo); Verella limbosa, Lam.; Medusa, Linn.; Holibut (Hippoglossus vulgaris), Flem.; Physalia pelagica, Lam.; Scyllæa pelagica, Linn.; Spawn of the Doris tuberculata, Cuv.; Larus minutus, Pallas; and of various species of Entozoa.—By Mr. W. P. Cocks, Falmouth.

Recent Observations on Subterranean Temperature in the Clifford Amalgamated Mines.—By Sir F. M. Williams, Bart., M.P.

Stannary Rolls, temp. Edward I, and observations thereon.—From Mr. J. Maclean, F.S.A.

An Inscribed Stone in the Churchyard of Stowford, Devon.—By Mr. W. Copeland Borlase, Castle Horneck.

Notes on the Geology and Archæology of Cornwall and Devonshire.—By Mr. W. Pengelly, F.R.S., F.G.S.

On Boiler Explosions.—By Captain Williams, St. Austell.

Concerning Mr. Maclean's Paper, Mr. SMIRKE remarked that it was interesting as containing one of the earliest records of the number of ingots or slabs of tin brought to be coined, or stamped, in each of the Coinage Halls in the County of Cornwall, in the year 34 Ed. I (A.D. 1305); with the total weights of the tin, and certain sums of money attached thereto; but, whether this last column represents the pecuniary value of the tin, or the duty on it payable to the Earls, or to the Crown during a vacancy, is not very clear until the relative quantities, as compared with the moneys in the last column, shall have been carefully considered. Before the stamp was applied (which has always been that of the Earl Edmund), the practice was to assay the metal; and the stamp was then considered by the dealer as a certificate of its purity and a license to export it to foreign parts. The last Assay Master, at the time of the abolition of this duty in 1838, was Mr. Henwood, our existing President of this Institution. An original "cuneus," or stamp, is in the Stannary Court.—Another feature of interest in the document before us is the list of names in the first column. Whether these be merchants, or landowners, or the names of the companies producing the blocks for weighing or coinage, is open to inquiry. The general aspect of them is of an aristocratic character; and some of the names are familiar to a student of Cornish biography.

The PRESIDENT thought that this communication from Mr.

Maclean, taken in connection with the laws and regulations which formerly governed the coinage of tin, would throw considerable light on the extent to which tin had been wrought in various parts of the Stannaries at different times. The earliest he recollected mentioned Chagford, Ashburton, Tavistock, and Plympton, as ancient coinage towns in Devon; those in Cornwall being Liskeard, Lostwithiel, Truro, and Helston.

Mr. SMIRKE observed that at the time referred to in Mr. Maclean's communication, Bodmin was one of the coinage towns, with Lostwithiel, Truro, and Helston. Liskeard was not mentioned.

The PRESIDENT added that the times anciently allotted for the coinages in Cornwall were: at Liskeard two days; at Lostwithiel six days; at Truro twelve days; and at Helston six days. At some subsequent period Penzance was made a Coinage Town, the coinage there lasting two days; and still later—in the reign of Charles II, he believed—the time was extended to six days. When he was appointed Assay Master in 1831, no inhabitant of Chagford, Ashburton, or Plympton, had any notion that tin had ever been coined at either of these towns; and all recollection that the coinages had ever been held in any other part of East Cornwall than Liskeard seemed to have died away. It appeared therefore that tin was anciently produced in very great quantities in the eastern part of Dartmoor; that at a later period the produce had almost, or altogether, disappeared there, but had enormously increased in the western part of Cornwall. In 1835, when changes were made in the Coinage Towns, it was no longer necessary to hold coinages at Chagford, Ashburton, and Plympton; but small quantities of tin were still coined at Tavistock and Liskeard, whilst Lostwithiel no longer required the privilege; at Truro, however, no alteration of time seemed necessary. Helston was but slightly frequented by tanners, but Penzance became increasingly important, and it was necessary to establish a coinage at Hayle. In process of time, therefore, the produce of Dartmoor and of East Cornwall had materially declined; whilst, at the same time, the mines of West Cornwall became increasingly productive.

On the reading of Mr. W. Copeland Borlase's account of the Inscribed Stone at Stowford, Mr. SMIRKE said he was very glad that this Institution had an opportunity of publishing an authentic copy of this inscription; inasmuch as an imperfect rubbing from the original had been undecipherable by archaeologists in London last year. Most of the inscriptions in the West which had been deciphered are supposed to have been the work of Romanized

Britons. But this one is a veritable *crux*; and obligations were due to Mr. Borlase for having produced it for inquiry.

Mr. WHITLEY exhibited and explained his diagrams to illustrate the connection between the direction of the prevalent N.W. wind of the Spring of 1870, and lines of equal pressure of the barometer. It was shown that this invasion of Cold came from the Norwegian mountains as a N.E. wind, passed southward over the middle of the British Isles, and fell on Cornwall as a N.W. wind; and that the curves of the course of the wind corresponded very closely with the isobarometric lines; that this coincidence also held good in the severe cyclonic storms which had lately swept the southern and eastern coasts of England; and that the lowest reading of the barometer was at the centre of the cyclone. A Map of the Storm of the 22nd August, 1868, was exhibited, showing the course of the wind bounded by sharp curves of equal barometric pressure.

Dr. BARHAM made some remarks concerning causes of the deflection of the wind described by Mr Whitley, and on the effects of the different rates of motion of the Earth in different latitudes—a subject requiring fuller investigation; and then proceeded to exhibit diagrams illustrating peculiarities of the Cornish climate. The large extent of sea-coast possessed by Cornwall, in comparison with other counties, the exceptional warmth of the sea, and the backbone of hills running east and west throughout the length of the county, served to illustrate most of the great general causes of climate, whilst they would account for considerable differences among various districts of the county. Cornwall had been looked at as a whole, and had had the character of being exceptionally mild; but, in fact, several parts of the county were not less cold than the East of England. Much discrimination between the districts of Cornwall must therefore be exercised in regard to its climate. At Truro, for instance, but a few feet above the sea level, the thermometer fell in December last to 13° , whilst at Falmouth, only eight miles off, the lowest temperature was 25° . Such a difference is one of life or death to many plants which flourish in one place and perish in the other. Animal life, feeble from disease or the two extremes of age, may also be nipt by such severe cold. Another peculiarity of this county was the remarkable differences between different places as to amount of rainfall; as, for instance, between Helston and Truro; the smaller amount of rain registered at Helston being on some occasions accounted for by the proximity of the high land of Tregoning and Godolphin hills. The influence of St. Agnes Beacon in causing heavy rainfall often escaped by Newquay—otherwise similarly situated—furnished another

instructive example.—In answer to a question from Mr. H. O. REMFRY, Dr. Barham said his diagrams referred to the preceding year only; but they coincided fairly with usual conditions. He added that, a few years since, Professor Daubeny published a list of plants which flourished at Grove Hill, Falmouth, and at Scilly, but which would not grow at Greenwich; and yet there were parts of this county where, with a north-easterly wind, the temperature was as low as at Greenwich.

From considerations of the differences of temperature existing in Cornwall, Dr. Barham inferred its advantages in regard to botanical pursuits and also for sanitary purposes. He also stated that at Scilly, where tropical plants thrive exceedingly well, the temperature scarcely falls below 29 or rises above 80, and he suggested for consideration by Geologists whether any great increase of so equable a temperature would be necessary for the flora discovered in our coal beds.

Mr. PENGELLY stated that his own results, especially from the North of Devon, were quite in accordance with those of Dr. Barham in regard to the great differences of the rainfall produced by local causes in places very near to each other.

Mr. R. W. FOX remarked that plants, Benthams for instance, had suffered much at Grove Hill in December last; harsh winds being often more destructive than mere lowness of temperature.

Dr. BARHAM gave an account of the Roman Coins presented to the Institution by Mr. Williams of Caerhays Castle. They were 30 in number, and were part of a much larger collection accidentally found by workmen, in the vicinity of Caerhays Castle, in the autumn of 1869. The entire collection comprised coins of 13 emperors or so-called emperors who were in power between A.D. 253 and 276; besides two specimens, of uncertain date, and indistinct. They were found in a tin jar; that tin had been analyzed by Mr. R. Pearce of Swansea, who stated that he had detected in it traces of iron and copper, but that its quality was as good as that of common tin of the present day. This Institution had been favoured with 30 of the coins; being six distinct types of each of five rulers,—two of them being emperors, and the others being some of the “tyrants” raised to the imperial purple by the soldiery, and enjoying but brief periods of rule. The coins were a valuable addition to the numismatic collection in the Museum, and were illustrative of the ancient history of Cornwall. It had been suggested by Mr. Albert Way that it was very desirable to bring together all means of illustrating the state of Cornwall during the period of Roman sway in Britain; and it was hoped that Mr. J. Jope Rogers, who had given special

attention to the subject, might collect the documentary evidence relating to it.—Some Roman coins were discovered not long since on land near Falmouth, the property of Mr. Robert Were Fox. He feared they had been irrecoverably dispersed; but should any of them come to light again, they would be very acceptable to the Institution. They were chiefly of or about the date of Constantius, and were in excellent preservation.—Mr. R. WERE FOX said the coins referred to were found in a field belonging to his grandson, and were more than a thousand in number; but they were all dispersed before he heard of the discovery.

Mr. H. M. WHITLEY exhibited and explained drawings of Jupiter, taken by him during the past opposition, with his $6\frac{1}{2}$ in. Silvered Glass Reflector; and drew especial attention to the ruddy colour of the planet's equatorial zone. He also exhibited sketches of the Lunar Craters, Linné, Messier, and Plato, and stated his reasons for considering changes in the first two mentioned craters doubtful; whilst with respect to the latter, he considered that the question of lunar activity would be considerably elucidated by continuous and careful observation of the spots on its floor.

Dr. BARHAM next brought before the meeting a communication, dated February, 1870, from Mr. S. R. Pattison of London, concerning a ruin named "Upton Castle," in the parish of Lewannick; together with a subsequent communication on the subject, from Mr. Rodd of Trebartha, the proprietor of Upton Farm.

Dr. BARHAM also read notes, and exhibited a small plan, from Mr. Edward Coode, of Polapit Tamar, concerning an ancient earthwork in Northcot Wood, on the east bank of the Tamar, in Northcot Hamlet, Devon.

Thanks were voted to the Chairman; to the contributors of Papers and other communications, and to the donors to the library and museum; and also to the Mayor of Truro for granting the use of the Council Chamber for this meeting.

Mr. WHITLEY stated that the Society's Autumn Excursion this year would be to Bodmin and Tintagel.

THE AUTUMN EXCURSION.

The Autumn Excursion, this year, occupied two days, and embraced objects of antiquarian and scenic interest, in considerable number and variety, in the north of Cornwall.

Bodmin having been appointed the place of rendezvous, about 9 a.m., on Monday, the 8th of August, the large majority of the excursionists arrived at the Bodmin Road Station; and, on their approaching the town, the travellers were arrested in their progress and summoned to make appearance at the Guildhall of the ancient borough. Obedient to the hospitable behest, they proceeded thither, and partook of a supplementary breakfast, presided over by ladies of Bodmin.

Vehicles of various kinds were soon in readiness; and, proceeding on the Camelford road, by way of Michaelstow, the positions of British Camps at Penhargard and Lower Helland, Dunmeer and Pencarrow, and the road leading to the Roman Camp at Tregear, were indicated by local *ciceroni* of the party; Dunmeer Camp being visible on the hill, as were also the entrenchments on Michaelstow Beacon. Within these entrenchments, we were informed, are fragmentary remains of St. Michael's Chapel or Oratory.

After a very pleasant drive, the party arrived at their first halting-place, the Rectory of Lanteglos-by-Camelford, where, after courteous reception by the Rector, the Reverend J. J. Wilkinson, and Mrs. Wilkinson, they inspected, under Mr. Wilkinson's guidance, the Church, recently restored by that gentleman, with admirable taste and at considerable cost. The building, evidently at one time cruciform, now consists of chancel continuous with nave, south aisle, north transept, and tower; the north wall, tower, and transept being portions of the ancient structure. The upper portion of tracery in the east window presents an exceptional feature in the repetition of a peculiar figure carved upon the font.

In the churchyard a lady drew attention to a memorial stone, of recent date, bearing the unusual Christian name "Ulata," which, it has been conjectured, may bear relation to some ancient name—possibly that of the saint, "Ulette," to whom the

chapel within the fortress at Tintagel is recorded to have been dedicated; just as the Cornish name Jennifer is believed to represent the "Guinevere" of Arthurian times.*

In the Rectory grounds adjacent were noticed two ancient crosses and a fine old Norman font, of somewhat goblet-like shape, and with cable and zig-zag ornament.

"Castle Goff"—an ancient entrenchment, near the Rectory, and the Inscribed Stone adjoining, were next visited and inspected. The Camp comprises a larger and a smaller ring; a plan and description of it by Mac Lauchlan, were published some years since by this Institution.† A sketch of the Stone, with part of its inscription, has been published by Blight, in his "Crosses, &c., of East Cornwall." The stone, of granite, is well formed, and tapers from a broad end (cut away, with shoulders, to form a tenon for a socket) to a squared top; it is tolerably well placed, both for preservation and for inspection, leaning, as it does, somewhat like a flying buttress, against the southernly wall of a farm building. The Inscription, forming three lines, occupies the upper face and one of the lateral edges of the stone. The words appear to be in mixed Roman and Saxon characters. A sketch and rubbing were taken by the Reverend W. Iago, and compared with those made by Mr. Blight and Mr. Maclean. The result will appear as a woodcut, with translation, in a forthcoming Number of Mr. Maclean's "Trigg Minor."

By the courteous and considerate hospitality of the Reverend J. J. Wilkinson and Mrs. Wilkinson, the excursionists, with visitors at the Rectory and friends from Camelford—altogether about 70 in number—partook of an elegant yet most substantial and invigorating luncheon, served on the lawn in the very picturesque grounds wherein the modern manse—a building possessing much architectural beauty—is situate; and, on a proposal from

* In the "History of Christian Names," by the author of "The Heir of Redclyffe," "Landmarks of History," &c., there occurs, in a chapter treating of "Names of Cymric Romance," the following concerning the name "Gwenever":—"Guenever was her full English name, contracted into Ganivre, or Ganore, a form that occurs in old Welsh registers. Jennifer, as they have it in Cornwall, is still frequent there; but nowhere else in our island has the name been followed."

In another chapter, which treats of "Modern Names from the Latin," occurs the following:—"That V is easily changed to Y, was plain in the treatment received by Violante, who was left to that dignified sound only in Spain; but in France was called Yolande, or for affection, Yolette; and in the confusion between *y* and *j*, figures in our old English histories in the queer looking form of Joletta."

† *Vide* Report of the Royal Institution of Cornwall, 1850.

the President, seconded by Dr. Barham, the heartiest of thanks were accorded to the generous host and hostess.

The house contains the library and portrait of Doctor Daniel Lombard, bequeathed by that learned but simple and eccentric gentleman (*ob.* 1746) to his successors in the Rectory. In the Probate Registry Office at Bodmin is a small book containing a list of the books in this library.

Delabole Quarries were next visited; Mr. Hockaday, the manager, conducting his numerous visitors over the extensive works, and exhibiting the modes of quarrying and raising these sedimentary rocks—among the earliest in geological age—and of adapting them to modern requirements. In raising the quarried slate, the use of guide chains, stretching from “poppet heads” to the bottom of the pit, has lately been abandoned, and the slate is now drawn in trucks by steam-engines, up inclined planes to the top of the rubbish heaps, where the process of manufacture is conducted.

From Delabole the party proceeded to what may be deemed the chief object of the excursion, Tintagel, where the vicar of the parish, the Reverend Prebendary Kinsman, Constable of the Castle, assumed the office of guide over the remains and site of the so-called Arthur’s Castle and its surroundings,—its courts, its ruined chambers and walls, its chapel (with remains of stone altar* and Norman ornamental moulding, and chancel-arch indications), its rock-cut graves outside the chapel, curious groups of rock, &c., &c.; while the extensive coast and inland scenery, in all the glory of magnificently fine weather, was in itself a perpetual yet unclaying feast.

The parish church was also visited. It was in course of restoration, and has since been re-opened. It contains several windows skilfully coloured by the vicar. Some of the windows are of only one very narrow light, deeply splayed. The plan of the building is cruciform, and formerly each transept was approached beneath a pointed arch, similar in height and character to the arches at chancel and nave; but in the restoration, these transept arches have not been restored, and the fine quadrangular group of arches no longer exists; the transepts are entered through square openings.

In the church are some ancient slabs without inscriptions, but

* Mr. Worth was of opinion that a large stone slab found near the chapel was incorrectly assumed to have been the altar slab; his reasons being that it was not found *in situ*, but outside the structure, and that it wanted the five crosses which were almost invariably found on præ-Reformation altar-slabs.

having each a cross wrought on them. One such is beneath a recess in south wall of chancel; and within the chancel, beneath the altar, there is in the floor a brass representing, in semi-effigy and habited in costume of her time, the mother of John Kelly, who, according to Oliver's Monasticon, was Dean of Crantock, 1430-37. The inscription, extended, is as follows:—

Hic jacet Johanna Bona Mater Johannis Kelly
Decani Collegatæ Sancti Carenteci
cujus animæ propicietur Deus. Amen.

The churchyard is of great extent; and outside, on the headland, is a low circular mound enclosing a small space, as if for wrestling or for a beacon.

Not until very "late in the gloaming" did the numerous excursionists congregate for evening refection—a very substantial "high tea," provided by the Institution, and laid out, by the Reverend Prebendary Kinsman's permission, in the School-house at Trevena—the town-place of Tintagel parish; and after tea, the party resolving itself into special general meeting, were thus addressed by the President, preliminary to other proceedings:—

"Ladies and Gentlemen: Notwithstanding this meeting consists wholly of members and friends of the *Royal Institution of Cornwall*, we may not all be aware that, for more than half a century it has devoted itself to illustrating the Natural History and to preserving and describing the Antiquities of the County. It possesses an extensive, carefully arranged, and well-kept Museum, rich in the rocks, minerals, shells, fishes, and birds of Cornwall, as well as in productions of various parts of the world. It has published—beside illustrations of the Fauna of Cornwall, by the Messrs. Couch—several volumes of Reports and Journals, which contain an enormous amount of valuable information regarding the Geology, Natural History, and Statistics of the County. Our extended series of Meteorological Observations—carried on under the superintendence of my able and excellent predecessor and kind friend, Dr. Barham—will, I believe, bear favourable comparison with any other in the West of England. Our Museum and Library are open at all reasonable hours; and it may save me further remark on the opinion generally entertained of them, to say that we have annually about 7000 visitors. We invite attention to our collections, and we believe that those who examine them will not be disappointed.—For some time past, objects of interest have been visited occasionally by the members and friends of the Institution; and of late—without, I believe, any formal resolution on the subject—an autumnal excursion seems to have

become a part of our routine. In 1868 we visited the ancient Cathedral of Cornwall, the Cheesewring, the Hurlers, the Caradon Mines, and other objects of interest in the neighbourhood of St. Germans and Liskeard. In 1869 our excursion was to Carn Brè, and to the ancient and still famous mine of Dolcoath, which is believed to have yielded ores of tin and copper to the value of $5\frac{1}{2}$ millions sterling,—at the rate of £10,000 per fathom, or £140 per inch in length.—Several of our best friends—who have zealously aided us, as well in our preliminary arrangements as in the labours of to-day—have repeatedly urged on us the propriety—perhaps I should have said the *necessity*—of a visit to Tintagel. The wisdom and the kindness of their propositions have from the first been thankfully acknowledged; the delay has been owing to no indifference—for we have all been anxious—but to the distance of Tintagel from a railway station. However, ladies and gentlemen, here we are; and if so feeble and inefficient a representative may venture to speak in your behalf, we are delighted with what we have seen, and grateful for the kindness and courtesy with which we have been received.”

The President then called on the Reverend J. J. Wilkinson, who read an elaborate and interesting Paper on “Tintagel Castle.” We shall avail ourselves of Mr. Wilkinson’s permission, given in compliance with a request from the President, to publish it in our *Journal*; and therefore, for our present purpose, we merely state that Mr. Wilkinson expressed his opinion that a British fortification had existed on the site, and that probably King Arthur used it for warlike purposes; but the building whose site and remains they had now inspected was more likely erected in Norman times, and perhaps by Richard (King of the Romans), Earl of Cornwall; * time and weather having used it more roughly than some other of the ancient castles in Cornwall, as, for instance, Restormel and Launceston.

Mr. Smirke thought that the castle, if Norman, must be of a very early class; and he referred to the connection of Tintagel Church with an Alien Priory, that of Fontevrault.

On a proposition from the President, thanks were cordially voted to the Reverend Prebendary Kinsman, the Reverend J. J. Wilkinson, and Mr. Smirke, for their interesting and instructive remarks; and soon afterwards the excursionists parted for the night,

* Godwin, F.S.A., states in his “Archæologist’s Handbook,” that Tintagel Castle was built by William the Conqueror, and that Richard, Earl of Cornwall, here entertained David, Prince of Wales, in his rebellion against Henry III, 1245.

and betook themselves to the various lodgings assigned them by the Committee *ad hoc*; some partaking the kind hospitality of the Reverend Mr. Kinsman, some that of the Directors of the Delabole Company, whilst others were lodged at Trevena, or posted at outlying stations, such as Trebarwith, Trenow, Bossiney, Boscastle, &c., all bearing with them their President's Envoy :

"To all, to each, a fair good-night,
And pleasing dreams, and slumbers light."

The following morning, the excursionists assembled at Trethevy, for the purpose of seeing St. Nighton's, or St. Nectan's, Kieve, which has been characterized as perhaps the most picturesque and secluded waterfall in England. Those of the party who proceeded thither from Trevena, had the opportunity as they passed through Bossiney, of noticing the barrow, marked by a flag-staff, whereon the writs for elections of members of parliament were wont to be proclaimed to the independent freemen; and we were informed that, in two farm-houses in the vicinity, are preserved the mace and seal of the ancient borough of Tintagel; these relics of departed dignity being retained by the *ex officio* holders of them at the time when the borough was disfranchised. Of less note, but presumably of greater antiquity, another object was pointed out by the Rev. W. Iago near the "Rocky Valley" through which the streamlet from the Kieve descends precipitously seaward: it was an old quern, placed on the garden hedge of a cottage near the road.

Arrived at Trethevy,* advantage was taken of the earliest meeting this day, of the excursionists *en masse*, to vote most hearty thanks to the Reverend Prebendary Kinsman, for his courteous and most assiduous attentions to the party on the previous day. They then placed themselves under the guidance of Mr. Goard, the intelligent warden of the waterfall and its precincts; and highly gratified were all by the singularly beau-

* Norden, *Topographical and Historical Description of Cornwall*, p. 88; Lysons, *Cornwall*, cexix; C. S. Gilbert, *Historical Survey of Cornwall*, i, p. 173; Bond, *Topographical Sketches of East and West Looe*, p. 216; Hitchins and Drew, *History of Cornwall*, i, p. 174; *Beauties of England and Wales*, ii, 389; Davies Gilbert, *Parochial History of Cornwall*, i, p. 193; Redding, *Illustrated Itinerary of Cornwall*, p. 61; Pattison, *Report of the Royal Institution of Cornwall*, xxxii, (1850), p. 31; Pedler, *Reports of the Penzance Natural History Society*, i, p. 435; Allen, *History of Liskeard*, p. 5, Pl. ii; Blight, *Ancient Crosses, &c., in the East of Cornwall*, p. 130; *Complete Parochial History of Cornwall*, i (1867), p. 205; Henwood, *Transactions of the Royal Geological Society of Cornwall*, 8, p. 661.

tiful and romantic scenery to which he conducted them. To some few it was an additional charm that they found the Maiden-hair Fern growing there, as in a native habitat. On returning to the Guide's Elizabethan dwelling, it was found that the thoughtful kindness of Mr. and Mrs. Wilkinson had provided good store of claret-cup and lemonade, seltzer water, and other refreshing beverages, which were soon dispensed to appreciative recipients by amateur almoners.

Among objects of antiquarian interest near Trethevy was observed an old well, with a pyramidal superstructure; and, (also forming part of the premises occupied by Mr. Goard) a building, now a farm-outhouse, which was formerly a Chapel; it has a single-lancet light, with cusped trefoil head in the east end; and in the south-east corner of the chancel the remains of, apparently, a piscina; and the chancel is raised, about one step, above the general floor level. The chapel has both a north and a south door; the latter being of wood, arched, like those at the Governor's House, St. Lawrence, near Bodmin. At the dwelling-house there is a recently constructed court-yard with embattled walls, in various parts of which Mr. Goard has inserted such stones of architectural character and ancient date as he has found in the vicinity of his dwelling. Thus, there are seen here, a chamfered cross, of four equal limbs, and also a trefoil-headed recess, which may have been either a piscina or a window-head. Around the doorways and other parts of the recent erections are pieces of carved oak with running pattern of stems and foliage—portions of wall-plates from the roof of Minster Church, during its renovation; and, also from this church, are some carved ribs, a boss, and other portions of its roof, now piled in a shed.

Dr. Oliver, in his "Monasticon," states that in Tintagel parish the church is dedicated to St. Marcelliana or Materiana, and that there were in the parish, chapels of St. Pieran and St. Denis, which were licensed May 8, 1457. It has been suggested for inquiry, whether the ruined and desecrated chapel at Trethevy, was St. Nighton's, or St. Piran's, or St. Denis's; and also, whether some ruins near the cascade formed part of St. Nighton's Oratory. These ruins are now spoken of traditionally as remains of a cottage in which two ladies once lived in mysterious seclusion; and Mr. T. Q. Couch draws attention to the fact that a similar legend exists in other parts of Cornwall, and, especially, that it is told, with little variation, in connection with ruins at Polperro and near Padstow. A chapel in the parish of St. Winnow, Cornwall, was dedicated to St. Nighton, as were also churches in Devon, at Ashton and Wellcombe. At Hartland also, Githa, wife of Earl Godwin, believing that through the holy man's intercession her

husband escaped shipwreck, founded a monastery in his honour, and for a long time it was alleged to possess his relics.

The etymology of the word "Trethevy," and the fact that the well-known cromlech in the eastern part of the county is similarly named, induced Mr. Couch to make inquiry for like remains in the vicinity of the northern Trethevy. He was hereupon conducted to "King Arthur's Quoit," but found it simply a broad flat stone by the side of the road. The name "quoit," however, Mr. Couch suggests, would render it probable that the stone formed part of a place of sepulture; and he adds that Mr. Goard informed him that in deeds of his estate mention is made of a grave-yard.

From Trethevy the next stage was to Boscastle, and on the way thither fine views were obtained of the churches of Trevalga and Forrabury,—the latter, "the silent tower of Bottreaux," recalling to memory the superstitious yet pious legend which has been poetically recorded by the Reverend J. S. Hawker, of Morwenstow. Time failed for the purposed visit to Forrabury Cliffs; but long did the excursionists remain in enjoyment of the extensive views from Bottreaux' bold headlands; while some few among them were interested in noticing the singularly bold and beautiful contortions of the exposed rock-sections. The old scarped and partly terraced mound on which once stood the Castle of the Bottreaux was seen from the road, but was not visited.

Luncheon was excellently and comfortably served, at the "Wellington Hotel," in Boscastle town. Here too the healths were drunk, of the President; of Mr. (now Sir Edward) Smirke; and of Mr. Michell Whitley, secretary of the Excursion, who had taken so lively an interest in its success, but was unfortunately absent, in consequence of domestic affliction; and much interest was taken in the following articles which Mr. T. Q. Couch exhibited from his Collection:

1. A Glain Neider (serpent of glass), snake ring, anguinum, or Druid's bead, found near Fowey. An excellent specimen of white glass, with a band of yellow, snake-like, convolutions around it.
2. A copper ornament containing, within an arched enclosure, a crucifix with a kneeling figure on either side: Saint Mary the Virgin and Saint John. It is of excellent workmanship, and was turned up by the plough at Lampen, near the church of St. Neot, Cornwall.
3. Celts found in East Cornwall.
4. An old carving in ivory, rich and interesting. (*Vide Journal of the Royal Institution of Cornwall*, No. VI., October, 1866).

5. Horn Book, as used in Cornwall, c. 1760.
6. A deeply gilt figure from a crucifix, of excellent workmanship, found at St. Cadix, on a creek of the Fowey River, when building the present house from ruins of the little religious cell of St. Cyric and St. Juliett (Vide "Lysons," p. 317).
7. A countryman's Pocket Dial (age unknown), described in the "Reliquary."
8. Several rings of stone or clay, named by antiquaries "ancient spindle-whorls," and by the country-folk, "pisky grinding-stones."

From Boscastle the party journeyed to Slaughter Bridge, near Camelford, the traditional locality of Arthur's last battle against the traitor Mordred, where he received his mortal wound, and whence his remains were removed to the mystic Avallon. At Worthyvale, near at hand, but in a recess difficult of approach, the very interesting Romano-British monumental stone, described by Borlase, was examined; and, it was believed by one of the party, that an important correction was made in its ordinary reading: "Catin hic jacet—filius Magari."* The restoration of the monolith to an erect position was promised, as a reward and record of this visit.

* Mac Lauchlan, *Report of the Royal Institution of Cornwall*, 1850; *Parochial History of Cornwall*, iii, p. 365; Borlase, *Antiquities of Cornwall*, pp. 395—6.

The Reverend W. Iago, who subsequently took a rubbing of the stone, has favoured us with a drawing of it on wood, from which we are enabled to present the following impression; and we avail ourselves of the opportunity of stating that, we are informed, the Rev. J. J. Wilkinson, in a copy of the inscription which he supplied to some of the excursionists previous to their visit, gave the first letter as L.



At Camelford, the party enjoyed the hospitality of the Mayor—Mr. Male—at the Guildhall; but, unhappily, in consequence of indisposition, His Worship, who had accompanied the party from Lanteglos, was unable to partake the refecton he had generously provided. He was represented by the Reverend J. J. Wilkinson, who is an alderman of the borough; and Mrs. Wilkinson prepared a plentiful “brew” of claret-cup, in a huge font-shaped bowl of Kilkenny marble, presented to the Corporation, in the last century, by a parliamentary representative of the borough. On its front is engraved a camel, with a label proceeding from its mouth, inscribed: “stoop low, drink deep.” There were also exhibited, the last charter of the borough, *temp.* Charles II.; its ancient seal, and its 17th century silver mace, its upper part adorned with a crown rim above the rose, thistle, fleur-de-lis, and harp, all crowned. The mace is thus inscribed: Ex dono Ambrosij Manaton Armig. Anno Dom. 1669. The Mayor’s health was heartily drunk, as was also that of “Mrs. Wilkinson and the Ladies”—a toast which was happily acknowledged by Mr. W. C. Borlase. Shortly afterwards, reluctantly compelled, for want of time, to forego intended visits to the important camps at Michaelstow Beacon and Pencarrow, the majority of the party returned to Bodmin, where they found awaiting them, in the Guildhall, a refreshing tea, provided, as the breakfast of the previous day had been, by their hospitable lady friends in the old County Town.

Thus happily terminated a most pleasant and instructive two days’ excursion, through a well chosen district, and under circumstances which must awaken pleasurable reminiscences in all who partook its enjoyments.

A few days after the Excursion, at a meeting of the Council of the Institution, under the presidency of Mr. Henwood, it was resolved:

That the thanks of the Institution be communicated to the principal parties who promoted the success of the late Excursion; especially to the Ladies of Bodmin (through Mrs. Stokes); T. Q. Couch, Esq.; Rev. J. J. and Mrs. Wilkinson, Lanteglos; J. Hockaday, Esq., Delabole; the Directors of the Delabole Company (enclosed to Mr. Hockaday); Rev. Prebendary Kinsman; the Worshipful the Mayor of Camelford; Rev. W. J. Kirkness; Rev. William Iago, Westheath; and Captain Liddell, R.N.

FIFTY-SECOND ANNUAL GENERAL MEETING

OF THE

ROYAL INSTITUTION OF CORNWALL,

Held on Tuesday, November 15th, 1870.

This Meeting was held in the new Lecture Room of the Institution, and there were present: Mr. W. J. Henwood, F.R.S., President; Mr. J. St. Aubyn, M.P., Dr. Barham, Mr. W. Copeland Borlase, Rev. J. R. Cornish, Dr. Jago, F.R.S., Rev. W. Iago, Mr. W. H. Jenkins, Mr. Alexander Paull, Mr. H. O. Remfry, Mr. Reginald Rogers, Rev. H. S. Slight, Mr. E. G. Spry, Mr. Tweedy, Mr. Whitley, Mr. H. M. Whitley, Rev. J. J. Wilkinson.

The PRESIDENT, on taking the chair, said: Ever since the establishment of our meetings in the spring, we, for want of sufficient accommodation of our own, have been indebted to the courtesy of successive mayors of Truro for the use of their commodious and beautiful council chamber on such occasions. When the members of the Cornwall County Library withdrew from us, however, it became matter for consideration how the rooms thus vacated might be most advantageously appropriated. After careful review, therefore, your Officers and Council concluded that the requisite measures would best be carried out under the superintendence of your resident officers and some of the most experienced members of the Council. The alterations and arrangements now complete seem to accomplish all we can at present desire. I believe, therefore, in occupying this room for the first time, we shall all concur in expressing our warmest approval of all that our sub-committee have accomplished, and in offering them our best thanks for the zealous and efficient manner in which they have executed their trust.

The Council's Report was read; and it was resolved unanimously, that it be received, adopted, and printed.

The following Resolutions were passed unanimously:—

That the thanks of the Society be given to the Officers and

Council for their services during the past year; and that the following gentlemen form the Council for the ensuing year :—

President, MR. HENWOOD, F.R.S.

Vice-Presidents.

SIR EDWARD SMIRKE,	|	MR. H. S. TREMENHEERE, F.G.S.,
MR. ROBERTS,		LIEUT.-COL. TREMAYNE.
JAMES JAGO, M.D., OXON, F.R.S.,		

MR. TWEEDY, *Treasurer*.

MR. WHITLEY and REV. J. R. CORNISH, M.A., *Secretaries*.

Assistant Secretary, MR. H. M. WHITLEY.

Other Members.

MR. H. ANDREW,	|	MR. ALEXANDER PAULL,
C. BARHAM, M.D., CANTAB,		MR. G. F. REMFRY,
REV. DR. BANNISTER,		MR. E. SHARP, JUN.,
MR. W. COPELAND BORLASE, F.S.A.,		REV. H. S. SLIGHT, M.A.,
MR. JOHN JAMES,		MR. W. TWEEDY,

and THE MAYOR OF TRURO.

That the cordial thanks of this Meeting be given to those gentlemen who have favoured the Society with Papers or other Communications in the course of the year, and also to the Donors to the Library and Museum.

That the thanks of this Meeting be given to Mr. Henwood for the ability with which he has presided over the proceedings of this day.

THE COUNCIL'S REPORT.

In presenting the Fifty-Third Report of the Royal Institution of Cornwall to the Annual Meeting, your Council feel assured that you will be gratified to hear that they meet you to-day with the conviction that at no previous date has the Institution shown clearer signs of healthy progress than during the past year.

The Specimens in your Museum are increasing beyond the means of displaying them adequately, though there have been particular years in which more valuable additions have been made.

The Spring Meeting was of a genial and animated character, and many valuable papers were contributed.

The two days' Excursion to Tintagel was joined in by about 70 ladies and gentlemen, being as many as accommodation could have been provided for in the district, and was both enjoyable and instructive.

The Meteorological Observations, extending over a long period, have been daily continued by your Curator, and now form an unbroken series of recorded facts, from which all the main elements of the climate may be deduced.

For some time past it has been found necessary to issue only one number of our Journal a year; we are thus prevented from publishing at length many valuable communications with which we are favoured. We trust, however, that this restriction is but a temporary one, and that the increase in our members will shortly enable us to resume the issue of two numbers yearly.

At our last Annual Meeting the Council were instructed to take such steps as they might deem desirable for rendering available to the general purposes of the Institution the rooms about to be vacated by the Cornwall County Library. This duty was undertaken by a sub-committee, under whose superintendence folding doors have been substituted for the partition wall, a second stove has been procured, gas pendants have been introduced, and shelves have been prepared for receiving many of the books which have been hitherto inconveniently lodged in the Lecture Room. These alterations, which will supply every accommodation necessary, as well for ordinary requirements as for general meetings, have been effected without drawing deeply on the funds of the Institution.

The removal of the Library has diminished our income by twenty pounds a year, and has deprived our Curator of his salary as Librarian; it has therefore become necessary to increase his income from the funds of the Institution.

With this increased expenditure to meet, it will be satisfactory for you to know that the balance in the hands of the Treasurer has increased from £76. 12s. 2d., at the commencement of the financial year, to £107. 15s. 8d., at its close; and that six new subscribers have been elected during that time. On the other hand, a considerable sum will be required to meet the alterations of the room, and there still remains a mortgage debt of about £150.

Since our last Annual Meeting, the Council of His Royal Highness the Prince of Wales have courteously invited your officers to meet an eminent engineer at the Cheesewring, and to suggest means for its preservation. To these communications they have replied, that when they had brought the perilous condition of that remarkable natural curiosity under consideration of the proper authorities of the Duchy and of their competent surveyors, they believed they had fulfilled their duty to the County.

One of the objects brought under notice during our late excursion, was the inscribed stone mentioned by Carew, Borlase,

and Mac Lauchlan. Since Borlase's time it has been torn from the protecting masonry which supported it, near Slaughter Bridge, and now, lying prostrate in the neighbouring marsh, it seems almost to invite the destroyer. A representation of its condition has been made to the proprietor of Worthyvale, in which it lies, and we trust another year will not pass without steps being taken to ensure its safety.

During the winter months your Council propose to hold evening meetings at the Society's Rooms. These meetings will, amongst other advantages, afford opportunity for the consideration and discussion of topics which for want of time can be but imperfectly treated at our Annual Meetings.

The Institution during one fourth of its existence has had the benefit of Dr. Jago's services as one of your Secretaries, but he now desires to withdraw. He will still favour us by undertaking other duties, and we have nominated him one of your Vice-Presidents. But we cannot permit his retirement from the office he has hitherto held to pass, without an expression of the high sense we entertain of the zeal and ability he has so long devoted to us.

The Council recommend the election of Colonel Tremayne as a Trustee in the room of the late Sir C. Lemon, Bart.

The Council recommend that Mr. Wm. Pengelly, F.R.S., whose knowledge of the Antiquities and Geology of the West of England will render him a valuable addition to your Society, and Mr. John Maclean, F.S.A., the Author of "A History of Trigg Minor," of much antiquarian research, and an able contributor to our Journal, be elected as Honorary Members; that Mr. Walter H. Tregellas, who has already furnished us with valuable information, be elected a Corresponding Member; and that Mr. J. H. Collins, F.G.S., and Mr. Nicholas Hare, Junr., be elected Associates.

During the last year we have had to regret the loss of Sir William Williams, Bart., of Tregulow, one of our oldest members, who for a period of more than 40 years was a steady supporter of this Society.

The total number of visitors to the Museum during the year ending July, 1870, is as follows—free admissions, 5,881; by tickets, 150; at sixpence each, 224. Total, 6,255.

Dr. JAGO read the Lists of Presents:—

DONATIONS TO THE MUSEUM.

A Sword with Sheath, and a Quiver of Arrows, From Capt. George D. Broad,
used by Savages of the Island of Formosa R.N., Falmouth.

A Spur, from Chili	Capt. Caddy, Wendron.
Flint Axe, from Denmark	Mr. B. M. Wright, jun.
Fragments of a Sword-Fish, and of wood in which its beak was broken off after piercing 2½ inches of sound English oak—a plank of the <i>John and Mary</i> of Truro, then sailing in the Bristol Channel	Capt. J. Dunstone, Port Loe.
Silver Medal commemorative of the Peace of Utrecht, in 1713 *	Rev. J. J. Wilkinson.
Two Silver Coins of Parthia	Ditto.
Jamestown Weed, grown in Cornwall in 1870, from seed gathered in 1867, on the banks of James River, near Jamestown, Virginia, U.S.	Mr. T. Cragoe, Penhillick.

ADDITIONS TO THE LIBRARY.

The London, Edinburgh, and Dublin Philosophical Magazine, and Journal of Science. Fourth Series. From No. 234, January, 1868, to No. 268, November, 1870	From Mr. Henwood, President, 1870.
Mineral Statistics of Victoria, for the year 1869	Ditto.
Reports of the Mining Surveyors and Registrars (Victoria). For Quarter ending 31st December, 1869. ditto, 31st March, 1870. ditto, 30th June, 1870.	Ditto.
Address delivered at the Spring Meeting of the Royal Institution of Cornwall, on the 17th of May, 1870. By William Jory Henwood, F.R.S., Member of the Geological Society of France; sometime Her Majesty's Assay-Master of Tin in the Duchy of Cornwall; President of the Institution	Ditto.
Parochial and Family History of the Deanery of Trigg Minor. By John Maclean, Esq., F.S.A., Member of the Royal Archæological Institute of Great Britain and Ireland, etc. Parts I and II.	Ditto.
The Life of Sir Thomas Seymour, Knight, Baron Seymour of Sudeley, Lord High Admiral of England and Master of the Ordnance. By John Maclean, F.S.A., Member of the Royal Archæological Institute of Great Britain and Ireland	From the Author.

* On the obverse is a bust of the Queen, with laureated head, and the ordinary regal legend. On the reverse, Britannia, with an olive branch in her right hand, stands on a low sea-shore between figures emblematical of agriculture and commerce; the legend, "*Compositis venerantur armis.*"

- Letters from Sir Robert Cecil to Sir George Carew. Edited by John Maclean, Fellow of the Society of Antiquaries, &c. From the Editor.
- Letters from George Lord Carew to Sir Thomas Roe, Ambassador to the Court of the Great Mogul, 1615—1617. Edited by John Maclean, F.S.A., Keeper of the Records of H.M. Ordnance in the Tower of London, Editor of the Life of Sir Peter Carew, Knt..... From the Editor.
- History of the Town and Borough of Devonport, sometime Plymouth Dock. By R. N. Worth From the Author.
- A Familiar Description of the Old Delabole Slate Quarries. By John J. F. Turner.... From Mr. Whitley.
- On Gold-Mining and its prospects in Nova Scotia. By Henry Youle Hind, M.A. From Mr. James Tennant, F.R.G.S., &c.
- Four Years of a Country Friendly Society. By the Rev. F. C. Hingeston-Randolph, M.A., Rector of Ringmore, Devon From the Author.
- A MS. List of 247 Species of Plants indigenous to the county, exhibited at Truro in 1869..... From the Misses M. L. and F. Jenkins.
- Illustrations and Reproductions (MS.) Mr. Fuller, Camelford.
- Journal of Anthropology, No. I, July 1870
Ditto, No. II, October, 1870 From the Anthropological Society of London.
- Proceedings of the Scientific Meetings of the Zoological Society of London for the year 1869. Part II, March—June
Part III, November and December. From the Society.
- Collections of the Surrey Archæological Society. 1870, Vol. V.—Part I. Ditto.
- Proceedings of the Society of Antiquaries of London.—June 17 to December 9, 1869.
Ditto, December 9, 1869, to April 26, 1870. Ditto.
- Proceedings of the Bristol Naturalists' Society. Vol. 4, 1869..... Ditto.
- The Journal of the Liverpool Polytechnic Society.—May, 1870 Ditto.
- Proceedings of the Liverpool Naturalists' Field Club, for the year 1869—70..... From the Club.
- The Journal of the Royal Historical and Archæological Association of Ireland.—Vol. I.—Fourth Series. April, 1870. No. 2 .. From the Association.
- Report and Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art. (Devonport, July 1870.) Vol. IV, Part I Ditto.

Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society. Vol. IV, Part I. 1869—70	From the Institution.
Monthly Report of the Deputy Special Commissioner of the Revenue, in charge of the Bureau of Statistics, Treasury Department. Numbers 1, 2, 3.—Series 1869—70.....	From the Smithsonian Institution.
Annual Report of the Board of Regents of the Smithsonian Institution, for the year 1868.	Ditto.

The Rev. H. S. SLIGHT called attention to a remark in Mr. Hawker's "History of Morwenstow," that it was a custom to bury the clergy with their feet towards the west and the laity with their feet to the east; and asked if any one present could give instances of such a custom having been observed.—The Rev. W. IAGO said the custom had been observed at Tintagel and Bodmin, as shown by figures on the tomb-stones. The idea was, that when Christ appeared in the East, all those who laboured with Him in the holy offices of the Ministry would approach with Him, and thus rise with their faces to the west, whilst the laity would rise with their faces to the east.—Mr. H. M. WHITLEY stated that Boutell's "History of Slabs" also mentioned the custom, but he added that the custom was not invariable.—The PRESIDENT said it used to be followed in Ireland, so that, it was said, the priest should rise with his face to the congregation.—Mr. ST. AUBYN mentioned that on St. Michael's Mount one of the priors was buried with his feet to the east.

In the evening, after tea and coffee in the Truro Concert Hall, and the enjoyment of performances by Mr. H. G. Trembath on its fine organ, there was a numerously attended *Conversazione* in the Institution Lecture-Room, under Mr. Henwood's presidency; and various interesting subjects, for the most part having relation to the Excursion in August, were made the themes of conversation and discussion.

Rev. W. IAGO, of Bodmin, spoke of the Inscribed Stones at Castle Goff and Slaughter Bridge, and of the Brass Tablet in Tintagel Church, commemorative of the mother of John Kelly; of all which he exhibited rubbings and drawings. Concerning the Castle Goff stone, Mr. Iago said there could be no doubt it was in memory of a Saxon Christian—the inscription recording

that it was erected by two men, Ælself and Genered, for the good of Elwyn's soul; and he added that he had discovered that Elwyn was a Saxon landowner in the district at the time of the Conquest; and that men named Ælsig and Guenneret were mentioned in the Bodmin Manumissions. Concerning the stone at Slaughter Bridge, Mr. Iago spoke of the emendation which he had been enabled to confirm in the ordinary reading of the inscription, and which we have already recorded.*—Dr. BARHAM considered that the deciphering the first letter as L, instead of C, as in Borlase and other authorities, was highly important, as indicating that the person whom the inscription recorded was a Romanized Briton; whereas Carew read it as referring to "Arthur." It was satisfactory, Dr. Barham added, that the proprietors of the estate where the stone was now lying, were willing to assist in its erection on a suitable site in the vicinity.—Rev. J. J. WILKINSON, in reference to a recent tradition mentioned by Mr. Iago, that there was formerly at the head of the Castle Goff stone a Cross, which had been removed by a former Vicar of Lanteglos, stated that there was now in the Vicarage Grounds a Cross, of apparently suitable size for its alleged former position. He would make inquiries on the subject, with the view of aiding the preservation of both shaft and cross.

Mr. T. Q. COUCH exhibited, from his private cabinet, various objects illustrative of social history in by-gone days, and he offered observations upon them severally. They included beside those we have already recorded (*see* pp. xxxviii, xxxix), an ancient Knife, and an Apostle Spoon, found at Trelawne, in 1860.

Mr. WHITLEY described, with illustrations by means of drawings and plans, the remains of an ancient encampment and other antiquities on Michaelstow Beacon, and the hut circles on Roughtor; mentioning also a stone circle, 140 feet in diameter, which he had no doubt was anciently a temple in connection with the British village in its vicinity; and he added that there was a logan-stone near it.

In the course of some ensuing discussion, Dr. BARHAM spoke of the beehive form of construction of the huts near Michaelstow; and he commended to the patronage of his audience, various drawings of these and similar antiquities in that district, which had been made by Mr. Fuller, of Camelford, an artist who had unhappily lost his sight by cataract.—Mr. COUCH said he could point out, in the neighbourhood of Roughtor, a tolerably perfect

* See *ante*, p. xxxix.

hut, now existing, of the beehive form, and built with stones overlapping from circumference to centre.—Mr. HENWOOD mentioned that Mr. Blight and Mr. Edmonds had described antiquities of this kind near Penzance, and that some had been discovered more recently by Mr. Cornish of that town.

Ecclesiological descriptions of the churches at Lanteglos and Tintagel were given, respectively, by Rev. J. J. WILKINSON and Mr. MICHELL WHITLEY; and Captain WILLIAMS, of St. Austell, described the workings of the Delabole Quarries, in relation to their geological strata and the catastrophe of last year; after which discussion took place—mainly between Rev. J. J. WILKINSON and Mr. WHITLEY—concerning the origin and antiquity of Tintagel Castle; the contest being chiefly on Mr. Wilkinson's theory that what is called "The Island" was always really an island, and that the present isthmus between it and the mainland is not the last vestige of a more substantial communication formerly existent, but the result of falling *débris* from each side.

Dr.

Robert Tweedy in account with the Royal Institution of Cornwall.

Cr.

1870.

	£	s.	d.
July 31. To Balance from last Account.....	76	12	2
Annual Subscriptions	89	14	6
Ditto H.R.H. the Prince of Wales	20	0	0
Ditto Truro Town Council	20	0	0
Rent from Library	10	0	0
Visitors' Fees	5	12	0
Sale of Journal and Reports	18	15	4
Illustration Fund.....	7	13	0
Excursion, 1869	14	16	0

 £263 3 0

1870. Balance

 £107 15 8

ROBERT TWEEDY, TREASURER.

1870.

	£	s.	d.
July 31. By Taxes and Fire Insurance	6	13	4
Repairs	19	6	7
Curator's Salary	38	0	0
Museum Expenses	7	12	11
Printing and Stationery	4	15	10
Postages and Carriage of Parcels ..	5	15	1
Printing and Editing Journal and Report.....	47	5	0
Illustrations for ditto	5	4	9
Sundries	1	16	8
Ray Society	1	1	0
Palæontographical Society	1	1	0
British Meteorological Society	1	5	0
Royal Horticultural Society	2	2	0
Quarterly Journal of Science.....	1	0	0
Rain Gauge	1	4	0
Interest on Mortgage Debt.....	6	4	2
Polytechnic Society, on account of Excursion, 1869.....	5	0	0
Balance	107	15	8

 £263 3 0

JOURNAL

OF THE

ROYAL INSTITUTION OF CORNWALL.

No. XII.

APRIL.

1871.

I.—*Tintagel Castle.*—By REV. JOHN JAMES WILKINSON, *Rector of Lanteglos juxta Camelford.*

Read at Trevena, Tintagel, August 8, 1870.

THIS decayed fortress, says Carew, “more famous for his antiquitie than regardable for his present estate, abutteth on the sea; yet the ruines argue it to haue been once no vnworthie dwelling for the Cornish Princes.” Its origin is buried in obscurity. Borlase was of opinion that thē ancient Britons had here a place of defence before the invasion by the Romans, and that the present buildings are of too mean a construction to have been the work of the latter people. Norden, who surveyed these buildings and left us a drawing of the place as it was in 1585, states that “it was sometime a statelye impregnable seate, now rent and ragged by force of time and tempestes; her ruyns testefie her pristine worth; the view wherof and due obseruation of her situation, shape, and condition, in all partes, may moue commisseration that suche a stately pile shoulde perishe for wante of honorable presence. Nature hath fortified and arte dyd once beautefie it in such sorte, as it leaueth vnto this age wounder and imitation; for the mortar and ciment wherwith the stones of this Castle were layde, excelleth in fastnes and obduritey the stones themselues; and nether time

nor force of handes can easelye seuer the one from the other." Leland, in 1538, speaking of Tintagel, says: "This Castelle hath bene a marvelous strong and notable forteres, and almost situ loci inexpugnabile, especially for the dungeon that is on a great high terrible cragge, environed with the se, but having a drawbridge from the residew of the Castelle unto it. There is yet a chapel standing withyn this dungeon, of S. Ulette *alias* Ulianne. Shepe now fede within the dungeon. The residew of the buildinges of the Castel be sore wether-beten and yn ruine, but it hath beene a large thinge." In another place he says—"The Castel had be lykhod iij wardes, whereof ij be worn away with gulfying yn of the se: withowte the isle renneth alonly a gate house, a walle, and a fals braye dyged and walled. On the isle remayne old walles, and yn the est parte of the same, the grownd beyng lower, remayneth a walle embateled, and men alyve saw ther, yn a postern, a dore of yren. There is in the isle a prety chapel, with a tumbre on the left syde." "Halfe the buildings," says Carew (1602), "were raised on the continent and the other halfe on an iland, continued together (within mens remembrance) by a drawebridge, but now diuorced by the downefaln steepe cliffes on the farther side; which, though it shut out the sea from his wonted recourse, hath yet more strengthened the late iland; for in passing thither you must first descend with a dangerous declyning, and then make a worse ascent, by a path, as euerie where narrow, so in many places, through his sticklenesse occasioning, and through his steepnesse threatning, the ruine of your life with the failing of your foote. At the top two or three terrifying steps giue you entrance to the hill, which supplieth pasture for sheepe and conyes: upon the same I saw a decayed chappell." "Under the iland runs a caue, thorow which you may rowe at ful sea, but not without a kinde of horroure at the uncouthnesse of the place." Norden, (1584 or 5) describing the ascent to the island, says, "by a verie narrow rockye and wyndinge waye vp the steepe sea clyffe, vnder which the sea waues wallow, and so assaile the foundation of the ile, as may astonish an unstable brayne to consider the perill, for the leaste slipp of the foote sendes the whole bodye into the deuouringe sea; and the worste of all is higheste of all, nere the gate of entraunce into the hill, where the offensiue stones so exposed hange ouer the head, as while a man respecteth his footinge

he indaungers the head ; and lookinge to saue the head indaungers the footing, accordinge to the olde prouerbe, ‘ Incidit in Scyllam qui uult vitare Charybdin.’ He muste haue eyes that will scale Tyntagell.” “Moste parte of the iland buyldings are ruyned.”

The first mention of Tintagel is about 1150, by Geoffrey of Monmouth, to whom we are indebted for the marvellous exploits of King Arthur. He makes some one describe Tintagel thus: “It is situated upon the sea, and on every side surrounded by it, and there is but one entrance into it, and that through a straight rock, which three men shall be able to defend against the whole power of the Kingdom.”

Whether the account of King Arthur be true or false, this description of Tintagel is sufficiently accurate to prove that there was a tradition of a fortress here belonging to the British Earls of Cornwall. This I conceive to have been little more than a rude fortification of earth, strengthened by the stone on the spot, after the manner of Treryn and other Cornish Cliff Castles, and relying for protection principally on its insular position.

Probably the Cornish Princes had here all along a place of defence, which, when the great Castle-building age came, was chosen as the site of the building whose ruins now remain. Had a Castle existed here during the Conqueror’s reign, it would have been mentioned in Domesday, like Launceston and Trematon. From the omission, we must conclude that it was either a rude Cliff Castle, and as such not entitled to be named among Norman Castles, or that if it had ever been more, it had then become entirely dilapidated.

Both the ruins and the description of them given by Leland, Carew, and Norden, are to my mind convincing proofs of their Plantagenet origin.

The Castle, like others of that period, consisted of two baileys or courts. The outer bailey or base court was on the mainland, surrounded on the right (E and N) by a wall, outside of which was a moat, “a fals braye dyged and walled.” On the left, a line of rocks, strengthened with masonry, where requisite, separated the court from a strip of high ground running along the cliff, north and south. The gate-way was surmounted by a tower. Adjoining the east wall were stables for eight horses. On the high ground was a very strong semicircular wall, at least seven feet thick,

reaching from the gate tower in a southerly direction, along a steep crag, to the cliff. In the south corner stood a small watch tower, probably the height of the great wall. Part of a room, with a chimney in the wall, still remains; steps are traceable which led to the top of the tower, whence the view must have been very extensive both by land and by sea. From this point a wall extended to the chasm between the main and the island. Between this wall and the cliff was a terrace. It has nearly disappeared by land slips, which have carried with them great part of the wall.

Leaving the outer court, we come to a chasm, of at least 200 feet wide, which was formerly so narrow as to be spanned by a drawbridge. All who described the Castle in by-gone days speak of it as built partly on an island. The island is now become a peninsula, by the gradual falling in of the sides, especially on the land side, which is more exposed. This has formed an isthmus 70 or 80 feet in height. "A considerable quantity fell in March, 1846, carrying with it a large piece of the north wall, which still overhangs the path to the peninsula."* I have had no difficulty in tracing, through the *débris*, the island edge of the chasm down to the beach where the tide once flowed, thus confirming the statements of former writers.

The drawbridge appears to have fallen early in the 16th Century; as Leland, in 1538, speaks of it as existing, and Carew and Sir Richard Grenville say it was then in men's memories. For some years after its fall, the chasm was narrow enough for elm trees laid across to form a bridge.

Within the inner bailey stood the keep or principal part of the Castle, in which was the "*Great Hall*"; the timber of which was taken down between 1330-1337, by order of John of Eltham, the then Earl of Cornwall, because the hall was ruinous and the walls thereof of no value.

Adjoining the north wall (the ruins still remain) were "six ruinat rooms, which were lodgings." They could have been repaired in 1583 at a small cost. Here was the residence of the Constable and Chaplain; and here too, after the Castle became a prison, were kept John of Northampton and the Earl of Warwick.

* 32nd Report, p. 41.

The Chapel (54 feet by 12) Leland says was dedicated to S. Ulette or Ulianne. It has been unroofed and in ruins for several centuries. In 1855 I explored the interior and removed the rubbish from the altar, which is built of slate and mortar, with a granite slab. In the chancel were graves lined with slate, of no great depth. One of them contained some dark mould, but no bones. The position of the screen is marked by hollows in the walls. Several pieces of freestone, of billet moulding, and one similar to the impost of the Transition Norman Chancel Arch in the Parish Church, with a carved triangular stone, with mouldings of the same period, were likewise observed. The Chapel, beyond a doubt, was built about the middle of the 13th century; and there is nothing to shew that it is of later date than the rest of the Castle.*

Norden says (as already mentioned) that the "morter and ciment wherwith the stones of this Castle were layde excelleth in fastnes and obduritey the stones themselues, and nether time nor force of handes can easelye seuer the one from the other." This is a perfect description of Norman mortar. I need not remind you that mortar now-a-days is made by slaking lime with water, then mixing it with earth or fine sand, and making it into a thick paste with more water. It is then left for days or weeks till wanted; and when dry it is little harder than a mass of clay. The Norman plan was to grind the lime as it came from the kiln, and after mixing it with coarse sand or gravel, to exclude it from the action of water until it was used. When wanted, it was mixed very freely with water, and poured, in a sort of semi-fluid state, into its bed, loose rubble being thrust in amongst it. In the course of a few days the mortar would be hard enough to resist a battering ram. Nothing can exceed the firmness of Norman masonry. It is, if possible, harder than the unhewn rock. About twenty years ago it was necessary to breach the walls of the White Tower in London, in order to introduce a tram-way into it, for the conveyance of ordnance stores. It took a party of sappers and miners six weeks to effect their purpose.

I do not imagine that the Castle ever had a large garrison, as

* 1 Ric. III (1483) John Leicrofte was presented by the King to the free Chapel of Dyndagell *alias* Tyntagell.

it was, from position, quite safe against any number of invaders. When Earls resided here, they would bring their own retainers with them; but as they possessed several large and more important Castles in the County, Tintagel was, I imagine, kept more as an impregnable fortress in time of danger than as a residence.

By whom then was it built?

In the year 1225, Richard, brother of King Henry III, was created Earl of Cornwall. He was a great benefactor to this County, from which he derived much of his wealth. He enlarged or rebuilt Restormel Castle, built Liskeard Castle, and everywhere left traces in Castles, free boroughs, and markets, of his energetic rule and of his desire to improve the County. From the mouldings in the Chapel, from the architecture generally, and from never having been able to find the Castle historically mentioned before, I have every reason to believe that soon after his creation he erected the Castle whose ruins we are considering.

In the year 1245 Earl Richard is said to have entertained here his nephew David,* Prince of Wales, then in rebellion against Hen. III.

Edmund, son and successor to Earl Richard (1272 to 1300), was the last of the Earls who occasionally resided in Cornwall, chiefly at Launceston, Restormel, and Liskeard. He did not keep a large staff of dependants at Tintagel. In 1291 he appointed by deed, dated at Liskerret, his "dearly beloved familiar servant, John, called le Barber, for life Constable, with a salary of sixty shillings and eight pence per ann., and one mark (13/4) yearly for his robe." The Chaplain's fee for celebrating divine service was 50 shillings per annum, and the wages of a door-keeper and a watchman, six marks and eleven shillings (*i.e.*, 90 shillings), and for their robes yearly one mark.

The same staff kept the Castle for many years; but in 1337 there was no Constable, the priest who officiated at the Chapel having custody of the Castle, for which he received no fee.

The Castle, then in a very dilapidated state, is described as "a certain Castle, sufficiently walled, in which were two chambers beyond the two gates, in a decayed state; one chamber with a small kitchen for the Constable in good repair; one stable for

* Matt. Par., ii, 125, Tintaiol.

eight horses decayed; one cellar and bakehouse ruinous. The timber of the great hall had been taken down by command of John of Eltham, Earl of Cornwall (1330-1337), "because the hall was ruinous and the walls thereof of no value."

It may appear strange that Tintagel should have become dilapidated so soon; especially if, as I suppose, it had not existed more than a hundred years. We must however remember that the same holds good of Restormel, Liskeard, and other Castles which have been erroneously described as seats of the British Earls, and yet were built about the same time as I suppose this to have been. After the death of Earl Edmund, in 1300, *all* the Cornish Castles, except Launceston, ceased to be kept up; and in the survey of 1337 were described as "out of repair." Hence, when William of Worcester, Leland, Norden, Carew, and others speak of them, they use much the same language of all. Truro Castle, built by one of the Norman Earls, Leland speaks of as "now clene down"; and William of Worcester, in 1478, as "*dirutum*." Liskeard Castle, says Leland, is "now al in ruin: fragments of waulles yet stand." Restormel he calls "sore defaced"; and Norden talks of "the planchings rotten, the walls falldowne, &c. "The cannon needs not batter, nor the pioneer to undermine, nor "powder to blow up, this so famous a pyle, for tyme and turrannie "hath wrought her destruction." If these Castles, in comparatively sheltered situations, had so soon become ruins, the only wonder is, that Tintagel, exposed to every blast and storm from the Atlantic, should have lasted so long.

Before 1385 the Castle must have undergone some repair, for in that year we find it a state prison, in which John of Northampton, Lord Mayor of London, was imprisoned; "condemned thither," says Carew, "as a general penitentiary, for his unruly maioralty." In the year 1397, Thomas, Earl of Warwick, was a prisoner for treason, here according to some, but in the Isle of Man, according to Baker and others. He was released in 1399, and recovered all his manors (Carnanton, &c.) which had been forfeited.

From the time when this Castle became a prison, a small annual sum was granted for repairs until the reign of Queen Elizabeth, when it was discontinued by Lord Treasurer Burleigh, as "being a superfluous expense to the Crown"; and ever since, the

ruins have had to contend with storms and the ravages of time, with no other assistance than their own innate strength.

The custody of all the Castles, Manors, and other property of the Earls, was committed to the Sheriff of the County, who was annually appointed by the Earls, and required to render an account of all sums received and expended. Whenever the revenues of the Earldom reverted to the Crown, the King appointed the Sheriff, commanding the Sheriff of the preceding year to deliver up the County, with the Castle of Launceston and all its appurtenances, without delay, and the Earls, Barons, Knights, and freeholders of the County to receive him as their Sheriff, and his bailiff in other things. In most histories of the County we find certain noblemen, as Thomas de la Hyde, William de Bottreaux, and others, named as Constables of this Castle; whereas they were the Sheriffs for that year, and as such, custodians of all the Earl's Castles. For instance, in 1307, Piers Gaveston was appointed Earl of Cornwall and Sheriff in fee, and obtained all the Castles, &c., of which Edmund, the late Earl, had died possessed. Under him Thomas de la Hyde was Sheriff; and, as such, custos of all the Castles, for which he rendered a debtor and creditor account. He appears to have died in the same year as the Earl, in 1313; and between the Earl's death and his own we find he had the fees or wages of the staff of this Castle for 40 days, viz., 2d. a day to the Constable, 3d. to the Porter and Watchman, and 5/7 to the Chaplain for officiating during the said time: the same rate of payment as had been made since the appointment of John le Barber by Earl Edmund.

During the reign of Richard II much of the property of the Duchy became alienated for a time. Tintagel Castle and Manor, with other Castles and Manors, were given to John Holland, Earl of Huntingdon, married to the King's sister Elizabeth, who survived him. After he was beheaded, she married Sir John Cornwall; who, with her till their deaths, by permission of Henry Duke of Cornwall, held the Castle, &c., when they reverted to the Duchy. Captains or Constables continued to be appointed until the reign of Elizabeth. John Upcote was Captain in 1485; Sir John Carewe, Knight of the Body, was appointed Captain or Constable on the 27th August, 1509. He died in 1512, and was succeeded by Sir Anthony Utright. After him John Nevill was appointed to be

Constable, and to have a meadow called Halemere, in the Lordship of Tyntagel.

The following interesting letter was written in 1583, by Sir Richard Greynvile, who had been directed by the Council to visit the Castle, and report on its state and condition as a place of defence.

“ My dutie to your honor humblye remembered ; the sixth of December. I received your honor's letter, with direction to view the state of the Castell of Tyntagell ; I presentlye rode thither, and sending for him that hath the charge thereof, went up into it. At the entry of the Iland there is a dore and certayne walls standing, with some ruinat rounes w^h were lodgings, and may yet with some small charges be repaired and made fite to be dwelt in. From the utter great gate on the maine ther hath ben, within the memorie of some that dwell thereby, a drawbridge, w^h is now gon, by reason that the seas have undermined and fretted out some p^{te} of the workes whereon the bridg stode, and taken away that means to pass into the Ile from the utter part of the Castell ; so as now the way to the Ile being by the side of a rocke, on a very steepe clife over the sea, is very daungerous, and such as a man shall find narrow footing to passe up by. This place wth on fowler may easily be defended. From the sea ther ar two landing places ; against the one of them is a wall w^h a gate in it, called the Iron Gate (because there was a gate of iron there) ; this wall is of length on hundred and twenty foote, in thickness five foote, garrated, now somewhat ruinat ; w^h was in old time sufficiente for the defence of that place. By the workes without this wall (being the landinge place) foure or five of the greatest sortes of shippes may with most windes ride, and lay their sides to the workes, and land anie companie of men ; the water being ther at the lowest ebb five fathom deepe, and the ground in this bay before the rockes faire and sandy for a moringe. This place may well be fortified for the defence of the landing by some repairinge of the wall, a rampier of turffe to be made on the inside of the wall for thickening therof with a couple of little bulworks ; at the endes of that wall two peace of ordinaunce, though they were but fowlers, would sufficiently defend the landing ther ; but sinse the utter p^{te} of the landing rocke is not two hundred foote without the said wall, so as anie bigg shippinge with good artillery may com so nere as to beat down both the said wall and the bulworks, it were very convenient that in each of the bulworks with the fowlers there were a better peace placed, as demiculverins, sacars, or such like, which should be sufficient to defend the place and harborough, so as no ship should be able to approche the place for landing there. The other place to land at is not so easie, because the ground is fowle and rocky without it, so as a ship cann have no ancor hold ther, and the clifes so uneasie to be mounted, as five or six men may keepe down a great number. The whole Iland is so fortified by nature, as on anie occasion it is to be defendede with twentie or thirtie men. The Ile, it seq^r, as it is now left, is a dangerous receptacle for anie evill affected person that shall attempt to take it ether by land or by sea ; for he

who now hath the charge of the Castell and the Ilande is on John Hendey, a very tale young man, and on that is thought to be evill affected in religion: his father now dead, who had the charge before him, was accounted a papist, and accused and long imprisoned in gayle for sedecius wordes against her Ma^{tie}. This yong man's mother knowen to be a papist, and not caring for her bands wherein she stooode bounde to her Ma^{ties} use to appeare before us at the Sessions as a recusant, for not comming to the Church, forfeiting the same, hath forsaken her house and this countie, and is gone to a house of S^r John Arrundell's, in Dorsetshere, called Chydioc, wher she and mani such ar receaved and harbored, and wher this John Hendy hath of late ben with her, coming and going this Michelmas term last to and from London where he hath had accesse to S^r John Arrundell; no cause known. The estate that S^r John Arrundell hath in this Iland is but thre or four yeares now to come, the reversion therof (as) here is graunted to Mr. Arthur George: the profit that ariseth to S^r John is nothing; for Hendy payeth no more to him then the same rent w^{ch} S^r John payth to the Queen's Ma^{tie}. Now wheras your honors will me to certifie whom I think meet in these partes to be appointed by your honors to take the charge of the Ile, being well affected in religion and to her Ma^{ties} service, and that part of the countrey is so barren of such gentlemen of ani account, for it is verie well knowne to my very good Lord the Erle of Bedford, as I know none more fitt dwelling nerest to the place then Mr. George Greynvile, now Shreiffe of the Countye, whom I assure your honors to be a gent well inclined to religion and to her Ma^{ties} Service. On the Iland there is nether ordinance nor ani other kind of munition; nether doth ther anie apperteine therto as I am informed. For your honor's better view understanding of the nature and qualitie of the Ile and the situation therof, I have, as well as I could, drawn a plotte of the same, and sent it heerwith unto your honors, having added the new bulworkes w^{ch} I before thought convenient to be made for the defence of the landing at the wall of the iron gate. The charge of the bulworks, rampiers, and repairing of the ruined walls will, as I judge, be made for on hundred marks or there about. For the ordinaunce, as the three foulders, two sacars, or demiculverins, wth a dozen or twenty muskets, would be sufficient munition; the w^{ch} is not to be gotten in these ptes; w^{ch} I leave to your honor's consideration. And this is as much as at this present I could do in performans of your honor's direction here in being readie at all comaundment with a faythfull hart to be employed in anie service of her Ma^{tie}, whom I beseech God preserve and defend from traytrous practizes; and praying God also to preserve your honors, I most humblie take my leave. Rediford, this xxviith of December, 1583.

Your honor's most humblie at commandment,

R. GREYNVILE.

From this time I have been unable to obtain any historical account of Tintagel. During the Civil Wars and the Commonwealth, the position was not of sufficient importance to be a bone

of contention between the rival armies. Indeed after the general use of fire-arms the place ceased to be of any value, except as a subject of interest to antiquaries and lovers of the picturesque.

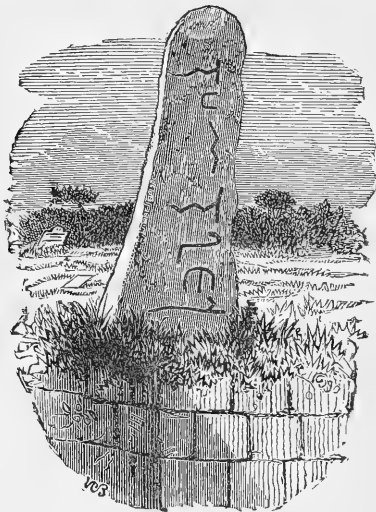
Old people remember when the walls were more extensive than at present, and the chasm much narrower than it has become by the falling in of the cliff on both sides.

Under the tasteful care of the Constable, the Reverend Prebendary Kinsman, it is safe from the hands of idle depredators; and had he substantial help from those interested in its preservation, he would be enabled to arrest the progress of decay, without in any way altering a feature of the original building.

II.—*An Inscribed Stone in the Churchyard of Stowford, Devon.*—By
WILLIAM C. BORLASE, *Castle Horneck, April, 1870.*

Read at the Spring Meeting, May 17, 1870.

ON entering the little churchyard of Stowford, the eye of the stranger is attracted by a monumental pillar, standing on the top of the hedge, to the right of the entrance gate. This will be found, on closer examination, to be a hard sand-stone, about 5 feet in height, and as thick in the centre as a man can span, but gradually tapering towards the top, where it is as round and smooth as a boulder washed by the sea. On the flat side is engraved a remarkable inscription, the characters of which are unlike those of any alphabet with which I am acquainted.



Owing to the impervious nature of the stone, the letters have been preserved in what seems to be almost their original state ;

and the regularity and care which has been displayed in their formation, points plainly to the fact, that they are no chance productions of a sculptor making trial of his tool, but the set characters of an acknowledged system of caligraphy, carrying a clear and distinct meaning to the people of a distant age.

The small drawing which I made on the spot, a few weeks ago, was not sufficiently correct to be worthy of a place in your *Journal*; but so very interesting did I consider the stone, that I made an attempt to obtain a more correct one; and through the kindness of the Rev. W. W. Martyn, Rector of Lifton, have now in my possession a rubbing, in which every letter is most clearly and correctly delineated. The following is a copy of the inscription, the letters averaging from 3 inches to 7 inches in height:—



Whether this inscription belongs to the transition period between the Roman and the early English letters, or whether they are to be found among any of the ancient Irish alphabets, and belong to a system, whose characters are well known to the Antiquary at the present day, I am not in a position to say. The three last letters would seem rather to point to the former theory, and the four first to the latter; that the first letter on the left is repeated again in the fourth I think there is no doubt; and the similarity of the second, fifth, sixth, and seventh, to Hebrew characters, led me at first to imagine that it was to that language they must be referred; but a more minute inspection seems only to increase the difficulties of such a supposition, and I therefore leave the task of deciphering them to the many readers of our *Journal*, who are more competent to undertake it than myself; and shall be quite content to have given them an accurate representation, of what I think they will agree with me in considering one of the most remarkable of the Inscribed Stones of Damnonia.

III.—*Stannary Roll, 34th Edward I. (1305–6), with Introductory Remarks thereon, and on other similar Rolls.*

By SIR JOHN MACLEAN, F.S.A., &c., &c.,

An Honorary Member of the Royal Institution of Cornwall.

ANY information, however imperfect, upon the subject of Tin, the great staple of the County in early times, can scarcely fail to be of interest to the members of the Royal Institution of Cornwall. We therefore submit an abstract of one of a small class of documents, preserved in the Public Record Office, among the Miscellaneous Papers of the Exchequer, entitled “*Nomina Villarum*,” adding a brief description of the others.

The County of Cornwall, with the Stannaries and all the Minerals, were, by Charter dated 15th Henry III,* granted by the King to his brother Richard, King of the Romans and Earl of Cornwall, and remained vested in the Earls of Cornwall until the death of Earl Edmund, in 28th Edw. I. Accordingly, we find that the earliest Stannary Roll is met with in the accounts of Thomas de la Hyde, of the Stewardship of the Earldom of Cornwall for that year † (1300–1), in which the total amount received for the coinage of tin was £1120. 13s. 5d. The names of the owners, the number of the pieces, ‡ and the weight of each “*laste*,” together with the total weight belonging to each owner at each weighing, and the sum of the toll, are shewn on the Roll.

For the following year we have another similar Roll, extending to the 21st Sept., 30th Edw. I. || (1302), in which the sum shewn to have been received for dues is £1472. 17s. 5d.

We are unable to find any other Roll for several years, which may be accounted for from the Stannaries having been granted

* Charter Roll, 15th Hen. III, m. 4. See also *Hist. of Trigg Minor*, p. 29.

† Pipe Office, Sheriffs' Accounts, No. 378.

‡ The pieces would seem to have averaged in weight from 120 lbs. to 130 lbs. At a later date the pieces weighed from 300 to 400 lbs. (*Speculi Brit. pars.*, p. 13, *Harl. MS.*, 6252).

|| Pipe Office, Sheriffs' Accounts, No. 380, Roll 4.

to farm. We find of record, that the King owed a sum of £750 to one William Servat, for wine supplied for the King's use, and all the issues of the coinage of the King's tin growing in Cornwall were assigned to the said William, for the full term of one year thence ensuing; and it was provided that if the said William failed to collect 700 marks from the said coinage dues, the balance should be paid to him in the wardrobe.*

In 33rd Edw. I. Thomas de la Hyde, John de Treddewy, Philip le Wenche, Thomas de Lostwell, Henry de Pridias, Philip de Medros, and John le Toller, paid a fine of 100 marks to the King, to have the King's Charter for liberties granted to the miners working in the Stannaries in Cornwall.

In the 34th year of this reign we have another Roll, appertaining to the shrievalty of Thomas de la Hyde.† An abstract of this Roll we have the pleasure of laying before the members of the Institution, as a specimen of these documents. We have shewn the totals only of the tin weighed by each merchant or owner, at the several weighings, and the sum of the dues thereon, giving the names of such merchants; which are, we consider, of no small interest, as shewing the old Cornish families which at this early period were dealers in this great commodity. Some of these names are still extant in the County. For the better illustration of the Roll, we have had a small portion executed in fac-simile,‡ which will shew all the details alluded to above. This particular portion was selected because it shews a remarkable way of writing the name Truro—*Truuuru*. It occurs, contracted in two different forms in the two first lines in this specimen, and in several other places on the Roll.

This Roll commences on Wednesday next after and ends on Wednesday in the feast of St. Matthew the Apostle (Sept. 21). It consists of 14 membranés of vellum, about $4\frac{3}{4}$ inches in breadth, written on both sides. The other Rolls resemble it in

* Originalia Rolls, 32nd Edw. I, No. 133.

† Pipe Office, Sheriffs' Accounts, No. 374, Roll 2.

‡ This is an excellent fac-simile, representing the original most perfectly, both in the tone of the vellum and colour of the ink. It was executed by the Heliotype process, by Messrs. Edwards and Kidd, 22, Henrietta Street, Covent Garden. We consider it far superior in clearness to the photozincographic process.

character. All are in good preservation, and are perfectly clear and distinct throughout. During the period over which this Roll extends, the gross weight of tin coined was 863,234 lbs., and the coinage fees £1726. 9s. 4½d.

We find another Stannary Roll of the time of Edw. I.* The year to which it should be assigned is uncertain, but it is believed to apply to the 35th and last year of the King's reign. It is with the account of Thomas de la Hide, Seneschal of Cornwall. The weight of all the tin was 520,330 lbs., and the receipt for coinage £1040. 17s. 5d.

The next Roll is for the period from the feast of St. John, 1st Edw. II, to Michs., 2nd Edw. II (1308).† The tin weighed was 343,218 lbs., and the coinage dues £686. 10s. 11d. And there is another from Michs. 2nd (1308), to 5th Aug., 3rd Edw. II (1309).‡ In this period the weight of the tin coined was 468,694 lbs., and the sum received for dues £937. 11s. 6d.

We do not find any other Roll until 6th Edw. II, when there is a Roll shewing the tin weighed between the feast of St. Scholastica the Virgin, 6th Edw. II (Feb. 10, 1312-13), to Michs., 7th Edw. II (1313).|| In this period the weight of the tin accounted for was 582,481 lbs., and the sum received for coinage £1164. 19s. 2½d.

From the feast of the Purification of St. Mary the Virgin, 7th Edw. II (Feb. 2, 1313-14), to the feast of the Decollation of St. John Baptist, 8th Edw. II (29th Aug., 1314), § the tin weighed, as shewn by this Roll, was 803,541 lbs., and the money received was £1607. 1s. 8½d. Another small Roll is attached, shewing receipts for toll, amounting to £380. 17s. 4d., but the weight of tin is not clearly stated.

There is a further Roll, rendered by Thomas Lerchdekne, for the period from Michs. to the feast of the Epiphany, 8th Edw. II.¶ In this time the weight of tin accounted for was 43,040 lbs., and the sum received £86. 1s. 7½d. From this time these detail Rolls appear to cease.

* Pipe Office, Sheriffs' Accounts, No. 385, Roll 2.

† Pipe Office, Sheriffs' Accounts, No. 377, Roll 3.

‡ Pipe Office, Sheriffs' Accounts, No. 377, Roll 4.

|| *Idem*, No. 380, Roll 6.

§ *Idem*, Roll 5.

¶ *Idem*, Roll 7.

In 10th Edw. II the King granted * to Stephen de Abyngdon, his Butler, the coinage of the tin in Devon and Cornwall; and in the 20th year of his reign the King assigned to William de Somerhill, of Asperton,† to collect to the King's use the whole of the gold which may be found in the mines already opened, or hereafter to be opened, in the two counties.

Edmund Earl of Cornwall (*ob.* 1300) is said to have granted sundry privileges to the Stannaries, in consideration of which, the Lords of the seven tithings in Blackmoor, by whose means the Charter was procured, consented to pay unto the Earl one halfpenny for every pound of tin which should be wrought. "This Charter," it is added, "is recorded in mens' memories, but extant it appeareth not."‡

It will be observed from these Rolls that the profits arising from the mines amounted to from £1000 to £1500 a year—a large sum in those days; but it would appear from the caption seizin of the Duke of Cornwall, 5th May, 11th Edw. III (1337), that the revenues from the Stannaries had considerably increased in amount. The Commissioners returned the profits of the Courts, of the four Stannaries together, as £20; and the coinage as being worth per annum 3000 marks; but that year, from the abundance of tin, 4000 marks.||

* Originalia, 10th Edw. II, Roll 17.

† *Idem*, 20th Edw. II, Roll 2.

‡ *Speculi Brit. pars.*, *Harl. MS.*, 6252, p. 16.

|| *Vice v. Thomas, Smirke, Appx.*, p. 21.

ABSTRACT OF A STANNARY ROLL PRESERVED IN THE PUBLIC RECORD OFFICE.

The Account of Thomas de la Hyde (Sheriff and Steward of Cornwall), 34 Edw. I. A.D. 1305-6.

Pondera Stangni apud Lostwythiel die Mercurii proxima post —.		£	s.	d.	
Henricus de Campo Arnulphi	.. 109 peciæ	Summa Stangni	13,000 libras	.. Summa denariorum	26 0 0
Oliverus de Halep	.. 40 "	..	4,600 "	..	9 4 0
Philippus le Wenche	.. 17 "	..	2,000 "	..	4 0 0
Johannes de Kilminawith	.. 13 "	..	1,500 "	..	3 0 0
Johannes Geueili	.. 10 "	..	2,036 "	..	4 18 0½
Robertus Giffard	.. 16 "	..	1,986 "	..	3 19 6½
Pondera Stangni die Martis in Crastino festi Sancti Edmundi Episcopi.					
Johannes Cok	.. 9 peciæ	Summa Stangni	1,054 libras	.. Summa denariorum	0 16 2
Stephanus le Rede	.. 26 "	..	3,000 "	..	6 0 0
Pondera Stangni die Mercurii proxima post festum Sanctæ Lucie Virginis.					
Radulphus de Cheyndut	.. 24 peciæ	Summa Stangni	3,192 libras	.. Summa denariorum	6 7 8
Idem Radulphus Cheyndut	.. 5 "	..	526 "	..	1 1 0
Adam Someter	.. 2 "	..	290 "	..	0 11 7
Rogerus Martyn	.. 38 "	..	4,942 "	..	9 17 8
Summa denariorum hujus partis £76. 5s. 2d.					
Johannes Ripariis	.. 24 peciæ	Summa Stangni	3,074 libras	.. Summa denariorum	6 3 0
Idem Johannes	.. 17 "	..	2,168 "	..	4 6 9
Idem Johannes	.. 17 "	..	2,144 "	..	4 5 9
Idem Johannes	.. 9 "	..	1,036 "	..	2 1 3
Idem Johannes	.. 9 "	..	1,104 "	..	2 4 2

Pondera Stangni apud Lostwythyll die Martis in festo Sancti Thomæ Apostoli.								
Johannes Martyn	.. .. .	22 peciæ	.. Summa Stangni 3,000 libras	..	Summa denariorum	6	0	0
Pondera Stangni apud Lostwythiell die Mercurii proxima post festum Sancti Hilarii.								
Johannes le Perour	.. .. .	18 peciæ	.. Summa Stangni 2,188 libras	..	Summa denariorum	4	7	6
Rogerus le Bera	.. .. .	16 "	.. " 2,072 "	..	"	4	2	11
Rogerus de Pencoyd	.. .. .	17 "	.. " 2,180 "	..	"	4	7	2½
Johannes Treiagu	.. .. .	47 "	.. " 5,450 "	..	"	10	18	0
Idem Johannes Treiagu	.. .. .	44 "	.. " 6,002 "	..	"	12	0	1
Johannes Trebewy	.. .. .	35 "	.. " 4,332 "	..	"	8	13	3
Summa denariorum hujus partis £69. 10s. 0½d.								

Pondera Stangni apud Bodmyniam die Veneris proxima ante festum conversionis Sancti Pauli.								
Benedictus Reynward	.. .. .	17 peciæ	.. Summa Stangni 2,108 libras	..	Summa denariorum	4	4	4
Idem Ben' et socij sui	.. .. .	16 "	.. " 2,106 "	..	"	4	4	3
Idem Ben' et socij sui	.. .. .	35 "	.. " 4,026 "	..	"	8	1	0
Idem Ben' et socij sui	.. .. .	63 "	.. " 8,056 "	..	"	16	2	3
Idem Ben' et socij sui	.. .. .	16 "	.. " 2,182 "	..	"	4	7	3
Idem Ben' et socij sui	.. .. .	17 "	.. " 2,078 "	..	"	4	3	1
Idem Ben' et socij sui	.. .. .	9 "	.. " 1,030 "	..	"	2	1	2
Idem Ben' et socij sui	.. .. .	8 "	.. " 1,032 "	..	"	2	1	3
Idem Ben' Reynward	.. .. .	17 "	.. " 2,076 "	..	"	4	3	0
Adam de Sancta Margareta	.. .. .	23 "	.. " 2,740 "	..	"	5	9	7
Ricardus de Sancta Margareta	.. .. .	14 "	.. " 1,666 "	..	"	3	2	8
Rogerus Martyn	.. .. .	55 "	.. " 7,010 "	..	"	14	5	0
Summa hujus partis £72. 6s. 0½d.								

Ad huc pondera eodem die.

Robertus le Tailleur	.. .. .	19 peciæ	.. Summa Stangni 2,478 libras	..	Summa denariorum	4	19	1
Willielmus Hendi	.. .. .	7 "	.. " 1,060 "	..	"	2	2	5
Robertus de Sancta Genas	.. .. .	36 "	.. " 4,720 "	..	"	9	8	10
Johannes Trethewy	.. .. .	8 "	.. " 1,036 "	..	"	2	1	0

Johannes de la Biri	..	..	..	14	pecie	..	Summa Stangni	1,840	libras	..	Summa denariorum	3	13	7
Walterus Penteg	..	..	..	9	"	..	"	1,120	"	..	"	2	4	10
Benedictus Reynward et socij sui	..	..	..	14	"	..	"	1,696	"	..	"	3	7	10
Idem Ben' et socij	..	..	..	16	"	..	"	2,144	"	..	"	4	5	9
Idem Ben' et socij	..	..	..	17	"	..	"	2,190	"	..	"	4	7	7
Godfridus le Mercer	..	..	..	27	"	..	"	5,870	"	..	"	11	14	10
Adam le Someter	..	..	..	12	"	..	"	1,494	"	..	"	2	19	9
Ricardus Sanctus	..	..	..	34	"	..	"	3,810	"	..	"	7	12	5
Willielmus Gregori	..	..	..	12	"	..	"	1,678	"	..	"	3	7	7
Ben' Reynward et socij sui	..	..	..	9	"	..	"	1,050	"	..	"	2	0	0
Idem Ben' et socij	..	..	..	2	"	..	"	308	"	..	"	0	12	4
Pascasinus de Glyn	..	..	..	12	"	..	"	1,420	"	..	"	2	16	10
Bartholomeus le Mercer	..	..	..	8	"	..	"	948	"	..	"	1	17	11

Summa hujus partis £69. 14s. 10d.

Summa utriusque partis £141. 15s. 5d.

34,862 libras.

Pondera Stangni apud Bodmyniam die Sabbati proxima ante festum Conversionis Sancti Pauli.

Walterus Tonker	..	..	..	8	pecie	..	Summa Stangni	1,000	libras	..	Summa denariorum	2	0	0
Rogerus Lowys	..	..	..	33	"	..	"	4,126	"	..	"	8	5	0½
Johannes Cristian	..	..	..	38	"	..	"	4,374	"	..	"	8	15	0
Rogerus Treglownou	..	..	..	7	"	..	"	1,032	"	..	"	2	1	3½
Nicholaus Ancret	..	..	..	6	"	..	"	520	"	..	"	1	0	1

Pondera apud Lostwythiell eodem die Sabbati quo supra.

Ricardus de Sancta Margareta	..	..	..	22	pecie	..	Summa Stangni	3,106	libras	..	Summa denariorum	6	4	3
Johannes Ripariis	..	..	..	37	"	..	"	4,330	"	..	"	8	13	2½
Walterus Dyn	..	..	..	8	"	..	"	952	"	..	"	1	18	1
Willielmus Blundel	..	..	..	9	"	..	"	1,054	"	..	"	2	2	2
Rogerus Martyn	..	..	..	12	"	..	"	996	"	..	"	1	19	10½
Gerardus de Vilers	..	..	..	11	"	..	"	1,196	"	..	"	2	7	10½
Simon de Gelly	..	..	..	4	"	..	"	970	"	..	"	1	2	10
Willielmus de Carballa	..	..	..	10	"	..	"	1,190	"	..	"	2	7	6½
Walterus Wacy	..	..	..	10	"	..	"	1,132	"	..	"	2	5	3½

Pondera apud Helleston die Junis in Crastino Purificationis beate Mariæ.

Rogerus Pengerseck	.. .. .	17 peciæ	..	Summa Stangni	2,262 libras	..	Summa denariorum	4 10 6
Willielmus Fengerseck	.. .. .	23 "	..	"	3,082 "	..	"	6 3 3½
Herveius Fengerseck	.. .. .	9 "	..	"	1,240 "	..	"	2 9 7½
				Summa hujus partis	£64. 6s. 9½d.			
					32,162 libras.			

Ricardus Clericus de Mosehole..	..	iii peciæ	..	Summa Stangni	504 libras	..	Summa denariorum	1 0 2
Ricardus Benyn	..	iii "	..	"	562 "	..	"	1 2 6
Robertus de Glas..	..	20 "	..	"	2,376 "	..	"	4 15 0½
Rogerus Aubre..	..	8 "	..	"	1,090 "	..	"	2 3 7½
Johannes le Droyes	..	6 "	..	"	720 "	..	"	1 8 10
Willielmas Bordon	..	14 "	..	"	1,808 "	..	"	3 12 4

Pondera apud Lostwythiell die dominica proxima post festum Sancte Scolastice Virginis.

Stephanus Trewynt	.. .. .	38 peciæ	..	Summa Stangni	4,506 libras	..	Summa denariorum	9 0 4
Walterus Symond	.. .. .	12 "	..	"	1,558 "	..	"	2 12 4
Mathews le Petit	.. .. .	10 "	..	"	1,026 "	..	"	3 1 0½
Michaelis Coulyng	.. .. .	9 "	..	"	952 "	..	"	1 18 1
Henricus de Bodrigan..	.. .. .	12 peciæ	..	Summa Stangni	1,502 libras	..	Summa denariorum	3 0 1
Johannes Tut	.. .. .	36 "	..	"	4,322 "	..	"	8 13 0
Gerardus de Vilers	.. .. .	21 "	..	"	3,770 "	..	"	5 10 10
Idem Gerard	.. .. .	17 "	..	"	2,050 "	..	"	4 2 0

Pondera apud Lostwythiell die Martis in festo Sancti Petri in Cathedra.

Johannes Scor	.. .. .	45 peciæ	..	Summa Stangni	5,160 libras	..	Summa denariorum	10 6 5
				Summa hujus partis	£61. 17s. 7d.			
				Summa utriusque partis	£123. 3s. 4½d.			
					30,910 libras.			

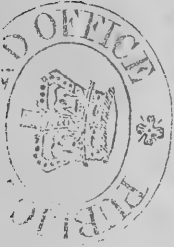
Johannes de Hivhis	8 pecie	Summa Stangni	970 libras	Summa denariorum	1 18 10
Radulphus de Cheyndut	16 "	"	2,020 "	"	4 0 10
Edmundus Trenewyth	13 "	"	1,718 "	"	3 8 9
Johannes Imsworgi	8 "	"	958 "	"	1 18 4
Johannes Cok	4 "	"	50 "	"	1 0 0
Walterus Ballard	2 "	"	270 "	"	0 10 10
Pondera Stangni die Mercurii proxima post festum Sancti David.					
Robertus de Sancta Gynas	31 pecie	Summa Stangni	3,670 libras	Summa denariorum	7 6 5
Walterus Wace	5 "	"	582 "	"	1 3 3½
Johannes de la Pole	18 "	"	1,952 "	"	3 8 1
Ricardus de Pridias	9 "	"	1,130 "	"	2 5 1
Robertus Coulyng	40 "	"	4,380 "	"	8 10 2
Stephanus Coulyng	17 "	"	2,111 "	"	4 4 6
Pondera Stangni apud Lostwythiell die Martis proxima ante festum Annunciationis beate Marie.					
Henricus de Bodrigan	10 pecie	Summa Stangni	1,298 libras	Summa denariorum	2 11 9½
Ricardus Trevaga	16 "	"	2,160 "	"	4 3 5
Thomas Peticu et	6 "	"	7,048 "	"	1 9 11
Thomas Graunt		Summa hujus partis £48. 18s. 6½d. 24,456 libras.			
Walterus Dyn	24 pecie	Summa Stangni	3,126 libras	Summa denariorum	6 5 0
Adam de Sancta Margareta	57 "	"	7,338 "	"	14 9 6½
Rogerus le Bera	12 "	"	1,354 "	"	2 14 2
Ricardus Sancta Margareta	13 "	"	1,522 "	"	3 0 11
Robertus Coulyng	17 "	"	1,978 "	"	3 19 1½
Willielmus Restour	17 pecie	Summa Stangni	1,858 "	Summa denariorum	3 14 4
Johannes Martyn	19 "	"	2,314 "	"	4 12 8
Nicholaus Ancret	25 "	"	2,596 "	"	5 10 0½
Guinard de Vilers	21 "	"	2,276 "	"	4 9 0½
Johannes Aurifaber	12 "	"	1,646 "	"	3 5 10½

Ponder apud Trinum die lune post festum hunc
sac. marie in ffencia davis de Campford p. de C. m.

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Hugo le Rede	14 peciæ	..	Summa Stangni	1,456 libræ	..	Summa denariorum	2 18 4
Rogerus Martyn	2 "	..	"	288	..	"	0 11 6½
Johannes Ingelot	15 "	..	"	1,918	..	"	3 12 9
Rogerus Lowys	6 "	..	"	746	..	"	1 9 10½
Willielmus le Tailleur	20 "	..	"	2,296	..	"	4 11 10
			Summa hujus partis	£65. 9d.			
			Summa utriusque partis	£113. 19s. 4½d.			
				32,612 libræ.			

Willielmus Coulyng	33 peciæ	..	Summa Stangni	3,893 libræ	..	Summa denariorum	7 15 9½
Thomas Withiel	23 "	..	"	2,696	..	"	5 7 10½
Ben' Reynward et socij	21 "	..	"	1,874	..	"	3 15 0

* Pondera apud Truuru (=Truwru) die Lunæ proxima post festum Annunciacionis Sanctæ Mariæ in preseneia David de Tauistock præpositi de Truuru.

* Reginaldus de Benille	8 peciæ	..	Summa Stangni	1,078 libræ	..	Summa denariorum	2 3 1½
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* Robertus Howell de Oreford per plegium Johannis Nauntyan Wal- teri Maenhir de Tauistock.	6 peciæ	..	Summa Stangni	612	..	Summa denariorum	1 4 6
* Walterus Maenhir	47 "	..	"	5,568	..	"	11 2 9
* Willielmus Cary	20 "	..	"	2,242	..	"	4 9 8
Rogerus Penpel	14 "	..	"	1,786	..	"	3 11 5½
Odo Luddre	8 "	..	"	1,004	..	"	2 0 2
Serlo Nansladron	16 "	..	"	1,910	..	"	3 13 5
Reginaldus Benille	8 "	..	"	1,040	..	"	2 1 8
Johannes Ireiagu	17 "	..	"	2,014	..	"	4 0 8
Ranulphus de Rudfos	10 "	..	"	1,078	..	"	2 3 1½

Summa hujus partis £53. 12s. 1½d.
26,796 libræ.

N.B. The items in the abstract marked thus * are shewn in detail in the fac-simile annexed. The verb has been omitted from the abstract throughout.

Ad huc pondera infra apud Truru.			
	27 pecie	Summa Stangni	Summa denariorum
Willielmus Coulyng...	..	8,220 libra	6 8 10
Adam de Sancta Margareta	19 "	2,358 "	4 13 4
Galfridus Prior Montis Sancti	15 "	1,850 "	3 14 0
Michaelis	..	1,544 "	3 1 9½
Adam de St. Margareta	12 "	2,894 "	5 15 9½
Robertus Beyson	24 "	1,552 "	3 2 1
Johanna Maynard	14 "	2,094 "	4 3 9½
Robertus Maynard	18 "	2,812 "	5 12 6
Bernardus Maynard	26 "	1,668 "	3 6 9
Johannes Pouna	13 "	2,154 "	3 0 2
Bernardus Petit	16 "	1,502 "	3 0 1
Johannes Margh	14 "	2,062 "	4 2 6
Willielmus de Rostour	19 "	920 "	1 16 10
Willielmus le Taillour	8 "	..	..

Summa hujus partis £53. 5s. 5½d.
26,630 librae.

Ad huc pondera apud Truru die Lunae proxima post Annunciationem S. Mariae.			
	6 pecie	Summa Stangni	Summa denariorum
Reginaldus le Mercer de Helleston	..	710 libra	1 8 5
Serjo de Nansladron	1 "	138 "	0 5 6
Galfridus Prior de Monte	1 "	176 "	0 7 0½
Adam de Sancta Margareta	12 "	1,390 "	2 15 7
Willielmus Walter	9 "	1,020 "	2 0 10
Henricus Bailly	11 "	1,262 "	2 10 6
Johannes de Gernemowe	4 "	466 "	0 18 8
Bartholomeus Cuny	7 "	924 "	1 17 1
Willielmus de Wilde	11 "	1,144 "	2 0 9½
Johannes Treviscar	24 "	2,880 "	5 15 7½
Johannes le Margh	4 "	600 "	1 4 0
Rogerus Tregge	32 "	3,374 "	6 15 0½
Johannes Priston de Marcadon	5 "	494 "	0 19 4½
Bernardus Maynard	2 "	246 "	0 9 11½

Bernardus Botowan	..	..	..	2 peciæ	..	Summa Stangni	184 libræ	..	Summa denariorum	0 7 4½
Willielmus Maenbir	..	..	..	6 "	..	"	630 "	..	"	1 5 2½
Pondera apud Lostwythyell die Lunæ in crastino Paschæ.										
Robertus Tresschare	..	..	..	11 peciæ	..	Summa Stangni	1,140 libræ	..	Summa denariorum	2 0 7½
Summa hujus partis £33. 11s. 2d. 16,770 libræ.										
Ad huc pondera apud Lostwythyell.										
Hugo le Rous	..	..	..	6 peciæ	..	Summa Stangni	880 libræ	..	Summa denariorum	1 15 2½
Ben' Reynward et socij	..	..	..	74 "	..	"	8,716 "	..	"	17 8 4
Michaelis Coynt	..	..	..	16 "	..	"	2,000 "	..	"	4 0 0
Pondera Stangni apud Lostwythyell die Jouis proxima ante festum Sancti Gregorij.										
Walterus de Sancta Margareta	..	..	..	34 peciæ	..	Summa Stangni	4,210 libræ	..	Summa denariorum	8 8 5
Adam de Sancta Margareta	..	..	..	21 "	..	"	2,678 "	..	"	5 7 1½
Willielmus Coulyng	..	..	..	17 "	..	"	1,558 "	..	"	3 3 4
Radulphus Norreys	..	..	..	39 "	..	"	4,780 "	..	"	9 6 2½
Richardus Podiford	..	..	..	23 "	..	"	2,634 "	..	"	5 5 4½
Amadasius de Bodmyn	..	..	..	5 "	..	"	580 "	..	"	1 3 2½
Summa hujus partis £56. 18s. 0½d. 28,036 libræ.										
Ad huc pondera eodem die.										
Michaelis le Petit	..	..	..	8 peciæ	..	Summa Stangni	944 libræ	..	Summa denariorum	1 17 9
Rogerus Lowys	..	..	..	14 "	..	"	1,580 "	..	"	3 3 2½
Robertus le Tailleur	..	..	..	17 "	..	"	1,996 "	..	"	3 19 10½
Godritus le Mercer	..	..	..	18 "	..	"	2,286 "	..	"	4 11 5½
Willielmus Carballa	..	..	..	20 "	..	"	2,350 "	..	"	4 13 0
Petrus de Roscol	..	..	..	8 "	..	"	1,064 "	..	"	4 2 7
Thomas Lostwoyn	..	..	..	9 "	..	"	1,060 "	..	"	2 2 0
Randolphus de Pridias	..	..	..	9 "	..	"	1,031 "	..	"	2 1 3
Richardus Sires	..	..	..	9 "	..	"	1,012 "	..	"	2 2 8
Rogerus Pencoyd	..	..	..	17 "	..	"	1,918 "	..	"	3 16 9
Johannes Colmayet	..	..	..	2 "	..	"	274 "	..	"	0 11 0

Pondera Stangni die Veneris proxima ante festum Sancti Georgij.

Rogerus le Tailleur	44 peciæ	Summa Stangni	4,928 libræ	Summa denariorum	9 19 1½
Walterus Symound	17 "	"	2,004 "	"	4 0 2
Reginaldus Lewis	8 "	"	920 "	"	1 16 10

Pondera Stangni apud Lostwithiel die Mercurii in vigilia Ascencionis Domini.

Stephanns Trewynt	14 peciæ	Summa Stangni	1,486 "	Summa denariorum	2 19 5½
Margaria Treuerbyn	34 "	"	3,714 "	"	7 8 7
Willielmus Buffete	30 "	"	3,456 "	"	6 18 8

Probata totalis Summa hujus partis £64. 3s. 5½d.
36,098 libræ.

Ad huc pondera eodem die.

Gerardus de Vilers	39 peciæ	Summa Stangni	4,764 libræ	Summa denariorum	9 10 7
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Pondera Stangni die Martis proxima post festum Ascencionis.

Henricus Bodrigan	9 peciæ	Summa Stangni	1,074 libræ	Summa denariorum	2 4 0
Willielmus Bodrigan	20 "	"	2,268 "	"	4 10 9
Gerardus de Vilers	18 "	"	2,108 "	"	4 4 4
Willielmus Buffet	2 "	"	208 "	"	0 8 4
Stephanus le Rede	60 "	"	7,346 "	"	14 12 10½
Willielmus Blundel	8 "	"	1,060 "	"	2 2 5

Pondera Stangni apud Lostwithyell die Jouis in Crastino Sancti Petri Apostoli.

Willielmus de Bodrigan	8 peciæ	Summa Stangni	874 libræ	Summa denariorum	1 15 0
Michaelis Coynt	8 "	"	1,002 "	"	2 0 1

Pondera Stangni die dominica proxima post festum Apostolorum Petri et Pauli.

Dawe percarus	18 peciæ	Summa Stangni	2,048 libræ	Summa denariorum	4 1 11½
Walterus Symound	16 "	"	2,086 "	"	4 1 5½

Pondera Stangni die Mercurii in vigilia Translacionis Sancti Thomæ.

Robertus de Sancta Genas	.. ..	64 peciæ	..	Summa Stangni	7,506 libræ	..	Summa denariorum	15	0	3
				Summa hujus partis	£64. 12s. 1½d.					
					32,294 libræ.					

Ad huc de Toyuu ? die Mercurii in vigilia Translacionis Sancti Thomæ.

Johannes Treiagn	.. ..	161 peciæ	..	Summa Stangni	18,090 libræ	..	Summa denariorum	36	3	7½
Nicholaus de Bradworthy	.. ..	21	..	"	2,630	..	"	5	5	2½
Johannes Cok	.. ..	4	..	"	476	..	"	0	19	0½
Willielmus Hendre	.. ..	19	..	"	2,146	..	"	4	5	10½
Walterus Dyn	.. ..	33	..	"	3,880	..	"	7	10	2½
Johannes de Treiagn	.. ..	72	..	"	8,522	..	"	17	0	11
Robertus Coulyagh	.. ..	36	..	"	3,950	..	"	7	18	0
Edmundus Winnon	.. ..	4 peciæ	..	Summa Stangni	480 libræ	..	Summa denariorum	0	19	2½
Godfridus le Mercer	.. ..	64 "	..	"	7,602	..	"	15	4	1
				Summa hujus partis	£95. 11s. 2d.					
					47,776 libræ.					

Ad huc eodem die.

Michaelis Coulyng	.. ..	13 peciæ	..	Summa Stangni	1,576 libræ	..	Summa denariorum	3	4	0½
Thomas de Lostweyn	.. ..	16	..	"	2,004	..	"	4	0	2
Willielmus Westna	.. ..	9	..	"	1,013	..	"	2	0	8
Willielmus Carballa	.. ..	20	..	"	2,098	..	"	4	3	11½
Johannes Engelot	.. ..	20	..	"	2,432	..	"	4	16	4½
Johannes de la Pole	.. ..	8	..	"	890	..	"	1	15	7½
Pascou de Glyn	.. ..	8	..	"	898	..	"	1	15	9½
Gautier de Fentec	.. ..	6	..	"	704	..	"	1	8	2

Pondera Stangni die Veneris in Crastino Sancti Thomæ.

Johannes Martyn	.. ..	20 peciæ	..	Summa Stangni	2,432	..	Summa denariorum	4	19	3½
Johannes Martyn	.. ..	17	..	"	1,988	..	"	3	19	6½
Vincent Colytes	.. ..	7	..	"	834	..	"	1	13	4½

Johannes Treiagu	..	..	..	21 peciæ	..	Summa Stangni	2,518 libræ	..	Summa denariorum	5 0 9
Michaelis Coynt et Johannes Tub	..	..	..	30 "	..	"	4,050 "	..	"	8 2 0
Gilbertus Tursteyn	..	..	..	17 "	..	"	2,000 "	..	"	4 0 0
Johannes Wolnok	..	..	..	8 "	..	"	942 "	..	"	1 17 8½
Gerardus de Villars	..	..	..	60 "	..	"	7,184 "	..	"	14 7 4½
Summa hujus partis £67. 4s. 11d. probata.										
33,613 libræ.										

Pondera Stangni apud Lostwythvell die dominica proxima post festum Translacionis Sancti Thomæ Martyris.

Galfridus de Carsele	8 peciæ	..	Summa Stangni	1,000 libræ	..	Summa denariorum	2 0 0
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Pondera die Martis proxima post festum Translacionis Sancti Thomæ.

Ricardus de Sancta Margareta	22 peciæ	..	Summa Stangni	3,094 libræ	..	Summa denariorum	6 3 9½
Johannes Anevæd	..	..	..	57 "	..	"	6,800 "	..	"	13 12 5
Oliverus de Halep	..	..	..	18 "	..	"	2,046 "	..	"	4 1 10½
Andreas de Penquoit	..	..	..	18 "	..	"	2,000 "	..	"	4 0 0
Benedictus Reneward	..	..	..	19 "	..	"	2,154 "	..	"	4 6 2
Thomas de Lustwoon	..	..	..	8 "	..	"	1,020 "	..	"	2 0 10
Johannes Stonbard	..	..	..	24 "	..	"	2,762 "	..	"	5 10 6
Walterus de Sancta Margareta	..	..	..	16 "	..	"	2,032 "	..	"	4 15 0½
Ricardus de Sancta Margareta	..	..	..	8 "	..	"	1,064 "	..	"	2 2 7
Winarus Tirel	..	..	..	8 "	..	"	1,000 "	..	"	2 0 0
Adam de Sancta Margareta	..	..	..	8 "	..	"	1,016 "	..	"	2 0 8
Radulphus D'arondel	..	..	..	8 "	..	"	1,012 "	..	"	2 0 6
Michaelis Ancret	..	..	..	9 "	..	"	990 "	..	"	1 19 7½

Pondera apud Lostwiell die dominica proxima ante festum beate Margarete.

Gerardus de Villars	..	..	..	40 peciæ	..	Summa Stangni	4,714 libræ	..	Summa denariorum	9 8 7
Summa hujus partis £65. 8s. 10d. probata.										
32714 libræ.										

Ad huc eodem die pondera.

Gerardus de Villars	..	..	..	85 peciæ	..	Summa Stangni	10,018 libræ	..	Summa denariorum	20 0 9
Idem Gerardus	..	..	..	59 "	..	"	6,112 "	..	"	8 4 6

Pondera apud Lostwythyll die Martis in Vigilia Sancti Laurencij.

Matheus de Trearek	.. .. .	14 peciæ	..	Summa Stangni	1,813 libræ	..	Summa denariorum	3 12 8
Rogerus Pomayn	.. .. .	12 "	..	"	2,004	..	"	4 0 2
Reginaldus de Boyville	.. .. .	44 "	..	"	5,088	..	"	10 3 6½
Rogerus de Treglohnou	.. .. .	11 "	..	"	1,508	..	"	3 0 4
Willielmus le Faillour	.. .. .	28 "	..	"	3,022	..	"	7 0 9
Willielmus Hendi	.. .. .	15 "	..	"	1,584	..	"	3 3 4½
Petrus de Roscol	.. .. .	9 "	..	"	1,086	..	"	2 3 5½
Radulphus D'aroundel	.. .. .	19 "	..	"	2,010	..	"	4 0 5
Ricardus Samitus	.. .. .	35 "	..	"	4,092	..	"	8 3 8½
Summa hujus partis £76. 13s. 10d. probata. 40,360 libræ.								

Pondera apud Truuru die Martis proxima ante festum Sanctæ Margarietæ Virginis.

Willielmus Talcarn	.. .. .	53 peciæ	..	Summa Stangni	5,702 libræ	..	Summa denariorum	11 8 1
Robertus Maynard	.. .. .	38 "	..	"	4,288	..	"	8 11 6½
Johannes le Margh	.. .. .	4 "	..	"	504	..	"	1 0 2
Walterus Maenhyr	.. .. .	29 "	..	"	3,576	..	"	7 3 0½
Michaelis de Bray	.. .. .	18 "	..	"	2,186	..	"	4 5 5½
Adam de Sancta Margareta	.. .. .	13 "	..	"	1,458	..	"	2 18 4
Johannes de Geuelly	.. .. .	9 "	..	"	1,050	..	"	2 2 0
Rogerus Pennel	.. .. .	25 "	..	"	3,210	..	"	6 8 5
Willielmus Walter	.. .. .	8 "	..	"	982	..	"	1 19 3½
Bernardus Maynard	.. .. .	24 "	..	"	2,936	..	"	5 17 3½
Rogerus Martyn	.. .. .	17 "	..	"	1,892	..	"	3 15 8½
Walterus Tremur	.. .. .	8 "	..	"	1,064	..	"	2 2 7
Rogerus Martyn	.. .. .	9 "	..	"	1,000	..	"	2 0 0
Johannes Martyn	.. .. .	9 "	..	"	812	..	"	1 16 6
Alanus de Kernek	.. .. .	12 "	..	"	1,526	..	"	3 1 0½
Robertus Maynard	.. .. .	25 "	..	"	3,076	..	"	6 3 0½
Summa hujus partis £70. 12s. 6d. probata. 35,308 libræ.								

Johannes Treagni	..	..	..	58 peciæ	..	Summa Stangni	6,988 librae	..	Summa denariorum	13 17 6½
Martinus Crusulek	..	..	..	16 "	..	"	1,278	..	"	2 11 1½
Willihelmus Talcarn	..	..	..	2 "	..	"	280	..	"	0 9 2½
Walterus Maenhir	..	..	..	24 "	..	"	8,011	..	"	6 0 6
Rogerus de Hellaund	..	..	..	9 "	..	"	1,040	..	"	2 1 7½
Ad huc Coyngiatæ eodem die quo supra.										
Gerardus de Vilers	..	..	..	25 peciæ	..	Summa Stangni	2,862 librae	..	Summa denariorum	5 14 6
Johannes Prisolon	..	..	..	9 "	..	"	1,020	..	"	2 0 10
Bernardus Maynard	..	..	..	6 "	..	"	660	..	"	1 6 5
Alanus de Kernek	..	..	..	4 "	..	"	500	..	"	1 0 0
Adam de Sancta Margareta	..	..	..	4 "	..	"	484	..	"	0 19 4
Stephanus Coulyng	..	..	..	7 "	..	"	1,386	..	"	2 19 4½
Rogerus Trege	..	..	..	4 "	..	"	530	..	"	1 2 2½
Pondera apud Lostwythyell die Mercurii proxima post festum Sancti Jacobi Apostoli anno predicto.										
Robertus Coulyng	..	..	..	8 peciæ	..	Summa Stangni	1,000 librae	..	Summa denariorum	2 0 0
Summa hujus partis £42. 1s. 9½d. probata. 21,040 librae.										
Pondera apud Lostwythyell die Mercurii in festo Sancti Bartholomei.										
Walterus Dyn	..	..	..	83 peciæ	..	Summa Stangni	10,252 librae	..	Summa denariorum	20 10 1
Matheus Treafrek	..	..	..	2 "	..	"	208	..	"	0 8 4
Hugo le Rous	..	..	..	46 "	..	"	5,478	..	"	10 19 1½
Dawe le Parker	..	..	..	80 "	..	"	4,554	..	"	7 2 2
Michaelis Coynt	..	..	..	20 "	..	"	2,466	..	"	4 18 8
Michaelis Coulyng	..	..	..	20 "	..	"	3,586	..	"	7 3 5½
Johannes D'arundel	..	..	..	8 "	..	"	1,000	..	"	2 0 0
Pondera Stangni apud Lostwythyell die Jouis in Crastino Sancti Bartholomei.										
Willihelmus le Tallur	..	..	..	21 peciæ	..	Summa Stangni	2,612 librae	..	Summa denariorum	5 4 6
Stephanus Trewynt	..	..	..	9 "	..	"	970	..	"	1 18 10
Walterus de Sancta Margareta	..	..	..	88 "	..	"	13,588	..	"	22 18 0½
Summa hujus partis £87. 6s. 8½d. probata. 43,664 librae.										

Johannes Martyn..	..	..	..	8 pecie	..	Summa Stangni	1,140 libræ	..	Summa denariorum	2 0 7
Adam de Sancta Margareta ..	..	..	..	8 "	..	"	1,626 "	..	"	3 5 0½
Idem ..	..	..	..	56 "	..	"	6,725 "	..	"	13 8 11
Ricardus de Sancta Margareta ..	..	..	..	140 "	..	"	16,740 "	..	"	33 9 7½
Johannes Martyn, Junior ..	..	..	..	2 "	..	"	208 "	..	"	0 8 4
Pondera apud Bodmyniam die Jouis in Crastino festi Sancti Bartholomei.										
Ricardus de Stokbrigge ..	..	..	..	19 pecie	..	Summa Stangni	2,248 libræ	..	Summa denariorum	4 9 11½
Willielmus Couer ..	..	..	..	15 "	..	"	686 "	..	"	2 7 5½
Stephanus Trewynt..	..	..	..	9 "	..	"	1,154 "	..	"	2 6 2
Johannes Ingebot..	..	..	..	19 "	..	"	2,488 "	..	"	4 19 6½
Oluerus Halep de Liamoren ..	..	..	..	27 "	..	"	4,082 "	..	"	8 3 3½
Summa hujus partis £76. 8s. 11½d. probata. 38,094 libræ.										
Thomas le Clerc ..	..	..	..	33 pecie	..	Summa Stangni	3,960 libræ	..	Summa denariorum	7 18 5
Nicholaus Ancred ..	..	..	..	13 "	..	"	1,544 "	..	"	3 1 9½
Godfridus le Mercer ..	..	..	..	28 "	..	"	3,336 "	..	"	6 13 5½
Rogerus Martyn ..	..	..	..	51 "	..	"	6,688 "	..	"	13 7 6½
Willielmus fraunceys ..	..	..	..	11 "	..	"	1,240 "	..	"	2 9 7½
Benedictus Reneward ..	..	..	..	10 "	..	"	1,020 "	..	"	2 0 10
Pondera Stangni apud Lostwythyell die dominica proxima post festum decollationis Sancti Johannis baptiste.										
Ricardus Viuian ..	..	..	..	59 pecie	..	Summa Stangni	6,934 libræ	..	Summa denariorum	13 17 4½
Godfridus le Mercer ..	..	..	..	6 "	..	"	792 "	..	"	1 11 8½
Johannes Stonhard ..	..	..	..	30 "	..	"	3,680 "	..	"	7 7 2½
Summa hujus partis £58. 7s. 11½d. probata. 30,194 libræ.										
Ricardus Viuian ..	..	..	..	41 pecie	..	Summa Stangni	5,012 libræ	..	Summa denariorum	10 0 6
Willielmus de Rostour ..	..	..	..	5 "	..	"	668 "	..	"	1 6 9
Johannes Picard ..	..	..	..	2 "	..	"	376 "	..	"	0 15 0½
Bernardus Cosyn..	..	..	..	2 "	..	"	188 "	..	"	0 7 6
Stephanus Trewynt..	..	..	..	17 "	..	"	2,000 "	..	"	4 0 0

Pondera apud Bodmyniam.							
Rogerus le Tailleur	118 peciæ	..	Summa Stagni 13,494 libræ	..	Summa denariorum	26 19 9½
Johannes Martyn	48 "	..	5,438 "	..	"	10 17 6½
Adam Scarlet	53 "	..	7,650 "	..	"	15 2 0
Robertus le Tailleur	7 "	..	786 "	..	"	1 11 5½
Amadasius de Bodmyn	34 "	..	4,300 "	..	"	8 12 0
				Summa hujus partis £83. 10s. 8d. probata.			
				41,760 libræ.			
Davidus Ledfenece	56 peciæ	..	Summa Stagni 6,512 libræ	..	Summa denariorum	13 6 0
Nicholaus de Trewyda	18 "	..	2,080 "	..	"	4 4 2½
Rogerus le Bera	23 "	..	2,782 "	..	"	5 11 3½
Johannes Tut	31 "	..	3,026 "	..	"	7 5 0½
Walterus de Sancta Margareta	16 "	..	1,984 "	..	"	3 19 4½
Robertus Leyrre de Boskennay	8 "	..	990 "	..	"	1 19 7½
Martinus Joby	9 "	..	1,048 "	..	"	2 1 11½
Ricardus Pridias	8 "	..	1,016 "	..	"	2 0 8
Walterus Symond	25 "	..	2,613 "	..	"	5 4 7
Willielmus Rostaur	15 "	..	1,540 "	..	"	3 1 7½
Pondera Stagni apud Lostwythyel die lunæ proxima post festum Nativitatis beate Mariæ.							
Johannes Inisworgi	11 peciæ	..	Summa Stagni 1,266 libræ	..	Summa denariorum	2 10 8
Adam Carburra	33 "	..	3,862 "	..	"	7 14 6
Bartholomeus Le Mercer	10 "	..	1,206 "	..	"	2 8 3
Robertus Coulyng	8 "	..	954 "	..	"	1 18 2
				Summa hujus partis £64. 16s. 5½d. probata.			
				32,404 libræ.			
Ad huc eodem die.							
Gerardus de Vilers	38 peciæ	..	Summa Stagni 4,584 libræ	..	Summa denariorum	9 3 4½
Johannes Treut	1 "	..	158 "	..	"	0 6 4
Pondera apud Truruu die Jouis in festum Exaltationis Sanctæ Crucis.							
Walterus Maenhir	6 peciæ	..	Summa Stagni 720 libræ	..	Summa denariorum	1 8 10
Willielmus Walter	8 "	..	1,064 "	..	"	2 2 7

	4 pecie	Summa Stangni	512 libræ	Summa denariorum	1 0 6
Bernardus Maynard	.. .. .	..	512 libræ	..	1 0 6
Rogerus de Pengerseke	43 "	..	5,264	..	10 6 7
Rogerus de Tregre	29 "	..	3,566	..	7 2 8
Johannes Ponna	4 "	..	508	..	0 10 4
Willielmus Wilde	12 "	..	1,498	..	2 19 11
Robertus Berson	9 "	..	1,046	..	2 1 10½
Ricardus Carneyne	48 "	..	6,046	..	12 1 10
Rogerus Tregoe	6 "	..	508	..	1 2 4
Henricus de Botergan	14 "	..	2,684	..	5 7 4½
Ricardus Carneynek	8 "	..	770	..	1 10 10

Summa hujus partis £57. 12s. 5½d. probata.
28,828 libræ.

Pondera Stangni die Mercurii in festo Sancti Matthæi Apostoli.

	2 pecie	Summa Stangni	232 libræ	Summa denariorum	0 9 3½
Adam de Sancta Margareta	.. .. .	..	232 libræ	..	0 9 3½
Robertus de Boscumnoy	17 "	..	1,992	..	3 19 8½
Stephanus de Trewynt	25 "	..	2,586	..	5 3 3½
Michaelis Elys	6 "	..	866	..	1 14 8
Willielmus Mawyn	9 "	..	1,090	..	2 3 7½
Adam le Sempier	10 "	..	1,072	..	2 3 11
Willielmus Carballa	11 "	..	1,334	..	2 13 4½
Johannes Engelot	11 "	..	1,268	..	2 10 9
Rogerus Martyn	5 "	..	636	..	1 5 5½
Radulphus Corteys	7 "	..	812	..	1 12 6
Willielmus Bestna	4 "	..	484	..	0 19 4½
Robertus Stonhard	5 "	..	436	..	0 17 5½
Adam le Sempier	8 "	..	1,098	..	2 3 11½

Summa hujus partis £27. 16s. 4½d.

Probata Summa omnium rotulorum £1726. 9s. 4½d.

(Indorsed) Summa Stangni 863,234 libræ.

Further Observations upon the foregoing document.—By SIR EDWARD SMIRKE, late Vice-Warden of the Stannaries.

AT the meeting of this Society, in May, 1870, I had the pleasure of introducing to the notice of the meeting a curious document, or rather series of documents, relating to a well known tax or charge on all tin produced and smelted for local use, or for exportation, in the two western counties of England, in which that metal has been immemorially worked. The origin of this tax, and the ground of the claim to a perception of it by the Crown, or by Earls or Dukes of Cornwall when those dignities became the recipients of this ancient endowment by a grant from the Crown, is very obscure; and as we are now as well acquainted with the history of it as we are ever likely to be, this obscurity is not likely hereafter to become less.

The document had been sent to the Society by Mr. (now, Sir John) Maclean, with valuable comments, which are now partially embodied in his prefatory notice of it.

This impost, known down to as late a date as the first year of the present reign, is, and always has been, known in those counties as the “coinage” duty; and derived its name from the “*cuneus*,” or stamp used by the royal or other authorized legal recipient of the dues, and impressed upon the smelted metallic block or ingot, after it had been fused in a proper mould, and assayed by the officer of the Crown, or of the Earl or the Prince, to whom that duty was granted. The use of the word “*cuneus*” and of the word *cunagium*, as applied to stamped coins, is familiar, and of undefined antiquity; but the use of it, as applied to such produce of tin in the western mines, is, I think, only found in the public records of England since the Conquest. The earliest occurrence of the word in this sense has not been yet found in any original document before the 12th century. The various charters of our early sovereigns, whereby the community of the miners engaged in this branch of local industry was organized, and the franchises which were conferred upon them by those charters, have been elsewhere described with sufficient fulness in a work printed by me in 1843,

of which the library of this Institution is in possession of a copy, presented to them by me, some 17 years ago.

Whether the peculiar claims of the Crown or its grantees were founded on the supposed existence of precious metals (*i.e.* gold or silver) in the ore, or on a much larger claim to the exclusive prerogative of the sovereign to *all* subterranean metallic ores, is a question which may be the subject of reasonable conjecture, but not, in my opinion, of any conclusive decision. Mediæval sovereigns acted on the principle, current among their own doctors of the Law :—

“ Quicquid in occultis abscondit terra cavernis
Jure quidem *nostrum* est; *populo* concessimus usum ”;

and this larger claim is, in fact, the one now generally asserted by the law of most of the continental countries of our hemisphere, though it has long lost its hold in the United Kingdom.

IV.—*Notes on the Geology and Archaeology of Cornwall and Devonshire.*—By W. PENGELLY, F.R.S., F.G.S.

Read at the Spring Meeting, May 17, 1870.

POLITICAL Geography frequently takes its form, in a great degree at least, from Physical Geology. Nations cut off from great rivers by narrow strips of territory, are usually suspected of absorptive tendencies, and of hankering after their “natural boundaries”; and

“Mountains interposed
Make enemies of nations, who had else
Like kindred drops been mingled into one.”

Cowper's Time-Piece.

Geological *formations*, however, pay but little respect to Political Geography. Whether the men on the opposite banks of the Tamar choose to be represented in the British parliament by the same, or by different men, the rocks on which they dwell undoubtedly represent one and the same great portion of Palæozoic antiquity. He who would understand the Geology of Cornwall or Devonshire, must, instead of restricting himself to either County, often make incursions into the other, and, indeed, not unfrequently go much further afield. Though this truth is so obvious as to require neither argument nor illustration, the most important recent fact with which I am acquainted in connexion with the oldest rocks of the two Counties, bears so directly on it, and is of so much interest in itself, that I am tempted to introduce it here, even at the risk of making the Introduction to my brief paper of somewhat inordinate length.

It is well known that, through the labours of Sedgwick, Murchison, Lonsdale, and Godwin-Austen, the Slates, Limestones, and associated rocks of Cornwall and Devonshire—the oldest rocks common to the two counties—have for upwards of thirty years been held to form a distinct group—termed the *Devonian*,—and to be of the age of the Old Red Sandstone of Scotland and

Herefordshire. The following, however, were difficulties in the way of the unqualified acceptance of this chronology :—The Old Red rocks and the Devonian beds differed greatly from one another in the materials of which they were composed, and, more serious still, though each abounded in fossils, the two suites were utterly unlike. There were in the north, to use the language of the late Hugh Miller, “fossil fish by the ton and the ship-load” ; * whilst the southern rocks, especially the limestones of Devonshire, were replete with fossil sponges, corals, crinoids, trilobites, and mollusks. So far as was known, however, none of the fossils of one locality had been found in the other.

The difference in the composition of the rocks implied, of course, a corresponding difference in the character of the two old sea-bottoms which they represented, and this of itself would probably be a sufficient explanation of the absence of the *Devonian* invertebrates in the Old Red formation ; but it might have been expected that it would not apply to the fish. It is not easy to see why they, being free-swimmers, should fail to find as genial a home in the southern as in the northern area. Be this as it may, their remains were not forth-coming in the deposits of the south, and this constituted the chief amongst the difficulties alluded to.

As long ago as 1843 the late Mr. Jonathan Couch discovered near Polperro certain fossils such as he had never seen before. He at once submitted them to Mr. Peach, then resident at Fowey, who believed them to be fish remains, and described them as such in a paper read to the British Association, at Cork, in the year just named. They naturally attracted a large share of attention, and several geologists devoted much time to their elucidation. At length, in 1851, Professor Mc Coy, having subjected such specimens as he could command to a microscopic investigation, pronounced them to be sponges merely, and the case was supposed to have collapsed. I had made a large collection of them, had traced them from Talland Sand bay to the Rame Head, and had found them in the parish of St. Veep on the left bank of the Fowey, at Bedruthan Steps in North Cornwall, and at Mudstone Bay in South Devon. To this collection I added from time to time as opportunities offered, believing that, whether sponges or

* “Foot-prints of the Creator,” p. 2.

fishes, the fossils were good indices in geological chronology.

Whilst accepting the decision of Professor Mc Coy as probably final respecting such specimens as he had seen, I stated in 1852, to the Royal Geological Society of Cornwall, that I had found at Hannafore Point, near Looe, a specimen such as he had *not* seen. This, in 1857, was submitted to Mr. W. H. Baily, who at once identified it as a fish defence-spine; and as such I described it in a paper read to the British Association at Leeds in 1858, when the identification was confirmed by Sir P. Egerton, F.R.S. In 1862 I read to the same body, at Cambridge, a paper descriptive of a scale of *Phyllolepis concentricus*, an Upper Old Red Sandstone fish, found by my son, Mr. A. Pengelly, in my presence, on the northern shore of Torbay.

The ichthyolitic character of the two fossils just named was admitted by all palæontologists, but Mc Coy's decision respecting the "Polperro fossils" remained unreversed and, so far as I know, unquestioned until the 12th of March, 1868, when the Rev. W. S. Symonds, F.G.S., resident in Herefordshire and familiar with the Old Red *Pteraspidian* fishes of that county, was examining my collection of the so-called "Polperro sponges." On having his attention called to a fine specimen of great size, he exclaimed "That's Pteraspis," and at once urged that it should be sent to Professor Huxley for examination. This was accordingly done, and in a few days I had the gratification of learning that that distinguished palæontologist had fully confirmed the identification by Mr. Symonds. As was first asserted by Mr. Peach, the Polperro fossils are remains of Fishes, not Sponges; and the difficulty spoken of has disappeared. Arrangements have recently been made for describing and figuring the Polperro fish in an early Volume of the Transactions of the Palæontographical Society.

The case before us then may be thus briefly stated:—To ascertain the place of the Devonshire Slates and Limestones, go into East Cornwall and collect fossils, and, having taken these into Herefordshire, in order to their identification, it will be found that they fully confirm the belief that the rocks in question belong, like the Old Red Sandstones, to the interval between the Silurian and Carboniferous systems.*

* For the History of the Discovery of Fossil Fish in the Devonian Rocks of Devon and Cornwall, see *Trans. Devon. Association*, Vol. ii, pp. 423–442.

It is probably very unusual, and, no doubt, most undesirable to bring a paper before a society for the purpose, not of communicating, but of soliciting information: to have, in short, no higher aim than that of calling attention to desiderata and unsolved problems. But, be this as it may, my present object is to ask my friends in Cornwall to devote attention to certain questions, interesting in themselves, and calculated to throw light on certain points, more or less obscure, in the geology and archæology of Devonshire.

Joints.:—Thanks to the President of the Royal Institution of Cornwall, and others, it has long been known that the granites and older rocks of Cornwall and Devonshire are traversed by joints which pass in definite directions through all the rocks alike, whatever their age or material. In the latter county, at least, they form two principal systems, which, speaking roughly, may be called the “east-and-west joints” and the “north-and-south joints.” It cannot be doubted that they are superinduced, that all those of either system are of one age whatever the rock they traverse, and that the age of each system must be less than that of the most modern rock they pass through. Now, as we know that the granites of the two south-western counties are more modern than the great Coal period, it follows that both the east-and-west and the north-and-south joints came into existence in post-carboniferous times. To this extent, I believe, the joint phenomena everywhere concur; but beyond it, there is not, so far as I am aware, any evidence, save in one limited locality.

The excepted district is the southern shore of Torbay, where the two systems of joints intersect the *Devonian* limestone, and one another. In the same locality the comparatively modern New Red Sandstones, or Triassic rocks, are well developed—the formation to which the well-known red colour of the cliffs of south-eastern Devonshire is due. Now, it happens that, instead of being in contact, as they all were originally and many of them are still, the walls of many of the joints of both systems are some distance apart, and the spaces between them are filled with New red sandstone dikes, of which those running north and south are of a slightly, but appreciably, darker red than those having an east-and-west direction. It is not possible therefore to avoid the con-

clusion that both systems were in existence *before the close of the Triassic era.*

A further inspection shews that where the *dikes* intersect,—and the instances are by no means few—those having a north-and-south direction always cut through the east-and-west system: a fact from which it may be safely inferred that the former are more modern than the latter, that the *joints* they occupy are of different ages also, and that whilst those running east and west may perhaps be pre-triassic, the transverse system came into existence *during* the New-Red era.

The facts just enunciated are well seen in vertical sections; but a ground-plan or bird's-eye view discloses something more. It then appears that the east-and-west dikes—those intersected—are faulted, and traversed by longitudinal veins of carbonate of lime, which come up to, but stop short of, the north-and-south dikes. Their continuity is interrupted by the latter, but is immediately resumed on the other side. Here, again, we may draw a few perfectly trustworthy inferences: First, that a considerable interval of time elapsed between the formation of the east-and-west dikes and that of those which cut through them;—an interval sufficient for the former to become coherent, to be themselves, as well as the rocks containing them, jointed and faulted, to be fissured longitudinally without affecting the integrity of the walls along the various divisional planes, and for the fissures to be filled with calcareous matter by precipitation. And, second, that it is impossible to deny that in some cases at least, joints are due to an agency utterly unlike desiccation.*

Whilst there appears to be no flaw in the logic by which the foregoing conclusions are reached, it would be of great interest to get some additional facts,—facts which probably not only exist, but are abundant in a county which, like Cornwall, is rich in veins and dikes; and, if it may be done without presumption, I venture to commend the subject to, and to request the co-operation of, the geologists of the county.

The Lower Silurian Fossils of Cornwall.:—As long ago as 1837, Mr. Peach discovered fossils in the quartzites near Goran Haven.†

* See *Trans. Devon. Association*, Vol. i, 1863, pp. 31—43.

† See *Trans. Royal Geol. Soc. Cornwall*, Vol. vi, pp. 317—326.

It is well known that they proved to be of Lower Silurian age, but it may be doubted whether the lode then struck has been so thoroughly worked as it deserves, or whether all the bearings of the subject have been fully recognized.

There is in the New Red Sandstone formation immediately west of Budleigh Salterton, in south-east Devonshire, a remarkable bed of pebbles, of which by far the greater number are quartzites, commonly of a dull reddish colour. In 1863, Mr. W. Vicary, F.G.S., announced that these quartzites contained fossils, and the late Mr. Salter, F.G.S., described them as Lower Silurian species, which had their analogues in rocks of the same character, not in the typical Lower Silurian country of Britain, but in Normandy; whence, as he believed, the pebbles had travelled.* From that time to the present, the subject has again and again come to the surface, and there seems no little reluctance to accept so large a gift from our "natural enemies." There can be no doubt that, come whence they may, their appearance as a part of the Devonshire Trias is a very remarkable phenomenon. Conglomerates—more correctly, Breccias—are very prevalent amongst the red rocks from Torbay to the Exe; but the stones which compose them are not well-rounded, are not quartzites, and the fossils in them are not Silurian but well known Devonian forms. At Budleigh Salterton comes a sudden irruption of a vast horde of beautifully rounded and even polished quartzites, containing fossils known to be of Lower Silurian age, but differing from those of the same period found in British rocks.

The bed is about 100 feet thick, extends inland for about nine or ten miles along a line parallel to the valley of the Otter, and by its outcrop forms the high ground a few miles west of that river.

Some years ago, with Dr. Scott and Mr. Vicary, I visited Goran to inspect the Lower Silurian rocks and fossils there. We succeeded in finding a few specimens, but by no means good ones. Nevertheless, it is a fact that the rocks, as well as the organic remains they contain, have so strong a resemblance to those at Budleigh Salterton that I have never been able to lose sight of the probability—to use no stronger word—that the parent rocks

* See *Quart. Journ. Geol. Soc. Lond.*, Vol 20 (1864), pp. 283—302.

which yielded them are as likely to be in Cornwall as in France. The Anglo-Saxon may be less unwilling to be under obligation to the Cornubii than to the Gauls. The ancient possessors of the soil have a right to be generous to those who have come to share their home. I shall be delighted to hear that some energetic young Cornishman is devoting himself to the elucidation of the Goran quartzites and their contents.

Flints on the existing Beaches of Cornwall and West Devon:—
It is well known that there is at present no deposit of flint anywhere in Cornwall or in Devonshire west of the basin of the Teign. That, with a few local and easily explained exceptions, our beach materials travel up channel, or from west to east, might have been predicated from the contour of the coast and the prevalence of south-westerly winds. That such is the case is rendered evident by the fact, that, eastward from the Exe inclusive, bars of sand and shingle extend from the western towards the eastern side of every river in south-eastern Devon and south-western Dorset; that the rivers themselves are jammed against their eastern banks, where, if sufficiently powerful, they force a passage to the sea; that pebbles can be traced eastward, but not westward, from their parent beds; and that the famous Chesil Bank, nearly eleven miles long, which connects the "island" of Portland with Dorsetshire, is entirely made up of materials from the west, amongst which the Budleigh Salterton quartzite pebbles occur in considerable numbers, after having performed a journey of fully fifty miles.

Beside the foregoing facts, there is another, which with them in view, is not easy of explanation. I allude to the occurrence of flints on, at least, almost every existing shingle beach along the entire sea-board of Cornwall and West Devon. This fact appears to be of considerable standing, for it is equally true of the Raised beaches of the two counties. Nevertheless, in the earlier era, represented by the ancient beaches, the direction of transportation was up channel as at present, for at Easter last (1870) Mr. Vicary and I found Budleigh Salterton pebbles in great numbers in a well developed Raised beach at Portland Bill.

Whence the flints on the western strands were derived is a problem that still awaits solution. He who will ascertain their

relative abundance on both the modern and the ancient beaches of Cornwall will do good service; and he who will carefully dredge the English Channel, to ascertain whether or not there are in it any submarine outliers of gravel containing chalk flints, will, I had almost said, do a better.

The Megalithic Monuments of Cornwall.—Recent discoveries have so closely connected Geology with Archæology as to render it difficult to say where the one ends or the other begins. Nothing can be more certain than that, instead of having an unexplored territory between them, they overlap. Man was certainly, in Britain, the contemporary of many animals which had become extinct before the times of history and even of tradition; he occupied this land at a time when many of our valleys were much less deep than they are at present; when the ancient forests so frequently laid bare on our tidal strands were in vigorous growth, and sheltered the mammoth and his contemporaries; he probably collected shell-fish on what are now our Raised beaches; at his advent here he was ignorant not only of the use of any kind of metals, as such, but also of the art of polishing his stone implements in order to increase their efficiency; his most powerful tools were flints chipped into shape but left unpolished, but in addition to these he converted bones into “harpoons” or fish-spears, awls, pins, and eyed-needles.

The foregoing facts must be my apology for suggesting a line of inquiry respecting the Megalithic Monuments of Cornwall. That they are very old must be admitted; but there is reason to believe that but few, if any, of them go into a more remote antiquity than that which archæologists term the *Age of Bronze*, in Britain. Possibly a few of them may be *Neolithic*;—that is, they may go back to the age when *polished* stone implements were the most powerful man had yet invented—but it may be regarded as certain that all of them fall very far short of that still earlier *Paleolithic* time when our predecessors, as has been already stated, used flint tools formed by chipping merely.

The great stone structures, as we all know, are frequently ascribed to the Druids, just as we sometimes assign supposed anomalies in Meteorology to irregularities of the Gulf Stream; in Physics, to Electricity; in Astronomy, to the tail of a comet;

and in Geology, to Convulsions. That, however, to which I wish to call attention at present, is their *popular names*, which appear to be very full of meaning and worth much more than the Druidical hypothesis. For example: It is well known that remnants of megalithic circles exist near Liskeard and Penzance; the former are known as *The Hurlers*, the latter as *The Merry Maidens*;—the former, because they were men, who, playing at Hurling on Sunday, were transformed into stones as a punishment for their crime, and to deter Sabbath breakers; the latter, because they were young women, who, dancing on the sacred day, were petrified for the same reasons. Now, it may be assumed that whenever these structures were reared they were for some well-defined purpose, and that they represented a wide-spread feeling and, at least, a national usage; yet their present popular names must have been given them since the introduction of Christianity into the same districts, since they are obviously intended to check the desecration of the Christian Sabbath.

The acceptance of the names, however, proves either that the populace had utterly lost sight of, or their fathers had never known, the real history of the monuments. In other words, in a district in which the Baal fires are still lighted, and the rites of Flora, though perhaps maimed, are still observed, the purpose of the great stone monuments was *long ago* utterly unknown;—a fact implying either a great number of intermediate generations, or that the race who raised the stones had been supplanted by men of a different language and religion; and forming a strong argument, in either case, in favour of the great antiquity of the remains. The more we familiarize ourselves with the full meaning and chronological value of the monuments of the Bronze and Neolithic Ages, the further, without doubt, will the Palæolithic men, whose handiwork we find in our ossiferous caverns, retire into the remote past.

The task of collecting the popular names of the great archæological remains of this county, together with the legends connected with them and the beliefs and usages which they betoken, would probably not be very onerous; but it seems calculated to aid greatly in certain lines of enquiry which at present occupy a large share of attention.

V.—*The Family of Killigrew.*—By R. N. WORTH, *Plymouth.*

IN the History of Cornwall by Hitchins and Drew, mention is made of a certain manuscript history of the Killigrews of Arwenack, who occupied so important a position in the county in the 16th and 17th centuries. A copy of that manuscript having fallen into my hands, I was led, finding that it contained much novel matter, written in a quaint and characteristic fashion, to prepare an abstract for publication, in the belief that it would be a valuable contribution to the historical collections of the county, and an interesting memorial of a family, now, in the direct line, extinct. The principal portions are accordingly here presented in what may be regarded as nearly their pristine form, nothing of consequence being omitted. The original is not known to exist, and the copy had been somewhat modernised.*

The Author of this History was Mr. Martin Killigrew, son-in-law of the second and last Sir Peter Killigrew, sometime Recorder of Falmouth, and for several years Steward of the Arwenack Estate. He appears to have been born in 1666, at Liston, in Staffordshire, and to have first made his acquaintance with the Killigrews whilst a Captain or Lieutenant at Pendennis Castle, under John, Earl of Bath. His name originally was Lister, and he took that of Killigrew upon his marriage with Ann, Sir Peter's youngest daughter. He survived all the Arwenack family with the exception of his grand-nieces, through the younger of whom Earl Kimberley inherits the property. The history was written in 1737 or 1738, as appears by a Letter, dated August 25th, in the former year; in which he says, "I am upon Leaving behind me Something Historically of the Family, y^e memory of w^{ch} is so Dear to me." He was then in fair health of body for his age (71), and took regular exercise in "Kingsington Garden"; but appears to have been

* I have been favoured by the Rev. C. M. Edward Collins, of Trewardale, with an extract from a letter written by his Grandfather, Mr. George Browne, in 1791, in which the writer states, "I have the history of the Killigrew family, of Arwenack." Possibly this manuscript, which is now not to be found, was the original.

rather low-spirited, since he says, "at present y^e thoughts of Leaving this world are farr from being disagreeable to me, relishing nothing in it, and yet affected with Disagreeable Incidents happening." At this time he built the Pyramid which now stands near the Railway, at Falmouth, as a kind of family memorial.

As Steward he used to make yearly journeys from London to Falmouth. He was evidently a shrewd capable man, with strong feelings, and a keen sense of humour. During his Stewardship there was continual warfare between the Killigrews and the Corporation of Falmouth, in which he bore a stout part, and of which he has left a very curious record behind him. The soldier indeed seems to have clung to him through life: for he says in one of his letters to Mr. Abraham Hall, his successor in the Stewardship, "I value not my head being loaded with curses"; calls an opponent "a right raskell," and advises Hall, "I am a great enemy to the showing of teeth; ever let yours be felt before they are seen." Yet he gave the old Town Hall to the Corporation, and likewise presented them with their maces. In his record of the Corporate proceedings, he tells an uncommonly good story of the manner in which he once overreached his opponents. He had half engaged a Curate for the parish, whose salary he had offered to pay, and who on his road down to Falmouth got drunk at Penryn, and whilst lying in the gutter there was robbed by the boys of a very necessary article of wearing apparel. Feeling it would never do to appoint such a person himself, yet having compassion on his miserable plight, he told the poor fellow to go to the "King's Arms," and there to abuse him for his "barbarous usage...without limitation." This was done; the bait took; the Parson got the appointment from the Rector; and Martin records with great glee how "the next Sunday he preached, and that at me, to my face without sparing."

As a specimen of his Letters, I may quote the following curious production:—

MR. ABM. HALL.

Yours of y^e 28th past fully to my satisfaction came to hand in due time. But as yours in course by this post is not come to hand, and Snoxell * being down in Essex, and having Litle to say of business, shall deferr making you answer till his returne.

* His Clerk.

It is but by guess I have to tell you that you are not to expect to see y^e Col^o * till about y^e end of y^e first week in May, who bringing with him y^e young gentleman in question, must add considerably to y^e flurry you will be put in from his being a person of great consideration, as I hear, tho' I know not so much as his name, and as Litle any particular of his circumstances. But suppose you must be advised by the Col^o as to your providing accomodation for their Retinue. Two Bed Chambers for y^e gentlemen you will put in y^e best order you can; a room for y^e Serv^{ts} to Eat in; The best Cook your Town affords; some choise good Hambs and a provision of fatt chickens; Wine you must leave Mr. James to provide; and if any fine green Tea be to be had, you must secure some of it, as what y^e Col^o is most Nice in, and drinkes much off. Two of y^e Largest Tea Potts you can borrow, He using them both at a time. Nice and knowing beyond y^e comon in providing a Table, so that your mother will only have to receive his orders Every morning on that head. The Stable put in y^e best order you can, provided with Hay & Corne. If I do not greatly mistake, this flury cannot continue above three weeks, for that their impatience will be greater to get back to Bath than it is to see Falm^o.

You are still in time to see that your Closett & Books be put in y^e best Order you can, and nothing to be seen there belonging to other people's business, but only to y^e Estate. You will finde y^e Col^o quick of comprehension, and as ready at figures as can be supposed. At y^e same time you observe to them y^e great sums I have raised from y^e Estate you will do me y^e Justice to note y^e improve^{ts} I have made upon it. And that tho' times are now dead as thro'out y^e Kingdome, yet as they have been good it may reasonably be hoped they will be so again, & that in y^e main you doubt not of giving a yearly demōstration (by y^e Rentall) of y^e increase of y^e Estate; when Diner is over you git back to your Closet, and as you see it proper, you returne with your pen in your Ear, making y^e Col^o sensible he is wanted above, whereby he may git rid of impertinant Compⁿ if such be with him. Nor can I see in respect to time y^e Col^o can do more in business than from day to day, he giving you orders w^{ch} you will take in writing, and at parting take his hand to them, you giving him a duplicate.

You will be able to borrow glasses, knives, forks, and spoons, with some handsome pieces of plate, in everything to make y^e best figure you can; & if you can borrow a better Horse then your own, you ought to do it. Relying upon y^e Col^o generosity (His greatest fault), you will be nothing out of pocket upon this occasion. As from me pray your Mother to trouble y^e Col^o with as Litle of her conversation as her business will admit off. I thinke enough at a time to a man of your accute parts.

Yours,

St. James's, 16th Aprill, 1737.

MART. KILLIGREW.

* Col. West, husband of the last Sir Peter's youngest granddaughter, of whom more anon. The "young gentleman" is apparently Mr. Merrill, subsequently the husband of the Colonel's eldest daughter.

Martin Killigrew, in the commencement of his History, observes that the Killigrews were "of the most ancient of our people"; and that Richard, Duke of Cornwall and King of the Romans, gave them "y^e spread eagle with the border of Cornwall" as their arms.* They held the manor of Killigrew until the time of Henry VIII, "tho' some time before they had marryed y^e daughter and Heir of Arwenack, and had removed their Residence thither." When Pendennis Castle was built by King Henry, John Killigrew was made "Captain therof," and so continued until he died, in 1567, "having rebuilt Arwenack House, y^e finest and most costly then in y^e county," and being possessed of an estate of £6000 a year, "his lands in those parts extending from Arwenack to Helford Passage." Sir John Killigrew, his son, succeeded him both at Arwenack and at Pendennis, and died in the 26th of Elizabeth, having placed his two younger sons, Thomas and Simon, at Court, where they "made their Fortunes." The History then proceeds:—

"John, y^e eldest Son of y^e said Sir John Killigrew, marryed Dorothy, daughter of Tho^s Monck, of Poderidge, in y^e County of Devon, Esq., Ancestor to Gen^l Monck, Duke of Albemarle, by whom he had 9 Sons and 5 Daughters; who, tho' a father of so many Children, was so negligent of his Affairs, a fine Gentleman, a Gamester, and so profuse in his Way of living, as to leave his eldest son, y^e last Sir John Killigrew of y^e name, a very shattered Estate. The said last Sir John Killigrew, a sober good man, to his utter undoing, marryed y^e daughter of an ancient and honorable family, now in y^e peerage, in respect to whom I forbear the name; making herself infamous, and first debauched by y^e Governor of Pendennis Castle.†

"In y^e said Sir John's younger days, S^r Walter Raleigh,

* Hals took the arms to indicate the descent of the family from the Duke through his concubine, Joan de Valletorta. The arms of Falmouth, derived from those of the family, are—a two-headed eagle displayed, charged with a castle on each wing and a rock surmounted by a pole on the body.

† Hals also gives this lady—the daughter of Sir George Fermor—a very bad character as a widow, stating that she went on board two Hanse-town vessels, in Falmouth Harbour, with a numerous gang of ruffians, and murdering two Spanish merchants, took thence two barrels of pieces of eight. Retribution awaited all the criminals but the chief; the whole party being tried at Launceston, and executed, with the exception of "Lady Jane," who escaped by the influence of friends, one being the Governor of Pendennis. Davies Gilbert says, "this terrible story cannot possibly be true, in the manner or to the extent in which it is related."

homeward bound from y^e Coast of Guinea,* put into Falmouth, where he found only one poor Litle house upon y^e ground where y^e town now Stands; who, being refreshed at Arwenack, and his people in y^e said Poor house, gave him a notion of y^e usefulness of more houses for y^e accomodation of seafaring Men putting in there; who, returning to Court before his late fatal disgrace, laid such his projection (by memorial) before King James y^e 1st, whereupon Sir John founded a petition in y^e case for a Royal license to build 4 houses at y^e place for y^e better accomodation of shipping, it being not otherwise lawful to put up such buildings; who met with much opposition therein from y^e Penryn Interests—so early were they jealous of y^e growing Smithick, nicknamed Penny-come-quick. But after several London Journeys and very great Expense, he obtained such license for buildings, w^{ch} are now increased beyond y^e license, and by y^e troubles of Charles 1st coming on, connived at, or not minded, when y^e prerogative of y^e Crown was disregarded.

“But this worthy gentleman, y^e last Sir John Killigrew, was hardly got over this difficulty, when he fell under a much greater Affliction, as aforementioned, the Prostitution of his Wife; who caused herself to be called, or unaccountably was known by y^e name of, Lady Jane. Arrived to that shameful degree, Sir John, in point of honor and for quietness of mind, found himself under a necessity to prosecute a divorce from her in y^e Archbishop’s Court, which lasted so many years and so very expensive, as quite Ruined his Estate, to y^e degree of his being often put to very hard Shifts to get home from London upon y^e frequent recesses of y^e process, but at length obtained y^e Divorce in all its formal Extent * * * *. This woman in such long contest was in no degree protected by her family, but supported and cherished by y^e town of Penryn, from their jealousy and hatred of Arwenack, as specially appears to this day, by plate by her given to the Mayor and Corporation of Penryn, when she came into her Jointure, as an acknowledgment for such their protection.† Sir John did not

* Guiana.

† This cup is still in the possession of the Corporation of Penryn. It is of silver, will hold about three quarts, and is inscribed:—“From Mayor to Mayor of the town of Penryn, where they received me in great misery. Jane Killygrew, 1613.”

long outlive such his divorce, dying in 1632, whose Widow came into her Jointure * * * who lived so possessed to and in y^e year 1648, when dying, Sir Peter Killigrew, y^e first of y^e name and y^e next eldest Brother of Sir John of y^e said 9 Sons, succeeded as of Inheritance to y^e said poor reduced Estate ; * bred under y^e then Earl of Bristol in Spain, and at home at Court, a fine Gentleman, a Gamester in his youth, when he had nothing to lose, and ever a merry and a desirable Companion, even in those times of distraction and cruel mad factions, still in essentials preserving his loyalty to his Prince, but at y^e same Time well with all y^e great Men of y^e opposite faction. Whilst a younger Brother, and nothing but his wit and agreeable temper to live on, he fell in with one of y^e Sisters of y^e Lord Lucas of Colchester, when he was refused, on account of his not being able to make her a Jointure ; which impediment coming to y^e knowledge of y^e then Wm., Earl of Pembroke, † freely and voluntarily, of his own ever noble and generous disposition, jointly with his Brother Philip, by their deed bearing date y^e 13th May, in y^e 5th year of Chas. 1st, between them of y^e 1st part, and y^e said Sir Peter Killigrew and Dame Mary his wife of y^e other part, did grant and demise. [Then comes a list of "lands, tenements, parcels of ground, meadow, and pasture" near Cardiff, "amounting to a good £300 a year," granted to Sir Peter and his wife by the said Earl of Pembroke]. "As aforehinted of y^e said Sir Peter Killigrew, preserving entire and at heart his loyalty to his Prince, he had opportunity of giving a strong instance, of w^{ch} he often discoursed with tears in his Eyes, in y^e presence and hearing of his Son and Lady Killigrew, [his] Daughter-in-law, from whose mouths I had y^e story as thus : King Charles being under force brought to Hampton Court, and in treaty with y^e Parliament, and Sir Peter being apprized of y^e bad intentions of Oliver to his Majesty, he got admittance to y^e King, showed him y^e imminent danger he was in, and that he had provided horses and a Ship upon y^e coast of Sussex, and with his head would answer y^e carrying him off, provided his Majesty w^d keep y^e secret especially from his two favorites, ‡ then by Sir Peter

* Its value had been reduced to £80 a year.

† This was the friend and patron of Inigo Jones and Ben Jonson, the Pembroke of the famous epitaph on "Sidney's sister."

‡ Evidently Berkeley and Ashburnham.

named to y^e King, and now by me suppressed in respect to their families in being. The King agreed to y^e proposal, saying he would go to bed as usual, and when all was quiet would rise again, and be ready to take horse at y^e time and place appointed in y^e night, at 2 o'clock. Sir Peter was punctual on his part, and waiting till daylight, got off, but not without some suspicion and after questioning. These two favorites the night following carried off y^e King as my Lord Clarendon tells, &c.*

“Lord Lucas, Sir Peter’s Brother-in-law, being secured by order of Parliament, Sir Peter solicited his Lordship’s being admitted to bail, with success, and became bound to y^e Government for his Appearance in £6000, w^{ch} Bond was forfeited, by his Lordship getting off beyond sea, leaving Sir Peter to struggle against y^e penalty of y^e said Bond, more than sufficient to have ruined almost any other man in these times; but his Interest was such among the reigning Men of y^e Faction, as to get clear of it in y^e end.

[Here follow some references to the relatives of Sir Peter’s wife, who “was of a very ancient and honorable family in Essex,” and who “lived not many years after her marriage to Sir Peter Killigrew, leaving him only one son, y^e last Sir Peter, and one daughter, who died young; breeding his son at Oxford, and thence sent him to, and kept him in France, to y^e time of y^e Restoration.”]

“In the year 1648, after holding y^e whole of this reduced Estate in Jointure 16 years from Sir Peter, y^e said infamous Lady Jane died; when of inheritance he entered upon it, bringing to it about £12000 of personal estate; which inheritance, however small, he was fond of and cherished, but came not time enough to prevent y^e malicious and envious Governor of Pendennis from burning his fine house of Arwenack, upon Sir William Waller’s (Oliver’s General) coming to besiege y^e Castle.† One of y^e first

* This is a curious story; but there are circumstances in its favour. Charles, after escaping from Hampton, did go to the coast as if expecting to meet a Ship. Could Sir Peter have been misunderstood as to time and place? Hume seems to favour Clarendon’s idea that the King’s going to the Isle of Wight was not entirely voluntary; and considers Ashburnham, if not treacherous, imprudent.

† Tonkin says he burnt it himself, setting fire to it with his own hands, that the enemy might not find shelter in it. Hitchins and Drew erroneously credit “the manuscript history” with this story.

things Sir Peter set about was to show y^e then Government their Interest for y^e good of y^e Revenue, that y^e Custom House ought to be removed from Penryn to his town of Smithick, in w^{ch} he y^e more readily succeeded in granting a Lease of a 1000 years to Jennings, y^e Collector of y^e Customs, whereon was built y^e late Corker's house.* From y^e said Commonwealth, or rather Government, he obtained a patent for a weekly market and two fairs, as also a patent for y^e passage of ferry from Smithick to Flushing—both perpetuities—having before purchased y^e Barton of Trevetan. And it must be owned, very unthinkingly, to equal in figure y^e Rival Town of Penryn, he obtained y^e Charter incorporating y^e village of Smithick by y^e name of Falmouth, and not only built y^e Church there, but at a greater labor and expense, obtained an act of Parliament for y^e taking y^e present parish of Falmouth out of and from y^e then parish of Budock, and in compensation to y^e Parson of Budock, charged y^e Corporation of Falmouth with a perpetual annuity of £3, payable to y^e said Parson of Budock; to y^e payment of w^{ch} annuity y^e body and personal members of y^e Corporation expressly by the act are liable to, and none other, altho' they fraudulently take y^e money out of what is yearly raised for y^e Poor.

“The second Sir Peter also had a younger brother, William by name, bred a Soldier from his youth, in y^e Service and long wars of y^e States of Holland against y^e Spaniards, was their General and y^e Commander-in-Chief of y^e Troops they sent in aid of y^e Dane against y^e Swede, gained a complete victory over them, took all their baggage and many hundreds of good horse; w^{ch} y^e King of Denmark, much wanting, bought them of y^e said Gen^l Killigrew, to y^e amount of upwards of £3000, and took y^e King of Denmark's Broad Seal for y^e money, paying his Officers and Soldiers out of his own pocket for their Shares of y^e said Horses, but could never obtain any y^e least satisfaction from y^e King of Denmark, upon or from such his Broad Seal. The Service over, he returned to his Masters, y^e States of Holland, continued in their service many years, was of service and support to many of his Countrymen during the Exile of King Charles y^e 2nd, as by letters of thanks I have seen under y^e said King's hand. At w^{ch} time, so being in

* Mulberry Court.

Esteem with y^e Princess of Orange, y^e General Killigrew introduced his Sister Elizabeth into her service, from whence Count de Kinski, of y^e Empire, married her. Upon a prospect of War with y^e Dutch a few years after y^e Restoration of Charles 2nd, y^e said King, with y^e rest of his subjects in y^e service of y^e Dutch, called over y^e said General Killigrew, gave him a Regiment of foot—Sir Charles Littleton his Lieutenant Col'—and by patent created him a Baronet, and for failure of Heirs Male, y^e honor descending to Sir Peter Killigrew, his nephew, son of y^e first Sir Peter; and who, dying a Bachelor in 1678, left his said Nephew what he had composed, more of honor than of real substance.

“In 1667 Sir Peter Killigrew died on y^e Road at Exeter, leaving his son, Sir Peter Killigrew, with his Estate, about £7000 in money. Having in 1662 happily married Frances, daughter of Sir Roger Twysden, of East Peckham, in Kent, one of y^e finest women of her time, mistress of good sense, and endowed with virtue and beauty, and was y^e greatest worldly happiness of Sir Peter's life to y^e time of his death. Who no sooner found himself in his said Estate, but Ambrose Jennings, y^e said Collector of y^e Customs, dec^d, and Bryan Rogers, his son-in-law, possessed of his house in Falmouth, also by cunning sinister means took possession of y^e Corporation, bringing his own Litle Creatures into it as Aldermen and Burgesses, and for more than twenty years, to y^e time of his death, nosed and sat hard on all occasions upon Sir Peter's interest in y^e heart of his Estate, and greatly to y^e detriment thereof; Sir Peter residing much at Court, and leaving all his domestic affairs to Draper, his Steward, who sacrificed and betrayed his Master's Interest to y^e said Rogers in all things relating to y^e Corporation, and y^e Estate to y^e Tenants, for Bribes, of w^{ch} there are scores remaining to this day, at y^e end of 50 years. Soon after Sir Peter's coming into y^e Estate afs^d, y^e said Rogers, by y^e help of Dennis Russell, an Attorney, and one of his Aldermen, drew in and influenced Sir Nicholas Slaning, an easy unthinking Gentleman, to attack Sir Peter in his Inheritance, in claiming a certain field in Pristloe, of about 20s. a year value; W^{ch} at y^e end of about 10 years contest at Law and in Equity, y^e field remained with Sir Peter, to y^e damage of about £3000 to y^e said Sir Nicholas, and £1000 to Sir Peter; who, tho' his bent was to speculative learning, he was indefatigable in defending and

pursuing his interest in obvious things; who with y^e money his Father left him (fortunately) purchased y^e Barton of Tregenver, y^e Barton of Trescobeas, and Howard's part of Treganeggy * * * *.

“In or about y^e year 1670 Sir Peter left London, and settled with his family at Arwenack, in order to y^e more closely looking into the Interest of his Estate there; and in particular for y^e better accomodation of y^e Revenue of y^e Customs, he set about building a Public Quay there, in w^{ch} projection and carrying it on to success, he met with very great opposition from y^e towns of Penryn and Truro, in w^{ch} y^e said Mr. Rogers played his Aldermen and y^e whole Corporation of Falmouth upon Sir Peter * * * *. Besides y^e building of y^e said Quay, w^{ch} was very costly, he was obliged to pursue a Commission out of y^e Exchequer for establishing y^e Limits of y^e Port, with y^e approbation of y^e then Lord Treasurer Danby, and that at a very great Expense, Labor, and many London journeys; when also was judged necessary, y^e obtaining an Act of Parliament for fixing y^e pitiful Duties to be paid him by y^e Merchants on their imports and exports of their goods from such his Quay * * *. Y^e said public Quay, projected and established with y^e Custom House upon it, was y^e putting a full stop to y^e Clandestine trade y^e said Rogers had till then carried on; and had not y^e Revenue of y^e Customs (upon y^e coming in of King William) been in a shameful manner prostituted to Parliament interest, as it more and more continued to be, y^e benefit of y^e said Public Quay would have answered all his labor and cost * * * *.

“About y^e latter end of y^e year 1683, having some few years before buried an infant son called Peter, he found all his ready money gone, and got into debt more or less; and in family charged with an only son, just come of age, a fine and hopeful young Gent, and two daughters, Frances and Ann, remarkably good and dutiful children, and his Estate yielding him not more than a reasonable subsistence, common prudence put him upon y^e thoughts of marrying his son, in order that from such Wife's portion in money to make provision for his two daughters, on settling his whole Estate upon his son. And soon had an opportunity of effecting y^e same, by marrying him to y^e daughter of a most worthy and honorable Gentⁿ, his neighbour,* and in all

* This was Sir John St. Aubyn. Martin Killigrew's character of the lady

human prudence, a promising and suitable match, with a portion of £5000, four of w^{ch} Sir Peter took, and allowed y^e son to take y^e other £1000 to himself with a rent charge of £300 a year, and a jointure of £350 a year to y^e Young Lady, free of all taxes. Consumated in May, 1684, but proved a very unhappy Match, from y^e young Lady's taking more after her mother than her father, bringing much Sorow at Arwenack House, and whose ill temper occasioned her husband's seeking and keeping Company abroad more than otherwise he would have done. With y^e like good prospect, y^e next year, 1685, Sir Peter marryed his daughter Frances * to y^e full as unfortunately as he had marryed his son, who, on y^e 20th March, 1687, was most basely murdered by a stab in his back, in a Tavern at Penryn.†

“This loss of his only son, and hopes of his family (in a way of speaking) broke Sir Peter Killigrew's heart, so as never after to take delight in anything but his Lady and two daughters, all three remarkably good and tender of him to his dying day. But Mr. Rogers, Lord of the Corporation, took all advantages of such Sir Peter's deplorable case, and raised perpetual Vexations to him amongst his tenants * * * *.

“About y^e latter end of y^e year 1688 Sir Peter's daughter Frances, being cast off in a very unaccountable manner by her husband, Sir Peter took her home, with her only child Mary, and seeing no hopes of issue Male from that Marriage, nor any comfortable hopes from his other Granddaughter by his late Son, Ann by name, from her education under her wretched Mother, Sir Peter then first entertained y^e thoughts of marrying his youngest daughter, Ann, to a young Gentleman, a Soldier of Fortune, induced thereto from y^e great intimacy which had subsisted

must evidently be taken *cum grano*. He was a man of strong prejudices, a bosom friend of George Killigrew, and since his account of the manner in which the latter was killed is hardly borne out by other evidence, it is quite possible that the bad temper (if it were so) of the wife arose from the conduct of the husband, instead of, as he puts it, the reverse being the case.

* To Mr. Richard Erisey.

† He was killed in a duel with one Vincent, a barrister, who was tried for the offence at Launceston, and acquitted, but died not long after, according to Hals, of an atrophy, caused by the sad event preying on his mind. Hals further states, that the death of young Killigrew was considered by the people of the district as a judgment upon the family for the murder of the Spanish merchants by Jane Killigrew, already noted.

between his late son George, and y^e said young Gent, w^{ch} match was consummated upon y^e 23rd of February, 1689, and w^{ch} was but in one respect unfortunate, in a very essential circumstance, w^{ch} was of there being no issue of y^e said marriage; for that in all other respects it was a remarkably happy match, and to y^e apparent comfort of Sir Peter, his Lady, and his daughter Frances, and y^e said Ann, y^e said Gent proving a dutiful and painstaking son to Sir Peter and his Lady, a good and kind brother-in-law to y^e said unhappy Frances, and as good a husband to y^e said Ann, to y^e day of all their deaths, he having y^e mortification to survive them.* Then soon after Sir Peter had so married his said daughter Ann, he with all his family retired from his said troublesome Estate, and y^e daily vexations created him therein (by y^e said Rogers) to reside at London, leaving his Estate and Concerns in Cornwall under y^e care and management of Mr. Quarme, Parson of y^e Parish, a good living w^{ch} Sir Peter had given him, a man of acute parts and firm in Sir Peter's Interest in opposition to y^e encroachments of y^e said Rogers."

[Martin Killigrew goes on to narrate somewhat tediously, how Sir Peter, after some years soliciting at the Treasury for justice to be done him as to Pendennis Castle—till then held on a long lease, at £2000 fine and £12 10s. yearly rent—got the Government to take a lease for 21 years, at £200 a year, without a fine, and retired to Ludlow in 1697. Whilst there he discovered that Mr. Quarme "had become a busy and ungrateful person." The obnoxious Rogers had died a "mere begger," about 1693, and had been succeeded by one Robert Corker, who, after being originally "a poor boy kept in charity," had been taken apprentice by Rogers, and "proving an acute insinuating young man," had made use of his opportunities to assist in his master's ruin. After Rogers's death Corker became master of the Corporation, having, to effect his end, "insinuated himself into a good understanding with Mr. Quarme,—a vain glorious empty busy man,† to the degree of entirely sacrificing Sir Peter's interest and estate to y^e said Corker's ambitious views." Quarme was therefore dismissed in

* This was Martin Killigrew himself.

† Elsewhere Martin says that Mr. Quarme was the first who levied the Rector's rate outside the borough.

1700, and one "more trustworthy," *i.e.* Martin himself, put in his place. Sir Peter died in 1704, and was buried at Falmouth].

The History proceeds :—"Frances, Lady Killigrew, his widow, returned to and lived at London with her children, becoming her character as a wise and good woman ; who, tho' absolute mistress of y^e whole Estate, assumed nothing to herself from thence, but shared only the necessaries of life with them, and died in April, 1711, and was buried at Falmouth, with Sir Peter, aged about 70. From whose death Frances and Ann, with y^e husband of y^e latter, continued to live together. In June, 1711, Mary, daughter of y^e said Frances, married herself,* and died at York, of the small-pox, in January, 1715, leaving issue two daughters, Mary and Frances. Ann, Sir Peter's youngest daughter, died, after a seven years' lingering sickness, in Charles street house (where she was born), in 1727, without issue, and was buried at Falmouth, with the foregoing family. Frances, Sir Peter's eldest daughter, lived in tolerable good health till y^e beginning of March, 1736, and then died, when by virtue of Sir Peter Killigrew's settlement of 1699, y^e forementioned two granddaughters of y^e said Frances entered upon y^e Estate without contest and not impaired. Thus you see an end of a Family in y^e elder house, ancient and honorable and as unfortunate."

Concerning the younger branch of the family, the writer says that Thomas and Symon, sons of Sir John Killigrew, 2nd Governor of Pendennis Castle, were in great esteem with Queen Elizabeth, and acquired a great Estate. Sir Robt. Killigrew was at y^e head of the 2nd branch, "Vice Chamberlain to King Charles y^e first's Queen," and left his great possessions to his eldest son, Sir Wm. Killigrew :—"several younger sons making great figures in y^e world, and four fine daughters, famed for their Wit and Beauty, and from thence preferred in marriage, one to y^e Earl of Yarmouth, another to Lord Shannon, a third to Berkeley, Lord Fitz-Harding, and y^e other to Godolphin of Cornwall. Y^e said younger sons of y^e said Sir Robert making their way at Court by their Wit, w^{ch} for want of prudence, was y^e ruin of y^e second branch of this family, still excepting, with just regard to his memory, Henry, one of y^e youngest Sons of y^e said Sir Robert, bred to y^e Church and of great

* To Colonel John West.

Esteem therein, Governor to y^e Earl of Devonshire's son, since by King Wm. created Duke of Devonshire, also Preceptor to y^e late Duke of York, King James y^e 2nd, by style Dr. Killigrew, Master of y^e Savoy and Prebend of Westminster, who had two sons, Henry and James, both bred to y^e Sea. His Son Henry, a man of strict honor, by long service arrived to command y^e Fleet of England under King Wm., in y^e late War with France, well known by y^e name of Admiral Killigrew, whose younger brother James, at 21 years of age, was honored with y^e command of 5 men of war in y^e Straights; where about y^e height of Leghorn he met with and engaged 2 capital French men of war, bigger than any of his, and yet, tho' two of his Captains proved Cowards and would not come to his assistance, he took one of y^e Frenchmen and sunk y^e other, but at y^e expense of his own life, and that of most of his ship's crew, so glorious an end did y^e same James Killigrew make; w^{ch} two coward captains for y^e present from y^e death of their said commander escaped Punishment; but some years after, upon a second like misbehaviour, were condemned and shot at Plymouth. Kirby was y^e name of one of them."*

The writer concludes by merely mentioning some of the other junior members of the younger house, among them Thomas (second son of Sir Robert), the celebrated wit of Charles the Second's Court, two grandsons and a great grandson of whom were the "last of the Killigrews" at the time the history was written. With them Martin frankly avows he wished to have nothing to do—"to whom I am a stranger or desire to be so thought,"—wickedly adding, that they had not "one penny of estate from amongst them all," except about £500 a year, which had come through a marriage.

* Wade was the name of the other. They were shot in Plymouth Sound, in 1702, for cowardice in Benbow's action with Du Casse, in the West Indies, and were buried in Charles Church, Plymouth.

VI.—*Recent Observations on Subterranean Temperature in the Clifford Amalgamated Mines.*—By SIR FREDERICK MARTIN WILLIAMS, BART., M.P., F.G.S., &c., &c.

Read at the Spring Meeting, 17th May, 1870.

THE district in which the Clifford Amalgamated Mines are worked has been frequently described,* but never better than by Mr. Warington Wilkinson Smyth, F.R.S., who says, “The constituent rock of this region is mostly the clay-slate or killas, which, abutting against the granite dome of Carn Marth, dips away from that hill towards the east, and has not been unbottomed in the deepest mines about to be mentioned, although there can be no reasonable doubt that the granite would be found occurring again beneath it. The clay-slate is intersected by dykes of elvan or granitic-porphry, coursing in an east and west direction; by lodes or mineral-veins, having on the whole a very similar line of strike; and by cross-courses or non-metalliferous veins, running north and south. The more notable mines of this district have been Poldice, Wheal Jewell, Ting Tang, Wheal Squire, the Consolidated Mines, the United Mines, and Wheal Clifford, worked with various success to depths of from 1,000 to 1,900 feet from the surface. Certain of them are at present in abeyance; others

* Borlase, *Natural History of Cornwall*, p. 206; Pryce, *Mineralogia Cornubiensis*, pp. 8, 9, 11, 12, 192, Pl. vii; Berger, *Geol. Trans. O.S.*, i, p. 72; Phillips (William), *ibid*, ii, p. 156, Pl. vi; Williams, *ibid*, iv, p. 143, Pl. vii, Fig. 1; Thomas (Richard), *Survey of the Mining District from Chasewater to Camborne*, pp. 1—76, Geological Map and Sections; Carne, *Cornwall Geol. Trans.*, ii, pp. 44—128, Pl. 2, 3; *ibid*, iii, p. 81; Hawkins, *ibid*, ii, pp. 225—230, Pl. 4; Henwood, *ibid*, iii, pp. 324—31, v, pp. 69—92*, Pl. vii, viii; Boase, *ibid*, iv, pp. 290—1, 305—7; Fox, *Phil. Trans.* (1830), pp. 407—9,—10, 11, 13, 14; De la Beche, *Report on the Geology of Cornwall, Devon, and West Somerset*, pp. 93, 176, 305—6,—39,—40; Burr, *Quarterly Mining Review*, No. vii, p. 20; Hopkins (Evan) *Geology and Terrestrial Magnetism*, pp. 46—50, Pl. viii; Thomas (Charles) *Remarks on the Geology of Cornwall and Devon*, pp. 4, 19; Salmon, *Mining and Smelting Magazine*, v, p. 329; Barnett, *Reports of the Royal Cornwall Polytechnic Society*, xxxvii, pp. 53—6.

have lately received new appellations; and thus the so-called "hot spring," met with a few years ago in the United Mines, is now, by a different arrangement of the Setts, included in the group known as the Clifford Amalgamated Mines."*

The lodes of the United and Clifford Mines consist in great measure of quartzose and slaty matter, associated, however, with larger quantities of yellow copper ore than have been obtained from any other tract in the County of equal extent, as well as with smaller proportions of many other minerals.

During the last half-century the undermentioned temperatures of the streams entering them, were ascertained at intervals, by different observers:—

Depth.	Temperature.	Depth.	Temperature.	Depth.	Temperature.
140 fms.	.....67 ⁰ †	195 fms.	... { 83·5† 84·7† 86·5† 88· † 93·5†	250 fms.	... { 97·7§
170 "	... { 67† 76†			251·6 "	.....114·||
180 "	... { 74† 77† 82† 83†			255 "	... { 93¶ 109¶ 116¶
190 "	.....87·5†			260 "	.....106·**
		210 "	... { 84† 89·5† 92† 92·7†	270 "	.....122·||

Beside these, however, many observations have been made on the temperatures of the rocks, the lodes, the cross-courses, and the air; but for such I beg permission to refer to the publications of the several observers.

When unhappily it became necessary to abandon the deeper works, I thought that as opportunity for re-examining them might

* Smyth, *Reports of the British Association*, xxxiv (1864), Part ii, p. 70; *Mining and Smelting Magazine*, vi, pp. 193—6.

† Fox, *Cornwall Geol. Trans.*, ii, pp. 20—3, Table 1.

‡ Henwood, *ibid*, v, p. 398.

§ Fox, *Reports of the Royal Cornwall Polytechnic Society*, xiv (1837), p. 1.

|| Smyth, *Reports of the British Association*, xxxiv (1864), Part ii, p. 70; *Mining and Smelting Magazine*, vi, pp. 193—6.

¶ Fox, *Reports of the British Association*, xxvii (1857), p. 98.

** Francis (junr.), *Reports of the Royal Cornwall Polytechnic Society*, xiv (1837), p. 9.

not occur again soon, it would be desirable to preserve some permanent record of the highest temperatures observed. The following are the results of Captain Gilbert's observations, made in compliance with my request :—

At the 224-fm. level, 279 fathoms from the surface, at about 120 fms. west of Clifford shaft, the water rising in the bottom of the level maintains a temperature of $123^{\circ}5$.

At the 245-fm. level, 300 fms. from surface, the temperature of the water is 125° , the hottest spring we have ever observed.

I hope this notice, short as it is, will be received as a proof of my warm interest in the Royal Institution of Cornwall.

VII.—NATURAL HISTORY.—*Notes on the Ornithology of Cornwall from May, 1870.*—By E. HEARLE RODD.

NOT very long after your last Spring Meeting we had, during the vernal migration, a very interesting immigration of large numbers of *Golden Orioles*, a species at all times very rare in the British Isles, and very often appearing at only long intervals. I have several times, however, had to record the annual appearance of this Bird at Scilly; and of late years their visits to those Islands have been so regular, and at a period of the year when they might be expected to remain and breed, that I have fully expected to have been able to report the interesting fact; but in every instance when the male and female had paired and resorted to thickets well suited to their nests, they abruptly took their departure, and were not afterwards seen or heard of. Last year, in the month of April, the groves of Trevethoe, in the parish of Lelant, were visited with an assemblage of these beautiful birds, varying in the intensity of their plumage from difference of age and sex, in flocks of eight up to twice or thrice that number, according to information kindly conveyed to me by Lieut.-Col. Manners, the resident occupier of the place. I prepared him, however, for their departure as abrupt and sudden as their advent, and which was the case. The bird possesses such a brilliant blaze of yellow over the whole of its body, that it is next to impossible that any specimen can escape notice; and the symmetrical proportions of its shape and general elegance of form, with its finely contrasted colours of yellow and black, entitle it to be regarded as one of the most attractive of our British birds. This flight of Orioles extended to the Scilly Isles, and several were seen at Trescoe, Samson, and St. Mary's Islands, about this time.

Amongst our Predatory Birds there appears to be a remarkable increase in the comparatively newly discovered species of the family of *Harrier*, viz., *Montagu's Harrier*. There are only three British species, and the last was identified, and its specific value pointed out, by our celebrated naturalist, Montagu, and it is named after him "Montagu's." The "Ash-coloured Harrier" is

another name for the bird. This species is now of frequent occurrence, and is more frequently met with, at least in this county, than the other two, viz., the *Common Harrier* and the *Marsh Harrier*. Several were obtained from the Lizard district last Spring; and one, on the property of George Williams, Esq., taken with several others, showed a character in its plumage which seems to be a peculiar feature in this species, viz., the prevalence of an uniform dark liver colour over the whole body of some specimens. A great number of specimens in this dark plumage are recorded in the *Zoologist* for 1870; and so numerous have been the examples in this aberrant form of colour, that they seem to establish a different "race," without however being specifically distinct. I shall give an extract of what I reported of Mr. Williams' bird as applicable to our present proceedings:—

"This Harrier may be regarded as a species quite as plentiful as the Common or Hen Harrier of late years in the Land's End district. We get them in Cornwall in all stages of plumage, but more frequently in the immature state than the adult; in the former state the whole of the under plumage is of an uniform fawn colour. An adult male and female were killed on the property of George Williams, Esq., at St. Keverne, this week, and with them was a second female, a variety with an uniform sooty-black plumage throughout,—the second of the kind that has come under my notice. The tone of this colour is so intense that the bars of the tail are only just perceptible. Both the females were far advanced in the development of their eggs. The adult female has the breast intermixed with dirty white and rufous blotches. This appears to be the adult ordinary female plumage; the upper plumage more or less brown, with a broken patch of white on the wing coverts. The dark bird was caught in a trap, first baited with a rabbit;—this attracted her notice, but she abstained from pouncing upon it. The keeper thought that a viper would be a more attractive lure, and having killed one, placed it on the trap. The bird on seeing it immediately pounced on the reptile and was captured. It is always well in the pursuit of Natural History to watch the economy and the compensating qualities in predatory creatures; and this little fact is mentioned to show that amongst our birds of prey, which by game-keepers and game-preservers are branded as *vermin*, results beneficial to mankind may be traced

and proved as well as the contrary. Ought we not to pause before we try to exterminate every creature that we deem unexceptionably damaging?"—*May 4th, 1870.*

The "Little Bittern," a highly-prized rare British bird, has appeared both here and at Scilly, in the last year or two; and in the last week of May the Land's End afforded a good specimen of a female bird, two adult males having been obtained previously, one from Scilly and another from St. Hilary. This species is the smallest of the Heron family, and is a most elegant and rare British bird. We had some other Spring visitants not usually seen in the Land's End district, viz., the "Garganey," or "Summer Teal," the only Spring visitor of our Ducks, and then only for a few days, in their passage from the Continent to more northern climes, to breed and rear their young. This little Duck is not surpassed for its elegance of shape and the beautiful arrangement of the fine shades of brown and yellow in semicircles on the breast. It is the smallest of our *Anatidæ*, our Common Teal being a trifle larger. We do not very often observe the two British Godwits in their Spring plumage, as they generally commence their northern flight before the assumption of the nuptial livery. A specimen, however, of the rare species, the "*Black-tailed Godwit*," in Summer plumage, was sent from Scilly last April. The Autumnal migration brings a large number of these wading birds on our southern shores, but they are mostly young birds of the year in their unadult plumage. Speaking of adult-plumaged birds, I may mention that amongst the numerous specimens of Red-breasted Mergansers that have come under my notice for the last 40 years, they have all been birds of the year apparently, until this year, when two specimens, in splendid adult plumage, came under my notice, and were obtained from the Land's End and Marazion Pool. During the very severe part of our past winter two specimens of the "Goosander" were obtained from Trengwainton ponds. Amongst the British Owls a very good specimen of the "Scops-eared Owl," the smallest and rarest British species, occurred in the plantations at Trevethoe very recently, and is the second example I have heard of in the County, the first having been sent to me from Scilly, and is the grey-toned plumaged bird which forms one of the plates in *Gould's "Birds of Great Britain"*; the grey-plumaged specimens denoting the males, and the rufous-toned specimens the female.

The Scilly Islands have been visited during the past Autumn by sportsmen and naturalists, who have contributed information on the ornithological resources of those Islands, which will be worthy of record in your Journal. You are already a good deal indebted to those Islands for a large amount of information on subjects of Natural History; nature has favoured these Islands with many advantages for the furtherance of scientific pursuits, both zoological and botanical, not only from their climatic influence, but from their maritime and extreme southerly and westerly position. My Journal for October has the following note:

British Sandpipers at Scilly.—The elegant form of our Sandpipers (*Totani*) renders them always agreeable visitors, whether on the margin of water or on the wing. There is a shyness and wildness in their natures which add to their interest with naturalists and sportsmen. The “Common Sandpiper,” “Green Sandpiper,” “Redshank,” and “Dusky Sandpiper” (the “Spotted Redshank” of Bewick and Gould), have all appeared in their southern or autumnal migration, at the Scilly Isles during the last fortnight. I believe there is little or no seasonal change of plumage in the common, green, or wood Sandpipers of a remarkable character; but in the Redshank and Dusky Sandpipers the change of plumage is striking, especially in the Dusky Sandpiper, which in summer becomes almost sooty black from pale cinereous in winter. The Dusky Sandpiper in its first year, previous to the autumnal moult, shows a plumage well represented by Bewick in his figure of the “Spotted Redshank.” When they moult, this spotted plumage gives way to an uniform cinereous brown on the back, with the underparts almost white, instead of being marbled over brocoli-brown as in the young bird. I mention this to induce further observations from those who may obtain specimens at this time; for in a fine specimen just sent from Scilly I observe the moult commenced and a few cinereous feathers cropping out on the spotted back, showing the assumption of the winter plumage.

Scilly has been remarkably rich in her family of Stints (*Tringa*) this year. Besides the common species, those Islands have afforded specimens of the “Buff-breasted,” the “Pectoral,” and “Schinz’s” Stints, all rare species, and all fully worthy to be recorded in your Journal. A particular description of these birds would be

unavailing, as they are to be found in the works of all the British authors on Ornithology.

The "Hooded Crow," "Pied Flycatcher" (a species confined to the Midland Counties, and only observed in Cornwall occasionally in the migratory season), and "Spoonbill," were observed at Scilly in the last autumn; the latter in company with Common Herons, which seem to frequent a particular island or rock to the north-east of Trescoe, called *Hedge Rock*, for what particular reason does not appear. The Spoonbill appeared to be quite associated with the Herons, and feeding with them I suppose on small fish. The general form and structure of the Spoonbill seem to point to the *Ardeidæ* till we look at the beaks of the two species or rather genera. And in the Spoonbill we see one of those remarkable modifications of forms which nature now and then shows, proving at the same time how an organ totally different in form and character in two birds can be made applicable to the one and the same purpose of procuring the like description of food.

VIII.—*A Calendar of Natural Periodic Phenomena: kept at Bodmin for the year 1870.*—By THOMAS Q. COUCH, M.R.C.S., F.S.A.

“ Il semble, en effet, que les phénomènes périodiques forment, pour les êtres organisés, en dehors de la vie individuelle, une vie commune dont on ne peut saisir les phases qu'en l'étudiant simultanément sur toute la terre.”
—*Quetelet.*

N.B.—The names printed in *Italics* indicate plants and animals marked for special observation.

fl., means flowers ; fol., foliates ; defol., defoliated.

The time of flowering is to be noted when the flower is sufficiently expanded to show the anthers ; of foliation, when the leaf-bud is so far open as to show the upper surface of the leaves ; of fructification, at the period of dehiscence of the pericarp, in dehiscent fruits ; and, in others, when they have evidently arrived at maturity ; of defoliation, when the greater part of the leaves of the year have fallen off.

The spring of 1870 was generally cold and dry, with occasional frosty mornings until late ; and, as a consequence, the grass was thin and backward. Such a spring, followed by an exceedingly hot and arid summer, was very disastrous to agriculture. Hay was a lighter crop than I have ever noticed, many farmers being unable to cut any, and there was scarcely more than a quarter of the usual yield anywhere, except in some of the better land resting on the granite. The corn-crake was heard late, which I attribute to the stunted grass not giving it the usual shelter. This bird, as well as the cuckoo, arrived in very scanty numbers. Three or four rainy days in the middle of May made a wonderful advance in field and garden ; but the dry cold weather so injured the wheat, that in some places it was ploughed down as hopeless, and the ground sown with barley. At harvest the wheat crop was thin in

the ground and very short in the straw, but generally well filled in the ear and well kernalled, but in our district much under the average. Barley was generally a good crop, both in sample and yield. Oats gave a slight crop on light soils, but in good ground about an average produce. The turnip crop suffered severely from unpropitious weather and the ravages of the fly, so that many fields had to be resown, and in the end the result was hardly worth the labour, the plants being very sparse, and the roots small. The mangolds were above an average in some instances, and good as a rule; showing that an exceptionally dry summer does not harm them as it does the turnips, but is rather favourable to their growth. Potatoes were generally good, both in quantity and quality, with a comparatively small number of diseased tubers. There was an abundant crop of apples. Woodcocks and snipes were very scarce.

- January 12. *Laurustinus*, fl.
 — *Potentilla fragariastrum*, fl.
 19. *Cardamine hirsuta* (Hairy Lady's Smock), fl.
 — *Galanthus nivalis* (Snowdrop), fl.
 30. *Frog* (*Rana temporaria*), spawns.
- February 2. *Corylus avellana* (Hazel), fl.
 11. *Aurora borealis*, seen.
 14. *Primula vulgaris* (Primrose), fl.
 22. *Ribes grossularia* (Gooseberry), fl.
- March 5. *Sambucus nigra* (Elder), fl.
 — *Lonicera periclymenum* (Honeysuckle), fl.
 10. *Narcissus pseudo-narcissus* (Daffodil), fl.
 16. *Ranunculus ficaria* (Pilewort), fl.
 18. Sulphur Butterfly (*Gonopteryx rhamni*), seen.
 — Man. Measles and lung diseases prevalent.
 19. *Tussilago farfara* (Colt's-foot), fl.
 — *Crategus oxycantha* (White-thorn), fl.
 23. Woodcock shot.
 25. *Viola canina* (Dog Violet), fl.
 — *Glechoma hederacea* (Ground ivy), fl.
 — *Veronica Chamœdrys* (Germander speedwell), fl.
 — *Veronica agrestis* (Rural speedwell), fl.
 29. *Pieris brassicæ* (Cabbage butterfly), seen.

- March 29. Wheatear (*Saxicola œnanthi*), arrives.
31. *Rosa canina* (Dog rose), fol.
- April 4. *Stellaria holostea* (Stitchwort), fl.
5. *Oxalis acetosella* (*Wood-sorrel*), fl.
- *Adder* (*Pelias Berus*), seen.
6. *Acer pseudo-platanus* (*Sycamore*), fl.
- *Æsculus hippocastanum* (*Horse chestnut*), fol.
- *Swallow* (*Hirundo rustica*), seen.
10. *Prunus spinosa* (Blackthorn), fl.
11. *Ribes nigrum* (*Black currant*), fol.
13. *Cochlearia anglica* (*English Scurvy-grass*), fl.
- *Ligustrum vulgare* (*Privet*), fol.
- *Ranunculus hederaceus*, fl.
- *Larix europœa* (*Larch*), fol.
- *Draba verna*, fl.
14. *Snake* (*Natrix torquata*), seen.
- *Fraxinus excelsior* (*Ash*), fl.
- *Anemone nemorosa*, fl.
15. *Adoxa Moschatellina*, fl.
18. *Cuckoo* (*Cuculus canorus*), heard.
- *Fragaria vesca* (*Wild Strawberry*), fl.
- *Betula alba* (*Birch*), fol.
- *Primula veris* (*Cowslip*), fl.
- *Caltha palustris*, fl.
19. *Vaccinium uliginosum*, fl.
- *Corylus avellana* (*Hazel*), fol.
- *Orchis mascula*, fl.
- *Cytisus scoparius* (*Broom*), fol.
- *Hyacinthus non scriptus* (*Bluebell*), fl.
- *Ranunculus acris*, fl.
- *Tilia europœa* (*Lime tree*), fol.
- *Cardamine pratensis*, fl.
21. *Ranunculus flammula*, fl.
- *Orobus tuberosus*, fl.
22. *Sorbus aucuparia*, fol.
25. *Quercus pedunculatus* (*Dwarf Oak*), fol.
26. *Fumaria officinalis*, fl.
27. *Geranium pusillum*, fl.
28. *Allium ursinum* (*Wild Garlic*), fl.

- April 29. *Juglans regia* (*Walnut*), *fol.*
 30. *Syringa vulgaris*, *fl.*
- May 3. *Polygala vulgaris*, *fl.*
 — *Ulmus montana*, (*Wych Elm*), *fol.*
 4. *Betula alba* (*Birch*), *fl.*
 — *Luzula campestris*, *fl.*
 — *Anthoxanthum odoratum* (*Vernal grass*), *fl.*
 — *Æsculus hippocastanum* (*Horse chestnut*), *fl.*
 — *Potentilla anserina*, *fl.*
 — *Pedicularis sylvatica*, *fl.*
 — *Lotus corniculatus*, *fl.*
 — *Viola lactea*, *fl.*
 5. Orange-tipped butterfly, *seen.*
 — *Tormentilla officinalis*, *fl.*
 — *Carex dioica*, *fl.*
 — *Eleocharis pauciflora*, *fl.*
 — *Ajuga reptans* (*The Bugle*), *fl.*
 6. *The Swift* (*Cypselus Apus*), *seen.*
 — *Arum maculatum*, *fl.*
 — *Ulmus glabra* (*Elm*), *fol.*
 — *Alnus glutinosa* (*Alder*), *fol.*
 — *Nasturtium officinalis*, *fl.*
 — *Chærophylum temulentum*, *fl.*
 — *Plantago lanceolata*, *fl.*
 7. *Fraxinus excelsior* (*Ash*), *fol.*
 8. *Cytisus scoparius* (*Broom*), *fl.*
 9. *Gnaphalium germanicum*, *fl.*
 — *Acer pseudo-platanus* (*Sycamore*), *fl.*
10. *Pedicularis palustris*, *fl.*
 — *Lysimachia nemorum*, *fl.*
 — *Erysimum alliaria*, *fl.*
 — *Smyrniolum olusatrum* (*The Alexander*), *fl.*
11. *Cytisus laburnum* (*Laburnum*), *fl.*
 12. *Ulmus campestris* (*The common Elm*), *fol.*
 — *Geranium molle*, *fl.*
 — *Crataegus oxyantha* (*Hawthorn*), *fl.*
14. *Anchusa sempervirens*, *fl.*
 16. *Veronica beccabunga* (*Brook-lime*), *fl.*
 — *Cotyledon umbilicus*, *fl.*

- May 16. *Veronica polita*, fl.
 — *Lepidium Smithii*, fl.
 — *Myosotis versicolor*, fl.
 17. *Lotus major*, fl.
 18. *Hypochaeris radicata*, (Cat's Ear), fl.
 — *Potentilla verna*, fl.
 — *Hieracium pilosella* (Hawkweed), fl.
 19. *Potentilla repens*, fl.
 20. *Sedum anglicum* (*White Stonecrop*), fl.
 — *Medicago pusilla*, fl.
 — *Digitalis purpurea* (*Foxglove*), fl.
 — *Rosa rubiginosa* (*Sweet-briar*), fl.
 21. *Veronica serpyllifolia*, fl.
 — *Scandix Pecten-Veneris*, fl.
 22. *Sisymbrium officinale* (*Hedge Mustard*), fl.
 — *Galium aparine* (*Goose-grass*), fl.
 — *Galium mollugo*, fl.
 — *Poa procumbens*, fl.
 — *Rumex acetosa*, fl.
 — *Urtica dioica* (*Nettle*), fl.
 23. *Bunium flexuosum* (*Pig-nut*), fl.
 — *Corn-crake* (*Crex pratensis*), heard.
 — *Sorbus aucuparia* (*Mountain Ash*), fl.
 — *Myosotis palustris*, fl.
 — *Ornithopus perpusillus*, fl.
 — *Papaver hybridum* (*Poppy*), fl.
 — *Asperula odorata*, fl.
 24. *Sambucus nigra*, (*Elder*), fl.
 28. *Fragaria vesca* (*Wild Strawberry*), ripens fruit.
 30. *Chrysanthemum leucanthemum*, fl.
 — *Polygonum bistorta*, fl.
 31. *Melampyrum pratense*, fl.
 — *Erica cinerea* (*Heath*), fl.
 — *Achillea millefolium* (*Millefoil*), fl.
- June 1. *Rosa canina* (*Dog-rose*), fl.
 — *Viburnum opulus* (*Guelder-rose*), fl.
 2. *Silene inflata*, fl.
 — *Stellaria graminea*, fl.
 — *Lonicera periclymenum* (*Honeysuckle*), fl.

- June 3. *Menyanthes trifoliata*, fl.
 3. *Lathyrus pratensis*, fl.
 — *Crepis tectorum*, fl.
 5. *Vicia Cracca*, fl.
 — *Valeriana officinalis* (Valerian), fl.
 — *Orchis maculata*, fl.
 6. *Vicia sativa* (Common Vetch), fl.
 — *Epilobium roseum*, fl.
 — *Melittis melissophyllum* (Bastard Balm), fl.
 7. *Rubus fruticosus* (Blackberry), fl.
 — *Veronica officinalis*, fl.
 — *Thymus Serpyllum* (Thyme), fl.
 — *Lychnis Flos cuculi* (Ragged Robin), fl.
 — *Hypericum humifusum* (St. John's Wort), fl.
 8. *Prunella vulgaris*, fl.
 — *Convolvulus sepium*, fl.
 — *Lapsana communis*, fl.
 — *Stachys sylvatica*, fl.
 — *Solanum dulcamara* (Bitter-sweet), fl.
 — *Iris pseud-acora* (Yellow Flag), fl.
 — *Malva sylvestris* (Common Mallow), fl.
 — *Orchis Morio*, fl.
 — *Orchis latifolia*, fl.
 12. *Habenaria chlorantha*, fl.
 — *Jasione montana*, fl.
 — *Senecio lividus*, fl.
 — *Erica tetralix*, fl.
 13. *Sedum acre* (Yellow Stonecrop), fl.
 — *Ligustrum vulgare* (Privet), fl.
 16. *Scabiosa arvensis*, fl.
 17. *Juncus conglomeratus* (Rush), fl.
 18. *Scrophularia aquatica*, fl.
 — *Tilia europæa* (Lime-tree), fl.
 19. *Erythræa Centaurium*, fl.
 20. *Hypericum perforatum*, fl.
 — *Anagallis arvensis* (Pimpernel), fl.
 21. *Papaver Rhœas* (Poppy), fl.
 — *Senecio Jacobæa*, fl.
 22. *Anagallis tenella*, fl.

- June 22. *Bartsia viscosa*, fl.
 — *Spergula arvensis*, fl.
 — *Hordeum vulgare* (*Barley*), fl.
 — *Betonica officinalis* (*Betony*), fl.
 24. *Sonchus oleraceus*, (*Sow-thistle*), fl.
 — *Centaurea nigra*, fl.
 — *Hypericum pulchrum*, fl.
 — *Agrimonia Eupatoria* (*Agrimony*), fl.
 — *Linum catharticum* (*Flax*), fl.
 — *Verbascum Thapsus*, fl.
 25. *Anthemis nobilis* (*Camomile*), fl.
 — *Eupatorium cannabinum* (*Hemp Agrimony*), fl.
 — *Bartsia odontitis*, fl.
 — *Ononis procumbens* (*Rest Harrow*), fl.
 27. *Circæa lutetiana*, fl.
 28. *Teucrium Scorodonia* (*Wood Sage*), fl.
 July 3. *Verbena officinalis*, fl.
 — *Carduus nutans* (*Thistle*), fl.
 — *Linaria vulgaris*, fl.
 9. *Spiræa ulmaria* (*Meadow-sweet*), fl.
 11. *Euphrasia officinalis* (*Eye-bright*), fl.
 25. *Solidago virgaurea* (*Golden Rod*), fl.
 — *Clematis Vitalba* (*Traveller's Joy*), fl.
 29. *Inula dysenterica*, fl.
 30. *Serratula tinctoria*, fl.
 August 5. *Calluna vulgaris*, fl.
 9. *Sorbus aucupariu* (*Mountain Ash*), ripens fruit.
 12. *Viburnum opulus* (*Guelder Rose*), ripens fruit.
 15. *Rubus fruticosus* (*Blackberry*), ripens fruit.
 — *Arum maculatum*, ripens fruit.
 — *Tamus communis* (*Briony*), ripens fruit.
 — *Calamintha Nepeta*, fl.
 — *Lonicera periclymenum*, ripens fruit.
 20. *Corylus avellana* (*Hazel*), ripens fruit.
 23. *Prunus spinosa* (*Sloe*), ripens fruit.
 — *Sambucus nigra* (*Elder*), ripens fruit.
 — *Rosa canina* (*Dog Rose*), ripens fruit.
 — *Scabiosa succisa*, fl.
 26. *Cratægus oxyantha* (*Hawthorn*), ripens fruit.

September 1. *Mentha sylvestris* fl.

- 6. *Sambucus nigra* (*Elder*), defol.
- 10. *Acer pseudo-platanum* (*Sycamore*), defol.
- 14. *Æsculus hippocastanum* (*Horse Chestnut*), defol.
- 22. *Fagus sylvatica* (*Beech*), defol.
- *Quercus pedunculata* (*Oak*), ripens fruit.
- 27. *Fraxinus excelsior* (*Ash*), defol.
- 28. *Quercus pedunculata*, defol.
- 29. *Corylus avellana* (*Hazel*), defol.

October 6. *Ligustrum vulgare* (*Privet*), ripens fruit.

- *Tilia europæa*, defol.
- 7. *Sorbus aucuparia* (*Mountain Ash*), defol.
- 11. *Ulmus montana*, defol.
- 12. *Ulmus glabra*, defol.

November 25. *Vinca major* (*Periwinkle*), fl.

December. The Rotche or Little Auk (*Mergulus melanoleucos*)
caught at Withiel, five miles from a tidal
river.

- 9. The Mountain Finch (*Fringilla montifringilla*), caught.

METEOROLOGICAL NOTES FOR 1870.

IN accordance with our usual practice, we append a brief statement of the characteristics of the several months at different stations.

January.—The year opened mildly after the severe frosts of the previous month, and there was no material change till the 18th. The weather was similar throughout the country. At Greenwich the average excess of temperature, during this period, was $6\frac{1}{4}^{\circ}$ daily. It blew very strongly on the 7th and 8th over most part of England, generally from S W. From the 18th to the 30th it was commonly dry and cold; not intensely so, however; the minimum at Truro, Bodmin, and Liskeard, being 25° , at Falmouth 30° , and at Helston 34° ; at Altarnun it was 17° ; the night of the 22nd was everywhere the coldest. At Greenwich the temperature during these 12 days was 5° below the average. In the north of England the effects of continued, if not very intense, cold were felt on the 28th,—Lake Windermere was so frozen over that the steamers were unable to ply. This had not occurred since 1854. Rydal Water, Grasmere, and Derwent Water, afforded excellent skating. On the 30th a cyclonic gale occurred at Penzance and at Dublin; it commenced from S.E. and veered to W., with heavy rain. The fall at Truro, $\cdot 65$ inch, was the largest daily quantity of the month. At Penzance $\cdot 61$ inch fell in 12 hours. The total rainfall of the month was only about one-half the average at Penzance and Helston, three-fifths at Truro, and not much less below the usual amount at Bodmin, Liskeard, and Altarnun.

February.—The beginning of the month was mild and wet, with fresh winds from S.W. to N.W. At Penzance 1.42 inch was registered on the 6th. The average temperature up to the 8th was 4° in excess at Greenwich. On the 9th a sudden change took place, and the weather became very cold, and continued so, with little exception, till the 25th. The highest temperature at Penzance was 25° , and the 12th was the coldest day experienced there for ten years, the maximum for the day having been $29\cdot 5$; and this was one of the four days during that period when the thermometer kept below freezing point. At Helston the minimum was 28° , at Falmouth $25\cdot 5^{\circ}$, at Truro and Bodmin 23° , at Liskeard 20° , and at Altarnun 16° . At the last place there were 27 frosts on the grass. The coldest day everywhere was the 11th. The heavy rains early in the month raised the total fall nearly one-third above the average.

March was decidedly dry, the number of days at Truro on which rain fell (9), being little more than half the average, and the quantity was a good deal less than usual. The temperature was low, the wind having a N. and E. element on 21 days. There was frost on 7 nights at Truro, on 23 at Altarnun. According to Mr. Glaisher's estimate, there was a deficiency of 1° daily on the whole quarter of 90 days, and the harshness of the weather generally was unfavourable to agricultural work, and arrested vegetation.

April was a remarkably dry month everywhere south of Greenwich, and particularly so in this county, the total rain in the thirty days being at no station one third of an inch,—at Sennen it was only $\cdot 03$, and at St. Agnes $\cdot 06$, two days only having witnessed a shower. But the weather was marked by great extremes of temperature, ranging at Truro from 26° to 67° ; the first seven nights were frosty there; and at Altarnun the minima varied only from 25° to 20° during that week. The comparative equability of Falmouth was illustrated; the lowest temperature having been $36\cdot 5^{\circ}$, the highest $58\cdot 2^{\circ}$. The days were often warm. The same character of season obtained up the country, but there was more heat by day and less cold by night. Capt. Liddell notes for Bodmin that “the long drought was severely felt.”

May was divided into two periods, the first half rather cold and showery, the latter generally fair and warm. There was a marked difference between the western and eastern divisions of the county in regard to the quantity of rain as compared with the average for the month: it was much less than usual in the former, whilst it equalled or even exceeded the mean in the latter. Notwithstanding this, Capt. Liddell remarks that in the neighbourhood of Bodmin “the springs were never known so low in May before”; but Mr. Tripp says, that at Altarnun “nearly three inches fell in the week beginning on the 10th, and the effect of this welcome supply on the parched and stunted vegetation was marvellous.” At Helston the range of temperature was from 35° to 77° ; at Falmouth from 38° to 66° ; at Truro, from 32° to 74° ; at Bodmin, from 31° to 73° ; at Liskeard, from 34° to 83° ; and at Altarnun, from 26° to $81\cdot 5^{\circ}$.

June was a very dry month everywhere, and drought was severely felt. At Penzance the heat was over 70° on two days; at Helston the range was from 43° to 84° ; at Falmouth, from 48° to 75° ; at Truro, from 38° to 82° ; at Bodmin, from 47° to 76° ; at Liskeard, from 44° to 87° ; at Altarnun, from 32° to 83° ; and at Greenwich, from $41\cdot 4^{\circ}$ to $90\cdot 2^{\circ}$. On the 16th there were thunderstorms throughout the country, from Helston to North Shields, in many places violent. The close of the month was colder and unsettled. Mr. Glaisher states the temperature of the 41 days from the 12th of May to the 22nd of June, as $3\frac{3}{4}$ daily above the average; and he says that the rainfall in this quarter ($1\cdot 13$ in.), was the smallest on record for these three months.

July was a very fine summerlike month. The rainfall was considerably below the average at all the stations; but whilst it fell on only 6 days, half the usual number, at Truro, just the average number (15 and 13 respectively) were more or less wet at Bodmin and Altarnun. There was a thunderstorm at Truro on the 8th, one of the hottest days of the year. The range of temperature was at Helston from 48° to 84° ; Falmouth, $52\cdot 7^{\circ}$ to $74\cdot 2^{\circ}$; Truro, 46° to 84° ; Bodmin, 51° to 83° ; Liskeard, 46° to 88° ; Altarnun, 37° to 87° . At the Greenwich Observatory the lowest temperature was $44\cdot 8$, the highest $89\cdot 7^{\circ}$.

August was also a fine month, with only a few unsettled periods. The number of days on which no rain fell was one-third greater than the average at all the stations, and Bodmin was the only place where the quantity was

in excess, owing probably to some very heavy local showers,—the quantity was 1·28 inch on the 22nd. The highest temperatures were at Penzance 72°; Helston, 84°; Falmouth, 76·3°; Truro, 81°; Bodmin, 75°; Liskeard, 83°; Altarnun, 84°. At Greenwich it did not rise above 81°. Mr. Glaisher remarks that the period of fine and warm weather, which commenced on the 4th of July, and continued until August 18th, 46 days, “exercised a great influence on the growing crops, which up to this time were in doubtful condition.” The excess of temperature was more than $3\frac{1}{2}$ ° daily.

September was also marked by the characteristic dryness of the summer; the quantity of rain having been only one-half, and the number of days on which it fell much less than the average at all the stations. The first ten days were unsettled and showery, but the rest of the month was almost uninterruptedly fine. The temperature was, however, rather below the average. There were strong breezes about the equinox, but no gale. On the 24th a fine display of aurora borealis was witnessed from Guernsey to North Shields. The highest temperature at Falmouth was 67°, at Truro, 74°, the lowest 50° and 36°, respectively. Mr. Glaisher states that, on the whole quarter of 92 days, there was an excess of nearly 1° daily on the average. The weather was as favourable as could be desired for all farming operations, but the grass crop was rendered very deficient by the drought.

October was fine for the first few days, afterwards very unsettled, and the rainfall was greatly in excess of the average, especially at the eastern stations. At Truro the quantity was 5·79 inches, at Bodmin 7·98, at Altarnun 10·55. Whilst on the night of the 10th, the coldest of the month, the lowest temperature at Falmouth was 42·5°, it was 31° at Truro, and 22° at Altarnun, where the heliotrope, fuchsia, &c., were much cut by the severe frost. There were thunderstorms on the 8th, 9th, and 19th; the last was heavy, and in the neighbourhood of Penzance it did some damage. Auroræ Boreales were seen on several nights; the display on the 24th was probably the most magnificent which has occurred for many years; it was seen at Malta, Italy, Syria, &c. The deep blood-red colouring was noticed extensively.

November commenced very fine and bright, with easterly winds and high barometer, and so continued for a week. The weather then became unsettled. The rainfall, and the number of rainy days, were about the average. On the 10th a fine morning was followed by a thunderstorm, with rain, hail, sleet, and snow, which fell heavily, even at Falmouth. On the 22nd there was another thunderstorm, and it blew heavily from W. to S.W. on that and the following day, when the “Jane and Mary” was wrecked at Chyandour; and a traveller met his death on Laneast Down, in consequence of his horse being frightened by the lightning. Mr. Glaisher divides the month into two periods, one of cold, extending from the 1st to the 19th, during which the average daily deficiency of temperature amounted to $4\frac{3}{4}$ °, and another of the following ten warm days, when the daily average excess of temperature was $4\frac{1}{2}$ ° nearly.

December was characterised by two cold periods, separated by ten mild days in its midst. At Truro there was frost on 16 days, and snow on 11. At Altarnun there were 26 frosts. The last ten days of the year were intensely

cold. Even at Penzance, the thermometer at night was from 4 to 8 degrees below freezing point. At the other principal stations the range of temperature was as follows:—At Helston from 23° to 58°; Falmouth 24° to 55½°; Truro, 14° to 56°; Bodmin, 15° to 53°; Liskeard, 16° to 60°; Altarnun, 8° to 54°. At this last place the mean temperature from the 23rd to the 31st was 24·5°; the mean of the minima for the same time being 16·6°. Mr. Glaisher gives 1° as the minimum at Taunton on the 31st, the lowest among 57 localities. The quantity of rain, and the number of rainy days, were both everywhere less than usual.

An accurate estimate may be formed of the most important peculiarities of the brilliant summer of 1870, from the following table:—

1870.	Obscuration of Sun at 9 a.m. & 3 p.m.						Actual Weather at 9 a.m., 3 p.m., & 9 p.m.				Rainfall.			
	Sunshine.		Gleam.		Cloud.		Dry.		Wet.		Quantity in inches.		Number of days with rain	
	19 yrs.	1870.	19 yrs.	1870.	19 yrs.	1870.	18 yrs.	1870.	18 yrs.	1870.	21 yrs.	1870.	21 yrs.	1870.
April . . .	32·4	44	6·4	6	21·2	10	76·8	88	13·2	2	2·62	·18	13·0	5
May . . .	34·4	36	7·3	11	20·3	15	81·4	89	11·6	4	2·72	1·72	13·7	11
June . . .	35·04	42	8·2	6	16·76	12	80·0	87	10·0	3	2·28	·32	12·3	4
July . . .	35·9	39	7·9	5	18·2	18	84·4	86	8·6	7	2·29	1·49	12·4	6
August . .	37·2	53	7·5	0	17·3	9	82·9	90	10·1	3	2·55	2·25	13·4	9
September	29·5	46	7·2	5	23·3	9	79·8	87	10·2	3	3·14	1·49	15·6	12
Means . .	34·1	43·3	7·6	5·5	19·51	12·2	80·9	87·8	10·6	3·6	2·60	1·26	13·6	7·8

It will be readily seen, that in regard to each of the three great elements of weather here numerically exhibited—the amount of sunshine, the number of dry hours, and the quantity of rain—*every one* of the six months, from April to September, was distinctly finer than the average of a long series of years. It may be added that in no summer season of the still larger period of 33 years, since 1838, when the observations at this Institution were first recorded, has the rainfall in the summer half-year been so small.

I had the pleasure of referring in the last summary to the important addition to the means of attaining an accurate estimate of the climate of Cornwall, placed within our reach by the establishment of the government observatory at Falmouth, where continuous observations are recorded by self-registering instruments. To these, a rain gauge, affording a similar continuous record, has recently been added, and will give precision to our knowledge in that department. It is still more satisfactory to find these materials already turned to account in the most useful way by Mr. Dymond, in a laborious and excellent analysis of many of the results, especially in relation to horary variations, just published with the Report of the Cornwall Polytechnic Society, where it will be available to most of our members.

C. BARHAM.

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1870, from Registers kept at the Royal Institution of Cornwall.

TABLE No. 1.

1870.	MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level.												Between which days it occurred						
	Month.	Mean pressure corrected to 32 deg. Fahr.			Mean of monthly means.	Mean diurnal range.	True mean of monthly means.	Mean force of vapour.	Mean pressure of dry air.	Corrected absolute maximum observed.	Day.	Corrected absolute minimum observed.		Day.	Extreme range for the month.	Mean diurnal range.	Greatest range from 9 a.m. to 9 p.m.	Day.	Greatest range in any 24 hours.
		9 a.m.	3 p.m.	9 p.m.															
January	30·002	29·997	30·019	30·006	·004	30·002	·238	29·764	30·581	18	29·306	1	1·275	in. ·120	in. ·37	31	in. ·48	29 & 30	
February	29·837	29·833	29·834	29·832	·003	29·832	·213	29·619	30·359	12	29·312	27	1·047	·089	·24	5	·44	1 & 2	
March ..	30·098	30·105	30·136	30·113	·007	30·106	·237	29·869	30·487	20	29·370	3	1·117	·088	·48	25	·43	3 & 4	
April	30·227	30·208	30·210	30·215	·004	30·211	·283	29·928	30·521	16	29·474	9	1·047	·066	·27	9	·56	9 & 10	
May	30·092	30·095	30·108	30·098	·003	30·095	·308	29·787	30·424	25	29·287	11	1·137	·049	·22	12	·35	9 & 10	
June	30·215	30·209	30·212	30·212	·001	30·211	·338	29·873	30·550	6	29·885	10	0·665	·047	·15	11	·27	7 & 8	
July	30·058	30·051	30·065	30·058	·002	30·056	·419	29·637	30·263	20	29·764	11	0·499	·048	·19	25	·32	25 & 26	
August ..	30·060	30·041	30·056	30·052	·004	30·048	·378	29·670	30·361	31	29·732	28	0·629	·057	·20	22	·30	27 & 28	
Sept.	30·103	30·092	30·105	30·100	·004	30·096	·364	29·732	30·516	17	29·380	7	1·126	·070	·25	3	·46	9 & 10	
Oct	29·823	29·819	29·841	29·828	·006	29·822	·330	29·492	30·481	4	29·081	23	1·400	·140	·29	18	·51	7 & 8	
Nov.	29·828	29·825	29·846	29·833	·004	29·829	·254	29·575	30·505	3	29·188	22	1·317	·064	·26	26	·39	25 & 26	
Dec.	29·928	29·925	29·938	29·930	·003	29·927	·188	29·739	30·551	2	29·037	14	1·514	·109	·42	14	·43	11 & 12	
Means ..	30·023	30·017	30·031	30·023	·004	30·020	·295	29·724	30·467		29·402								

REMARKS.—The Barometer used is a Standard, made by Barrow, and compared with the Standard Barometer at the Royal Observatory, Greenwich, by Mr. Glaisher. The corrections for Index Error (+·008), Capillarity (+·013), height above sea (43 feet), and temperature, have been applied.

TABLE No. 2

1870.		MONTHLY MEANS OF THE THERMOMETER.												ABSOLUTE.												
		9 A.M.		3 P.M.		9 P.M.		MASON'S HYGROMETER.						SELF REGISTERING.												
		Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Mean correction for diurnal range.	True mean of Dry Bulb.	Mean of Wet Bulb.	Mean correction for diurnal range.	Mean temp. of evaporation.	Wet Therm. below dry.	Mean dew point.	Dew point below Dry Therm.	Mean of all the maxima.	Mean of all the minima.	Approximate mean temp. for the month.	Correction for the month.	Adopted mean range.	Maximum.	Days.	Minimum.	Days.	Range.	
January..	41.5	40.0	45.8	43.2	42.5	41.0	43.3	4	42.9	41.4	0	41.1	1.8	39.0	3.9	46.9	38.7	42.8	0	42.6	8.2	55	16	25	0	30
February	38.6	37.2	43.7	40.6	39.5	38.2	40.6	6	40.0	38.7	4	38.3	1.7	36.1	3.9	44.6	34.8	39.7	4	39.3	9.8	53	28	23	0	30
March ..	43.7	41.7	48.9	44.9	42.0	40.6	45.0	1.2	43.8	42.4	7	41.7	2.1	38.9	4.9	50.4	38.0	44.2	1.0	43.2	12.4	59	18	25	0	34
April....	50.0	47.0	56.4	50.7	46.8	45.3	51.0	2.2	48.8	47.7	1.4	46.3	2.5	43.5	5.3	58.2	39.6	48.9	1.5	47.4	18.6	67	17	26	0	41
May	55.4	51.4	59.1	52.8	51.6	49.0	55.4	2.3	53.1	51.0	1.4	49.6	3.5	45.8	7.3	61.0	45.8	53.4	1.7	51.5	15.2	74	21	32	0	42
June	63.2	56.0	66.6	56.9	58.0	54.7	62.6	3.0	59.6	55.8	2.0	53.8	5.8	48.2	11.4	68.4	52.3	60.3	1.8	58.5	16.1	82	21	38	0	44
July	65.5	59.5	70.2	61.2	61.4	57.8	65.7	2.2	63.5	59.5	1.3	58.2	5.3	54.1	9.4	71.9	56.7	64.3	1.9	62.4	15.2	84	24	46	0	38
August ..	65.7	58.8	69.5	59.2	59.0	55.6	64.7	2.1	62.6	57.9	1.4	56.5	6.1	51.3	11.3	71.0	53.0	62.0	1.7	60.3	18.0	81	12	38	0	43
Sept.	60.5	56.0	66.0	57.3	56.0	53.3	60.8	1.7	59.1	55.5	1.2	54.3	4.8	50.2	8.9	67.5	50.1	58.8	1.5	57.3	17.4	74	29	36	0	38
Oct.	54.6	51.5	58.9	53.0	52.6	50.3	55.4	8	54.6	51.6	7	50.9	3.7	47.6	7.0	60.8	47.7	54.2	1.0	53.2	13.1	69	28.3	31	0	38
Nov.	44.5	43.0	50.0	45.9	43.2	41.6	45.9	8	45.1	43.5	8	42.7	2.4	40.7	4.4	51.4	39.2	45.3	4	44.9	12.2	58	18.5	30	0	28
Dec.	36.5	34.7	40.9	38.4	36.0	34.6	37.8	2	37.6	35.9	2	35.7	1.9	33.1	4.5	43.0	31.9	37.4	0	37.4	11.1	56	13	14	0	42
Means ..	51.6	48.1	56.3	50.3	49.1	46.8	52.3	1.5	50.9	48.4	1.0	47.4	3.5	44.0	6.8	58.0	44.0	51.0	1.1	49.8	14.0	67.7	30.3	30	0	37.4

The Thermometers are placed on the roof of the Royal Institution in a wooden shed, through which the air passes freely. The Standard Wet and Dry Bulbs are by Negretti and Zambra, and have been corrected by Mr. Glaisher.

TABLE No. 3.

1870.	WINDS.												AVERAGE FORCE.																							
	E.			S.E.			S.			S.W.			W.			N.W.			N.			N.E.														
	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.	9 a.m.	3 p.m.	9 p.m.												
January..	3	3	3	4	3	3	4	3	4	4	4	8	1	1	1	1	1	8	7	20	25	20	20	25	20											
February.	4	5	2	1	1	1	4	4	4	5	6	2	2	2	3	3	2	7	5	21	27	19	21	27	19											
March ..	4	5	4	1	4	1	3	2	4	2	3	3	7	9	9	7	10	3	18	24	10	18	24	10												
April	5	4	4	3	6	3	0	1	2	4	5	11	7	6	4	1	0	1	2	20	27	14	20	27	14											
May	3	4	3	3	2	3	3	0	5	6	9	4	4	6	4	3	4	7	10	23	31	17	23	31	17											
June	3	1	0	3	2	2	2	3	1	2	4	6	7	13	12	3	0	0	2	2	2	2	2	2	2											
July ...	7	4	5	1	4	0	1	2	2	4	3	8	6	7	8	2	0	1	2	15	20	10	15	20	10											
August ..	3	5	7	1	1	0	2	0	4	3	4	2	11	17	17	10	0	0	1	15	20	05	13	20	05											
Sept.....	9	10	12	0	1	1	1	2	5	4	5	4	4	3	4	4	3	4	1	16	24	14	16	24	14											
Oct.	1	2	3	1	2	1	2	4	3	5	4	8	2	1	2	5	1	1	2	24	32	20	24	32	20											
Nov.....	4	6	5	2	0	1	1	1	7	4	6	4	4	6	6	5	4	6	1	18	23	15	18	23	15											
Dec.....	2	4	4	2	4	2	2	0	2	3	1	2	9	3	8	9	13	11	1	18	23	16	18	23	16											
Total....	47	53	52	22	30	18	20	22	42	39	51	48	51	66	68	79	81	63	34	228	300	174	233	300	174											
Means ..	51.0			23.3			18.7			44.0			51.3			55.0			76.0			46.3			1.9			2.5			1.4			1.9		

The force of the Wind is estimated on a scale from 0 to 6, from calm to violent storm.

TABLE No. 4.

1870.	WEATHER.														REMARKS.							
	AVERAGE CLOUDINESS.				RAINFALL.				WEATHER.				SUN.			Dry.	Wet.					
	9 a.m.	3 p.m.	9 p.m.	Mean.	Amount in inches.		Greatest Fall in 24 hours.		Mean additional weight required for saturation of the air.		Mean humidity of atmosphere.		Mean elastic force of vapour.					Amount of water in a vertical column of air.		Shine.	Gleam.	Cloud.
				Truro.	Penarth.	No. of days in which rain fell.	Depth.	Date.	gts.	gts.	in.	gts.	in.	gts.	in.	gts.	in.					
January	7.4	8.0	7.0	7.5	3.19	1.42	17	.65	30	2.7	0.5	86	.238	554	1	3.3	17	8	37	81	12	Frost, 6, 10, 11, 20, 21, 22, 23, 24, 26, 28. Gale, 7, 8, 9. Hail, 12. Remarkable Rain, 30, 31, 12, 13, 14, 15, 16, 17, 18, 25. Snow, 13, 14. Fog, 25, 19. Gale, 1, 6. Snow, 13, 14. Fog, 25, 27, 29, 30, 31.
February	8.5	7.1	6.9	7.5	3.61	3.61	15	.80	1	2.5	0.4	86	.213	553	7	2.9	18	7	31	71	13	Frost, 1, 2, 3, 5, 6, 7. Hail, 9. Gale, 18. Fog, 14, 15, 16. Cuckoo heard, 18. Swallow seen, 22. Remarkable Rain, 11.
March	7.3	6.6	6.2	6.7	2.45	2.53	9	.81	1	2.7	0.6	84	.237	554	0	3.2	25	7	30	81	12	Frost, 1, 2, 3, 5, 6, 7. Hail, 9. Gale, 18. Fog, 14, 15, 16. Cuckoo heard, 18. Swallow seen, 22. Remarkable Rain, 11.
April	5.7	4.8	4.7	5.1	0.18	0.06	5	.07	29	3.1	0.7	81	.283	550	9	3.9	44	6	10	88	2	Frost, 1, 2, 3, 5, 6, 7. Hail, 9. Gale, 18. Fog, 14, 15, 16. Cuckoo heard, 18. Swallow seen, 22. Remarkable Rain, 11.
May	6.6	5.3	5.5	5.8	1.72	1.86	11	.76	11	3.5	0.9	78	.308	543	4	4.2	36	11	15	89	4	Frost, 1, 2, 3, 5, 6, 7. Hail, 9. Gale, 18. Fog, 14, 15, 16. Cuckoo heard, 18. Swallow seen, 22. Remarkable Rain, 11.
June	6.4	5.3	5.6	5.8	0.32	0.49	4	.29	16	3.8	1.9	68	.338	538	7	4.6	42	6	12	87	3	Frost, 1, 2, 3, 5, 6, 7. Hail, 9. Gale, 18. Fog, 14, 15, 16. Cuckoo heard, 18. Swallow seen, 22. Remarkable Rain, 11.
July	6.5	5.6	6.3	6.1	1.49	1.48	6	.60	17	4.7	1.8	71	.419	532	2	5.7	39	5	18	86	7	Frost, 1, 2, 3, 5, 6, 7. Hail, 9. Gale, 18. Fog, 14, 15, 16. Cuckoo heard, 18. Swallow seen, 22. Remarkable Rain, 11.
August	4.9	3.7	3.8	4.1	2.25	2.09	9	.62	22	4.1	2.0	67	.378	532	2	5.2	53	0	9	90	3	Thunder Storm, 8. Fog, 19. Lightning seen, Thunder not heard, 24. Remarkable Rain, 6, 7, 22. Thunder Storm, 22. Fog, 2. Aurora Borealis, 24. Fog, 26.
Sept.	5.5	4.9	4.3	4.9	1.49	1.61	12	.44	8	4.1	1.5	72	.364	537	0	5.0	46	5	9	87	3	Thunder Storm, 8. Fog, 19. Lightning seen, Thunder not heard, 24. Remarkable Rain, 6, 7, 22. Thunder Storm, 22. Fog, 2. Aurora Borealis, 24. Fog, 26.
Oct.	6.5	6.5	6.1	6.4	5.79	6.04	23	.72	7	3.7	1.0	76	.330	536	5	4.5	40	2	20	78	15	Frost, 11. Gale, 11, 12, 17, 18, 19, 21, 22, 23, 24, 30. Remarkable Rain, 7. Hail, 20, 23. Thunder Storm, 8, 9, 19. Aurora Borealis, 24, 25.
Nov.	7.2	6.6	5.8	6.5	4.13	4.23	19	.61	23	2.8	0.6	82	.254	547	6	2.5	24	6	30	78	12	Frost, 3, 17, 18, 19, 20. Snow, 10. Hail, 11, 12, 15, 16. Gale, 21, 24. Thunder Storm, 16, 22. Aurora Borealis, 19.
Dec.	7.0	6.3	6.0	6.4	2.81	3.12	12	.45	13	2.1	0.5	85	.188	558	1	2.5	23	5	34	51	12	Frost, 5, 6, 9, 10, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31. Snow, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31. Hail, 3, 4, 7. Fog, 15, 16.
Means	6.6	5.9	5.7	6.1	29.43	28.54	142			3.3	1.0	78	.296	544	9	4.0	34.0	5.7	21.2	80.6	8.2	

Cloudiness is estimated by dividing the sky into ten parts, and noting how many of these are obscured. The rain gauge at Truro is placed on the roof of the Royal Institution, at about 40 feet from the ground. Gleam is recorded when the sun's disk is visible through a film of cloud. The rain gauge at Penarth, near Truro, is 100 feet above the mean level of the sea.

CHRONOLOGICAL MEMORANDA.

1870.

January 1. The *Western Morning News* publishes an Article entitled : "1869 in the West of England."

January 1. The new Lighthouse on the Wolf Rock lighted for the first time.

January 1. The *Cornwall Gazette* publishes a "Mining Review" for the year 1869.

January 1, 15, 29. *Cornwall Gazette* publishes Articles on "The County Gaol," parts of a series entitled "Inside our County Institutions."

January 5. The *Cornish Telegraph* publishes an "Abstract of the weather at Penzance and its neighbourhood for the year 1869"; by W. Hosken Richards.

January 6. *West Briton* publishes "Local Events of the year 1869."

January 6. Annual Meeting of the Royal Cornwall Polytechnic Society; Mr. J. St. Aubyn, M.P., President, in the chair. The Committee's Report announced a marked improvement in the Society's financial position.

January 12; February 9, 16, 23; and March 2. *Cornish Telegraph* contains communications on "The Tithe on Fish at Newlyn and Mousehole."

January 12, 19; February 16, 23. *Cornish Telegraph* publishes letters signed "Ap Kedna," on "Druidic Remains"; in completion of a series commenced in December, 1869.

January 13. *West Briton* publishes a letter signed "E. H. W. D.," Greenwich, entitled "Remarks on the Cromlech on Prospidnick Hill;" with postscript concerning a Cromlech near St. Columb.

January 13. *West Briton* records that Mr. J. T. Blight, F.S.A., had been elected a member of the Historical and Archæological Association of Ireland.

January 18, and subsequently. *Western Morning News* publishes, under the heading "Life in the Two Counties," and in continuation of a series commenced in 1869, articles descriptive of places in Cornwall and Devon, viz. :—

Bodmin : January 18, 19.

Barnstaple : January 25, 31.

Launceston : February 9, March 2.

Bideford : May 11, 13.

January 20. *West Briton* publishes a letter signed "Δ," concerning "The Giant's Quoit or Cromlech on Prospidnick Hill; and also a letter by "Inquirer," on "Liskeard;—Herles, Hurlers, Circles, &c."

January 26. *Cornish Telegraph* publishes an Article entitled "Cornwall a Century Ago."

January 27. *West Briton* publishes a paper signed "Penwith," entitled "Description of Two Domestic Articles formerly used in Cornwall, viz., the Chill and the Wooden Tinder Box." Also an abstract of an article in *Land and Water*, on "The Decline of Cornish Fisheries."

February 2. *Cornish Telegraph* publishes a letter from "E. H. W. Dunkin," Greenwich, on "A Canal Scheme of 1796," from Hayle to Helford.

February 2. *Cornish Telegraph* publishes, among its "Archæological Notes," by "E. H. W. D.," a notice of Beehive Dwellings (similar to those in Cornwall), discovered at Ardfinran, near Tipperary.

February 3. *West Briton* publishes "An Antiquarian Ramble, No. 4," by "S. J. Wills," having reference to antiquities on Prospidnick Hill; and also a letter signed "Ap Kedna," concerning the "Men-amber," "Giant's Quoit," and "Long-Stone."

February 5. *Cornwall Gazette* publishes a letter from "Christopher Cooke," concerning the gold cup found on the Duchy Manor of Rillaton in 1867.

February 9. *Cornish Telegraph* publishes an Article from the *Globe* on "Penzance."

February 12. *Cornwall Gazette* notices an inscription on the church tower of St. Goran: "166 EAB EK IM."

February 17. *West Briton* publishes a letter from "E. H. W. Dunkin," Greenwich, "On the Giant's Quoit on Prospidnick Hill."

February 24. *West Briton* contains a memoir of the lately deceased Major Bickford, of Tuckingmill.

February 24. *West Briton* publishes a letter signed "W. B.," on "Cornish Names."

March 2, and April 6. *Cornish Telegraph* publishes, among its "Archæological Notes," notices of Gunwalloe and its Church.

March 12. *Cornwall Gazette* publishes a letter from "Christopher Cooke," London, on "Cornish Institutions."

March 17. *West Briton* publishes a letter from "Delta," on "A supposed Cromlech" on Prospidnick Hill.

March 17, 29; and April 21. *Western Morning News* publishes Articles on "Cornish Fisheries—The Mackerel."

March 24. Death of Sir William Williams, Bart., of Tregulow.

March 30. *Cornish Telegraph* contains a notice of the Family of Williams, of Gwennap.

April. The *Reliquary, Quarterly Archæological Journal and Review*, contains a paper entitled "Notes on the discovery of a Kistvaen on Tredinney Hill, near the Land's End;" by E. H. W. Dunkin.

April 6. *Cornish Telegraph* quotes from the *Builder* an account of the "Construction of the Wolf Rock Lighthouse."

April 7. *West Briton* publishes a letter, signed "Tre," on "Cornish Names and Provincial Words."

April 9 and 23. *Cornwall Gazette* publishes Articles on "The Lunatic Asylum," in continuation of a series of papers on "Our County Establishments."

April 13. Death of Mr. Jonathan Couch, F.L.S., Corr. Mem. Z.S., &c., at Polperro, in the 82nd year of his age.

April 14. *West Briton* publishes "An Antiquarian Ramble, No. 6," by S. J. Wills, concerning Antiquities on Wendron Beacon.

April 16. *Cornwall Gazette* records that recently a fisherman at Mevassey had landed a fine specimen of the Holibut (*Pleuronectes hippoglossus*).

April 20. *Cornish Telegraph* publishes an account of "The Kist-vaen at Wendron."

April 20. Cornwall and Devon Miners' Association. General Meeting at Redruth; Mr. J. St. Aubyn, M.P., the President, in the chair. Mr. Arthur Pendarves Vivian, M.P., elected President for the next two years. Sir F. M. Williams, Bart., M.P., Mr. J. St. Aubyn, M.P., and Captain Basset, appointed Vice-Presidents.

April 30. *Cornwall Gazette* records that there had been recently found in the church tower of St. Goran, an old stone bearing this inscription: "H. R. ALLYN V I C 1517." Also that in the trench, running outside the southern aisle of the church, had recently been found part of an earthenware jar containing a coin. There had also been found a copper penny of the Stannaries of Cornwall, with three ostrich feathers on one side, and a rude delineation of an ancient mine on the other.

April 30. *Cornwall Gazette* publishes a letter from "M. C. Burns," giving an account of the discovery in the parish of St. Goran, some years since, of a cromlech and kist-vaen; and of thirteen urns containing cinerary remains.

May 5 and 26. *West Briton* publishes a paper entitled, "The Battle Fields of Cornwall."

May 5, 19, and 26; and June 2. *West Briton* publishes Articles entitled "A Northern Stroll in the Easter Tide," by "Mot"; descriptive of scenery, &c., in North Cornwall.

May 11. *Cornish Telegraph* publishes an "Interesting Notice of Scilly in the Heimskringea."

May 12. *West Briton* publishes "Ancient Customs celebrated in Cornwall during the month of May"; by "Beta."

May 17. Royal Institution of Cornwall, Spring Meeting. Mr. W. Jory Henwood, F.R.S., F.G.S., &c., President, in the chair. Among subjects treated of by the President, were the State of the Cheesewring; statistics of the fisheries and vegetable produce of West Cornwall; and the detrital deposits in the Carnon Valley. The following papers were presented:— Copy of a Letter in the British Museum, concerning the state of Ports in Cornwall in 1593—5; from Mr. Henry Lee Rowett. Notes on the Ornithology of Cornwall; Mr. E. Hearle Rodd. Notes concerning the *Hirudo*; *Velella limbosa*; *Medusa*; *Hippoglossus vulgaris*; *Physalia pelagica*; *Scyllaea pelagica*; Spawn of *Doris tuberculata*; *Larus minutus*; and various species of Entozoa; Mr. W. P. Cocks. Recent Observations on Subterranean Temperature in the Clifford Amalgamated Mines; Sir F. M. Williams, Bart., M.P. Stannary Rolls, temp. Edward I; Mr. J. Maclean, F.S.A. An Inscribed Stone in Stowford Churchyard; Mr. W. Copeland Borlase. Notes on the Geology and Archæology of Cornwall and Devonshire; Mr. W. Pengelly, F.R.S., F.G.S. On Boiler Explosions; Capt. Williams. Observations were made concerning Tin Coinage; the Stowford Inscription; Meteorology; Roman Coins; the planet Jupiter; and Antiquities at Upton, in Lewannick, and at Northcot, Devon. (*See Journal of the Royal Institution of Cornwall*, No. XII.)

May 25; June 1 and 8. *Cornish Telegraph* publishes letters on "The Submarine Forest of Mount's Bay."

May 26. *West Briton* contains a letter, by the late Rev. F. V. J. Arundell, on the inscription over the porch of St. Austell church.

May 26. *West Briton* publishes a letter, signed "C," urging the necessity of protecting Tintagel Castle against danger from blasting operations.

May 26. *West Briton* publishes a letter, signed "Tre," on "Remarkable Meteors," citing a description, by Walter Moyle, of Bake, of a meteor seen on the 19th of March, 1718—9.

June 8. *Cornish Telegraph* publishes a communication on the question: "Where was ancient bronze made—in Phœnicia or in Cornwall?"

June 9. *Nature* publishes a letter from "E. H. W. Dunkin," Greenwich, on the "Anticipated Destruction of the Cheesewring."

June 9. *West Briton* publishes communications on "The Lionesse, the lost portion of Cornwall," by "Observer"; "Tintagel," by "Mot"; and "Obsolete Words," by "T. * *."

June 14. *Western Morning News* records a capture, near the Gear Rocks, Mount's Bay, of the "Broad-headed Gazer," and of the Black Fish (*Centrolophus pompilus*.)

June 16. *West Briton* publishes "An Antiquarian Ramble, No. 7," by S. J. Wills, descriptive of Antiquities on Tregoning Hill.

June 22. *Cornish Telegraph* records that at a recent meeting of the Council of the Penzance Natural History and Antiquarian Society, the Secretary reported the existence, near the Hangman Barrow, between Redruth and Crowan, of a sculptured and inscribed stone, and of remains of a large barrow and kist.

June 29. *Cornish Telegraph* publishes an Article, by "Old Celt," on "Ancient Midsummer Customs."

July 2. *Cornwall Gazette* publishes a letter from "Christopher Cooke," concerning the Reverend Richard Polwhele and his published works.

July 6. *Cornish Telegraph* publishes a letter on "Inscribed Stones," with especial reference to the stone in St. Hilary Churchyard; and also a letter from "E. H. W. Dunkin," making inquiry concerning an "Incised Stone at Treryn, St. Levan."

July 26. Devonshire Association for the Advancement of Science, Literature, and Art. Ninth Annual Meeting, at Devonport; Mr. J. A. Froude, President. The following papers were read:—The probable inapplicability of the rifle principle for vertical or mortar fire, and a suggestion of another method; Dr. R. W. Woolcombe. The Life and Writings of Josephus Iscanus, the Swan of Isca; Sir John Bowring, LL.D., F.R.S. Instinct and Reason; Rev. T. R. R. Stebbing, M.A. On Rainfall; Mr. W. Pengelly, F.R.S., F.G.S. The Stalk-eyed Crustacea of Devon, and the Histology of their Shells; Mr. Parfitt. On two One-eyed Peoples of the Olden World, namely, the Arimaspians and the Cyclopes; Rev. B. H. Cooper, B.A. The Occurrence of Fossils at Smugglers' Cove, Torquay; Mr. E. Tawney, F.G.S. The Degeneration of our Sea Fisheries; Mr. J. N. Hearder, F.C.S. The Abnormal Structure of Ferns; Mr. T. M. Hall, F.G.S. On some curious stones at Swincombe, probably connected with ancient mining on Dartmoor; Mr. P. F. S. Amery. Notes on the Præ-Historic Archæology of East Devon, No. 3; Rev. R. Kirwan, M.A., F.E.S.L. Notes on Vessels formed of Bovey Lignite, and of Kimmeridge Coal; Mr. W. Pengelly, F.R.S., F.G.S. Annual

Industrial Exhibitions in Devonshire; Mr. J. Phillips. On some Fossil Spicula of Sponges from Haldon and Blackdown; Mr. E. Parfitt. The Literature of the Bone Caverns, near Yealmpton; and the Ash Hole and Bench Bone Caverns at Brixham; Mr. W. Pengelly, F.R.S., F.G.S. On Prison Discipline; Dr. Row. The Modern and Ancient Beaches at Portland; Mr. W. Pengelly, F.R.S., F.G.S.

July 27. *Cornish Telegraph* publishes a notice, by Mr. W. C. Borlase, of "Hawken's King of the Herrings"; and a description of "The Eagle's Nest," Zennor, with notices of the Zennor Logan-rock, the Giant's Snuff-box, the Giant's Quoit, and the Twin Logan-Rocks, on Tregarthen Hill. Also, a letter, from Mr. Richard Edmonds, on Inscribed Stones and Cliff Castles.

August 1. *Western Morning News* publishes an account of an ancient vault in Catherine-street, Plymouth.

August 6. *Cornwall Gazette* publishes a letter from Mr. John Burton, Falmouth, on "Roman Remains in Cornwall." Also a letter from "Christopher Cooke," concerning antiquities near "The Land's End."

August 6. The *Builder* publishes a letter from "John Freeman and Sons," entitled "Safety of the Cheesewring."

August 8 and 9. Royal Institution of Cornwall. Excursion to Tintagel, &c., (see *Journal of the Royal Institution of Cornwall*, No. XII, and 53rd *Annual Report*). A programme, with notices of objects proposed to be visited, was published in the *Cornwall Gazette*, of July 30th.

August 13. The *Builder* contains a letter from "H. B. W." on the present condition of the Cheesewring.

August 16. *Western Morning News* records the recent capture of a Bogue (*Sparus boöps*) near the Deadman, in a ground seine belonging to Mr. Matthias Dunn, of Mevagissey.

August 17. *Cornish Telegraph* publishes "An Excursion to Chapel Uny Well, with a Legend of the Changeling of Brea."

August 24. *Cornish Telegraph* publishes "Traditions of St. Levan," by "Old Celt."

August 24. *Cornish Telegraph* publishes, in the Programme of an intended Excursion by the Penzance Natural History and Antiquarian Society, notices of Antiquities, &c., in Sancreed, Buryan, and St. Levan.

August 27. *Cornwall Gazette* records the recent capture of a Canadian Beetle (*Mohammus Dentator* of Fabricius), at Mevagissey. It was forwarded by Mr. F. Michell to the London Entomological Society, and the Secretary states, "that it is an undoubtedly imported specimen, it being a native of Canada and the Northern States of the Union."

August 29. *Western Morning News* publishes a letter from Rev. H. Anstey, St. Wendron Vicarage, recording the appearance, in his garden, of a specimen of the scarce "Spotted Hawk-Moth (*Deilephila galii*.)"

August 31. *Cornish Telegraph* publishes a letter, signed G. F. G., concerning an Inscribed Stone formerly at Chapel Curnow, St. Levan.

September 1. *West Briton* publishes a letter, signed "A Lover of Cornish Scenery," on "Hills and Views in Cornwall." It gives lists of some of the highest hills in the several districts of Liskeard, Camelford, St. Austell and Bodmin, Truro, Camborne and Redruth, Falmouth and Helston, and Land's End; and the views to be seen from them.

September 1. *Western Morning News* publishes a letter, signed T. G.,

Rectory, Peter Tavy, recording the appearance of a very bright meteor, near the Pole Star, at about 2h. 40m. p.m., and under a brilliant sun.

September 7. *Cornish Telegraph* contains a paragraph, from Mr. T. Q. Couch, on the present condition of the Cheesewring.

September 8. *Western Morning News* states that on the previous day, there was captured a rare fish, apparently a Spinous Shark, in Mount's Bay.

September 9. Royal Cornwall Polytechnic Society. 38th Annual Exhibition; Mr. John St. Aubyn, M.P., presiding. On the 10th Sept a lecture was given by Mr. E. B. Tylor, President of the Ethnological Society, on "The relation of primitive to modern civilization." Mr. Charles Fox presided.

September 12. Miners' Association of Cornwall and Devonshire. Annual Meeting at Falmouth; Mr. John St. Aubyn, M.P., presiding. The following papers were read:—On a patent Pulverizer; Mr. Dingey, Truro. On Sturgeon's patent Ore Crusher; Mr. Chatwood, London. Mr. Husband, of Hayle, described his patent Pneumatic Stamps.

September 14, and following days. 40th Annual Meeting of the British Association, at Liverpool; President, Professor Huxley. Among the papers read were the following: Sixth Report of the Committee for the Exploration of Kent's Cavern; Mr. W. Pengelly. The Modern and Ancient Beaches of Portland; Mr. W. Pengelly. Note on Anthotites, discovered by Mr. C. W. Peach; Mr. W. Carruthers. On an Ebalia, new to the British List; Mr. C. W. Peach.

September 15, and October 6. *West Briton* publishes letters, signed "Tre," on "Hills and Views in Cornwall."

September 17. *Cornwall Gazette* records the recent capture of a Torpedo, or Electric Ray, in a ground seine at Mevagissey.

September 22. *West Briton* publishes a letter, signed "S.," on "Hills and Views in Cornwall."

October 11. *Western Morning News* publishes an Article descriptive of Tintagel Church.

October 12. *Cornish Telegraph* publishes a notice (from the *Athenæum*) of "Traditions and Hearth-side Stories of West Cornwall."

October 13. *West Briton* publishes an Article on "The Cheesewring," including extracted notes from Messrs. Freeman and Sons, and Mr. T. Q. Couch. Also a letter signed "Δ," on "The Institutions of Cornwall."

October 14. At a meeting of the Plymouth Institution, Mr. Spence Bate, F.R.S., read a paper on "Præhistoric Antiquities of Dartmoor."

October 21. Royal Geological Society of Cornwall. Annual Meeting at Penzance; Mr. H. Seymour Tremenhœre, F.G.S., President. The following were among the papers read:—On Chromic Iron in Serpentine from the Lizard; Mr. Richard Pearce, Swansea. On the occurrence of a granite boulder, 60 fathoms deep, in the killas of Halamanning Mine; Mr. Richard James, St. Ives. Mr. T. Cornish exhibited Hazel Nuts and Bivalve Shells of existing local species, found in streaming, in the valley between Marazion and Hayle, at a depth of about 18 feet. Mr. Warrington Smyth gave an account of gold-mining operations in Merionethshire.

October 22. *Cornwall Gazette* publishes a letter from "Christopher Cooke," concerning "The Wringcheese"; urging "Cornubians, One and All" to endeavour to prevent its destruction.

November 2. *Cornish Telegraph* publishes, in its "Archæological Notes," remarks of Sir John Lubbock, on the importance of preserving antiquities from destruction.

November 4. The *Building News* publishes woodcuts of the Font in Landewednack Church, by "J. B. Fowler."

November 15. Royal Institution of Cornwall. Annual Meeting; Mr. W. J. Henwood, F.R.S., President, in the chair. In the evening a conversazione in the Institution Lecture Room. (See *53rd Annual Report of the Royal Institution of Cornwall*.)

November 23. Oxford Local Examinations. Presentation of Prizes and Certificates at Truro, by Lieut.-Colonel Tremayne.

November 23. *Cornish Telegraph* records recent presents to the Penzance Natural History and Antiquarian Society, of a granite Spindle-Whorl, found at Trevilly, and a White-fronted Goose—both from Mr. J. Symons, jun., of Mayon, Sennen.

November 25. Annual Meeting of the Penzance Natural History and Antiquarian Society; Mr. J. St. Aubyn, M.P., President, in the chair. Remarks made by Mr. Ralfs, Mr. Curnow, and Dr. Montgomery, on the occurrence, this season, in the neighbourhood of Penzance, of large quantities of the *Parasol Fungus*, an edible variety.

November 28. Mr. W. C. Borlase lectured at the Penzance Institute on "Præhistoric Cornwall."

December 7.—*Cornish Telegraph*, in its "Archæological Notes," makes reference to the curious inscribed font in Landewednack Church.

December 10. *Cornwall Gazette* records the recent capture of a specimen of the (Silvery) Hairtail (*Trichiurus lepturus*) about 4 miles from Looe. It was sent to Mr. Frank Buckland, for his Museum at South Kensington.—*West Briton*, of Dec. 22, records the capture of another specimen in Mevagissey Bay.

December 10. "Land and Water," of this date, contains a letter, by Mr. Matthias Dunn, of Mevagissey, on the "Spawning of Sea Fish."

December 17. *Cornwall Gazette* publishes an article (introductory) on "Cornwall, Two and a Quarter Centuries Ago." It contains a notice of "John Taylor, the Water Poet," and of his book, published 1649, entitled "John Taylor's Wandering; to see the Wonders of the West."

December 22. A Conversazione of the Royal Institution of Cornwall; Dr. Jago, F.R.S., presiding. Optics and Theories of Light; the Spectroscope; Phenomena of Solar Eclipses; the Planet Jupiter, its colours and belts; Entoptics; and Microscopic Observations.

December 30 and 31. *Western Morning News* publishes Articles on "Eighteen Hundred and Seventy" in the West of England."

December 31. *Cornwall Gazette* publishes letters from "Christopher Cooke," concerning the "Pendarves Quoit," near Clowance, and "The Wringcheese," St. Cleer.

LIVERPOOL MEETING OF THE BRITISH ASSOCIATION.

At this meeting, the "Sixth Report of the Explorations in KENT'S CAVERN," was presented by Mr. PENGELLY, F.R.S.

It has been stated in previous reports that Kent's Cavern consists of an eastern and a western division, each composed of a series of chambers and galleries; that it has two entrances, which are about 50 feet apart, 200 feet above the mean sea level, from 60 feet to 70 feet above the bottom of the valley in the same vertical plane, situated in one and the same low vertical cliff in the eastern side of the hill, and which open at once into different branches of the eastern division; that the labours of the committee had been restricted to the eastern division, the different branches of which were known as the North-east Gallery, the Vestibule or Sloping Chamber, the Gallery, the Lecture Hall, the South-West Chamber, the Water Gallery, and the North and South Sally-Ports. In their fifth report (Exeter, 1869) the committee stated that, with the exception of the last two, the exploration of the entire series had been completed to the depth of four feet below the stalagmitic floor, without, however, reaching the bottom of the cavern; and that some progress had been made in the South Sally-Port. The Sally-Ports were so named by the late Rev. J. M'Enery, who firmly believed that if excavated they would be found to lead to new external openings in the eastern slope of the hill, through which burrowing animals, foxes especially, found ready access to the body of the cavern. The year which has elapsed since the last statement of progress has been spent in the exploration of these branches and their ramifications, the characters and contents of which formed the topics of the present report. The South Sally-Port has its entrance in the eastern wall of the Lecture Hall, its direction being to the south-east. With its ramifications, it occupies a space of 80 feet east and west, and 40 feet north and south; its width varies from 21 to 2 feet, averaging about 10 feet. There is no indication of its leading to any external opening. At 50 feet from the entrance the succession of deposits was—1, red cave earth, 12 to 21 inches; 2, stalagmite floor, 1 to 24 inches; 3, cave earth of unknown depth, but exceeding 5 feet. Besides a large number of bones, including several of birds, a few of fish, and portions of antlers, the yield of teeth amounted to 1,400 specimens, the percentages of which were:—Horse, 29; hyena, 27; rhinoceros, 11; bear, 8; sheep, 7; badger, 3; fox, 3; rabbit, 3; elephant, 2; deer, 2; lion, 2; ox, 10; wolf, 1; hare, 1; dog, 1; pig, 1. In this part of the cavern 21 flint implements were found, one at 55 feet from the entrance, in association with remains of horse and rhinoceros, in the cave earth. The North Sally-Port has its entrance in the east wall of the Great Chamber. All that was known about it when the committee commenced its exploration was the existence of a rude tunnel about 27 feet, and 8 feet by 6 feet in height and breadth. The excavations have shewn that it had an external as well as an internal mouth. The former, just discovered, is under the débris of the hill-side, and 140 feet away from the inner mouth. The yield of recognizable teeth is above 2,600, the percentages being:—Hyena, 31; horse, 31; rhinoceros, 16; deer, including Irish elk and reindeer, 6; badger, 4; rabbit, 2; elephant, 2; ox, 2; lion, 2; bear, 2; fox, 1; beaver, 1; wolf, 1; dog (?), 1; cat, 1; sheep, 1. Birds' bones and flint implements were also found. Taken as a whole, the 'finds' in these series of excavations are considered to be superior to those found in any previous year.

HENRY GRENFIELD.

THE TRURO GRAMMAR SCHOOL.

HENRY GRENFIELD.—In No. XI of this Journal, page 190, there was published an inquiry, by “T. Q. C.,” concerning “Henry Grenfield,” a native of Truro, the author of a volume of poetry, comprising “God in the Creature,” and other poems and odes. The publication bears date, 1686; and, through the courtesy of Mr. Tannahill, Chairman of the Grammar School Committee of the Truro Town Council, we learn that “Henry Grenfield” was Master of the Truro Grammar School from September, 1685, to December, 1693. His volume of poetry is dedicated: “To the Worshipful the Mayor, the Right Honourable the Recorder, with the Honourable and Worshipful Justices, Aldermen, and all the rest of the Worthy Capitol (*sic*) Burgesses of the Reformed and Loyal Corporation of the Borough of “Truro, in the County of Cornwall;” and there are expressions in the “Epistle Dedicatory” which clearly identify the Poet with the School-master. For instance:

“I cannot but with a chearful Humility, declare my self under a double Obligation of all possible Respect and Service to your Honourable and most Loyal Fraternity, and particularly of my present Address, tho’ with so minute and homely an Offering.” * * * “In this Ancient Corporation I drew my first Breath; and to this therefore would gladly pay the first fruits of my Honest (howsoever unfortunate) Endeavours. But to this natural Incitement of Love and Honour, we have in you the happy Accession of a most generous and noble Loyalty.” * * * *

At some length, he expatiates on the excellence of “Loyalty! the grand Comprehension, in one Word, of all Publick and Political virtue;” and affirms “that Loyalty, wherever she lights, tho’ on a Dunghil, carries a commanding Lustre in her Face; but an advantageous setting off the Jewel in Generous and Noble Metals (such as your selves); as it mightily commands its Beauty, so ought proportionably to heighten its Value:” * * * “In the present State of *Truro*, ’tis now (Thanks be to Heaven) easie to see awful Authority, and a most Rational, Ingenuous Candor, going Hand in Hand, and every where to the grief of Faction, but the Delight of God, and all honest Men, embracing and greeting each other with a Holy Kiss.” * * * “As for Silver and Gold, such as the more splendid and Heroical Pieces of Poesie, I have none; but such as the *Cornish* Muse affords, once in the Name of all that’s Good, I humbly present you with, as the humble Specimens of an unmodish, hearty Gratitude: And this is a second Obligation I would have all Men to know I lye under to your Honourable and most Loyal Fraternity;” * * * “I am (*Sirs*) undoubtedly secured of no Inferior Place in your Favour, by many pregnant Instances, but more especially by your last most sensible demonstration of Kindness, the character whereof is indelibly written in my Heart (as with a Diamond). Nor shall the Recognition of the same on all suitable occasions be only ingeminated in my Mouth, but also seconded by agreeable Action, so far forth as the Sphere and Abilities, which the Divine Goodness hath allotted me to act in, and by, shall permit.”

We learn that the earliest mention of the existence of the Truro Grammar School is found in a petition respecting a contested election,

recorded in the Journals of the House of Commons, in which it is said the school was built by Walter Borlase, in the reign of Edward VI. Subjoined is a List of its Masters; but we have no means of ascertaining whether, as is just possible, "Johannes Hodge" was the first who held the appointment.

MASTERS OF THE TRURO GRAMMAR SCHOOL.

No date,	Johannes Hodge,	Buried, Oct. 15th, 1600.
No date,	Thomas Syms,	Buried, June 28th, 1609.
1612,	Matthew Sharrock,	—
1618,	Nicholas Upcott,	—
1621,	George Phippen,	—
1635, Nov. 17th,	William White,	—
1666,	Richard Jago,	—
1685, Sept. 9th,	Henry Grenfield,	—
1693, Dec. 21st,	Simon Paget,	—
1698, Dec. 16th,	— Hilman,	—
1706, Oct. 9th,	Thomas Hunkin,	Buried, Oct. 20th, 1714.
No date,	Joseph Jane,	Buried, Nov. 19th, 1745.
1728, Feb. 25th,	George Conon,	Resigned, 1771.
1771, July 15th,	Cornelius Cardew, D.D., &c.,	Resigned, July 19th, 1805.
1805, May 23rd,	Thomas Hogg,	—
1829, Feb. 1st,	John Ryall, M.A., D.C.L.,	—
1837, Nov. 15th,	Osborne John Tancock, D.C.L.,	Resigned, Dec. 1848.
1848, Dec.,	A. J. W. Morrison,	Resigned, June, 1852.
1852, June 3rd,	Samuel Andrew, M.A.,	Resid., Michaelmas, 1855.
1855, July 9th,	Charles Durnford Newman, M.A.,	Resigned, Christmas, 1866.
1866, Dec. 27th,	George Henry Whitaker, M.A.,	—

ROYAL INSTITUTION OF CORNWALL.

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Vice-Patron:
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M. 12

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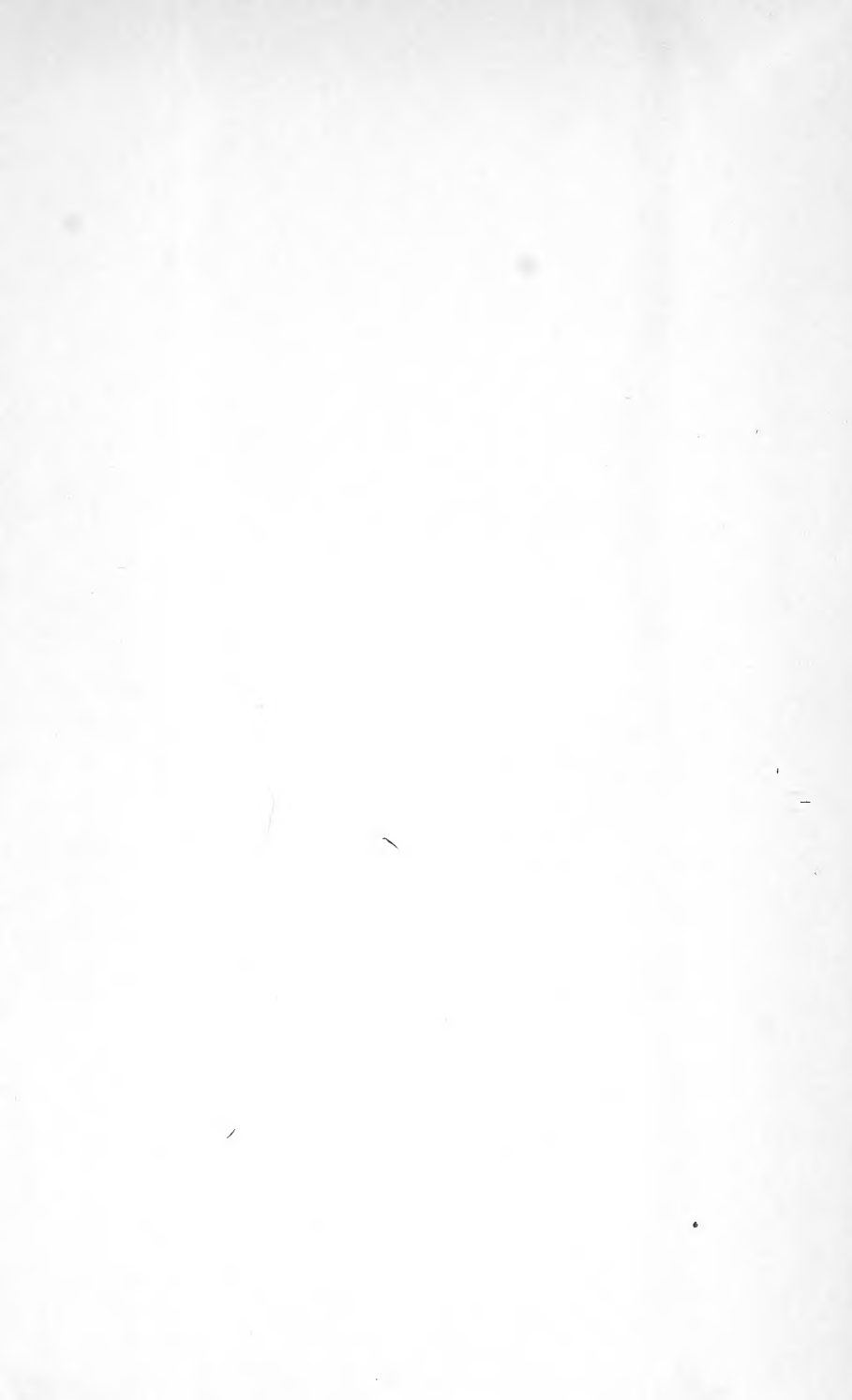
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