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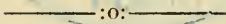
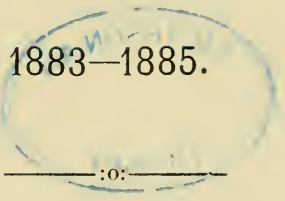
Royal Institution of Cornwall.



VOLUME VIII.



1883—1885.



TRURO :
PRINTED BY LAKE AND LAKE, PRINCES STREET.
1886.

The Council of the Royal Institution of Cornwall desire that it should be distinctly understood that the Institution as a body is not responsible for any statements or opinions expressed in the Journal; the Authors of the several communications being alone answerable for the same.



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Part I.—*March*, 1884.

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SPRING MEETING, 1883.

The Spring Meeting was held at the Rooms of the Institution, on May 29th. The President, the Earl of Mount Edgcumbe, in the Chair. There were also present the Lord Bishop of Truro (Dr. Wilkinson), the Revs. Canon Cornish, Chancellor Whitaker, W. Iago, E. H. Bree, W. S. Lach-Szyrma, Pole-Carew, Napier, J. H. Moore, and G. L. Church; Dr. Jago, F.R.S., and Messrs. Bryant, H. M. Jeffery, F.R.S., J. C. Daubuz, A. C. Willyams, R. Tweedy, H. Tilly, Counsell, J. H. Bawden, R. Symons, W. Helps, T. A. Cragoe, T. Clark, W. J. Clyma, T. Hawken, J. Snell, E. Kitto, Bass, H. James, E. G. Spry, and H. Michell Whitley and Major Parkyn (secretaries). Several ladies were also present.

Mr. H. Michell Whitley read a letter from Mr. A. P. Vivian, M.P., who regretted that business in the House of Commons would require his presence in London. There was, he said, another gentleman they missed very much that day, viz., Dr. Barham, who was by illness prevented from attending. Mr. Whitley was also absent from a similar cause. He had received from the executors of Mr. George Freeth, of Nottingham, a letter enclosing an extract from his will, by which he bequeathed to the Institution, such of his historical books and manuscripts relating to Devon and Cornwall as were not represented already in the library by copies. That would be a most valuable acquisition to the Institution, as the library was not well furnished with historical works relating to Cornwall.

Major Parkyn then read the List of Presents as follows:—

ADDITIONS TO THE LIBRARY.

Bulletin of International Meteorological Observations, Washington	... ..	From the American Government.
Proceedings of the Society of Antiquaries of London	... ..	From the Society.
Transactions of the Geological Society of Glasgow	... ..	Ditto.

Proceedings of the South Wales Institute of Engineers	From the Society.
Transactions of the North of England Institute of Mining and Mechanical Engineers...	Ditto.
Collections of the Surrey Archæological Society	Ditto.
Transactions of the Epping Forest and County of Essex Naturalists Field Club	Ditto.
Annual Report of the Royal Cornwall Polytechnic Society	Ditto.
Reports of the Philosophical Society of Glasgow	Ditto.
Journal of the Royal Geological Society of Ireland	Ditto.
Proceedings of the Zoological Society of London	Ditto.
Transactions of the Royal Geological Society of Cornwall	Ditto.
Transactions of the Edinburgh Geological Society	Ditto.
Journal of the Society of Arts	Ditto.
Monthly Notices of the Royal Astronomical Society	Ditto.
Transactions of the Eastbourne Natural History Society	Ditto.
Proceedings of the Yorkshire Geological and Polytechnic Society	Ditto.
Proceedings of the Natural History Society of Glasgow	Ditto.
Transactions of the London and Middlesex Archæological Society	Ditto.
Transactions of the Manchester Geological Society	Ditto.
A Catalogue of the Library of the Royal Geological Society of Cornwall	Ditto.
The Journal of the Liverpool Polytechnic Society	Ditto.
Annual Report of the Geologist's Association and List of Members	From the Association.
The Journal of the Anthropological Institute of Great Britain and Ireland	From the Institute.
Journal of the Royal Historical and Archæological Association of Ireland	From the Association.
Collections. Historical and Archæological, relating to Montgomeryshire and its borders ...	From Powys Land Club.
Proceedings of the Bath Natural History and Antiquarian Field Club	From the Club.
Cornish Chantries, by H. Michell Whitley.	From the Author.
The Iron and Tin Deposits of the Tuscan Mining District, by Brenton Symons... ..	Ditto.

ADDITIONS TO THE MUSEUM.

Specimen of Crystallised Galena, partly covered with Quartz, from Snailbeach Mine, Shropshire	Presented by Dr. Foster.
Specimen of Pyromorphite from Rushen Mine, Isle of Man	Ditto.
Specimen of Rosin Blende, from Minera Mine, Wrexham	Ditto.

Specimen of Zinc Blende, from Snailbeach Mine, Shropshire	Presented by Dr. Foster.
Specimen of Waterworn Pebble of Galena, from an alluvial deposit of Lead Ore, Minera, Wrexham	Ditto.
Specimen of Scratched Stone, glacial drift, Deganwy, Carnarvonshire	Ditto.
Specimen of Graptolites, from Derwen Deg Mine, Conway	Ditto.
Specimen of Schistose Porphyry, adjoining the lode	Presented by Mr. J. H. Collins.
Specimen of Jasper, with Veins of quartz ...	Ditto.
Specimen of Jasper, with specks of Pyrites and of Oxide of Manganese... ..	Ditto.
Specimen of Compact Porphyry, near the lode...	Ditto.
Specimen of Porphyry, charged with Crystals of Pyrites	Ditto.
Specimen of Iron Stone, now forming in the rives beds near the Rio Tinto Mines, Spain—50 per. cent of Iron	Ditto.
Specimen of Porphyry, with variegated surface of Oxide of Iron	Ditto.
Specimen of Vein of Rich Yellow Copper Ore, traversing Cuperiferous Pyrites... ..	Ditto.
Specimen of Schistose Porphyry, with fragments of Slate	Ditto.
Specimen of Iron Ore, with variegated surfaces, from the Rio Tinto Mines, Spain—50 per cent. of Iron	Ditto.
Specimen of Purple Slate, with Oxide of Manganese	Ditto.
Specimen of Pyritous Schist, adjoining the lode "L. Carboniferous" Slate with fossils (posidonomya) from near the lode	Ditto.
An Old Lamp, and a variety of Spanish Coins	Ditto.
Specimen of Granite, from Carnsue	Presented by Mr. Thos. Clarke.
Specimen of Cornubianite, from Higher Treluswell	Ditto.
Specimen of Fossils from Portscatha	Ditto.
Specimen Sucker and Sea Horse... ..	Presented by Mr. Dunn.

The PRESIDENT then delivered his Address, which will be found printed in the present number of the Journal.

The Rev. W. IAGO gave a description of an Ancient Urn found in a barrow at Nanstallon, near Bodmin, and a Spear Head found at St. Breward.

The LORD BISHOP OF TRURO, at the invitation of the President, then addressed the Meeting as follows: Lord Mount Edgecombe, Ladies and Gentlemen,—I am much obliged to your President for allowing me to express the interest I feel in this Institution. I am only sorry that business connected with the

Diocese obliges me to leave, instead of waiting, as I should like to do, for the later proceedings of the day. I was glad to come down here to-day and show my respect for your President, whom I have had the pleasure of knowing for a great many years, as being always anxious to use that influence which his position gives him for the good of those amongst whom he lives. (Applause). I think anyone who came into this Diocese would be utterly wanting in the power of appreciation if he did not desire to follow, so far as he was able, in the steps of his great predecessor, the good Archbishop Benson. To myself it is easy, because I am bound to him by ties of personal affection; and, if he had not written me a long letter asking me to visit the Royal Institution, I should, indeed, be wanting in everything that I hope will distinguish my episcopate, if I had no desire to carry on everything Archbishop Benson begun in connection with this Institution. This Institution must interest any man who has any intelligence. It seems to me the very thing that is wanted, not merely to develop—as I hope we always shall develop in Cornwall—a strong feeling for our own country, but also a desire to fasten ourselves to the great family of men, to know what is being done in other places, and use every means to increase our own knowledge and enlarge our own sympathies. These seem to me to be the two secrets of the real progress of a county. No county would make real progress unless it has a large, wide-spread interest outside its own boundaries, and that seems to me what this Institution seeks to accomplish. The mere fact of my being Bishop of this county makes a demand on my sympathy, for what am I here for except to advance everything which tends to promote the welfare of the county, not merely the spiritual welfare, but the intellectual welfare, and even the material interests of the people—(applause)—and so a great Institution like this, which tends to increase the intellectual energy of the county, must always demand my deepest interest and hearty support. (Applause).

The following papers were then read :

“Dame Killigrew and the Spanish Ship,” by H. Michell Whitley, F.G.S.

“Relics of the Cornu-British Language,” by the Rev. W. S. Lach-Szyrma.

“The St. Neot Stone,” by N. Hare, Junr.

“A remarkable Sunset,” by N. Whitley.

“Inventories of the Cornish Friaries, at the time of their dissolution,” by H. Michell Whitley, F.G.S.

On the motion of Mr. CRAGOE, seconded by Mr. SPRY, a vote of thanks was passed to the gentlemen who had given papers, and to those who had given donations to library and museum.

On the motion of Mr. COUNSELL, seconded by Capt. BRYANT, the Chairman was thanked for presiding.

The NOBLE EARL in acknowledging the vote said there were two points he had intended to deal with in his address. He had intended to speak of the intermediate traders with regard to fish dealing. They knew there was a great deal of hanging together among these “middle-men.” When one came to know that very large quantities of fish were destroyed solely for the object of keeping up the price, they saw to what extent these men pulled together. If they saw an agriculturalist destroy corn or any other kind of food, simply in order to keep the price up, they knew what would be said of him; and the Chairman believed that the public opinion on the question of the fish trade would sooner or later put down the practice he had alluded to. The other point he wished to refer to was the question whether it might not be desirable to endeavour to inaugurate somehow or other a fisheries exhibition of a local character. The things which had been collected for the International Exhibition would not do for local exhibition, and he thought such an exhibition would be a very interesting one, especially if it were founded upon the model of the American section of the International Exhibition, where could be seen traced in the most beautifully systematic order all the history of the fish from the very commencement of its life to the cooking of it. (Applause).

Spring Meeting, 1883.

—:O:—

THE PRESIDENT'S ADDRESS.

—:O:—

When last I had the pleasure of addressing you from this chair, I hoped that, before we met again at our Annual Spring Meeting, I might have had an opportunity of turning my attention to one of the many subjects of which your Society takes cognizance sufficiently to enable me, following the example of my predecessors however far behind, to prepare something like an address, which, with the assurance of a friendly and indulgent audience, I might venture to lay before you. I am sorry to say the every day engagements of my life have prevented my attempting anything of the kind. No special subject of an appropriate character has come under my notice in the ordinary course of events, and it has been impossible for me to devote sufficient time to any new subject of thought to enable me to prepare an essay or address which would have been either a source of credit to myself, of advantage to the Institution, or even of amusement to my hearers. I must therefore content myself with jotting down a few of those incidents of local interest that have occurred during the past year, which it may be desirable to place on record in your journals, and I must accept the fact that, if my presidency is kindly remembered by any of those with whom it has brought me into friendly contact, it will not be through any addition which it has been in my power to make to the literary or scientific possessions of the Institution.

The pens of readier writers have however not been idle during the past year. Mr. Frederick W. P. Jago has lately published a new Cornish Glossary, and Colonel Vivian has almost completed his "Herald's Visitation of Cornwall." A history of the ancient town of Launceston, or Dunheved, by Mr. O. B. Peter, is in course of preparation. A work called "Collectanea Cornubiensia," by Mr. G. C. Boase and Mr. W. P. Courtney, which is partly issued, is sure to meet with a hearty welcome, from all who know and appreciate the successful and

laborious researches of these gentlemen in compiling the "Bibliotheca Cornubiensis; while all who take an interest in the vestiges of our primitive ancestors will await with keen expectation the completion of a work upon pre-historic monuments by such able pens as Mr. Lukes and Mr. W. C. Borlase—a work to which this Institution has appropriately subscribed. Then there are Mr. Petrie's (of Bromley) plans of hut circles and pre-historic remains presented to the British Museum, which are very minute, and drawn to a large scale. Mr. Tregellas, our London Secretary, has been, I believe, entrusted with the task of writing the lives of celebrated Cornish worthies for the first number of the National Biographical Dictionary, edited by Mr. Leslie Stephen, which is now in the press. Whilst to all those who thus devoted their time and talents to the elucidation of local history from the earliest days, the acknowledgments of the Institution are gladly paid, it also gratefully accepts information respecting objects of antiquarian interest which accident or research may bring to light. The only objects of that character of which I have heard, are, a cross newly found at St. Teath, an urn exhumed near Nanstallon, and a large spear-head found in the parish of St. Breward, to which your attention will be directed.

But in thanking the living we must not forget the tribute that is due to those members and friends of the Institution who have passed away from us. Among them will be remembered Mr. Alexander Paull, of Truro, who devoted so much of his leisure time to inscriptions, and who for many years acted as our Curator. As a last proof of his interest he has left us his large collection of rubbings from brasses and inscribed stones, which Mr. Jago has kindly undertaken to arrange for the museum. Mr. H. Mc.Lauchlan, to whom the Institution is indebted for the most valuable series of plans and descriptions which it possesses of the Hill Castles, and kindred remains of early ages, has died quite lately at an advanced age in London. An able surveyor, he was stationed at Truro for some years in connection with the Manors' Commission, and gave us the benefit of his professional skill, his antiquarian acumen, and literary talent; and when afterwards he was employed on the old Roman Roads by the Duke of Northumberland, he obtained for our library copies of the magnificent works which he produced. Mr. Freeth, formerly

connected with the Duchy Office, has also bequeathed to this Institution, free of legacy duty, such of his historical books and MSS as relate to the counties of Devon and Cornwall, of which copies or duplicates are not already in our possession,—a large accession to our shelves. And here, I think, you will pardon me for recalling to your memory for a moment one whose name will live in Cornwall in connexion with works which you all know, but whose face will never be seen amongst us again. His descriptive power and artistic skill are things of the past, because, though the hand still lives, the over-wrought brain is powerless to guide it. This is not the place to make an appeal to your liberality, but still I think that any one who values his copy of "The Ancient Crosses of Cornwall," or "A Week at the Land's End," would be glad to help in saving their author from any aggravation of his terrible affliction. £300 to meet £200, conditionally promised from the Royal Bounty, would buy Mr. Blight an annuity of £50, and secure to him for life the comforts which he now enjoys. I also deeply regret the absence, through illness, of our friend Dr. Barham. All here will feel that this Society is indebted to him, perhaps more than to any one else. Last summer he was unable to be present with us at our excursion, but that was in consequence of an event of family congratulation; now, alas! after having passed through a sad episode of domestic sorrow he is prevented from being with us to-day through ill-health.

Although the Royal Institution is chiefly distinguished from the other kindred societies in the county by the attention which it gives to archæology, literature, and natural science, yet in common with those institutions it takes a lively interest in the practical progress of the great industries of the county, and all that is calculated to promote the welfare of the Cornish people. I need not therefore apologize for referring to the reports which kind friends have assisted me in obtaining on those subjects.

The amount of Tin Ore produced annually in Cornwall during the past ten years, has, roughly speaking, averaged a little over 14,000 tons, varying from a maximum of 15,000 in 1877, to a minimum of 13,000 in 1881, and the price has ranged from £36 to £95 a ton. The produce in 1882 was 14,170 tons, or about the average of the last ten years, and represented about 9,400 tons of metal, Cornish tin ore generally yielding about 65 per

cent. of metal. Since 1825 the total production of tin throughout the world has increased more than three fold, and last year it seems to have been about as follows :—

	Tons Metal.
Cornwall	9,400
Banca and Billiton	8,599
Straits of Malacca	11,705
Australia	10,067
Peruvian, &c.	500
	<hr/>
Total	40,271

The great improvements in mining during the last quarter of a century have been the introduction of wire-ropes, the use of the skip in hauling, the improvements in dressing; more especially the adoption of the Brompton calciner, and the boring machines, whilst the use of dynamite, in some mines, has been of great value. There can be no doubt that from improved ventilation, greatly due, I believe, to Mr. Teague, the health of our miners has suffered less than formerly. These practical details come, perhaps, rather within the scope of the sister societies, but it is strictly within the province marked out for itself by this Institution, to honour those among the sons of Cornwall whose energy and talents have contributed, by their inventions, to the benefit of their fellows, and when we think of what we owe to those who led the way in the development of steam machinery, we cannot but rejoice to know that the services of a great Cornish engineer are at length being recognized, not only in Cornwall, but throughout England. It would be impossible for me to attempt to recapitulate the multifarious inventions which the ingenious and daring spirit of Richard Trevithick produced, or prepared for others to complete. A summary of them would fill a volume, but you know he was not a man to create a fortune or to win friends, and that he died penniless and alone. But I am glad to say, his memory is to be perpetuated, and the proposal is that the subscriptions received towards the memorial should be utilized by placing a Bust (if possible), in Westminster Abbey, and establishing scholarships bearing his name, to aid in the technical education of young men for the profession of mining and other engineers.

But Trevithick is not the only Cornish inventor who has not received the recognition which his merits deserved. Sir

Goldsworthy Gurney, of Bude, a man of modest and retiring nature, claimed the discovery of the Steam Jet or Blast, which has done so much to increase the rapidity of locomotion in this country; and his name deserves not to be forgotten among the scientific worthies of Cornwall.

Cornwall has always been noted for its practical engineers, and in these days of rapid locomotion it is only fair to say, with regard to one of those things most necessary for the safety of trains, that the earliest invention of the Vacuum Brake bore the honored name of Bolitho,*—and now, I believe, the most ingenious and practical mechanical Brake was also invented in Cornwall, by Mr. Parke Smith, of Lostwithiel. This brake is now being tried on the Looe and Caradon railway, with, I believe, great success. It would not be right for me to express any opinion or rouse discussion on a question which has led to a good deal of excitement in relation to one of our largest mines, but as last year I referred to the troubles and rioting which had occurred in that neighbourhood, I think we may rejoice that, although recently there was a great deal of excitement in the neighbourhood of Camborne, yet, owing to the conciliatory influence brought to bear, nothing in the way of overt turbulence (which had been feared) occurred. There is still, however, a question connected with Cornish mining which forms a problem that will have to be solved. We have recently had an instance of the fatal facility afforded for committing frauds under the existing system, but I feel assured that by united action among pursers and managers of mines, some measures will be devised to give shareholders security against a similar occurrence. While the toilers underground are still producing such large quantities of valuable material—more than 23 per cent., as we have seen, of all that the world at present supplies,—there are some favoured spots on the surface of our county which yield almost equally exceptional returns to the labour of the cultivator,—spots where in some cases the tenant can pay a rent of from £5 to £10 an acre, and where yet a very small acreage suffices to maintain a family in comfortable circumstances, solely by market gardening, which has the great advantage of enabling all members of the family to take part in the work. Some of the best land, well

* Major Glynn Bolitho.

manured, has borne potatoes and brocoli alternately for 20 years. And while strawberries and other fruit, as well as apples, are being increasingly grown in the eastern parts of the county, and their prospects for the year, together with those of agricultural crops generally, are very promising, in the Isles of Scilly flowers have become of late years (through the assistance and encouragement of Mr. Augustus Smith and his successor) a material source of profit to the growers. The value of the various flowers exported from these Islands this year, consisting chiefly of narcissus, lillies of the valley, ixias, and gladioli, probably amounted to £1000, and I am told that nearly all the farmers grow small quantities.

Complaints are rife of the heavy charges made for conveying market-garden produce by railway. An attempt has been made to meet this by sending away potatoes in a steamer which runs from Penzance to Garston, on the Mersey, but as she only runs in summer, this mode of transit is not available for the brocoli crop. The high rate of speed necessary for conveying perishable goods may justify a high rate of charge, but when we find that owing to the cost of carriage Cornish vegetables are being shut out of the London market by those from France and the Channel Islands, and diverted to Liverpool and the northern towns, it seems time that the Great Western Railway Directors should see whether some reduction is not possible.

Side by side with the produce of the land, above and below the surface, goes on continually the harvest of the sea, which seems to be ever increasingly appreciated. If I remember right, I rather think that in the days of Homer, the leader of the Greeks forbade his warriors from eating fish, as it was not considered good for training. And we have been told that here, in England, at the Reformation, fasting was retained as part of the discipline of the Church, merely with the object of obliging people to eat fish, for the purpose of maintaining the class of fishermen, and so keeping up the best supply of seamen for the navy.

The mere invention of such a story seems to indicate what is no doubt a fact, that fish is regarded as a far more desirable article of food now than it was formerly, and if it is true that the eating of fish is good for the brain, perhaps in these high pressure days of competitive education it may be but the natural impulse

of the creature to eat that which best supplies its needs. Within the last fifteen years the quantity of fish sent out of Cornwall by rail has increased 80 per cent. There are about 400 boats engaged in the Mackerel Fishery in Cornwall, employing about 2,700 men, and the cost of a first-class boat, with nets, is £600, but this fishery was not successful in 1882, and up to within a recent period the quantity of mackerel taken this year has been small. In Pilehards, too, the average exportation of the three preceding years—12,000, 12,300, and 13,000 hogsheads respectively—fell to between 7,000 and 8,000 hogsheads, but the prices were fair, ranging from 55 shillings a hogshead for the summer fish, to 80 shillings for the winter cure. The characteristics, progress, and needs of this industry, have lately been brought into unusual prominence by the great International Fisheries Exhibition at South Kensington, which is daily attracting spectators in thousands to view its wonderful collection of all the appliances used throughout the world in rearing, catching, and utilising every variety of living thing that moves in the waters, besides everything which man's ingenuity has devised for diminishing the risk of a fisherman's life, and promoting his comfort and profit. Cornwall was among the first to take up the invitation of the committee, and I have heard repeated praise of the manner in which our county came forward and supported the proposal. The exhibits from Cornwall included models of Mount's Bay Seine Boats and Drift Boats, Nets of all kinds, Crab Pots, Cured Fish, Improved Anchors and Ropes exhibited by Mr. John Stephens, of Falmouth (which have been greatly admired by rope makers and others), including wire ropes which have of late years been used with so much advantage in mines. A beautiful collection of Knitted Frocks in a variety of patterns illustrates the neatness of the Cornish maidens. Would that their handiwork was paid for in a manner more advantageous to themselves and their families than in most instances is the case; the custom being that they are in most cases paid by those who supplied the wool in goods from their shop, by which the employers made a double profit, while I know that the women and girls often have to sell their goods again at a loss. That this custom should have continued so long seems strange to anyone who remembers that more than half-a-century has elapsed since the Truck Act was passed, and that that Act

declares it to be illegal for any employer to pay any person employed in knitting any kind of woollen manufactures otherwise than in coin; that any payment in goods instead of money (under any agreement, direct or indirect) makes the employer liable to a fine of £10 for the first offence, £20 for the second, and so on up to £100, and that if any person so employed becomes chargeable to the parish, the parish can recover from the employer the amount of wages which have not been paid in money, while he cannot recover the goods he paid instead. The spirit of the law seems clear, but there must be some defect in the letter and application of it.

The picturesque aspect of fishing is beautifully exemplified in photographs, sent by Mr. Gibson, of Penzance, and Mr. Orchard, of St. Austell. But fishing has also its antiquarian interests, and some of the ancient appliances sent by Mr. E. Rashleigh, have been much noticed, such as the Killick, or wooden anchor weighted with a stone, and the old nossil twister for twisting nestles for long lines, and the compass fixed in a wooden bowl, which may be seen alongside of several similar appliances of the newest make.

But it was not to see these things that the fishermen of Cornwall were so liberally invited to the great show. Twelve men from various fishing villages were conveyed gratuitously to London and back by the Great Western Railway, and had an opportunity of spending six days in the metropolis, during which time they were maintained free of cost by the funds placed at the disposal of the Cornish committee, under the presidency of Mr. Tremayne, whose active interest, together with that of Sir John St. Aubyn and Mr. T. Cornish, they must have appreciated. Besides having repeated opportunities of visiting the exhibition itself, they were most kindly enabled to see various objects of interest in the great city, which some of them had never seen, such as the Zoological Gardens, &c. They were hospitably entertained by the Prince of Wales, and invited by the Queen to visit Windsor Castle, and I am much mistaken if they will not look back upon those few days with great pleasure, and especially remember Mr. Buck, secretary of the Sailor's Home, where they were lodged, and by whom they were relieved of all difficulty and trouble,—and the unwearied atten-

tion of Mr. Laughrin, an Associate of the Institution, whose house at Polperro we visited in our last summer's excursion, and whose collection of Crustacea, which was much admired, has nothing to equal it in the exhibition. The Cornishmen at the exhibition have shared the character, which they all received, of being a most exemplary and steady set of men. Wearing on their breasts the well-known Cornish badge—worked by a lady's hand—they were much noticed, and always spoken of in terms of praise. You may ask what advantage they have derived from this exhibition, and if I think it will be of any use to the Cornish Fishery. Well, I must confess my inability to give a practical answer to that question. Even a practical fisherman might well be bewildered by the multitude of objects exposed to view in that vast building, and I could quite sympathise with one, who, when I asked him what he thought of what he had seen, said "Well, I reckon some of us will be in the asylum when we get back." The real benefit of the exhibition will not be known until the judges have decided on the merits of the various exhibits. But there are one or two of these which occur to me as suggestive. In the Dutch department there is an exhibit of nets, cured in a particular way, and hung up according to the number of years in which they had been worked, and, I believe, practical men like Mr. Laughrin, seem to think that a hint as to the curing of our Seines might be gained here, and that instead of "barking" the Seines only with catechu, they should be oiled and dried before being "barked," and that the additional expense would be recouped by the length of time the nets would last. I know oiling is adopted with regard to the smaller nets in the east of the county, but not to those which are subsequently barked. An improvement might also be made in curing and packing the fish. In Cornwall the system has been simply to pack the fish dry, with layers of salt between, and the oil which exudes runs down over the lower ones, and makes them what is called "rusty." But in Spain, after carefully packing them, they are soaked in kieves of salt and water for three weeks, the strength of the brine necessary for the purpose, being tested by floating a potatoe in it. The fish are then taken out in baskets and washed again in kieves filled with water sufficiently salt not to wash out the brine, and they are then prepared for the market.

It is, I believe, an undoubted fact, that of late years the Spaniards have had the advantage of us in the Italian market—and a glance at the silvery fish prepared by them, and exhibited in London, would I think convince our Cornish curers that their own system is capable of improvement.

It is to be hoped too, that the general interest thus awakened in the fish supply of the country may, without injury to our fishermen, tend to prevent its price being unfairly raised by action on the part of the middlemen, which goes beyond the limits of legitimate combination.

We are told that very large quantities of good fish are constantly destroyed solely for the purpose of keeping up the price. If we heard of an agriculturalist destroying corn or any other kind of food for the purpose of rigging the market, we know what would be said of him, and I believe that sooner or later public opinion will cry out against similar tricks in the fish trade.

I hope the exhibition may lead to some steps being taken with regard to harbours of refuge along our coasts, a subject which has exercised the mind of many a patriotic Cornishman since the days of Elizabeth, and since the famous Sir Richard Grenville made his "Plotte" or plan of the proposed harbour of Tintagel, a copy of which, I believe, is in our library.

It has been suggested that when the exhibition is over, the exhibits from the Western Counties, might form the nucleus for a local Exhibition of a similar character, which might be a very interesting one, especially if it were founded upon the model of the American Section of the International Exhibition, where can be traced in the most beautifully systematic order all the history of the fish from the very commencement of its life to the cooking of it, as clearly as if it were written in a book.

Our interest in the exhibition is not lessened by the fact that it was opened by the Duke of Cornwall, and that the blessing invoked upon its success came from the lips of our late Bishop, now Archbishop of Canterbury. When he prayed that this great work might bring a blessing on the poor, I could not help thinking that his mind was turning to the Cornish villages, where his kindly smile and genial welcome will long be remembered by the Fishermen of Cornwall. Dr. Benson has

undertaken a task, the labour of which none of us can realise; but we know that he has, with his eyes open, determined to devote himself to what will be a life-long labour—such as few men could undertake—in the service of his Master. He has been asked to remain an honorary member of the Institution, an invitation which he has cordially accepted.

We have to-day to welcome here his successor, who, I feel assured, will gladly work with us, not only because I know he will follow Archbishop Benson in taking a lively interest in all that is conducive to the welfare of the inhabitants of Cornwall, but because as head of the Church in Cornwall, he will feel it not inappropriate to associate himself with an Institution which has devoted so much attention to ecclesiastical matters. His first work will be to re-open Temple Church, newly risen from its long sleep of ruin and desolation, and restored to its sacred purposes.

And this leads my thoughts to the most important ecclesiastical work now going on in our county. I think I may be forgiven for making some special reference to the Cathedral at this meeting, because the work has now risen to a point at which all its main features are sufficiently developed to enable any observant eye to trace them with interest to their completion, notwithstanding the bewildering screen of scaffolding, in itself an object of curiosity and admiration to practical builders. Some have expressed regret that so much time and money have been spent in preserving and restoring the south aisle of St. Mary's Church. I do not think that feeling will be shared by this Society. True, owing to the decay of the elvan, much more than could have been at first foreseen had to be entirely replaced, but the work is beautiful and exceptional, shewing in parts some foreign influence, and though, as in almost all our Cornish Churches of that date, there is unfortunately little or no record of those who built it, it would have been a source of regret if it had been swept away for ever. The east window and much of the elaborate work has been most carefully and skilfully restored. But besides this, its preservation has been the direct means of leading the architect to the production in the new Church of a special feature which will distinguish Truro Cathedral from all others, viz: the four parallel arcades on the choir side forming five distinct aisles of varying width and height.

The narrow aisle which runs between the restored portion of the old Church and the south aisle of the new Choir, is not only a beautiful feature in the general effect, but most ingenious in its structural purpose. The two arcades which form it are tied together above by a series of pannelled walls, and thus the piers practically form the southern buttresses of the new building to receive the thrust of the flying buttresses of the Choir, and, to enable them to do this, heavy gabled buttress tops (which can be seen over the walls of the old aisle) are placed above them for the purpose of diverting the lateral pressure to a vertical direction. The wall above the southern arcade of this narrow aisle is pierced with circular windows, and forms a clerestory of its own. The spacious Crypt, which will be applied to many uses, extends under the whole of the Choir and its aisles. And now before it is vaulted over, can be well seen the height of the whole construction and the work which the crypt piers, surmounted by giant blocks of granite, have to perform in supporting the main arcades above. The arcades, erected respectively, as memorials of Mr. Fortescue and Lord Robartes, and the triforium over them are completed, and one of the bays of the triforium can be well seen, enriched with the tooth ornament beautifully executed, and with the colored shafts of Polyphant and Northampton stone introduced.

There is ample scope for private munificence in providing for this and many other portions of the building similar shafts of the various ornamental porphyries, serpentine, traps and colored granites to be found in the county. In the Choir, at the summit of the completed work, can be seen the prominent caps from which the vaulting will spring. At the east end the windows of the crypt and those of the lower tier are now visible, and the three great lancets above (which will be twice their height), as well as the great windows of the eastern transepts are in course of construction. The general treatment of the windows, internally, is very beautiful, consisting as it were of a double arcade—the outer one to be filled with glass, and the inner forming a curtain or open screen. Externally the most complete and therefore the most striking part of the building is the north aisle, with its lofty row of lancet windows, and here you can judge of the admirable effect of the warm-tinted Mabe granite which has been used for the ashlar work. At the west

end of the *old aisle* three arches at right angles to each other support the Bell or Clock tower which is intended to take the place of the old one, which was removed,—then comes the great porch at the southern end of the transept, the gift of Canon Phillpotts—which, until the nave is built, will be the main entrance, and one of the most striking features of the Cathedral. Entering by this porch you see before you the position of the great central Tower—two of the piers being completed to the same height as the choir, of which they form a part—while only the foundations of the other two are as yet constructed. Beyond them, the walls of the northern end of the transept are commenced, while immediately on your left (to the westward of the south porch) is the position of the Baptistery. This is to be built entirely from a distinct fund as a memorial of Henry Martyn, the great Cornish missionary, whose life was sacrificed to his unflinching zeal, as a preacher of the gospel, and to what Sir James Stephen calls “his fervent compassion for a world he longed to quit, and panted to improve.”

The transept which is now being commenced, will be proceeded with at once, as a memorial of Bishop Benson's episcopate. I think this is a time when we are justified in asking all who have the means to try once for all to finish this portion of the work which the county has determined to undertake.

When that transept is finished (and I hope we may be able to finish it, instead of incurring the useless expenditure of temporarily roofing it), I feel that this generation will have done its work, and I, for one, would most strongly protest against any further appeal being made to the county in our time.

In conclusion, I may say that a programme for the usual Summer Excursion, to take place in the eastern part of the county, will shortly be arranged, which I hope will be agreeable to the members of the Institution, and in which we shall be glad to welcome representatives of the sister societies, whose mutual co-operation I think it most desirable to encourage.

THE ST. NEOT STONE.

By N. HARE, *Corresponding Member.*

There is a large square granite stone lying against the south wall of St. Neot church. which apparently is the shaft, or rather part of the shaft, of an ancient granite cross. It measures six feet eight inches in length, one foot eight inches in breadth, and one foot five inches in depth. Originally, its length must have been much greater, especially at the bottom, where part of a panel, and the foot-piece, are wanting.

There is a double border at the top of the upper panel, which seems to be complete, except that the mortise or socket, which held the cross, has been broken off, and in this part of the shaft there are marks of the jumpers used for splitting it.

As the shaft now lies, there are but the upper and front sides visible. Of the others, the underside is lying on flat stones, hidden by high rank grass. The inner side is against the church-wall, but the space between is filled in with small stones and mortar, apparently to keep out the rain. Of the two outer sides each one is divided in its length into three panels; the centre ones being two feet nine inches long, the upper ones with the double border one foot six inches, and the lower panels, which are broken, about one foot nine inches. The side uppermost has in each panel a diapered pattern precisely like that of "The other Half-stone," at Redgate in St. Cleer, which Polwhele (as quoted by Blight in his *Ancient Crosses of Cornwall*) calls "Ornamental Asterisks." I have taken a rubbing of the centre panel only of this side, the others being similar. These ornamental asterisks or dots, run diagonally across the panels in rows of seven. Being struck by the number seven, I went to Redgate to examine the panel on "The other Half-stone" and I found that the dots on that stone also ran diagonally in sevens, and had the double border at the top. Can this be symbolical, and have reference to the sacred number seven so often mentioned in Holy Writ, such as the seventh day or Sabbath, the seven years of plenty and famine, the seven churches, the seven golden candlesticks, the seven trumpets, &c.?

The three panels on the front face, contain a rude pattern of reticulated tracery work, as shown in the accompanying rubbing, which represents the present length of the shaft.

By lifting some of the loose masonry between the shaft and the church wall, and inserting my hand, I could feel that the inner side also was panelled, though I could not ascertain the pattern.

The late aged Parish Clerk, a stone mason, informed me last year, that this shaft had been in its present position ever since he could remember. There is a monumental slate slab on the wall immediately above the shaft, of the date of 1718, and the shaft appears to rest on the flat stones covering this grave.

As the Church is now being restored, it would be desirable that the shaft should be removed from its present position, and erected opposite the south porch, so as to display its four sides. Search should also be made for the missing parts, as well as for the Head or Cross, and the foot-piece. There are two coping-stones fixed on the walls at the eastern entrance to the Church-yard, and used for fastening the iron gates, which evidently "are not what they seem." These should be removed and carefully examined.*

I do not notice in Blight's *Cornish Crosses*, any stone figured by him, (except The other Half-stone) which has the ornamental asterisks of the St. Neot shaft. I may mention, however, that the two sides of "Dungerth's monument," not shewn in Blight's sketch, and which monument stands alongside "The other Half-stone," has, on smaller panels, the same asterisks. Dungerth is said to have been drowned in the river at Redgate, about 872.

Seeing that these three stones possess the same distinctive ornament of the asterisk, that two of the three have the double border at the top, that they have, or had, a mortise or socket to receive a cross, which very many stones have not, (the cross usually forming a continuation of the shaft of the stone) that these stones are in adjacent parishes, two being at Redgate, and the third only about three miles distant, at St. Neot, is it not

* I have just been informed that these coping-stones, were mullions, taken from the church windows at the time of their restoration in 1826-9.

probable that these three stones are of the same age, and may they not have been designed and worked by the same craftsman?

There is a legend, that "little" S. Neot being very diminutive in stature, was unable to reach sufficiently high to unlock the church door. He therefore used this stone-cross to stand on, and then throwing the key towards the door, it would unlock the door, and thus enable the saint to enter the church for his devotions.

INVENTORIES OF THE CORNISH FRIARIES AT THE TIME OF
THEIR DISSOLUTION.

By H. MICHELL WHITLEY, F.G.S., Hon. Secretary.

The Mendicant Friars soon after their introduction into England, settled, as usual, in the chief towns of the counties; selecting in Cornwall, Bodmin and Truro. At the former town the Franciscans or Grey Friars had a house, which was founded by a London merchant, John Fitzralph, and completed by Richard Earl of Cornwall in 1239; and at the latter, the Dominicans or Black Friars established themselves; their convent being founded by the Reskymer family, and their church dedicated in 1259.

Unlike the monks, who were amongst the great landowners of England, the friars had at first but little endowment,—although as time passed on their revenues increased,—and we should therefore expect to find them in Cornwall, possessed of but little property, and this is found to be the case, the value of the lands of the Priory of the Preaching friars at Truro being returned at £4 1s. 4d., whilst at Bodmin the revenue appears to have been still smaller. In accordance with the act for the dissolution of the monasteries, visitors were appointed to undertake the duty of carrying out its provisions. They were to visit each house in turn, to dismiss the monks and take possession in the king's name. The debts were to be ascertained and discharged. Appraisers valued the stuff, furniture, stocks, ornaments, etc., and the visitor paid himself out of the sale. Thus at Bodmin two old feather beds and two old coverings were sold for ten shillings to pay these charges, whilst the balance was accounted for to the Augmentation Office, and the plate and jewels reserved for the king. Lead in these times was very valuable, and accurate returns of the quantity at each house had to be made, whilst in some cases the melter accompanied the visitor. At Bodmin the upper part of the cloyster and part of the steeple were of lead, but at Truro there was none on the roofs of the buildings. Inventories, it has been well said, are "The grammar of the archaeologist," and by their aid some idea may be formed of the furniture and internal appearance of the ruined abbey churches which dot our land. Friaries though poor in landed

possessions, were usually rich in jewels and vestments; but in many cases the bareness of the church and vestry, and the accumulated debts show that the inmates had foreseen the coming storm which left their buildings unroofed, unpaved, and dismantled, to crumble into ruins by the slow hand of time, or the more destructive one of man.

The visitation of the Cornish Friaries took place in September, 1538, and the Inventories and deeds of dissolution are appended to this paper.

The former supply us with valuable information as to the state of the houses of that period.

The Grey Friars at Bodmin had a much richer list of church goods than the Black Friars at Truro, as will be seen by a careful perusal of the inventories themselves. The silver plate amounted to 286 ounces at the former, and 360 ounces at the latter house. The vestments at Bodmin were rich, but at Truro very poor; here there were a pair of organs, whilst at Bodmin the organ was simply a frame without pipes, although the wardens had a pair to pay the debts with, it is supposed by some authorities that one of the organs was placed at the west end of the church for voluntaries and processions, and that the second was in the choir for use in the services.

In the deed of voluntary dissolution the names of the monks present great difficulty in being read, as in addition to the character of writing at the time some names are so badly written as to be almost illegible.

Although the author has spent considerable time in searching for further inventories of the Monastic Houses in Cornwall, he has been unable to find any up to the present time.

One fact it may be interesting to note that Henry VIIIth intended to have appropriated the revenues of Launceston, Bodmin, and another house for founding a new bishop's see for Cornwall, as a memorandum in his own handwriting in the Cottonian M.S. of the British Museum attests.

TRURO.

CHAPTER HOUSE BOOKS. B₁₀² p. 127.

The blacke freeres of Trurey.

This indenture makith mencyon of all y^e stuffe of y^e blacke frereis of trurey receyved by the lorde visitor under y^e lorde

prevey seale for the kinges grace & delyvrde to Mr. Wat Devis Mayer their to Mr. John Thomas gent at armys & Mr. John Gaverigan to seal and order to y^e kinges use w^t the howse & all y^e appurtenances till y^e kinges plesure be further knowen.

The quere.

- 1^t. at the hei auter a propar tabell, newe peyntid at y^e priorys chargis.
- 1^t. an olde clothe white bustian before y^e altar.
- 1^t. a lampe bason.
- 1^t. a holi wat'r bason & a sacry bell.
- 1^t. a peyer of orgaynes.
- 1^t. bokes after y^e freers use pore.
- 1^t. oldd stallys.

The chirche.

- 1^t. ij oldd altares alabaster & ij sacry bellis.
- 1^t. certyne setis.
- 1^t. in the stepill iij bellis eche more than y^e other.

The vestre.

As towcheing y^e vestre w^{ch} was very pore & all other offices & stufte in the howse be Mr. Meyer, Mr. John Thomas & Mr. John Michell was all prised & soldd by the visitor to paye y^e dettes for y^e w^{ch} plate laye in pledge. The stett of the dettes drawn xvj^{li} xiiij^s iiij^d y^e w^{ch} ys all payde & no mony sparyd of all the stufte and xvij^{xx} unces of broken silver & plate restith in y^e visitors handis to y^e kingis use & all y^e evidens of the howse the saide keparys of the howse have to save and a chest of evidens of divers mennings delyverid to Mr. Meyer by y^e gentilmens agreement.

*Wat Dennis
John Thomas.
John gav'gane.*

BODMIN.

CHAPTER HOUSE BOOKS. B $\frac{2}{10}$. p 63.

The graye fryers of Bodmin.

This Indent^{re} makythe mencyon of all y^e stuff of the grey fryers of Bodmin recevveyd by the lorde vysytor under the lorde privy sealle for y^e kynges grace & delyvuyd to bley & nycholas bonar to seal and order to y^e kynges use w^t y^e howse and all y^e pertenances tyll y^e kynges plesur be forther knowyn.

The quere

- 1^t. at y^e hey auter a fayer tabull of allebaster.
- 1^t. ij gret candellstickes laten.
- 1^t. ij small candellstikes laten.
- 1^t. a frame of olde organes w^t out pypys.
- 1^t. iij olde lect'neys tymber.

- 1^t. fayer stalles well syleyd.
- 1^t. bokes for y^e quere of no value.
- 1^t. in y^e chyche iiij auters allebaster.
- 1^t. a sacry bell.
- 1^t. arten candellstickes removeyd into y^e chamber laten.
- 1^t. in y^e stipull ij belles.

The Vestre.

- 1^t. a corporase w^t ij casseys.
- 1^t. dyvers steyned clothes with curtains.
- 1^t. iiij olde aut^r clothes lynyng.
- 1^t. pryst, decon & subdecon w^t one cope sylk w^t lyons of golde.
- 1^t. pryst, decon & subdecon whyte sylke w^t one cope damaske.
- 1^t. decon & subdecon rede chamlet, y^e pryst damaske.
- 1^t. pryst, decon & subdecon olde bawdykn.
- 1^t. pryst, decon & subdecon grene silke.
- 1^t. pryst, decon & subdecon blacke worstede.
- 1^t. pryst, decon & subdecon olde cheker velvet.
- 1^t. a syngle vestimente, blacke damaske.
- 1^t. a syngle vestimente, red satin.
- 1^t. a syngle vestimente, whyte bustyon.
- 1^t. oue pore surples & one lytyll rocket.
- 1^t. iiij clothes to hang before auters blewe & yellowe saye.
- 1^t. ij whyte copys y^e one sylke y^e other bustyon.
- 1^t. iiij blewe copys sylke olde.
- 1^t. v olde chesubles & v.....

The chambers.

- 1^t. a cowt^r olde & an olde cupbord.
- 1^t. ij formys & an olde chayer.
- 1^t. a payer of anndyornes.
- 1^t. in y^e gret chamber.
 - ij tabulls new w^t syleyed bencheys.
- 1^t. ij formys & ij candelstickes laten.
- 1^t. ij olde cupbordes.

The frayters.

- 1^t. vij tabulls syleyd at y^e backes.
- 1^t. in y^e ketchyn & brewe howse all pore stuffe, & solde to paye y^e coste for.....xxiii^s i^d excepte a gret pott brasse cop in a forneys.

The buttery.

- 1^t. ij latin basons.
- 1^t. ij olde tabull clothes.
- 1^t. a salte pewter.
- 1^t. ij three coffers.
- 1^t. on fayer ledder.

Also ther wer ij olde fether bedes & ij olde coveryngs solde to paye y^e dettes & charges of y^e vysyters for x^s and y^e convent was in det to dyvers above a sum of xvi^{li} for payment of the whyche y^e wardeyns had a sute of whyte vestiments not yett all payd for, (a payer of organes) a lytill maser & ij sponys & hathe purpseyd to dyschover all dettes so y^v none shall be un payde.

Forther y^e vysytor hathe with him in brokyn sylver & plate to y^e sum of xiiij^{xx} unces & vi unces to y^e kynges use.

And ther was in y^e convent a cheste with certen evydens belongyng to dyverse gentilmen lockyd w^t ij lockes, y^e whyche I have seleyd & lefte y^e cheste w^t y^e prior of y^e chanons of Bodman, and y^e evydens of y^e howse do remayne w^t y^e keper of y^e howse bowne in a lytyll coffer & sealyd.

By me Nicholas Bowar.

By me John Blygh.

THE DEEDS OF VOLUNTARY DISSOLUTION.

TRURO.

(CHAPTER HOUSE BOOKS. B $\frac{2}{10}$ p 163.)

We the prior and convent of y^e blacke fryers of truroye with one assent and consent without any maner of coaccyon or consell do gyve our howse into y^e handdes of y^e lorde vysyter to y^e kynges use, desyerryng his grace to be goode and gracious to us in wyttenes we subscribe our namynges in our proper handdes the xxij day of September in y^e xxx yere of our most dred sovergn lorde Kinge Henry the viijth.

per me frater Johanes.

ff^r Johes de colombg.

ff^r Dohes Coll.

ff^r perns tomky.

ff^r Richard Cossyn.

ff^r Martimer Jeffre.

ff^r Wryne Bhlyn.

ff^r Thomas pastewe.

ff^r Richardus Martyn.

ff^r Dany Porte.

ff^r Johes Wood.

BODMIN.

(CHAPTER HOUSE BOOKS. B $\frac{2}{10}$ p 147.)

We y^e wardeyns and convent of y^e graye fryers of Bodman with one assent and consent without any maner of coarcyon or counsell do gyve our howse in to the handdes of the lorde vysyter to the

kynges use desyeryng hys grace to be goode and gracious to us.
 In wyttenes we subscribe this with our proper handdes the xx day
 of September in y^e xxxth yere of our majisties dred soveryn lorde
 Kyng Henry the viijth.

per me frater Waltere rodd.
per me Johnes.....
per me frater Johes colyns.
per me frater Richardus Kesem.
per me Johnes bowrood.
per me Jose Cohyn.
per me Robertus Skyll.
per me Henricus t.....hay.
per me Johnes hameley.
per me Richardus pet.

THE ECCLESIASTICAL SEALS OF CORNWALL.

BY THE REV. W. IAGO, B.A., WESTHEATH, BODMIN. *Member of the Council of the Royal Institution of Cornwall, and an Hon. Sec. for Cornwall of the Society of Antiquaries, London.*

Ecclesiastical Seals are so suggestive of the history of the Church, its orders and organizations which gave them origin, that some observations respecting that history may suitably precede an account of the Seals themselves.

The rise and establishment, amongst us, of an Ecclesiastical power for good, cannot but claim our earnest attention.

Investigations shew that its development, in this western region, has occupied considerably more than a thousand years, and during that period it has passed through many phases.

This long extent of time leads the mind, from the present, back to the era when the Christian system itself had only just begun—the date of its actual commencement being well expressed in those very familiar but solemn words “*Imperante Augusto, natus est Christus; Imperante Tiberio crucifixus!*” Let us start, then, from that point.

Heathen Rome had been enforcing its authority upon most of the countries within its reach.

It had intruded into Palestine, in the east, and into Britain, in the west.

In Judea its executive, influenced in the first instance by prejudiced Jews, slew, near the walls of Jerusalem, the Holy Founder of our Faith, and soon afterwards the Roman forces proceeded to scatter the whole Jewish nation.

Many christians, jews, and heathens, who had beheld the scene on Mount Calvary, must have been living when the imperial warriors destroyed Jerusalem. Judgment was swift. That generation did not pass away till both those events had been fulfilled.

Jerusalem was overthrown and its Temple burnt, A.D. 70, Vespasian being emperor, Titus—his son and general—commanding the troops.

But at that very time, *i.e.*, during the first century, and also in the next few centuries, Roman soldiers and merchants from

the east, were going to and from our shores. Vespasian's coins have been dug up in the vicinity of a Roman entrenchment in mid-Cornwall.* Some of the men therefore who came over here in those early days may have been eye-witnesses of the first dread events in the church's history. Who can tell what tidings of these things they may have spread in our land!

We have no means of ascertaining how many or how few of those who took part in the occupation of Britain were acquainted with these events. We do know, however, that at least one Roman centurion in the east had been so far impressed by what he had witnessed as to declare to those around him that Christ evidently possessed the favour of Heaven. What subsequently became of that man and his companions we know not for certain.

Early Christians there may have been in the Roman ranks, forced into the army by persecution, or joining it to escape danger, perhaps for a while concealing their creed.

Our Western peninsula was rightly regarded as one of the ends of the earth, yet, as we have seen, it was quite accessible from the continent of Europe, and even from the most distant Asiatic shores of the Mediterranean.

In any case, Christianity was not likely to remain long unknown in the west. Revealed at first to mankind in the Holy Land, it was, under divine providence, soon spread abroad in the world, the human instrumentality employed being two-fold: its professors zealously laboring to make it known, and its opponents unwittingly disseminating it by persecuting its adherents and dispersing them in many directions.

It must then have been in very early times that Christianity was first heard of in Cornwall†—consequently the history of the Church here affords endless scope for interesting enquiry. Its actual beginning is enshrined amid the mysterious dimness of a remote age concerning which full earthly records never existed. Still, it is only with regard to details, that any obscurity prevails.

* At Tregear Camp, and across the ford at Nanstallon, coins of Vespasian and Trajan, and some pottery have been found. A silver coin of Vespasian also been dug up at Trekillick in Lanivet, not far off.

† Roman pottery marked with portions of a cross and the sacred monogram have been found at Padstow,—according to Haslam and Borlase. See *Archæological Journal* (1847) Vol. IV, p. 307, and *Royal Institution of Cornwall Journal* (1878) Vol. VI, p. 32.

Main facts are clear. Missionary teachers had crossed the seas to christianize heathen Cornwall, some of them laying down their lives in the attempt. Many of the oratories they founded still preserve their names, and to this day remind us of Brittany and Ireland, whence most of them came. Much intercourse was carried on between the Welsh, the Cornu-Welsh, and the people of those not far distant shores.

We know that in this British peninsula bishops and their subordinate clergy were exercising their sacred functions long before Western Christendom was dominated by the see which had been founded in Rome, and it has been alleged that Cornwall was the seat of an Archbishopric.

The submission of the British ecclesiastics to distant authority at a subsequent period, has been traced, and in more recent times our branch of the Catholic Church cast off the foreign yoke, reformed itself, and resumed such duly regulated freedom as was alone consistent with its original simplicity of order.

But, to revert to the definite introduction of the Church's system into our land, in a form that we can recognize. Mr. Borlase's words on this point are worth particular notice. He writes, in his *Age of the Saints* "The route by which Christianity "arrived in *Britain* is clear enough. According to the facts "brought together,* the British Church was, directly speaking, "an offshoot and reflection of the Church in *Gaul*, the original "seat of which was fixed at Lyons, perhaps early in the second "century. The numerical strength of Christians in Britain "in the fifth century was by no means inconsiderable. Their "fountain-head was however still in Gaul, and the mission of "St. Patrick to Ireland (he received his commission from St. "German) was an offshoot from Gaul also. "

During some hundreds of years Cornwall had its episcopal residents.† It is said that at Celliwig an archbishop dwelt. However this may have been, when submission had been made to the power of Rome and Canterbury, and considerations of safety from marauders suggested the arrangement, the episcopal thrones were removed—first, from St. Petrock's, Bodmin, to St.

* See Hallan and Stubbs's "Councils," Vol. I, p. 153; Todd's "St. Patrick," p. 316; and Borlase's "Age of the Saints," *Royal Institution of Cornwall Journal*, Vol. VI, p. 29.

† It seems that at first there was no settled abode of the Bishops.

German's, and thence into Devonshire. For awhile they were settled at Crediton, then for a long period at Exeter, and thus it came to pass that the Church in Cornwall had allotted to it only a share of diocesan supervision; thenceforth, for eight hundred and thirty five years, it continued to be ecclesiastically annexed to the neighbouring county of Devon.

For a brief interval one of the Bodmin superiors acted as a Suffragan Bishop, and another suffragan was subsequently employed. The Bishops of Exeter moreover held Cuddenbeak in St. German's, and sometimes there transacted business relating to the Church in this county, but it was not until quite lately (1877) that Cornwall once more had a Bishop specially its own.

Notwithstanding a divided supervision, however, the Cornish Church was not left without systematic oversight, its requirements being provided for by the following ecclesiastical scheme.

In addition to the Papal control which for some time existed, the Archbishop of the Province* was to visit the Diocese once in every seven years. The Bishop's visitations, or his Chancellor's, were to be once in every three years. The Archdeacon's twice in three years—so as not to clash with those of the bishop.† Each Rural Dean was to visit yearly, Chapters and Synods were to be holden as required, and the Parochial Clergy were to minister daily.

Besides this general organization, for the Church at large, many Religious Houses and Stations were early established. These were of considerable importance, for they became not only retreats for meditation, but they promoted literature and were centres of instruction. They also provided for the nursing and other relief of the poor and for ministrations in such sacred edifices as were assigned to them or committed to their care.

Certain churches, served by Colleges of secular canons under

* From the records of Burian Deanery preserved at Bodmin it appears that Richard (Bancroft) Archbishop of Canterbury held a Metropolitan Visitation of that Peculiar, by his Commissary the Ven. William Parker, B.D., August 6th, 1605

† The prescriptive rights of the ancient Archdeaconry of Cornwall are recorded in a composition deed signed by the Bishop and all the dignitaries of the Church of Exeter, 26th March 1616, by which it appears that once in three years complete, but not during Easter, the Bishop may, on his Visitation inhibit the Archdeacon for two months. ("Cornwall Register" by late Rev. John Wallis, Vicar of Bodmin, and Archdeacon's official, p. 409.)

superiors, and possessed of property, in Anglo-Saxon times or earlier, were afterwards placed under the charge of regulars; and, besides the independent Priories with their outlying cells, alien Priories were established—these receiving, in times of war and peace, varying treatment from the English kings.

As a rule, no monastery was founded without the consent of the bishop of the diocese, the regular as well as the secular clergy depending on him for faculties, and he being the visitor to check abuses.

In addition to the Priories (indigenous and alien) and their Cells, there were also Deaneries and Archpresbyteries in connection with Collegiate and Prebendal Churches. Also Hermitages, Friaries, Hospitals, and Chantries. Even the Knights Templars who were independent of episcopal control planted one of their Preceptories, and built their little temple,* amid its barren tors,—for the promotion, we may suppose, of pilgrimages to Jerusalem.

Besides the oratories, already mentioned, votive Chapels were erected; and others, attached to mansions, hospitals, &c. Also some as Chapels of Ease to the numerous ancient Churches which dotted the land.

The histories of the various ecclesiastical persons and societies, as far as they have been gathered, are full of interest, and sometimes they receive curious illustration from SEALS which belonged to, or were formerly used in connection with them. The further we can trace such evidence, the more we shall be likely to learn with respect to them. Here then the question arises "How far back may we seek for this Ecclesiastical Seal-testimony in Cornwall?" We will proceed to answer this question.

Seals were in use, it is well known, thousands of years ago in some countries, as proved by the words of Holy Scripture (from Genesis to Revelation), and by discoveries in such countries as Assyria and Egypt.

The different materials of which they were formed, and many other matters connected with the history of seals in general,

* See "Temple Church," by J. R. Brown, Rector of Helland, (illustrated by W. Iago) published by Quintrell, Wadebridge, 1883. 1s. (Third Edition.)

have been very ably commented upon by Mr. Worth in the fourth volume of this Journal, (p. 278). He has moreover treated of the oldest corporate seals, ecclesiastical and lay, hitherto found in this county. There are but few of the Cornish ecclesiastical seals which he has not described,—to his paper, therefore, the reader is referred for many details which otherwise would have required introducing here.

On the subject of Seals, their age, and devices, the late Rev. C. Boutell* wrote, to the following effect:—One of the first uses of any symbolical device would be for marking property or authenticating documents relating to important transactions, and some kind of stamp would be formed for affixing the required symbol. Various modes of doing this have been, from time to time, adopted. It is somewhat remarkable, he observes, that seals should not have been in use in England before the time of Edward the Confessor,—eleventh century. Their adoption, however, preceded the introduction of true Heraldry, for that, as a science, reached us from Germany, through France, as late as the second half of the twelfth century. A few Saxon † seals exist, but it was not till after the Norman Conquest that seals came into general use in England. When once fairly established, they were engraved in vast numbers.

To the archæologist they afford the most prolific store of information bearing upon public and private history, illustrating the progress of various arts, the tastes, feelings, fancies and superstitions of their times.

Boutell has stated further, that the modes of affixing Seals depended to some extent on the character of the deeds or on the fashion of the age. Some seals were pendent—the wax being melted upon parchment strips or upon cords. Some of the pendent seals were impressions struck upon lead. They were called ‘bullæ,’ and, from being so sealed, certain instruments of importance issued by the Popes acquired the name of Papal ‘Bulls.’ Another writer has gone so far as to state that seals of grace were attached by a silken cord, seals of justice by one of hemp.‡

* Boutell's "Manual of British Archæology," p. 179, &c. "English Heraldry," pp. 4, 10.

† Concerning Earl Aelfric's circular brass seal, &c., see Knight's "Old England," pp. 77, 82.

‡ R. Lanyon, M.D., Royal Institution of Cornwall, Report 1847, p. 58.

The clay or wax employed to receive the impression was in early times left uncovered. In the fourteenth century a rush fender or some similar contrivance was placed to encircle and so protect it, and in the fifteenth century the custom began of attaching to the face of the wax a covering of paper. This was intended to strengthen it, but the result was a deadening of the effect of the device. The practice did not become general, but wafer seals are, of course, so made even in the present day.

A person of high rank, in the Middle Ages, usually had, besides his official seal, a private seal "Secretum," or more than one; and a different seal for each office held.

Ecclesiastical seals were generally either circular or of a pointed oval form, and most commonly exhibited in the central space an effigy of the patron Saint with, sometimes, a small figure of an ecclesiastic kneeling below. On others the principal figure was that of the ecclesiastic himself. Border legends were introduced, and heraldic shields, also canopies and tabernacle work of the period. Some of the Cells dependent on Abbeys displayed on their seals subjects traditionally connected with the dedications of the superior houses.

It follows then, from the circumstances of the case, that in studying Cornish ecclesiastical history, we may not, with any prospect of success, look for seals of earlier date than the Mediæval period. Far more interesting and instructive it would have been for us had more ancient seals connected with our Church existed.

In preparing a list of the Ecclesiastical Seals of Cornwall we have first to decide what can rightly be included. Only those which properly belong to the district come within the description, and we must exclude all seals which merely carried authority with them into Cornwall from a distance. Thus we cannot class, as Cornish, the official and other seals of Popes and Archbishops, nor those of such Bishops, Chancellors, Archdeacons, Abbots, Deans and Chapters, &c., as exercised rule in Cornwall in common with some other locality.

The Cornish Church, however, prizes no less their discovery, and values as highly having been connected with them.

Thus it is very interesting to find that our Museum contains a "Bulla" of Pope Urban VI (1378-89.), dug up at St. Saviour's

Chapel, Polruan; * and, with regard to these more enlightened days, it is a pleasure to realize that our former gracious President, the eminent Prelate who was the first to use officially the Seal of the Diocese of Truro (which seal rightly comes within our list) now holds the very highest ecclesiastical seal of all,—that of Canterbury,—as our deservedly beloved Archbishop and the Primate of All England.

The early Cornish Bishops, we may conclude, had no seals, and as we have shut out from our list such as belong equally to the Church over the border † we pass at once to those of the new or restored See.

THE SEALS OF THE BISHOPRIC OF TRURO.

The Blazon granted to this See, by the Heralds' College, was composed by the Somerset herald, Mr. Stephen Isaacson Tucker, when Rouge Croix.

It is:—"Argent. on a saltire gules, a key ward-upward in bend, surmounted by a sword hilt-upward in bend sinister, both or. In base a fleur-de-lys sable. The whole within a bordure of the last, fifteen bezants. Ensigned with a mitre."

The reason why Mr. Tucker decided on this combination, he tells me, was that he wished to illustrate the history of the Church in Cornwall.

The red saltire on white, forming St. Patrick's cross, commemorates the arrival of early missionaries from Ireland, and also the visit to that country (for theological study) of St. Petrock the Briton, whose relics were eventually enshrined in his own monastery at Bodmin, which became an abode of the bishops.

The sword and key placed as shewn are taken from an ancient wood-carving, at St. Germans, which is supposed by some to refer to the bishopric seated there for a time. Perhaps, however, the carving may have been merely a fanciful or incorrect representation of the arms of the See of Exeter. But in either case the reference becomes sufficiently historical.

* See Twenty-ninth Annual Report *Royal Institution of Cornwall*, 1847, p. 57.

† Oliver has figured the old seals of Bishops, Deans and Chapters of Exeter, in his "Lives of the Bishops of Exeter."

The fleur-de-lys, is the emblem of the Blessed Virgin, and marks the selection of St. Mary's Church, Truro, as the new Cathedral site.

The bordure is derived from the arms of the county of Cornwall which the Diocese includes.

The mitre, in place of crest, as in similar instances, needs no explanation.

SEAL OF THE FIRST BISHOP, (1877).

In form an Ichthys, or vesica piscis. It is about three and a quarter inches in length by two and a quarter in breadth. It displays, as its border legend:—

✠ S : EDUARDI · WHITE · BENSON · P : D :
EPISCOPI · TRVRONENSIS · PRIMI.

In the centre, beneath the mitre with its *infulæ*, is a shield charged with the arms of the See, described above, impaling, for Benson:—"Argent, a quatrefoil between two trefoils slipped in bend sable, between double cottises gules." (*See Plate.*)

SEAL OF THE SECOND BISHOP, (1883).

Now in use. Similar to the foregoing in size and form. Its legend is:—

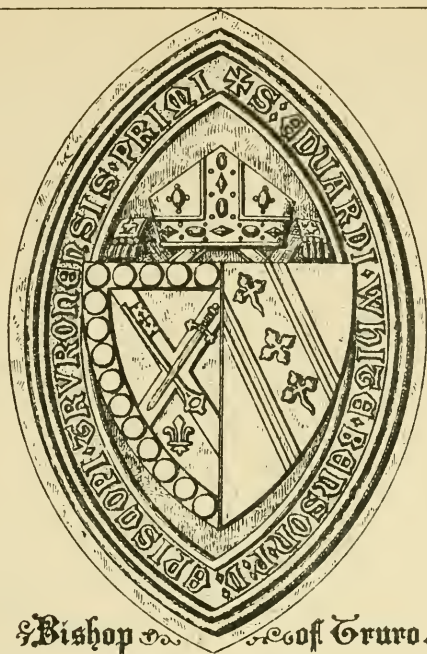
✠ S.' GEORG.' HOWARD : WILKINSON :
TRVRONENSIS : EPISCOPI.

The shield exhibits the episcopal arms, as above, impaling, for Wilkinson, "A fesse erm : between three unicorns passant." (Of the tinctures and form of fesse, see below*)

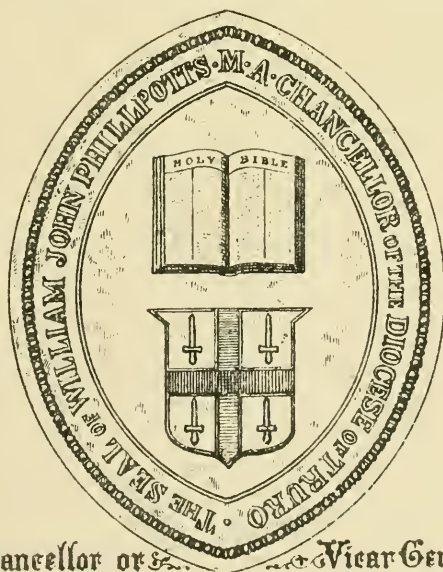
It is to be noted that instead of all the fifteen bezants appearing, as in the first seal, upon the part of the bordure in view, only seven and a half are shewn, an arrangement recommended

* Burke in his "General Armory" gives a list of many families of Wilkinson, with their Arms, and the Bishop informs me that the reference, therein, to "Wilkinson of Coxhoe, Co. Durham, descended from ancestors at Crossgate and Newcastle" relates to his family. The Arms of that branch are described by Burke thus:—"Gules a fesse wavy between three unicorns argent." It will be seen that the Arms on his Lordship's Seal are different. The fesse is not wavy. The charges resemble in form those which Burke has given under the reference "Wilkinson of Harpley and Kyo, Co. Durham" and "Wilkinson of Harperly Park formerly of Stockton" viz:—"Azure, a fesse erminois between three unicorns passant argent." The explanation of this has not reached me in time for insertion here, in consequence of the Bishop's absence on duty and the illness of one of the Heralds.

Ecclesiastical Seals of Cornwall.



Bishop of Exeter.



Chancellor of Exeter.

by the former bishop, now the archbishop, as being the mode of dimidiation more usually practised.

Both seals were supplied by Wyon, and are of brass.

There being no Dean of Truro yet, no Capitular Seal exists.

SEALS OF THE ARCHDEACONRIES.

Early in the Church's history Archdeacons were appointed to assist the Bishops.

Since the Council of Nice, their dignity has advanced beyond that of priests.

In England, their position, it is said, dates from the eighth century.

We do not know when an Archdeaconry was first established in this county, but it has certainly existed here for about eight hundred years, and perhaps for a longer period.

In 1098, Alnoth was Archdeacon of Cornwall, and the names of nearly eighty of his successors are known.*

Between 1138 and 1154 a charter relating to a gift effected in full synod at Bodmin—"In plena sinodo apud Botmennam," was witnessed by one of the Archdeacons, as we gather from the expression "Auco Archidiacono Cornubie." (It was also witnessed by the Prior of Bodmin—"Willielmo priore Bothmene," by a Dean of Cornwall and by others). †

About 1318, Walter Stapledon, Bishop of Exeter, annexed one of the Prebends of the Collegiate Church of Glasney, Penryn, to the office of the Archdeacon of Cornwall, so Dr. Oliver has stated, and we also find that more recently in the Close at Exeter a building, with garden and courtlage, was called "the House of the Archdeacon of Cornwall." ‡

Until 1878, the Archdeaconry included very nearly the whole county, after certain peculiars had been abolished. It is now, however, confined to the Western portion of it, for, the eight Rural Deaneries having been re-cast into twelve, the six eastern-

* See Le Neve's *Fasti: Eccl: Angl:* latest edition.

† See Oliver's *Monasticon Dioc: Exon:* p. 41. No. XIII

‡ *Bibliotheca Cornubiensis*, Vol. 3, p. 918.

most of these have been constituted a second Archdeaconry. This new one takes its name from Bodmin, the County Town, situate within it. Each Archdeaconry* has its distinctive seal.

SEALS OF FORMER ARCHDEACONS OF CORNWALL, (1322, &c.).

Amongst the records in the Probate Court at Bodmin, are several impressions. The oldest † I have yet found is attached to a document dated 1605. It is imperfect. In form it is a pointed oval. Of its border legend only the commencement and ending can be traced, ✠ SIGIL.

.....CORNVBIÆ.

A winged figure (doubtless St. Michael) affronté, with a nimbus or halo about the head, occupies the upper part of the central space. Nothing further is discernible. (*See Plate*).

Subsequent seals, of which there are many, vary but slightly from each other. They display more fully the old device. ‡ They shew St. Michael the Archangel slaying the winged Dragon, which with upturned claws and barbed tail lies overthrown at his feet. Its mouth is open, tongue protruding, and the weapon of the heavenly conqueror enters between its teeth. The archangel, habited in girt tunic, holds diagonally his spear with both hands. Below this spiritual group is the shield of personal arms,—different, of course, for each Archdeacon.

The later seals are elliptical, not pointed, but retain a Latin legend, as for instance that which was in use, in 1644, by “one of the sons of the pious Joseph Hall (Bishop of Exeter and afterwards of Norwich).” George Hall was one of the “Suffering Clergy” (see Walker, “Sufferings of the Clergy,” part II. pp. 25, 26). He had succeeded his brother Robert in the Archdeaconry. In 1662 he became Bishop of Chester. In his seal,

* Maps of the Archdeaconries and Deaneries have been published. The old divisions were explained by the late Rev. J. Wallis in 1816, (Index to Martyn's Map, p. 87,) and he issued Maps shewing the same in 1825, and 1847 (Cornwall Register, &c.) The new divisions first appeared in the “Truro Diocesan Kalendars” for 1878 and 1879, in the Map compiled by Rev. W. Iago, now printed, with additions, annually.

† The Archdeacons of Cornwall used official seals as early as 1322 and earlier. Their device is not stated.

‡ It is not known when, by whom, or why, this design was adopted, but Dr. Borlase has stated that dedications to St. Michael were adopted from 8th to 10th centuries.

Ecclesiastical Seals of Cornwall.

[These three sketches of the old forms of the Seal, are from imperfect impressions attached to documents of the dates specified.]

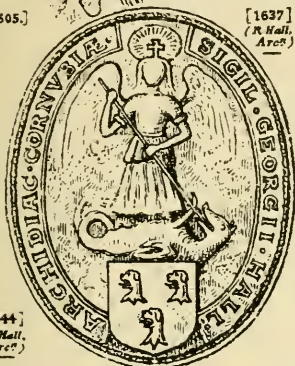
[Seal in use in 1882.]



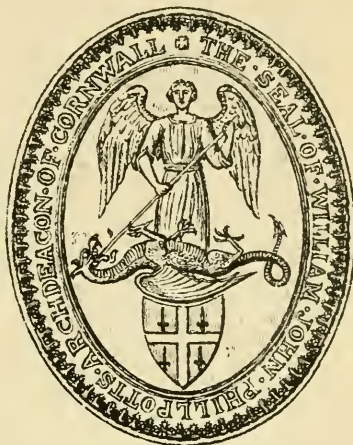
[1605.]



[1637]
(R. Hall, Arch^b)

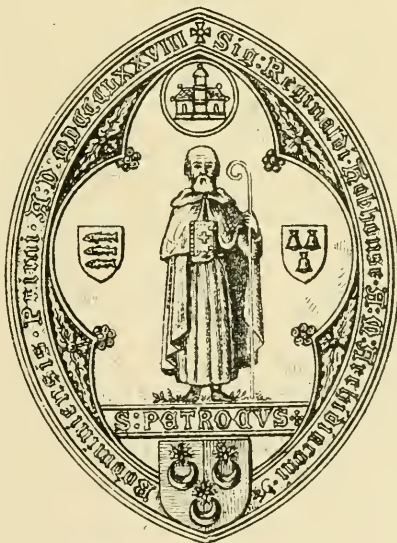


[1644]
(G. Hall, Arch^b)



Cornwall Archdeaconry.

[Seal in use in 1882.]



Bodmin Archdeaconry.

as in his brother's, the border was divided at the upper part, by the nimbus. The legend is:—

SIGIL · GEORGII · HALL ·
ARCHIDIAC · CORNVBLÆ. (*See Plate.*)

Several others are preserved, but space fails for a description of them all. The latest have the legends in English.

Until 1715, the time of Launcelot Blackburne (afterwards Bishop), the dragon's head was to the sinister. On his and subsequent seals it appears to the dexter.

John Sleech's was the last to shew the nimbus. His successors have all omitted the cross from the brow and the halo from the head of the archangel.

A description of their seals will now be given, the size of all being the same, viz. : two and a quarter by rather more than one and three quarter inches.

Moore's, 1788,—Silver matrix. Legend,

✠ THE · SEAL · OF · GEORGE · MOORE ·
ARCHDEACON · OF · CORNWALL.

This surrounds the usual group and the shield of personal arms:—"Sable a swan argent, within a bordure engrailed or." The back of the seal is plain and flat.

Short's, 1807,—Silver matrix, similar form and device substituting the name WILLIAM · SHORT, and the arms "Gules, a griffin segreant, a chief erm: differenced with a crescent." The back of the seal is plain with the exception of the Hall-mark.

Bull's, 1826,—Only wafer impressions found. Similar device and form of words. Name given as JOHN · BULL · D·D· Arms on shield, illegible.

Sheepshanks's, 1826,—Bronze matrix. Device and words as before, except name thus given,

JOHN · SHEEPSHANKS · A·M·

and arms:—"Azure a chevron erm: between three roses in chief and a sheep passant in base." The seal is thick. On the back the position of the seal is indicated by cross lines through the centre at right angles, and the letter T at the top. This seal gave place to the following

SEAL OF THE ARCHDEACON OF CORNWALL (1845).

The present Archdeacon, at the date given above, succeeded to the full title and extensive sway of his predecessors, and his seal was engraved accordingly.

From his official designation it might have been supposed that all Cornwall was then ecclesiastically subject to him, but such was not the case. There were 33 places in Cornwall, constituting certain Donatives and Peculiars, with a population of about 50,000 inhabitants, exempt from his Archidiaconal rule.

In 1848, however, they were placed under his authority; consequently, in that year he held his first General Visitation of all the Cornish parishes, &c., including Temple and the Scilly Islands.*

His Testamentary jurisdiction remained as before, not being extended to the Peculiars, and in 1857 all Probates passed to the Government. †

In 1878, as stated previously, one half of Cornwall lying east of Padstow, Roche, and Fowey, was severed from his Archdeaconry, but no alterations were made in the name and seal of his remaining portion. ‡

The old title "Archdeacon of Cornwall" is therefore still preserved, and will continue to be transmitted, together with the seal device.

The seal is of silver, oval, measuring over $2\frac{1}{4}$ by $1\frac{3}{4}$ inches, and exhibits the combative group. In it St. Michael is shewn without either brow-cross or halo. The surrounding legend, on continuous elliptical border, is:—

✠ THE SEAL · OF · WILLIAM · JOHN · PHILLPOTTS ·
ARCHDEACON · OF · CORNWALL.

* See "Cornwall Register" by late Rev. J. Wallis. p., 409.

† The Bodmin Probate Court Seal is now circular and rather more than three inches in diameter. It displays the Royal Arms, &c., with V.R. and the following words:—"The seal of Her Majesty's High Court of Justice, Probate Division, District Registry, Bodmin."

‡ "Kenwyn, 4th Oct., 1878. . . . The Archdeacon of Cornwall will always be so styled. It is one of the most ancient titles of an Archdeacon in England. The Archdeacons of Essex and Colchester are parallel cases, and there are others. . . . E. W. TRURON."

[Extract from letter of Dr. Benson, now Archbishop.]

In base the shield of Arms displays, for Phillpotts, "Gules, a cross argent, between four swords erect of the last, pomels and hilts or," (*see Plate.*)

Archdeacon Phillpotts is beneficed in the Dioceses of Truro and Exeter, and holds the Chancellorships of both. His seal as Chancellor will presently be described.

SEAL OF THE ARCHDEACON OF BODMIN (1878).

Having had the honour of designing the 1st Seal of Bodmin Archdeaconry, I will explain its symbolism and narrate the circumstances which led to its composition—for, as it is now in use, its general features will probably appear on a series of future seals. Here, however, I would state that after my primary design had been accepted, I was guided, as to some of the details, by suggestions made by the Archdeacon (Rector of St. Ives), and by his brother, Bishop Hobhouse (formerly of Nelson) as well as by the wishes of Dr. Benson then Bishop of Truro.

In the first place the name of the new Archdeaconry led me to select, as the principal figure for the centre of the Seal, St. Petroc the Briton—Bodmin's patron Saint.*

I depicted him bearing the Book of Gospels and his Prioral Staff, as we regard him through the vista of mediæval times—signified by the open cusped panel through which he is seen, his name below marking his identity.

At the base of the seal I placed, in accordance with many precedents, the shield of the Archdeacon's personal Arms, unimpaled, and on the border of the pointed oval I inscribed his legend, the initial cross being at the upper extremity.

Such then was my general design.

Concerning details:—An effigy had already appeared, on the Seal of the old Bodmin Priory, of St. Petroc habited in the ecclesiastical vestments of the middle ages; but Bishop Benson, to avoid such an anachronism, wished me to represent the figure, on the Archdeaconry Seal, clad as a prior of the British period—the time in which he really lived.

* St. Petroc died A.D. 564, and was afterwards enshrined in Bodmin Priory Church (since destroyed). The ivory casket now held by the Corporation is considered to be a 12th century Reliquary, which for a time contained his remains. Concerning his life and the stealing, &c., of his bones, see Sir John Maclean's "History of Trigg Minor" pp. 121, 231; Rev. J. Wallis's "Bodmin Register," p. 356; and accounts in the "Journal of the Royal Institution of Cornwall," &c.

Mr. Borlase's description of the garb and tonsure which prevailed in the early church bore on this point. I therefore consulted him and the Bishop, in order that everything might if possible be settled correctly, and to guard against any misrepresentation of the British tonsure [“ ab aure ad aurem per frontem in coronæ modum incisus est capillus, ab aure ad aurem per occipitium capillus intonsus dependebat.”] I took advantage of the presumed effect of the saint's old age, and this rendered it unnecessary for me to adopt any distinctive form of cutting.

To prevent the appearance of stiffness with regard to the Sacred Volume and the Crook, I had placed them in opposite diagonal positions in the hands of the saint, but the Bishop preferred a more severe mode of treatment. A sloping staff, he thought, might be a hindrance to progress, and the Gospels ought not to be carried carelessly. I therefore set both upright—sacrificing the more picturesque arrangement.

Further, with regard to the crook, Bishop Hobhouse recommended that its head should not be turned outward, as on the Priory Seal, but inward, to signify the internal rule of a monastery rather than the care of an exterior Diocese. With this suggestion I also complied, because some recent instances had made such a difference significant, although in former times no such distinction was observed, as may be proved not only by Bodmin Priory Seal but by a comparison of many Bishops' and Priors' monuments, &c., in various places.

Lastly, the Archdeacon desired me to introduce some evidence of the extent and limit of his Archdeaconry. It contains St. German's in the east, Bodmin in the west, and Launceston in the north, I therefore inserted the insignia of those places, as old religious foundations,—not raising any question as to what superior authority, if any, Archdeacons possessed in such communities, but merely indicating that their sites are within the Archdeaconry, and these particular symbols seemed to harmonize, better than other badges of the same localities, with the ecclesiastical character of the Seal. Moreover, I arranged them in such a manner as to illustrate their relative position with regard to each other on the map.

My drawing for the die-sinker having been completed, the Seal was made, and it may with some repetition be thus described :—

It is of steel, and measures more than $2\frac{3}{4}$ by 2 inches. Its form is an Ichthys, the border legend is in Church-text letters (capital and small).

✠ Sig: Reginaldi · Hobhouse · A: M: Archidiaconi ·
Bodminiensis · Primi · A: D: MDCCLXXIII.

Through ornamental cusping of five expanding curves there appears in the central space, as if in the distance, the Patron Saint of Bodmin; affronté, of venerable aspect, bearded, head bald above, and with hair drooping at the sides. He is clad in sandals, girt tunic, cloak, cape, and hood or cowl. He carries in his right hand, in token of honour, the Book of Gospels erect, in his left a pastoral Staff upright, crook inward as Prior. S: PETROCUS is inscribed below. In the space surrounding him the following are arranged in pyramid:—To the dexter, a shield charged with the Arms of Bodmin Priory “Azure, 3 salmon in pale, argent.” To the sinister, a shield of the Arms of St. German’s Priory “Azure 3 bells (2 and 1) or.” In apex, a circle displaying the cognizance of Launceston Priory, “St. Stephen’s Church.” Reaching to the lower point of the Seal is the armorial shield of Hobhouse, “Party per pale azure and gules, three crescents (2 and 1), issuant therefrom as many estoiles, irradiated or.”—(see *Plate.*)

SEAL OF THE CHANCELLORSHIP OF TRURO DIOCESE (1877).

As long as Cornwall and Devon were ecclesiastically united to form one Diocese, each was equally under the control of the Chancellor or Vicar General of the See of Exeter but when Cornwall was separated, a new Chancellorship was created. Notwithstanding this, the Chancellor who was in office at the time was not deprived of Cornwall. He was retained in his old position—becoming, however, the representative of two Bishops, and having two Vicar-Generalship titles, instead of one.

The seal of his Exeter Chancellorship being no longer valid in the Western County, he—as first Chancellor of the Truro Diocese—adopted a new seal.

It is a pointed oval, measuring 3 inches in length by about $2\frac{1}{4}$ in breadth. The border legend, which has no initial cross and commences in base, reads thus:—

THE SEAL OF WILLIAM JOHN PHILLPOTTS, M.A.
CHANCELLOR OF THE DIOCESE OF TRURO.

The upper part of the field is occupied by an open book. Its pages, ruled as with double columns of text, are headed HOLY BIBLE—on each page one word.

Below is the Chancellor's Armorial Shield; displaying, for Phillpotts, "Gules a cross argent, between four swords erect of the last, pomels and hilts or." The heraldic tinctures are not indicated, but the cross is not left plain. The arms have been before described, being on his Archdeaconry seal. (*See Plate.*)

SEALS OF THE RURAL DEANERIES.

Rural Deaneries have existed in Cornwall from an early period.

Until lately they were eight* in number—four bounded by the North coast, and four by the South.

Commencing in the north-east and proceeding westward, they were Trigg Major, Trigg Minor, Pyder, and Penwith (which last included the promontories Cape Cornwall and Land's End, also the Wolf Rock and Scilly Isles). The southern, adjacent to them, being East, West, Powder, and Kirrier (which last included the Lizard Point.)

In 1875 their boundaries were more or less altered to form twelve † more convenient Deaneries—some of them reaching from shore to shore,—their names being Stratton, Trigg Major, Trigg Minor, Bodmin, Pyder, Powder, Carnmarth, Penwith, East, West, St. Austell, and Kerrier.

It is not certain what seals were used in connection with the old Deaneries, but the following records are interesting.

In an agreement dated at the Exeter Consistory Court, 3 April, 1322, between certain parishioners residing at St. Nighton's and their Vicar at St. Winnow, it is stated that both parties were heard through proctors, the procuration of the people being authenticated by the Seal of the Dean of West, ‡ the procuration of the Vicar by the official seal of the Archdeacon.

* See Wallis's Maps, particulars of which are given in *Bibliotheca Cornub* : II, 849—50.

† See Iago's Maps in *Truro Dioc* : *Kalendars*, also *Bibliotheca Cornub* : III. 1240.

‡ Written in the original either as *Westwenalschire* or *Westwevalschire*. Called in Pope Nicholas's Taxation, *West-Wellshire*. See copy of document printed and annotated by Sir J. Maclean and Sir E. Smirke.—*Arch* : *Jl.* vol. 25, p. 312.

In a deed of Robert Chichester, Bishop of Exeter, confirming before 1154, a grant to the Priory of St. Andrew, Tywardreath, the witnesses at Bodmin include, besides the Archdeacon of Cornwall, and very many others, Ralph, Dean of Cornwall, Bartholomew and Roger, Deans. [“ Testibus . . . Radulfo decano Cornubie, . . . Bartolomeo, Rogero, decanis, et pluribus aliis.”] * These may have been Deans Rural or they may have been Deans of Colleges in Cornwall. Seals used by the Deans of Collegiate establishments will be noticed presently.

CONVENTUAL AND OTHER SEALS.

The official Seals of the chief ecclesiastics of the Diocese—hitherto undescribed by other writers—having now been noticed, we will turn our attention to the seals of the recognized religious houses in Cornwall.

The late Rev. Dr. Oliver figured many and described most of them in his *Monasticon*, and Mr. Worth, as before stated, has treated of them. It will, therefore, be sufficient here to give such references and supplementary information as will enable anyone interested in the subject to trace as many of them as possible.

Of great Abbeys there were none in Cornwall ; but the little Preceptory of the Templars † independent of Diocesan control, is still identified not only by its Church of St. Catherine at Temple, but also by what was probably the residence of the officer of the commandery, and of those associated with him. This is now called the Abbey Farm.

Although designated an Abbey, its headquarters were elsewhere ; and therefore it is doubtful whether Temple Abbey possessed a Seal ‡ of its own or not. If the Knights there had a separate seal, it has not yet, as far as I am aware, been found.

St. Benet's or Benedict's, in Lanivet, has been called an Abbey,

* Oliver's *Mon* : *Diœc* : *Exon* : p. 41.

† See page. 32, ante, with its note.

‡ The peculiar form of Cross, the Banners, War-cry, and the Seals of these Knights as an Order, are described in works relating to their history. Their Badges appeared on their Seals. One was the *Agnus Dei*, the Holy Lamb bearing a red-cross Banner. Another displayed two Knights on a single horse, to signify the original poverty of the Order.

The armorial sign of the Barristers Templars of the present day is a Pegasus or winged horse. With regard to it Boutell writes :—“ This is derived from the early badge—the two horsemen having been mistaken, in later times, for wings.”

a Priory, a Monastery, a Nunnery, a Religious House or Cell dependent upon Bodmin Priory, &c., &c., but Dr. Oliver has combated these statements. The place is beautifully picturesque. In the rear of the gothic mansion, with its traceried windows, rises the ruined tower of a sacred edifice which has been destroyed. C. S. Gilbert wrote thus:—"The chapel together with some beautiful cloisters (from the altar to the Monks' refectory) have been taken down. The tower with its handsome pointed arch is all that remains. The buildings which constitute the present mansion are of early workmanship, perhaps of the reign of Henry VII, and contain several fragments of the figured glass which once adorned the windows of the monastery."* Oliver writes:—"As to St. Bennet's, asserted to have been a Nunnery subordinate to some foreign monastery in Italy, in France, or elsewhere (for various places have been named), it was nothing more than a chapel of special devotion, as is proved by a document dated May 6, 1535, in vol. 2 of Bishop Vesey's Register," † and then he adds "It is indeed a remarkable fact that *there was no Nunnery whatever* in Cornwall."

This last statement affects not only St. Benet's but also Credys ‡ which, situate in Padstow, is reported to have been a Nunnery also, or a cell dependent upon St. Benet's. The lands of Credis at the present day belong to the poor of Lanivet.

Thus then we may look in vain, if Oliver be correct, for any Seals of St. Benet's or of Credy's.

* C. S. G.'s Survey of Cornwall, vol. 2 p. 640, with note on Credys. Polsue (Hist: Cornwall, Lake, vol. 3, p. 13,) however states that the stained glass was brought from Lanivet Church.

† Oliver's Monasticon, p.v. (preface).

‡ Credys, Credis, (Crede's?). A mediæval fresco, labelled "S. Crede" was found, with others, in Lanivet Church in 1864. See illustration in Royal Institution of Cornwall Journal, vol. 3, pp. 162-72, plate 3, which plate I drew from a photograph, after inspecting the original fresco. She was there represented as crowned and royally robed, holding in her right hand a sceptre terminating above in a bud or cone. Perhaps to her may have been dedicated the churches of Creed, Sancreed, and Grade, besides Credys chapel in Padstow, although St. Crida, St. Sancredus, St. Gradus, &c., are stated to have been the patron saints of those churches. Mr. Borlase considers their identification doubtful, and observes "Registers make the Saints' names alternately masculine and feminine—the result is we have a spurious Hagiology invented by the scribe out of the names of the parishes." See his "Age of the Saints," (Royal Institution of Cornwall Journal, vol. 6, p. 77, with a note referring to Crida in Smith's Dictionary of Christian Biography.) See also Blight's week at Land's End, and E. F. Whitley's remarks on the same subject, in *R.C. Gazette*, November 26, 1883.

As to the question of Nunneries or no Nunneries, Leland, in his Itinerary, wrote concerning the Monastery at Bodmin—"there hath been monkes then nunnys," but this latter statement has been refuted.

In Bishop Stafford's Register it is mentioned that Margaret, an anchoress of Bodmin, was allowed to quit her cell, March 10, 1415, to proceed to a Nunnery—but whether Cornwall then possessed one, or not, does not appear from the record, her destination being St. Bridget's at Sheen.*

Further, it is to be observed that the Carmelite Nunnery now in the venerable house of Lanherne, at Mawgan, is a convent of quite modern date.

The mention of the Bodmin anchoress reminds us that in early days there were Anchorites in various parts of Cornwall.

St. Guron in the 6th century, before settling by the south coast, where Goran Church † now commemorates him, is said to have occupied a Hermitage in the centre of the county, not far from the unfailing fount of water which gushes forth at what is now called Bodmin Church Stile. His small dwelling has been regarded as the origin of Bodmin [Bos, Bod, manach—house of the Monks], for, when he resigned his quiet retreat to St. Petrock, who associated with himself a few companions, the abode of the Solitary became a Monastery, which in course of time developed into the important Priory, with a Church of its own, and meanwhile, on account of this conventual establishment, a town gradually sprung up, a parochial Church also was built, the largest in Cornwall, whilst various other local organizations, clerical and lay, were founded.

Again, the remains of a Hermitage, with Chapel above it, are found on the highest central point of Roche Rocks. The recluse there, according to some writers, was a member of the Tregarrick family, whose name, derived from the rocky manor which they held, assumed also the synonymous forms of de Rupe and de la Roche. Little seems, however, to be really

* Oliver's Mon : additional supplement 1854, p. 2.

† At Goran is a carved chair, of perhaps 16th century work, displaying in the panel a cowed figure kneeling as in prayer upon a chequered pavement whereon rest a skull and open book. In the background is shown a Church tower with spire. The design is considered to represent St. Guron the Hermit with the Church either of Bodmin or of Goran—both built after his time. Each of them had a spire.

known about the cell and its inhabitant, although the spot is surrounded by a host of traditions.

At St. Gonger, otherwise St. Congar or Ingungar, in Lanivet, was a chapel—and, it is said, a Hermitage also.* The site is approximately indicated by the ancient disc-headed Greek cross of stone, with mortised base, which formerly stood at the triple junction of the roads but now lies overthrown and broken by the roadside, and is still called by the saint's name. †

Another hermit dwelt near the chapel of our Lady in the Park of Liskeard. ‡

Ecclesiastical Seals, were not, of course, needed in connection with such small establishments as Anchorites' cells.

The larger religious establishments had seals—and, the use of them being of considerable importance, special means were taken to ensure their safe custody.

"The common seal," Oliver states, "was deposited in a chest secured by three locks and keys;—one kept by the Superior, the second by his deputy or next in rank, the other by the oldest of the professed; nor could it be validly used without the consent of the majority and discreter part of the community."

Notices, confirmatory of such a custom, occur in the Cartulary of Glasney College, Penryn, § for we there find that as early as 1304 the Provost and Chapter had a common seal in use, and the Bishop in 1400 decreed that it should be safely kept under three different and secure keys, these always and severally remaining—one with the Provost or his deputy, and the two others with two other different Canons of the said Church (by the Provost, or his deputy, and the Chapter to be deputed), nor

* Traditions as to hermits are often merely confused accounts of patron saints of localities. Thus one legend of the Roche hermit confounds his life with that of St. Roche. Here, too, at S. Gonger there may have been only a chapel with cross and well, for in Husenbeth's Emblems of Saints the old English calendar gives "March 13, St. Cungar, Hermit." This dedication of the chapel, therefore, may possibly have led to the supposition that there was a hermitage at St. Gonger's whether one existed there or not.

† Figured by Blight in his *Ancient Crosses of Cornwall*, in which work he has also inserted interesting notes on the Hermitages, Holy Wells, &c., also see *Lysons' Cornwall*, p. 175, and *Couch (R. I. of C. J., Vol. 1, p. 72)*.

‡ *Oliver's Mon* : p. 72, note.

§ Original in Mr. Rashleigh's possession, at Menabilly. See *R. I. of C. J.* vol. 6, pp. 245, 215, 253, 257.

should anything be sealed with the said seal without the special consent of the Provost or his deputy, and a majority of the senior members of the chapter. In 1435 the Provost and Chapter ordained that at the end of every year all monies belonging to the community should be placed in a chest with three keys, which chest was further described as being that "in which the college seal is kept." They also decreed that annually on the morrow of the feast of All Saints, (2nd. Nov.), there should be elected "the keepers of two keys of the common chest aforesaid of three keys."

SEALS OF PRIORIES.

BODMIN, otherwise Petrockstow.* (Dedication, St. Mary the Virgin and St. Petrock, Confessor). This Priory, originally Benedictine, afterward Augustinian, had a common seal in use in 1347, and probably earlier.

The following impressions of seals belonging to this house are known :—

1. Seal of Priory † attached to the surrender, in the Augmentation Office, &c. Described and figured by

* See Oliver (Mon. Add. Sup. 1854, p. 1), and Carne (R. I. of C. J., Vol. 2, p. 200). Also Michell, who quotes Anglo-Saxon Homily, (Hist: of St. Neot's, p. 153), concerning locality of Petrockstow.

† The Priory which stood at the east end of Bodmin having long since been suppressed, a new one at the west end has been formed. For this I am told, a seal similar, in design, to the old one is now being made at Rome (see "Addenda.")

The first modern Prior is Father Felix Menchini, Canon Regular Lateran.

Bodmin Priory Seal is not quite accurately figured and described by Oliver and those who have followed him, as is evident from an examination of a wax impression preserved at Duporth.

In the Monasticon the following details are thus given in error.

The Crook of St. Petrock's Prioral Staff is shown plain and turned outward.

The three salmon, of the Priory Arms, have their heads to the sinister.

The names under the effigies are stated to be S. Marie and S. Petro.

The border legend is made to contain the words Prioratus (in full) and sante.

The seal, on the contrary, displays St. Petrock's crook *enriched* and turned *inward*.

Fishes heads to *dexter*.

Names under effigies *S. Maria* and (apparently) *S. Petrus*.

In the border legend, if Prioratus be the word intended it is as short as this :—*Prtus*, and the other word is either *Sancte* (for Sanctæ) or *Sanctis* (for Sanctissimæ). In the impression the letters are not sharply defined.

The second word of the legend, given as *coie*, seems to be meant for *co'e* or some abbreviation of *commune* (agreeing with *Sigillum*).

The common seal of the Priory is larger and more elaborate than its picture in the Monasticon. It measures nearly three inches in length by two in breadth.

Oliver (*Monasticon*, p. 17, and plate), engraved as a fragment in "Seals of Monasteries of the Benedictine Order" (plate 14), quoted from Oliver by Maclean, and Worth (*R. I. of C. Jl.* vol. 4, p. 283), and copied from Oliver in Iago's *Bishopric of Cornwall, &c., Arms Sheet*.

2. Seal of Prior Thomas Vivian, as titular Bishop of Megara. See Oliver, Worth, Maclean (*Trigg Minor*, vol. 1, pp 133, 158 n.)

RIALTON Priory or Manor House, in St. Columb, an outlying residence belonging to Bodmin Priory, just described. As it was under the same management it seems not to have had a separate seal.

ST. GERMAN'S (Dedication, St. German, Bishop of Auxerre.) This Augustinian Priory early possessed a common seal. Of some of its seals the following impressions have been found.

1. Seal of Henry the Prior, (St. German standing). A Prior named Henry held office in 1315. See Oliver (*Mon.* 1846, p. 2, and additional supplement, 1854, p. 1).
2. Seal of the Prior John Haukyn.* Attached to a deed of Bodulgate 1435, now in the possession of Mr. Rogers, at Penrose, (*R. I. of C. Jl.* vol. 1, p. 28), figured by Iago in *Bishopric, &c., Arms Sheet*.
3. Seal (figure seated, without mitre). Attached to surrender in Augmentation Office, &c. Described by

* This seal has never yet been fully described. Its legend is:—

Sigil *s Haukyn Prioris Sci Germani*.

Under a canopy St. German stands in benediction, wearing mitre, &c., and holding pastoral staff in left hand, crook outward. The seal is ornamented with foliage. On each side of the Saint, as a supporter, stands a *Hawk, belled*—probably the rebus or badge of *Hauken*. Beneath, is a shield charged with 3 bells (2 and 1), the Arms of the Priory (not of Prior Swimmer, as some have supposed, he held office long afterwards). According to Oliver (*Mon.* p. 3), John Hawken died in April, 1434. This deed is dated 20 January, following (13th of Henry VI, *i.e.* 1434-5). If Oliver be correct, John Kylkeham was then Prior, and must have used his predecessor's seal. In the deed the Prior's name is given merely as "John." See Deed (with curses) *in extenso*, in Maclean's *Trigg Minor* vol. 2, p. 391.

Oliver (Mon : p. 3), and figured in "seals of Monasteries of the Benedictine Order" (Pl. 14,) and quoted by Worth.

LAUNCESTON * (Dedication, St. Stephen, protomartyr.) This Augustinian Priory had a common seal of early type. Other seals also were in use.

1. Seal of Priory (circular.) Attached to a 13th century deed. Oliver (M : p. 23,) Worth.
2. Seal (oval) of Prior Roger de Horton. See Oliver (M : p. 413.)

In 1428, 1430, 1447, the Priory Seal was appended to Deeds which still exist at Liskeard. The device is illegible, only fragments of wax remaining. See Hancock (Notice of the Church of St. Martin, Liskeard, p. 11, &c.)

TYWARDREATH, (Dedication—St. Andrew, Apostle and Martyr). At first an Alien Priory or Cell of the Abbey of Saints Sergius and Bacchus at Angers in Anjou, but afterwards incorporated. The Seals pertaining to this Benedictine Priory were numerous. Impressions of the following remain. See Oliver (Mon : p. 36 with plate of seal No. 5), and Worth, who quotes from him.

1. Seal (Saint with plain cross, &c).
2. Seal (Saint with Saltire, &c).
3. Seal (Saint on Saltire between star, fleur de ly and crescent).
4. Seal (The star, &c., omitted).
5. Seal (Saint with Saltire under rich canopy).
6. Seal (Armorial),
and perhaps others.†

ST. ANTHONY or Antonine, in Meneage. This Priory was a Cell of Tywardreath Priory, just mentioned, and probably had no separate seal.

* There being a notable castle here, Castrum or Cestre might be looked for in the name, but from old deeds it appears that the Town, called Dunheved, acquired the name of Launceston, or Lan-stevaton, from the Church and Priory of St Stephen. Leland mentions "Launston otherwise cawled Lostephan."

† Concerning these, including the Laocoon Seal, see "Addenda" at end of this paper.

ST. ANTHONY, in Roseland. A cell of the Augustinian Priory of Saints Peter and Paul, Plympton, * Devon. St Anthony's Priory was burnt by the French, in or about the year 1338. It probably had no separate Seal.

TALCARNE Priory, or MINSTER (Dedication—St. Merthiana). The Alien Priory of "la Minstre," like Tywardreath, was a cell of the Abbey of Saints Sergius and Bacchus, Anjou. Probably it had no separate seal. The other place of somewhat similar name viz: MANACCAN or MINSTER, will be found described under Colleges (See Glasney).

ST. CADIX (and Juliette) Priory, in St. Veep. The name of the young Saint, who suffered Martyrdom with his mother Julitta, is given in a great variety of forms:—Ciric, Cyrus, Karrock, Quiric, &c. This was a cell of Montacute Priory in Somerset, and probably had no separate seal.

TREGONY, St. James's Priory. At first an Alien Priory, or cell of St. Mary de Valle, Normandy, but afterwards, by exchange of property, made a cell of Merton Priory, Surrey. Probably it had not any separate seal.

ST. NEOT'S (formerly Hamstoke, St. Guerryer's or Guerierstoke, and afterwards Neotstoke or Nyotstow). Here, according to old records, was a religious house, but Oliver has given no particulars of it, although he has marked it in his map as St. Neot's College. It seems that St. Guerryer's hermitage was at this spot, and St. Neot, a Monk of Glastonbury in priest's orders, after occupying St. Guerier's cell as an Anchorite, founded a Monastery or College at the place. He presided over it till his death, and some writers have styled him an Abbot. His relics were enshrined in the Church, but most of them were afterwards transferred from place to place.

* See Seal of Plympton Priory in Oliver's Mon: (Plate).

At the time of the Domesday Survey, a College of Priests, described as "Clerici" and "Præsbiteri," were in possession; but their lands had suffered much spoliation, and the whole establishment was soon afterwards suppressed. See Michell (Hist: of St. Neot's, p. 141), &c.

No seal of St. Neot's in Cornwall is known; but King Alfred's jewel has been often figured, on which it is supposed St. Neot is shewn. It is thought that the jewel formed the head of the King's victorious War Standard which, as representing the Saint, was carried before his army into battle. On the border of the miniature is the legend AELFRED MEC HEHT GEWYRCAN (Alfred had me wrought).

LAUNCELLS (Dedication—St. Andrew; St. Swithun is also named). It has been alleged that in this parish was a small Priory or Cell belonging to the Augustinian Abbey of St. Nectan, at Hartland in Devon. (For seals of which see Oliver's Mon: Plate, &c). Whether a cell existed at Launcells, or not, Hartland Abbey held the Church and other property there, and doubtless its representative, or some of its members, exercised, from time to time, local supervision.

Oliver notes that in many places (St. Columb* for instance) property was held and overseen by religious houses without any sub-priory or cell being necessarily established.

It is not supposed that there was any monastic seal of Launcells.

Besides the above Priors, Cells, &c., on the mainland of Cornwall, there were the following in isolated positions.

ST. MICHAEL'S MOUNT. The religious foundation here, having been an Alien Priory or Cell of a foreign house (the Abbey of St. Michael in Normandy), with "a Prior moveable ad nutum" afterwards obtained a distinct corporate character, and had "a convent, a Seal, and perpetual Prior." Eventually it became an Archpresbytery. See *R. I. of C. Jl.* (vol. 2, p. 1), and Oliver (Mon: p. 28).

* See "Addenda" at end of the paper.

1. The seal is not described, and no impression of it appears to be obtainable. Probably it displayed a figure of St. Michael, Archangel.

ST. MICHAEL DE LAMMANA on Looe Island, Talland.

The name Lan-manach, Monks' enclosure, is descriptive—like the names Manaccan and Bod-manach (Bodmin)—of an old monastic site. The religious house, with its chapel, on Looe Island was a cell and chantry belonging to St. Mary's Abbey, Glastonbury, Somerset. It probably had no separate seal.

ST. NICHOLAS'S Priory, TRESCOE Island, SCILLY. This minor Abbey was a cell of the Benedictine Abbey of St. Mary the Virgin, and St. Rumon the Bishop, at Tavistock,* Devon. There may also have been an Oratory belonging to it on St. Mary's Isle—for the names Holy Vale and Carn Friars, or Carn Prior, occur there. The Prior, moreover, was sometimes described as of St. Mary's, as that Island also pertained to Tavistock. The Abbey and the Monks of Scilly enjoyed amongst other privileges the right to certain sorts of wreckage. Probably Tresco Abbey had no separate seal, unless it was allowed more independence than was granted to other cells.

SEALS OF COLLEGES,

COLLEGIATE & PREBENDAL CHURCHES, ARCHPRESBYTERIES & DEANERIES.

Reference has been made, under Priors, to certain Colleges of Secular Canons which were changed into Monasteries, or into Cells, for Regulars. Some, however, were not so altered and others were subsequently founded. These latter then, with their seals, have yet to be described. In some respects such Colleges of Secular Canons resembled the old Cathedral establishments—in framing their rules Cathedral statutes being taken as a guide. They were governed strictly.

As Hooker (Ecc: Polity, Book VII) states that in each Diocese "the Bishop had under him, to direct Deacons, his Archdeacon, so termed albeit himself a Presbyter, and for the guidance of Presbyters one of the self-same order with them,

* See fine Seal of Tavistock Abbey in Oliver's Mon : (Plate).

termed an Archpresbyter or Dean," so the Collegiate Churches, scattered throughout the Diocese and served by secular Canons or Prebendaries, had, in each, a chief amongst his brethren,—styled an Archpriest, Dean, Provost, President or Superior,—under the control of the Bishop.

PERRAN-Zabulo, or Perran-Towan, or **LANPIRAN** (Dedication, St. Piran or Kieran, perhaps the same as St. Keverne). This Church seems as old as the 6th century. Its College existed as early as the time of King Edward the Confessor, there being a Dean and other Canons. It was said that St. Piran's head was in their custody, Sir John Arundell, in 1433, bequeathing forty shillings for the better enshrining of it in an honorable manner. This Collegiate Church became the property of Exeter Cathedral.

No Seal of Perran College is known.

ST. KEVERNE or **LANNACHEBRAN** (Dedication variously given as St. Achabran, Keveran, Kieran, &c., or Piran). At one time a College of Secular Canons, afterwards a possession of the Cistercian Abbey of Beaulieu, Hants.

No Seal of St. Keverne College is known.

CRANTOCK or **LANGOROCH** (Dedication, St. Carentoe or Kerender, &c.). This College existed in the time of Edward the Confessor, and its members consisted of a Dean or Prepositus, other Canons, Prebendaries, and Vicars.

1. Seal of the Dean. See Oliver (Mon. p. 54).

PROBUS or **LANBRABOIS** (Dedication, St. Probus). A College of early date. It had a Dean and other Canons and Prebendaries. Part of the endowment of this Collegiate Church became a source of income to the Treasurer of Exeter Cathedral. The College was dissolved in the 16th Century.

No Seal of Probus College is known.

GLASNEY College, Penryn (Dedication, St. Mary the Virgin, and St. Thomas A'Becket, Archbishop and Martyr).

Founded in the 13th Century. See Oliver (Mon. p. 48, &c.; Sowell (*R. I. of C. Jl.*, Vol. I, part 3, page 21, and Plates) and the Cartulary (Idem. Vol. 6, p. 213). The Provost or President, other Canons and Prebendaries (including the Archdeacon of Cornwall), and the Vicars of this College, are mentioned in connection with the endowments, statutes, &c. Reference has already been made to the chest with 3 locks and keys within which the College Seal was kept.

1. Common Seal, used in 1304 and perhaps earlier. Not described. Probably its device consisted of one or both of its Patron Saints.

MANACCAN or **MINSTER** (St. Antonine). This Church, like many others, was appropriated to Glasney College, just described. Its name, as already stated, seems to imply that at an early date it had been a monastic establishment.

No Seal of Manaccan is known.

ST. TEATH (Dedication—St. Thetha, Tethe, Eath, or Erthe). This Prebendal Church, or College of Priests, included only a Vicar and two Prebendaries. The Rectory belonged to Exeter Cathedral and one of the Bishops founded the Prebends. A Vicarage having been assigned, Bodmin Priory, and afterwards the Bishops of the Diocese, presented to it. The Prebends continued till after the Reformation. See Maclean (*Hist. of Trigg Minor*, vol. 3, p. 96, &c., and Plate of effigy in curious habit), also Oliver (Mon : p. 17).

St. Teath Prebendal Church does not appear to have required a Seal.

ENDELLION (Dedication said by some to have been St. Endelienta or Delia; by others, St. Delian, Telen, or Teilo, Bishop of Llandaff).* Hals and Mr. Borlase have considered that one or other of the Domesday

* On the establishment of a modern Cathedral at Truro, 24 Honorary Canonries were founded. One of them was called the canonry of St. Endellion, but its title was soon changed to that of St. Teilo, which name it now bears.

manors of Deliau may have included Endelian, they having been identified in St. Teath, the adjoining parish. See, Hist: of Cornwall, Lake, Truro, (vol. 1, p. 329), Borlase (Age of the Saints, *R. I. of C. JI.* vol. 6, pp. 79, 80), Maclean (Trigg Minor vol. 1, p. 479, and Plates, also vol. 3, pp. 89, 120, 122, 126, 128). There were four Prebendaries, under different patrons, composing this College. Each seems to have had a separate residence near the Church. The four co-ordinate Rectors were afterwards regarded as one Rector and three Prebendaries. These offices are still continued, but the Prebendaries are non-resident. No other Prebends in Cornwall remain.

Endellion Prebendal Church does not appear to have required a Seal.

ST. MICHAEL PENKIVEL (Dedication, St. Michael the Archangel). The Church was consecrated Aug: 13, 1261, by Walter Bronescombe, Bishop of Exeter. The names and titles of the Saint and of the Bishop appear, with an incised cross, on the foundation stone. The advowson belonged to Fentongollan. In 1319, Sir John de Tre-iagu (Tre-jago) of Fentongollan, Knight, was patron. He, having restored the fabric, founded a chantry of four chaplains. The Bishop's Deed confirming this is still preserved at Tregothnan. It is endorsed "*Ordinacio Archiepiscopatus de Penkevel in Cornubia.*" The Church was thus made Collegiate. The head Chaplain was Archpriest and received special charge of the parish. His "*socii,*" or fellows, lived under his roof, shared his table and each received from him yearly two marks "*pro stipendio et robâ suâ.*"

To all who had assisted in promoting the Church's welfare, &c., and had prayed for (amongst others) Sir John Triagu, the founder of the chantry, and Sir William de Mullabourne the first Archpriest there, Pope Benedict XII granted in 1335 an Indulgence. This document also is preserved at Tregothnan. The four chaplains required four altars.

Three were placed at the east walls of Chancel and Transepts, and a place for the fourth was found by ascending to the first floor of the massive tower. There against the east wall it was erected; a little window over it, opening just above the ridge of the nave roof. See Oliver (Mon: p. 66); Street (Some account of St. Michael Penkivel Church. *Transactions of Brit: Architects*), and *R. I. of C. Jl.* (vol. 1. p. 33).

The Collegiate Church or Archpresbytery of St. Michael Penkivel probably did not possess a seal.

ST. MICHAEL'S MOUNT. The Priory and its Seal have been already noticed. The church of the Mount also included an Archpresbytery, which was afterwards described as a foundation which provided that three "prysts" should celebrate in a chapel there, one of them being named the "Arche pryst." See Oliver (Mon: p. 488). It is not to be supposed that these, as a College, had an official or corporate seal.

Many other CHANTRIES were founded in the various parish churches, and in certain chapels (such as that of St. Thomas the Martyr in Bodmin churchyard), besides those already named. None of them, however, require further notice here, as they were in no way connected with ecclesiastical seals. See Oliver (Mon: pp. 472, 483, 488).

BURIAN, OR EGLOSBERRIE. (Dedication, St. Buriana, Virgin). This was a Royal Peculiar Collegiate Church and Deanery, of considerable importance. It is said that the patron saint came from Ireland, founded an Oratory, and died at this place, which is not far from the Land's End. It is added that King Athelstan having left Burian for the purpose of subjugating the Scilly Isles, made "ex voto," on safely and successfully returning, a College where the Oratory was. The clergy of the College, who may at one time have been as many as seven, served the churches of St. Burian, St. Sennen, and St. Levan. After a while the lands were alienated, the college buildings fell into decay, and such tithes as

remained were received by the Dean or Rector of St. Burian,—the clergy of the other churches being his curates. The Deanery is now abolished. Its seals will presently be described, after a few more particulars of the Peculiar have been given.

Leland wrote "Ther longeth to S. Buryen's a Deane and a few Prebendarys, that almost be nether there," and Whitaker declared "The Dean like Aaron's rod has swallowed up the rest."

Walter de Gray was Dean in 1213, and the last who held the office was the Hon: Fitzroy Henry Richard Stanhope, M.A., who was Dean from 1817 to 1864. The Deans held courts similar to those of an Archdeacon, and were also styled "Venerable." Their controlling power extended to certain ecclesiastical and moral offences, excommunication, penance, and absolution. They granted Probate. Registration was also attended to. Some of the Prelates of Exeter held the Deanery, amongst others the famous Bishop Trelawny. His seals and signatures occur in the documents at Bodmin (see plate of facsimiles accompanying this paper).

Dr. Oliver in 1846 (Mon: p. 6) gave much interesting information concerning Burian and its Deans, and in 1854 (in his additional supplement) he somewhat amended his list. In mediæval times controversies arose between the Crown, the Duchy, the Bishops, and the Deans, respecting rights relating to the Peculiar. Some letters on the subject which passed between the Black Prince and the Bishop of Exeter, are of interest. They are written in old French. See Oliver (Mon: p. 10). Other particulars concerning Burian, including Bishop Tanner's list of the early Deans, have been given by Dr. Borlase (*Antiquities of Cornwall*, p. 349), Lach-Szyrma (*History of Penzance, &c.*, p. 72), and in the Truro Diocesan Kalendar (issue for 1882, Records at Bodmin,* pp. 69, 73). It is to be observed that just as Endellion Church is the last in Cornwall to retain its old Prebends, so Burian Church was the last in which there remained a Deanery.

* After I had contributed to the Kalendar the above-mentioned account of Records, I added a list of the last fourteen Deans of Burian, with notices of some of them, and an examination of their dates, also the seals in a second edition printed as a pamphlet for private use.

Two seals of Burian are known, and as they have not been figured by others, and only one of them has been partially described, their details will here be given.

1. Seal impressed on a document dated 1612, and perhaps used earlier. This grotesque seal appears to be a copy* of a much older and better one. In form it is a vesica piscis or pointed oval. Device, the demi-figure of a King, probably Athelstan, affrontè, beneath the low arch of a canopy ornamented with bosses, balls, and an engrailed ridge, and supported by two baluster-shaped pillars, one on each side. The King wears a double-arched crown, surmounted by a cross. He holds the orb in his right hand, and a drawn sword, point upward in bend sinister, in his left. In base is a plain arch enclosing a space. Possibly this part of the device is a mistaken imitation of the skirt drapery which in an older seal may have enveloped, and depended from the enthroned King's knees. The border legend is:—

✠ SIGILLVM · PECVLARIS · IVRISDICTIONIS · DE · BVRYAN ·

In size the seal is about $2\frac{1}{4}$ by $1\frac{1}{2}$ inches. (See Plate).

The use of this Seal was continued by Bishop Trelawny † and the two Deans (Bishop Blackall and John Harris) who succeeded him. Dean Harris used it in August 1717, but in August 1718 his official impression was made from the following, instead:—

* If an older seal of Burian did exist, it may have been of artistic merit, and most likely it displayed an Anglo-Saxon King (Athelstan) seated on his throne. This grotesque copy of it, if such it be, exhibits a manifest anachronism with regard to the crown, for crowns were not *arched over* in Anglo-Saxon times—in fact, not till the 15th century. Boutell (English Heraldry, p. 275) has stated that it was King Henry V, who first introduced two jewelled bands arched across at right angles to each other, and at the point of their intersection a small mound with a cross on it. All our subsequent monarchs adopted the same arrangement, except Henry VI and Charles I, who each placed above the circlet three bands instead, forming six half-arches. The debased style of this Burian seal seems to shew that it is of 16th or early 17th century work.

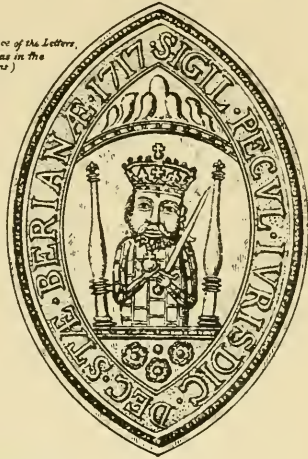
† Bishop Trelawny (one of the seven loyal Prelates committed to the Tower by King James II) used, whilst Bishop of Exeter in 1689, in his capacity of Dean of Burian, his small Episcopal seal thus charged:—“Gules, a sword in pale, bladed argent, hilted or, upon two keys, in saltire, of the third” (for Exeter See), impaling “Argent, a chevron sable” (for Trelawny), the whole ensigned with a mitre and its infulæ. At other times he used the Burian seal. (See Plate).

Ecclesiastical Seals of Cornwall.

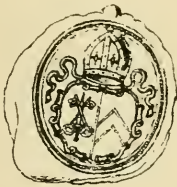
[Seal used in 1612 and probably earlier, and until 1717-8, by many Deans, including B. Grelaway, &c.]

[Seal used by the last six of the Deans &c.]

(The Irregularity in form and place of the Letters, *Crowes, Conventus*, &c., copied as in the original Impressions)



Burian Deanery.



[Facsimile Extracts from a document appointing John Hantsis, of St Nyott, Register of Burian Deanery.]

Sciatis me Jonathan
Epum p[ro]p[ri]et

Doracatum Srta

Bozian ats Burian

et [¶] Dodiffe [¶]

..... apposuimus. Dat apud Trelawne

Donno octavo die mensis Januarij

Anno atm 1689

Episcopal Seal and Signature of Bishop Trelawny, Dean of Burian, Cornwall.

2. Seal mentioned by Oliver (Mon: p. 7). In form it is similar to the preceding, but slightly larger. The design is still more grotesque. The King with beard and moustaches looks like a puppet. He is clad in what is intended to represent a suit of plate armour, but it more resembles brick-work set on end. He has the arched crown, orb, and sword, but his canopy is quite distorted. The balusters do not even support it. They are attenuated, inclined in opposite directions, and on the top of each is a miniature fleur-de-lys. The arch is wider than before and detached from the pillars. It spans over them like a rainbow, and is jewelled along its centre with small stars. Its upper enrichments instead of being crockets or other definite forms are little better than flames, clouds, or icebergs. The King's half-figure rests on a horizontal shelf, ornamented like the arch, with minute stars. In base are three roses (2 and 1) but not on a shield. The legend is :—

SIGIL · PECVL · IVRISDIC · DEC · STÆ ·
BERIANÆ · 1717 ·

The silver matrix is in the possession of Mr. J. B. Collins, Registrar of the Probate Court (in whose official charge are also the Burian archives). The seal is flat on the back, with a cylindrical holder for a handle. This has been crushed down nearly flat. Around the margin, on the back of the seal, these words are engraved, viz. :—

IOANNE HARRIS DECANO.

In size the seal is nearly $2\frac{1}{2}$ by rather more than $1\frac{1}{2}$ inches. (See Plate).

SEALS OF FRIARIES AND HOSPITALS,

GUILDS AND CONFRATERNITIES.

Friaries, Hospitals and Guilds were established in various parts of Cornwall, and they seem to have been of considerable practical utility. Many bequests in their favour, found in old Wills, assist in their identification. Mr. Dunkin in his

“Testamenta Cornubiensia,” now partly printed, has supplied some interesting notices of such entries.

TRURO Dominican * Friary, founded about 1250. Its conventual Church was dedicated 1259. The Prior and Convent consisted of Preaching Friars † otherwise called (from their outer habit) Black Friars. Although a Mendicant Order, these Friars possessed lands. For a history of the Friary, description of its site, &c., and account of the recovery of its seal, see Spry (*R. I. of C. Report for 1840*, p. 40), Dr. Lanyon (*Idem.* for 1847, p. 57) and the remarks (at page 13) preceding his paper; Haslam (*Idem.* p. 61); Dr. Oliver (*Mon: 1846*, p. 67 with Plate, also additional supplement 1854, p. 8); Dunkin (*Testamenta Cornubiensia*, A.D., 1374, &c., pp. 1, 5, 8, 13, 23), and Worth.

1. Seal. The brass or bronze matrix was found, 1842, in the garden of Sturry Vicarage near Canterbury ‡, and is now in the Museum at Truro. The seal makes a fine impression. The figure is that of our Lord, clothed in a girt garment and a robe of flowing folds, seated on a throne (without canopy) somewhat resembling an altar. Two of the fingers of the right hand are held up in benediction. The left hand is closed upon the top of a clasped book set erect. A circular nimbus (with its cross) is about the head. The seal is boldly cut, the features and hair, especially, being beautifully wrought. Hitherto the legend has scarcely been stated with exactness. In Dr. Oliver’s otherwise excellent illustration of the seal, S’ (for Sigillum), and the cross of the nimbus

* St. Dominic, founder of the order, died in 1221. The order was almost immediately introduced not only into Oxford but also into the Diocese of Exeter. There were eventually, it is said, 53 houses in England and 5 in Wales.

† The objects of this order now claim special attention from the fact that at Truro, of late years, a band of missionaries has been established, in connection with the Cathedral, for preaching throughout the Diocese.

‡ It is remarkable that not only has *this* seal been unearthed accidentally, as described, but the seal of the English Provincial Prior of the same order has *also* been discovered. In 1851, it was found in the Wall of a Stable at Pembroke, and passed into Lord Cawdor’s possession. Upon it is displayed the Blessed Virgin with the Holy Infant on her right arm. The legend is :—

SIGILLV̄ · PRIOĒ · PROVINCIALIS · ANGLIE · ORDINIS · FRATR̄V̄
PREDICATORVM ·

See Oliver (*Mon: Additional Supplement*, p. 8).

are unfortunately omitted. The letters are Lombardic capitals, and the words are thus contracted :—

✠ S' 9VENT.' FRATRĪ P'DICATOR.' DE TRIVERV.
 (Sigillum Conventûs fratrum predicatorum de Triueru). The second character stands for CON, and cannot be shewn (as clearly as could be desired) with ordinary type.

The seal is a smooth plate of metal, $\frac{1}{8}$ of an inch in thickness, $1\frac{7}{8}$ inches long, by $1\frac{1}{4}$ inches wide. On the back was originally, from end to end, a raised flat piece of similar metal for handle, (like that on the seal of St. Lawrence yet to be described). It has been removed, and filed down to a level with the back of the seal—which is now quite flat.

BODMIN Franciscan Friary, founded in the 13th century. The modern Assize Courts are built upon part of its site. Mention of its Conventual Church * occurs as early as 1253, see Maclean (Trigg Minor, vol. 1, p. 188). St. Francis, of Assissi, who originated this order of Friars, desired that poverty and humility should be their rule. Consequently the titles of Abbot and Prior were avoided, and each confraternity described itself as consisting of "fraterculi" or "fratres minores," Friars Minors, under a "Guardianus" or Warden. By others they were called (from their habit) Grey Friars.†

England was divided by the Franciscans into seven Custodies, each containing several of their houses. Bodmin Friary and nine others were in the Bristol Custody. Concerning legacies left to this Friary, see Dunkin, (Test : Cornub : pp. 1, 9, 14, 23).

1. Seal ? In all probability Bodmin Friary possessed a seal, for the Franciscan Friary at Exeter, which belonged to the same custody or group, used a common seal as early as 1266. The seals appended to deeds from time to time by the Guardian and his

* Oliver, apparently in error states that it was dedicated to St. Nicholas. A chapel named after that saint stood not very far from it, see Wallis (Cornwall Register, p. 205).

† A most interesting account of the Franciscans is given by Sir John Maclean in his work, to which reference has been made above.

For concise particulars of the habits and rules of the various orders, see Boutell (Manual of Archæology, p. 354, &c).

brethren at Exeter, were ornamented with sacred effigies, and words to this effect:—"Sigillum conventus fratrum minorum Exonie," see Oliver (Mon : pp. 331, 333, Plate, &c). It does not appear that any seals of Bodmin Friary have yet been found, but doubtless one or more existed, bearing some legend similar to that just quoted, except as to local term.

ST. LAURENCE DE PONTEBOY (or Penpoy, &c.), juxta Bodmin, Lepers' Hospital. (Dedication, St. Laurence, Deacon and Martyr). Founded probably in the 13th century,—perhaps through the efforts of the Franciscans.

A "Bailiff of the Leppers of Bodmin" is named in 1302. The chapel was consecrated in 1382. Concerning the terrible scourge of leprosy, and the history of this Alms-house or Lazar-priory with its Bailiff, Prior, Governor or Master, its Chaplains, Brethren and Sisters, who, all told, were at one time as many as forty, see Sir John Maclean's excellent account (Trigg Minor, vol. 1, p. 193, &c.), also see Babington, Smirke, and Way, (*R. I. of C. Journal*, Vol. 3, p. 21), Oliver (Mon : p. 15), Lake's Hist. Cornwall, (vol. 1, pp. 80, 100); Dunkin (Test. Cornub., p. 8).

The name of the village in which these "poor lepers" dwelt, has been written variously,—Pontaboyes, Pont Boye, &c.,—but seems to have been intended for Pont-de-bois, Wood-bridge. There is now a stone bridge at the place. The Hospital received gifts of lands, and a charter, and was allowed a market and fairs. Its revenues escaped the spoliation of religious houses, but passed in modern times to the Infirmary at Truro, which in consequence is bound to receive a leper or lepers, if required.

1. Seal. The figure of the saint (holding the gridiron) is of more grim aspect than appears in the engraving in "*Archæologia Cambrensis*" (vol. 9, 3rd series, p. 177). The same woodcut appears in *R. I. of C. Journal* (vol. 3, p. 32), and in Maclean's "*Trigg Minor*" (vol. 1, p. 197). In other respects the representation is very correct. For another view of the seal see Lysons' "*Supplementary Plates of Cornish Seals*," rarely found in copies of the "*Magna*

Britannia." This engraving, otherwise good, unfortunately omits the *y* from Penpoy. In judging the age of the seal it should be compared with the engraving on the same page shewing the seal of St. Leonard's, Gilmartin, which strikingly resembles it in canopy and other details.

The matrix is of brass. It measures $2\frac{1}{10}$ by $1\frac{3}{10}$ inches, and is about $\frac{1}{20}$ of an inch in thickness. From point to point along the flat back extends a perpendicular plate or ridge somewhat thicker than the seal. At one place this is raised (near the lower point of the seal) so as to form a half disc, through which is bored a hole, either for the attachment of some other sort of handle, or simply for the purpose of suspension. This plate, on the back, rises but slightly at each extremity and about $\frac{3}{5}$ of an inch at the pierced part. After the transfer of the hospital estate, the seal was accidentally sold with other old brass, in Bodmin, and was bought by the late Mr. R. Bray, town clerk. It is now in the possession of Mr. J. B. Collins, to whose courtesy I am indebted for an examination of it, as well as of other seals already mentioned.

In Mr. Worth's description of this Seal T is misprinted for C in the legend.

ST. ANTHONY'S Hospital, BODMIN. Mentioned in 1500. The site is now occupied by Coombery, a modern residence, in Chapel Lane. The history of the Hospital with its Chapel is unknown. See Wallis (Cornwall Register, p. 205), also Lysons, Maclean, &c., and Oliver (Mon : p 15).

Whether it possessed a seal or not is uncertain. A beautiful seal, preserved in another part of England, adorned with figures of St Anthony (with Tau-cross and pig), and St. Dunstan, Archbishop, (with hammer and pincers), was at one time supposed to relate to it, but eventually it was found to belong to the hospital of St. Anthony de Hodstun.

ST. GEORGE'S Hospital, BODMIN. Mentioned in 1405, 1432, 1500, &c. Very little is known of this house or of its chapel.

The site has not been traced. As the Inn "George and Dragon" stands near the Assize Courts on the way to St. Nicholas, it has been thought that perhaps St. George's stood somewhere in that locality. See Maclean (*Trigg Minor*, vol. 1, p. 198), Oliver (*Mon* : p. 15), &c. A guild presently to be noticed, was associated with it.

Whether it possessed a seal, or not, is uncertain.

St. LEONARD'S Hospital for Lepers, LAUNCESTON ; and afterwards. . . . DE INT'AQUAS, Gilmartin, in or near Lawhitton parish. This establishment, with its Chapel (Dedicated to St. Leonard), existed at an early date in Launceston. Subsequently, in the 13th century, the community removed to "a place amongst the waters," named Gillemartin, where also was a Chapel with its cemetery. In the charter of the Prior of Launceston granted to the Lepers in or about the year 1257, the boundaries of this new settlement are described. They were the river Tamar, the water of Kensie, a certain spring with its stream, &c., &c. Probably the place now named St. Leonard's in Lawhitton, just across the division of parishes towards Poulston Bridge, approximately indicates the site. The Launceston Priory gave alms to the "poor lepers" of this hospital, and made provision for its chaplain. There was a Prior of this house. See Oliver (*Mon* : pp. 22, 25, No. VI, and 28).

1. Seal. An engraving of this appears in Lysons' *Magna Britannia* (supplementary plate). St. Leonard is shewn standing, habited in mediæval vestments, holding pastoral staff in left hand, crook outward, and raising in benediction two fingers of his unlifted right hand. His mitre, if such it be, much resembles the cap with ornamented band upon the head of St. Lawrence in the Seal of the Bodmin lazaret house. The cusped canopy with its pillars and other details, including two branches of foliage, one at each side, are also strikingly similar to those on that seal. Judging from the engraving the two seals appear to be of the same age. The seal of St. Leonard's was made after the migration from Launceston to Gilmartin, as is evident not only from the

workmanship, but from the description of the locality which appears in the border legend :—

SIGILLVM · HOSPITAL̄ · SCI LEONARDI :
DE · INT AQVAS.

The matrix, Lysons states, was “ in the possession of the Rev. F. V. Jago ” (the Rector of Landulph, who assumed the additional surname of Arundell).

ST. THOMAS'S Hospital for Lepers, NEWPORT, juxta Launceston. Oliver (Mon : p. 22) states that this was well endowed and governed in Carew's time.

No seal of this house is known to exist.

ST. MARGARET'S juxta Launceston, Hospital for Lepers. Mentioned (according to Dunkin) in a Latin codicil, dated 1419, annexed to the Will of John Megre, citizen of London, pewterer (Test : Cornub : p. 9). After bequeathing tweldepence “ to be divided amongst the lepers of the Chapel of St. Laurence by Bodmin,” he gave, in similar terms, ninepence “ to be divided amongst the lepers of the Church of St. Margaret by Launston.” This ecclesiastical house of charity does not seem to have been noticed by other writers, but it must have existed unless a mistake has been made with regard to its name. If that be the case, either St. Leonard's or St. Thomas's, just referred to, may have been intended ; but perhaps the record is right, No seal of this house is known.

LAMPOR, juxta Lostwithiel. This also, as a Hospital for Lepers, is mentioned in the same codicil of 1419, but no ecclesia or capella is included in its title. John Megre bequeaths ninepence “ to be divided amongst the lepers at Lampor by Lost Twethyell.” This house likewise seems to have escaped previous notice. Can it be possible that the words “ Lampor, Lost-twethyell,” were written (in error) for “ Newport, Launceston,” where stood a lazar house to which reference has been made already ? It is scarcely likely that such an error would occur. No seal of Lampor Hospital is known.

SHIPPSTALL, in Cornwall. Another abode of Lepers, named by the same John Megre. His words appear thus :—
“ Item lego cuilibet lazari apud Shippstall in dicto comitatu

vj^d” (Test : Cornub : p. 8). No further notice of the place appears, and no seal of it is known.

St. MARGARET’S, juxta Helston. This, according to the same document, was another Hospital in which were Lepers. Megre’s words are thus given :—“ Item lego cuilibet lazari ecclesie Sancte Margarete juxta Helston in comitatu Cornubie vj^d.” Nothing more appears concerning it. The dedications in the town were St. Michael, and Our Lady. There was also the hospital of St. Mary Magdalen close by (see next paragraph), the question therefore arises, was that the one intended in Megre’s codicil, or was there a St. Margaret’s also? No seal of St. Margaret’s is known.

St. MARY MAGDALEN’S, afterwards St. JOHN THE BAPTIST’S, juxta Helston. This hospital was in Sithney, in proximity to Helston. One of its Priors has been mentioned by Lysons (Mag : Brit : III. p. 28^v), and another by Oliver (Mon : p. 72). The Hospital existed in 1411. John Megre may have alluded to it, if he miscalled it St. Margaret’s (see above). No seal of it is known.

St. MARY MAGDALEN’S, usually called Maudlin, in Menheniot, juxta Liskeard. Hospital for Lepers. See Tanner (Notitia Monastica), Oliver (Mon : p. 72), Lysons (Mag : Br : III. p. 225), Lake’s Hist : of Cornwall (vol. 3, pp. 143, 316). About the year 1400, a Papal Indulgence was granted concerning this hospital. In 1419, John Megre bequeathed ninepence “ to be divided amongst the Lepers at Leskyrd.” The seal is not found.

GUILDS and other FRATERNITIES (in addition to the societies already described) existed in connection with the Church in Cornwall, although their objects were not of a specially ecclesiastical nature.

The leading Burgesses of each Borough, elected to be a Council of Management, may be regarded as having formed a municipal Guild,—the Mayor (or Prepositus) and his brethren, meeting in their Guildhall, using, as a corporate body, a common seal, attending, in state procession, the Parish Church, and contributing from their common chest to its support. Other Guilds were

established by the members of separate Trades, &c., for mutual aid, in conjunction with the upholding of the church and participation in church privileges. Sir John Maclean has thus written on the subject :—

“Guilds, or as we prefer to write it, Gilds, were very numerous in the middle ages, and formed the centre of Religious life in many a town and village. They embraced all degrees of men and women, from the noble to the peasant. All were equally brethren and sisteren, under the gild habit. These fraternities were instituted for the promotion of the glory of God, and for the benefit of mankind, by acts of love and kindness to one another, and moreover for the cultivation of a religious life; serving in every respect the purpose of our benefit societies, clothing clubs, &c. ; but they were something more—for they were formed and conducted upon a more religious basis.”

There were a large number of gilds in Bodmin, which were greatly instrumental in rebuilding the church there, in 1469-72. An account of them will be found in Maclean's Hist : of Trigg Minor Deanery, (Vol : 1, p. 198, and Vol : 3, p. 419), also in Wilkinson's Bodmin Church Building Receipts and Expenses in 1469, &c., (published by the Camden Society, 1874). These Gilds were dedicated to God and various Saints and were attached to the Church of St. Petrock, in which they had special or separate altars, and to sundry Chapels, *e.g.*, those of St. Thomas the Martyr in the Churchyard, the Holy Rood at the Bery, St. George's, St. Leonard's, and some appear to have been without special location. The Gilds were under the direction of Wardens.

The Gild of St. Petrock was that of the skimmers and glovers.

The Gild of Saints Dunstan and Eloy, that of the smiths.

The Gild of St. Anian the Bishop, that of the cordwainers,

The Gild of St. Martin the Bishop, that of the millers or mill-wrights. There were also very many more in Bodmin.

There was at Blisland “the Gilde of the Blessed Mary of Bliston,”

In St. Keverne Church “the Fraternity of All Saints,”

At Davidstow “the Fraternyte of our Ladye of Dewstowe.”

The Chantry Rolls, see Oliver, (Mon: p. 472, &c.) give interesting particulars of guilds, brotherhoods, &c., in Devon and Cornwall, showing that some were incorporated, and explaining some of their objects. For instance, we read that at St. Mary Arches in Exeter was "a fraternyte called the Wevers and Tuckers, founded by the Weavers and Tuckers of the city, incorporated by the mayor, &c., To find a pryst to pray for the brethren and benefactors of the fraternitye in the parish church aforesaid. The yerelye value of the lands and possessions, owt of which sayd pryst to be payd, vj^{li}. vj^d." At Totnes "the Guylde called Jesus Guylde" was founded "to find a pryste to praye for the brethren and benefactors and to helpe to mynystre in ye parish church." Some fraternities also promoted education. But these examples must suffice. The Cornish Guilds are not described as incorporated, and Borough Seals cannot be included in an Ecclesiastical account.

No Seals are known to have belonged to any of the Church Guilds of Cornwall.

APPENDIX.

EXTERIOR SEALS, OF ECCLESIASTICAL CHARACTER, FOUND IN CORNWALL.

Although the following cannot be classed as ecclesiastical Seals of Cornwall, they claim notice as occurring in the County.

BULLA of POPE URBAN VI, whose Pontificate lasted from 1378 to 1389, but in opposition to whom (on account of his severity) the Cardinals chose, as Pope, Robert of Geneva with the title of Clement VII, thus creating a schism which was continued for many years under succeeding Pontiffs.

The Bulla was dug up near the ruins of St. Saviour's Chapel, by Polruan, in Lanteglos parish opposite Fowey, in or before the year 1845, as appear from a MS. note by Wallis (who adds "the North tower of St. Saviour's fell, 20 March, 1825"). This bulla is now in the Museum at Truro, having been presented by Dr. Lanyon in 1847. See his notice of it in *R. I. of C. Report* for that year (p. 57). See also Wallis's *Cornwall Register* (p. 374).

Hitherto no description of this seal has been given. It is a leaden disc, about $1\frac{1}{2}$ inches in diameter, and about $\frac{1}{4}$ of an inch thick. It is stamped on both sides, and was so struck as to enclose the cords (said to have been of silk) which, passing through it, attached it to the document—which has perished. The hole, left by the cords, extends through the seal from top to bottom.

Obverse,—Within a circle of dots, a cross rising from a base which is contiguous to the lowest part of the circle, the top of the cross reaching to the middle of the seal. On either side of this are two dotted enclosures, intended for nimbi, containing the heads of St. Paul and St. Peter, respectively, dexter and sinister. Above these are the following letters SPASPE (for Sanctus Paulus, Sanctus Petrus). St. Paul is shewn with straight hair and long pointed beard, whilst St. Peter appears with his short and crisp.

Reverse,—Within a dotted circle, the Pope's title in thick Lombardic capitals, the words being interspersed with minute Roman symbols. The arrangement of them being in the following order :—

A small eagle's head erased at neck. **URB**

ANUS. Another small eagle's head erased.

Another such head erased, **PP**, another erased head, **VI.**

A small spread eagle. Another small spread eagle.

A plate illustrating Papal Bulls, with very similar seals (but without the eagles), may be seen in Astle's "Origin and progress of Writing" (p. 158).

SEAL of a PARIS Confraternity, dug up in St. Burian parish. It has been noticed and figured by Blight (Ancient Crosses, &c., in West Cornwall, p. 63), and described by him as being in Mr. J. J. A. Boase's possession. According to the engraving the legend appears to be,

S : ofraternitatis : ocepconis. hte : m : o. d : sci : augustini : parisias.

(The Seal of the Confraternity of the Conception of the Blessed Mary, of the Order of St. Augustine, Paris). This inscription is

specially noteworthy as twice displaying that particular form of abbreviation for **Con** which occurs also on the seal of Truro Friary.

A **SECRETUM**, or private seal, with religious legend. This small tapering bronze or latten seal, with circular face $\frac{3}{4}$ of an inch in diameter, was found in 1868 or '9 at Mentikel Point, Pradanack Head, Mullion. It was exhibited at a Meeting of the Royal Institution of Cornwall, some years ago, and is, therefore noticed in one of the Reports of Proceedings. The legend at that time was only incorrectly guessed at, but an engraving and accounts of the seal have since appeared, shewing that its inscription is,—**IHC VANGIES TOI**,—a mixture of the sacred Monogram with old French, signifying "Jesus avenge Thyself!" The form of the G is peculiar, resembling a Greek "Gamma." In the central space of the seal three lines meet in a point, the head of the upper one being formed into a cross for the commencement of the marginal part of the legend. The seal is supposed to date from late 14th to early 15th century. See Brit: Archæol: Jl. (for 1874), and Cumming's Cury and Gunwalloe Churches (p. 194), where the seal is shewn.

Another **SECRETUM**, very similar to the last in size and workmanship. This one was formerly at Bodmin, in the late Mr. Burton's possession. Its design is the "Agnus Dei." The Holy Lamb bears the vexillum to which there are three points. The staff of it terminates above in an initial cross for the border legend, as on the other seal. The words around the margin are these, viz: **PR DIVE-SN**, in Lombardic capitals. Explanations of the meaning have been offered, but not one yet that is wholly satisfactory. A solution is therefore invited.

Ecclesiastical **SIGNET**, found in Cornwall. An **ORIENTAL** silver ring set with an oblong sard engraved with Agnus Dei, cross, &c., and an inscription believed to be Servian. Mr. Tregellas described it (*R. I. of C. Jl.* vol. 5, p. 154) as having been discovered in a field near Budock Church some years ago. He has presented impressions of it to the Museum at Truro. It probably belonged to an ecclesiastic of the Greek Church.

A D D E N D A .

The foregoing account is intended to serve as a clue towards tracing,—in connection with this western region,—such Seals, or notices of them, as reflect the history of the Universal Church and the Cornish branch of it.

The following notes will help to illustrate what has been written :—

- Page 31. (Cuddenbeak, in St. German's, as a Bishop's residence).*
 In 1445, Edmund Lacy, Bishop of Exeter, dated a letter thus :—"apud Cothynbeke" "in manerio nostro de Cothynbeke." (Oliver's Mon: p. 51, No. vi).
- P. 31. (Suffragan Bishops).*
 Thomas Vivian, Prior of Bodmin, Bishop of Megara, who died 1533, and William Collumpton, Prior of Exeter, Vicar of Probus, Bishop of Hippo, who died 1559, both acted as assistants to the Bishop of Exeter. (Wallis's Cornwall Register, pp. 16, 18, 36). The Episcopal Seal of the former has been noticed; that of the latter should be sought.
- P. 32. (Convents, &c).*
 Carew and some other historians have given very incorrect lists of the religious establishments in Cornwall. Dr. Oliver relied chiefly on entries in the Episcopal Registers and other original documents; but he states that the Registers do not commence till 1257, and that there is a gap of 14 years (from 1292 to 1306), during which time some entries now lost were made, which would have proved of value had they been preserved.
- P. 32. (Alien Priory Cells, and Houses of Mendicant Orders).*
 For obvious reasons the former were generally near the coast, the latter in towns.
- Pp. 32 and 45. (Knights' Preceptories).*
 Besides the Preceptory or small Abbey of the Templars, at Temple, (called by Oliver "Templo

Grafton"),—there was a Preceptory of the *Hospitallers* at Trebigh in St. Ive. Oliver, after appearing to exclude it by the words of his Preface, thus alludes to it afterwards (Mon: p. 439):—"At Treby was formerly a Cell dependent on St. John's at Jerusalem." It is also mentioned by other writers. No Seal of it is known.

P. 46. (St Benet's.)

In 1430, St. Benet's Chapel is thus mentioned in the will of Andrew Lanvyan, Rector of Lanivet:—"Lego ad fabricam capelle Sancti Benedicti, infra dictam parochiam situate, xx^s (Dunkin's Test: Cornub: p. 17). An interesting view of St. Benet's, as it was, is given in Lyson's Cornwall (Mag: Brit: Vol. 3).

Pp. 46 and 47. (Nunneries.)

Besides St. Benet's and Credis, which—with Lanherne—have already been discussed, the following are mentioned more or less doubtfully by Lysons. See Mag: Brit: (Vol: 3, Cornwall, pp. xxxv, 343):—The Nunnery of the Poor Clares at Liskeard, where "Great Place" with its chapel, now a bake-house, is regarded as the site; The Nunnery of the same Order at Truro, where the late "King's Head" Inn marked the spot, till it was pulled down to open a way up the newly-built Lemon Street from Boscawen Street; A third Poor Clares' House at Tresillian Bridge in Merther; A Nunnery at Hellnoweth (Newhall) in St. Martin's, Meneage; One at Trugan in St. Michael Penkivel; and another (of the Gilbertines) on St. Michael's Mount. All these, according to Lysons, have no documentary or seal proof of ever having existed. They are therefore dismissed by Oliver as imaginary.

There seems, however, to have been a Nunnery in St. Ewe, during the time that Lanhadron was possessed by the Arundells. Part of the road by Lanhadron is still called Nunnery Hill. (*R. I. of C. Jl., vol. 6, p. 397*).

P. 49. (Great Priors, &c).

The History of the chief Convents has been so fully written by those to whom references have been given, that it is unnecessary to describe them further.

Ep. 47 and 49. (Bodmin, Padstow, and Rialton).

Bodmin otherwise Bodmyn, Bodman, &c.

Undoubtedly "Bod" is abode, but when an attempt is made to decide the meaning of "myn" or "man" many Celtic words besides "manach" claim attention.

The old language warrants the statement that if the designation did not originally signify "the monks' abode" it might have meant "Hill-dwelling (Bod-mynydh), or Stone-house (Bod-maen), &c." (See Bannister, Maclean, Williams, and others). Petrockstow (Locus Petroci). This form of the name quite agrees with Bod-manach, and if it be its equivalent, it even gives the "manach's" name.

Lodenek or Aldstowe on the coast, likewise received the name Petrock's-stowe (its Church is dedicated to that Saint), and is now merely by corruption of the term, called Padstow whilst the chief Petrockstowe has entirely reverted to its old name of Bodmin.

For Rialton sculptures and Prior Vivian's Tomb, see *R. I. of C. Jl.*, vol. 5, p. 342, &c).

The modern Priory of Bodmin has this year (1884) received its first seal, or rather stamp, from Rome. It has been designed according to the representation of the old Seal in Oliver's Monasticon. It is of brass and gives in outline the figures of the Holy Infant and of *S. Maria*, in one niche, and that of *S. Petroc* in the other, their names being beneath, and the old Priory Arms (3 salmon) on a shield below. The new legend is:—

Sigil · Can · Reg · Lat · Priorat · S̄c̄e Mariae et
S̄ci Petroci de Bodmyn.

This brass stamp, equivalent to a seal, was obtained for the Bodmin Prior by his Superior D. Luigi Santini, Abate Com. Generale dei Canonici Regolari Lateranensi. (S. Pietro in Vincoli, Rome).

P. 50. (St. German's).

Curses, &c. The late Sir Ed. Smirke considered that Walter Bodulgate, in fortifying his Deed of Mass-endowment in 1435, was indebted to the Priory of St. Germans not only for the loan of the beautiful seal of John Haukyn, the Prior, but also for the unusually complete form of curse which accompanies its impression.

The non-fulfilment of the trust was to subject the offender, whoever he might be, to the gravest penalties.

The words may be thus translated (keeping as nearly as possible to the Latin sounds):—"I the aforesaid Walter, in the presence of God Almighty and his Saints, pray that whosoever shall be found culpable, concerning this matter, in the Day of Final Judgment, may answer for it to me...and that his soul may go to the place where there shall be weeping and gnashing of teeth; groaning and shrieking; lamentation, mourning and excruciation; din and clamour; fear and tremor; grief and labor; heat and stench; obscurity and anxiety; acerbity and asperity; calamity and want; extremity and sadness; oblivion and confusion; tortures and punishments; bitterness and terrors; hunger and thirst; cold; brimstone and fire burning; through enduring ages of ages, for ever."

This painful catalogue of impending torments may be compared with the brief but expressive entries, of earlier date, which occur in the manumissions recorded (circa 950), in the Bodmin Priory Book of Gospels, (printed in different forms by Davies Gilbert, Wallis, and Oliver). A few quotations must suffice:—

“ Whosoever will infringe this . . . , let him be accursed, and whosoever shall defend it, may he be blessed ”

“ May he who breaks what is done have the curse of God and of St. Petree and of all the Saints of the Welkin.”

“ Whosoever shall infringe it let him be accursed from the Lord God of heaven and from his Angels.”

“ Let the point be settled in common between him and Christ, Amen.”

In 1266, this form was used by an Archdeacon (afterwards Dean of Exeter) :—

“ Whosoever shall presume to alter this my donation may he incur the malediction of Almighty God.”

See Oliver (Mon : p. 333).

P. 51. (Launceston Priory).

The circular seal, found attached to the surrender in the Augmentation Office, has been figured not only by Oliver but also by Lysons (see Plate in Mag : Brit :).

P. 51. (Tywardreath Priory).

Other impressions of Seals belonging to this Priory are mentioned by Oliver, in his Additional Supplement, 1854, (p. 5), and Lysons has figured a very old one (see Plate in Mag : Brit :) which may perhaps be the same as the oldest described by Oliver. There is, however, no cross in the right hand. It is held up in benediction. In the left is a book, and the legend is :—✠ SIGILLVM SCI ANDREE, in Lombardic capitals. The last two words appear in reversed letters running from right to left, down the dexter margin, from the top of the seal. It was attached to a 12th century Deed.

The Laocoon Seal used by Thomas Collyns, Prior of Tywardreath, in the 16th century, is very remarkable.

The impression shows that it was engraved perhaps two or three centuries before the Christian era,

and it displays probably the original shape of the famous Laocoon group of statuary. That group was found in the 16th century, in a mutilated condition, and was repaired in a different form. It is now in the Vatican. The impression of the seal is at Wardour Castle, and although it can scarcely be classed amongst the Ecclesiastical Seals of Cornwall, it is highly interesting in its connection with Art; and as illustrating certain influences associated with Tywardreath Priory.

For accounts relating to the engraved gem, see *R. I. of C. Jl.*, (vol. 3, No. X, p. xvi, and No. XI, p. xxix), *Archæological Journal* (vol. 24, p. 45) in which is an engraving of the seal twice the size of the original, *Oliver's Mon: (Addl: Suppl: p. 5)*, and *Maclean's Trigg Minor* (vol. 1, p. 325), in which the engraving again appears.

P. 53. (St. Michael's Mount).

The Marquess of Salisbury, according to *Oliver*, (*Mon: p. 30*), is in possession of the Register of this Priory.

P. 54. (Looe Island). St. Michael's Priory.

The Island has been called *St. Nicholas's Isle*. *Carew* called it *St. George's*. For further information concerning this cell see *Oliver* (*Mon: pp. 443, 484, under Talland*).

P. 58. (Colleges, Chantries, &c).

St. Columb.—*Dr. Oliver*, by his map and in his Preface (*Mon: p. v*), stated that there was no religious house or college here, but he afterwards (*pp. 485-8*) shewed that in *Arundell's Chapel* were five stipendary priests serving the parish Church, and there were other priests besides. He also refers to *Lysons* (*Mag: Brit: III. 65*), where we read that the Warden and four other *Arundell* priests probably resided by the Churchyard, and formed what *Hals* described as the College of Black Monks engaged in education; *Lysons* adds that the College house was burnt down by accident in 1701.

We may suppose that this College required no Seal.

Week St. Mary.—The College, as it has been called, founded by Dame Thomasine Perceval (née Bonaventure) was an endowed chantry and Grammar School. Compare Hawker (*Footprints in far Cornwall*, p. 80, &c) with Lysons (*Mag: Brit: pp. xxxv, 322*) and Oliver (*Mon: p. 483*).

For an account of the number and description of officers and other inmates of the various Colleges, Hospitals, &c, and for details concerning Deaneries, Prebends, Chantries, &c., see Oliver's *Monasticon* (pp. 483, 488), and H. M. Whitley's "Cornish Chantries" (*Truro Dioc: Kal: 1883, p. 72*). Mr. Whitley's other papers in the *R. I. of C. Jl.* on the miscellaneous property, &c., belonging to the monasteries and other religious establishments, are likewise extremely interesting.

P. 69. (*Guilds, &c.*)

At Stratton was a Guild of the Maidens of our Lady.

In Poundstock Church there was a fraternity. Thomas Haywode, Chaplain and Vicar of the Parish Church of Poundstock, in 1434, bequeathed to it the sum of iij^s iiij^d. (*Test: Cornub: p. 19*).

P. 70. (*Conclusion*).

Mediæval Seals were not all of the usual circular or double-pointed oval forms (see p. 34). Dr. Oliver has figured one used by the Dean and Chapter of Exeter in 1133 which, as seal and counterseal, on opposite sides of the wax, made one impression circular, and the other of spoon-bowl shape, *i.e.*, pointed at apex, and rounded at base (See Plate in his "Lives of the Bishops of Exeter"). He has also noticed the triangular Seal of a Treverbyn, engraved in the *Archæological Journal* (vol. X, p. 150). See *Monasticon* (*Addl: Suppl: p. 4*).

REMARKS ON MR. SOMERVAIL'S PAPER "ON THE GEOLOGICAL
STRUCTURE OF SOUTH CORNWALL."

By J. H. COLLINS, F.G.S.

In a paper under the above title, published in the 27th No. of the Journal of the Royal Institution of Cornwall, Mr. Somervail has criticised a paper which I brought before the Institution in 1881.* Mr. Somervail's paper was read after I had left England, but a reply to its most important statements was written by my son, who had accompanied me on many of my geological rambles—and was read at the same meeting. Here I was disposed to let the matter rest, but as Mr. Somervail's paper has now appeared in the Journal without my son's rejoinder, I must reply to the criticism myself

In the first place, let me say that I have nothing to withdraw. I adhere to all the statements made in the paper referred to, and I have corroborative evidence to bring forward in support of some of them. Furthermore—I do not propose to deal with the whole of Mr. Somervail's objections. I will confine my remarks to four only of the points raised by him, the four most important—viz: the age of the "Ladock Beds"; the existence of certain unconformabilities; the question of the Penryn "gneiss," and that of the age of the "Fowey Beds."

1.—*The Ladock Beds.*—These I have called somewhat doubtfully Devonian, regarding them as the marine equivalents of the Old Red Sandstone, as I said in my paper. I still believe that they are "the most recent stratified rocks of Central and West Cornwall, with the exception of certain stratified superficial deposits." In making these rocks Devonian I am in agreement with the Geological Survey Maps—and, so far as I know, with every writer on the subject except Mr. Somervail. It is difficult to make out what Mr. S. believes on this point, except that I am wrong. He says on page 268, paragraph 1, "Let me state that I consider it extremely doubtful if any of these Ladock Beds really belong to the Devonian at all." In the next paragraph he says "It is quite possible that the very highest

* The Geological Age of Central and West Cornwall—*Journ. R.I.C.* part I, vol. vii.

of these Ladock Beds may not be far from—or even form the base of the Devonian.” In the following paragraph on the same page he says, “I think we are fully justified in regarding these Ladock rocks simply as an upper portion of the Lower Silurian.” Finally, on the same page, the last paragraph, he says, “altogether I think it will be very clear to any physical geologist that, instead of these Ladock Beds forming as stated by Mr. Collins, ‘the most recent stratified rocks of Central and West Cornwall,’ they are in reality about the lowest in the county.”

How can these contradictory statements about one and the same series of beds be reconciled? How can beds be at once (1) “the lowest in the county,” (*i.e.* as low at least as the Llandeilo beds even according to Mr. S.); (2) “an upper portion of the Lower Silurian; (3) “the base of the Devonian.” Surely further comment on this point is needless.

2.—The Penryn “gneiss.” Referring to this rock my words were as follows—“A band of what appears to be true gneiss nearly half-a-mile in width, has also been developed in these Pre-silurian rocks near Penryn—close to the junction of the killas and granite.” Specimens of the rock were deposited in the Museum of the Royal Institution, and the exact locality was pointed out by Mr. Clark, who had frequently been my geological companion in that neighbourhood. Mr. Somervail says (p. 264) “the occurrence of a true gneiss. is a statement to which we take exception.”*

Mr. Somervail calls it a much metamorphosed rock, and refers its metamorphism to the action of the neighbouring granite. Without accepting this theory as to its origin, I, of course, agree that it is metamorphic—all modern geologists regard gneiss as metamorphic I believe—the question therefore narrows itself to the “aspect” and name of the rock in question. After Mr. Somervail’s flat denial of my statement had been read at the Meeting of the Royal Institution, and printed in the newspaper reports of that meeting, I set to work to analyse the rock (I had previously examined microscopic sections of it).

* In Mr. Somervail’s original paper the words were, “it approaches in no way whatever the aspect of a true gneiss, from which it is readily distinguishable even at first sight.” See *Royal Cornwall Gazette*, January 26th, 1883. I am glad to see that Mr. S. has been induced to tone his words down a little.

I also sent a piece of the rock to Professor Judd of the Royal School of Mines, requesting him to favour me with his opinion thereon. The following is the Analysis:—

	per cent.
Moisture	0·00
Combined Water	0·90
Silica	76·85*
Alumina	15·05
Ferric Oxide	0·50
Ferrous Oxide	1·80
Lime	0·10
Magnesia	0·10
Potash.. .. .	1·39
Soda	2·33
Loss	0·98
	<hr/>
	100·00
	<hr/>
Specific gravity	2·587

* Of this 1·05 per cent. soluble in acid.

Professor Judd's reply came to me through my son, and is to the following effect—"That of all the rocks with which he is acquainted it resembles most closely in characters, structure, and composition, the well-known rock of the Schutterisberg near Schemnitz, a rock which has been pretty generally described by petrographers as a "gneiss." He would call it almost indifferently a "mica-granulyte" or a fine-grained red gneiss." In another letter I learn that the Professor had found minute garnets in the specimen I had sent him. I too had seen garnets in the rock in some of the specimens (a very common accessory mineral in gneiss rocks), but had omitted to mention the fact to the Professor. I cannot think it necessary to say more on this point.

3.—*The Age of the Fowey Beds.*—Mr. Somervail condemns my *suggesting* that these may be Upper Silurian. He states that they are "charged with typical* forms belonging both to the Lower and Middle Devonian," and says further "I am not aware that any geologist of the present day besides Mr. Collins himself has attempted to identify them with the Upper Silurian."

* On my sketch map these beds are marked as Upper Silurian with a query (?). They were so marked originally in the text also, but the query (?) has been omitted by an error of the press, which I did not observe in time to correct.

In both these statements he is wrong, as will be shewn in a joint paper by myself and my son, which I offer to the Royal Institution with these remarks—and in which we discuss more in detail than has hitherto been done the geological age of these rocks. Our conclusions are quite different to those of Mr. S.

4.—*The unconformabilities.*—I infer the presence of unconformabilities of strata in many places on stratigraphical grounds, and I mention in my paper 5 or 6 places in which I have seen them. Mr. S. says that he has visited all these places and has failed to find them. I regret this, but re-assert that they exist nevertheless. I will now try to guide Mr. S. (or any other enquiring student) to *one* of these unconformities in such a manner that he cannot fail to find it if he looks once more. We will select as an example the unconformity * *near* the Nare Point in Meneage, of which I have given a diagrammatic sketch in fig. 2, plate A, and fig .5 plate B, of my paper.

Mr. Somervail says there is no such unconformability. His words are—(p. 266) It is distinctly interstratified and inclines at the same angle and in the same direction as the other beds. . . . its relations with the other strata are seen to be strictly conformable, forming along with other beds of conglomerate and slates an unbroken and consecutive series of beds.

Now let any one start from the Nare Point at low water, and examine the rocks between low and high water mark—and the low cliffs for half-a-mile to the eastward. By that time every geologist will be convinced of the existence of beds of conglomerate resting unconformably upon highly inclined slates.

I will not attempt to follow up what I consider to be all Mr. Somervail's minor objections to my paper, but I cannot help remarking that, having come to reside quite recently in West Cornwall, he has been over-hasty to conclude that what was not obvious to him in its geology had no existence—notwithstanding the statements of those who had made the district in question a special study for several years.

He also appears to have constantly ignored the important stratigraphical evidence derivable from "strike" and "dip,"

* My paper should have said "near" instead of "at," but it may be seen very near the point.

and to have adopted—in spite of the evidence of the strata in scores of exposures, the old and now exploded dogma that the stratified rocks bend around the respective granite masses in “great curves.”*

Rio Tinto, October, 1883.

* In two instances (pp. 270-271, Mr. S. proposes lines of section running for miles along the *strike* of the rocks, and in one of these he actually estimates the thickness of the series from such a section.

THE ANNUAL EXCURSION.

—o—

*The following account is taken chiefly from the "WESTERN MORNING NEWS,"
the proceedings being reported on September 14th and 15th.*

—o—

The annual excursion of the members of the Royal Institution of Cornwall took place on the 13th and 14th September, and the weather being fine and the company large, a pleasant and agreeable holiday was spent. The excursionists, according to their programme, met at Liskeard Station on the arrival of the up train shortly after nine o'clock in the morning, and were conducted by the Mayor, Mr. W. Polkinghorne, to his residence, where he entertained them at breakfast and exhibited the municipal regalia. The party then drove to St. Cleer, where the Church and Well were the prominent objects of interest. Having visited the Longstone, the Inscribed Monument at Redgate and the Hurlers, the Cheesewring was reached. The party subsequently proceeded to Kilmar, and afterwards lunched at the Phoenix Mines; full justice having been done to this particular feature of the programme, the Mayor of Liskeard gave an interesting explanation of the workings of the mines. At five o'clock the party returned to Liskeard Station and came on to Plymouth by the mail train. In the evening they were the guests of the Plymouth Institution at the Athenæum, where a large company of ladies and gentlemen assembled shortly after eight o'clock. The company included the Earl of Mount Edgcumbe, president of the Royal Institution of Cornwall; the Rev. Professor Chapman, president of the Plymouth Institution; the Rev. J. E. Risk, the Rev. W. Iago (Bodmin), the Rev. W. Sharman, Admiral Beechey, Dr. Jago (Truro), Messrs. W. Derry, R. G. Edmonds, Dr. Merrifield, W. J. Square, W. Polkinghorne (Mayor of Liskeard), C. Spence Bate, I. Latimer, R. N. Worth, S. Cater, Dr. Oxland, Captain Polkinghorne (St. Blazey), Dr. A. Pearse, Keen, S. Picken, Dr. Aldridge (Plymouth), H. Luscombe,

Ragget, E. G. Bennett, Major Parkyn, Hamilton James (Truro), E. Stribley, J. Penson, C. Radford, W. Square, Dr. Neild, Lewis, Taylor, Phillips, F. J. Webb, J. Hine, W. N. Carne (Falmouth), Colville Smith (Truro), W. Adams, R. H. Dawe, Balkwill, Bazley, J. C. Inglis, Harper, G. Jago, Brugmann, C. Jago, Walkem, A. J. Bond, A. Ryder, F. Lemann, and a large number of ladies. After coffee had been served to the company,

The Rev. Professor CHAPMAN remarked that it fell to his lot as president of the Plymouth Institution to express the great pleasure it afforded them to be honoured with the presence that evening of the members of the Royal Institution of Cornwall, and to assure them of the interest which they felt in that society. For reasons obvious to dwellers on both sides of the Tamar, the people of Plymouth were wont to think that what concerned the county of Cornwall also concerned them, more, perhaps, than any other part of England. This interest, arising out of geographical and commercial relations was, in their case, strengthened by the fact that the objects contemplated by the two Institutions were in many respects identical. Both sought by means of lectures, discussions, encouragement of private research, and the establishment of libraries and museums to extend and improve historical and scientific knowledge and to foster the cultivation of literature and art. (Hear, hear). Moreover, the society which found its home in that building rejoiced in having incorporated in its very constitution a distinctly Cornish element, for its full and proper designation was the Plymouth Institution and Devon and Cornwall Natural History Society. (Applause.) Not only were they thus constitutionally connected with Cornwall, but when he looked around the room and saw the portrait of that distinguished man, Dr. Tregelles, he was reminded that the Institution in the past, and also at the present, had been very greatly indebted to the neighbouring county for some of its most active and distinguished members, whose names were famous in the scientific world, and who by their researches in the various departments of literature and science had contributed very much to the advancement of its highest interests. (Applause). He trusted they would excuse these references. He made them in order to set forth what special reasons they had for gratification in having an oppor-

tunity of manifesting their regard for fellow-workers in the common enterprise of extending the area of human knowledge, and thereby promoting the welfare of our race. (Hear, hear.) On behalf of the officers, members, and associates of the Plymouth Institution, he afforded to the members of the Royal Institution of Cornwall a most cordial welcome. Long might his lordship be spared to enjoy the respect and honour which were borne to him on all sides, and continue to take a leading part in whatever tended to the best interests of the people, and long might the Royal Institution of Cornwall, of which the noble earl was the president, continue to advance those researches which in times past had added considerably to the stock of human knowledge, had given an impetus to the love of truth, and deepened the interest of Cornishmen in the history and resources of their own county. (Applause.)

The Earl of MOUNT EDGUMBE, in reply, sincerely thanked the President and members of the Plymouth Institution for their very cordial and hospitable reception of the members of the Institution with which he was at present associated as its president. The rev. gentleman had remarked that the objects of the two associations were identical, and he believed that to be entirely the fact. Their aims and objects were very similar in their character, and not only so, but he thought he might add that the subjects which formed the topics of consideration in both the institutes, the history of the two counties of Devon and Cornwall, both in their natural features and in their actual history, were also most closely connected; and he gladly acknowledged in the Plymouth Institution and Devon and Cornwall Natural History Society the point of union between the scientific and antiquarian researches of Cornwall and those of Devon. (Applause.) He was almost ashamed to confess that this was the first time that he, and probably many of those who accompanied him that evening, had seen the building in which they were now assembled since its museum was perfected. But he was sure they would all share with him the feeling that the arrangements of that museum were wonderfully perfect compared with anything of the kind that they had seen there before. (Hear, hear). Apart altogether from the special interest attaching to the contents of the museum itself he thought they could not help being struck with the manner in which those

contents were arranged and exhibited, and he had no doubt whatever that those who came from Cornwall would carry back with them many ideas which might assist them in adding to and improving their own exhibition at Truro. (Hear, hear.) They must all feel that nothing could do more to assist both Institutions in their respective researches than unity of feeling and mutual assistance such as he was convinced a meeting of that kind would largely tend to foster and continue. (Applause.) It would be a very great pleasure to those who had taken part in the excursion that day to meet the members of the Plymouth Institution, and any others who might have arranged to take part in the excursion which it proposed to hold on the morrow. It would be rather a holiday than an occasion for any very deep research of a scientific or archæological character, but they would all agree with him that meetings of this kind tended to an interchange of ideas which would doubtless continue to be of use to both societies. He hoped to return to-morrow the welcome which had been so generously given to them that evening.

Mr. R. N. WORTH, at the invitation of the president, then briefly explained the character and contents of the museum, and in the course of his remarks mentioned that they were indebted to Mr. Jewers for the shields which ran around the walls of the museum. Each shield illustrated either some family or some person connected with the history of Plymouth and its neighbourhood, or with the foundation of the Plymouth Institution, and for this reason they were exceedingly interesting.

During the evening the proceedings were pleasantly varied by some musical selections, rendered by Miss Marian McKenzie, who was in excellent voice, and sang in her best style. She was accompanied on the piano by Mr. J. Pardew, and the efforts of both these popular artistes were highly appreciated by the audience.

The second day was occupied by an excursion to Cotehele at the invitation of the President, the Earl of Mount Edgcumbe. The weather was all that could be desired—little wind, but the heat of a warm sun, tempered by light clouds, which slowly made their way across the sky. A large number of the party started from West Hoe Pier in the *Eleanor* about half-past ten, and they were joined by a still larger number, principally members

of the Royal Institution of Cornwall, who, with the Earl of Mount Edgcumbe, had been paying a visit to the Mount Edgcumbe Training-ship, near the Royal Albert Bridge, at Saltash. They immediately got on board the *Eleanor*, the band of the industrial ship, under Mr. Battishill, who has so capitally trained the boys, coming with them. Captain Knevitt, who has command of the Mount Edgcumbe, also made one of the party. The *Eleanor* then made straight for Cotehele, and when the party had landed the Earl of Mount Edgcumbe led through the wood, in order that a visit might be paid to the chapel, which is built upon the site where Sir Richard Edgcumbe, in the troublous times of Henry VII., hid from his enemies, and deceived them by throwing his cap into the river below. The road ascends the wooded acclivity upon which the house stands. The peeps of the river as it winds past Calstock, and the surrounding country, and the cool shade of the green woods are very much to be admired on such a day. When the site of the house was gained the company was joined by the Rev. Canon Buck and his son, the Rev. R. S. S. Buck, respectively the rector and curate of St. Dominic, the parish in which Cotehele is situated. Entering through the terraced gardens on the east of the house, the Earl of Mount Edgcumbe led the way to the main entrance of the quadrangle on the south side. His lordship himself imparted to the company the following information, pointing out the parts of the building alluded to :—

The principal part of the house as it now exists was built in the last twenty years of the 15th century, but there is evidence of some of the earlier building remaining. In the south front the gateway tower is of granite ashlar work, and seems to have been added to rubble masonry of an earlier date. The windows in the rubble masonry are of a simpler type. One of these small windows on the upper floor communicates, not with the room upon that floor, but it gives light through a chimney-like shaft into a dungeon, or place of concealment, on the ground floor. This entrance is through a granite archway, with a quaint ribbed roof, and a porter's lodge, and leads into a quadrangle, surrounded by the building on all four sides. The different dates of the building are here seen by the surrounding walls. On the west side are two doors and four small windows evidently

of the same date, whereas the double-light window, and two three-light windows are plainly of later insertion. So appears to be the four-centred archway which leads into the retainers' court. The east end of the Chapel, the gable of which appears in the north-west angle of the court, seems also to have been a later (perpendicular) addition, while the north side of the quadrangle has the appearance of being subsequently attached to the chapel. Leaving the quadrangle through the retainers' court, the west end of the chapel is seen surmounted by a singular little bell-cot, at the north-west angle of the exterior the great tower displays some cable moulding, and appears to be of later date. It was only in this northern portion of the building that until quite recently there were any large windows in the exterior of the house. The east front shews the only alterations the present noble owner has made in the exterior of the house. The wall here had been broken into by modern doors, when the house was used for farm purposes. In 1862 several large and appropriate windows were inserted and offices added.

At the conclusion of the ramble round the exterior of the house and through the grounds, his lordship conducted the party again through the quadrangle and into the great dining-hall upon the opposite side of the court. Here a splendid luncheon was laid for the visitors, who numbered in all about one hundred and twenty. The members and friends of the Royal Institution of Cornwall included the Earl of Mount Edgcumbe (president), the Hon. Athole Liddell, Col. Cocks, Treverbyn Vean; Rev. Canon Moor, St. Clements, Truro; Rev. J. A. Gregory, Rev. G. T. Bull, Treslothan; Rev. A. H. Malan, Perranarworthal; Rev. G. L. Church, Chacewater; Dr. Jago, F.R.S., Mrs. Jago and the Misses Jago (2), Truro; Mr. H. M. Jeffery, F.R.S., Falmouth; Mr. Jonathan Rashleigh, Mrs. and Miss Rashleigh, of Menabilly; and Miss Rose, Mullaghmore, Ireland; Mr. Alfred Fox and Mrs. Fox, and Mr. Robert Fox, Falmouth; Mr. W. Polkinghorne and Mrs. Polkinghorne, and Miss Gill, Liskeard; Capt. Polkinghorne, St. Blazey; Mr. C. Bainbridge Rendle and Mrs. Rendle, Liskeard; Mrs. Lewis Foster and Miss Foster, Liskeard; Miss Foster, Bodmin; Mr. and Mrs. Crace, London; Miss Emma Buller, Morval; Miss Bazley, and Mrs. Miller, Liskeard; Mr. W. Nettle and Mrs. Nettle, Mr. N. Hare and Miss Hare, Mrs. Polwhele, of Polwhele, and party; Mr. Naylor Carne, St.

Agnes; Mr. P. Colville Smith, Truro; Mr. E. G. Spry, Mr. Hamilton James, Mrs. James, and Miss James, of Truro; Mrs. James and Miss James, of Probus; Mrs. J. R. Paull, of Bosvigo; Miss Tom, Captain Bryant, Mr. John Barrett, Mr. Chas. Barrett, Miss Evans, Mr. and Mrs. Coopér Furniss, Mr. Vivian, Mr. E. Whitley, and Mr. Sylvanus Trevail, of Truro; Mr. Harry Tilly, Falmouth; Mr. W. Towan, Carhar-rack; Mrs. J. R. Collins, Bodmin; and Mr. Hockin, Mr. F. P. Langstone, Dr. West, Mrs. Ballard, Bodmin; the Misses Stokes, the Rev. W. Iago (local secretary) Bodmin, and Mrs. Iago; Major Parkyn (hon. secretary).

The Plymouth Institution was represented by the Rev. Professor Chapman (President) and Mrs. Chapman, Mr. R. N. Worth, F.G.S., and Miss Worth, Mr. D. Slater and Miss Slater, Dr. Merrifield and Mrs. Merrifield, Mr. J. C. Inglis, Mr. A. J. Jewers and Mrs. Jewers, Mr. Spence Bate, F.R.S., and Miss Bate, Mr. S. Cater, Mr. J. Hine, F.R.I.B.A., Dr. Oxland and Miss Oxland, Mr. F. H. Balkwill and Mrs. Balkwill, Mr. G. Jackson and Mrs. Jackson, Dr. Pearse, Mr. N. Power and Mrs. Power, Mr. F. J. Webb, F.G.S., Mr. Isaac Latimer, Mrs. Miall, Miss Marian Mackenzie.

After luncheon the Earl of MOUNT EDGCUMBE gave a very interesting account of the history of Cotehele and the Edgcumbe family. He read extracts and culled information from legal and other documents still in his possession, but which have never yet been made public. Local antiquaries and historians will therefore be interested to learn that his lordship has permitted the information he gave his guests at Cotehele to be printed in the transactions of the Royal Institution of Cornwall. They contain much information concerning the redoubtable Sir Richard who was the founder of the family's greatness in the reign of Henry VII. and Richard III. One incident mentioned will, at all events, be interesting to all general readers. During a brief period of calm Sir Richard was sent over to Ireland on the King's behalf to administer the oath of allegiance to the Irish nobles. They seem to have given him considerable trouble insomuch that "he did use fearful and terrible words against the Irishmen." Probably the members of the British House of Commons to-day will sympathise with him in that respect. The noble Earl also described the very interesting

antiquities with which the walls of this great hall are decorated. Then his lordship appointed four assistants and led the way in an inspection of the interior of the house.

The chapel at the north-west angle was first reached and was shewn by Colonel Cocks. The east window has recently been most ingeniously restored by Mr. Fouracre. It was formerly much mutilated and the glass misplaced, perhaps on purpose to prevent its destruction by Puritans. It represents the Crucifixion, angels catching the blood from the sacred wounds. The tracery represents the Annunciation. The south window, which represents St. Anne and St. Catherine, has also been restored. Two windows look into the chapel, one from the best bedroom on the north, and one from the priest's room on the south. There is also a square window at the west end, and an opening can be seen behind the seats on the south side of the chancel. Both these appear to have been intended to enable persons to see in who could not be admitted. The pavement in the chancel has been restored. The tiles are too glaring, but are in imitation of what the old floor really was. The screen is worthy of notice. The ceiling is Tudor, the lectern somewhat later, with the Edgecumbe arms carved on it. That which has been thought to be a font, and used as such, is really a corn grinder, or double mortar, with trunnions. There is a similar one at Alnwick Castle. A brass plate on the north wall is in memory of Caroline, Countess of Mount Edgecumbe, and opposite hangs a copy of the monument of Sir Richard Edgecumbe, who died at Morlaix in 1489. In a closet at the south-west corner is some old machinery for tolling the bell.

Mr. WORTH shewed the old dining-room, or, more properly, the withdrawing-room. There are fine brass fire-dogs in the grate. On the west wall is a painted Italian mirror, and on the north wall tapestry representing the death of Eurydice. There is some old china, and, what attracted most attention, the famous salt cellar which used to denote the division between those who sat above and those who sat below the salt. To this there is an anteroom or punch-room, as it has been called because the punch for court dinners was brewed there. The tapestry here represents boys employed in vintaging. There is an old earthenware costock or pilgrims' bottle on the window sill, and a specimen of Delft ware.

The Rev. W. JAGO showed a suite of rooms in the upper part of the house which seem formerly to have been in one, as there is a high roof over all of the same pattern as the roof of the dining-hall. From this there is a quartrefoil opening looking into the large hall and another into the chapel. It was probably a state bedroom for receptions, and there was a state bed in it. The tapestry in the first room represents Roman people and children at their games, and in the second room scenes from Roman history. Italian fire-dogs are in the fire-place, and on a table were displayed the housings and trappings believed to have belonged to the lady of the family, who was a maid of honour to Queen Elizabeth; and also a saddle supposed to have been ridden on in procession to Westminster in 1660 at an installation of knights of the garter. On the bed were three altar cloths adorned with figures of saints, of 14th or 15th century work.

The Rev. G. T. BULL shewed two of the most interesting rooms in the house known as Queen Anne's and King Charles's rooms. They are bedrooms in the upper part of the house, and contain all the old furniture and appointments in a wonderful state of preservation. Among the other remarkable articles in these rooms is a curious old polished steel mirror.

By the time the party had examined the house, it was necessary to hurry at once away to the steamer for Saltash, where the Cornish members of the company had to catch the train, going west at 5.15. As soon as the Eleanor had got well under way, and the Mount Edgecumbe band had played a parting air, Dr. JAGO, getting upon a seat amidships, proposed a vote of thanks to the Earl of Mount Edgecumbe for his kindness and hospitality. As a vice-president of the Royal Institution of Cornwall he thanked his lordship for his conduct during the two years he had been their president. He had not only been kind and liberal, but careful in the discharge of all the duties of the office.—Professor CHAPMAN, in seconding the proposition, as representing Plymouth, said they deemed it a very great favour to have been permitted to share in the excursion, and were especially indebted to his lordship for his generous and noble hospitality. There could be but one feeling of thankfulness for the kindly consideration and zealous devotion to their interests which his lordship had evinced that day. All had been made to

feel that in our land there was something grand, and good, and stable in having amongst us noble houses that held to the traditions of the past, and that were able and prepared also to take a leading part in all those matters that had to do with the development of the highest interests of the people. This and other points of the speeches were endorsed with hearty applause. Professor Chapman also alluded to the fact that his lordship was a member of the Plymouth Institution, and was thus the link that connected Cornwall and Plymouth that day.—The Rev. G. L. CHURCH interposed a few remarks, one of which was to the effect that there was not a Cornish heart that did not respect the Earl of Mount Edgcumbe, and Cornwall was proud of its Lord Lieutenant.—The noble EARL made a happy and characteristic response, the burden of which was that their pleasure had been his.—The Eleanor made good way down the river on a full tide; the ladies and gentlemen from Cornwall caught their train, the noble lord and his party left the ship in his lordship's steam launch, and a thoroughly pleasant and enjoyable day closed by the Eleanor landing the Plymouth members of the company at Millbay Pier at about a quarter-past five.

TABLE No. 1.

1883.	MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level.													Days.	Greatest range in any consecutive 24 hours.	Between which days it occurred.																
	Mean pressure corrected to 32 deg. Fahr. at sea level.			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 and minimum observed.		Corrected absolute minimum and maximum observed.		Extreme range for the month.		Mean diurnal range.		Greatest range from 9 a.m. to 9 p.m.		Day.		Greatest range in any consecutive 24 hours.		Between which days it occurred.	
	in.	3 p.m.	9 p.m.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.				in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	29.863	29.850	29.850	29.854	.004	29.850	29.850	.262	29.588	30.497	23	29.080	13	1.417	.158	.56	25	.56	23 & 24													
February	30.033	30.060	30.063	30.052	.003	30.049	30.837	.262	29.787	30.837	23	28.740	22	2.099	.170	.77	2	.77	1 & 2													
March	29.963	29.958	29.968	29.963	.007	29.956	30.650	.200	29.756	30.650	5	29.300	30	1.350	.128	.42	30	.63	29 & 30													
April	29.988	29.986	29.998	29.991	.004	29.987	30.596	.253	29.734	30.596	7	29.110	27	1.486	.094	.35	17	.67	17 & 18													
May	29.974	29.978	29.981	29.978	.003	29.975	30.374	.303	29.672	30.374	17	29.492	9	0.882	.064	.30	10	.38	9 & 10													
June	29.967	29.964	29.964	29.965	.001	29.964	30.451	.370	29.594	30.451	13	29.717	27	0.734	.041	.12	19	.23	10 & 11													
July	29.894	29.899	29.901	29.898	.002	29.896	30.289	.393	29.503	30.289	16	29.491	12	0.798	.073	.22	29	.32	15 & 16													
August	30.061	30.056	30.061	30.059	.004	30.055	30.311	.410	29.645	30.311	23	29.671	8	0.640	.050	.23	8	.28	14 & 15													
Sept.	29.840	29.847	29.847	29.845	.004	29.841	30.240	.396	29.445	30.240	12	28.550	2	1.690	.132	.69	1	.90	1 & 2													
Oct.	29.990	29.884	30.002	29.959	.006	29.953	30.503	.333	29.620	30.503	8	29.363	16	1.140	.096	.33	15	.43	3 & 4													
Nov.	29.857	29.844	29.864	29.852	.004	29.848	30.300	.280	29.508	30.300	28	28.994	25	1.306	.149	.49	3	.66	5 & 6													
Dec.	30.233	30.253	30.253	30.246	.003	30.243	30.659	.254	29.989	30.659	7	29.779	15	0.880	.093	.32	16	.50	15 & 16													
Means	29.972	29.965	29.979	29.972	.004	29.968	30.475	.309	29.659	30.475		29.274		1.202	.104	.40		.53														

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 (+0.008), Capillarity (+0.013), height above sea (43 feet), and temperature, have been applied.

TABLE No. 2.

1883.	MONTHLY MEANS OF THE THERMOMETER.												MASON'S HYGROMETER.				SELF REGISTERING.						ABSOLUTE.			
	9 a.m.		3 p.m.		9 p.m.		Mean of Dry Bulb.	Dry Bulb.	Mean of Wet Bulb.	Mean correction for diurnal range.	Mean 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.	Daily mean range.	Maximum.	Day.	Minimum.	Day.	Range.	
	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.																				Mean correction for diurnal range.
January	45.8	44.0	48.5	45.5	45.6	43.5	46.6	0.4	0.3	0.0	2.2	41.5	4.7	51.0	40.5	45.7	0.1	45.6	10.5	56.0	18	28.0	16	0	28.0	
February	44.0	42.5	48.8	45.8	44.0	44.0	46.1	0.7	0.5	4.8	1.8	41.5	3.9	52.0	38.5	45.2	0.1	45.1	13.5	56.0	14	27.0	13	0	29.0	
March	40.1	37.5	45.0	40.9	38.3	36.5	41.1	1.0	0.6	3.7	2.4	34.6	5.5	47.7	32.1	39.9	0.2	39.7	15.6	57.0	5	21.0	13	0	36.0	
April	49.5	45.6	52.9	47.6	45.6	43.6	49.3	1.6	1.3	4.4	3.4	40.6	7.1	56.5	37.3	46.9	0.1	46.8	19.2	65.0	12	28.0	1	0	37.0	
May	55.0	50.2	57.3	51.6	50.7	48.6	54.3	2.3	1.4	4.8	3.3	45.3	6.7	60.7	43.0	51.8	0.8	51.0	17.7	78.0	16	28.0	6	0	50.0	
June	59.0	55.0	62.3	56.6	55.8	53.5	59.0	2.9	1.7	5.3	2.8	50.7	5.4	66.5	49.5	58.0	0.3	57.7	17.0	78.0	5	40.0	21	0	38.0	
July	59.6	56.0	62.4	57.3	56.5	54.5	59.5	2.1	1.2	5.4	2.7	52.3	5.1	66.5	53.2	59.8	0.3	59.5	13.3	71.0	28	48.0	15	0	23.0	
August	61.8	57.4	65.2	59.2	58.0	56.2	61.7	2.0	1.2	5.6	3.3	53.5	6.2	69.7	52.8	61.2	0.3	60.9	16.9	77.0	26	40.0	19	0	37.0	
Sept	58.0	55.3	61.8	57.0	56.0	54.2	58.6	1.7	0.9	5.4	2.3	52.5	4.4	64.6	52.0	58.3	0.2	58.1	12.6	71.0	19	44.0	12	0	27.0	
Oct	53.4	50.5	56.0	52.5	52.0	50.0	53.8	0.8	0.6	5.0	2.6	47.8	5.2	58.8	47.5	53.1	0.4	52.7	11.3	65.0	10	31.0	21	0	34.0	
Nov.	46.8	44.9	51.4	48.2	47.2	45.6	48.5	0.6	0.5	4.5	2.2	43.3	4.6	54.2	41.9	48.0	0.1	47.9	12.3	58.0	28	26.0	15	0	32.0	
Dec	43.9	42.0	47.0	44.7	44.1	42.8	45.0	0.2	0.3	4.2	1.9	40.7	4.1	49.8	40.2	45.0	0.0	45.0	9.6	55.0	14	26.0	8	0	29.0	
Means	51.4	48.4	54.9	50.6	49.6	47.7	52.0	1.4	0.9	4.8	2.6	45.4	5.2	58.2	44.0	51.1	0.2	50.8	14.1	65.6		32.2		0	33.4	

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.

1883.	WINDS.												AVERAGE FORCE.														
	E.			S.E.			S.			S.W.			W.			N.W.			N.			N.E.					
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.			
January	7	4	6	6	6	5	10	8	6	6	8	1	2	5	0	0	0	0	1	1	0	0	0	25	30	27	
February	2	0	0	2	5	4	12	8	13	3	6	6	6	7	0	0	0	0	0	0	0	0	19	28	22		
March ...	5	5	4	0	0	0	1	2	1	3	3	7	9	10	5	5	6	6	6	9	6	6	22	30	18		
April ...	9	6	8	4	4	3	4	3	6	4	5	2	3	7	2	3	1	2	2	2	2	1	19	28	15		
May ...	2	2	3	3	2	1	5	4	6	6	5	2	6	6	5	3	2	2	2	4	2	2	20	26	16		
June	5	6	6	2	2	0	6	6	8	3	2	5	10	11	9	0	0	0	0	0	0	0	23	25	16		
July	0	0	0	2	2	1	8	5	3	7	5	6	11	12	14	1	1	0	0	0	0	0	22	28	17		
August ...	2	2	2	1	1	0	6	3	3	6	7	9	7	9	9	1	1	2	0	0	0	0	17	24	10		
Sept.	2	1	2	2	7	4	9	4	7	1	8	8	7	9	0	1	1	1	0	0	0	0	20	27	18		
Oct.	4	4	5	3	5	3	6	3	3	6	6	5	8	9	0	1	1	3	2	2	2	2	21	26	19		
Nov.	4	4	2	2	2	2	8	10	8	5	4	9	8	11	0	0	0	0	1	1	2	2	19	26	20		
Dec.	4	4	4	3	3	3	2	3	3	4	5	8	13	9	2	3	3	2	2	2	1	1	18	24	19		
Total ...	46	38	42	26	39	26	79	65	74	52	64	62	81	90	103	16	18	16	21	16	15	24	32	21	26		
Means ...	42			30			35			73			59			91			17			17			20	27	18

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

TABLE 4.

1883.		WEATHER.																						
		AVERAGE CLOUDINESS.			RAINFALL.			Mean weight of vapour.			SUN.			Remarks.										
Month.		9 a.m.	3 p.m.	9 p.m.	Mean.	Rainfall in inches.		Greatest fall in 24 hours.		No. of days in which rain fell.		Mean weight of vapour.		Amount of water in a vertical column of air.		SUN.		Remarks.						
						Truro.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		in.	in.				
January		7.8	7.6	7.2	7.5	3.86	19	.64	14	3.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	20	73	20	Frost 6, 7, 16. Gale 8, 9, 24, 29. Hail 26. Remarkable Rain 25. Thunder Storm 17, 19, 23, 24. Gale 1, 9, 11, 14. Thunder Storm 1. Remarkable Rains 1, 9, 11.	
February		7.6	7.4	6.7	7.2	6.79	18	1.20	1	3.0	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	27	60	24	Frost 5, 8, 9, 10, 11, 12, 13, 16, 19, 20, 23, 24, 25. Gale 6, 7. Hail 17, 26, 27. Snow 7, 9, 16, 18.	
March		6.0	6.4	4.2	5.5	2.56	13	.66	13	2.3	0.6	0.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6	39	82	11	Frost 1, 8, 9, 11, 17, 19, 20. Hail 20.	
April		5.8	6.3	4.0	5.4	1.66	12	.52	26	2.9	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	39	85	5	Frost 6. Thunder Storm	
May		7.0	7.0	6.5	6.8	1.86	12	.33	11	3.4	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	39	80	13	Lightning seen Thunder not heard 3. Thunder heard Lightning not seen 24. Earthquake 2 p.m.	
June		7.2	6.6	6.0	6.6	2.82	16	.84	27	4.2	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	35	74	16	Thunder heard Lightning not seen 13. Thunder Storm 14. Hail 14, 21.	
July		7.5	7.2	6.6	7.1	2.78	18	.42	3	4.4	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	34	6	82	Fine Weather. Fog 20.	
August		7.0	6.4	5.6	6.3	1.11	11	.30	8	4.6	1.2	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	35	6	84	Remarkable Rain 1, 23.	
Sept.		7.4	7.0	6.6	7.0	5.73	18	1.40	23	4.4	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	34	4	71	Frost 21. Gale 16, 17, 18. Fog 9. Remarkable Rain 13, 15.	
Oct.		7.4	7.5	7.5	7.5	3.67	16	.75	15	3.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	28	6	76	Frost 7, 14, 15. Remarkable Rain 11, 22. Rainbow 25, 9 a.m.	
Nov.		7.7	7.0	6.4	7.0	6.15	24	.86	11	3.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	24	5	67	Frost 5, 6, 7, 8, 13. Hail 16, 17. Fog 24.	
Dec.		8.0	7.7	8.0	7.8	1.74	18	.31	15	2.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	20	5	68		
Means		7.2	7.0	6.3	6.8	40.73	16.2	.69		3.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	31.2	3.8	28.4	76.3	14.9

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 flat roof of the Royal Institution, is about 4 feet above it, and 55 feet above the sea. Glean is recorded when the sun's disk is visible through a film of cloud.

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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 WEDNESDAYS, from Noon until dusk, during the winter months, and until Six o'clock in the summer months. On other days, an admission fee of sixpence is required.

An Annual Subscription of Five Shillings entitles the Subscriber to admission to the Museum on Mondays and Saturdays, and to attend all the Meetings of the Society.

A Subscription of Ten Shillings further entitles the Subscriber to introduce to the Museum and Meetings all the *bona-fide* resident members of the family.

A Subscription of One Guinea entitles the Subscriber to all the publications issued by the Institution, to admission to the Museum, for himself and family on every day in the week, and to the Meetings of the Society: and to ten transferable tickets of admission to the Museum whenever open.

The "JOURNAL OF THE ROYAL INSTITUTION OF CORNWALL" will be forwarded free of charge to the Members subscribing One Guinea annually. To other subscribers to the Institution, it will be supplied on payment, in advance, of Five Shillings a year; or the several numbers may be obtained from the Curator, or from a bookseller, at Four Shillings each.

Royal Institution of Cornwall.

65TH ANNUAL GENERAL MEETING.

The Annual Meeting of the Royal Institution of Cornwall was held on November 26th, 1883, at the Rooms of the Institution, Truro. Dr. Jago, F.R.S., vice-president, occupied the chair, and amongst those present were—Mr. A. Pendarves Vivian, M.P., the Revs. Chancellor Whitaker, W. Rogers, James H. Moore, G. Napier, G. L. Church, A. R. Tomlinson, and W. Iago; General Pearse, R.A., Major Parkyn (*Sec*), and Messrs. H. S. Leverton, E. G. Spry, R. Symons, R. H. Carter, R. Tweedy, H. M. Jeffery, F.R.S., E. Sharp, J. H. Bawden, W. M. Grylls, T. Hawken, J. Bryant, and T. Cragoe.

Major Parkyn read the Report of the Council, as follows:—

The presidency of this Institution is, as the members are aware, a biennial office; that of the Earl of Mount-Edgewcombe will terminate to-day; and it is very gratifying to the council to be able to report that they perceive many substantial signs of the increase of usefulness and general attractions of the society during his term, and that his second year of office has been even more prosperous than the first. But before further mention is made of such matters the council will, for a while, speak of the losses that the Society and county have suffered in the ordinary course of human events. The untimely decease of Dr. Hudson, F.R.C.S.I., of Redruth, in the midst of a professional success which he had richly merited, has deprived us of a much valued contributor to our journal, and us and the county generally of one of the most ardent and able promoters of scientific education that the neighbourhood could be proud of, and he had made himself so entirely one of us that few ever thought that he was not born in Cornwall. Whilst speaking of such losses, perhaps the Council may be forgiven for going outside of our own society to record the death, on July 19th last,

of one who believed himself to be the last male descendant of the family of John Keigwin, who showed so early an interest in striving to prevent the Cornu-Britannic language being extinguished as a literary one, not only by his perservation of the text of the miracle play "Mount Calvary," in the original Cornish, and translating it into English (which was published in 1682), but by collateral labour of a like kind. It is now to mention the Rev. James Philip Keigwin, Fellow of Wadham College, Oxford, and a Canon of the Cathedral Church, Cumbrae. The *Scottish Guardian* says, *in memoriam*:—"Mr. Keigwin was of an old Cornish family, of which few members now remain, and indeed none of his own name in any way related to him. . . . His sermons were of a very high order. . . . He was an accomplished artist in water-colours. . . . Had travelled a great deal on the Continent, chiefly in France and Italy. His acquaintance with men and books, combined with a keen sense of humour and a dramatic power of narrative, made him an excellent conversationist." He died a bachelor, aged 72 years. It may not be amiss before leaving such notices to refer for a moment to two of our members in our obituary list of last year, or rather to the bequests they left us. First, we must note that the rubbings given to us by the late Mr. A. Paull have not yet had their mountings completed by the Rev. W. Iago, who kindly undertook to get them done, and, therefore, our walls are not yet adorned with them. The Council must inform the members that they have not been unmindful of the handsome legacies of books and MSS. that we owe to the late Mr. George Freeth. They entrusted the selection of such articles as might belong to them in the library at Duporth to our secretary, Major Parkyn, and the Rev. W. Iago, who visited Duporth and claimed for our library a very large and valuable collection of books and MSS. The Institution has lost three of its ordinary members during the past year by death and withdrawal, whilst on the other hand our subscribers have been added to by the election of seven new members.

The income of the year amounted to £222 19s. 5d. ; this is less than that of last year by about £20. These figures, however, must not be taken to indicate any falling off in the prosperity of the Institution, for the income for 1882 was considerably augmented by special donations amounting to

between £60 and £70. Compared with the years immediately preceding the last one, the income more than maintains its buoyancy as it shews a steady, and, let us hope, a permanent increase, leaving each succeeding year a more favourable credit balance. As just stated, the income for the current year has amounted to £222 19s. 5d., whilst the expenditure has been £186 15s. 3d., thus leaving a credit balance of £36 4s. 2d. in our banker's hands. This we feel to be eminently satisfactory, shewing not only an increase for the present year, but indicating an increasing credit balance. The sum realised from the sale of the journal is beyond the average. Looking at the whole year the journal has maintained the credit of the Society, but considerations of economy led the editor to reduce the size of the part most recently issued. An ample supply of suitable material may hereafter be calculated on, not only in the way of original papers, but especially in documentary articles contributed by friends engaged in researches amongst ancient records—articles less suited to books prepared for the general public, but most appropriate to the transactions of learned bodies, by whom indeed they can alone be preserved. As instances of such sources of future matter for the journal may be mentioned the works now in preparation by one of our members, Mr. W. H. Tregellas, on the "Worthies of Cornwall," and of Mr. E. W. H. Dunkin, on the "Ancient Wills of Cornwall." The dissemination of the journal is of the highest importance to the well-being of our Society, its advent being looked forward to with increasing interest each succeeding year. It is gratifying to know that it is to be found on the shelves of most of the learned Societies of Europe and America. The Society feels itself much indebted to their editor, Mr. H. Michell Whitley, for the successful efforts made by him to maintain its high reputation. In addition to the ordinary issue of the journal an extra pamphlet will be given to the members, which the Council thought might be conveniently kept apart—the summary of the meteorological observations made and recorded at the Museum. This is now on the table in a complete form as regards our own registers. Dr. Barham, in whose hands this work was placed, has desired us to express at the same time his satisfaction that the duty of the Institution in regard to the results of the long and assiduous labour of observers here, of Mr. Newcombe especially, has been

thus fulfilled, and his regret that he has been hindered by ill-health from preparing, as he had intended, a condensed statement of the results of observations of much earlier date, beginning with Dr. Huxham's in 1728. Having the materials in his hands, he hopes they will yet be turned to account by himself or others, as they constitute a very interesting adjunct to our own records. A sufficient number of copies of this summary has been printed, over and above those issued to our members, for sale to anyone interested in our climate. The ordinary meteorological observations have been recorded and published as usual.

Among the events of the past year, with which this Institution was more or less associated, was the Great International Fisheries Exhibition, whose bearings on Cornish interests were amply explained by our noble president in his address at the Spring meeting. Every facility which these rooms could afford has been gladly furnished to the county committee, and it may be hoped that the Museum will be ultimately enriched by an illustrative collection. The remarkable success of the exhibition ought to be advantageous to Cornish fishermen and to the consumers of fish, and we must all be gratified by the conspicuous part taken in it by our much esteemed member, Mr. Thomas Cornish, permanent evidence of which is fortunately in our possession in his two capital lectures, issued by authority, on crustaceans, and on mackerel and pilchard fisheries. Another subject of a more quiet order was referred to in the last year's report—the memorial of Richard Trevithick. The central committee is a large and highly distinguished one, but the contributions obtained from the whole country, about £1,000, will barely constitute a nucleus for prizes to students after the requisite outlay on a statue. Meantime a memorial edition of the life of Richard Trevithick has been issued, which contains a very interesting and fully illustrated account of his numerous and important discoveries. Taking the buildings of the Institution as they stand, we possess a very creditable Museum and Theatre for Lectures, and a pleasant library and rooms for sociable meetings. Every effort ought to be used to render this old foundation as perfect as possible, and especially looking to the now more central position of Truro, in its relation to the county, our volumes should keep pace with the progress of

natural history, natural philosophy, and antiquities, the subjects whose cultivation has been specially aimed at from the first foundation of this Society.

It is satisfactory to our Council that more than usual attention has been given to the completing and binding the successive volumes of transactions and serials, which had been a good deal interfered with. We are particularly indebted to our secretary, Major Parkyn, for the careful supervision of these matters. It is, however, certain that the provision for science and art teaching for the artizan and middle classes, through the length and breadth of the land, will be regarded by every government as indispensably necessary for the success of the productive interests of the community, and if such teaching is hereafter to be carried on in connection with this Museum, additional space and accommodation must be provided. The suggestion of possible extension by the purchase of the freehold between these premises and Pydar-street, was broached in the last report, and seemed to be favourably received; and the Council would now propose that the usual preliminary steps be at once taken to ascertain the cost of the required extension, and the willingness of our members and the public to contribute towards the sum necessary for carrying out the undertaking.

The admissions to the Museum during the year were as follows:—Admitted free, 2,401; by ticket, 98; by payment, 6d., 488; total, 2,987.

On the 13th and 14th of September the Annual Excursion was held, under most favourable auspices. Those who joined the first day were exceptionally few, whereas the party on the second day was unusually numerous. This resulted from the selection of routes. One was a locality well known to our members from a previous visit; the other was new and specially attractive. On the first day the expedition was materially advanced by Mr. W. Polkinghorne, Mayor of Liskeard, and on the second day by the Lord-Lieutenant, our president, both of whom were extremely kind, hospitable, and helpful. On the morning of the 13th the excursionists assembled at Liskeard, and, in the course of the day, visited St. Cleer, the Cheesewring, Kilmar, the Phoenix Mines, and other interesting objects in that neighbourhood. In the evening of

the same day the party was received by the members of the Plymouth Institution, and the entertainment arranged by them for the friends of this Society added much to the pleasure and success of the day's proceedings—promoting our purpose of co-operation of the scientific Societies of the two counties. The crowning point, however, of the journey, was the reception of the members and their friends, numbering about 140, on the following day, the 14th, by the Earl of Mount-Edgcumbe at Cotehele. The weather was most delightful, and the voyage up the Tamar was a thing long to be remembered. At Cotehele Lord Mount-Edgcumbe led the party through the woods, and exhibited the votive chapel commemorating Sir Richard Edgcumbe's escape (temp. Rich^d. III). The house was subsequently shewn, the exterior points of interest being first explained. After shewing the entrance tower, the chapel with its curious turret, the quadrangle, and the various alterations effected in the building at different times, the noble owner led the way to an elegant banquet, provided in the great hall and neighbouring rooms. Here his Lordship read a most interesting paper, giving the history of Cotehele and its former owners, which, it is hoped, will be placed permanently in the pages of our journal. At the conclusion of the visit all unanimously expressed, through Dr. Jago, their obligations to the president for his great kindness.

The Earl of Mount-Edgcumbe's two years' tenure of office expires to-day, and your Council have pleasure in proposing Mr. A. Pendarves Vivian, M.P., as his successor, feeling convinced that his close connection with the county and his great interest in mining cannot fail to promote the welfare and add to the success of the Royal Institution of Cornwall. Mr. W. C. Borlase, M.P., having fulfilled his term of office as a vice-president, it is proposed to elect Canon Moor in his place.

1883.

	£	s.	d.
July 31. To Annual Subscriptions, Donations, & Arrears ...	169	8	0
" H.R.H. the Prince of Wales	20	0	0
" Visitors' Fees	12	4	0
" Sale of Journals	7	0	0
" Jeffery's Supplement	2	0	0
" Profit on Excursion	22	7	5

Excursion Account.

Tickets Sold ...	41	2	6
Less Expenses	18	15	1
	<hr/>		
	£22	7	5
	<hr/>		

1882.

	£	s.	d.
July 31. By Balance brought forward ...	1	0	7
" Taxes	2	11	8
" Repairs to Buildings	53	18	0
" Museum Expenses	9	11	6
" Curator's Salary	44	0	0
" Lake, Printing No. 26 Journal	33	4	4
" Illustrations for Ditto	1	12	0
" Postage and Parcels	7	8	9
" Printing and Stationery... ..	9	12	11
" Sundries	8	12	11
" Ray Society	1	1	0
" Paleontographical Society	1	1	0
" Meteorological Ditto	1	0	0
" Rainfall and Magazine... ..	0	10	0
" Geological Journal	1	10	0
" Journal of Science... ..	1	7	0
" Botanical Magazine	3	3	0
" Nature	2	4	0
" Conversazione	0	18	4
" Geological Record	0	11	2
" Telegraph and Gardeners' Chronicle	1	6	0
" Western Antiquary	0	11	7
" Balance	36	4	2
	<hr/>		
	£222	19	5
	<hr/>		

£222 19 5

The Rev. A. R. TOMLINSON moved, and the Rev. W. ROGERS seconded, the adoption of the report, which was carried.

The Rev. W. IAGO then read the list of presents and additions to the Library and Museum, as follows:—

ADDITIONS TO THE LIBRARY.

	<i>From</i>
Journal of the Cambrian Archæological Association ...	The Association.
Journal of the Anthropological Institute of Great Britain and Ireland	The Institute.
Monthly Notices of the Royal Astronomical Society ...	The Society.
Journal of the Society of Arts	Ditto.
American Journal of Science	The American Gov.
Proceedings of the Birmingham Philosophical Society ...	The Society.
Proceedings of the Bristol Natural History Society ...	Ditto.
Transactions of the Bristol and Gloucestershire Archæological Society	Ditto.
Proceedings of the Bath Natural History and Antiquarian Field Club	The Club.
Bulletin of International and Meteorological Observations	The American Gov.
Report of the Cornwall and Devon Miners' Association...	The Association.
Report of the Royal Cornwall Polytechnic Society...	The Society.
Transactions of the Cornwall Geological Society, Penzance	Ditto.
Proceedings of the Mining Institute of Cornwall...	The Institute.
Commission of Patents	The Patent Office.
Report and Transactions of the Devonshire Association ...	The Association.
Transactions of the Essex Field Club	The Club.
Transactions of the Eastbourne Natural History Society	The Society.
Transactions of the Edinburgh Geological Society ...	Ditto.
Transactions of the Epping Forest Field Club	The Club.
Proceedings of the Glasgow Natural History Society ...	The Society.
Transactions of the Glasgow Geological Society	Ditto.
Proceedings of the Philosophical Society of Glasgow ...	Ditto.
Hadyn's United States Government	The Author.
Journal of the Geological Society of Ireland	The Society.
Proceedings of the Irish Academy	Ditto.
Journal of the Historical and Archæological Association of Ireland	The Association.
Proceedings of the Liverpool Natural History Society and Field Club	The Club.
Journal of the Liverpool Polytechnic Society	The Society.
Proceedings of the Liverpool Literary and Philosophical Society...	The Society.
Transactions of the London and Middlesex Archæological Society...	Ditto.

Proceedings of the Society of Antiquaries, London ...	The Society.
Proceedings of the Zoological Society, London	Ditto.
Report of the Leeds Philosophical and Literary Society...	Ditto.
Proceedings of the Lancashire and Cheshire Historical Society	Ditto.
Transactions of the Manchester Geological Society ...	Ditto.
Collections of the Montgomeryshire Historical and Archaeological Society	Ditto.
Transactions of the North of England Institute of Mining Engineers	The Institute.
Annual Report and Transactions of the Plymouth Institution	The Institution.
Report and Transactions of the Penzance Natural History Society... ..	The Society.
Annual Report of the Smithsonian Institution	The Institution.
Proceedings of the South Wales Institute of Engineers ...	The Institute.
Collections from the Archaeological Society, Surrey ...	The Society.
Monthly Weather Review	The American Gov.
Proceedings of the Yorkshire Geological and Polytechnic Society... ..	The Society.

ADDITIONS TO THE MUSEUM.

- Ancient Candlestick for holding Rushlights, in use in North Wales. Presented by Dr. C. Le Neve Foster, H.M.I. of Mincs.
- Specimens of Rocks illustrative of the Geology of Central and West Cornwall. Presented by Mr. J. H. Collins.
- Stones anciently used for Grinding, discovered by Mr. Thos. Phillips, on Bosvathick, Constantine, and presented by the Rev. W. Rogers, Mawnan.

Mr. A. PENDARVES VIVIAN, M.P., on taking the chair, thanked the members very much for electing him president of such an important and valuable Institution. He greatly valued the honour, and he at the same time felt the responsibility he took upon himself, more especially coming, as he did, after two such remarkable presidents as the present Archbishop of Canterbury and the Earl of Mount-Edgcumbe. Of course, if it were not that that Institution embraced so many departments besides archæology, did he not see before him specimens of mineralogy, geology, and natural history, and did he not know how much time and industry had been given by the Institution to those particular sciences, he should feel still more how little able he was to fill the position of president. He assured them that he would

do everything he could to fill the office to the best of his ability. Of course they knew his time was not his own. During a great part of the year he was obliged to be absent from the county on other business, and if he failed to be present at some of their meetings he hoped they would bear in mind that he had to be doing county business in other parts. Whenever he could be, he would be present; and they might be quite sure that their interest would also be his.

The Rev. W. IAGO followed with a few remarks on various points. He first referred to an inscribed stone at Redgate, St Cleer, which was perhaps one of the very best specimens of an inscribed stone in Cornwall, and a rubbing of which was before them. It bore the name of a supposed King of Cornwall, who was drowned in the 9th century. Beneath it was found a cruciform chamber with an arched roof. Mr. Iago next spoke of the late Mr. Freeth's bequest of books, which were of great value and interest. Reference was made at the Spring Meeting by the Earl of Mount Edgcumbe to the case of Mr. Blight, and he was happy to state that, through his Lordship's recommendation and the exertions of Mr. W. Bolitho, of Penzance, a sufficient fund had been raised, and Mr. Blight was now permanently provided for. At a former meeting he (Mr. Iago) had pointed out the desirability of collecting any manuscripts which might be of value, and having reference to persons of eminence in the county, and he thought they need not now go beyond the Institution itself to begin with, as any letters which anyone might have from the Archbishop of Canterbury, who had been so closely connected with them, might be formed into a volume, and would be full of interest. Mr. Iago having referred to several ancient Cornish crosses which were in a state of neglect, and regretted the absence of Dr. Barham from the meeting, read a letter from Mr. W. Copeland Borlase, M P., addressed to Mr. Whitley, in which that gentleman said he had some early documents connected with the state of Cornwall in the reign of Edward III., comparing the relative position of a tinner to the rest of the community, which he would have much pleasure in laying before the Society. Mr. Iago also read a letter from the Rev. S. R. Flint, of Ladock, in which it was stated that what was apparently an ancient grave had been discovered near Bissick. Mr. Iago concluded by throwing out the suggestion that a

collection of "parish sayings" should be made, for he had found that in almost every parish the people had something to say either for or against the neighbouring parish, and a collection of these sayings would make rather an interesting chapter of folk-lore.

The Rev. G. L. CHURCH read a paper, written by Dr. C. Le Neve Foster, on "The Rush-light in North Wales." Mr. R. SYMONS said he knew from personal observation that such lights were used in Cornwall within the last seventy years.

Mr. H. M. JEFFERY moved that the best thanks of the meeting be given to the Council and officers for their past services, and that the following should form the Council for the ensuing year:—President, Mr. A. Pendarves Vivian, M.P.; vice-presidents, Mr. Whitley, his Grace the Archbishop of Canterbury, Dr. Barham, Dr. Jago, and Canon Moor; treasurer, Mr. A. C. Wilyams; secretaries, Mr. H. Michell Whitley, F.G.S., and Major Parkyn; and in addition the Revs. Canon Cornish, W. Iago, A. H. Malan; and Messrs. R. H. Carter, H. Fox, H. James, H. S. Leverton, R. M. Paul, E. G. Spry, and W. Tweedy; corresponding secretaries, Rev. W. Iago, for East Cornwall; and Mr. W. H. Tregellas, for London.—This was seconded by Mr. E. SHARP, and carried.

Mr. W. GRYLLES moved that their cordial thanks be given to those gentlemen who had favoured the Society with papers, &c., and to the donors to the Library and Museum.—This was seconded by General PEARSE, R.A., and carried.

Mr. TWEEDY moved and Mr. CARTER seconded a vote of thanks to Dr. Jago, and to Mr. Vivian for having occupied the chair.

Mr. VIVIAN, in reply, said with reference to a remark Mr. Jeffery made as to the family he (Mr. Vivian) represented, that if there was any energy left in him which had descended to him from his late uncle, he could only say it would be used in the very best endeavours to promote the welfare of that Institution, and every other institution and society with which he was connected in Cornwall.

Dr. JAGO having also acknowledged the compliment, the meeting concluded.

THE CONVERSAZIONE.

The *Conversazione* in the evening was well attended. In addition to those who were at the morning meeting, many other members and friends were present. The chair was occupied by Dr. Jago, F.R.S.—Rev. W. Iago read an interesting paper on some “Curious instances of monastic discipline,” illustrated by reference to original documents.—General Godfrey Pearse exhibited a number of gems, rings, and precious stones, and gave an historical account of them, which excited much interest.—Rev. Canon Cornish gave a graphic account of the mackerel fishery, mostly taken from the lectures given by his brother, Mr. T. Cornish, Penzance, at the International Fisheries Exhibition in London. An enjoyable evening was brought to a conclusion by an account of the Autumn Excursion by the Rev. W. Iago.

Spring Meeting, 1884.

The Spring Meeting of the Royal Institution of Cornwall was held on May 29th, at the Rooms of the Institution, the President (Mr. A. Pendarves Vivian, M.P.) in the chair. There were also present—Dr. Barham, Dr. Jago, Canon Cornish, Canon Moor, Revs. W. S. Lach-Szyrma, F. Barham, A. H. Malan, J. H. Moore, A. R. Tomlinson, and Messrs. Whitley, J. H. Collins, H. James, H. Fox, T. A. Crago, R. Tweedy, Spry, Clarke, Stanley, Earthy, Symons, Bryant, Hawken, W. J. Clyma, Clemens, Lidgely, Searle, W. J. Criddle, S. Trevail, E. Sharp, Kitto, and Major Parkyn (secretary).

The following list of presents having been read :—

ADDITIONS TO THE LIBRARY.

	<i>From</i>
Monthly Notices of the Royal Astronomical Society ...	The Society.
American Journal of Science	The American Gov.
Journal of the Anthropological Institute of Great Britain and Ireland	The Institute.
Journal of the Society of Arts	The Society.
Western Antiquary	
Journal of the Cambrian Archæological Association ...	The Association.
Proceedings of the Birmingham Philosophical Society ...	The Society.
Proceedings of the Bristol Natural History Society ...	Ditto.
Transactions of the Bristol and Gloucestershire Archæ- ological Society	The Society.
Proceedings of the Bath Natural History Society and Field Club	The Club.
Annual Report of the Royal Cornwall Polytechnic Society	The Society.
Transactions of the Christiania University	The University.
Transactions of the Cornwall Geological Society, Penzance	The Society.
Proceedings of the Mining Institute of Cornwall	The Institute.
Report and Transactions of the Devonshire Association ...	The Association.
Transactions of the Edinburgh Geological Society... ..	The Society.
Transactions of the Essex Field Club	The Club.
Transactions of the Epping Forest Field Club	Ditto.

Transactions of the Eastbourne Natural History Society	The Society.
Report of the Glasgow Philosophical Society	Ditto.
Transactions of the Glasgow Geological Society	Ditto.
Transactions of the Glasgow Natural History Society ...	Ditto.
Proceedings of the Geologists' Association, London ...	The Association.
Journal of the Royal Geological Society, Ireland... ..	The Society.
Journal of the Royal Historical and Archæological Associa- tion of Ireland	The Association.
Proceedings of the Zoological Society, London	The Society.
Proceedings of the Liverpool Natural History and Field Club	The Club.
Journal of the Liverpool Polytechnic Society	The Society.
Report of the Liverpool Literary and Philosophical Society	Ditto.
Report of the Leeds Philosophical and Literary Society ...	Ditto.
"Aleriel," or Voyages to other Worlds, by the Rev. W. S. Lach-Szyrma	The Author.
Transactions of the Lancashire and Cheshire Historical Society... ..	The Society.
Transactions of the Manchester Geological Society... ..	Ditto.
Collections, Historical and Archæological, relating to Montgomeryshire	Powy's Land Club.
Transactions of the North of England Institute of Mining Engineers	The Institute.
Annual Report and Transactions of the Plymouth Insti- tution	The Institution.
Commission of Patents	The Patent Office.
Proceedings of the Penzance Natural History and Anti- quarian Society	The Society.
Annual Report of the Smithsonian Institution	The Institution.
Proceedings of the South Wales Institute of Engineers ...	The Institute.
Collections of the Surrey Archæological Society	The Society.
Proceedings of the Yorkshire Geological and Polytechnic Society	Ditto.
Bulletin International and Meteorological Observations ...	American Gov.
Monthly Weather Review	Ditto.
Tertiary History of the Grand Canon District, U.S. Geol- ogical Survey..	Ditto.
Map to accompany the Tertiary History of the Grand Canon District	Ditto.
Second Annual Report of the U.S. Geological Survey, by S. W. Powell	Ditto.
Twelfth Annual Report of the U.S.A. Geological and Geographical Survey of the Territories Wyoming and Idaho, 2 vols., by T. V. Hayden, Washington, 1883 ...	Ditto.
Maps and Panoramas to accompany Twelfth Report ...	Ditto.
Bulletin United States Geological Survey	Ditto.
Steam Tramways, by Thos. Cole, C.E.	The Author.

DONATIONS TO THE MUSEUM.

Several Articles manufactured by Indians from British Guiana. Presented by the Rev. J. Richards-Dixon.

A Pair of Silver Shoe Buckles. Presented by Mr. R. Symons.

Specimens of Tin Stone with deposits of Quartz. Presented by Mr. G. A. Copeland.

Specimens of Serpentine and Olivine. Presented by Mr. Thomas Clark.

Fragment of Ancient Stone, 1672. Presented by Mr. W. Clemens.

A series of large Photographs, 64 in number, illustrative of the scenery of the Rocky Mountains. Presented by Mr. Richard Pearce, Junr., of Denver.

The President delivered his address, which will be found printed in the present number of this Journal.

Dr. BARIHAM made some remarks upon the summary of the latest meteorological observations. He also stated with regard to the extension of the building, as mentioned by the Chairman, the fund started for that purpose had now reached about £400, whilst they knew of several considerable additions to it that had been promised, and there was every probability that the total subscription would be sufficient to accomplish the object in view. There had been recently presented a report from the Royal Commission of Technical Education, by which they were led to hope that the expense of purchasing the freehold would not depend upon the subscriptions, but either upon municipal funds or otherwise. The erection of such buildings would be a vast advantage to Truro, and as a companion to existing Societies it would be a great benefit to the whole county.

The following papers were then read:—

“The Geological age of Central and West Cornwall,” by J. H. Collins, F.G.S.

“Helston Furry Day,” by Rev. W. S. Lach-Szyrma.

“The Foreshores of Kea,” by T. A. Cragoe.

“Cornwall and the Spanish Armada,” by H. Michell Whitley, F.G.S.

“Manuscript Materials for Cornish History,” by R. N. Worth, F.G.S.

“Notes on Truro Grammar School,” by W. H. Tregellas.

Mr. COLLINS made a few remarks upon the specimens of "Olivine" that had been found in Cornwall, and a letter was read from Mr. Hare giving an account of the theft of a pair of earrings by starlings, from a room at Liskeard, after which Mr. H. Fox proposed a vote of thanks to those gentlemen who had prepared papers, and to the contributors of literature and curiosities. This was seconded and carried, and a vote of thanks to the Chairman, proposed by the Rev. A. R. TOMLINSON, seconded by Mr. SPRY, and supported by Dr. BARHAM, concluded the proceedings.

Spring Meeting, 1884.

THE PRESIDENT'S ADDRESS.

However unfitted I may feel to fill this highly honourable chair, I can assure you that this feeling of unsuitability does not detract one iota from my thanks to you for having selected me. It makes me, however, desirous at the very outset of a short address to ask you for your indulgence, if only on the grounds of being a hard-worked individual with no spare leisure time, indeed, scarcely sufficient for preserving health. When I accepted the honour you have conferred upon me, I had hoped to have been able for a short time ere this, to have trodden afresh those enticing paths of natural sciences in which I had enjoyed myself in my youth, under the guidance of such world-famed leaders as Professors Weissbach, Plattner, Cotta, Breithaupt, and Reich in Germany, and that fine old Professor Sedgwick at Cambridge. But this has been denied to me, my leisure time has been taken up by being pressed for the last month into the heaviest work of the House of Commons, and being called upon to serve as chairman of a committee appointed to investigate a group of very important Railway Bills. These duties are by no means light, for besides necessitating a daily attendance, an amount of continuous attention and brain power is requisite, the strain of which quite unfits one for anything else for the rest of the day, notwithstanding after that begins the usual Parliamentary work of the evening. This must be my apology for shortcoming on the present occasion, and for not having been able to give that attention to this address which I should otherwise have wished. Happily, our ancient and well-known Institution covers a very large expanse of ground in its researches and subjects: were this not the case, more hopeless still would have been my task in endeavouring to find any subject matter which would be of

interest for a short address. In a county like this—so exceptionally rich in objects of archæological interest—the mind naturally turns in connection with this Institution to that most bewitching of investigating lore, but, here, I regret to say, I must plead gross ignorance, although I can feel the fullest appreciation of its charms.

I can fancy few things more fascinating than being able, in a county like ours, to investigate and follow up the many signs and remains of past ages, and we are indeed happy in having amongst us so many gentlemen who have given their time and abilities to deciphering our early history, both for their own enjoyment and for the benefit of those amongst whom they live. Their works and papers are a true pleasure to outsiders like myself, who are unable to assist in their careful and extensive investigations.

But your Museum, besides its rich collection of archæological treasures, contains much else connected with the study of natural sciences. Its collection of minerals, and that in connection with the Geological Society at Penzance, are two of the best I have ever seen in the provinces: Great care appears to have been taken to carry out such an arrangement of the specimens as shall best conduce to the study of mineralogy. I am not aware whether it is a practice here, but I remember, when I was studying at Freiberg in Saxony, the Royal collection there used to be kept enriched with the finest and newest specimens, by the funds received from the selling of duplicates, and this proved to be a continuous and important source of income.

Now the prominent position which minerals occupy in your Museum emboldens me to follow the example of my noble predecessor in office, Lord Mount Edgcumbe, and to offer some remarks on the metallic production of our county. I feel the more encouraged to do this, as I believe it has been always the object of this and kindred institutions of the county to promote and encourage all investigations which may be of practical interest and value to our great commercial communities. The noble lord in his opening address last year, most ably dealt with the tin production of the county, and by his figures shewed that we still held a very leading position in the tin production of the world. Of the 40·271 tons of metallic tin produced in 1882, Cornwall

contributed no less than 9,400 tons (or 23·33 per cent.) a very large proportion, considering what vast regions of mineral deposits are now opened up to mining enterprise. Dame Nature seems to have been—fortunately for us—more niggardly of her gifts in foreign parts as regards this metal than any other. If we take the metal which of old days was always linked with tin in this county, I mean *Copper*, in the old Cornish toast of “Fish, Tin, and Copper,” how different is the state of supply with regard to that useful metal. I have here in my hand two tables, which have been kindly arranged for me, from Messrs. Merton & Co.’s tables and other sources. The 1st is the copper productions of the principal countries from 1871 to 1883 inclusive, thus extending over thirteen years. The 2nd shews the quantity of ore, with the contents in fine copper, which has been sold in Cornwall and Wales from 30th June, 1862, to 30th June, 1883, inclusive, thus over a period of 21 years. Now I will not weary you with quoting largely from these tables; they are entirely at the disposal of the Institution, to make any use of them they may think fit, but I should like to call your attention to certain broad facts which they present, and from which we may draw our own deductions.

First of all will be brought home to us by those difficult things to confute, namely, hard figures, that which we must all of us have known before, that in consequence of the vast and extraordinary deposits of copper which have been found in other parts of the world—I might almost say all over the world—our county no longer occupies anything like the position it used to possess amongst the copper producing districts of the world, but that, on the contrary, it has been gradually producing less and less, and has now become a comparatively small factor of the whole. This, undoubtedly, is a state of things very much to be deplored, but, at the same time, it is one that we must bow our heads to, and meet as best we can. Fortunately some of our best copper mines of days gone by have proved tin in the deep; nature, as it were, coming to our assistance to enable us to meet the vast deposit of copper she was about to exhibit to the hardy explorers and prospectors of the western hemisphere.

But to return to these tables of facts which we have before us.

PRINCIPAL COPPER PRODUCTIONS.

Table 1.

	1883.	1882.	1881.	1880.	1879.	1878.	1877.	1876.	1875.	1874.	1873.	1872.	1871.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Algiers...	*600	*600	*600	*500	*500	...	...	...	...	...	...	...	...
Argentina Republic	*293	*800	307	*300	*300	...	...	...	...	...	...	...	...
Australia	12,000	8,950	10,000	9,700	9,500	9,000	11,000	10,000	11,500	10,000	10,500	8,500	6,500
Bolivia—Cococoro	*3,250	3,259	2,655	*2,000	*2,000	46,668	45,000	50,740	45,430	48,240	42,165	46,337	41,200
Chili	41,999	42,969	37,989	42,916	49,318	4,053	4,134	...	...	...	...	...	...
Cape of Good Hope—	5,000	5,000	5,087	5,038	4,328	...	...	...	...	...	...	...	...
Cape Copper Co....	*329	221	50	*50	*50	...	...	...	...	...	...	...	...
Canada	3,000	3,464	3,875	3,662	3,462	3,952	4,486	4,694	4,322	4,981	5,240	5,703	6,280
England	12,443	11,516	10,999	9,800	8,400	7,950	6,900	6,195	6,078	5,158	5,570	5,395	3,895
Germany—Mansfeld	*1,220	*1,743	1,743	1,000	*600	...	...	...	...	...	...	...	...
Other German	*1,000	*976	976	976	976	...	...	...	...	...	...	...	...
Hungary	*1,600	*1,400	*1,480	*1,380	*1,140	...	...	...	...	...	...	...	...
Italy	*2,800	*2,800	*1,900	*1,900	*1,900	...	...	...	...	...	...	...	...
Japan	489	401	333	*400	*400	...	...	...	...	...	...	...	...
Mexico	1,053	1,500	1,718	*1,500	*1,500	...	...	...	...	...	...	...	...
Newfoundland—Betts Cove	2,340	2,300	2,040	2,000	2,000	...	...	...	...	...	...	...	...
Norway—Vigsnaes	*290	*290	290	386	412	...	...	...	...	...	...	...	...
Other Norwegian	395	440	615	*600	*600	...	...	...	...	...	...	...	...
Peru	*3,000	*3,000	*3,081	*3,081	3,081	1,069	850	887	940	945	1,094	1,343	1,400
Russia	800	798	995	1,074	800	...	...	...	...	...	...	...	...
Sweden	20,472	17,389	16,666	16,215	13,751	8,416	7,095	3,794	1,430	213	200	200	200
Spain & Portugal—	*9,800	*9,000	*10,203	*9,151	*11,324	11,000	10,691	9,737	8,110	7,210	8,550	7,478	7,083
Rio Tinto	8,000	8,000	8,170	6,603	4,692	...	...	...	...	...	...	...	...
Tharsis	2,026	1,885	1,340	1,705	1,360	...	...	...	...	...	...	...	...
Mason & Barry	*2,357	1,700	1,410	1,000	770	...	...	...	...	...	...	...	...
Seville	*1,000	*800	*800	*800	*800	...	...	...	...	...	...	...	...
Portuguesa	52,080	39,300	30,882	25,010	23,350	21,005	19,825	19,530	18,855	18,195	15,530	10,892	11,479
Poderosa	4,018	3,700	2,823	1,800	1,597	1,262	...	...	...	...	...	...	...
United States	*500	*455	*455	470	245	...	...	...	...	...	...	...	...
Venezuela—New Quebrada	193,454	174,596	159,711	151,057	149,156	111,375	109,981	105,577	96,665	103,942	88,749	86,088	78,037
Austria...	...	...	...	...	...	...	...	...	...	...	...	...	...

Those marked * are estimated.

STATISTICS OF COPPER SOLD IN CORNWALL AND WALES.

1862 to 1882.

	1862-63.		1863-64.		1864-65.		1865-66.		1866-67.		1867-68.		1868-69.	
	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.
Copper Ores Sold } in Cornwall ... }	176,285	11,269	166,707	10,545			148,777	9,189	125,679	8,343	121,815	8,025	103,199	6,926
Copper Ores Sold } in Wales ... }	38,457	5,587	40,676	5,572			34,778	5,229	26,157	3,686	36,937	6,039	30,986	4,436
	1869-70.		1870-71.		1871-72.		1872-73.		1873-74.		1874-75.		1875-76.	
	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.
Copper Ores Sold } in Cornwall ... }	90,227	6,316	74,367	4,988	67,543	4,372	61,715	3,999	51,327	3,676	47,856	3,371	57,173	3,836
Copper Ores Sold } in Wales ... }	23,155	3,488	21,813	3,734	19,343	3,075	26,630	4,670	29,031	5,139	27,698	5,072	25,068	4,937
	1876-77.		1877-78.		1878-79.		1879-80.		1880-81.		1881-82.		1882-83.	
	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.	Ore. 21 cwt.	Fine Copper. 20 cwt.
Copper Ores Sold } in Cornwall ... }	54,609	3,688	51,447	3,623	44,788	3,129	40,525	2,783	41,133	2,745	40,147	2,520	41,537	2,526
Copper Ores Sold } in Wales ... }	42,853	6,434	50,380	4,648	22,679	2,238	27,418	2,606	25,519	2,103	9,554	837	5,237	587

From June 30th to June 30th, of each Year.

Take No. 1.—Here we have, as I said before, a list of the principal copper producing countries of the world, with their “outputs” since 1871. In that year we see that Australia yielded 6,500 tons and England 6,280 tons,—much about the same, but now mark the difference that follows: the former has gone on gradually increasing whilst we have been diminishing, so that last year the figures are, Australia 12,000 tons, England only 3,000. The largest producer in 1871, was Chili, her yield was no less than 41,200 tons, out of a total production of all the world, of 78,037 tons, but curiously enough, although Chili production has varied much from year to year, reaching one year (in 1876) as large an output as 50,740 tons, yet last year (1883) the figures were a trifle less than in 1871, namely, 41,099 tons.

The Mansfeld district in Germany yielded in 1871, 3,895 tons, last year it had increased to 12,643 tons.

Of course,—as we might all have anticipated,—by far the greatest producer in the world is the United States. In 1871 it yielded only 11,479 tons, not double the production of that year in this country, but last year the United States figures as producing no less than 52,080 tons out of a total of 193,454 tons, or more than 60 times as much as the output of all England. But one of the most remarkable facts of this table is that some of the largest sources of copper supply at the present time did not exist in 1871. I see that last year the Rio Tinto undertaking in Spain produced no less than 20,472 tons of copper, whereas in 1871 it figures only as 200 tons. Tharsis, however, is a large producer, but so it has been for some years past, for in 1871 it stood at 7,083 tons and last year 9,800 tons, showing therefore but a comparatively small increase. There are besides, other new countries which we may feel certain, in the course of development by our hardy and indefatigable miners, and by the opening of new railways, will soon come to occupy prominent positions in the world's market. I saw myself a few weeks ago some remarkably fine stones of argentiferous grey copper ore from a district recently “tapped” by the new Canadian Pacific Railway, where it crosses the Main Divide of the Rocky Mountains, and I am told that Montana and Mexico are proving remarkably rich in Mineral deposits, which the the indomitable energy of our American cousins will soon bring into the market.

Well, now, to return to this table and to sum up shortly the facts taught by it; Twelve years ago England— Cornwall—produced 6,280 tons out of the total production of the world of 78,037 tons, being roughly 8 per cent. Last year only 3,000 tons out of a total production of 193,454 tons, or only a little more than $1\frac{1}{2}$ per cent. The United States on the other hand has increased from 11,479 tons out of a total 78,037 tons = 14.70 per cent. in 1871, to 52,080 tons out of 193,454 tons = 27.71 per cent. in 1883.

The other table repeats the same tale of falling off as regards copper ores sold in Cornwall and Wales. In the year ending 30th of June, 1863, 176,285 tons of ore, with a contents of fine copper of 11,269 tons, was sold in Cornwall, and 38,457 tons of ore containing 5,587 tons of fine copper was sold in Wales, whereas in the year ending 30th June, 1883, only 41,537 tons of ore, containing 2,526 tons of fine copper, was sold in Cornwall, and in Wales only 5,237 tons containing 587 tons of copper.

It is evident from this cursory glance at these tables, with which I will no longer weary you, that in consequence of the vast discoveries of copper, one may say all over the world, that our home production no longer forms even an important factor of the whole. How far this has been caused by the great fall in the value of the metal, which has now continued with a downward tendency for such a lengthened period, is a matter of considerable surmise. There can, however, be little doubt but that if the demand of the world had continued to be proportionate with the increased and increasing supply, and that, in consequence, the old prices had been maintained, the production of our own mines would have been far in excess of what it is at present. The value of the metal, however, has been so disastrously low for so very many years, that only exceptionally well-to-do mines could afford to sell their ores at the prices they commanded in the market. I feel sure that many, myself amongst the number, would be very glad indeed to know whether this state of things is likely to continue. My own private opinion is, that we can only look for an improvement in the value of copper to an increase in the demand for it, for I feel sure that instead of any falling off in foreign production we shall have to meet a very rapid and constant increase, that is to say, under the usual condition of national affairs. As regards an increase

in demand, I cannot help feeling surprised that at the present very low price, such a wonderfully useful, ductile metal as copper is not substituted for many purposes where now iron and other inferior metals are used. The same applies to many of the alloys of copper to a greater or less degree. Constant discoveries are being made of useful alloys, of copper with zinc, tin, iron, phosphorus and other metals, but none of the recent combinations,—as yet at any rate—have at all assumed the position of exercising any effect on the copper demand. It may be that hereafter electricity may prove our friend, and exercise an important bearing on the market by the demand it will create for one of our own county metals; but at present the outlook is, I confess, dark and dreary.

And now to say a few words on matters more immediately connected with the present occasion. I mean, those which have concerned our Institution during the past year.

Since the Annual Meeting of last year the International Fisheries' Exhibition has been brought to a most successful termination. Although I was a member of the General Committee and did what I could to afford assistance in enabling Cornwall to take part in it and to reap all the benefits practicable from it, I was unable, from having been placed on one of the heaviest committees that ever sat in the House of Commons (namely, the Manchester Ship Canal), to take that active part in it which I should otherwise have desired. It must have been a matter of great congratulation to all connected with the county to see by the public prints that no less than three gold, seven silver, and six bronze medals were won by Cornwall, besides three diplomas and sundry money prizes. If we can, at the same time, hope that the various and many exhibits from other countries of tackle, boats, different sorts of gear, &c., &c., were of use to our industrious and deserving fishermen, this, in itself, would be a source of the greatest satisfaction to all of us, for, I believe, no one who has ever come across the Cornish fishermen would deny, that no class of the community deserves better of their country.

And this brings me to consider, very shortly, that question which has of late been occupying the minds of many of us, and taking a very prominent position in our local newspapers, I mean the question of Harbours of Refuge.

Now, in my mind, this question resolves itself into two distinct parts, first in its national, and, secondly, in its local bearing. Now as to the first, I look upon it as a national necessity, and therefore a responsibility which devolves on the Imperial Government to see to, that Harbours of Refuge are provided along the coast of the United Kingdom wherever it is found that by nature's omission such a length of dangerous coast exists as to lead to avoidable loss of life and property. As an example of what I mean, I would say that the present condition of our North Coast of Cornwall, without a good and easily-accessible harbour for large vessels from the Land's End to the Bristol River at King's Road, is one which should be remedied as soon as it is practicable for any Government to do so, whether by convict labour or otherwise.

But independent of this national view of the question, there is the second or local bearing: and by this I mean that, in my opinion, very great good is to be done by some well expended thousands (whereas it might be millions in the other case), in promoting and subsidising and encouraging the local efforts, for creating along our coasts smaller harbours for the protection of the lives and property of our hardy fishermen, and our small trading craft. The more thought we give to this particular question, and the more we hear of it, the more convinced we must, I think, become of how much good can be done in this direction by, say, even a few well-spent hundreds of thousands, which have been often, and might be so easily again, wasted in some ill-advised warlike expedition of our soldiers and sailors. In the one case lives may be expected, with a certainty, to be saved, in the other, with an equal certainty, precious lives are jeopardised and sacrificed.

I must guard myself, however, against being misunderstood in this matter of harbours of refuge, and leaving a too sanguine impression of government help. I do not think that this or any other government would be ready to incur a large expenditure of the nation's money on the evidence now before them, but I look with hopes to such a report from the select committee which has been now sitting, as may lead to the appointment of a Royal Commission to proceed around our coasts and report on the most urgent and desirable sites for harbours of refuge, both

of the larger and smaller class, and that by these means we may eventually obtain what, I myself believe to be, one of the most urgent requirements of this great commercial nation.

And now I cannot help saying a few words on the condition of our Natural History Museum, which possesses some rare and interesting specimens, both native and foreign. In a hurried visit I paid to it some short time since, I could not help observing that very great damage had been done to some of the best examples by the ravages of the moth, that most pernicious of all enemies to such a collection. This is deeply to be regretted, and can only be avoided in the future by constant and careful supervision. The other day I had the pleasure of being shown over the South Kensington Collection by its very able and energetic keeper, Dr. Günther, everything looked in the most perfect condition, and in the course of conversation he told me that the moth can be easily fought against by careful watching and a very liberal use of common camphor in air-tight cases.

As usual, our Institution is indebted, I am told, for very interesting papers from Mr. Whitley and the Rev. W. Iago. The continuation of Mr. Boase and Mr. Courtney's work, "Collectanea Cornubiensia," as well as Mr. Tregellas' "Cornish Worthies," the "Western Antiquary," will form very valuable additions to our book shelves; also, Mr. Collins' communication on the Geology of the County cannot but lead to much profitable consideration and discussion.

And now I would wish to allude, shortly, to the matter which was brought before the public a few months ago by circular issued by this Institution, I refer to the *Proposed Extension of Buildings in connection with our Museum*. It was stated in that circular that a great opportunity now offered for purchasing some freehold ground immediately adjoining our Museum, on which could be erected very convenient schools for the study of science and art, such as would be required by the Government Department. To use the words of the circular, "these premises will constitute "an entirely distinct property, and will be secured for Educational "purposes under the Trusts required by the Department of "Science and Art, from which substantial aid may be expected "towards the purchase of the site and the cost of building in "the first place, and subsequently to the maintenance of the

“classes and their teachers, by the Grants on the results of the “instruction.”

But in order to carry out this very promising and desirable object for the whole County as well as for the City of Truro, it will be absolutely necessary to have considerable private help, and the subscription list, which has already been to some extent filled up, on the whole promises well. I think I need hardly point out to such an audience as that I have the honour of addressing, the immense benefit it is to students to have such excellent collections so close at hand, as these of this Institution would be, in the event of our hopes being fulfilled. On this point I may be allowed, perhaps, to speak from my own personal experience of the benefit the collection at the Mining Academy, at Freiberg, is to the students, who come from all parts of the world to take advantage of the facilities afforded them there. I have therefore very great pleasure in endorsing this statement, and commending the scheme to your very earnest attention. I wish to add that the proposal if carried out would in no way interfere with the working and individuality of those other scientific, educational, and useful societies which I am proud to say exist, and do such good work in this industrious county. They are in themselves worthy of every possible encouragement, bearing testimony as they do to great foresight on the part of their promoters, and reflecting credit on those who maintain and carry them on. I feel naturally a peculiar interest in the scheme now before us, from the fact that the site in question is that of the old town residence of our family, where my grandfather and father lived for many a long year.

I understand that the chief addition to our Museum during the past year is Mr. Laughrin's most excellent case of “Crustaceans,” which obtained such an honourable mention at last year's International Fisheries' Exhibition.

And now, as is customary, I must refer briefly to the losses sustained by the Institution by the death of any of its members during the year. I am thankful to say that I am told that only one active member has been removed from us, but in him we have sustained a very grievous loss indeed. I refer to Dr. Hudson, of Redruth. Although, I believe, not a native of this county, yet during a lengthened residence in it he

had so ingratiated himself, far and wide, with rich and poor, that his death was most acutely and terribly felt. His prevailing idea and wish seemed to be, to work for the good and instruction of those amongst whom he lived. No trouble was too great, no exertion too severe to alleviate the suffering of his neighbours; no wonder, then, that his loss was so severely felt.

I have now finished, thanking you most sincerely for the kind attention you have given to what, I fear, must have been a very wearisome address. I only wish time had been allowed to me to make it more worthy and more in accordance with addresses such as have been given in former years from this honourable Presidential Chair.

THE EARLY HISTORY OF THE FAMILY OF MOUNT EDGCUMBE

BY THE RIGHT HON. THE EARL OF MOUNT EDGCUMBE.

IN the Parish of Milton Abbot, about a mile from the village, and on the edge of the Duke of Bedford's beautiful estate of Endsleigh, is the small house of Edgcumbe, or Lower Edgcumbe, standing where has been from time immemorial the dwelling of the elder branch of the Edgcumbe family.

In part of the back premises are four granite stones, inscribed with the initials R.E., and a date supposed to be 1292. At any rate one Richard Edgcumbe lived there in the 14th century, and had two sons—1, John, who succeeded his father in the Edgcumbe estates, and was living in 1390; 2, William, who in 1353 married Hillaria de Cotehele, the heiress of the house and estate of Cotehele, where they henceforth lived and founded that branch of the family which, two centuries later, removed to Mount Edgcumbe.

The earliest deed I know of which bears the name of Cotehele, is dated 1293, and refers to Eustace Cotehele. His grandson, William, married the daughter of Walter de Donne. The children of this marriage were a son, called Ralph, and a daughter named Hillaria, who were both under age when their father died (before 1336). As their ancestors had always held their lands of the Earls of Cornwall, by Knight Service, John de Eltham, then Earl of Cornwall, promptly seized the wardship of these children as Lord Paramount, and gave it to one Richard de Bakhampton, then his steward in Cornwall, on account of good and agreeable service done to him by the said Richard, who transferred it for a consideration to Maude de Brendon, a lady with a daughter to marry, which daughter was accordingly espoused to young Ralph.

Ralph died childless, and on the death of his Mother-in-law, about 1352, a contention arose as to the guardianship of his sister Hillaria, and the right to dispose of her in marriage.

John de Eltham having died in 1336, the matter came before the Council of Edward the Black Prince, who had been created Duke of Cornwall by Charter of the King in 1337. In the first place John de Brendon, eldest son of Maude de Brendon, claimed the wardship and marriage of Hillaria, as his mother's heir; and by an Order in Council, dated March 1, 1352, the Prince declares that they belong to himself, and that he has sold them to the said John (so that she be married without disparagement) for forty shillings (solez) to be paid to the feodary of the Duchy. By a subsequent order he commands his dear "Vadlet" John Dabnoun de Bradford, the said feodary, or keeper of the fees of Cornwall and Devon, to deliver to this John de Brendon the body of the said heiress, to be married as aforesaid, on payment of the money; and again in a third Order commands that the said John be allowed to take her lands and tenements for his advantage and profit, "in case that in any marriage offered to her she shall not be disparaged, within the time ordained by the statute, and that she has refused."

On further investigation, however, the feodary learns that Maude de Brendon on her death bed appointed another son, Thomas, and his sister Joan, to be her executors, and bequeathed to them by will the wardship of the body and lands of Hillaria. One Mons. Walter de Wodeford (whom the Prince calls "our dear Bachelor") has also stated that the contested wardship was sold to him by the said Thomas, and at the same time Hillaria herself claims to be of full age of 14 years and upwards, and prays to have letters of enquiry as to her age, so that she may have the benefit of the statute, which would free her from control in the matter of her marriage. Wherefore the Prince, on 27th March, 1353, issues fresh orders to his steward and feodary. "We command you," he says, "that you call the parties before you, if they are willing to come, and, the things on the one hand and the other being properly tried, that you cause the "livery" to be made to him who ought in right to have it. And, if what is needed cannot be duly tried before you, that you certify to us distinctly all the aforesaid things, and the rights claimed by each party."

I have no record of the issue of this enquiry, but as the young heiress was born in the days of John de Eltham, who had been dead at least 16 years, she must have found it easy to

prove that she was of age to choose for herself. Probably she had chosen already. At any rate she was married within the year, for a deed dated 1353 bears the names of William Eggcombe, of Cotehele, and Hillaria his wife.

The grandson of Hillaria was Richard Eggcombe, who in the 7th year of Edward the 4th served in Parliament for Tavistock, and was Escheator of the County of Cornwall. This was an office of great trust in those times, so he must have been in favour with the king, yet he seems not to have taken any active part in the Civil wars of this troubled reign, but to have lived at home as quietly as circumstances would permit.

He had, however, a troublesome neighbour in Robert Willoughby, who now occupied the castellated mansion of the Ferrers family at Bere Ferrers, and who seems to have delighted in committing depredation upon his property and assaults upon his retainers, as set forth at length in "the Complayntes of Richard Eggcombe, Squyer, of certyne and dyvers injures and wronges doon to him by Wylughly, Squyer," (19th Edward IV.)

This quaint Document tells how on the 30th of April 1480, as Richard Eggcombe was riding from the house of his friend William Trethewy, at Kendal, to his own "mansyon place" of Cotehele, Robert Willoughby with 34 men armed with "Jackes, Salettes, and Scythes lay in a wayte to have mordered and slayne him, and uppon him made a saute" so that he was "putte to flighte" and chased to "Leskarde" and was "in grete jep^{dy} of his liff." Then "on phlyppe is day and Jacob" Willoughby came to Cotehele "shot arowes" at Eggcombe's servants, "brake dyvers dores," and threatened to burn the place, while one of his men "drugh his swerde sayinge to the childer he woulde kutte off there koys, and to John Dowrygge he wold have kutte his throte" unless they "wold" confess where their master was, and that same night Willoughby attacked Eggcombe at Krokedon with 24 men and put him to flight. On other occasions Robert (as Willoughby is generally called) or his men "contrewayted" Richard at "Pilyton Brigge" and at "Klaper Brigge" so that he might nought pass no case for jupertye of his liff," and carrying off one of his servants kept him seven days prisoner at Bere Ferrers. Again Robert came one day to Cotehele with 15 men and took several of Richard's prisoners to Bere Ferrers, and his servants "lay dayly and

nyghtly in the wodys and hegges at Cotehele" so that Richard and his household durst not "at the said place to abyde," and stole "at dyvers tymes" "Bedynges, Blankyddes, Schyrts, Bowys, a hatte and a typet, a huntynge horne" "brass pots and pans," "a broche, a payre of hosys, sporys, &c." Then Robert "chasyed" Richard, so that he was forced to "lie dayly and nyghtly in his wodys for safe garde of hys lyffe to the grete hurte and grefe of hys body."

Another time, Richard recounts, that he had been "upon the see" and intending to land at Fowey was so threatened by Willoughby that he was afraid to do so, "but was fayn to take the see" and keep away six weeks. Again at "Tauystoke" Robert and his men with "Jakkes, Saletts, toygenders, bowys, swerdys, and byllys made a gret affray an a sawte" upon Richard who "was in hys bed nakyed safe his shurt" and wounded his servants, and at "a comyn Ostry at Calyngton" two of Robert's servants "bete and wounded" one of Richard's. Lastly Willoughby's men came to Cotehele and there "wold have sold both drye corn and wete" and other goods, "and forbode my brother Dr. Eggcombe ys man that he shuld have do with no man's stuff there uppon jup^{dy} of hys lyfe."

Each charge against Willoughby is headed "*Item*" and ends with a valuation of damages, as thus: "to the hurte and damage of the same Richard of 20lb. and more."

This feud between the adjoining Squires may have originated in party hostility inherited from the Civil wars, but all fighting had long been over, nine years at least having elapsed since the Earl of Warwick had been killed at Barnet, and the Red Rose crushed at Tewkesbury.

Within a few years this Willoughby (as Lord de Broke) and Richard Edgcumbe held high places together in the Court of Henry VII; and 300 years later the estates of Willoughby having passed into the possession of Lord Buckingham's line, came to Richard 2nd Earl of Mount Edgcumbe on his marriage with Lady Sophia Hobart.

In 1483 Richard Edgcumbe is said to have joined the rising against Richard III, which was headed by the Duke of Buckingham, and of which one of the principal centres was Exeter.

The union of the insurrectionary forces was frustrated by the flooding of the Severn. The Duke of Buckingham was taken and beheaded; and of his followers, some were executed, and the rest dispersed. It was then that Edgcumbe was pursued into the woods at Cotehele by a party headed, according to tradition, by Sir Henry Trenowth, of Bodrigan, and so narrowly escaped, according to the quaint description of Richard Carew, by throwing his cap, with a stone, from the rock where he lay concealed, into the river, so that "the rangers who were fast at his heels, on looking down after the noise, and seeing his cap floating thereon, supposed that he had desperately drowned himself, gave over their farther hunting, and left him at liberty to shift away, and ship over to Brittany. For a grateful remembrance of which delivery he afterwards builded in the place of his lurking a chapel, not yet entirely decayed." This little chapel still exists; but it was evidently much ruined in Carew's time, and was probably new vamped (I can hardly say restored) about a hundred years ago.

In 1485 the Earl of Richmond returned in person from Brittany to wrest the crown from the usurper, and was accompanied by Richard Edgcumbe, who, on the field of Bosworth, was made knight-banneret, and subsequently comptroller of the King's household. He also received various other offices and considerable grants of land; among others, all the confiscated estates of his old enemy, Henry of Bodrigan, who, by a stroke of poetic justice, is said to have been hunted down by Edgcumbe and Trevanion at his own manor-house, near the Dodman Head, and to have barely escaped their clutches—much as Sir Richard had previously saved himself—by dropping from the cliff at the spot still called "Bodrigan's Leap."

From this time Sir Richard Edgcumbe, whose estates had before been very small, became a comparatively rich man; and it would be natural to suppose that the enlargement and improvement of his house would date from this period, but he only survived his accession of fortune about three years, and they were busy ones. As an indication of this I may merely say, without entering into any details, that he was almost immediately sent to France to take the allegiance of officers and others at Calais and many other places. Next year (1487), as Sheriff of Devon, he is mentioned as bringing aid to the King at

the battle of Stoke, against the adherents of Lambert Simnel. Early in 1488 he was sent on an embassy to King James III of Scotland, and succeeded in making a truce for seven years. Soon after, in the same year, he was despatched with five hundred men to Ireland, where Lambert Simnel's insurrection had originated, to carry the King's pardon, and administer the oath of allegiance to the nobility, gentry, and commonalty of the realm.

The diary of this expedition, from a MS. in the Cottonian collection, is very quaint and amusing, describing how from day to day the Irish nobles attempted to put him off with excuses for not taking the oath; how at last they proposed taking it in the afternoon, "to which Sir Richard would not consent, but would have them sworn in the forenoon, and that a chaplain of his own should consecrate the host as they should be sworn upon;" how, even then, he could not get them for ever so long to sign their certificates and recognisances, and had to use "fearful and terrible words;" and how, at last, it all ended in much good cheer; and Sir Richard, having visited Waterford, Dublin, Drogheda, and other places, had a detestable voyage back, poor man, which took him eight days, as the wind was always right contrarious, and it "blew right sore," and "was right troublesome weather."

I have referred to this expedition, because there are several articles hanging up in the hall which I can only account for by supposing that they were brought back from Ireland by Sir Richard on this occasion, and in particular two brass trumpets, which I know to be Irish and very ancient.

We have no record of the time when any of the arms were first hung up in the hall. No doubt some importations from foreign parts may have been brought home and added to the collection by naval friends or members of the family; but I can think of no occasion but that to which I have referred when it is likely that the two curious brass trumpets can have been brought; and it is interesting to think that, in all probability, they were hanging up as curiosities and antiquities in some part of the house before the hall in which they are now placed was even built.

In September of this same year, Francis II, Duke of Brittany, who had befriended Henry VII during his exile, died

after his defeat by the French at St. Aubyn; and Lord Willoughby de Broke was placed in command of six thousand men to go to the assistance of his daughter the Duchess Anne.

Sir Richard was one of those summoned to report upon the quota of archers from Cornwall; and was afterwards sent to Brittany himself in a diplomatic capacity.

Hepworth Dixon in his *History of Two Queens* gives an amusing account of the state of Brittany at the time of Sir Richard's mission; of the number of suitors who were rivals for the hand of the young Duchess—or rather for the Duchy of which she was the heiress; and of their quarrels and intrigues. Ultimately, as you will remember, after having been formally betrothed to Maximilian of Austria, she was induced to throw him over for the treacherous young French King (who was himself as good as married to Maximilian's sister), and Brittany was thus added to the Crown of France. But Sir Richard did not live to see the failure of his work. He died at Morlaix in September 1489.

Before sailing from Penryn, he made his will, at the beginning of which he entrusts his soul to the care of St. Thomas à Becket, whose effigy appears on his monumental brass—a copy of which is hung up in the chapel here, the original at Morlaix having been destroyed when the church in which it was placed was desecrated during the French revolution.

Of Sir Richard's son, Piers, who, like his father was a trusted supporter of Henry VII, in 1485, and was made one of the Knights of the Bath at the creation of Prince Arthur, I must say a few words, because he is the last of the family who lived altogether at this place. By his first marriage, with Jane Durnford, some time within the last decade of the century, he acquired the estates of the Stonehouse family on both sides of the river-mouth. At East Stonehouse, which is still the legal name of the town, there was a manor-house at which he sometimes lived; while near the site of West Stonehouse, a village which was destroyed by the French in the fourteenth century, and of which every vestige, as well as its name, is lost, his son built Mount Edgcumbe House, in the first year of Queen Mary.

I may mention, as bearing on the dates of the buildings at Cotele, that the arms of Sir Pier's first wife only appear in the

windows of the hall, while those of his second wife were introduced into the east window of this chapel; but I know little of his biography, except that, having distinguished himself in the following reign at the sieges of Therouennes and Tournay and the "Battle of the Spurs" at Guinegate, he was made knight-banneret by Henry VIII. I have had a facsimile of his standard hung up in the hall, which shows (oddly enough) a crest that was never subsequently used, and appears nowhere else except on the herald's patent in my possession, dated 1513.

All the private history of the next two generations is connected rather with Mount Edgcumbe than with Cotehele.

Early in the seventeenth century, the Sir Richard of that day (for they were all called alternately Richard and Piers) married the daughter of a Protestant merchant of Brabant, who had sought refuge in England from the persecutions of Philip II, who seems to have lent large sums to James I, and to have been knighted by him, and who, by a curious coincidence, was called Sir Thomas Coteele—although spelt differently from the old family name. From various letters, it would seem that this gentleman lived here a good deal. His picture is on the staircase; and probably much of the furniture and some of the alterations of the house are of this date. Some of the tapestry is Flemish; but, whether brought by him, or transferred to this place from Mount Edgcumbe when it went out of fashion, I cannot say.

One of Sir Richard's sisters, Mary, afterwards Lady Denny, was maid of honour to Queen Elizabeth; and some of the old dresses, saddle housings, etc. which remain at Cotele, were perhaps worn by her in the glittering train of the great Gloriana.

I know of no matter of interest connected with this house during the Civil war. A bedroom is called King Charles's, and it has been supposed that he slept here; but, although the tide of war swept across the Tamar at New Bridge, within a few miles, and no doubt the head-pieces in the hall were worn in the service of the King, I have no proof whatever of his having been within its walls. Sir Richard had evidently to suffer by the confiscation of a large portion of his property, in consequence of his allegiance to Charles; for we find (in the State Paper Office) a document signed by him asking the Commonwealth Parliament to restore the lands to his family. Colonel Piers

Edgcumbe (the then head of the family) was engaged with his regiment, near his other residence, in the contest that was raging round the beleaguered town of Plymouth. The war dealt hardly with him. I have various bills for silver-plate, of an earlier date, very few articles in which I can identify, although there are a few old forks and an ancient salt-cellar which seem to have been his, but all the rest must have gone either in the service of the King or in payment of his fines as a delinquent. As late as 1651, he was still a prisoner in St. Mawes Castle; and, although at the restoration his services appear to have been recognised by his son being made a Knight of the Bath, he himself seems to have spent the rest of his days quietly here, and is buried at Calstock.

From that time, with few exceptions, this house was little occupied for two centuries.

For many years the eastern side of it was used for farm buildings; and with the exception of the arms and the pictures—the former of which were all periodically painted brown, and the latter washed by an old housekeeper with gin and water “every spring and fall”—no hand but that of time has interfered with the house or its contents, until about twenty years ago I made a residence for my mother in that part of it which had been only used for farm purposes, or left to the mice and bats.

THE RUSH-LIGHT IN NORTH WALES.

By C. LE NEVE FOSTER, B.A., D.Sc.

In these days, when tallow candles have been replaced to a great extent by those of stearine, paraffin, and ozokerit, or have been driven out altogether by mineral oils and gas, it seems strange that the humble rush-light should still linger in some of the farm houses of North Wales. Such however is the case, and before this old-fashioned illuminant is quite extinct, it may be well to preserve a record of it, especially as it differs from the rush-light used in England within my recollection. This was a thin tallow candle with a rush wick, placed in a candlestick surrounded for safety by wire gauze; it has long been discarded for the more convenient night-light. The Welsh rush-light is a taper about 2 feet long, made from the common rush or sedge; the outer skin is peeled off with the exception of a narrow strip left for strength, and the pith is drawn through fat melted in a frying pan or any other suitable vessel. The spongy pith absorbs the fat readily, but it does not receive an outer coating of tallow. It is burnt in a simple candlestick, which holds the taper in any position, and allows it to be shifted readily as it burns down. The candlestick which I send to the Royal Institution was kindly procured for me by Mr. G. J. Williams, of Blaenau Festiniog; it has been in use for four generations.

The length of time a taper will burn depends upon the angle at which it is set in the candlestick. I find that a well-made taper set at an angle of 45° will burn at the rate of 1 foot in 20 to 30 minutes.

Though primitive, the rush-light taper must not be despised, for it possesses certain advantages. In the first place it can be made very cheaply, children can pick and peel the rushes, and the fat used is a product of the farm. All waste fat from sheep or pigs is collected, and when enough has accumulated it is boiled down for use. Secondly, it requires no snuffing like an ordinary tallow candle; and thirdly, no grease drops about when it is carried.

NOTE.—This Welsh rush-light is precisely similar to the Sussex one, which was common in the rural districts until a few years ago. Gilbert White in his Natural History of Selborne gives an account of the mode of manufacture.

These rush-lights were burnt in rude frames of Sussex iron, which stood on three claws, and were also furnished with a spring to keep the rush in an approximately upright position; one of these primitive candlesticks was in the belfry of Eastdean Church, amongst the Southdowns, near Eastbourne, a few years ago.—*Ed.*

MANUSCRIPT MATERIALS FOR CORNISH HISTORY.

By R. N. WORTH, F.G.S., *Cor. Mem.*

Although Cornwall is richer in the number of County Histories than almost any other division of the kingdom of equal importance, it is undoubtedly wanting in extended histories of a more local character, and an enormous mass of detail remains yet to be worked out. We have histories of Bodmin, of Liskeard, of Falmouth, and graphic sketches of Penzance and of a few other localities, and a History of Launceston is now in the press. But neither of these, so far as they are publicly known, are upon a scale to meet the demands of the modern topographer and local historian; and for the greater part of Cornwall the general county histories supply our only available information. And even they are far, in many respects, from fulfilling the modern idea, and of meeting modern needs; while, with all their excellences, they fall very short of the standard set by Sir John MacLean in that model parochial record—*The History of Trigg Minor*.

I am not sure, however, that the delay which has perforce occurred in carrying out the detail work of historical research within our county, is altogether to be regretted. We have all of us seen churches which were among the first victims of what became the mania of restoration; and we have all of us regretted the damage done by zealous but unskilled hands, and wished unavailingly that the work had been left to the fuller knowledge of a later time. And something of the same feeling must attach to the perusal of the results of historical labours, patiently and perseveringly continued, and wanting nothing to attain the chronicler's perfection *but* the solid basis of ascertained fact. We have already so much to undo, that we may be thankful there is no more.

It has only, indeed, of very late years, since the treasures of the Record Office have been made widely available, and still more, so far as local history in particular is concerned, since the Historical Manuscripts' Commission has been pursuing its

useful career, that the original materials for this work have been placed within the reach of the historical student. Probably few know what this really means, save they whose lot it has been to trace a statement through a long range of copyists—each passing with the general public as an independent authority—to find at last that the originator had blundered, or been led astray by lack of sufficient information; and that a single document sufficed to render worthless the whole of their labours. In fact, where an original record exists, it is never wise to assume that it has been duly considered by our predecessors, and the only safe course is to bring everything so far as possible to the test of contemporary evidence.

These remarks are simply preliminary to a few suggestions concerning the materials of our Cornish history which yet exist in manuscript. I feel sure that at the present moment, notwithstanding all that has been done, we are very imperfectly acquainted with those records, and that unless a special effort is made at the present moment, we never shall be. The Historical Manuscripts' Commission has done some work in the county, and will do more, but it is overburdened with its toils and straightened for means, and years in any case must elapse before it could do for Cornwall what really needs to be done at once.

We have reached a stage in the history of the county which closely corresponds to the eventful 1832. In that year the bulk of the ancient Cornish parliamentary boroughs were swept out of existence; and those of them which had not municipal corporations ceased to show any signs of local life, while several of those which did rejoice in the possession of a chief magistrate and a civic body, as time went on failed to keep up their charters, in the absence of the stimulus—not always unprofitable—of a contested election.

I think we may safely assume that the whole of these boroughs possessed records of some kind or another, and records which would throw valuable light upon many important points in our local history. I do not believe that they are all lost, or past recovery, especially in those cases where proprietary influence was strong; but can anyone tell us where they are? Is there any clue to the muniments of St. Mawes, Tregony, Grampound, Mitchell, Fowey, Tintagel, West Looe, St. Germans, Newport? And is not the enquiry worth the making? I have

reason to think that in some instances the clue exists, but I do not wish to carry this paper beyond suggestion.

We have now, however, arrived at a period when it is certain that some of those unreformed corporations of the county which have maintained their existence until the present day, will disappear, while those which are left must pass under the ordinary municipal scheme. What is to become of the muniments of the corporations doomed by Sir Charles Dilke's bill? They would be practically valueless in private hands, and would soon be lost sight of in any case. Moreover, with regard to the reformed corporations, will not their position with regard to the historical student be very different to that of the old close bodies which they will replace, and their records be more readily accessible?

My idea, therefore, is this, that an effort should be made to secure for the purpose of historical research such local records as are in danger of disappearance, and I would combine with this an attempt to ascertain, with some approach to precision, what the full manuscript materials for Cornish history may be.

The task is by no means a light one. It is far too great for any one individual, but I venture to think it is neither beyond the province nor the powers of the Royal Institution. Here, with greater accessibility than elsewhere, might be deposited the muniments, properly arranged and indexed, of the corporations that have ceased to be (should any be recoverable), and of those that are doomed to extinction. And this would be a good work, even if it went no further.

But we may go much further. Would it not be possible, with the consent of the various corporations throughout the county, to do on a small scale, but with special regard to local interests, what the Historical Manuscripts' Commission is doing on a large—to examine the various collections of records in the county, and to calendar their chief contents?

I have reason to believe that some of the corporations at any rate would be glad to have their collections examined, and so far reported on and arranged by competent authority. With the volunteer aid that no doubt would be available the cost need not be heavy, and a very few years would put us in possession of a body of original historical material of the highest value. We should do, in fact, for the local manuscripts of the

county, what Messrs. Boase and Courtney have done for its printed literature, with the further advantage that we should be perpetuating and preserving records of which no copies exist, and which once lost—unlike the immense majority of printed books—can never be replaced.

CORNWALL AND THE SPANISH ARMADA.

By H. MICHELL WHITLEY, F.G.S., Hon. Sec.

Attend, all ye who list to hear our noble England's praise ;
I tell of the thrice famous deeds she wrought in ancient days,
When that great fleet invincible against her bore in vain
The richest spoils of Mexico, the stoutest hearts of Spain.

I am telling the story of the Spanish Armada and the part our own country played in that heroic strife, whose memory will never fade out from the minds of Englishmen, and especially from west countrymen, when amongst the names who bore a leading part in "Britain's Salamis" were Drake, Raleigh, Hawkins, Grenville, Rashleigh, and many another Devon and Cornishman; but to do this and gather together into one connected story the various threads, it is necessary to go back to the reign of Henry VIII and trace the development of the coast defences of Cornwall, the wrongs suffered by Cornishmen from foreign pirates, the reprisals of Sir Francis Drake, and then (to avenge them) the advent of the Spanish Invincible Armada blessed by the Pope, and the part our county bore in that noble fight.

In the early years of King Henry VIII the sea coast of Cornwall was practically defenceless. Pirates and foreign ships of war cruised off the coasts, boldly entered the harbours, and captured prizes before the very towns themselves. Leland (in his Itinerary, 1538), writing of Malpas, says:—"Here fought a late 18 sail of Merchant Spaniards and 4 shippes of warre of Depe the Spaniards chac'd hither the Frenchmen," and most satisfactory confirmatory evidence of this story is forthcoming. Sir John Arundell, of Trerice, (writing to Cromwell, 1537) says:—"There came into Falmouth Haven a fleet of Spaniards, and the day after came four ships of Dieppe men-of-war, and the Spaniards shot into the Frenchmen, and the Frenchmen shot into the Spaniards, and during three hours great guns shot between them, and the Frenchmen were glad to come higher up

the Haven; and the morrow after St. Paul's day (January 25th) the Spaniards came up to assault the Frenchmen, and the Frenchmen came up almost to the town of Truro, and went aground there.

I went to the Admiral of the Spaniards and commanded him to keep the King's peace, and not to follow further; but the Spaniard would not, but said, 'I will have them or I will die for it,' and then the Spaniards put their ordnance in their boats and shot the French Admiral forty or sixty shots during a long hour, the gentlemen of the city, Mr. Killebrew, Mr. Trefusis, and others, taking pleasure at it.

Then I went to the Spaniards and told them to leave their shooting or I would raise the country upon them. And so the Spaniards left. My Lord, I and all the country will desire the King's Grace that we may have blockhouses made upon our haven.*

And this was not the only time that Truro heard the thunder of foreign guns, as the following petition of a Truro merchant clearly shows, which states that:—

“There was taken about three months past by one Captain Matheas, of Crosicke, a shippe of 90 tonnes belonging to one John Mychell, of Treroe, upon Faulmouthe, in Cornewall, the sayd shipe and her ladding were worth £800, and she being att an ancker in Tonckett Rodde, within syghte of the towne, the sayed Mathias layed her a borde and tooke her, as maye appere by a testimonial from the inhabitence of the sayd towne; and having tacken the sayed shippe callid the George, of faulmouth, whent with her to sea and tooke with her two ynyliche shippes more, and towe fflemings, and then brought her back to Crosike and toucke out of her 60 tunnes of wynne and all her ordnance, and other furniture wherewith he rigged forth a greater shippe at the Cappe, and suffered the said George to be beaten, for lacke of ground tackle, upon the rocks that now she is all in pieces.

This is the third shipe that the said John Mychell hath lost into France by French pirates, and followed the same thence to his utter undoing, and could never get justice at their hands,

* MS., State Paper Office, 2nd series, vol. 1.

so as he is able to make good accompte by prooffe of £3000 that he hath lost within this seven years by French pirates, and yet to this daye never received a penny recompense.”*

The unprotected condition of the harbours was brought home to the King, by such outrages as these, whilst the threatening aspect of foreign powers showed that it was no longer safe to delay fortifying the coast. Accordingly surveys were made of the southern coasts, pointing out where the enemy might easily land, and what defences were necessary.

A chart of the southern coast of Devon and Cornwall, temp Henry VIII, is still preserved in the Cottonian collection at the British Museum. From this it may be seen how entirely unprotected the seaboard was. Practically the only defences were: on the northern coast the blockhouse at St. Ives, and on the south coast the two square towers at the entrance to Fowey Harbour (which are said to have been built in the reign of Edward IV), —the roadstead being further guarded by a great iron chain drawn from tower to tower across the water, the holes to which it was fastened, according to C. S. Gilbert, at that time still remaining in the rocks; this chain Leland states was removed to Dartmouth in the same reign it was laid down. Two links of a very large chain, probably from this boom, were dredged up in 1776, and are now preserved in the grotto at Menabilly.

The date of this survey is supposed to be about 1542, and it shows clearly what additional blockhouses were to be built for the defence of the coast.

One was proposed in Cawsand Bay to protect the landing there; and another at the entrance to Looe, which was at this time defended by a wall against the sea. The westernmost of the two towers at Fowey is noted as being decayed, and the fort outside (now known as St. Catherine's Fort) was then half made. Blockhouses, all marked “not made,” are also shewn at Tywardreath, Gillingdune, Dinas Head at the entrance to Helford River, Penzance Pier, and Penlee Point.

St. Mawes Castle at this time was in course of erection, but nothing stood on the opposite hill, where Pendennis was shortly afterwards built, and it is probable that the first defence at this spot was the blockhouse, near the entrance to the Haven.

* State Papers, Domestic, Elizabeth, vol. 47.

Probably St. Catherine's at Fowey, St. Mawes, and Pendennis were the only defences erected, and with regard to the latter a very curious bill of charges disbursed by Sir John Arundell, giving the price of labour in 1553, in still in existence,* which is worth giving in full, and runs as follows:—

“ These charges Sir John Arundell, of Langherne, in the county of Cornwall, Knight, bestowed about suche ordinance and other necessaries at the Castle of Pendennis in ffalmouth by the commandment of our late Sovereign Lady Queen Mayre as y^t may apere by her Grace's letters bearing date 13th of Marche in the fyrste yere of her most gracious rayne, which charges continued tyll discharged by her Grace's letters bearing dato the 23rd of Aprill in the same yere.

Imprimis paid for tymbre to stocke a Slyng and fowler more made there of 6 axxeltres and 17 forloges with other necessaries for the ordynance.	23s. 8d.
I ^{tm.} paid for raxxs for olage of the ordynance.	28d.
I ^{tm.} payde for towe and tallowe for the ordynance.	12d.
I ^{tm.} payde for a ladle for the fawken.†	16d.
I ^{tm.} payde to a smythe for 22 dayes having 8d. by the daye.	14s. 8d.
I ^{tm.} payde to the smythes man for the same 22 dayes afore 6d. by the daye.	11s.
I ^{tm.} payde to a carpenter for 18 dayes stocking of ordynance havinge 8d. a daye.	12s.
I ^{tm.} payde to his man for the same 18 dayes havinge 6d. the daye.	9s.
I ^{tm.} payde for iron to make nayles, spikes, etc., and bandes to the ordynance.	7d.
I ^{tm.} payde for smithes cole to worke with.	2s. 6d.
S ^{ma.} £5 17s. 4d.	

Charges payde the Capten and 10 soldyers for 32 dayes that is to saye from the 20th of Marche tyll the 21st of Aprille in the fyrste yere of the Rayne of Queene Mary, the captaine havinge 18d. a daye and the soldyers 6d. a daye so that the hole is £10 8s.

S^{ma.} Tot: £16 5s. 0d.

The summer of 1545, when the invasion of England was attempted by the French, found the nation not unprepared. “The Abbey lands had been melted into cannon; the swords

* State Papers, Domestic, Elizabeth, vol. 8, No. 16.

† Falcon, a small piece of ordnance.

and lances stood ready in the Castle halls; the longbow leant against the wall of the peasant's cottage, and the sheaf of arrows hung above the chimney," and amongst the Royal Squadron assembled at Portsmouth to resist the attack were the following Cornish ships:—

Ships.	Captain.	Tons.	Men.
The Trinity of Fowey	Anthony Dowgate	80	60
The George, of Falmouth	John Calerde	60	56
The Marye, of Fowey	Thos. Hollyes	"	30
The James, of Fowey	Thos. Cock	"	29
The George, of Truroe	Richd. White	"	32
The Katherine Whyte, of Lowe	Thos. Even	40	31

The Cornish coast thus possessed for defence, in addition to the Castles named, a number of small ships useful in time of war to repel any attack of an enemy.

Passing now to the reign of Elizabeth in the years before the Armada, the ill-feeling between Spain and England was growing in intensity, and numerous expeditions under the command of Sir Francis Drake were undertaken for the purpose of crippling the Naval power of the Spaniards, and in July 1587 he returned home bringing as a prize the great Caracke San Philip, which was captured near the Azores; so richly was she laden that the sailors believed their fortunes made. By an inventory taken at Saltash the value of the cargo is given as £108,049 and amongst the lading were 330 tons of dry pepper, 420 bales of indigo blue, calico's, china silk, cynamon, cloves, myrrh, benianim, 1800 lbs. of china in 3 pipes, nutmeg, saltpeter, wax, ivory, 6 chests of fine white china silk, culled cypres, culled taffitas, changeable silke, etc.

And there is also preserved in the Public Record Office* another inventory of a casket with jewels, perhaps belonging to some Spanish Lady, captured in the same vessel and taken charge of by Sir Francis Drake to deliver to the Queen, which runs as follows:—

A note or Iventorye of a small caskett with divers jewels viewed by us in the towne of Saltashe the 6th of Julye, 1587.

Conteynyng as followeth.

Five forckes of gold.

Twelve hastes of gold for knives to saye five of one sort and five of another.

* State Papers, Domestic, Elizabeth, vol. 202, No. 53.

- One chayne of golde with longe linckes and hooks.
 One chayne of golde with a tablet havinge a picture of Christe in golde.
 One chayne with a tablet of Cristall.
 A crosse of golde.
 One chayne of golde of Sses* with fower diamonds and fower rubyes sett in a tablett.
 One chayne of small Beadestones of golde.
 One small chayne of golde with rough linckes, a tablet hanging into it with the picture of Christe and our ladye.
 Two pendens of golde for the cares.
 Three bracelettes of golde eiche with a crosse of sondrye fashion.
 A girdle of christall garnished with golde.
 A payre of beades of beniamyn garnished with golde.
 Three rings of golde with stones.
 One round looxe of golde inameled with blacke.
 One smale ringe of golde with a pearell
 Three heads and three ringes of gold for walking staves.
 One boole of gold and five spoones of gold.
 Two pomanders † the one with a small chayne of golde and garnished with golde,
 One pomander garnished with golde and a pearll hanging to the same.
 One small box with some muske in it.
 A certyne quantitye in peeces of amber grene.
 One hundred eighty and nine small stones which wee esteem to be garnetts.
 Thirtye nyne aggates small and greate.
 Eleaven other stones of a grene colour with spottes of reed.
 One blood stone.
 One white clothe in the whiche there goeth diverse small stones thought to be of small valew.
 The saide casket garnished with golde with two keyes and a small chayne of golde to the same, the which casket and jewells before rehearsed Sir Francis Drake hath taken charge to delyver unto her Majesty with his owne hands at this presentes.

July 11th, 1587.

Francis Godolphin, John Hawkins, Edward Carew.

* A collar of ss. was an ornament worn by persons of rank, its origin and meaning are very obscure; it was, however, a badge of the house of Lancaster, Henry IV's being the first reign in which it appears. It is generally thought to be a repetition of the initial letter of that King's favorite motto "Soveraigne," borne by him while Earl of Derby and retained at his accession as a good omen.

† An open work ball of gold or silver to contain a scented ball or perfumes.

The defences of the sea coast having been left in almost the same state as during the reign of Henry VIII, when war with Spain became daily more imminent and the advent of the Spanish Armada was expected, measures were taken for the strengthening of the bulwarks and castles along the coast.

As early as 1579 the Earl of Bedford writes from Tavistock advising that Tyndageil Castle in Cornwall, under the handes of a servant of Sir John Arundell, and the Mount, should be fortified to resist the Spaniards,* the only other forts along the sea coasts at that time being the Castles of St. Mawes and Pendennis

Nothing appears, however, to have been done in this matter, and there is a memorial a few years later in Lord Burley's handwriting for the better defence of Devon and Cornwall dated November 17th, 1587, as follows.†

Lieuts. Sir Francis Godolphin.

Sir Wm. Mohun.

Peter Edgcumbe.

Richd. Carew.

Cornwall—Instead of Mr. Thos. Carminowe to have Nich^s. Trevenion.

To send 3 or 4 lieutenants into Cornwall to serve under y^e Captaynes of y^e bands.

To remove Harvise farmer of y^e woods and to place in his stead allowyng to y^e farmer his yerely proffitt.

To have y^e ordonance out of y^e great phillipp to be bestowed upon places undefended both in Cornwall and Devon.

To have y^e ordonance also that was lost out of a shipp called y^e Newbark near to Padstow y^e ordinance is at Mr. Godolfyns.

“To urge y^e Lieutenants of Cornwall to confer with Sir Rich^d. Grenfeld for “y^e trenching of places upon y^e sea coste where now danger is of “landinge.”

The arming of the Castles on the coast, and furnishing them when requisite, with cannon and further supplies of shot and other necessaries, was also attended to; the ordonance and stores for St. Mawes being set forth in detail in the following inventory.‡

* State Papers, Domestic, vol. 131.

† State Papers, Domestic, Elizabeth, vol. 205.

‡ State Papers, Domestic, Elizabeth, vol. 114.

ORDNANCE FOR ST. MAWES.

The Castle of St. Mawes.
beside Falmouthe

The remains within the
saide Castle and a
supplie added for the
better furniture of
the same the 12th day
of June 1577 Anno
regni Dnc Me Eliza-
beth Regina.

Videlicet,
The supplie.

		The Remains.						
Brasse Ordinance	{	Demi canon *	one	}	5			
		Culveringes	2					
		Demi Culveringes	one					
		Sacre	one					
Cast yron Ordinance	{	Culveringes	one	}	3	To be supplied in lieu of 3 slinges and 2 port- peces unserviceable Dimi Culveringes 2 and 2 Mynions way- ing 6000 ^h 8 ^c . at 12d. the c.	£ s. d.	
		Demi Culveringes	one					40 16 0
		Sacre	one					
Shotte viz.	{	Dimi canon shott	33 ^c .	}		To be supplied viz. Dimi Culveringe shott 200 Sacre shott 100 and Mynion shott 200 waieinge in all one tonne 7 ^c . 16 ^{lbs} . at 8 ^d . the c th . weight amounting to	£ s. d.	
		Culveringes shott	4 ^c .					11 5 3
		Demi Culveringes shott c.						
		Sacre shotte	60					
		Mynion shotte	mill					
Carriages.	{	With their furniture to be supplied viz. : for Dimi canon one at C ^s . for Culveringe one at C ^s . for				}	£ s. d.	
		Dimi culveringes at £4 the pece 2 and for						24 13 4
		Mynions at 66 ^s . 8 ^d . the pece 2. In all						
Small gonnes.		†Calivers.	50					
		‡Curriors.	50					

* The dimensions of cannon in the time of Elizabeth were as follows :—The demi canon was 6¾ inches bore and carried a shot weighing 33 lbs. The Culvering was 5½ inches bore with 17½ lb. shot. The demi culvering was 4 inches bore and threw a ball weighing 9½ lbs. The Sacre and the Minion had both a 3½ inch bore, the former throwing a 5½ lb. shot, and the latter one of 4 lb., the Falcon was 2½ inches bore and carried a ball weighing 2 lbs., and the portpece was a small piece of ordnance probably of similar dimensions.

† The Caliver was a kind of short musket fired by a matchlock.

‡ The Currior was a weapon chiefly used in sieges, with a longer barrel than an arquebus.

Powder and Matche.	Corne Powder	Null	{ To be supplied 3 hundred weight at 12 ^d . the pounce. }	{ £15
	7 ^{ct} .		{ 11 ^d . the pounce. }	{ 45 16 8
	Matche	Null	{ To be supplied 2 cwt. at 30s. the cwt. }	{ 60s.
	Bowes. 5.....		{ To be supplied 12 at 4 ^s . the pece. }	{ 48s.
	Arrowes.	Null	{ To be supplied 24 sheves at 2 ^s . the shef.† }	{ 48s.
Artilerie and Munitions with other Charges.	Bowestrings	Null.	To be supplied 1 grosse containing 12 dozen }	7s. 6d.
	Morinspikes	Null.	To be supplied 25 at 2s. 6 ^d . the pece. }	62s. 6d.
	Blackbilles	Null.	To be supplied 25 at 18 ^d . the pece. }	37s. 6d.
	Crowes of Iron	Null.	To be supplied 6 at 5 ^s . the pece. }	35s.
	Gunne‡ complete	Null.	To be supplied one	63s.
	The new makinge of one platform for the better placinge of the ordnance aforesaid being 60 foote square which by estimation will amount to }			£72
	The freight of the newe supplies from the Tower of London to Falmouth. }			£8
Summa. £234 4s. 9d.				

G. Jamyk, Deputy Master.

Wylllyam Jorden.

Richard Boillande.

In order to raise money for the defence of the country, the Queen issued a requisition to the Lieutenants of each county that she required an extraordinary aid by way of loan; and the names of the nobility, gentry, and others who contributed are preserved in a rare tract in the British Museum, which was printed in 1798 to give an account of their spirited and patriotic conduct on that occasion, and thus to stimulate the people to aid to their utmost in repelling the threatened French invasion.

The list is taken from a MS. written in 1588 and the portion relating to Cornwall is as follows:—

Cornubia.	£
March.—John Kymphthorne, Armiger 26 Marche	25
John Buggens, eodem	25
Sampson Strilles, eodem	25

* Serpentine Powder was Meal powder for priming.

† A sheaf of arrows was 24 in number.

‡ A triangle for lifting ordnance.

March.—Oliver Sawle, eodem	25
Thomas Hext, of Launston 27 Marcii	25
John Roberts, 28 Marcii	100
Richard Roberts, eodem	25
William Marke, 29 Marcii	25
April.—Thomas Mayo, of Menhenet 8 Aprilis	25
William Burlace, gent. eodem	25
Robert Trencreke, Armiger 11 Aprilis	50
Robert Smithe, gent. eodem	50
Richard Chamonde, Armiger eodem	50
John Brode, eodem die	25
John Mayo, <i>alias</i> Helyer, eodem	25
John Kekewith, Armiger, eodem	25
May.—Edward Skawen, sexto die Maii	25
Frauncis Buller, arm eodem	50
Philip Mai, eodem	25
John Coade, gent. eodem	25
William Bodie, eodem	25
Thomas Clief, eodem	50
William Pascow, eodem	25
Junc.—Edwarde Noye, 21 Junii	25
George Rooles, Armiger, eodem	25
John Arundell, of Gwernacke, Armiger	50
John Prideaux, of Padstowe, Armiger	25

It is time to turn now to the Land forces, and see what were the means of resisting an enemy in case a landing was effected on the coast. There was no standing army, but every able man was expected to be trained in the use of arms, and periodical returns (or muster rolls as they are called) were made to the Government, which in the returns of Henry VIII give the names of the men and their weapons for each parish.

* The certificate returned by the Lieutenants of Cornwall of the numbers of able men, trained and untrained, in pursuance of the letters from the Council, dated April 1588, runs as follows:—

	Men.	Shott.	Cors.	Bowes.	Billes.
Sir Rich ^d . Grenville	303	199	69	179	0
Rich ^d . Carew, of Anthony }	300	114	65	121	0
Edw ^d . Cosworth, gent. }					
William Beville, Esq.	200	80	36	84	0
John Carminowe, Esq.	290	82	37	81	0
John Arundell, of Talverne	250	78	97	75	0

* Murdin, Cecil State Papers, p. 601.

Able 5766 Furnished 3300 whereof.	*Shott	626	} 1500
	† Corslets	332	
	Bowes	542	
	Billes	0	
	Pioneers	0	
	Powder	700 ^{lb.}	
	Match	350	
	Bullets	350	
	Carriages & Horse	120	
	Naggess	120	

	Hundred.	Men.	Shott.	Cors.	Bowes.	Billes.
Untrayned	Stratton Hundred	300	60	40	100	100
	Lesnewth do.	200	40	30	60	70
	Trigge do.	200	90	30	60	70
	East do.	300	60	40	100	100
	West do.	200	40	30	60	70
	Pyder do.	300	60	40	100	100
	Powder do.	200	40	30	60	70
	Penwith do.	200	40	30	60	70
	Kerryer do.	200	40	30	60	70

Shott	420	} 2700
Corslets	300	
Bowes	660	
Billes	720	

Horsemen.	Launces	4	} 100
	Light Horse	96	
	Petronells	0	

Abstract.

Able men 7760
Armed 3600 (of which)

Trained 1500
Untrained 2100

There were 3000 men left in Cornwall to guard the coast and to encounter the enemy should he succeed in effecting a landing, Sir Richard Grenville being the Colonel. In addition, should any attack be threatened, 4000 men from Cornwall, 4000 from Devon, and 3000 from Somerset, 11,000 in all, were appointed to meet at Falmouth for the defence of the sea towns, the principal captains being Godolphin, Grenville, Arundell of Trerice, Mohun, Edgecumbe and Carminowe.

* The Musketeers were armed with the Arquebus, which was a hand gun fired by a match, it was often supported on a rest fastened to the barrel by a hook of iron.

† A whole suit of armour worn by pikemen, showing the number of the latter.

In July 1588, when the Armada was daily expected, further efforts were made, and the Deputy Lieutenants of Cornwall, R. Greyville, Fra^s. Godolphin, and R^d. Carew write on the 8th of that month from St. Columb to Sir Walter Raleigh, stating that the Cornish gentry would increase the armour for horse and foot to the utmost of their power, and would furnish 200 horses, 200 armed pikes, 50 musketts and 50 calivers, and that they had also taken order for the providing 2000 men for the defence of the county.

Thus the land forces were ample in amount, for in all England a hundred thousand men, well drilled and provided with weapons, were ready to take the field, and repel an invasion, and their orders were in case they were obliged to fall back, to lay the country waste in their retreat, so that the Spaniards should find neither food or fodder.

It has already been mentioned that the Lieutenants were, in conjunction with Sir Rich^d. Grenville, to throw up earthworks on the coast, to resist an enemy whenever there was a prospect of the Spaniards landing, and a map of the coast as it was to be fortified still exists in the British Museum, and was printed in the Journal of the Royal Institution for 1873, therefore it will not be necessary to further refer to it.

It is time now to turn to the naval defences. The English fleet which was assembled at Plymouth not only consisted of Royal ships (of which indeed there were but few), but also of ships contributed by the different port towns, as well as volunteers.

The Vice-Admirals for Cornwall were Sir Walter Raleigh, of Cornwall, and Sir Edward Seymour, his deputy.

The ships that were required to be furnished by the Western Ports were as follows :—

	Ships.	Pinaces.
Plymouth, Saltash and Tavistock	3	1
Looe and Fowey	1	1
Barnstaple and Torrington	2	1
Exeter and Topsham	3	1
Dartmouth and Totnes	2	1

and accordingly the following Cornish ships joined Sir Francis Drake at Plymouth.

	Tons.	Men.
The John Trelawney, of Saltash	150	70
		Thos. Meeke (captain).
The Frances, of Looe and Fowey	140	60
		John Rashleigh (captain).

With respect to the latter ship, it appears that Fowey and Looe were very backward in subscribing to the cost, as on the 13th July, 1588, the council write from Richmond to Sir Frances Godolphin and Rich^d. Carew stating that John Rashleigh having disbursed £600 for the fitting out of a ship and a pinace, was £500 unsatisfied, having received £100 only, and they were required to lay an equal tax on these towns, and the hundreds adjoining. In addition to the ships above mentioned there was a transport called the Elizabeth, of Looe, manned by 40 sailors, and a victualling ship called the Minion, of Fowey, which was sunk within the Pier of Dover by a tempest, and was laden with bisket, beer, (for beer was taken to sea then) beef, dry bacon, corfish, herrings, butter, and cheese, to the value of £486. 5s. 4d. There was also a bark with 40 men, called the John Grenfeld. Two other ships appear to have been commanded by Cornishmen. The Virgin God save her, by John Grenfeld, and the Galleon, by James Erizey. It will be interesting to note what the cost of these vessels was, and in Sir John Hawkin's account of disbursements for the Navy appears the following entries:—

Amongst the coasters that served westwards

The John Trelawney, of Ashe and Tavistocke begun the 9th of June 1588, and ended the 13th August next, the wages of 70 men amounteth	} £98 0 0
For the tonnage of the said ship, being 150 ton.	
For the victuals of 70 men for the like time.	£30 0 0
	£98 0 0

Amongst the voluntary ship is

The Frances, of Foye, for wages of 60 men for 6 weekes.	£63 0 0
For one months victual for the said men.	£42 0 0
The tonnage of the said ship for like time, being 140 tons.	£21 0 0

This then was the Cornish complement to the navy that lay in Plymouth Sound in June 1588 waiting the advent of the Armada. The summer was wild and wintry, storm after storm from the south west swept up the channel, past the Cornish headlands and burst on the fleet in the Sound; on June 4th Howard writes to Walsingham that they have had three days extreme continual storm, and the ships have “daunced as lustilye

as the gallantest dauncers at the court," and short of provisions as they were, almost utterly neglected by the Queen, in the face of the Lord Admiral's passionate protest "for the love of God let her Majesty care not now for charges," the Armada could not arrive too soon.

On June 23rd came a false alarm, Sir Francis Godolphin writing that the Spanish fleet had been seen off the Scilly Islands, 9 sail of great ships between Scilly and Ushant with red crosses on the sails. These were, however, ships that had been driven northward by the gales and returned again. But on the night of the 19th of July the flaming beacons along the coast and far inland, told that the Invincible Armada was at last in sight of the English coast.

"Night sunk upon the dusky beach, and on the purple sea,
Such night in England ne'er had been, nor e'er again shall be.
From Eddystone to Berwick bounds, from Lynn to Milford Bay,
That time of slumber was as bright and busy as the day.
For swift to east and swift to west the ghastly war-flame spread,
High on St. Michael's Mount it shone; it shone on Beachy Head,
Far on the deep the Spaniard saw, along each southern shire,
Cape beyond cape in endless range, those twinkling points of fire."

The Spanish fleet, 136 sail and pinaces, of which 90 were very great ships, swept on in the form of a half moon, and on the morning of the 21st the first engagement took place within two miles of Looe, the English fleet numbering 67 sail. How they followed the Spaniards up the narrow seas, fought them again off the Isle of Wight, drove them on shore and dispersed them at Calais, how the Armada fled northward and around the Orkneys, until on the wild west coast of Ireland, on one beach alone less than five miles in length, eleven hundred dead bodies of Spaniards were counted, and timber, cordage, and masts enough to build many great ships were heaped up on the strand, and so on until out of the 150 ships and thirty thousand men that left the Bay of Ferol in the early morn of July 12th, only 54 ships and ten thousand men returned to Spain again. All this there is no need to dwell on, it has been told by far abler pens than mine.

ON THE GEOLOGICAL AGE OF CENTRAL AND WEST CORNWALL.

By J. H. COLLINS, F.G.S., *Honorary Member*; and H. F. COLLINS, *Associate of the Royal School of Mines.*

SECOND PAPER.

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- B. Fine-grained Mica-trap from the Gannel. Very fresh.
- C. Fine-grained Mica-trap from near the mouth of the Gannel. Much decomposed.
- D. Much-decomposed Mica-trap from Boscolla farm.
- E. Moderately fresh Mica-trap from Trelissick Point.
- F. Much-decomposed mass containing fragments of quartz, coarse-grained; from Trelissick Point.
- G. Fine-grained Specimen—much decomposed—from Lamb Creek.
- H. Fine-grained and decomposed—containing very little mica—from Flushing.
- I. Fine-grained, much-decomposed, having a large felspar crystal (orthoclase) porphyritically developed—from Greenbank.
- J. Moderately-fine-grained, fresh, from Mawnan Cliffs.
- K. Fine-grained, moderately fresh, from near the Nare Point.



Since the publication of the paper on this subject in the *Journal of the Royal Institution of Cornwall*,* and the discussions which took place in the Society's rooms, at Truro, during the winter of 1882, we have not been able to make many new observations in the field; but the following notes, in addition to and explanatory of the former paper, have been worked out from our notebooks and from specimens collected during the years 1878-81. A few errors which had crept into the former paper, for some of which the author was responsible, and for others the printer or engraver, will be corrected *en passant*.

Ladock Beds. (Devonian? Old Red Sandstone?)

As before, the supposed geological age of these rocks is marked with a query, but we see no reason to doubt the general correctness of the opinions then advanced.

We have, indeed, *some* independent evidence in support of the conclusions formerly arrived at. According to Mr. J. A. Phillips, who has devoted a great deal of attention to the examination of these strata, many of them contain fragments of igneous rocks identical in composition with the "greenstones"

* Part 1, Vol. VII, 1881.

and "dunstones" of the eastern part of the county, which are on all hands admitted to be Devonian.*

As a matter of fact, until the communication of Mr. Somervail's paper to the Royal Institution of Cornwall—in which he expresses the opinion that these rocks are "in reality about the lowest in the county" (see his paper, *Jour. R.I.C.*, Vol. VII, Pt. 4, p. 268)—we were not aware that anyone had doubted the Devonian age of the rocks in question.

Referring to an outlying patch of rocks to the south of the Helford River, believed to be of the same age as the Ladock beds, the following was written in the former paper (p. 23) "The area in question† is composed chiefly of schistose rocks, but it includes a remarkable bed of very coarse conglomerate, which stretches westward and a little inland from the Nare Point towards Trelowarren. . . . Some of the included masses in this conglomerate weigh several tons, and are themselves portions of a still older conglomerate." By following this bed at low water along the shore westward towards Flushing, it may be seen rising gradually so as to form low cliffs, the strata dipping very gently to the southward. At several points the bed may be seen to rest unconformably upon highly inclined slates, whose strike is N.N.E. A conglomerate—which we believe to be the same—appears on the eastern side of the Point, and may be traced southward as far as Nelly's Cove.

*"I through the kindness of Mr. J. H. Collins I have been enabled to examine four specimens of Cornish grit, namely, one from St. Allen, four miles north of Truro, two from Ladock, five miles further east, and one from Perranzabuloe in the Bristol Channel. Hand specimens of all these rocks closely resemble one another, excepting that those from Ladock enclose numerous angular fragments of a greenish slate, which the others do not, and one of them contains a number of rounded quartzose and other grains $\frac{1}{4}$ -inch in diameter. . . . In the rock from Ladock, which contains small rounded grains of quartz, felspar, and other material, these bodies are sparsely disseminated throughout the mass of the normal grit; and a microscopical examination shows that some of them are fragments of volcanic rocks closely akin to the "greenstones" and "dunstones" of many parts of Cornwall, but which have often become so altered as to be recognizable only by their felspars and general structure."—"On the Constitution and History of Grits and Sandstones," by J. A. PHILLIPS, F.R.S., *Quart. Jour. Geol. Soc.*, February, 1881, p. 10, and also p. 25, and Pl. 1, fig. 2.

† This area was omitted from the map by a mistake of the engraver. A sketch map of the district is now given on an enlarged scale.

Recently my friend Mr. Howard Fox has been working out the conglomerates and breccias of this neighbourhood, and here—as in the case of the rocks examined by Mr. Phillips from the Truro and Perran districts—he finds numerous fragments of older rocks, many being of igneous origin.

The country hereabouts is very difficult to make out, the surface being mostly cultivated, the cliffs much broken up by faults and falls of rock, and the foreshores either covered by d3bris, or very difficult of access. We have, nevertheless, endeavoured to illustrate what we believe to be the main feature of its stratigraphy on the accompanying enlarged map. Of course it is to a considerable extent hypothetical, but it will, at least, serve as a basis for and to give definiteness to future observations—by ourselves or others.*

Comments have been made upon the non-existence of fossils in the rocks now under consideration. As to the cause of this absence we may choose between the following conclusions:—

1.—*The fossils are there but have not yet been found.* We are not bold enough to say that no fossils will ever be found in the Ladock beds, but a great deal of labour has already been spent in searching for them during many years and by many workers, and so far quite fruitlessly.

2.—*The fossils were there but have been removed by chemical agencies.* This supposition is, we think, negatived by the absence of the casts of fossils.

3.—*Very few or no fossils were ever present.* We must confess that we believe this last to be the true explanation. If so, we have still to ask what was the cause of such a local dearth of organic remains. Two reasons may perhaps be assigned.

a.—*The deposits were accumulated so tumultuously that life was impossible.* In the former paper it was mentioned that many signs of rapid deposition are visible—cross-bedding and the like. But this cause alone would not suffice, as we ought to have indications of organisms brought in from more tranquil regions.

* The dyke of mica-trap which cuts through the conglomerate in the little cove below Penare Farm has not hitherto been noticed—at least by any author known to us. We first observed it when in company with Mr. Clark, in 1879. It is in all respects like the dykes in the Truro river, to which the attention of geologists was first called by Mr. A. K. Barnett, F.G.S., of Penzance, and will be again referred to in another part of the present paper.

b.—*The waters were so strongly impregnated with chemical solutions*—from mineral springs preceding the granitic irruptions—*that nothing could live.* If this were the case, the sediments would also be highly charged with chemical substances, and the subsequent segregation of these substances into fissures formed at a later date has given us the more recent lodes of Cornwall. This we are inclined to accept as the true reason.

The Fowey Beds. (Upper Silurian?)

These rocks, which were spoken of in the former paper as Upper Silurian with a query, do, we believe, pass upward in an easterly direction into the Devonian rocks of Polperro and Looe. To us it seems likely that the western portion near Fowey may be Upper Silurian, the central portion about Looe and Polperro Lower Devonian, while the Plymouth limestones are recognized as Middle Devonian. De la Beche himself speaks* of the difficulty of getting a really good line of demarcation between the Silurian rocks and the Old Red Sandstone of South Wales and Hereford. A similar difficulty has confronted Professor Hull, who is driven to the conclusion that "*The so-called Lower Old Red Sandstone of Scotland with its fish remains, is the lacustrine representative of the Upper Silurian rocks.*"†

It is quite probable that we have in these beds the geological equivalent of all the rocks of the typical Silurian area, from the lower Ludlow up to and beyond the Passage-beds and the "Tilestones" of the Devonian—and the equivalent also of the Devonio-Silurian system of Prof. Hull, (v. *Q.J.G.S.*, May, 1882.)

Against the identification of these rocks as Upper Silurian, Mr. Somervail, in his paper, published by the Royal Institution of Cornwall (*Jour. Roy. Inst. Cornwall*, vol. VII) brings forward the authority of Mr. Peach, and says further that "they are charged with typical forms belonging to both the Lower and Middle Devonian." On this point it may be as well to quote Mr. Peach *verbatim*. "I venture therefore now to express my long-formed opinion, from a most anxious consideration of the question, that the Old Red Sandstone is found at

* *Mem. Geol. Survey*, Vol. 1, p. 69.

† Hull. *Proc. Geol. Soc.* No. 383, 1880.

Polperro and Lantivet Bay, Upper Silurian rocks at Fowey, thence to the Gribben and in the cliffs as far as the Black-head, and Lower Silurian at Gorran Haven, Caerhayes, and and Gerrans Bay.”—*Trans. R.G.S.C., Vol. VII, p. 17.* We believe that Mr. Peach has never seen the rocks since these words were printed, but in course of conversation with one of us in 1880, he reiterated his former conviction in the strongest possible manner.* This testimony of Mr. Peach is borne out in a remarkable manner by his fellow-worker, the veteran naturalist, Mr. R. Q. Couch, who wrote in 1846,† “I may again repeat my belief that Cornwall will be found to occupy a place among the lower beds of the Devonian and the adjoining Silurian series;” and also in 1850, “The results thus obtained from the shells run parallel to those from the fish-beds; the eastern portions coinciding with the Lower Devonian beds, while the western gradually slide into those products which are indicative of the Upper, and of the middle and upper portions of the Lower Silurian rocks.” In the same report (*Trans. R.G.S.C., 1850*) he refers to the occurrence of Graptolites “W. of St. Austell,”—to their determination by Prof. Forbes and Sir Roderick Murchison—and to the additional support thus given to the theory that these beds are of Ludlow age. In this connection we must not omit to mention the opinion of Sir Roderick Murchison, as expressed in his letter to Sir Charles Lemon, (*Trans. R.G.S.C., 1846*) and in his address to the Geological Section of the British Association, in 1847, in which he said: “the fish-remains of Cornwall appear to belong to the Upper Silurian,” *Rep. Brit. Assoc. Cork, 1847.* This statement he made from his own knowledge, and also on the authority of Sir P. Egerton,—one of the greatest fossil ichthyologists of his day,—who, after describing in detail the various forms then known, wrote: “From the general appearance of the collection I should say they differ from any Old Red or Devonian fishes I have ever seen,” *v. Trans. R.G.S.C., Vol. VI, p. 320, 1846.*

* Another local geologist, well acquainted with the county—Mr. S. R. Pattison, F.G.S.—finds a similar succession on the north coast. “The geological traveller down the north coast of Cornwall in search of the Silurian system, may discover himself within it because surrounded by its fossils, but he will have much difficulty in giving a good account of how he got there.” *Trans. R.G.S.C., Vol. VII, p. 52.*

† *Trans. R.G.S.C., Vol. VI, p. 276.*

The rocks in question are, as is well known, exceedingly rich in fossils, a careful collation and comparison of which would well repay the student. The Museums at Penzance and Truro are especially rich in organic remains from this series—most of them being very carefully marked as to their localities. Many of the fish-spines from Lantivet and Lantick Bays very closely resemble *Onchus Murchisonii* and *O. tenuistriatus*, figured by Murchison from the Upper Ludlow bone-bed (see "*Siluria*," 5th Ed. Pl. xxxv, Figs. 13-17, and Pl. xxxiv, Fig. 1; see also several good figures of Cornish fish-remains, *Onchus*, &c., in Pl. 1 and 2 of Mr. Peach's paper, *Trans. R.G.S.C.*, Vol. VII, p. 17.

On the whole the fish-remains from Lantivet Bay, Looe, and Polperro, seem to be quite as closely related to the Ludlow as to the Old Red Sandstone; although up to the present we believe that but few have been identified as characteristic species.

The following lists, which are still far from complete, and which refer only to the South Cornwall beds from St. Austell Bay eastward to Looe, may be substituted for that given on pp. 26 and 27 of the former paper.

ACTINOZOA.

1. *Cyathophyllum celticum* (Milne-Edwards)—*Turbinolopsis celtica* (Phillips). = *Petraia celtica* (Lonsdale and McCoy); v. Phillips, *Pal. Foss.*, pl. 1, fig. 1.—Fowey, Looe, Polruan, Ready money, Gribben, Crinnis, Blackhead, Gorran (?) Bodmin, Wadebridge, St. Columb, S. Petherwyn, Tintagel and many other localities, according to R. G. Couch, C. W. Peach, and others. This appears to be a species of very wide range, although its characters are so far not completely made out. Salter gives it as *Upper Devonian*; Murchison (*Sil.* 5th, Ed., p. 276) says it is also *Middle Devonian* on the authority of Lonsdale, who records it from the Ilfracombe group. If it really occurs both at Gorran and S. Petherwyn as stated by Couch, it must range from the *Llandeilo* or *Caradoc* up to the *Upper Devonian*, and consequently it can be of no value for settling the disputed question of the age of the Fowey beds. Peach says it occurs with the graptolite *Protovirgularia dichotoma* at the Blackhead, which is a *Silurian* and even *Lower Silurian* form. (See *Trans. R.G.S.C.*, x., 93).

“ This species exists as a brown friable mass, but in some cases retains the character of the surrounding stone. The number of the longitudinal ridges varies from 40 to 42—at St. Columb to 44—at Fowey to 48. Some of these ridges run uninterruptedly from the base to the apex; while others ascend about one-third of its height and divide into two lamellæ. The furrow between these ridges is narrow, and frequently occupied by tubular projects which are irregular in their distribution. The apex is truncated and excavated. This species is most frequently very much distorted by violent compressions and contortions, and hence assumes a variety of shapes; and the finer markings, such as the denticulations of the lamellæ, are frequently obliterated. This, as most others in the Cornish slates, exists chiefly in casts”—(*Couch, Trans. Roy. Geo. Soc. Cor., VI, p. 276*). Respecting the same species Milne-Edwards says “ the septa, to the number of 36 or 48 must have been alternately of unequal size, the principal ones extending to the centre of the visceral chamber, where they became somewhat twisted. *Brit. Foss. Corals*.”

2. *C. pauciradialis*, = *C. bina pars.* (*Milne-Edwards*) v. *Phillips, Pal. Foss., pl. I, fig. IV.* Is given by some authors as a mere variety of the preceding—occurs at Fowey and Polruan, as recorded by Couch, 1846.

“ This species is more frequently of the character of the surrounding rock than the last, and it is smaller, and the ribs are about 20, acute and thin. Most of the lamellæ extend from the base to the apex but a few others extend to various heights. The sulcus is wide; the delicate serrations of the lamellæ are frequently destroyed. In the centre of the ribs of some specimens is a depression, on each side of which is a row of small raised tubercles.”—(*Couch, loc. cit.*)

3. *C. pluriradialis* = *C. bina pars.* (*Milne-Edwards*) v. *Phillips, Pal. Foss., pl. II, fig. 5.*—Fowey, Polruan, Pridmouth, Gribben; (*Peach 1844, Couch 1846.*)

“ The external surface is marked by from 63 to 80 longitudinal striæ, most of which run from the base to the apex, with occasional smaller and shorter ones with circular undulations. In the furrows are a few scattered tubular projections. The reverse of this description must be taken in the brown casts; for the grooves in the first are represented by the lamellæ in the second. The appearance of the lamellæ depends very much on the age and size of the specimen. In the young, the lamellæ are fewer in number, and the secondary ones shorter and more widely separated than in the older. This species is also frequently very much compressed and distorted by former convulsions and movements of the rocks.” (*Couch, loc. cit.*)

4. *C. elongata* = *C. bina pars.* (*Milne-Edwards*)—Fowey and Polruan, according to Peach and Couch. Murchison says this species ranges from the *Caradoc* to the *Llandovery*.

“ This is rather more a columnar than a conoidal species; it is undulately elongated with faint traces of annulations. The striæ are numerous, and closely arranged; many of them extend from the base to the apex, while others are shorter; but all Cornish specimens hitherto procured are so obscure and distorted, that a detailed description cannot be taken from them.” (*Couch, loc. cit.*)

5. *Cyathophyllum* sp. Fowey, &c., Peach 1844, Couch 1846.
6. *Favosites cristata* (Milne-Edwards) = *F. polymorpha*. (Lonsdale) v. *Brit. Foss. Corals*, pl. xli, figs. 3, 3a, 4, 4a.)—Fowey, Punch's Cross, Polruan, Looe, Pelynt, Mellendreth, Bodmin, St. Columb, &c., according to Peach 1844, and Couch 1846, the latter of whom says it occurs in the *Aymestry* Limestone.

“This is one of the most abundant corals wherever it occurs, and it is common to many localities; but in some places it is so obscure that it can be recognised with difficulty. The brown casts are very much injured and distorted from dislocations and compressions of the rock. The colour is a light chocolate-brown; and the papillary emiucences are separated from each other; they are sometimes very prominent and apparently connected with transverse bands, while at others they are pressed flat; the substance appears to be minutely cellular. In Devon the specimens represent the entire production, in its external aspect;—most of the Cornish instances, casts of the interior.”—(Couch, *loc. cit.*) This species is sometimes confounded with *F. cervicornis* (Milne-Edwards) = *F. polymorpha* (McCoy), which is decidedly Devonian. *F. polymorpha* (Phillips), is *F. dubia* (Milne-Edwards).

7. *Favosites fibrosa* (Milne-Edwards) = *Stenopora fibrosa* (McCoy) v. *Brit. Foss. Corals*, pl. xlviii, figs. 3, 3a, 3b, and pl. lxi, figs. 5, 5a.—Polruan, Fowey, Looe, Lantivet Bay; Peach 1844, Couch 1846. According to Phillips and Murchison this species ranges from the *Caradoc* to the *Ludlow*, but both McCoy and Duncan say it is both Silurian and Devonian.

“In structure it resembles an *Alcyonium*; and to which in other respects it seems allied. The tubes are curved laterally from a central axis till they reach the surface. The surface outline is massive and irregular, the specimen is much compressed.—(Couch, *loc. cit.*) Milne-Edwards says “we have not remarked any material difference between the specimens found in the Devonian and the Silurian formations, but all these corals are so ill-preserved that we are not inclined to attach much importance to their supposed specific identity.”—*Brit. Foss. Corals*, p. 218.

8. *F. Gothlandica* (Milne-Edwards) v. *Brit. Foss., Corals*, pl. lx, figs. 1, 1a.—Polruan, Couch 1846. Murchison gives the range of this fossil as *Caradoc* to *Ludlow*, but it is said to occur also in the Eifel and in the Plymouth limestone. Duncan gives it as *Lower Silurian* (v. *Rep. Brit. Assoc.*, 1871.)

“Very much injured, being so compressed and distorted as scarcely to be recognised; it is massive, and the surface is uneven. Internally it is composed of numerous lines or septa, more or less diverging from a central axis; and the spaces between the lines are divided by transverse septa, similar to a horizontal view of *flustra membranacea*.”—(Couch, *loc. cit.*) Dr. Duncan says “it has rounded processes encircling the mural pores, and the projections formed upon one fit against those of the neighbouring Corallite.”—*Rep. Brit. Assoc.*, 1871.

9. *Alveolites Labechei* (Milne-Edwards.) = *Favosites spongites*, *pars.* (Lonsdale) v. *Brit. Foss. Corals*, *pl. lxi*, *figs. 6, 6a, 6b.* Fowey, Polruan, Mellendreth, Pelynt, Bodmin. Peach 1844, Couch 1846, by whom it is described under the name of *Favosites spongites*. Murchison gives its range, on the authority of Lonsdale, as *Llandoverly to Wenlock*. Milne-Edwards also gives it as a Wenlock species.

“Massive, spongy, traversed by numerous short *culs de sac*, which are divided by numerous transverse septa. In the Devonshire specimens the sacs appear to communicate with each other, but I have not yet noticed this in Cornish specimens.”—(Couch, *loc. cit.*)

10. *Amplexus tortuosus*, v. *Brit. Foss. Corals*, *pl. xlix*, *figs. 5, 5a.*—Fowey and Polruan, Peach 1844, Couch 1846. According to Salter it occurs also at S. Petherwyn.

“The tubular character is very remarkable, and is decisive of the genus in the present species. The tube is of nearly equal diameter throughout. The valves are transverse, imperforate, though frequently much deranged from the violence of contortions.”—(Couch, *loc. cit.*) Milne-Edwards gives the following description of this species. “*Corallum*, elongate, cylindro-conical, curved and slightly tortuous; circular winkles well-developed and irregular; *Epitheca* strong and wrinkled transversely; *Calice* sub-oval with 4 distinct septal fossulae (the one placed near the convex side of the corallum larger and deeper than the three others); *tabulae* not very closely-set, irregular, and presenting in the centre a large smooth space; *Septa*, (30 to 50 in the adult individuals) slender, but little developed, not very unequal in size; some rudiments of smaller septa between the former.”—*Brit. Foss. Corals*. Specimens have been seen nearly 2 inches diameter at top and over 4 inches long.

Mr. Champernowne states that the true *Amplexus tortuosus* occurs in Middle Devonian limestone, in a quarry near Wolfsgrove Farm, Bishopsteignton. v. *Quart. Journ. Geol. Soc.*, Aug., 1884, p. 503. He adds “the fossils called *Amplexus* have been very little worked out, and some are probably to be referred to *Zaphrentis*.”

11. *Cystiphyllum Siluriense* (Lonsd.) v. *Brit. Foss. Corals*, *pl. lxxii*, *fig. 1, 1a.*—Fowey, Couch 1850. Generally regarded as a typical *Wenlock* species.

12. *Pleurodictyum problematicum* (Goldff) v. Phillips, *Pal. Foss.*, pl. xix, fig. 24.—Looe, Polruan and St. Veep; Peach *Trans. R.G.S.C.* ix. 52. According to Murchison it is *Middle Devonian*, and it occurs in the Plymouth limestone. F. Roemer gives it also as a *Lower Devonian* form. Specimens in Mus. Roy. Geol. Soc., Cornwall, and in Mus. Pract. Geol., Lond.
13. *Caunopora ramosa* (Lonsd.)—*Stromatopora ramosa* (McCoy) v. Phillips, *Pal. Foss.*, pl. viii, fig. 22.—Polruan, Fowey, Looe; Peach 1844, Couch 1846. This species occurs also in the Eifel.

“The Cornish specimens of this species are not perfect, and hence their character could not be determined except by a comparison with others. While examining them it seemed to me doubtful whether they could be referred to the *polypiaria*; this may have arisen from the imperfect state in which I have seen them; but they seemed more nearly allied to the sponge, and to the genus *Grantia* of Fleming.”—(Couch, *loc. cit.*)

Out of the above 13 species of Corals, 3, viz. *Pleurodictyum problematicum*, *Amplexus tortuosus*, and *Caunopora ramosa*, so far as is known, occur outside the Fowey beds only in rocks recognised as *Devonian*. Four more—*Cystiphyllum Siluriense*, *Cyathophyllum Elongata*, *Favosites Cristata*, *Alveolites Labechei*—are exclusively *Silurian*. Three more—*Favosites fibrosa*, *F. Gothlandica*, *Cyathophyllum celticum*—though *Devonian* are also *Silurian*; while the remaining two—*Cyathoph pauciradialis* and *C. pluriradialis*—being of purely local occurrence are of no value in settling the disputed point of age. It will be noticed that of the common *Wenlock* corals we find just those which in other districts occur also in *Devonian* rocks, while of the *Devonian* corals we have those which pass down.

POLYZOA.

1. *Fenestella arthritica*. Polruan, Couch 1846, and Fowey, McCoy. All localities are in Devon except these only.

Fenestella arthritica. The only Cornish specimen of this species that I have seen was from Polruan. It was much injured, but belonged to var. *a* of Phillips. Its surface was rough; the cells large, regular, with hexagonal openings. The divisions of the cells were occupied with a brown powder, the cavity by the texture of the stone, so that it looked like a brown reticulated leaf.—Couch, *Trans. R.G.S.C.*, 1846, VI., p. 276.

2. *Retepora infundibula* (Lonsdale)—*Fenestella infundibula* (Shrubsole.) Fowey, Pridmouth, Gribben; (Peach 1844, Couch 1846.) Murchison mentions it from the *Wenlock*. Mr. Shrubsole does not appear to have seen the Cornish specimen.
3. *Protovirgularia dichotoma*. "Van, near the Blackhead, in an old slate quarry (nearly limestone) associated with *Petraia celtica*," according to Peach, *Trans. R.G.S.C.*, x, 93. Murchison calls it a *Llandeilo* species!

ECHINODERMATA.

1. *Platyerinus* sp. Crinnis, &c., Peach 1844. East Looe, McCoy. *Platyerinus retiarius* is recorded by Murchison from the *Wenlock* (*Sil.* 5th Ed. p. 223). The genus is common in the *Carb. Limestone*, where it was worked out by De Koninck.
2. *Actinoerinus* 30 *dactylus*? Gribben, Peach 1844. The species is both *Carboniferous* and *Devonian*. The Gribben specimen is probably wrongly named.
3. *Periechocrinus moniliformis*? (*Actinoc. mon.*) Crinnis. Fine specimen, supposed to be this species, found by T. Clark and J. H. Collins, and now in the Truro Museum. *P. mon.* is a very common Dudley fossil (*Wenlock*).
4. *Cyathocrinus planus*. Crinnis, &c., Peach 1844. The genus ranges from *Bala limestone* to *Carb. limestone*.
5. *C. pinnatus*, from Fowey, is, according to McCoy, in Museum Roy. Geol. Soc. Corn., Penzance.
6. *Sphaeronites tessellatus*, Peach 1846, Punch's Cross; specimen in Museum at Penzance.
7. *Echinoidea*. Many excellent specimens occur at Highgate Quarry and other places in St. Veep. There is a fair collection of these in the Museum of the Roy. Inst. Corn., but we believe that none have yet been determined.

ANNELIDA.

Worm-tracks. Highgate Quarry, St. Veep; Peach, *Trans. R.G.S.C.*, ix. 52.

BRACHIOPODA.

1. *Atrypa aspera* (*A. reticularis*)—(*McCoy*), Fowey; Menabilly, Looe and Pridmouth. Cambridge collection. The species *A. reticularis* ranges from the *Bala* to the *Carb. Limestone*.
2. *Strophomena depressa*. Fowey. Specimen said by *McCoy* to be in the Mus. Prac. Geol. Lond. *Caradoc, Ludlow*, according to *Murchison*.
3. *Orthis circularis* ? (*McCoy*), Looe and Fowey.
4. *Orthis resupinata*—(*McCoy*), Fowey.
5. *O. longisulcata*.—(*McCoy*), Looe; Polruan, Pattison 1850. *Phillips* records this species from S. Petherwyn.
6. *O. persarmentosa*—(*McCoy*); this probably is the same as the fossil described as *Spirif. persarmentosa*, Looe, Polruan and Fowey.
8. *Orthis hipparionyx* (*Vanux.*) Looe and Polperro. *Davidson*.
9. *Leptoena* ? *Looiensis* (*Dav.*) Looe and Polperro. This species does not appear to have been met with elsewhere in Cornwall, but according to *Mr. Davidson* it is common at Looe, behind Saltram Cove at Paignton, and at the Smuggler's Cove at Torquay. It differs from *Leptoena laticosta*, for which it has been mistaken.
10. *Streptorhynchus gigas* (*McCoy*) Polruan. *Davidson* figures it in *Pal. Soc.*, xviii, and gives the horizon as *Lowest Devonian*. A specimen from Looe marked *strophomena gigas* in the Penzance Museum.
11. *Streptorhynchus psarmentosus*—Polruan. *Davidson, Pal. Soc.*, xviii.
12. *Stringocephalus giganteus*—Fowey, Peach 1844. A genus generally considered to be exclusively *Devonian*.
13. *Rhynchonella nucula* (described by old authors as *Terebratula nucula*). Polruan, Peach 1844. *Murchison* gives its range as *Llandeilo* to *Ludlow*.
14. *R. pugnus*. Fowey, Peach 1844.
15. *R. Pengelliana* (*Dav.*) Looe and Polperro. According to *Davidson* "a very large and characteristic species").

16. *Lingula squamiformis*?—Readymoney, near Fowey. Peach Trans. R.G.S.C., ix. 53. This species is not mentioned by Murchison. A *Devonian* species according to Davidson, *Pal., Soc.*, xviii, p. 105, Pl. xx., figs. 11 and 12. Identical with the *L. Mola*, (Salter.)
17. *Spirifera Barumensis*.—Looe. This has been regarded by some as a mere variety of *S. disjuncta*, and there is a specimen so named in the Penzance Museum, but Davidson recognises it as quite distinct, and *lowest Devonian*.
18. *S. primæva*—Looe and Polperro. Davidson, *Pal. Soc.*
S. cultrijugata. This species has been stated to occur at Looe, and specimens so named are in the Penzance Museum from East Looe and from St. Veep, but Mr. Davidson thinks it is more likely *S. primæva*.
19. *S. calligergalus*. Looe and Polperro. Davidson, *loc. cit.* The above 3 spirifers are all Mr. Davidson has been able to name from these localities, but he says* that there are evidently two more species at least which he has not yet made out. Older authors have described 4 other species of *Spirifera* from Fowey, viz., *mesomala*, *mesoloba*, *obliterata*, and *speciosa*, all of which were found and described by Mr. Peach in 1844, but Mr. Davidson has not seen fossils from Fowey itself.

The following *Spirifers* are in the Museum of the Geol. Soc. of Cornwall, at Penzance:—

24. *S. macroptera*—Fowey and Looe.
 25. *S. disjuncta*—Looe, St. Veep and Fowey. This is probably *S. Barumensis* (Dav.)
 26. *S. gigantea*—Fowey and Polruan.
 27. *S. costata*—Looe, Polruan, Pridmouth, St. Veep.
 28. *S. grandæva*—St. Veep.
 29. *S. calcarata*—St. Veep and Fowey.

The following is in the Museum of Pract. Geol. Lond.

30. *S. octoplicata*.

All these last 7 species of *Spirifera* are on the authority of McCoy.

* In a private communication under date October 16^h, 1883,

It is evident that a great deal of work will have to be done upon the Brachiopoda before they can be used to decide the question *Devonian v. Silurian*, but there is at present at least as much evidence for the latter as for the former.

LAMELLIBRANCHIATA.

1. *Aviculopecten pectinoides*—(*McCoy*), Polruan. Cambridge collection. A *Devonian* species.
2. *A. Damonniensis*—(*McCoy*), Polruan; Cambridge collection. Occurs in the rocks of S. Petherwyn and also at Marwood and Baggy Point in Devon, being therefore an *Upper Devonian* species.
3. *A. subradiata*—(*McCoy*), Polruan; Cambridge collection. Occurs also at S. Petherwyn.
4. *Pecten* sp.—(*McCoy*), Polruan. Cambridge collection.
5. *Pecten transversus*. A specimen so named is in the Penzance Museum.
6. *Pterinea spinosa*—(*McCoy*), Fowey. Specimen in Museum Pract. Geol. Lond., and in the Penzance Museum.

The lamellibranchiata require much more working out, but at present they appear more *Devonian* than *Silurian*.

GASTEROPODA.

1. *Aeroculia* sp.—Mellendreth, Peach 1844. Murchison gives the range of this genus as *Llandovery* to *Ludlow*.
2. *Turritella* sp.—More probably a *Holopella*. Polperro, Peach 1844. Murchison gives examples of the genus from *Caradoc* to *Ludlow*.
3. *Loxonema* sp.—Fowey, Peach 1844. Also at St. Columb, many well-known species have been recorded from both the *Devonian* and the *Silurian*.
4. *Murchisonia* sp.—Polruan, &c., Peach 1847. Murchison gives the genus as characteristic of the *Silurian* system from *Llandeilo* to *Ludlow*.

On the whole the Gasteropoda appear more *Silurian* than *Devonian*.

HETEROPODA AND PTEROPODA.

1. *Bellerophon bilobatus*—St. Columb Porth, Peach 1850. Murchison gives its range as *Llandeilo* to *Llandovery*.

2. *B. bisulcatus*—Polperro and Fowey, McCoy.
3. *B. sp.*—Gribben, St. Columb, &c., Peach 1844.
4. *Conularia quadrisulcata*—Gribben, Peach 1844. The specific determination may probably be incorrect, but the genus ranges from *Lingula Flags* to *Upper Carboniferous*.
5. *Tentaculites ornatus*—St. Veep, Peach 1850. This species is a typical Silurian one, its range, according to Murchison, being from *Caradoc* to *Wenlock*. The genus is for the most part Silurian also. We have placed it among the Pteropoda, following Nicholson, but many would still regard it as an Annelid.

Evidently the Heteropoda and Pteropoda are rather more *Silurian* than *Devonian*.

CEPHALOPODA.

1. *Orthoceras cylindraceum*—Fowey, Peach 1844. If this be rightly named, it is a *Devonian* species.
2. *Orthoceras bullatum*—Polperro, Couch 1850. Ranges, according to Murchison, from *Llandoverly* to *Ludlow*.
3. *O. striatulum*—Fowey, Peach 1844; St. Austell Bay and St. Veep, McCoy. *Devonian*.
4. *O. sp.*—Rope Haven near Blackhead. Fine specimen found by T. Clark and J. H. Collins, and now in the Truro Museum.

The following are in Mus. Roy. Geol. Soc. Cornwall, Penzance.

5. *O. ibex*—Punch's Cross, McCoy; range *Caradoc* to *Ludlow*.
6. *O. Ludense*—Coombe Haven, Fowey. The characteristic and typical *Ludlow* species.
7. Specimens of *O.* also from Whitehouse Ferry, Pridmouth, Punch's Cross, Polruan, St. Veep, Coombe Haven, Looe, Ethy Wood and Lerrin.
8. *Goniatites inconstans*—Fowey, Peach 1844. *Devonian*.
9. *Bactrites gracilis* (*O. gracilis*)—Blackhead, according to Murchison (*Sil.* 5th *Edt.* 277), who gives it nevertheless as *Lower Devonian*. Portloek called it *Caradoc*.

The Cephalopoda tell the same tale, indistinct though it be, as the gasteropoda, &c.

CRUSTACEA.

1. *Phacops laciniatus*—Padstow, Liskeard, St. Keyne, McCoy ; with *Atrypa desquamata*, a *Mid. Dev.* form, according to Murchison, see *Siluria* 5th. Ed. p. 278
2. *Portlockia latifrons*—(McCoy) Pridmouth.
3. *Crustacea*—Rose Vale Quarry, Liskeard. Peach, Trans. R.G.S.C., ix. 52.

PISCES.

1. *Cephalaspis Lyellii*—Polperro, Peach 1844, Couch 1850. A lower Old Red Sandstone and "Tilestones" form.
2. *C. ornatus* (probably *Ctenacanthus ornatus*)—Polperro, Peach 1844. Perhaps *Auchenaspis ornatus*, a "Passage Beds" species (Murchison).
3. *Asterolepis* sp.—Cross-sand Point, Looe, Polperro, Lantivet Bay, Peach 1848, Couch 1850. Hugh Miller thought one of the fossils from Lantivet Bay resembled *Asterolepis*. "This is the only specimen Mr. Miller could identify as agreeing with any of the fishes of the Old Red Sandstone." Another Palaeontologist (no doubt Sir P. Egerton) "one of the most eminent" could not identify one. Mr. Pengelly has a fossil resembling an *Asterolepis* shoulder plate from Cross-Sand Point, Looe, (Peach, Trans. R.G.S.C., vii, 123, 313).
4. *Ctenacanthus* sp.—Polperro, &c., Peach 1847.
5. *Holoptychius nobilissimus*—Polperro, Peach 1844. According to Murchison, however, this is not *H. nobil*, which is an undoubted *Devonian* species. Perhaps it may be the *Bothriolepis* of Egerton. Mr. Ray-Lankester mentions in a private communication with which he favoured me in 1881, "a scale like *Holoptychius*"
6. *Onchus Murchisonii*—Polperro, Peach 1844. Murchison says this specimen is not *O. Murch*, which is a *Ludlow* and doubtful *Passage Beds* species. It may be, according to Egerton (*v.* Trans. R.G.S.C., vi., 320), a *Ctenacanthus* or perhaps *O. tenuirostris* (Eger.) = *O. tenuiseratus* (Agas.) which is *Ludlow*. Certainly many of the Lantivet Bay fish-spines much resemble the figures of *Onchus* given by Murchison in *Siluria* 5th. Ed. Pl. xxxiv and xxxv.

7. *Sclerodus pustuliferous*—Polruan, Couch 1850.
8. *Sphagodus pristodontus*—Polperro, &c., Peach 1844. A *Ludlow* species according to Murchison.
9. *Cheiracanthus sp?*—Polperro, Peach 1847.
10. *Scaphaspis Cornubicus*—(Ray-Lank.)—Lantivet Bay, Ray Lankester, 1869. See Peach, Trans. R.G.S.C., x. 94. Said by Ray-Lankester to occur also in the *Lower Devonian* of the Eifel.
11. *Phyllolepis sp.*—Looe? Lantivet Bay? Ray-Lankester, *Pal. Soc.*, 1869.
12. *Pteraspis sp.*—Lantivet Bay, Ray-Lankester, *loc. cit.*
13. *Fish remains* have also been found at Cliff in the parish of St. Veep. "Very excellent specimens" according to Mr. Pengelly.

The geological horizon of the Looe Beds appears to be fixed by Mr. Ray-Lankester's determination of *Scaphaspis Cornubicus*, and by what Mr. Davidson says* of *Spirifera Barumensis*, (*No 17. p. 175, supra*).

"This species has been found by Kayser in the Rheinischen-Taunus Quartzytes, which he has determined to constitute the *Lowest Devonian* beds. His paper, with plates, may be found in the "Neue Beitrage zur Kenntniss der Faune der Rheinischen-Taunus Quartzysten" which is published in the "Preuss. geologischen Landesanstalt for 1883." This, therefore, gives a base line of undoubted accuracy from which we may proceed to infer the age of adjoining strata. The Fowey Beds appear to be at least 4000 feet lower than the Looe Beds, as will be seen from the following considerations. The latter strike inland from Polperro towards Lostwithiel, *i.e.* in a north-westerly direction; and a perpendicular to this line from Fowey across the strike measures over three miles. So far as we are aware, there is no inversion of the strata to the N.E. of Fowey, and the average amount of dip can certainly not be assumed as less than 15°. If therefore there be no overturn—for the assumption of which there is not a particle of evidence—the vertical thickness of the

* In a private communication under date October 16th, 1883.

beds is not less than 4000 feet. The *Looe* and *Polperro* beds having been already shewn to be *Lowest Devonian* there is, we think, in this 4000 feet of rock plenty of room for the time which elapsed between the *Ludlow* and the *Lower Devonian*, and therefore the Fowey beds may very well be *Upper Silurian*. That this was the opinion of both Peach and Couch we have already stated (*v. supra* pp. 166-7), and we have been glad to find that our opinions, formed independently, have been so exactly confirmed by what these able local authorities had previously published on the subject. We believe, *in fine*, that those writers who have so hastily and positively asserted that the whole of these rocks are Devonian have either not studied the literature of the subject, or have not attached sufficient weight to the opinions of the local geologists quoted above, whose experience rendered their judgment most valuable.

LOWER SILURIAN.

As to the topographical extension of these rocks so far as they have yet been determined, we have little to add to the former paper. We have indeed, in company with Mr. Clark, traced them as we believe to the eastward about a mile beyond Lostwithiel; but, except this, have made no alteration in the boundaries formerly indicated. The fossiliferous beds of the series are for the most part quartzytes, they have been traced from Gorran to Bojorrow in Meneage—a distance along the strike of some 25 miles.

The Geological Horizon of the Quartzytes. These have been usually considered as the equivalents of the Caradoc Sandstone, but the fossil evidence seems to us to shew that they are somewhat older. The only fossils which can be said to have been adequately studied are the trilobites—10 species—worked out by Mr. Salter in the years 1862-1867, and the brachiopods—6 species—similarly worked out by Mr. Davidson, in 1879-80. The fossils of the underlying limestones, and the other fossils of the Quartzytes themselves can scarcely be said to have been, as yet, sufficiently determined to be of service in this particular enquiry. The following are the fossils referred to:—

TRILOBITA.

(See Salter, *Pal. Soc.* 1862-1867 ; and Murchison, "*Siluria*," 5th Ed., 1872).

1. *Homalonotus bisulcatus*. This species is said by both Salter and Murchison to occur in all the rocks from the *Lower Llandeilo* to the *Caradoc*.
2. *H. Vulcani*. This is also said to be *Llandeilo*.
3. *H. Sp.* from Gorran Haven. The specimen is now in Jermyn Street, and Salter (*Pal. Soc.* 1864, p. 112), considers it to be a *Lower Llandeilo* form.
4. *Phacops apiculatus*. (*Salt.*) Specimens from Great Peraver and Gorran Haven are in the Museum, at Jermyn Street. Murchison considers the species to be one characteristic of the *Caradoc*, but Salter—who is, on this point, a far more reliable authority—gives the horizon as *Llandeilo Flags*.
5. *Phacops minimus*. Specimen believed to be from Great Peraver is in the Jermyn Street Museum, and labelled *Caradoc*. Salter includes under this name all the fossils formerly described as *P. minimus*, and refers the species to the *Llandeilo flags*.
6. *Calymene duplicata*. This is said by Murchison to be very typical of the *Llandeilo flags* at Builth.
7. *C. Tristani* (*Brong.*) Specimens from Gorran Haven and "Mevagissey" are in the Museum at Jermyn Street, and are called "*Arenig*" by both Murchison and Salter.
8. *C. Blumenbachii*. This fossil has a very wide range in the Silurian system, as it is common both in the *Caradoc* and in the *Wenlock*, and specimens have been found even in the *Upper Ludlow*.
- 8a. *C. pulchella*. Considered by Salter to be a mere variety of *C. Blumenbachii*.
9. *C. brevicapitata* (*Portlock.*) Murchison regards this as identical with *C. senaria* (*Conrad*), which is certainly a *Caradoc* and *Bala* fossil. Salter, on the other hand, agrees with the specific reference but includes it in his var. *Cumbrensis* (*Salt.*) which is typically *Llandeilo*.

10. *Calymene parvifrons*. A specimen from Great Peraver is in the Museum at Jermyn Street, and is called *Lower Llandeilo* by Murchison. Salter says the Cornish specimen is *var. Murchisonii*, and that the whole genus is characteristic not only of the *Lower Llandeilo flags* but also of the *Arenig, Stiper Stones, and Skiddaw Slates*.

C. Sternbergii of Peach and Murchison, 1846, is discarded by Murchison in 1867, and not mentioned as a Cornish species by Salter.

C. Senex from Gorran Haven is also mentioned in early writings, but discarded by Salter. There is still, however, a specimen so marked in Jermyn Street.

Thus of the 10 species of Trilobites found in the quartzites, 9 are said by Salter to be undoubtedly of *Llandeilo* age, most of them are *Lower Llandeilo*, while 2—*C. Tristani* and *C. parvifrons*—are found in the horizon of the *Arenig* and *Skiddaw Slates*. Murchison himself in the 5th Ed. of his "Siluria," 1872, gives 5 of these species as *Llandeilo*. As regards *C. Blumenbachii* we have already said that it is a species of very wide range—from *Caradoc* to *Upper Ludlow*—and therefore it need not at all surprise us to find it in *Llandeilo* or even somewhat older rocks—more especially since its geographical range is as conspicuously wide as its range in time. The evidence of the trilobites, therefore, is that the rocks are at least as old as the *Llandeilo flags*, and perhaps older.

BRACHIOPODA.

(See Davidson *Pal. Soc.*, 1881.)

1. *Strophomena grandis*. This has been met with at Gorran and Caerhayes. It occurs in the Budleigh-Salterton conglomerate, in pebbles of dark-grey or greenish ferruginous rock, often with *Orthis calligramma* and *O. scotica*. (Davidson, *Pal. Soc.*, 1881, Pl. xlii supp., where it is figured. It is figured also in Murchison's "Siluria," where it is given as a characteristic *Caradoc* species). Specimens named by Mr. Davidson may be seen in the Museum at Penzance.
2. *Orthis calligramma*. This is found at Gerrans Bay, Gorran and Caerhayes, and also in the Budleigh-Salterton beds (v. remark on *Stroph. grandis* above.) Its range is,

according to Murchison, *Llandeilo* to *Wenlock*; it is figured by Davidson *loc. cit.*

3. *O. sp.* This unnamed species has been found at Gorran and also in the pebbles of the Budleigh-Salterton beds. Specimens may be seen in the Museum of the Geological Society of Edinburgh.
4. *O. scotica.* This is found at Gorran and in the Budleigh-Salterton pebbles (v. remark on *Stroph. grandis* above). It is given by some writers as a mere variety of *O. calligramma*, but Davidson, by whom it is figured, *loc. cit.*, recognizes it as a distinct species and calls it *Caradoc*. Good specimens are to be seen in the Museum at Penzance.
5. *Orthis Budleighensis* (Dav.) includes specimens which Salter referred partly to *O. redux* of Barrande, and partly to *O. testudinaria*. It probably includes most if not all of the *O. testudinaria* (*Dalm.*), and has also been called *O. Peachii*. Specimens have been found at all the Cornish localities, from Gorran and Caerhayes to Manaccan; also in pebbles of a light-grey quartzite in the Budleigh-Salterton beds, and in the "May" beds of Brittany. According to Davidson it occurs in the "May" beds with *O. Berthoisi* and *O. Monnieri*=*O. Vicaryi*. Rocks of similar age in Normandy contain "principally *O. Budleighensis* with a few casts of *O. Berthoisi*" (Dav.) Salter, who noticed the same association of *O. Vicaryi* (= *O. Monnieri*), *O. redux* (= *O. Budleighensis*) and *O. Berthoisi*, declared the quartzite to be of *Arenig* age both *in situ* in Brittany and in the pebbles of Budleigh-Salterton. He also gives *O. testudinaria* (*Dalm.*)= *O. Budleighensis* (Dav.) as *Lower Llandeilo*. Davidson says the *real O. testudinaria* is a characteristic *Llandeilo* species, but is not sure that it occurs in the Cornish rocks. In describing *O. Budleighensis* our authority gives its horizon as *Caradoc*, but in another place gives that of another species which occurs with it—*O. Monnieri*—as typical *Llandeilo*, so that it would appear to range into both series. Specimens of the fossil may be seen in the Museums at Jernyn Street, Penzance, and Truro, and like the others it is figured by Davidson *loc. cit.*

6. *O. Berthoisi* (Ronalt) var. *Cornubiensis* (Dav.) = *O. turgida* (McCoy). This occurs both at Caerhayes and Manaccan—as well as in the Budleigh-Salterton beds and the “May” beds in Brittany. At Budleigh-Salterton it occurs in a ferruginous rock, but *never* with *Strophomena grandis* or its associates (v. remark on *S. grandis supra*), figured by Davidson *loc. cit.* Specimens may be seen in the Truro Museum. *O. turgida* (= *O. Berthoisi*) is given by Murchison as *Llandeilo* and *Caradoc*. Salter has described this same fossil from Budleigh-Salterton under the names of *O. striatula* (Emm.), and *O. redux* (Barr.), and supposes them to be *Llandeilo*.

O. testudinaria (Dalm.) occurs, according to Mc Coy, at Carn Gorran, so also does the *O. retrorsistria* of Mc Coy, which is perhaps a mere variety of the same fossil. *O. parva* (Pander) occurs both at Gorran and Great Peraver according to the same author. Davidson considers the latter to be part of Salter's supposed *O. redux* of Barrande (not the real *O. redux*). He looks upon the whole of them as varieties of his species *O. Budleighensis*, which he gives as *Llandeilo* and *Caradoc*. In a private communication he says, “I do not think that more than 5 species (i.e. of *Orthis auct*) can be admitted.”

Besides the above, fossils from Gorran Haven marked *O. furcifer* and *O. virgulata* are to be seen in the Jermyn Street Museum. I do not know whether Mr. Davidson has seen these, they were named by Major Wyatt-Edgell—a well-known authority—who considered them to be of *Arenig* age. Formerly there were in the same Museum fossils from Gorran named *O. confinis* and *O. vespertilio*; these names have of late years very properly disappeared.

Thus it will be seen that the brachiopods tell a similar tale to the trilobites; they are recognized—*S. grandis* through its constant associate *O. calligramma*—as being species which are quite as characteristic of the *Llandeilo* as of the *Caradoc* horizon.

Other fossils from the Quartzites and associated rocks. These do not give much information on the subject, as they have not yet been sufficiently compared and worked out.

Ctenodonta sp. The fossil from Gorran Haven now in the Jermyn Street Museum and labelled *Arenig* may be a new species. The only *Llandeilo* species of which we are aware occurs in the *Llandeilo Flags*. It is named on the authority of Major Wyatt-Edgell.

Orthoceras cylindraceum is probably not the fossil now described under that name, which is typical *Upper Devonian and Lower Carboniferous*. The specimens so named may be imperfect.

O. encrinale, a *Llandeilo* species.

O. gracilis of Mc Coy is said to have been found "in the rocks to the S. of St. Austell." This is too vague to be of any value for our present purpose.

Loxonema lineata, mentioned by Murchison, 1846, is perhaps some smooth species of *Murchisonia*, such as the *M. gracilis*, which is *Llandeilo*, or perhaps it is a *Holopella*. The later editions of "Siluria" do not mention any Lower Silurian species of *Loxonema*.

On the whole, if we are to call the Quartzites either *Llandeilo* or *Caradoc*, the evidence of the fossils is plainly in favour of the former. It is probable enough that the differences which undoubtedly do exist in the fossil associations as compared with those of the typical Silurian areas, are due to the fact that the Cornish area—like that of Brittany, from which the Budleigh-Salterton pebbles have been derived—was more or less isolated. This would account for the fact that the fossils as a whole have a somewhat peculiar *facies*, and exhibit differences from those of the typical areas, which, though not of specific importance, are yet quite sufficient to account for the great variations existing in the nomenclature adopted by different observers of the brachiopoda.*

The 20,000 feet of Lower Silurian Rock—which we certainly have in Cornwall—appears to represent formations which, though

* These differences will be very evident on comparing the figures given by Murchison ("Siluria," 5th Ed., 1872), and Davidson (*Pal. Soc.*, 1881).

probably laid down continuously in our district, in other districts can be subdivided into

Skiddaw Slates,
Arenig and Stiper Stones,
Lower Llandeilo,
Llandeilo Flags,
Caradoc Sandstone,
&c., &c.,

in fact representing the whole of the time—or a large portion—from the top of the *Lingula Flags* to the bottom of the *Llandoverly* series.* Once admit this, and the whole difficulty as to the great thickness of the Cornish Lower Silurian series vanishes.

Geological analogies should not be carried too far, but we cannot help noticing those existing between the quartzite cairns of the two Nare Heads, of Gorran, Gerrans and Caerhayes, with those of the Stiper Stones. The resemblance is probably more than a merely superficial one. The great silicification of certain beds in the line of strike, and the association with intrusive rocks as observed in several of the Cornish localities, may very probably, we think, be connected with the intense volcanic action which characterized the latter part of the Lower Silurian period in the typical districts of Shropshire and Wales. The rocks of the two districts have similar, if not always identical fossils, their mineral composition and condition is the same, and they have almost exactly the same line of strike. The Cornish rocks dip to the E.S.E., the Stiper Stones nearly W.N.W., the lines if produced being not much farther apart than is the line of the Stiper Stones from that of the Lower Silurian saddle of Merionethshire.

Many interesting problems in relation to the rocks underlying the Cornish quartzites remain to be solved. Prof. Sedgwick visited the Lower Silurian rocks of Gerrans Bay, after Mr. Peach had found fossils there, and satisfied himself that they were really of Lower Silurian age, and that they appeared to rest upon the rocks called Devonian further to the N. and N.W. To explain this apparent anomaly, he suggested an inversion of the strata—a not uncommon resource among geologists at the

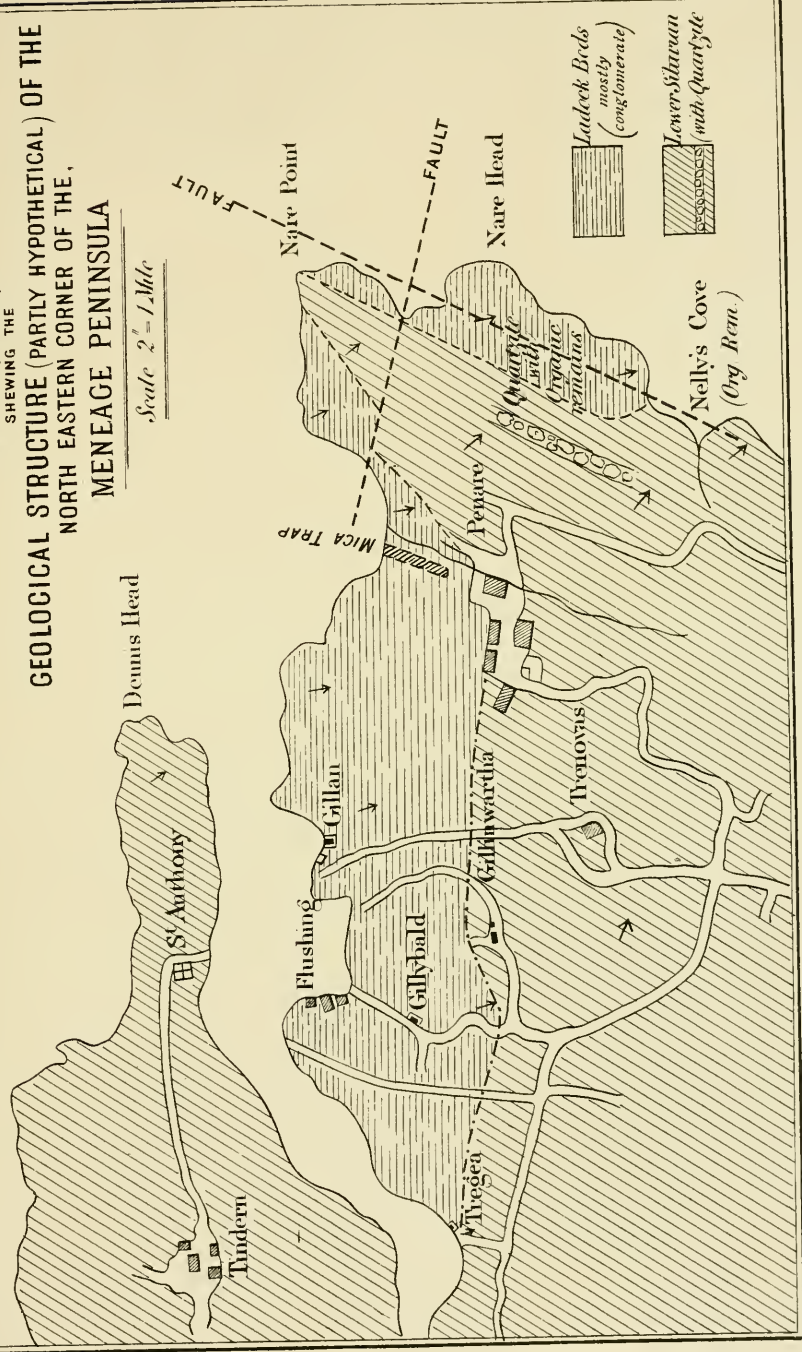
*Supposing—with many good authorities—the Skiddaw Slates to be newer than the upper *Lingula Flags* and older than the *Lower Llandeilo*.

Sketch Map

SHOWING THE

GEOLOGICAL STRUCTURE (PARTLY HYPOTHETICAL) OF THE NORTH EASTERN CORNER OF THE MENEAGE PENINSULA

Scale 2" = 1 Mile



present day,—but there does not seem to be any evidence in support of this hypothesis. We have followed the Strata from Gerrans Bay, through Philleigh and on to St. Clements, without finding any material variation in dip or strike; there is apparently a continuous downward succession for a distance of at least 5 miles. At St. Clements, however, we come to beds of an entirely different character, our “Ladock Beds” striking E. and W.—and *overlying* the others. Of course we do not pretend to trace exactly the topographical boundaries of the respective series in any greater detail than was indicated in the sketch-map which accompanied the former paper. This is work which must be done by the officers of the geological survey, with their staff of attendants and fossil-collectors,—but it is very significant, that in places near the junctions of the two rocks we frequently find the Ladock Beds on the higher ground while the Lower Silurians are exposed in the valleys.

Believing as we do that the Quartzites are of *Llandeilo* age, it does not seem to us unlikely that the geological horizon of the Lingula Flags may yet be identified in or near the valley of the Fal, and possibly still older rocks in the neighbourhood of Wheal Jane, and thence right across the Redruth mining district.

The S.W. extension of the Lower Silurians to and beyond Hayle was determined—so far as purely stratigraphical evidence would suffice—after several visits to the locality, and so indicated on the sketch-map already referred to. Mr. Peach’s discovery of fossils resembling *Eophyton**—a form occurring in the Alum-Schists of Sweden, supposed to be of the same horizon as the Skiddaw slates—in the quarry opposite the mineral floors at Hayle, will probably be regarded as evidence confirmatory of the views formerly expressed.

PONSANOOTH BEDS. (Cambrian?)

We have not much to add to what was said of these beds in the paper so often referred to. That they underlie the Lower Silurians and that they differ greatly from them in strike, dip, and mineral composition will be evident to all who study these rocks in the field. The surface area occupied by them must be very small compared with what exists at a

* Trans. R.G.S.C. Vol. IX., pp. 57, 58.

moderate depth. The dark, carbonaceous or anthracitic* schists raised from Wheal Jane, the Perran Mines, the parishes of Illogan and Redruth and many other localities, exactly resemble the Longmynd rocks in the neighbourhood of the Stiper Stones, as described by Murchison, whose words are as follows:—"The lowest strata of the Longmynd, or those forming the base of their eastern escarpment, range along the western side of the Stretton Valley; they are thin, fragile, glossy schists, or clay-slate. quartz veins occur here and there, but on the whole these strata consist chiefly of sandstone rock both schistose and gritty, and often finely laminated, in which the lines of deposit and even the rippled surfaces of the beds are distinctly visible, the mass being but slightly affected by slaty cleavage. some of the altered rocks contain copper veins, and others have cavities lined with crystals of quartz and occasionally with bitumen or mineral pitch. the geologist will naturally attach much interest to the occurrence of flakes of anthracite in these very ancient strata. for if these substances were formed out of vegetable or animal matter, we can refer to little else than seaweeds or annelides as their sources ("Siluria," 5th Ed., pp. 25-27.)

The subterranean extension of these Pre-Silurian rocks is indicated by many of the observations made by Mr. Henwood—the more so as they were entirely unconnected with any theory. Naturally a few irregularities occur in observations made near fissure-lodes at different levels, but the following notes have much meaning:—

Gwinear and Crowan District.	{	Wheal Herland, Gwinear, soft light-coloured schists,	}	Dip mostly	
		Binner Downs, Crowan, blue schists,		W. of N. 20°—40°	
		W. Strawberry, ,, ,,	}	A few E. of S.	
		Carsize Consols, ,, silky deep blue schists, W. of N. 8°—18°			
		Trevaskus, Gwinear, Hornblende schists,		}	Dip mostly
		Relistian, ,, deep blue schist,			W. of N. from 8°—34°
Providence, ,, blue schists,					
Duffield, ,, dark schist,					
Breges District.	{	Godolphin, Breage, blue schists	}	Dip mostly N.E., occasionally S.W.	
		Gt. Work, ,, deep bluish grey schists			
		W. Vor, ,, } deep grey schists, steep			
		Poladras, ,, }			
		H. Trannack, Sithney, dark schists, steep			

*We have repeatedly found thin scales of anthracite in the deep-seated rocks of the localities referred to, and in many others.

Camborne and Illogan District.	}	Stray Park, Camborne, Hornblende schists	} Dip. S.W.	}	Dip. W. of N 14°—30°
		W. Gons, ,, ,,			
		Camborne Vean, ,, ,,			
		Dolcoath, ,, dark schists,			
		E. W. Crofty, ,, dark micaceous schists and crystalline hornblende schists, 18°—70°			
		S. Roskear, ,, Hornblende schists, 32°			
St. Agnes District.	}	Cook's Kitchen, Illogan, dark schists	} Mostly light-coloured, Dip. S.E.		
		Carn Brea, ,, dark schists, 30°			
		Tincroft, ,, dark schists, flat			
		E. Pool, ,, ,,			
		Polberra, St. Agnes, ,,			
W. Pink, ,,					
W. Prudence ,,					
Gt. St. George, ,,					
W. Budnick. ,,					

All the rest of the mines in the St. Agnes district have schists with a S.W. Dip.

Redruth and Gwennap District.	}	W. Buller, Gwennap, dark coloured schists,	} Dip. E. of N. 16°—40°	}	Dip. mostly E. of S. a few W. of N.
		W. Beauchamp, ,, ,,			
		Tresavean, ,, ,,			
		Consol'd. Mines, E. part, Gwennap, dark coloured schists,			
		Cardrew Downs, Redruth			
		W. Falmouth, dark coloured schists same strike, Dip. S.W.			
		Consol'd. Mines, W. part, Gwennap, light coloured schists,			
United Mines, ,, ,,					
Ting Tang, ,, ,,					
N. Downs, Redruth, ,, ,,					

It has been usual to refer these marked variations of dip to the effects of the granitic intrusions, but, as was shewn in the former paper, such effects are for the most part very slight indeed as regards the *dip*, and almost inappreciable as regards the *strike* of the stratified rocks. From the observations quoted above—which might readily be extended—it would appear that the mines of Gwinnear, Crowan, Illogan, and the greater part of St. Agnes and Gwennap are in Lower Silurian rocks, striking to N. of East; while those of Breage, Sithney, the remainder of St. Agnes, and the southern and western part of Gwennap, are in strata of pre-silurian age, striking to W. of North. However this may be, it will of course be understood that the mineral veins themselves are of greatly subsequent date, cutting indiscriminately through the stratified rocks of all ages, as well as through the intrusive associated masses of granite and elvan.

INTRUSIVE ROCKS. (Mica Trap).

The remarkable group of veins of "mica-trap," "minette-felsite" or "kersantite" which traverses the rocks of West Cornwall, was referred to in the former paper (*p.* 36), but has never yet been described in detail. As we have devoted a large amount of labour to the investigation of these veins, and as they exhibit many points of special interest, we propose to describe them here with some amount of detail.

They traverse the stratified rocks in a great number of places throughout a band of country extending from Roscreage Beacon, three miles south of the Helford River, in a direction a little to the N. of east, to Watergate Bay, a distance of nearly 30 miles,—the band affected being nowhere more than three miles in width. The individual dykes for the most part have a course about N.N.E., but they are often somewhat tortuous and frequently split up into branches, some of which have for short distances directions very different from that mentioned.

So far as we are aware, these mica-traps—at any rate in a characteristic form—occur in this narrow band of country, and nowhere else in England, excepting only in the region to the south of the Lake District of Cumberland. Until very recently such rocks were altogether unknown in our country, but those of the Cumbrian district were described to the Geological Society by Messrs. Bonney and Houghton in the year 1878.* It will be seen hereafter that the Cornish rocks have many characters and circumstances in common with the Cumbrian rocks.

We must remark, however, that some of the veins to be described in the present paper have been previously referred to in brief terms as "traps" and "elvans,"† but their connexion with each other—their geographical limits, and their date as eruptive rocks have, we believe, never before been the subject of systematic enquiry.

* *Quart. Journ. Geol. Soc.* 137, p. 165.

† See De la Beche, *Rep. Geol., Corn. &c.*, p.p. 93, 94, where the "trap" of Mawnan Cliffs is referred to; see also A. K. Barnett "on the Elvan courses of Cornwall," *Rep. Miner's Assoc. Corn. and Dev.* 1873; J. A. Phillips on "the rocks of the mining districts of Cornwall," *Quart. Journ. Geol. Soc.* 23 p. 337; and J. H. Collins, *Trans. Roy. Geol. Soc. Corn.* ix, p. 225. In this latter paper the author described three type varieties of the Cornish "elvans," of which this was one.

In some of the localities now to be specified, eruptive rocks are inserted on the maps of the Geological Survey, sometimes coloured as "traps" at others as "elvans." Some of the veins, however, were for the first time noted by Mr. Barnett and others are here noticed for the first time. We have numbered the respective veins on the accompanying sketch map.

No. 1 occurs a little to the west of Roscreage Beacon near St. Keverne. It crosses the lane a little above the ancient mansion of Roscreage, which is now occupied as a farmhouse. It is much decomposed near the surface, but moderately fresh specimens may be got out by a little digging. The course of the vein appears to be a little to the east of north, but as the fields were covered with corn at the time of our visit in 1879, we could not trace it far. A slight depression in the fields seem to mark its position here, as in many other places.

No. 2 occurs in a little creek of the Manaccan Estuary on the north side of the Helford River, just north of Penare farm, and about three-quarters of a mile to the west of the Nare point. The dyke courses somewhat to the east of north towards Pendennis Castle, cutting through the (here) moderately inclined Lower Silurian slates, and the nearly horizontal conglomerates which rest uncomformably upon them in the manner diagrammatically represented in fig 1.* The rock here as elsewhere is concretionary and very fresh pieces may easily be obtained

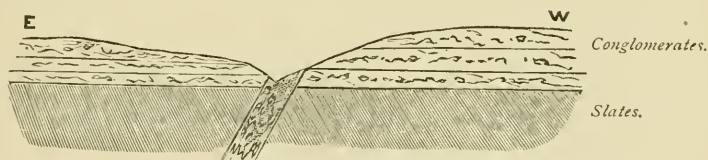


Fig 1.--Below Penare Farm.

No. 3. About 3 miles up the Helford River, at a point situate a few hundred yards short of "Frenchman's creek," is another dyke of this mica-trap of precisely similar character and direction—which apparently splits into two as it goes northward, since two distinct branches are to be seen on the north shore of the river.

* The dyke is not seen actually cutting through the slates at this point, except at extreme low water, and not always seen then. But a very short traverse to the east or the west will soon satisfy the observer as to the accuracy of the representation in fig 1.

Nos. 4 and 5. These occur on the N. side of the river, opposite No. 3, one on each side of the old "Bar House," about a furlong apart, and near the inlet known as Navas Creek. On one of these veins an adit has been driven in a N.N.E. direction for a considerable distance, some deluded speculators having been led to regard it as a mineral lode, and induced to "adventure" on it in search of mineral wealth. It is probable that the continuation of these veins might be discovered by careful search in the neighbourhood of Caerwinion or Mawnan Smith, but we have failed to find them on several occasions when passing through the district.

No. 6. The veins numbered from 1 to 5 are none of them marked on any geological map hitherto published. No. 6, which occurs in the cliffs beneath Mawnan Church was briefly described by Sir H. Dela Beche in his classical "report," already referred to. He gives a little figure of one of its modes of occurrence at that point, which is here reproduced, together with his remarks thereon. "In one place," he says, "in the ledge of rocks near



Fig. 2.—Mawnan Cliffs, from Dela Beche.

Mawnan Church, dry at low tide, we see the singular intermixture of trap and slate represented beneath. The dark shaded part representing the trap, which has apparently been injected in an irregular manner amid the laminae of the slate, forming a continuous mass beneath, it merely having so happened that the plane of the ledge cuts the junction of the two rocks so as to produce this appearance. The trap probably forms a portion of a dyke, which in the adjoining cliffs cuts partly among the beds and partly cuts through them, in one place including a large piece of the rock which it traverses."*

A private communication with which one of us has been favoured by the Rev. Wm. Rogers, the rector of the parish— informs us that the trap rock appears again at surface in the northern part of the churchyard, and that blocks of it were used by the builders of the oldest portions of the church. Northwards from the churchyard, this particular vein has not been traced,

* Rep. on Cornwall, Devon, &c., pp. 93, 94.

unless it be that known as the Maenporth Elvan, No. 46 on Mr. Barnett's map—which he speaks of as “a hard, fine-grained quartzo-felspathic rock, with a little mica distributed through it.”

Nos. 7 and 8. The next appearances of the mica-trap veins with which we are acquainted, are the two bands of “greenstone” marked on the survey maps as crossing Beacon Hill, between Falmouth and Penryn. Quarries were formerly open on these veins on the top of the hill—one of the pits being still open and carried down to a considerable depth for the sake of a magnificent vein of white quartz which crosses the trap just here.* Most of the trap here is of extremely fine grain, and a partial decomposition extends as far down as the bottom of the pit, nevertheless the true nature of the rock is perfectly evident. Both veins may be traced down to the shore beneath the Greenbank terrace, where they pass under the water—to re-appear on the opposite side of the creek.

7a is a little vein occurring at Pendennis Point, of which I was first informed by my friend Mr. Howard Fox. 8a occurs in a quarry between Falmouth and Penryn, near Mr. Stephens's rope factory. This also was first observed by Mr. Howard Fox, who drew attention to the remarkable spheroidal structure which particularly characterises it here, in a paper read before the Miners' Association at Falmouth in 1873.

Nos. 9 and 10. These are the apparent continuations of Nos. 7 and 8 on the opposite side of the creek. No. 9, or the most easterly, is very wide, and has been opened out very extensively for building purposes. No. 10 is much narrower, but can be traced farther, in fact it may be traced right across the promontory to the Mylor creek, where it may be seen at low water at a point a little west of the church. In the large quarry (No. 9) the stone is a good deal decomposed, especially near the surface, and full of minute cavities, owing to the disappearance of one of the components; nevertheless good pieces may be obtained, from which it appears to be very fine grained but of quite typical composition.

* This vein of quartz is the finest and purest I have ever seen. Perfectly white, it is often seen 3 or 4 feet wide and quite free from strain or flaw for spaces of many inches or even feet. It has only been used for roadstone, but it would be a perfect material for the manufacture of the better kinds of glass, as it is almost chemically free from iron.

Nos. 11 and 12. Two other little bands of this rock, also marked as greenstone or trap on the survey maps, appear near the place marked Landeryah, about a mile and a half to the west of Mylor Church.

No. 13. This is a vein of the trap which occurs on the north side of Mylor creek. It is evidently the continuation of No. 10.

No. 14. The only occurrence of this rock with which we are acquainted on the eastern side of Carrick Roads is at a point about a quarter of a mile above Mesack Point—where it was discovered a few years ago on the occasion of an excursion of the Truro Geological Class. At that time (and probably it is so still) it had been worked away below by the tide so as to form a picturesque cave or natural arch. This locality is not marked on any published map known to us.

No. 15. This vein appears on the survey map as a trap or greenstone—at a point on the south side of Restronguet Creek just above the bar.

No. 16. Is the continuation northward of 15, *i.e.* on the north side of the creek.

No. 17 to 22. These are for the most part marked on the survey map in faint dotted lines, but not coloured—either as elvans or “traps.” Apparently there existed some doubt as to their true nature at the time the map was made. Mr. Barnett was the first to publish any description of the intrusive rocks of this part of the Truro river (see *supra*, *loc. cit.*). The principal and most characteristic vein of this group (17) occurs on the north side of Pill Creek, a small inlet about a mile above Restronguet Point. It proceeds from thence in a direction a little east of north to Channel Creek, where it may be seen on both shores in several places.*

The vein on the north side of the creek splits into two, one branch coming out on the shore of the river near King Harry's passage (No. 18) while the other passes on to Roundwood (19), where it is visible in the creek. From this creek it passes on to Halwyn Farm (20), after which it divides, one branch passing

* On the south side of the creek near the Trelissick fish ponds, at the head of the creek, we found no fewer than 4 distinct bands, or veins on Easter Monday of 1878.

Sketch Map

OF

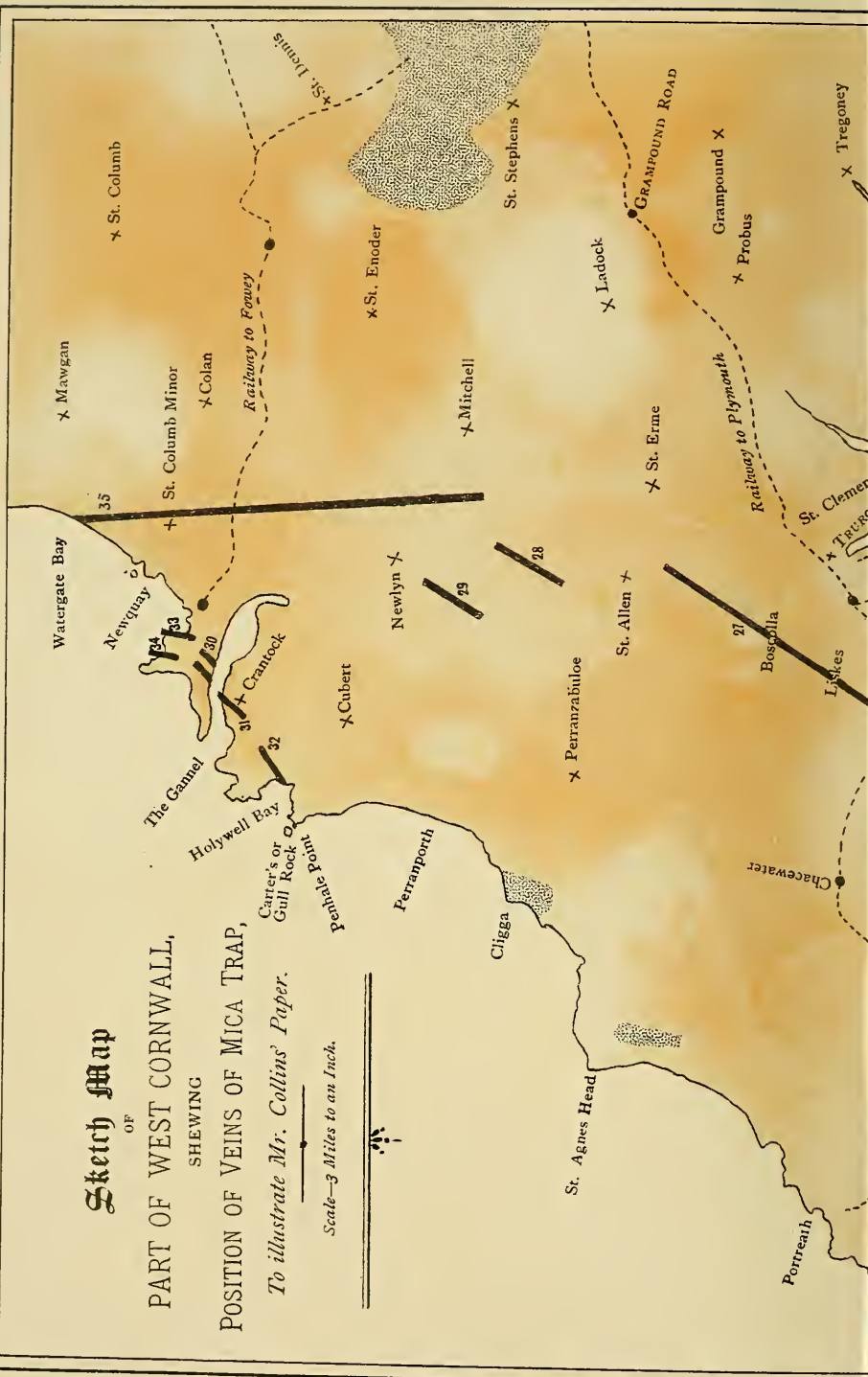
PART OF WEST CORNWALL,

SHEWING

POSITION OF VEINS OF MICA TRAP,

To illustrate Mr. Collins' Paper.

Scale—3 Miles to an Inch.





across the river to Victoria Point near Malpas (21), while another, apparently the main mass, appears in a field at the head of Lamb Creek, and then skirts the creek itself on the western side for a considerable distance (22).

Near Malpas (21) three separate veins or branches are visible at low water, one of these disappears beneath the slate in a quarry near the shore.

Nos. 20, 21, and 22 are not marked on the survey map. Mr. Barnett in his description speaks of the "elvan" as "lying conformable with the slate" at Channel Creek, but a close inspection shews that this is not exactly the case. On the south side of the creek, the killas is seen to dip at a greater angle than the dyke. It is here of a grey colour and dips about 25° from the horizontal, while the principal dyke is inclined not more than 17° . It is here about 30 feet thick, and has a very decided concretionary or rather spheroidal structure. This indeed is more or less observable wherever it is exposed to any considerable extent. On the north side of Channel Creek the dyke is smaller—it has about the same inclination as before, but the killas is here much more nearly horizontal, as shewn in the sketch fig 3—so that here it is clearly intrusive.

Fig 3.
Channel Creek
N. Side.



In the creek to the north of Roundwood the killas dips about 43° to the S.S.E., while the dip of the dyke is about 25° . Above the dyke the killas is much contorted, as shewn in the sketch fig 4.

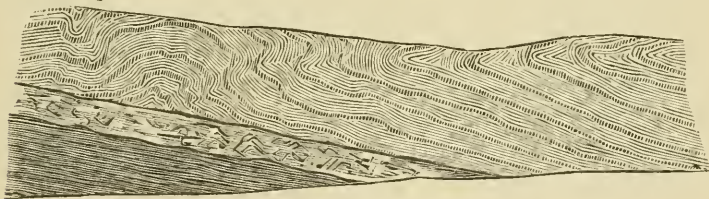
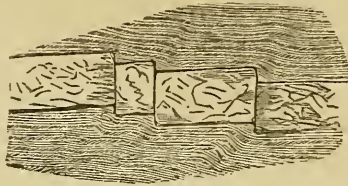


Fig 4.—Creek near Roundwood.

Near this place, too, we found the trap faulted as shewn in the sketch fig 5. The killas was *bent* into the angles and not broken. A good deal of carbonate of lime existed here in the joints.

Fig 5.
Near Roundwood.



Under the cliff at Victoria Point two distinct branches are visible at low water, respectively 2 and 8 feet thick—with about 2 feet of killas between. Here there is an abrupt contortion of the strata, and the dykes have been contorted with the killas as shewn in fig 6.

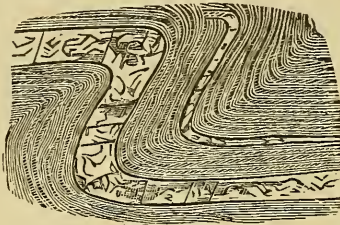


Fig 6.
On Shore below Victoria Point.

Several small branches were formerly to be seen in the quarry near Malpas, as described by Mr. Whitley many years ago in the reports of the Royal Institution of Cornwall, but they were almost entirely obliterated by an accumulation of rubbish on the occasion of our last visit, in 1870.

Nos. 23 to 25^a we mark with some little hesitation as belonging to this group. They are the veins numbered 40 to 44 by Mr. Barnett in his paper already referred to. They are certainly very unlike ordinary elvans, being much browner and containing much more mica. These peculiarities—a tendency to spheroidal structure which is frequently observable in them—their north and south course, and their nearness to undoubted veins of mica-trap, induce us to believe that these also are mica-traps, and to mark them as such upon the map.

No. 26. The next appearance of this kind of rock is at a point nearly 2 miles to the east of the Lamb Creek, vein No. 22. It crosses the fields at the back of Nancevallon Farm, a little above Penwethers, and not far from the well-known quarry on the Nancevallon elvan,

No. 27. A little farther to the west, in Gloweth Farm, a series of pits on the south side of the turnpike road marks the position of another vein. This passes through Liskes in a N.N.E. direction to Boscolla, where it is intersected by one of the ordinary felspar-porphyrries of the district. From Boscolla—where it is more than usually decomposed—it may be traced without difficulty by Shortlane's End, Gwarnick, and St. Allen, as mentioned by Mr. Barnett—the decomposed portions having been largely dug out for agricultural purposes, under the local name of “Merl.”

Nos. 28 and 29. Still farther to the northward veins of this rock have been met with in the workings of South Cargoll Mine, and fragments of it may still no doubt be picked up on the burrows (No. 28). It is also met with on the road a little to the north of Fiddler's Green (No. 29), a little village lying about a mile to the W.S.W. of Newlyn, where it was shewn to us in a shallow road cutting, by Mr. Clarke, in the summer of 1880.

Nos. 30 and 31. These veins are near the mouth of the river Gannel, where we saw them in July, 1880. The more westerly vein of the two which are marked on the Survey Map as cropping out on the north shore, consists of two distinct branches, the wider of them being at least 40 feet thick. The vein a little to the east is an ordinary elvan. The trap runs in a N.E. direction, cutting through slates whose general dip is S.E., but which are much contorted. No. 31 appears to be the southern continuation of this vein—it passes near Penpoll, and then disappears beneath the Crantock sands. A vein (No. 32) which may perhaps be the same as No. 31 comes out in the cliffs of Holywell Bay, $1\frac{1}{2}$ miles to the south-eastward of the point last mentioned. The vein points directly to the outlying rock known as the Carter's Gull Rock, and we have been informed that mica-trap exists there also, but as our informant was not a geologist, it is possible he may have been mistaken. The sea here is generally very rough, so that it is not often one has an opportunity of visiting such an inaccessible place.

Nos. 33 and 34. Farther to the north a much-branched series of veins of very fine-grained mica trap appears in the cliffs at Newquay, near the little pier on the northern side of the “neck,” cutting through the interstratified limestones and slates

in the most complex manner. Mr. Barnett has described these veins with much accuracy in his paper already referred to. The accompanying figure, shewing the chief branches of the vein (No. 34) somewhat nearer the headland, is copied from that given by him.

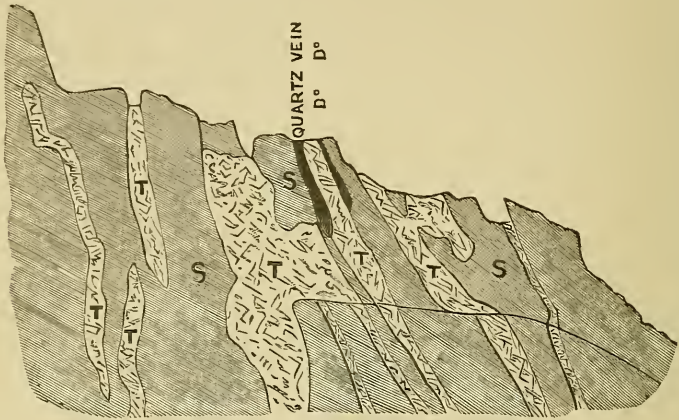


Fig 7.—Newquay Neck.

No. 35. Watergate Bay. This dyke is marked on the survey map as an elvan running very nearly N.S. and extending for eight or nine miles. In several places where we have seen it, its appearance is much more that of a trap than an ordinary elvan—*i.e.* it is a basic rock—containing much mica. It often, too, exhibits a strong tendency to spheroidal structure, but we regret that we have no specimens by us which we could analyse.

We have thus in an area of not more than 25 miles by 10, 35 or more distinct outcrops of a rock which, until lately, was supposed to be limited in Britain to the Cumbrian district.*

The essential unity of character of composition in this system of veins—hitherto spoken of variously as “trap,” “elvan,” “sandstone,” or “marl,” has only been ascertained by careful

* “Mica traps so far as we are aware, are either very rare or wholly absent in Britain to the south of the Cumbrian district, and in that they are rarely found in the vicinity of the principal lakes, but are almost confined to the eastern part of Westmoreland and the north-western of Yorkshire, *always occurring in Silurian rocks.*” Bonney and Houghton, *Quart. Journ. Geol. Soc.* 1878, 137, p. 165. It is worthy of remark that most (but not all) of the Cornish veins occur traversing Silurian rocks, as do also those of Bohemia.

investigation in the field, aided by the examination of thin microscopic sections and supplemented by numerous chemical analyses. A summary of those observations is given below:—

Physical description. The rocks vary in colour from golden-yellow to greyish or chocolate-brown, with—often—a purplish-tinge in the hardest parts when freshly-broken. Near the surface they are often much decomposed—as at Roscreage, Beacon Hill, Flushing, Fiddler's Green, Boscolla, and the Gannel. Sometimes this decomposition extends to very considerable depths. When the rock is undecomposed, its appearance is unmistakable, whether fine or coarse-grained; where the decomposition is but slight, it often simulates to a cursory view a brown sandstone, for which, locally, it is often mistaken. Where a rock originally fine-grained has become extensively decomposed—as for instance at Flushing, it appears like a brown or yellowish grey tuff full of minute cavities due to the complete solution and removal of some of its crystalline components.

A tendency to spheroidal structure—developed by decomposition—may generally be observed, and this is especially well-marked in the quarry section above alluded to, No. 8a, and also in the sections near Trelissick and Channel Creek, as well as in the cliffs below Mawnan Church—places where a considerable surface has been for a long time exposed to the action of the tide and spray. We have seen some spheroids at this latter locality not less than eight feet in diameter.

Microscopic appearance. The true character of the rock is always evident, *a.* whenever it becomes more than ordinarily coarse-grained, or, *b.* when unweathered specimens are obtainable. In such cases it is seen to be essentially a compound of plagioclase felspar and brown mica, with some orthoclase and a little quartz—embedded in a crypto-crystalline feldspathic base. Occasionally it contains crystals of hornblende, and, in the joints, films of carbonate of lime are generally present.

In some localities masses of a peculiar greasy-looking quartz, somewhat resembling corundum, are found interspersed throughout the mass; these are occasionally rudely spherical in form—varying in size from less than a hundredth of an inch to upwards of a foot. They often possess a coating of flakes of mica.*

* Notwithstanding its peculiar appearance the analysis of this quartz reveals nothing peculiar in composition.

In a few places, and notably at Boscolla, near Truro, the crystals of mica are comparatively large and exceptionally abundant, and the rock having become completely disintegrated to a considerable depth, these mica crystals—being the least destructible portions, may be scooped up in glittering handfuls. The greenish-yellow scales lying in the beds of streamlets have more than once been mistaken for grains of gold. In other places fragments of ordinary white vein quartz may be seen imbedded, but this is not very common. Distinct crystals of felspar or hornblende are rarely to be seen by the unaided eye, but in a few places large porphyritically embedded crystals have been observed—as in specimen I, from Greenbank.

Carbonate of lime is generally present in the joints—and occasionally in the cavities of the rock, but apparently to a less extent than is the case with the Cumbrian rocks described by Professor Bonney. We have never found zeolites present.

Microscopic characters.—Mr. John Arthur Phillips was the first to describe the microscopic appearance of these Cornish mica-traps. His description runs as follows.* “Under the microscope thin sections are seen to consist of a nearly equal mixture of quartz and felspar and brown mica, enclosed in a felspathic base. The felspar is monoclinic (orthoclase), and the quartz contains a few small gas cavities, but no well-defined fluid-cavities containing bubbles were observed.”

This description is evidently that of a “minette-felsite” or “kersantite,” it is very exact as far as it goes, as might be expected from so skilled an observer, but it appears that his sections must have been prepared from specimens containing somewhat more quartz than usual.† We would add to Mr. Phillips’s description the following remarks:—In nearly all the sections of undecomposed specimens small crystals of a strongly dichroic mineral resembling hornblende are visible, and not unfrequently these are accompanied by minute crystals of some

* Q. J. G. Soc., 123 p. 337.

† Minette-felsite, strictly speaking, should contain *only* orthoclase; “kersantite” *only* plagioclase. These rocks appear to contain both kinds of felspar—the potash predominating occasionally, but ordinarily the soda, as will be shewn hereafter.

triclinic felspar. Very often, too, minute acicular crystals of apatite* are visible, and these probably account for the traces of phosphoric acid, which substance is always present in greater or less proportion. We think, too, we have recognised augite in some specimens, and many specimens contain magnetite. *Opacite* and *Ferrite* are always present. Generally one may see little veins or patches of calcite. Altogether the resemblance to the mica-traps of the Kendal district, as described by Messrs. Bonney and Houghton, seems to be very close indeed.

Chemical Composition. Considering the very varying proportions of the constituent minerals and the extent of ground over which these mica-traps are found, this may be regarded as remarkably constant. In the accompanying tables we give many analyses illustrative of this point, each being in most cases the mean of two concordant analyses.

Table 1. Unweathered specimens.†

Sp. gr.	a.	b.	c.	d.
.. ..	2.70	2.72	2.727	2.749
Moisture	0.34	0.61	0.30	0.35
Combined Water	6.11	6.32	2.10	5.45
Silica	47.35	48.01	48.75	48.40
Alumina	20.60	19.20	22.99	15.93
Ferrous Oxide ..	1.60	4.82	1.55	1.98
Ferric Oxide ..	3.10		4.01	4.50
Lime	4.72	4.30	4.37	6.83
Magnesia	6.12	5.80	5.62	4.36
Potash	6.29	10.12	1.10	0.94
Soda	3.58		5.97	2.10
Carbonic Acid ..	—	—	3.43	9.17
	99.81	99.18	100.19	100.01

* My attention was first called to the crystals of apatite by Professor Bonney, to whom I had sent a specimen of the rock. J. H. C.

†a is the analysis of a specimen from Trelissick Creek—analysed by Mr. J. A. Phillips, (*loc. cit.*); for all the other analyses we are ourselves responsible. b is also from Trelissick; c is from Lamb-Creek; d is from near the Nare Point.

Table 2. Weathered Specimens.

Sp. gr.	<i>d2.</i>	<i>e.</i>	<i>f.</i>	<i>g.</i>	<i>h.</i>	<i>i.</i>	<i>j.</i>
Moisture ...	2.499...	2.747...	2.459...	2.656...	—	2.541...	2.724
Combined Water ...	0.25 ...	0.42 ...	0.82 ...	0.70 ...	0.40 ...	1.30 ...	1.00
Silica ...	2.95 ...	1.00 ...	3.82 ...	2.15 ...	3.20 ...	4.20 ..	3.70
Alumina ...	60.60 ...	50.10 ...	57.06 ...	55.45 ...	53.90 ...	51.75 ...	53.30
Oxides of Iron...	17.99 ...	19.45 ...	21.51 ...	25.95 ...	21.92 ...	23.58 ...	24.48
Lime ...	7.31 ...	10.75 ...	7.19 ...	6.07 ...	7.78 ...	10.37 ...	12.02
Magnesia ...	2.41 ...	4.03 ...	1.10 ...	1.26 ...	0.48 ...	2.46 ...	0.73
Potash ...	1.37 ...	5.13 ...	4.18 ...	2.39 ..	5.29 ...	3.03 ...	3.75
Soda ...	3.80 ...	1.60 ...	0.26 ...	1.48 ...	0.67 ...	tr. ...	tr.
Phosphoric Acid	not det.	.32 ...	not det...	not det...	.20 ...	not det...	not det
Carbonic Acid ...	none ...	2.00 ...	none ...	none ...	0.10 ...	none ...	none
	99.06	99.36	99.67	99.75	99.48	99.24	100.25

Here *d2* is from near the Nare Point, part of the same stone as that represented by analysis *d* in the Table I. The different *ratios* of potash to soda appear to indicate an original difference in the mineral composition, which perhaps facilitated the weathering; *e* is a moderately weathered rock from Newquay. This latter contains also traces of sulphur and nickel. *f* is the mean of two closely agreeing analyses of the rock from Fiddler's Green; *g* is the mean two similar analyses, from Flushing; *h* is from the Gannel; *i* is from Roscreage at the north western foot of the Beacon near Roscreage House, and *j* is from Beacon Hill, Falmouth, (the most decomposed of all). Viewed broadly in the light of these analyses it appears that weathering really or apparently *decreases* the combined water, *increases* the silica and oxides of iron, *decreases* the alkalis and alkaline earths.

In all these rocks there are also traces of phosphoric acid, manganese, lithia, and fluorine. In the rock from Trelassick (*a*, *b*) the high proportion of alkalis is notable—also the fact that the potash predominates over the soda. We have only observed this in one other instance. This Trelassick rock also is free from carbonic acid, which is different to what we have observed in all other *unweathered* examples of the mica-trap. The Lamb-Creek rock (*c*) contains much less combined water than the others; in the rock from near the Nare Point, the alumina is exceptionally low, and the carbonates are exceptionally high.

As these films of carbonates occur only in the joints and not as constituent parts of the rock, they must of course be regarded as extraneous although characteristic matters.

Geological Age. On this point farther information is still wanting,—nevertheless we are not altogether without evidence of considerable value. In the former paper it was shewn that the principal contortions of the Lower Silurians of West Cornwall were produced before the deposition of the Ladock Beds—and as the mica-trap partakes of these contortions in some places—as at Victoria Point—it is evident that the rocks were erupted before the contortions of the rocks of that period were completed. But it is certain that the traps cut through the Ladock Beds also—both at Boscolla and near Penare farm; it is evident, therefore, that they are more recent in their origin than these beds. The particular contortions of the stratified rocks at Victoria Point—of which the mica-trap partakes,—must therefore be referred to a later date, and are perhaps merely local.

But, as we have seen, the Ladock Beds appear to be of Devonian and even of Upper Devonian age. It is true that the exact date of the formation may be referred to almost any part of that period, since as yet no fossils whatever have been found in them. The stratigraphical evidence is however conclusive as to their being more recent than the Lower Silurians and more ancient than the final eruption of the granite. The mica-traps are evidently newer than the Ladock Beds, since they cut through them—they are as evidently older than the ordinary elvans—since they are cut through by them, as at Treiske. But it is generally held that the elvans were formed but little after the final eruption of the granite—that is in early Carboniferous times. Assuming therefore that the Ladock Beds are Devonian, and the Elvans Carboniferous, we have good superior and inferior limits for the mica-traps, and we may fairly enough suppose them to have been erupted, or rather injected into the Silurian and Devonian stratified rocks about the close of the Devonian period, and to have been contemporaneous with the great volcanic eruptions of the region to the north and east of Bodmin, which are known to traverse upper Devonian rocks near S. Petherwyn, and perhaps near Padstow also.

It does not seem at all unlikely that these widely extended intrusions of eruptive rocks resulted from earth-movements, which were preceded and accompanied by the outflow of much highly mineralized water, and which were the direct precursors of the final granitic upheavals. It is true that the basic eruptive rocks of the northern and eastern areas differ somewhat in mineralogical composition from the mica-traps—but this difference is probably due to a difference in the amount of pressure under which they became consolidated, or to different rates of cooling. The eastern rocks, as is well-known, are frequently vesicular and amygdaloidal, while those of West Cornwall scarcely ever exhibit any trace of such structures. But the chemical composition of the rocks of the two areas is so similar that we may well believe them to have come from the same deep-seated source, as will appear from the following table, in which *l* is the mean of the four analyses given in Table 1, while *m* is an analysis of the Wearde Rock, *n* that of Hendra Chapel, and *o* that of the lava ("dunstone" locally) of Pentire Point—these latter three being the analyses of Mr. J. A. Phillips,* who calls *m* and *n* altered dolerites.

	<i>l.</i>	<i>m.</i>	<i>n.</i>	<i>o.</i>
Moisture	0·40	0·32	0·24	0·51
Combined Water 4·99	5·39	2·02	2·64	3·98
Silica	48·13	46·42	44·69	43·23
Alumina	19·68	20·23	17·58	21·37
Oxides of Iron	5·39	10·32	11·62	11·22
Lime	5·05	5·99	10·54	6·66
Magnesia	5·47	3·82	9·81	3·57
Alkalies	4·99	6·95	2·87	5·63
Carbonic Acid	3·15	2·32	—	2·61
Phosphoric Acid	traces	0·98	—	—
	97·25	99·37	99·99	98·78

The principal veins of mica-trap on the one hand, and of the lavas and dunstones referred to on the other, appear to diverge from a point in the sea a little to the north and east of Padstow, and here it is probable the chief volcanic phenomena of that period were centralized. There can be little doubt that

*"On the so-called greenstones of Central and Eastern Cornwall." *Quart. Journ. Geol. Soc.*, Aug. 1878, pp. 30—48.

in ancient times many other outcrops of basic rocks were existent between these two groups, but the subsequent intrusions of the granite masses and the enormous amount of denudation which has since taken place, have left comparatively little of the basic rocks. What we have at present, for instance, of the mica-traps, is for the most part included in the great trough, in part elevated, but nowhere more than about 600 feet, between Hensbarrow and Carn Menezes; but the distance from the great trap vein where it comes out to the sea in Watergate Bay, to the scoriaceous lavas of Pentire Point, is not very great after all.

Economic Value. As already mentioned—the mica-traps have sometimes been used for building, under the name of “sandstones” and “freestones.” Blocks which are slightly decomposed may often be obtained of considerable size, and these are well adapted for building purposes, since they are very readily dressed into shape, and have a warm and pleasant appearance. They are, also, fairly durable, since the decomposition does not seem to progress very fast when once the blocks are removed from their natural beds and built into walls. The more decomposed portions are of course valueless for such purposes, but they are of extreme value to the agriculturist on account of the phosphoric acid and soluble silica which they contain—sometimes amounting to nearly 1 per cent. of the former, and $1\frac{1}{2}$ per cent. of the latter. The extensive excavations which have been made along the course of the veins wherever they are soft and decomposed, and of sufficient size, shews that the farmers of Cornwall have learnt by experience the value of such a material.

In several localities—and notably at Newquay—small crystals of nickeliferous and cupiferous pyrites exist in patches in the rock, and proposals have frequently been made by mining speculators to work in such localities for “mineral.” It is of course not impossible that valuable minerals in paying quantities might be found in, or adjoining, veins of mica-trap, but nothing of the kind has yet been discovered, and as it is not very likely that such deposits will be found hereafter—it may be well to warn the unwary against being misled by the specious statements of interested but unscrupulous persons.

AMERICAN PHOTOGRAPHS: ART IN PHOTOGRAPHY.

BY THE REV. A. MALAN, M.A.

Through the liberality of Mr. Richard Pearce, of Denver, Colorado, the Institution is fortunate enough to be in possession of sixty mounted photographs of American scenery, in size 21 inches by 16, which on account of the difficult nature of some of the subjects, and the grandeur of all, form a series of great technical excellence, and also of remarkable interest.

The object of the donor, in enriching the Institution with this series, was to convey to any Cornishman proposing to emigrate, some idea of the kind of scenery to be met with on the western coast of America; and for this purpose the photographs will be permanently most valuable. In the following paper, however, it is proposed to make such remarks on photography in general, as suggest themselves from looking over the prints, calculated to point out some of the difficulties connected with the art.

A large photograph is generally produced as an enlargement from a small negative. The magic-lantern, slide, and sheet give a familiar illustration of the method of working. The source of light being the sky, or a powerful lantern, the negative takes the position of the magic-lantern slide, and a sensitized piece of carbon-tissue, or gelatino-bromide paper (to receive the image as an enlarged positive) that of the sheet. In the present case the photographs are printed direct from large negatives, which of course involves a camera and lens and plates of sufficient size for such pictures.

It is usually supposed by the uninitiated, that given the necessary outfit, to take a landscape must be a very easy thing; but those who have practical acquaintance with photography know only too well that this is anything but the case. There are certain difficulties which experience can grapple with; but others again which are not to be entirely overcome even by that universal teacher.

These difficulties have to do with the lighting of the subject, the perspective, the sky and atmosphere, the colour, and the composition.

A hint of the first may be gathered by reference to the series before us. To take as an example, No. 1031, one of the many prints in this series, for technical excellence, most highly to be commended. Here we have a picture composed of distant snow clad mountains in strong light, with a foreground of two rocky piles, one in shade, one in sun. Now, in the ordinary course of things, the length of time during which the sensitized plate should be exposed to light through the lens, so as to impress the image of the distance the most satisfactorily, is much less than is required for the foreground. The shadows and shade of the photograph must be transparent, with detail; and that requires, comparatively, a long exposure. But a lengthened exposure having been given, great care must be subsequently employed in proportioning the chemicals which are to develop the latent image, lest the distant hills should become so dense in the negative as, in the resulting print, to be merged in the sky, as a white blank; or, on the other hand, lest, the hills appearing fairly well, the foreground should be black and void of detail, and thereby destroy the harmony of the picture.

Or take No. 1100—a hopeless subject! a fall of water between two precipitous cliffs, with the widening flood of torrent as a foreground. One can imagine a photographer being appalled at the magnificence of the scene, and aghast at his inability to represent it as it meets his eye. To render the falls effective, an instantaneous exposure would be best; for then the tumbling, crumbling, sparkling outline would be sharp, and clear, and full of motion,—supposing the spray not to create over much mist; but in that case the cliffs would “come out” dark black walls, without any feature. So there is nothing for it, but a compromise; a lengthened exposure secures the correct appearance of the cliffs, but the grand swirling falls become a lifeless white smudge.

From this it may be inferred, which is the real fact, that with an ordinary rapid dry plate, an instantaneous picture (or, a picture “by the instantaneous process” as it is mis-named), is merely a question of sufficient light on the subject; the

same plate, which would secure an open landscape in full sunshine in one second, or even less, requiring an exposure of perhaps half-an-hour's duration in the interior of a church.

Then there is the perspective. A photographer who would represent nature naturally, should go out provided with a series of lenses of varying foci. For instance, a subject of narrow angle, say, a deep ravine, with a mountain as distance, will require a lens of long focus; for if one of short focus were employed, the foreground would be exaggerated, the distance dwarfed. On the other hand, a wide subject, which *must* be wholly included, will demand a wide-angle lens of short focus. When photographs are defective in perspective (or rather *appear* so to be—for the perspective is optically correct), it is through the use of an unsuitable lens; and therefore since landscape painters, in these days of light and portable apparatus, and increased facilities, appear to employ photography more and more, to get their drawing correct, it is desirable that they should have some acquaintance with photographic optics.

As to colour; some colours, every one knows, such as the reds, and pinks, and yellows, make but little impression on the silver-plate;—a rhododendron bush covered with trusses of scarlet blooms, or a meadow of buttercups, though bright enough to the eye, being anything but bright in a photograph.

And as to clouds; to sympathy between sky and landscape; and to general atmospheric effect;—these great adjuncts to pictorial beauty are almost beyond the capacity of the best photographers. Indeed, when good clouds *do* appear in a photograph, it may be taken for granted, in nine cases out of ten, that they were taken at a different time, at a different place, and on a separate plate, and therefore have really no connexion whatever with the landscape they adorn. Mist rising in a valley, sun in one part, and shade in another, are not difficult to portray; but a natural sky and good atmospheric effect are, and perhaps always will be, as regards a photograph, conspicuous by their absence.

Taking these difficulties into consideration, and then turning to the artistic side of landscape work, it is probably true that, in spite of his camera and lens, which on the face of them would seem to give him an immeasurable advantage, the photographer

has a harder task to make a *picture*, than has the painter. It is astonishing how seldom nature makes a satisfactory composition. Even after selecting the best position possible, it is often found in practice that a part of the subject ought to be somewhere else. A tree wants transplanting, or a foreground is characterless, or two effective objects—neither of which can be omitted without detriment to the picture,—are most objectionably far apart, and by no manner of means can be secured in the way most desirable. Unfortunately, a lens will only reproduce what lies within its compass, and if it be a lens of an artistic angle—(about 50 or 60 degrees)—by no contrivance will it include more than lies within those limits. But what about the painter? He has no scruples, as a rule, about putting in telling pieces of foreground, or leaving out what he does not want, or “getting in” his subject by (unconsciously, perhaps) dwarfing heights, or narrowing the space between features that are important, but naturally too widely separated;—and in that way makes pretty pictures of apparently moderate angle, which please the eye, and are things of beauty. But if their landscapes were made to conform to the severe discipline of correct optics, from the point of view at which they were taken, it would astonish many landscape painters to know what truly miraculous feats they sometimes perform.

And yet photography is a wonderful *educator*; it trains the eye to admire artistic effect, and to appreciate nature’s beauties, and for that reason commands the attachment of many amateurs—who have this advantage over professionals, that they are not harassed by the caprice of clients, but can take what they like, when they like, and how they like it. The latter, however, might instil more art into their work than they do, without sacrificing their commercial interest. There are some brilliant exceptions—but, as a body, they must produce artistic work before they can rightfully enjoy the name of artists.

The circumstances under which the prints before us were taken are, of course, quite unknown: no doubt the photographer had good cause and the best of reasons for taking them in the manner depicted; but to illustrate the foregoing remarks,—that less in-artistic work might be produced by professional photographers, with a little more care—we may just draw

attention to No. 1054. This is a wide panorama diagonally cut in two by a straight line, which is its most prominent feature. That feature is a railway train at a stand still, whose passengers and officials are all staring at the camera. Looked at from an artistic point of view—not commendable. Or No. 1039—a pretty bit of composition in itself; but scarcely improved either by the enginemen in the foreground, surveying the camera (instead of tending their iron steed), or by the remarkable feature of a man fishing in apparently shallow water, with an untrimmed sapling-trunk for a rod, whose attention is concentrated, not on his imaginary bait or float, but on the camera.

But let it not be inferred that it is an easy matter to pose people gracefully; on the contrary, it is not to be done, as a rule, without much pains and patience. Many a charming picture one sees and longs to secure, truly artistic and natural—*e.g.* children picking flowers by the wayside, neighbours having a friendly gossip by the cottage-door, the pretty girl with the pitcher at the well, etc; but let him only commence setting up his apparatus, and all picturesqueness forthwith vanishes; in spite of earnest entreaties to his subjects to remain “as they were,” they almost invariably pose themselves as if they were playing at soldiers on drill, and the camera had just uttered the magic word “attention.”

NOTE ON THE DISCOVERY OF AN ANCIENT BURIAL-PLACE
IN THE PARISH OF LADOCK.

BY THE REV. S. R. FLINT.

Last Autumn, when some men were digging over a piece of ground immediately above the row of houses at Little Trendeal, which lies some three-quarters of a mile above Bissick, on the Bodmin Road, they came across some loose pieces of stone. The next day digging deeper they came upon a larger stone, and finding that it sounded hollow when struck, instead of attempting to lift the stone they set to work at once to break it, in order to discover what was beneath. They found nothing but an empty space 18-inches deep. Mr. R. Williams, the owner of the property, carefully examined the remainder of the stones before removing them, and it is due to information received from him, that I am able to give the following particulars.

The stone chamber lay nearly due north and south, about 2-feet below the surface. It was constructed by two side stones some 3-feet 6-inches in length and 1-foot 6-inches in depth; two smaller stones at the ends, and a large stone on the top forming the cover, and extending over the stones below it.

The dimensions within, were thus:—3-feet 6-inches long, 1-foot 6-inches deep, 2-feet wide.

The cover was a large rough hewn stone, varying in thickness.

At the south end, resting on the cover, were two stones, upright, slightly leaning towards the grave, and nearly reaching to the surface, placed at an angle to each other; both sides also, where the cover rested on the sides, were small stones built round, evidently to keep off the pressure of earth, and to prevent the moisture from running in.

The side stone on the east side, where the hill falls, was much thicker than that on the west side.

On the west side there were a number of small stones, laid flat, even with the cover, extending some 12 or 18 inches.

Running in the soil at the west side was a layer of red earth about 1-inch thick at the grave, and gradually getting thinner till it disappeared, perfectly distinguishable from the surrounding soil.

There was no stone at the bottom of the grave, and nothing was found within but a thin layer of deep red powder or dust, quite distinct from the red earth already mentioned.

The stones weighed some 20 cwt. and there must have been some considerable labour used to have brought them to the spot.

The piece of ground where this was found appears to me to have been raised at some time or other to a level, as it does not follow the slope of the hill.

I have not had the opportunity of searching for any more graves of the same sort, I hope however to be able to do so this autumn, when it is quite possible that further discoveries may be made.

VOLCANIC ROCKS OF CORNWALL.

By THOS. CLARK.

Olivine appears to be generally considered a truly volcanic production. It is found in ancient and modern basalts, lavas, and kindred erupted rocks of Egypt, Natoba, Brazils, Styria, Vesuvius, Mexico, Sweden, and Baden, it is also common in the basaltic green-stones of Scotland, and is now found in Cornwall. It consists of about 40 per cent. Silica, 48 Magnesia, 11 Iron Protoxide with traces of Manganese and Alumina.

Its crystals are rhombic prisms, its colour varies from bottle or olive green to brownish or yellowish. Its hardness varies from 7 downwards, according to its state of decomposition; it is soluble in hydrochloric or sulphuric acid, and its decomposed matter sometimes goes to form other crystals. Serpentine is generally accepted as a rock highly impregnated or cemented with a solution of olivine. Prof. Bonney first recognized it in some serpentine of the Lizard about 6 years ago, but instead of what he found being an accidental crystal, it is the reverse, for it is so abundant in the serpentine of the Lizard that I may safely say over 90 per cent. of it is unworkable for ornamental or decorative purpose, on account of its presence, and the small portion of it that is workable contains mild pseudomorphs after Olivine. Within the past few years I have been working on these rocks, and made some discoveries of this mineral in the Lizard, Duporth, and Menheniot serpentines. I have also discovered other volcanic evidences in a trap rock in the parish of Kea, by the Truro river, between Tregothnan boat-house and Cowlings creek. Hand and microscopic specimens of the various rocks I have placed in the Museum, for comparison with those from Vesuvius. The specimens from Kea are from a micaceous trap, whose out-crop is visible in many places between two volcanic regions, viz:—the Lizard and near Padstow. This trap has burst through the lower and upper Silurian between the Lizard and Newquay Head; at Padstow

the volcanic matter has broken through what I take to be Devonian formation; at Porthollow the serpentines and hornblendic gneiss rest on the lower Silurian; at Nare Head, Veryan, the serpentines and hornblendic slates rest on the lower silurian; at Duporth it pierces the lower silurian; and at Menheniot, I think, the rock it pierces is now considered Silurian also; therefore I cannot think that this volcanic activity can be placed at an earlier date than the upper Silurian or Devonian times.

INVENTORY OF SILVER PLATE BELONGING TO SIR THOMAS
ARUNDELL, KNIGHT,
COMMUNICATED BY THE EDITOR.

The following inventory is preserved in the British Museum (Add^l M.S. 5751), and is an account of the plate belonging to Sir Thomas Arundell paid into the Jewel House.

This Sir Thomas was the 2nd son of Sir John Arundell of Lanherne, and half brother of the Duchess of Somerset, and was charged with conspiring to effect the death of the Duke of Northumberland; he was attainted of felony, and beheaded on Tower Hill, on February 26th, 1552.

His conviction was secured with great difficulty, the jury being locked up for a long January day and night without food, drink, or fire, before they brought in a verdict of guilty; of his execution the Chronicle of the Grey Friars gives the following quaint account:—

“Item, the 26th day of the same Monythe, (Feb. 1552), the wyche was Fryday, was hongyd at Towre-hylle, Sir Myllys Partyrge, Knyghte, the whyche playd with Kinge Henry the VIIIth at dysse for the grett belfery that stode in Powlles church-erde:* and Sir Raffe Vane, theys too were hongyd. Also, Sir Myhulle Stonnappe and Sir Thomas Arndelle, theys too ware be-heddyd at that same tyme, and theis 4 Knyghtes confessyd that the war never gylte for soche thynges as was layd unto their charge, and dyde in that same oppinioun.”†

This document gives a very good idea of the quantity and magnificence of plate which was deemed essential to the standing of a Cornish gentleman in the 16th century.

* Stowe tells this story as follows: “Near to the school in St. Paul’s churchyard, in London, was a great and high clochier, or bell-house, four-square, builded of stone, and in the same a most strong frame of timber, with foure Bells, the greatest that I have heard; these were called Jesus Bells, and belonged to Jesus chappell. The same had a great spire of timber, covered with lead, with the image of St. Paul on the top; but was pulled down by Sir Miles Partridge, knight in the reigne of Henry the Eighte. The common speech then was, that hee did set one hundred pounds upon a cast of dice against it, and so wonne the said clochier and bells of the King; and then causing the bells to be broken as they hung, the rest was pulled downe.

† Monumenta Franciscana, Vol. 2, p. 235.

The inestimable value of such a collection, had it survived to the present day, may be judged from the fact that only a very few pieces of genuine mediæval plate are now known to exist.

“ In this book indented made the 15th of February, Anno vi. Reg. Ed. VI. : is conteyning all suche parcells of plate late Sir Tho^s. Arundell, Knight, attaynted of felonye, as are delyvered in to the office of the Jewelhouse by Sir Richard Sakevile, Knight, Chan^c. of the Augmentacion of the Revenues of the Kinges Ma^{ties} Crowne to t'hands of John Kyrkeby and Edmunde Pigeon, officers of the same office to the Kinges Ma^{ties} use in maner and forme folowing.

GUILTE PLATE.

firrst oone bason and an ewer to the same guilt poz ¹ together	11 oz. 4 dwt.
Item oone parre of pottes poz	88½ oz.
Item oone parre of fillagons with cheynes poz	132 oz.
Item oone chalesse with a paton poz	17½ oz.
Item two spice plates poz	24 oz. 1 dwt.
Item VIII spownes poz	12½ oz.
*Item oone bolle ² withowte a cover poz	14½ oz.
*Item oone bolle with a cover poz	21½ oz.
*Item oone standing coop ³ with a cover having a Lyon hold- ing a staff poz	25 oz.

RD. SAKEVYLE.

YEAT GUILT PLATE.

Item oone standing cup glass faccon, having a boy with a shield and a broken staff on the cover poz	} 23½ oz. ½ dwt.
Item oone standing cup with a cover, glass faccon with a woman having a pillar in the one hand and a shield in the other poz	
Item oone olde standing cup with a cover chased with bor- ders and Roses, flower de luces pourte clyses and a rounde Knop with pillows and a bontie poz	} 21 oz. 3 dwt.
Item oone standing cup with a cover chased with long doppes with a man having a hande gunn and a matche in both handes poz	
*Item oone guilt jug with a cover with a Lyon holding a staf poz	} 25 oz. ½ dwt.
Item oone othe guilte jug with a cover with a Lyon holding a speare poz	
Item oone other plaine guilte jug with a cover with a rounde Knop poz	} 23½ oz.
Item oone othe guilt jug having a boye with speare and a shield on the cover poz	

1 Weighing. 2 Bowl.

3 Standing Cups were amongst the wealthy classes of great magnificence, and were used to present the wine from the butler to the Lord or Gentleman. These cups always had covers to prevent the introduction of poison.

Item two square saltes with oone cover	poz	53 oz.
*Item two other square saltes without a cover	poz	21½ oz.
Item oone faire salte ⁴ with an Ape	poz	50 oz.

Sum of the guilte plate 739¾ oz.

R.D. SAKEVYLE.

PARCEL⁵ GUILT PLATE.

Item oone chafing dishe	poz	49¼ oz.
Item oone paire of pottes	poz	87 oz.
*Item oone paire of lesser pottes	poz	53½ oz.
Item oone bason and an Ewer, the bason without a platte in the bushell, the Ewer with a white wolf in the bushell	}	101¾ oz.
poz		
*Item one bason and an Ewer parcel guilte, the bason chased in the bryme with T and A, the Ewer squared and chased	}	91¾ oz.
poz		
Item oone Oringe strayner	poz	4¾ oz.

Sum of the parcel guilte plate... .. 386½ oz.

WHITE PLATE.

Item six silver platters	poz	170 oz.
Item eight dishes of silver	poz	126½ oz.
Item four silver sawcers	poz	26½ oz.
Item six candelsticks	poz	49 oz.
Item oone shaving bason	poz	59½ oz.
*Item eleven spoones... ..	poz	16¾ oz.

Sum of the white plate 448¼ oz.

Sum total of all the said plate 1574½ oz.

R.D. SAKEVYLE."

NOTE.—The pieces of plate marked with an asterisk in the foregoing inventory are noted as being "Gevon to the Lady Arundell, wydow, by warrant dated the 24th day of Aprill, anno VI Regni Ed. VI."

4 The salt cellar was the principle article of domestic plate. It stood on the table and divided the nobler from the meaner guests, and was often very massive and handsome; it was generally covered for the same reason as mentioned with reference to Cups.

Note that the Abbot of Serne gave the Salte to Master Matthew Arundell at his baptism.

5. Partly gilt.

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1885.

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in the years 1840 to 1881 inclusive, by the
late C. Barham, M D., (Cantab) F.M.S.

JOURNAL

OF THE

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Royal Institution of Cornwall.

66TH ANNUAL GENERAL MEETING.

The Annual Meeting of the Royal Institution of Cornwall was held on November 27th, 1884, Dr. Jago, F.R.S., in the chair. There was also present the Revs. Canon Cornish, Canon Moor, W. Iago, A. H. Malan, and S. J. P. Dunman, Major Parkyn (Hon. Sec.), and Messrs. Robert Tweedy, N. Whitley, H. S. Leverton, H. M. Jeffery, F.R.S., W. J. Criddle, E. G. Spry, J. Snell, Searle, R. H. Carter, H. Bodilly, J. H. Collins, F.G.S., Howard Fox, T. Cragoe, F.R.G.S., T. Hawken, J. H. Bawden, T. H. Letcher, W. J. Clyma, S. Trevail, H. James, and R. Symons.

Major Parkyn read the Report of the Council, as follows:—

67TH ANNUAL REPORT.

Your Council cannot say that they have no matter to bring under your notice which shall command your attention. The past year is characterised by events of as absorbing importance to this Institution as any that have befallen it since it was founded in 1818.

To turn first to your obituary losses,—they have been grave indeed. In 1837, ere the Society was quite twenty years old, Dr. Barham became colleague with the late Mr. W. M. Tweedy (his predecessor in the office) as Secretary of the Society, Sir Charles Lemon then being President; and he continued to act in that capacity, and thus associated, until Sir Charles on account of advancing years, retired from his office, and this was conferred on Mr. W. M. Tweedy, Dr. Barham remaining as senior secretary; one of your acting vice-presidents being connected with him as junior.

The new President, to whose abilities and energy this Institution has been so deeply indebted in the early stages of its

existence, dying within a short period from his election, Dr. Barham was promoted to his chair in 1859 : and quickly thereupon, the biennial system of the presidency being made one of your laws, he resigned it to his successor in 1861. It should be added that from that time, though ceasing to hold a permanent office, he was ever a member of the Council ; and was vice-president at the date of his death, which happened on Oct. 20th, in his 81st year.

Thus forty seven years of this long life were devoted to your service. It may be truly said not only with indefatigable zeal that neither his successful pursuit of his duties as a physician, nor the cares of the many influential positions in this city apart from his profession he occupied could impair, but zeal, be it remembered, tempered with discretion, and armed with and controlled by extensive literary and scientific acquirements.

At the beginning of this period of nearly half a century, each Annual Report of your Society might commonly have been printed on a single leaf of your present Journal ; whilst it struggled under a mortgage debt on its building of £1,300, and these reception rooms, however modest their pretensions, in which you are now assembled, were rented by the Cornwall Library. But he lived to see the library elsewhere accommodated in a public structure that will ever be associated with his name, and these rooms revert to your purposes, and to see the entire extinction of the debt ; whilst the Museum has been added to in many of its departments, and the size and cost of your Journal have, as you are aware, so increased that it has become a considerable publication, issued twice a year, for which often appropriate engravings are prepared.

In your Journal or other printed proceedings his name may be met with as the author of remarks on a great variety of topics ; though to speak more particularly, he seems to have taken great pleasure in antiquarian researches and to have been unwearied in climatological studies, which, you will be happy to hear, have culminated in the completion, only last year, of a little work on which his heart was set, that you will regard as a legacy from his labours, and which in the words of its title-page, furnishes the "Results of the Meteorological Observations made at the Royal Institution of Cornwall...in the years 1840 to 1881

inclusive, with some notes of results at other Stations in Cornwall since the year 1728. Edited for the Institution by C. Barham, M.D., Cantab., F.M.S."

But with this object accomplished, his thoughts in furtherance of the views of this Institution did not terminate, as may be instanced by his project of extending its usefulness by an addition to its buildings in accordance with the Government requirements to entitle it to material assistance from the "Department of Science and Art," and his personal endeavours in an appeal issued to the friends of the Institution as late as March 3rd, 1884, to obtain funds for that purpose. Which it will be seen by subsequent statements were not without promise of ultimate success.

And to crown all, the plan of your Autumn Excursion was mainly due to himself, and its being carried through without a flaw, under the superintendence of your secretary Major Parkyn, to a careful supervision of preliminary details that involved much correspondence by letter, most of which he himself undertook; and feeble from age as he manifestly then was, to his having accompanied the party to expound the noteworthy peculiarities of the many objects of interest that were visited.

Death has also deprived you this autumn of three other cherished members,—Mrs. J. M. Williams of Caerhays Castle, Major Carlyon of Tregrehan, and Major Q. Vivian of Tregavethan, representatives of influential families, who were always ready to aid in the prosperity of this Institution.

Your Council are also concerned to subjoin that you must number among the departed Thomas Couch, M.R.C.S. of Bodmin, son of the late Jonathan the great naturalist, and brother of the late Richard, who so successfully followed in the footsteps of his father. Thomas was not devoid of tastes of a similar kind, as was demonstrated by a series of communications to your Journal on botany as related to climate; but it was chiefly as an antiquarian, and as a writer on the Cornish dialect that he has contributed to it,—whilst his "History of Polperro" and articles in London periodicals on his own favourite subjects widened a well-earned reputation.

The late Mr. W. Loughrin, of Polperro, became one of your associates as a compliment to his great skill in preparing and mounting the skins and shells of marine fauna. Awhile before his death, which occurred only a few weeks ago, you purchased from him a collection of crustacea, containing valuable specimens arranged in two cases under glass, that you will find in your museum.

To turn now from these sad records to the working condition of the Society as a living entity, it may be presumed that the four blanks so recently occurring in your list of members will not all remain unfilled up by their executors or representative survivors. But it must be added that removals from the neighbourhood or unavoidable incidents have occasioned four other members to withdraw. Since, however, seven new members have been elected during the past year, their numerical roll may be reckoned as undiminished.

The Museum continues to attract visitors from the non-subscribing public. During the past year on the free days (Wednesdays) there have been 2,355, by members' tickets on other days 78. And at 6d. each 400 have been enumerated by the Curator.

The annual excursion involved a drive of nearly 50 miles in carriages, and was therefore somewhat costly to the excursionists—36 in all. but they were very kindly guided by the Rev. W. H. Bloxsome, the rector of St. Mawgan in Meneage, to the various objects of interest in and about the church. Whilst at Trelowarren they were welcomed by an equally ready expositor in the Rev. Sir Vyell Vyvyan—and it may be said in Lady Vyvyan and in each member of their family—of the antiquities and historical mementos now in his keeping, and were refreshed by the hearty hospitality of their host and hostess. At Cadgwith they were well entertained at Mrs. Williams's Hotel. It is comforting to reflect that this agreeable and instructive picnic was so economically contrived that a surplus of £6 was found in your coffer.

You cannot own an extensive freehold premises without having repairs to effect from time to time; nor a museum of manifold contents to be kept in sound condition and progressiveness without having to part liberally with your money to ensure

their adequate maintenance. However, for the past year no heavy charges in either have had to be provided for. In the previous year, notwithstanding some thorough repairs to the main building, your balance with the Treasurer was £36, and you may to-day be congratulated on finding that balance increased to £63. Thus you might be tempted to imagine that you are emerging from the inconveniences of a narrow income into the freedom of an ample one: and this aside, from the fact that before the end of April next, you will be able to claim, and doubtless will receive, a legacy of £100 with compound interest accumulating since the year 1875 (a sum that will then amount to £132) which the will of your former president, W. J. Henwood, F.R.S., instructed his executors to pay by that time to your Treasurer for the ordinary purposes of this Institution.

It may be appended that there will be payable *in trust* at the same time and from the same source the sum of £200, and like accumulations, which by that time will have augmented it to £265. The destination of this sum is to purchase Dies for a gold medal, with specified characteristics that will limit the option of your current Councils, and of not less intrinsic value than ten guineas, to be awarded by your officers triennially to the person, "who shall have contributed the best treatise or paper on the geology, mineralogy, mining operations, botany, ornithology, ichthyology, conchology, or antiquities of Cornwall (but on no other subjects whatsoever) published in any Journal, Proceedings, or Transactions of the said Institution during the three years next preceding the date of such award." The first award is to be made three years after the date of the purchase of the dies. If the sum that remains in trust after such purchase (which sum is to be invested in some British government security) shall yield more interest triennially than shall suffice for the cost of the medal, the surplus is to be applied to the ordinary purposes of the Institution,—and it may be taken for granted that there will be some surplus.

The International Fisheries Exhibition, held in London, during 1883, more than realized the anticipations of its promoters, both as to its general attractions and special value to English fishermen; and a memorial gold medal has been presented to Cornwall in recognition of the prominent contributions

to its success furnished from these parts. The local committee of promoters have deemed this Institution the most fitting body to have charge of it. It was in your rooms their conferences took place, and in them the exhibits from the Cornish fisheries were focused.

You have again to thank Mr. H. Michell Whitley for saving you the cost of a salaried editor of your Journal by voluntarily taking upon himself a task, that well performed as it is by him, must consume much time which, other ways employed, might be of personal advantage in his pursuits or literary researches. You will be glad, as he will be, to hear that much good material for the next part of the Journal will be at the services of the Council you will this day elect. It is not customary for the Council to single out any one for special mention from the many donors that confer favours on the Society by presents to the Museum or otherwise to the Institution; but Mr. Richard Pearce, of Colorado, to whom you owe incessant obligations, has compelled them to call to your notice a very graceful act of his, in transmitting to you, carriage paid, sixty-four beautiful photographs of striking landscapes in the western portions of the United States of America, with instructions to get them framed and glazed at his charge, if you deem them worthy to be hung on your walls, and you will observe that nearly 50 of them are already there.

Your Council propose, independently of the continued presidency of Mr. A. P. Vivian, for the acceptance of this Annual Meeting, that the vacancies in the office of vice-presidents—by the retirement of the Archbishop of Canterbury and Mr. Whitley, and that caused by the death of Dr. Barham—be filled by the Lord Bishop of Truro, Mr. H. Martyn Jeffery, F.R.S., and Mr. Warrington Smyth, F.R.S.; that Mr. Arthur Williams, be the treasurer; Mr. H. Michell Whitley and Major Parkyn, secretaries; and the Revs. Canon Cornish, M.A., W. Iago, B.A., A. H. Malan, M.A., and Messrs. Howard Fox, Hamilton James, H. S. Leverton, M.R.C.S., R. M. Paul, E. G. Spry, B.A., R. Tweedy, and N. Whitley be the other Members of the Council for the ensuing year.

Dr. Arthur C. Williams in Account with the Royal Institution of Cornwall.

1883.		1884.		1884.		1884.	
July 31st.	July 31st.	July 31st.	July 31st.	July 31st.	July 31st.	July 31st.	July 31st.
£	s.	£	s.	£	s.	£	d.
To Balance brought forward ...	36	4	2	By Taxes	...	...	...
Annual Subscriptions, Donations, & Arrears	130	6	6	Repairs to Buildings	...	...	...
H. R. H. The Prince of Wales	20	0	0	Museum Expenses	...	...	...
Visitors' Fees	10	0	0	Curator's Salary	...	...	...
Sale of Journals	14	10	0	Lake and Lake, Printing Journals 27 & 28	...	...	...
Sale of Fauna	0	16	4	Illustrations for ditto	...	...	...
Martyn's Letters	0	4	8	Postage and Parcels	...	...	...
Illustration Fund	1	5	0	Printing and Stationery	...	...	...
Profit on Excursion	6	6	9	Sundries, Cheque Book	...	...	...
Old Skins	0	6	6	Ray Society	...	...	...
				Paleontographical Society	...	...	...
				Meteorological Society	...	...	...
				Rainfall and Magazine	...	...	...
				Geological Journal	...	...	...
				Journal of Science	...	...	...
				Botanical Magazine	...	...	...
				Nature	...	...	...
				Conversazione	...	...	...
				Geological Record	...	...	...
				Telegraph and Gardener's Chronicle	...	...	...
				Western Antiquary	...	...	...
				Binding Magazines, &c.	...	...	...
				Balance	...	...	...
							£220 3 1

Excursion Account.	
To Balance	£63 1 3
Tickets Sold	18 4 0
Less Expenses	11 17 3
Profit...	£6 6 9

Mr. Tweedy moved, and Mr. Howard Fox seconded, the adoption of the Report which was adopted.

The Rev. W. Jago then read the list of presents and additions to the Library and Museum, as follows:—

Additions to the Library since the Spring Meeting.

Bulletin of International and Meteorological Observations	From the American Government.
Monthly Weather Reviews	Ditto.
Tertiary History of the Grand Canon District	Ditto.
Atlas to accompany the above	Ditto.
Second Annual Report U.S.A. Geological Survey	Ditto.
Twelfth Annual Report U.S.A. Geological Survey	Ditto.
Maps and Panorama to accompany the above	Ditto.
Bulletin U.S.A. Geological Survey	Ditto.
Journal of the Cambrian Archæological Association	Association.
Journal of the Anthropological Institute of Great Britain and Ireland	Institute.
Journal of the Society of Arts	From the Society.
Journal of the Liverpool Polytechnic Society	Ditto.
Lecture on the New Motor, Buckell's Patent Caloric Engine, by E. Latham	
Billiard Tables, past and present	
Proceedings of the Bristol Natural History Society	From the Society.
Proceedings of the Bath Natural History Society	Ditto.
Proceedings of the Society of Antiquaries of London, with List of Fellows	Ditto.
Proceedings of the Zoological Society of London, with List of Fellows	Ditto.
Proceedings of the London Geologists' Association	From the Association.
Proceedings of the Philosophical Society of Glasgow	From the Society.
Proceedings of the Mining Institute of Cornwall	From the Institute.
Proceedings of the North of England Institute of Mining Engineers	Ditto.
Proceedings of South, Wales Institute of Engineers	Ditto.
Report of the Royal Cornwall Polytechnic Society	From the Society.
Report of the Royal Cornwall Geological Society	Ditto.
Report and Transactions of the Penzance Natural History Society	Ditto.
Report and Transactions of the Devonshire Association	From the Association.
Transactions of the Manchester Geological Society	From the Society.
Liverpool Literary and Philosophical Society	Ditto.
Annual Report of the Plymouth Institution	From the Institution.
Greenwich Observations	The Astronomer Royal.
Monthly Notices of the Royal Astronomical Society	From the Society.
Collections of the Montgomeryshire Historical and Archæological Society, vol. 17, 2nd & 3rd parts	Ditto.
Geological Survey Mineral Resources of the U.S.A.	The American Government
Leeds Philosophical and Literary Society	From the Society.

Transactions and Proceedings of the Royal Irish Academy	From the Academy.
Report of the Cornwall and Devon Miners' Association	From the Association.
Annual Report of the Smithsonian Institution ...	From the Institution.
The Devonshire Domesday Book, by J. Brooking Rowe	From the Author.
Prize Essay on Machine Belting, by A. H. Barendt	Ditto.
Modern Locomotive Practice, by H. Michell Whitley	Ditto.
The Postal Microscopical Society, Rules, &c. ...	From the Society.
Journal of Microscopy and Natural Science ...	
Proceedings of the Academy of Natural Science of Philadelphia	From the Academy.
The Maidanpec Wet Process for the Reduction of certain poor Cupreous Ores, by Brenton Symons...	From the Author.
Geology of Cornwall, by Brenton Symons...	Ditto.
Reasons for Dissenting from the Philosophy of M. Compte, by H. Spencer	Ditto.
The Egyptian Difficulty and the best way out of it...	
Bulletin De L'Societe Mineralogique De France ...	
Mudge Memoirs, being a Second Record of Zachariah Mudge, by the Rev. S. R. Flint	From the Author.
New Zealand Crown Lands, Guide from the Agent General for New Zealand	Ditto.
Chapters for Travellers, Orient Line Company ...	
On the Minerals of the Rio Tinto Mines, by J. H. Collins	From the Author.
On the Serpentine and Associated Rocks of Porthalla Cove, by J. H. Collins	By the Author.
Transactions of the Essex Field Club	From the Club.
Journal and Proceedings of the Royal Society of New South Wales	From the Society.

BOOKS PURCHASED.

Cornish Worthies, by W. H. Tregellas, 2 vols.
Gazetteer of Cornwall, by R. Symons.
A Week at the Lizard, by the Rev. C. A. Johns, B.A., F.L.S.
A Week at the Land's End, by Mr. J. T. Blight.

ADDITIONS TO THE MUSEUM.

Specimens of Stickenside or Zinc Blende, from Frongoch Mine, Devil's Bridge	Presented by Dr. Foster.
Specimen of Gold and Silver bearing Sphuretted Ore from the Providence Gold and Silver Mine, at Nevada City, California	Presented by Mr. W. P. Richards, Porkelles.
Specimen of Carbonate of Lead containing Silver, from Lilian Mine, Leadville, Colorado	Presented by Dr. Foster.
Specimen Native Gold, from Lilian Mine, Leadville, Colorado	Ditto.
Specimen Native Gold, from Blue Nose Mine, Halifax, Nova Scotia	Ditto.
Two Specimens of Tropical Sponge, ...	Presented by Rev. R. S. Flint.

Mr. Whitley read a paper on "Traces of the Great Post-Glacial Flood in Cornwall."

The Rev. W. Iago gave a description of Mawgan Cross, the inscription on which was Latin (*Cnegvni fili Genavns*). Mr. Iago also made feeling allusion to the death of Dr. Barham, and spoke of the desirability of the Institution enlisting the sympathies and co-operation of those residing in other parts of the county besides Truro and the vicinity.

The Rev. A. H. Malan read some notes illustrative of Sir Richard Grenville's plot of Tintagel Castle, by Mr. H. Michell Whitley.

Canon Cornish then read a letter from Mr Hare, with reference to Lansallos Church, as follows:—"On the 7th November, I attended the re-opening, by the Bishop of Truro, of Lansallos Parish Church. The Restoration of this Church has been only very partially carried out from the want of funds. [During the progress of the work, the half of the basin of a round Norman font was found, imbedded in the wall near the Tower arch. There was also discovered beneath the flooring, portions of the full length stone effigies of an armed warrior and his lady. It is a great pity that further search was not made at the time for the remaining fragments, so as to have completed the figures, and it may be, have ascertained the name. The place was at once filled in with cement. This will have to be removed before any further discovery of the missing parts can be made. If the dirt were cleaned off the shield borne by the knight on his left arm, his coat of arms ought to be visible, and his identity and date thus deciphered. When I saw them, the fragments both of font and figures were cast out of the church, and lay on the village graves. As I presume it is not intended to break them up, it would be well that more care should be bestowed upon them and, if not already done, to place them within the church for safety, and finally restore them to their proper use. It might be desirable for the Society to have the portions recovered, photographed, or sketched, in case of further damage."

Mr. W. J. Criddle moved and Mr. Bawden seconded a vote of thanks to the officers for their past services, which was carried.

Mr. Spry moved a vote of thanks to the readers and writers of the papers, and the donors of the presents made to the Institution during the year.

Mr. Trevail, in seconding the motion, also referred to the advantages which would accrue to the Institution from a more active interest being taken in it by those resident in all parts of Cornwall, instead of simply by those in the immediate locality of Truro. (The motion was carried).

Canon Moor, in moving a vote of thanks to the chairman, spoke of the great necessity there was of arousing a serious interest in the preservation of ancient monuments. Canon Moor also spoke highly of the most valuable services rendered to the Institution by Major Parkyn as hon. secretary.

Mr. Jeffery seconded a vote of thanks to the chairman, which was carried unanimously, and the proceedings concluded.

In the evening a conversazione was held in the rooms of the Institution, Dr. Jago in the chair. Papers were supplied by the Revs. Canon Moor, W. Iago, and Mr. Whitley, Canon Moor's remarks being illustrated by a number of beautiful photographs of Rome and its churches. Short discussions took place, and a pleasant evening was spent. Light refreshments were served during the evening.

TABLE No. 1.

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1884, from Registers kept at the Royal Institution of Cornwall.

1884.	MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level.										Days	Between which days it occurred.					
	Month.	Mean pressure corrected to 32 deg. Fahr. at sea level.			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.			Corrected absolute minimum observed.	Days.	Extreme range for the month.	Mean diurnal range.	Greatest range from 9 a.m. to 9 p.m.	Day.	Greatest range in any consecutive 24 hours.
		in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January		30.150	30.117	30.140	30.136	.004	30.132	.283	29.849	30.637	15	29.243	1.334	.094	.50	26	.88
February		29.843	29.840	29.913	29.865	.003	29.862	.254	29.608	30.553	3	29.174	1.379	.087	.52	2	1.16
March		29.917	29.910	29.914	29.914	.007	29.907	.247	29.660	30.327	5	29.237	1.090	.097	.60	4	.32
April		29.810	29.806	29.806	29.807	.004	29.803	.246	29.557	30.103	12	29.041	2.062	.067	.31	4	.40
May		30.028	30.023	30.038	30.030	.003	30.027	.299	29.728	30.425	21	29.520	3.095	.083	.28	14	.36
June		30.077	30.061	30.097	30.088	.001	30.087	.358	29.729	30.351	12	29.563	2.788	.058	.27	1	.44
July		29.959	29.953	29.956	29.956	.002	29.954	.427	29.527	30.229	30	29.586	0.643	.063	.20	17	.24
August		30.026	30.008	30.021	30.018	.004	30.014	.425	29.589	30.260	4	29.651	3.609	.058	.20	1	.20
Sept.		30.014	29.999	30.017	30.010	.004	30.006	.415	29.591	30.346	18	29.434	6.912	.072	.28	7	.39
Oct.		30.130	30.124	30.133	30.129	.006	30.123	.322	29.801	30.663	5	29.320	9.343	.077	.22	8	.53
Nov.		30.154	30.130	30.154	30.146	.004	30.142	.370	29.872	30.543	19	29.713	7.890	.090	.39	6	.59
Dec.		29.926	29.917	29.936	29.923	.003	29.920	.244	29.676	30.273	22	29.383	20.890	.140	.46	20	.66
Means		30.003	29.992	30.010	30.002	.004	29.998	.315	29.683	30.392		29.405	0.987	.082	.60	4	1.16

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 (+0.008), Capillarity (+0.013), height above sea (43 feet), and temperature, have been applied.

TABLE No. 2.

1884.	MONTHLY MEANS OF THE THERMOMETER.												ABSOLUTE.												
	MASON'S HYGROMETER.												SELF REGISTERING.												
	9 a.m.		3 p.m.		9 p.m.		Mean of 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.	Adopted mean temp.	Daily mean range.	Maximum.	Day.	Minimum.	Day.	Range.	
January	47.5	45.4	49.7	47.0	47.2	45.5	0	48.1	0.4	47.7	46.0	0	42.2	51.8	43.4	47.6	0	0.4	56.0	9	34.0	27	0	22.0	
February	43.9	42.0	48.2	45.5	45.0	43.0	0.7	45.7	0.5	45.0	43.5	2.0	4.3	50.8	39.9	45.3	0.1	45.2	55.0	14	26.0	3	0	29.0	
March	46.0	43.5	50.5	46.2	45.3	43.5	1.0	47.3	0.6	47.2	44.4	3.4	7.2	53.4	40.0	46.7	0.2	46.5	61.0	17	30.0	11	0	31.0	
April	48.5	44.7	51.9	46.8	45.2	43.2	1.6	48.5	1.3	46.9	44.9	3.3	7.0	55.7	38.8	47.2	0.1	47.1	62.0	9	27.0	25	0	35.0	
May	55.4	50.5	58.9	52.0	51.0	48.5	2.3	55.1	1.4	52.8	50.3	3.9	7.8	62.8	45.6	54.2	0.8	53.4	76.0	24	32.0	21	0	44.0	
June	60.1	55.3	62.4	56.0	55.0	52.4	2.9	59.2	1.7	56.3	54.6	3.4	6.5	67.4	49.9	58.6	0.3	58.3	75.0	26	43.0	1	0	32.0	
July	62.8	59.0	65.4	59.3	59.4	57.1	62.5	2.1	60.4	58.5	56.1	3.1	5.8	69.3	54.1	61.7	0.3	61.4	80.0	31	43.0	9	0	37.0	
August	65.4	59.8	69.6	61.5	60.0	51.4	65.0	2.0	63.0	59.6	57.4	4.6	8.5	73.4	53.4	63.4	0.3	63.1	82.0	23	42.0	5	0	40.0	
Sept	61.0	57.3	65.5	60.0	57.3	55.0	61.3	1.7	59.6	57.4	56.5	3.1	5.8	68.8	52.0	60.4	0.2	60.2	80.0	18	37.0	30	0	43.0	
Oct	52.6	50.0	55.6	51.3	51.2	49.3	53.1	0.8	52.3	50.2	49.6	2.7	5.4	58.9	45.8	52.3	0.4	51.9	65.0	2	32.0	29	0	33.0	
Nov.	45.5	43.8	50.0	47.0	46.9	44.9	47.4	0.6	46.8	45.2	44.7	2.1	4.5	52.0	40.2	46.1	0.1	46.0	61.0	1	28.0	25	0	33.0	
Dec	44.3	42.3	46.8	43.7	44.7	42.6	45.3	0.2	45.1	43.9	42.6	2.5	5.4	49.0	39.1	44.0	0.0	44.0	56.0	7	29.0	22	0	27.0	
Means	52.8	49.5	56.3	51.4	50.7	48.5	53.3	1.4	51.9	49.8	49.8	3.0	6.0	59.4	45.2	52.2	0.2	52.0	67.4		33.6				33.8

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.

1884.	WINDS.												AVERAGE FORCE.																
	E.			S.E.			S.			S.W.			W.			N.W.			N.			N.E.			9 a.m.	3 p.m.	9 p.m.	Mean.	
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	5	2	2	0	3	2	14	10	11	4	6	9	6	7	5	0	0	0	0	0	0	0	0	0	1	24	28	21	2.4
February	4	7	6	4	3	3	10	8	10	2	3	2	2	2	3	1	1	1	1	1	1	1	1	1	1	23	30	26	2.6
March ...	5	1	3	5	3	3	13	12	11	0	1	1	3	4	5	0	0	0	0	0	0	0	0	3	20	27	20	2.2	
April ...	6	3	3	3	7	7	3	4	5	0	1	1	0	3	1	1	1	1	1	1	1	1	1	9	22	26	15	2.1	
May ...	5	5	7	2	4	1	9	7	6	2	3	3	5	8	10	0	0	0	0	0	0	0	0	3	24	28	16	2.3	
June	0	0	0	0	1	1	3	2	3	2	4	3	16	15	19	3	4	4	4	4	4	4	4	1	20	26	14	2.0	
July	0	0	0	4	3	1	10	10	11	7	6	5	4	7	7	1	0	0	0	0	0	0	0	0	0	19	29	15	2.1
August ...	5	4	4	4	4	3	5	5	8	4	3	1	7	10	10	0	1	1	1	1	1	1	1	2	17	20	10	1.6	
Sept.	4	5	4	3	2	4	9	7	5	2	5	7	5	6	6	0	0	0	0	0	0	0	0	3	16	20	10	1.5	
Oct.	3	3	4	0	2	0	4	3	2	6	4	6	14	18	16	0	0	0	0	0	0	0	0	2	18	24	18	2.0	
Nov.	3	6	4	3	3	3	5	6	6	4	1	0	7	10	12	0	0	0	0	0	0	0	0	6	16	25	15	1.9	
Dec.	1	1	1	1	1	0	10	7	6	5	6	5	5	7	9	3	1	2	6	8	7	7	6	8	24	29	22	2.5	
Total	41	37	38	29	38	29	95	81	84	38	43	52	74	97	103	9	8	11	36	29	26	36	29	26	24	31	20	25	25.2
Means ...	38.7			32.0			35.3			87.0			44.3			91.3			9.30			30.4			2.0	2.6	1.7	2.1	

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

TABLE 4.

1884.	Month.	AVERAGE CLOUDINESS.			RAINFALL.			Mean weight of vapour in a cubic foot of air.	Mean additional saturation of the air.	Mean humidity of atmosphere.	Mean elastic force of vapour.	Mean weight in grains of a cubic foot of air.	Amount of water in a vertical column of air.	SUN.			Dry.	Wet.	REMARKS.				
		9 a.m.	3 p.m.	9 p.m.	Mean.	Rainfall in inches.								Greatest fall in 24 hours, Truro.	No. of days in which rain fell.	Depth.				Date.	Shine.	Gleam.	Cloud.
						Truro.	in.																
	January	8.5	8.5	7.6	8.2	3.81	18	in. 0.73	26	in. 3.2	0.6	87	in. 283.549.9	3.9	15	2	45	80	13	Hail 7, 27, 28. Gale 23, 26. Lightning seen, thunder not heard 25, 26. Great storm 26.			
	February	8.0	8.0	8.2	8.1	5.35	21	0.57	27	2.9	0.5	85	254.547.9	3.5	20	4	43	67	20	Hail 1, 2, 10, 11. Gale 1, 2, 12, 13, 20.			
	March	7.1	7.0	7.0	7.0	3.76	17	0.92	3	2.8	0.9	77	247.546.5	3.4	35	4	23	80	13	Frost 6, 11, 24. Hail 10, 20, 21. Gale 4, 9, 31. Remarkable Rain 3.			
	April	6.0	6.6	6.0	6.2	1.66	8	0.92	4	2.9	0.8	78	246.544.9	3.3	38	7	15	85	5	Frost 22, 24, 25, 26. Remarkable Rain 4.			
	May	6.3	6.1	4.8	5.7	0.85	9	0.18	7	3.4	1.2	75	239.542.5	4.0	41	2	19	89	4	Frost 19, 20, 21, 22, 23, 24. Lightning seen Thunder not heard 25.			
	June	6.5	5.6	5.5	5.9	1.68	10	0.33	6	4.0	1.0	79	358.539.5	4.9	43	3	14	80	10	Hail 6, 7.			
	July	6.9	7.3	6.7	7.0	3.15	16	0.56	14	4.8	1.1	82	427.532.2	5.8	42	2	18	82	11	Lightning seen Thunder not heard 3.			
	August	5.5	5.3	4.4	5.1	1.64	9	0.72	31	4.7	1.7	74	425.531.0	5.7	48	6	8	87	6	Lightning seen Thunder not heard 3. Thunder storm 16. Remarkable Rain 31.			
	Sept.	5.6	6.0	5.8	5.8	1.89	13	0.48	15	4.6	1.1	82	415.534.2	5.6	41	5	14	83	7	Lightning seen Thunder not heard 13, 14.			
	Oct.	7.3	7.3	6.5	7.0	2.29	18	0.45	8	3.6	0.8	83	322.544.6	4.4	26	10	26	77	16	Hail 8, 9, 10, 11.			
	Nov.	7.5	7.6	7.6	7.6	2.58	19	0.46	5	3.1	0.6	85	270.551.0	3.6	23	8	29	74	16	Frost 2, 18, 19, 20, 22, 23, 25, 26. Hail 23, 26.			
	Dec.	8.0	7.5	7.0	7.5	3.97	20	0.53	3	2.8	0.6	81	244.549.1	3.2	21	3	38	79	14	Frost 16, 22, 23, 24, 25, 26, 27, 29, 30. Hail 3, 9, 17, 19. Gale 4, 5, 7, 11, 19, 20. Remarkable Rain 3.			
	Means	6.8	6.9	6.4	6.7	32.63	17.8			3.6	0.9	81	315.542.8	4.3	34.0	5.0	24.0	80.0	11.0				

Cloudiness is estimated by dividing the sky into ten parts, and noting how many of these are observed. The rain gauge at Truro is placed on the flat 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.

TRACES OF A GREAT POST-GLACIAL FLOOD IN CORNWALL.
By NICHOLAS WHITLEY, C.E.

One of the greatest of the physical changes, and probably the last in the geological history of our county, must be described as that of a great post-glacial flood; which, could we have witnessed it, would have impressed us as a great catastrophe; and yet the results have conferred untold blessings on unknown generations.

There is absolute geological evidence that the whole of the solid frame-work of our County at no very distant geological period sank wholly and completely under the surface of the ocean; and that after its baptism it rose again refreshed and regenerated, adapted and furnished for the fit and enjoyable abode of intellectual man; with a treasury of stream-tin deposited and assorted in our valleys, the traffic of which brought civilization to our shores and enriched successive generations.

My present object is to give a brief outline of the evidence in support of this hypothesis. That a great denudation of the surface of our County has taken place, is shown by the granite tors which stand up far above the crests of our highest hills, as at Carn-brea,—The Cheese-wring,—Roughtor; and on a larger scale on the hill tops of Dartmoor, at heights of from 1400 to 2000 feet above the sea. Large masses of solid granite have been severed from their native bed and swept down the slopes of the hills and rest now on the surface of the less elevated beds of Killas. The surface of these slopes for a depth of from 4 to 6 feet has been in a semi-fluid state, and the denuded upturned beds of slate have been pressed and curved down the hill side towards the valleys.

The evidence of an overwhelming flood is further shown by our valleys having been swept out to their base, and the stream tin deposited immediately on the bare rock and in its fissures and pockets, above which is a thin vegetable stratum composed of the ruin of forests with an abundance of hazel nuts—and from thence to the present surface nothing but turbid river deposits of from 6 to 30 feet in depth. Conclusively

showing that such a flood has never been repeated in our County.

The upper and basin-like portions of our valleys,—as Tregoss Moors, are filled with drift gravel; and similar gravel is found in contact with the underlying rock throughout these valleys to the sea.

The mass of drift gravel on the high hill-top near St. Kevern, may be traced by its trail down the slope of the hill to the sea at the Lowlands: and a gravel bed on the Crest of the Hoe at Plymouth may in like manner be traced southward along the surface to the so-called raised Beach at the sea shore.

That the sea has in Cornwall overwhelmed the land to at least 100 feet above its present level is now conclusively proved, by the discovery of a large quantity of sea shells imbedded in what I considered to be boulder clay at about 100 feet above the mean level of the sea at St. Erth Glebe, and described in my paper in the Transactions of the Royal Geological Society of Cornwall, 1881. These shells have been more fully examined and described by Mr. Searles Wood, F.G.S., in a paper read before the Geological Society of London, the 5th of November, 1884. A most careful examination of these shells by Mr. Searles Wood, Dr. Gwyn Jeffreys, and Mr. Robert Bell, had led to the provisional conclusions that they belong to a pre-glacial deposit,—that of the Red Crag.

But whatever may be the geological age of these beds of Sand and Clay at St. Erth, the marine shells which they contain in the interstratified clay, demonstrate the oscillation to which the surface of our County has been subject in recent geological time.

On the other hand there is geological proof from the uniformity of the sections of our valley deposits, that the violent flood of water which swept over the land depositing the stream tin at the base of the valleys, and nothing but ordinary river alluvium above, has never been repeated by any subsequent flood; and that these valley deposits have never been disturbed by glacial action.

Thus we are driven to the conclusion that the flood which deposited the stream tin, was post-glacial; and therefore, probably the equivalent of that "great post-glacial flood," of

which such abounding evidence has been adduced by Mr. H. H. Howorth, F.S.A., in the Geological Magazine for 1883-4. Such a "pluvial period" probably mingled with land floods from remnants of melting ice would re-arrange the gravel beds, leaving large masses on the flat hill tops, sweeping other portions from the steep hill sides to lower levels, and forming the thick gravel beds which now border the more recent alluvium of the valleys. Afterwards the whole country appears to have sunk beneath the ocean, and when it re-appeared after its baptism, and the turbulent waters slowly retreated from off the surface of the ground, the beat of the waves, and the prolonged tide washing in shallow water, left a blessing behind them, by depositing first the clayey subsoil, then the less heavy but more friable and fertile soil, described by Mr. Trimmer as the "Warp of the Drift;"—thus rendering the land a fit abode for the last and best of all God's works.

On the origin and formation of soil I am constrained to quote the opinion of that philosophical and acute observer, the late Mr. Robert Chambers, F.G.S., &c., he says:—"On the whole subject of the Superficial Formation I am disposed to make one concluding remark. I desire to refer to the broad fact, that in the regions of the earth where soil can least be dispensed with, there should have been a peculiar agency at work which secured the very general diffusion of soft matters over the hard surface. The warm parts of the world have large growth from little soil; but if the parts north and south of the fortieth parallels had been left to only such influences as the air and water they might have been so meagrely furnished with the needful matrix for vegetation, that little population could have there existed. As it is we have clays, and sands, and gravels, and mixtures of all three, spread in deep beds very generally over the temperate regions, so as to insure ample material for the agriculturist to work upon. In the present state of the subject of final causes, I suppose it would be held as rash to say that all this was matter of design; but I feel at least inclined to say that if it was not from a premeditated plan of the Almighty Creator of the worlds, it looks marvellously like one, just as the existence of coal and other minerals does, and I do not see that we can be far or fatally wrong if we feel thankful for it accordingly."

THE FOGOY, OR CAVE, AT HALLIGEY, TRELWARREN.

Illustrated descriptions of the above by the late Sir R. R. VYVYAN, Bart., and Mr. J. T. BLIGHT, edited with an Introductory Account and Notes, by the Rev. W. IAGO, B.A., *Hon. Local Secretary for Cornwall of the Society of Antiquaries, London, and one of the Council of the Royal Institution of Cornwall.*

INTRODUCTORY ACCOUNT.

BY REV. W. IAGO.

On the occasion of the visit of the Royal Institution of Cornwall to Trelowarren, the Rev. Sir Vyell Vyvyan, Bart., and Lady Vyvyan most kindly received the Members of the Society and afforded them every facility for viewing the various objects of interest there, as well as the neighbouring Fogou, locally called "the Cave," at Halligey.

To the late Dr. Barham who was present Sir Vyell entrusted an unpublished manuscript, containing a plan and description of the ancient subterranean structure, penned by the former Baronet, Sir Richard Rawlinson Vyvyan, together with a printed copy of Mr. Blight's illustrated paper upon the same subject.

These two documents were subsequently placed in my hands with a written request that I would edit them for the Royal Institution Journal. I consented,—subject to obtaining such authority as might be necessary,—and having obtained that, I now, by placing these accounts before the reader, fulfil my promise given to Dr. Barham just as his eminently useful life in our midst was (I deeply regret to add) drawing to a close.

When I received the papers, Sir Vyell Vyvyan's sanction to the publication of the late Sir Richard's manuscript had been accorded, it therefore only remained for me to communicate with the Society of Antiquaries, London, relative to the other account.

In response to my application, through the Secretary Mr. C. Knight Watson, permission was given for our Institution to reprint from the "*Archæologia*" not only Mr. Blight's letter-press but also his illustrations,—electrotypes (from the wood which he had so beautifully engraved) being forwarded to us for the purpose.

To the Director General of the Ordnance Survey at Southampton and officers of his staff, I am indebted for a recent plan of the locality, and for information bearing upon it.

Our sincere thanks are therefore due to all whom I have mentioned.

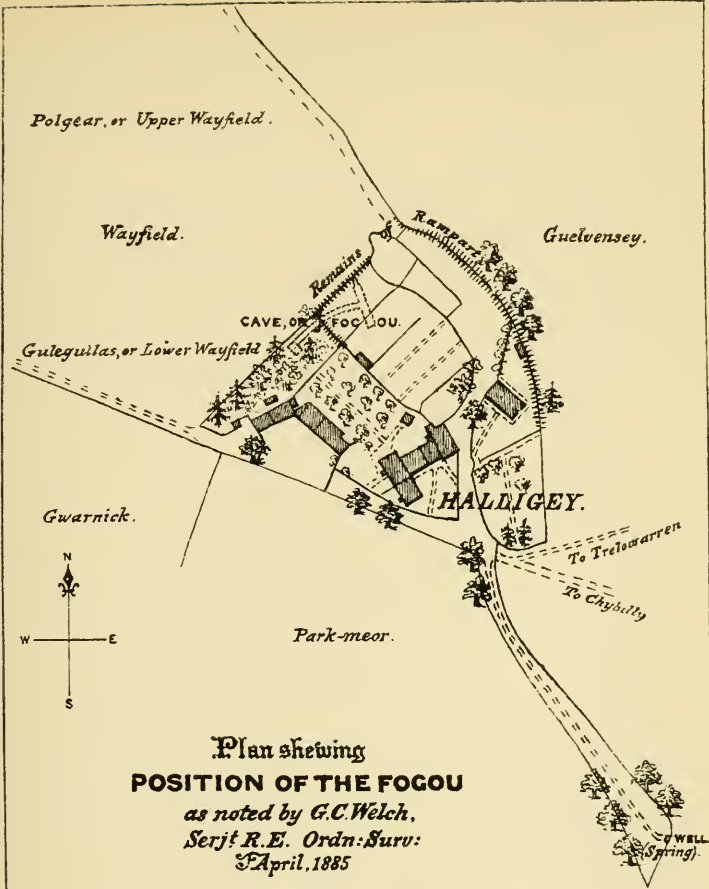
To suit the size of our pages, I have arranged in the form of four plates the six blocks so obligingly lent by the Society of Antiquaries, preceding them with an anastatic copy of the late Sir Richard Vyvyan's plan, together with a small sketch of the Well as it at present appears.

Absence from the excursion, and other causes, prevented my visiting the Fogou until lately, when Lady Vyvyan kindly took me to see it.

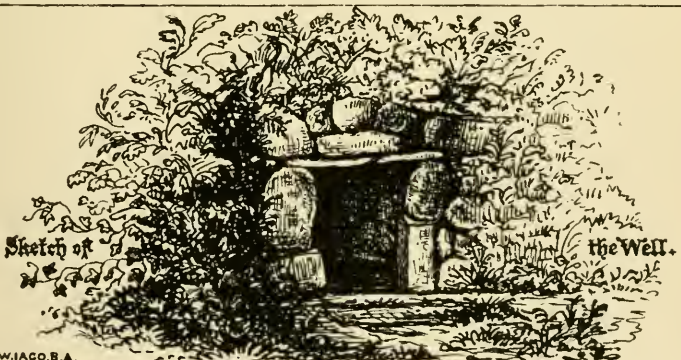
Some account of the present condition of the place will now be given in the hope that as an introduction, my notes may serve to illustrate the more elaborate papers which are to follow.

The Cave is situate about the third of a mile due west of Trelowarren Mansion, from which a straight road leads to it through the fields. On approaching the spot it is observed that the hedges and house walls display an abundance of good blocks of stone, some being of serpentine.

At present Halligey consists of half a dozen dwellings with enclosures of land in their rear. Beneath some of these closes, towards the north-west, the Fogou or artificial cave lies buried. The Well is about 200 yards from the Fogou, and in the opposite direction; being at the end of a hedged lane, south-east from the principal house-front. Its neatly protected clear pool appears perfectly still, but a quiet stream flows from it, and the spring (it is said) never fails. The stone-work of the well is, in style, so similar to that of the portals and walling within the cave that some think it must anciently have pertained to the precincts of that mysterious hold. The fosse which formerly defended the area in which the Fogou is found, seems to be almost identical with the outer encircling hedge on the east and south-east of Halligey as shewn in the Ordnance Map. If continuous, the rampart and ditch must have passed between the Fogou and the Well, but the latter may have been enclosed within an outwork, if any such extended from the fort.—(See Plate.*)



Plan shewing
POSITION OF THE FOGOU
as noted by G.C. Welch,
Serjt R.E. Ordn: Surv:
April, 1885



The Fogou, as Sir Richard Vyvyan has correctly shewn, is partly beneath a high plateau bounded by an embankment like two sides of a square slightly rounded at the angle. This important feature of the ground Mr. Blight has omitted, but he has marked a hedge, and the great curved fosse mentioned above, which Sir Richard Vyvyan has not inserted.* Mr. Blight's plan also enables us to check Sir Richard's measurements.

Both writers have given an excellent account of the cave, and throw light on each other's statements. Sir Richard took pains to shew the existing contour of the ground, Mr. Blight more particularly what he considered to be the ancient plan. The advantage we possess in having their two independent descriptions is therefore very apparent.

Behind the Halligey buildings, as already partly explained, the enclosures are of different elevations. A high one and a low one adjoin. Beyond them the ground is lower than either. The two first mentioned being side by side are divided from each other by the hedged embankment only. The Fogou extends under these, but their present names do not afford any clue to what is concealed within them. The designations seem to be "Upper Way Field" and "Lower Way Field." One portion is said to be called "Gulegullas," but this is merely "Lower Field" in old Cornish.

As indicated by the plans,—the cave seems to have been entered originally from the fosse on the north, the explorer lying down and crawling through a series of very low and narrow doorways, so small as to admit a man with difficulty even in that position. But the ditch there having long ago been filled up the old entrance is deeply buried, and a less painful way of access has been found. This is near the junction of hedges (or what appear to be such) between the two enclosures. In the corner of the lower one, by the high embankment, is now a pit, for the most part overgrown with ferns and other wild plants. It is partially faced inside with modern rough stone-work, and contains steps of similar character. These lead down to a small irregular opening,—the present rugged mouth of the Fogou, broken in through its side.

* The ordnance plan combines these intelligibly; shewing the earth-work to have been of irregular form.

Having descended by the steps to this black hole, I thrust myself in,—legs first, backward and downward,—and was soon standing on a pile of large loose debris in a low, narrow, stony corridor, extending in a curve to my right and left. It was pitchy-dark in each direction. The dead stillness of the place was broken only by the constant drip, drip of water soaking down from the deep earth overhead. It has been said that in consequence of the prevailing atmosphere being so heavy, and the Fogou so deeply imbedded, no sound made within the dungeon-like walls can be heard by anyone outside.

I kindled a light, but before proceeding adopted a precaution. Fearing that some accident might befall the light I carried, and that being alone I might in consequence miss my way, I planted a second lighted candle in the loose earth of the cave-floor to guide my return. I then began to explore. What I saw in my lonely wanderings agreed with the plans. I had come into a long curved tunnel-like vault, across the end of which I found a straight one at right angles, and a low passage connecting them, through which I passed by stooping. In conjunction with each I observed chambers or cells, entered by little portals. These miniature doorways, like the passage-ways, are uncomfortably small creeps, but there is room enough for walking erect in the chief parts of the two main corridors.

I noticed the stonework roughly but carefully piled together, each wall as it was built higher having been made gradually to approach that opposite. I also noticed the roof formed of granite slabs or posts laid across, with smaller stones—as earth stoppers,—peering down as it were, from between.

It is said that rats frequent the place; one was seen at the entrance. The air is dank, and the depth of gloom profound. Especially dark did I find the straight inner part of the Fogou. Not only is it far removed from that portion of the cave into which one small ray of day-light does enter (through the only breathing hole), but it seemed to be pervaded by a dark mist. I found it apparently filled with a thick black fog, so dense as to be almost impervious to the candle-light. The flame I carried burned lower as I entered, and it was only by straining my sight that I could dimly trace the position of the bare stonework, blackened as it is by the damp of ages. At one time it seemed doubtful whether or not I should be able by its aid to find again

the square hole in the lower part of the wall through which I had come from the long curved gallery, and by which I was to return. The floor of the Fogou is encumbered with many loose stones, not only within the entrance hole and beyond it, but chiefly at the ruinous southern end of the inner gallery. And here I would specially remark upon the two inmost terminations of the Fogou.

That which has been already described as ruinous, ends in a perpendicular face of earth which Sir Richard Vyvyan conjectured to be a mere filling up of a former continuation of the work, connected perhaps with some aperture* in the ground above. He has stated that at first no walling was found here. Stones have been built up against the earth at some time or other, but most of them have fallen and now lie in a great heap, with others which have evidently descended from the roof—more are overhanging, and at this point the Fogou appears to be in a somewhat dangerous condition.

The western extremity of the curved corridor presents a different appearance, being of rough rock. A raised projection right across the floor near this end appears in the plans. I found it to be in character different from what I expected. Instead of its being a smooth, compact, hard mass, difficult of removal, it is a sharply jagged ridge, a stumbling block of shattered stone, rising like an angry opponent to bar the passage. With proper tools this rugged ledge might easily have been cleared away. The end wall of rock further on is similar, and is quite as rudely fractured instead of being cut to a smooth face. Its loose contorted strata lying at a considerable angle, are much split and broken.

There would be nothing requiring particular remark in all this, were it not that between the ragged impediment and the end rock a small extent of level floor intervenes, with an adjacent side-chamber approached through a small portal. On seeing this, we are led to enquire:—Why was the shattered rock left protruding from the path, when work had to be carried on just beyond it, and why does the Fogou terminate here or turn aside, in the form of a mere chamber?

*Dr. Borlase's account of Fogous shews that this may have been the case. See, as examples, Bolleit Fogou and Pendeen Vau (Antiquities, pp. 273-4).

It has been surmised that this part of the cave is in an unfinished state. In one sense it may be, but even then why was not the troublesome projection levelled before the cell beyond it was built? Some explanation is needed.

We can scarcely imagine that this ridge was left to serve as a barricade to protect the chamber within by tripping up an intruder, and yet it may have been intended to deceive any who might come to rob the place, for since the side chamber forms the very inmost recess of the Fogou, and there is not another like it in the whole structure, it may have been "the safe" into which anything of special value was conveyed for concealment, and a few pieces of timber or mere faggots properly placed just within the rocky ridge and close to it, would have supported stones enough to form such a screen as would have simulated the end of the gallery. By this contrivance searchers would have been led to suppose that there was nothing beyond, and the inner chamber being so concealed, its stores would escape pillage.

But if this explanation of the reason for retaining the ridge of rock be not deemed satisfactory, a better may perhaps be deduced from a consideration of the two following facts:—Iron tools were probably scarce when the Fogou was made, and the place was not worked out like a mine. We cannot suppose that the heavily roofed* galleries and chambers here discovered were formed by underground burrowing. When they were commenced they must have been dug out like trenches, open to the sky. Stones were thrown in from above and built up for side walls, long stones were laid across as a roof, gaps were stopped with smaller stones, and then the whole place was buried with the excavated earth. In digging the trenches rocks would be as much as possible avoided, and if any were met with, tools being fragile and scarce, very little cutting of them would be attempted. Thus it may have happened that the workmen passing up and

* The covering stones of this cave have evidently been laid on from above. At Pendeen Vau one of the galleries is neither lined nor roofed with stone, that portion of it therefore may have been tunneled, or it may have been denuded of its stonework some time after its construction. There is a rock-cut subterranean chamber at Redgate, St. Cleer, but that is apparently of later date than this Fogou. The Treveneage Fogou has been partly deprived of stones.

down between the trench and the upper surface preferred leaving a stony ridge in the bottom of the trench to breaking a tool by attempting to level it, and when they had proceeded beyond it and found the ground still more rocky, they discontinued digging in that direction, and ended the trench by constructing a chamber alongside of the rock. We may suppose that they then covered in their work and regarded that part as finished.

We can well understand that at a remote period men were able, with very simple implements and few if any tools of iron, to dig out soft ground, collect great stones, pile them up for walls and roofs in the trenches they had formed, and afterwards conceal all with the earth they had raised. Strength for lifting and shovels of some sort would have been needed, but little else. They might in some instances have been able even to obtain granite stones cloven for their use, and yet not have been in possession themselves of rock-splitting or stone-cutting instruments. Thus the Fogou was formed when in all probability iron was very little used.

Now if we could identify a particular era by the absence or scarcity of iron tools, we might be able to fix upon the date of this Cave, but it is not very easy definitely to do so, without something further to guide us. When iron has been scarce even in comparatively recent times, rough work has been roughly performed. Many wooden shovels merely edged with iron, some of them of no great antiquity, have been found in Cornish tin works, as our museums shew. But if the late occurrence of such wooden tools weakens our clue to the date of this structure, it may yet be approximately learnt from its general style, contents, and surroundings. We observe the following characteristics :—

The great care displayed in the selection and placing of suitably shaped unhewn stones.

The absence of mortar in the building.

The small square portals and overhanging walls like those in British bee-hive huts.

The general difficulty of access, specially contrived, with concealment of position.

The situation within an entrenchment.

The similarity of the structure to other remains of undoubted antiquity.

The discovery of what is believed to have been a Celtic Urn containing human ashes, a cup, and some bones supposed to be of deer.

All these points taken in connection with the absence of quarrying appliances seem very clearly to indicate that this is an ancient British, or Romano-British work.

Celtic warriors and other inhabitants of the locality could have completed such a structure as this within their fort openly and without fear of its being betrayed, and they could have used it as a store, as a place of temporary concealment in time of pressing danger, and perhaps as a dungeon for captives. It would serve also as a place in which to deposit the relics of cremation. It could never have been used as a human habitation for long at a time, nor as a cattle shed, for want of light, ventilation, and fit entrances.

Not only in Cornwall but in other parts of the British Isles and also abroad, mysterious chambers, caves, and dens have been discovered. Tacitus, writing in A.D. 98, described* those that were then used on the continent. He relates that the tribes there fixed their abodes near a spring or in some other convenient spot. They built with rude materials regardless of beauty or proportion, they dug subterranean caves which they thickly covered over, and these served them as a retreat, or as a depository for their crops. If at any time an enemy approached, although he might lay waste or seize anything he could see, the hidden contents of these places dug in the ground escaped capture, either through being unsuspected or because it was so troublesome and difficult to find them even by a careful search.

There is no evidence to shew that Cornish Fogous were temples† or sacred enclosures. Some have surmised that they were

*Part of his description has reference to a climate unlike ours. Omitting such allusions, his words are :—"Colunt diversi ut fons, ut campus, ut nemus placuit. Materia ad omnia utuntur infirmi et citra speciem aut delectationem. Solent et subterraneos specus aperire, suffugium, et receptaculum frugibus. Et si quando hostis advenit, aperta populatur, abdita autem et defossa aut ignorantur aut eo ipso fallunt quod quaerenda sunt."—(Tacit : Germ : cap. 16).

† As to whether Halig, holy, forms part of the name of Halligey, see concluding chapter following this Introduction.

sepulchres. Their* names do not indicate whether they were or not.

A funeral urn containing ashes, Sir Richard Vyvyan has stated, was found in the Halligey Cave. Another writer informs us that the place was called the Catacombs,† but it can only have been in modern times that such a name was applied to it. Interments have been discovered in other Fogous also. Such subterranean chambers, if disused for other purposes, would be convenient burial places, and therefore were occasionally used as such; but the paucity of sepulchral indications compared with the great extent of the caves discourages the idea that they were in the first instance intended for tombs.

Another guess respecting them has been hazarded to the effect that perhaps smugglers built the Fogous. The Celtic remains found in them dispose at once of such a theory. But supposing that these remains had not been found, surely none could believe that such a formidable work as the Halligey Cave, 140 feet in total run, would have been undertaken by them. The great labor and publicity attending the digging and building of such a place would have deprived it of all chance of subsequent concealment from the authorities.

Smugglers no doubt constructed places in which to hide their contraband goods, but not on such a scale as this. Although they availed themselves of caves in the cliffs, and may have used the Fogous, they could not have been their builders. These stone galleries belonged to a people of much earlier time.

We may, I think, conclude that the Halligey Cave is an ancient store-house or hiding-place made by the Britons within fortified ground. It is much to be regretted that the urn, ashes, cup, and bones of deer (?) discovered in it, have been lost sight

*The names of localities require separate consideration. The following is the general term, which gives no clue as to the special object for which these places were constructed :—

Fogou, Vonga, Googoo, Hngo, Oogo, Ogou, Fou, Vou, Vau,—a cave. Dr. Borlase translated Fogou “ a hiding-place, a den or cave;” deriving it from fod, a place, and govea, to lie hid. Williams, in his *Cornu-Brit : Lexicon*, has given fo, a flight or retreat, and gow, false, deceitful, hidden. Fo-gow would thus signify a concealed refuge, a hidden retreat, so disguised externally as to deceive an enemy; the false or misleading appearance of the ground averting discovery.

†Mr. Polsue, in *History of Cornwall*. Lake, Truro, vol. 3, p. 281.

of, and that no record has been preserved to tell us in what part of the cave they lay.

Dr. Borlase in his work on the "Antiquities of Cornwall" has not mentioned Halligey, but his remarks on caves of this class possess considerable interest. He has made mention of the following :—

- The Fogou at Bolleit, in Burian.
- The Fogou at St. Eval, near Padstow.
- The Giant's Holt at Bodinar, Sancreed.
- Pendeen Vau, by St. Just in Penwith.

and many others.

Of these he figured the first and last named above. That at Bolleit was also illustrated afterwards by Mr. Blight in his "List of Antiquities in West Cornwall." In that list he has given references to books describing the caves. Mr. Blight has supplied the names of the following Fogous (besides those mentioned above) :—

- Boscaswell, St. Just.
- Chapel Uny, Sancreed.
- Chysauster, Gulval.
- Rosemorran, Gulval.
- Piskey Hall, Bos-au-an, Constantine.
- Tremenheer, Mullion.
- Bodean-veor, St. Anthony.
- Trehear, Wendron.
- Polkanogou, St. Keverne.
- Castallack, St. Paul.
- Treveneague, St. Hilary.

Mr. Fuller, of Camelford, has called attention to one in Altarnon, half-way between Roughtor and Buttern Hill.

Halligey Cave, in Mawgan, being it is said the finest of its class in Cornwall, is well worth special preservation. I am glad therefore to learn that Sir Vyell Vyvyan intends to have it carefully cleared of obstructions, and protected by an entrance gate, so as to secure it against casual injury.

The study of derivations not being suited to the tastes of all readers, an enquiry into the meaning of the name Halligey has been reserved until now.

As a separate chapter it will conclude this introductory account.

ON THE NAME HALLIGEY.

Sir John Maclean, who has written so ably on Cornish history and other matters connected with the county, remarked one day "To be safe, a writer should never give derivations," and the late Mr. Augustus Smith, of Scilly, said on another occasion "An archæological paper which I have just read leads me to the conclusion that a Cornish word can be shewn to mean almost anything."

In spite of these excellent warnings, with which I quite agree, it will be interesting to investigate and (if possible) determine the meaning of Halligey. Still, the result will—I feel sure—shew the truth of the observations just quoted.

The separate plots of ground overlying the Halligey Cave do not seem to have betrayed its presence by either of their names, as already stated.

The general designation of the place which includes them all has therefore now to be considered. It is pronounced Hal : lig : ge (the accent being on the second syllable, and each g hard), Sir Richard Vyvyan ingeniously tried to discover some trace of the cave in this name.

From its sound he thought it might refer to "The Sun and the Earth," and denote that the cave had been dedicated to these deified impersonations. When the probable uses of the Fogou are taken into consideration, such a theory seems to be untenable, but yet it is worth examination for philological reasons,

Sir Richard has observed that the sounds El and Ghee favor his supposition. It may be hastily replied that the Greek words Helios (the Sun) and Ge (the Earth) could never have found their way into any old Cornish word, but it so happens that at least one of them was incorporated into the Celtic language, which the Cornish people spoke;—Heul (derived from the Greek Helios) being their name for the sun.

Ke,—in composition ge, (equivalent to the Welsh cae) signified hedge, earthwork, or enclosed field.

Coupling these Cornish terms, then, we have Heul'a'ge, expressing to a certain extent "The Sun and the Earth," and

much resembling, in sound, Halligey. But although *ge*, as an enclosure, might thus stand for the fruitful field visited by the sun's rays, another word of wider sense was in use in Cornwall to describe the earth at large, or the world as compared with the sun.

This was derived from the Latin *terra*, and assumed the forms following:—*Tyr*, *tir*, *doer*, *doar*, *dôr*, *noar*, *nôr*, *oar*.

It appears in many familiar phrases, e.g. in these:—

Earth and Sea,—*Tyr ha môr*.

On Earth,—*Yn tyr* (or, *yn nôr*).

Heaven and the Earth—“*Nev han noar* (for *Nev hag an nor*). According to this, “The Sun and the Earth” instead of being written *Heul'a'ge* would appear as *Heul'a'nôr*; and so the likeness to Halligey vanishes.

But Sir Richard might have found something like a curious coincidence with respect to his idea of local sun-worship had he perceived that the neighbouring place Chybilly, scarcely a quarter of a mile away, might with equal facility have been translated “House of Bel, or Baal;” for the late Dr. Bannister's “Glossary” contains one conjecture making it “House (*chy*), of *Beli*.” This, however, is probably not the true derivation and it is not likely that either name was in any way connected with *Helios*, *Heul*, *Baal*, or *Bel* (the Sun).

We shall find, I think, that dedications connected with natural religion and mythology, must give place to some more simple explanation.

In various parts of Cornwall we meet either with the name Halligey, or with some similar name formed by a slight variation of its component parts. Thus we have Halligey, Haligey, or Hallegey in the parishes of Mawgan and St. Martin. Heligan or Hellagon, in St. Ewe, Crowan, and St. Mabyn. Penhaligon, Penhellick, &c., in other localities.

These names seem to have originated in one or more of the following Celtic terms, the meanings of which are well known:—*hal*, *hel*, *halig*, *helig*, *hag* (*ha*, *a*), *yn* (*y*), *agy* (*a-chy*), *ke* (*ge*), *pen*, *goon* (*gun*).

A few of these fall naturally into their proper places, as *Pen* (head) and *goon* (a down); but there is a difficulty in selecting

from amongst the others those which we require,—so many of them (with different meanings) seeming to have equal claims upon our choice.

Halig, holy, is a late Celtic word (from the Teutonic), and there seems no special reason for connecting it with Halligey. Still, *Halig-ge* might mean *sacred enclosure*, although the Cornish word in general use for holy was Sans (from the Latin Sanctus), and this word would probably have been connected with Lan rather than with Ke, or ge. Hal, a moor; Hal, a hill; Hel, a hall:—entered into many Cornish names:—*Hal'y'ge* and *Hal'agy*, *Hel'y'ge* and *Hel'agy*, might be translated *enclosed moor, hill, or hall*; either within ordinary hedges, or within the vallum of the ancient fort.

Bannister has given *Hal-age* (agos), *near, or neighbouring moor or hill* (perhaps in allusion to its position with respect to Trelowarren).

Hell was Anglo-Saxon, and meant a covered or unseen place; such as a dungeon or the lower regions. It was from *helen, to cover. Hole, hellyer (a coverer, a roofer), helling-stone (a covering or roofing stone), being from the same root.

Hell'y'ge, if compounded of this, would express—the concealed hollow within the enclosure,—the covered cave inside the earthwork,—“*the entrenched Fogou.*”

This explanation of Halligey is the most tempting, unless any objection is raised to its Teutonic origin. The ancient artificial caves described by Tacitus were those of the Germans, and some of their words—together with their customs may have spread to the Britons in early days.

Some ordinary Celtic combination would be preferable, and the Cornish word for the lower regions is not hell but ifarn, clearly derived from the Latin inferna; the Cornish for hole being tol. In making a final choice of a derivation we must be guided to some extent by the accent on the second syllable of Halligey. This suggests (Singular) Heligen, a willow, a place of willows; (Plural) Helik or Helig, willows.

*Bp. Browne's "Articles," p. 78.

*Helig-gê** (formed like *golvan-gê*, hedge-sparrow), would be hedge-willows, willow-hedge, or willow-field; and I find that this explanation of the name has been accepted by the Ordnance Survey authorities.

Thus, Halligey, named perhaps from the willows growing on the Castle-rampart, or in the Castle-close, may be simply equivalent to "*Withy-bank*."

ACCOUNT OF THE HALLIGEY CAVE, TRELWARREN.

BY THE LATE SIR R. R. VYVYAN, BART.

[See Plate.**]

PLAN AND DESCRIPTION OF THE CAVE AT TRELWARREN.

Reference A. Place where part of one of the side walls fell in:—present entrance.

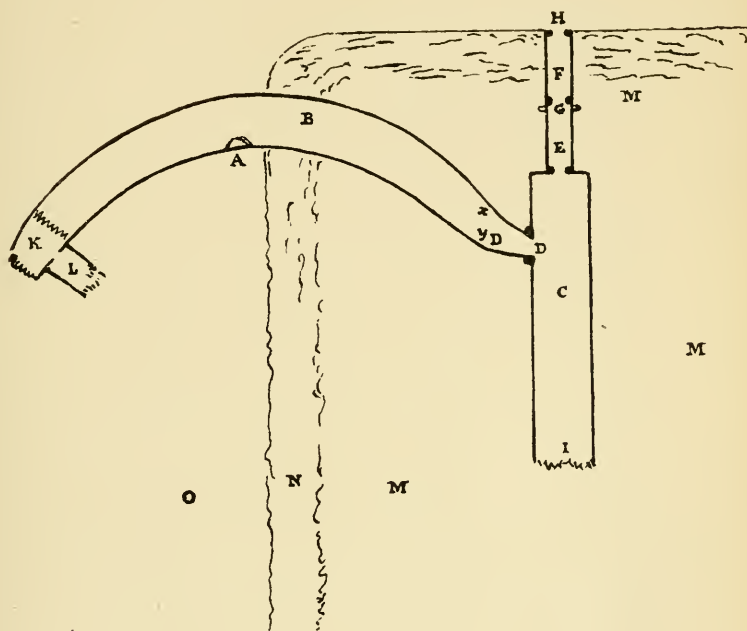
B. Semicircular gallery, the only entrance to which appears to have been through the passage at DD. The length of this gallery is about† fifty-five feet, its average height six feet and upwards.

C. Main gallery. Length about thirty feet, average width five feet, average height seven feet and a half.

DD. Passage between the galleries, about three feet high, appearing as if it were a continuation of the semicircular gallery at X, the contraction being opposite,—at Y, where it is three feet six inches wide. At its other end there is a portal consisting of two upright squared stones and one of the same character which is the lintel. This portal is two feet six inches wide and not quite three feet high. The uprights are rubbed as if by sheep.

*Williams's *Cornu-Brit*: Lexicon, pp. 48, 213, &c.

†Mr. Blight gives the length of this gallery as about 90 feet, which is more nearly correct. W.I.



Copy of the late Sir R.R.Vyuyan's sketch-plan
of the Cave at Halligey.

nr Trelowarren.

(Half the size of his Drawing).

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Reference E.F.G. Narrow passage, two feet four inches wide, about two feet high and fourteen long, opening into what must have been the vallum of the enclosure above, at H, where its portal is ten feet below the surface of the adjoining field.

The ditch has been long since filled up, but this entrance was found by sinking a shaft over its site and it was discovered to be exactly below the face of the embankment N. Hence we may conjecture that it was a concealed passage or sally-port opening into the ditch and that the embankment itself is the ruin of a wall, the foundations of which were at least ten feet below the present surface.

The space marked M, is an enclosed parallelogram. Its whole area is raised four or five feet above the ground around it, and its enclosing hedge or bank is nearly three feet high within, at this point, and from seven to eight feet above the surface of the field without. This gives a height of seventeen or eighteen feet from its present crest to the supposed level of its ditch.

The portal between the passage [F.E.] and the main gallery is two feet high by eighteen inches wide. It is composed of three hewn stones.

Midway in the passage is a similar doorway [G] and on each side, within† this middle portal are two holes obviously intended as sockets for the ends of a bar which was to confine the door (probably a stone or a piece of iron) when the passage was closed.

This passage, however, does not appear to have been the only entrance into the subterranean. At the other end [I] of the main gallery there must have been a communication between it and the enclosure above.

When the cave was first discovered there was no end wall there, but the gallery seemed to terminate abruptly, and its end consisted of the same moved earth as that which constitutes the garden soil of the enclosure itself.

At the other end of the semicircular gallery there is a ledge of rock in the floor, at K, about a foot high and as much wide;

†Any person who barred this from within must, of course, have been imprisoned in the Fogou, if no other way out existed. W.I.

for what purpose left, it is hard to conjecture,—unless it be that the work was unfinished.

The termination of this gallery is like that of any such work in a mine, and as it is not faced with stone (like the end of the main gallery towards the narrow passage E) we may conjecture that the original intention was never completed.

A small recess, at L, looks like the commencement of another gallery, but its entrance has no portal hewn stones and it only extends a few feet in the new direction.

The side walls of this cave are built of irregularly shaped stones of the country.

The roof consists of single transverse stones of a great size, some of which are the large detached blocks found in the neighbourhood, and some look as if they were brought from the sea shore, where their angles had been washed smooth by the waves.

The only hewn stones in the construction are those of the portals, and they are serpentine.

A large old farm-house close at hand is built of hewn serpentine stones which may have been found in the enclosure, where however there is nothing to show that any building had existed.

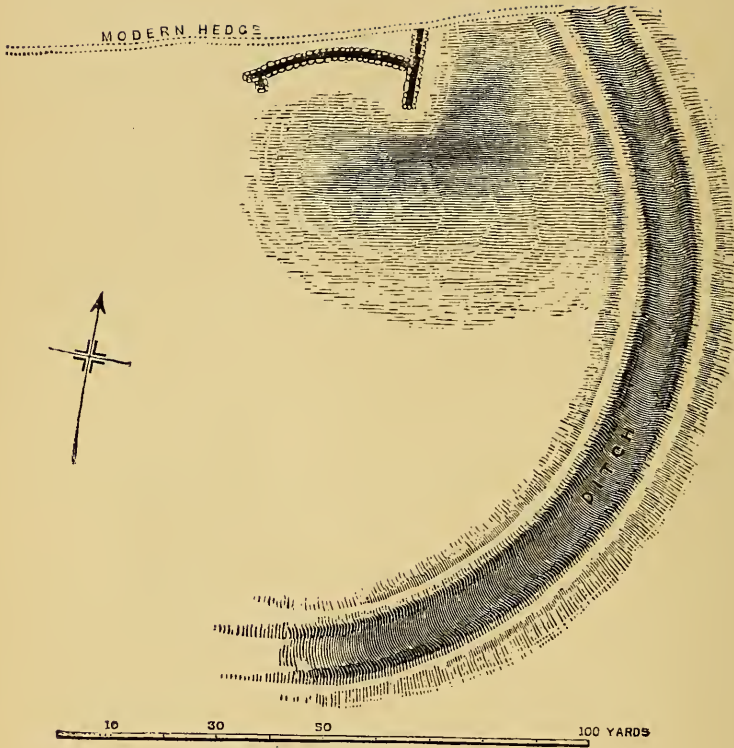
The name of the farm is Halligey. El-y-ghee is the mode of pronouncing the word, and there is enough in the sound* to justify the surmise that there was some religious building here dedicated to the Sun and the Earth,—more especially as a similar cave has been discovered in Ireland (much more perfect however in its construction) in which there was an inscription denoting a dedication to the Great God and the Universal Mother.

A vase, containing ashes, and a rude cup—both of Celtic manufacture,—have been found in the cave.

The only bones discovered look like those of a deer.

The floor is made of clay which is found in the neighbourhood.

* See examination of this, at page 253.—W.I.



AT HALLIGEY, TRELWARREN.

PLAN SHEWING POSITION OF FOGOU WITHIN REMAINS OF
ENCIRCLING FOSSE.

AN ACCOUNT OF REMARKABLE SUBTERRANEAN CHAMBERS AT
TRELWARREN, THE SEAT OF *SIR R. R. VYVYAN, BART.,
IN THE COUNTY OF CORNWALL.

BY J. T. BLIGHT.

From the Archæologia, Vol. XL.

On the beautiful domain of Trelowarren there are, in good preservation, very remarkable subterranean chambers, which appear to have been unknown to Dr. Borlase, the county antiquary, and are mentioned by one only† of the Cornish historians, Polwhele.

Polwhele's description, however, being unaccompanied by plans or accurate measurements, is of little use to the archæologist, and no more may be gathered from his remarks than that those galleries were not in his day, about fifty years ago, so easily to be investigated as at the present time.

Whilst submitting a description of these curious and interesting structures, I shall not presume to offer any definite opinion as to their age, or the purpose for which they were constructed, but hope, by plans, sections, and views, to convey some idea of the peculiarity of their formation, so that they may be compared with the subterranean chambers or galleries found in other parts of the kingdom, and in those countries peopled by Celtic tribes.

The spot on which they are situated is named Halligey, about five or six minutes' walk from Trelowarren House, and occupies the crest of a sweeping undulation of the country, for it can scarcely be called a hill, neither is it a very commanding site.

There is, at first sight, nothing particular to attract attention to these chambers; but it will be observed that the soil rises over them as if banked up, but not sufficiently high or definite in form to be termed a barrow—indeed it might be taken for no more than a natural formation of the ground, now intersected by one or more hedges.

* This description appears in the heading of Mr. Blight's Paper on the Halligey Cave, in 1861. Sir R. R. Vyvyan, having deceased, has been succeeded by the Rev. Sir Vyell Vyvyan.

† Noticed also by Lysons, *Mag: Brit: III*, p. CCXX; and more recently by Polsue, *Lake's Hist: vol. 3*, p. 281.—W.I.

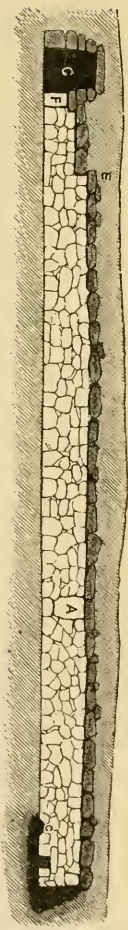
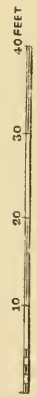
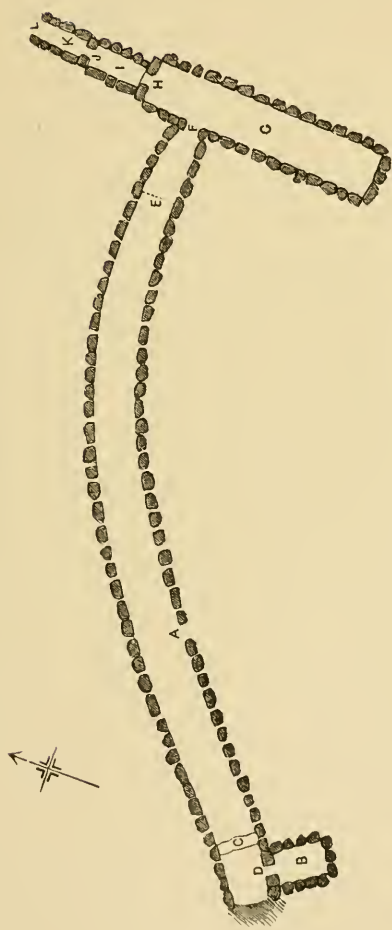
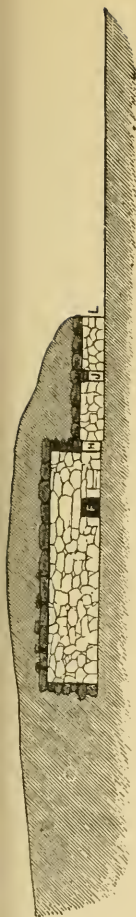
The present entrance is at A on the accompanying plan (Plate 2); this, however, is not the original one, but simply a hole pierced through the side in modern times. On entering through this, the explorer finds himself in a dark chamber or cave. It is impossible without some artificial light to see more than a yard in advance, or to know which direction to take. The sides exhibit the rudest and most primitive kind of masonry, rough blocks of unhewn stone being built up without cement or attention to regularity in their courses; these project somewhat inwards until they reach the roof, formed of large blocks of stone thrown horizontally across; the interstices, where not closely fitting, are filled by smaller stones placed between. This gallery, slightly curved, and running nearly east and west, measures in length about 90 feet, and varies from three to five feet in breadth; it is not of uniform height, being about 6 feet high in the middle, but lower towards the extremities. E on the plan marks a decided step in the roof, and from this part to the entrance F (Plates 2 and 3), the height is only 4 feet. At C, a rock rises above the level of the floor, and a mass of rock forms the end of this gallery. The doorway, D, is 1 foot 4 inches high, by 1 foot 4 wide, with jambs and lintel each of a single stone, and leads into a chamber, B, about 6 feet long, lower than the main gallery, but roofed in a similar manner.

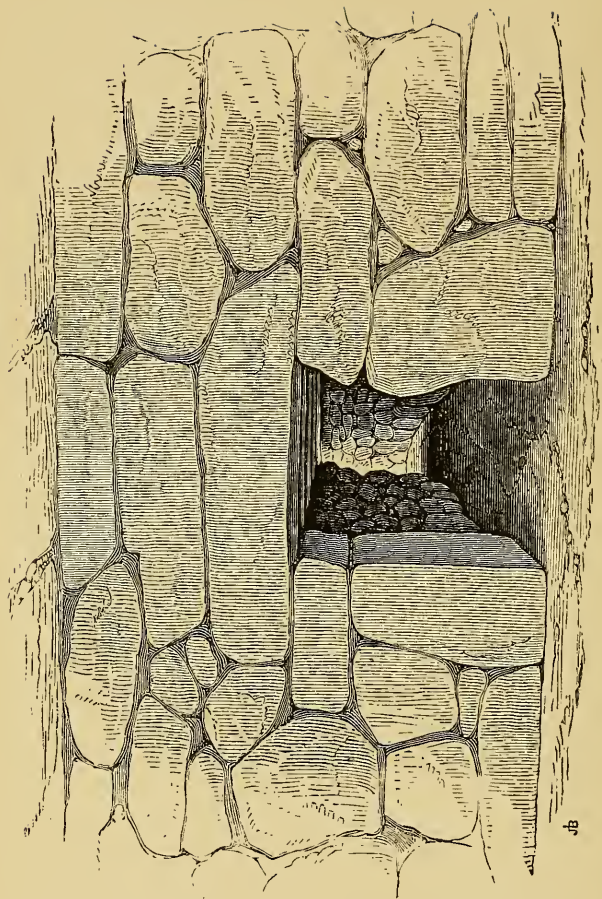
The gallery G, which runs north and south is 28 feet in length, 5 feet 6 inches in breadth, and 6 feet high. It is connected to the other by an entrance F, 3 feet high by 2 feet 3 inches wide, and with jambs and lintel placed somewhat regularly. In the north end of this gallery a doorway H, 2 feet 3 inches high, by 1 foot 6 inches wide (see Plates 2 and 4) opens into a chamber or cell, I, 6 feet 6 inches long, 2 feet 3 inches wide, and 3 feet high. At the end of this another entrance, J, 2 feet high by 1 foot 4 inches wide, gives access to the cell K, 6 feet long, 2 feet wide, and 2 feet 6 inches high.

The original entrance to the whole structure was at L, but it is now blocked by a modern hedge.

In all the doorways the stones for jambs and lintels seem to have been carefully selected, but none have been wrought into form. As the immediate neighbourhood is not of a rocky character, it must have been a work of considerable labour and time

PLAN AND SECTIONS
OF THE
FOGOU,
AT HALLIGEY,
TRELOWARREN.





WITHIN FOGOU, LOOKING WEST, THROUGH F, E, THE LOW PASSAGE-WAY BETWEEN THE TWO MAIN GALLERIES.

jb

to have collected all the material for the building of these chambers.

Some of the stones are of great size, and have been removed and adjusted by powerful means. It appears therefore that much importance was attached to those structures, and it seems to have been necessary that they should be substantially built. There can be no doubt that they were within the precincts of an ancient Fort; indeed, on the east and south-east of the mound, two earthen embankments with an intervening ditch 10 yards wide may still be traced (see Plate 1). No stones are used in the formation of the camp, but about 150 yards south-west of it is an ancient Well rudely built around, somewhat after the manner of the Cave.

Though the subterranean galleries at Trelowarren are by far the most important in Cornwall, there exist other examples of much interest. Those of Bolleit and Pendeen, in the Land's End District, have been described by Borlase. The former was enclosed within a triple entrenchment, and at St. Anthony, near Trelowarren, a similar passage was connected with an ancient camp. Polwhele mentions a third in a like situation in the parish of St. Constantine. From the positions of others, however, it seems doubtful whether they could ever have been so enclosed. It is well known that subterranean galleries of precisely the same character are found within the old forts or raths of Ireland, and similar structures exist in Scotland.

At Chapel Uny, in Sancreed, a parish west of Penzance, are remains of a structure of this kind; the principal passage expands into a circular chamber, the roof of which has fallen, but it was evidently dome-shaped and of what is termed the bee-hive construction. At the supposed British village of Chy-sauster, near Penzance, is a cave in which each course of stone also overlaps that beneath.

In all, it will be observed that whilst the principal galleries are sufficiently high for a man to stand upright within them, the doorways are extremely low and can only be entered by stooping—in most instances by creeping on hands and knees. The average height of those entrances is about 3 feet; but at Bolleit the outer one measures 4 feet 2 inches. The long galleries are

generally curved, and every means appears to have been adopted to make them as intricate as possible.

Dr. Borlase says that in a field at Trelowarren there was opened in July, 1751, an earthen barrow, very wide in circumference, but not 5 feet high; in it was found a parcel of stones set in some order, forming a cavity 2 feet in diameter and of equal height; it enclosed bones of all sorts, intermixed with wood ashes. There was no urn in the cavity, but two were found at a distance of a few feet from it, one on each side, with their mouths turned downwards and small bones and ashes inclosed.

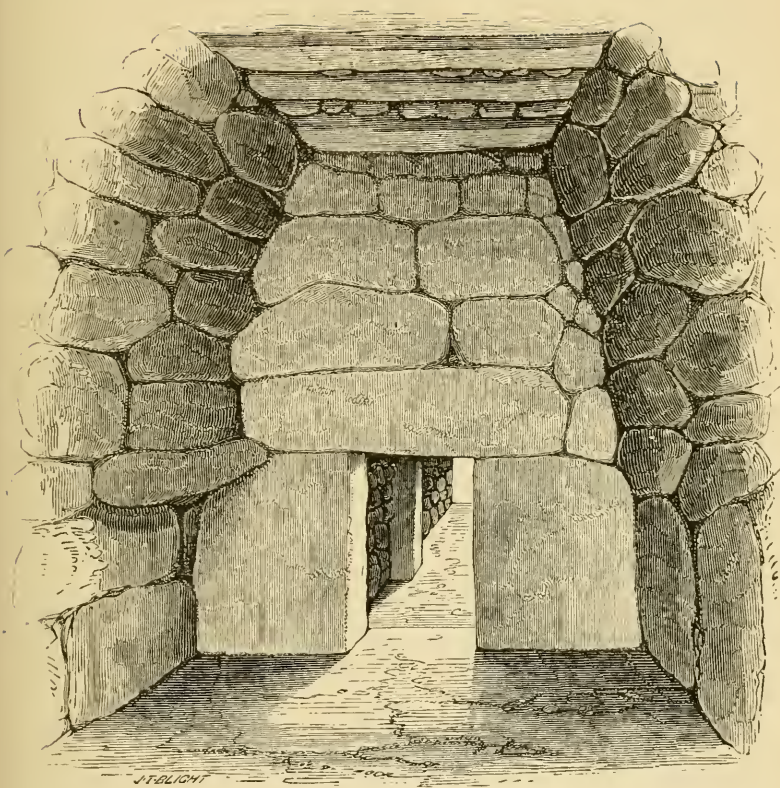
The Doctor also says, that the workmen found near the middle of the mound three thin bits of brass—the fragments of a sword or other instrument (“Antiquities,” p. 201, ed. 1754).

Polwhele thinks that the barrow described by Borlase stood over the subterranean galleries; if such were the case, it would shew how completely the cave was hid, when such an acute observer as Dr. Borlase could have walked over it without perceiving the least trace of its existence. It is probable, however, that the barrow described by the Doctor stood between the cave and Trelowarren House; where a large mound raised on the remains of an ancient barrow may still be seen.

Some years ago, there were, I believe, pieces of ancient pottery found within the Trelowarren cave; but nothing at present shows for what purpose this structure was designed—it is quite unsuited as a dwelling-place, having no openings for light or air other than could come through one small doorway.

Numerous instances might be given of places of sepulture having somewhat similar arrangements, but the Cornish caves have as yet yielded but little to prove that they were used as such.

In the Constantine Cave, Polwhele found a pit containing ashes. The situation of these galleries within forts seems, however, to show that they were specially connected with military operations. Passages of this kind in Ireland are considered by archæologists of that country to have been constructed as depositories for stores, arms, provisions, and such necessaries as required protection from the weather, and yet be at hand ready for use.



AT HALLIGEY, TRELWARREN.

WITHIN THE FOGOÜ, LOOKING NORTH, TOWARDS THE ORIGINAL
ENTRANCE (Now Closed);

SHEWING THE PORTIONS MARKED H, I, J, K, L, IN THE PLAN.

In some British camps, where such galleries do not exist, square or round-walled pits are found, as at Worle camp and in a few of the Cornish "hill castles." These have been considered store chambers; whether they are in any way akin to the subterranean galleries may be worthy of consideration.

These subterranean passages are by the Cornish people called Caves—in the Cornish language "Fogous." That at Bolleit in St. Burian parish is still known as the "Fogou," and the place in the parish of St. Keverne on which a cave was situated is named *Polkanogou*. In Ireland they are also known as caves.

In an account of two Irish missionaries of the seventh century, Saints Marinus and Anianus, contributed to the Royal Irish Academy by Dr. Reeves in the early part of the present year, we read, "Finding their labours among the pastoral inhabitants of the neighbourhood successful, they resolved upon settling in this region for the rest of their days, and erected huts for themselves *over two caves* about two Italian miles asunder." There can be little doubt that these structures are to be referred to a very remote period, but to what exact date, or for what purposes they were used is uncertain. It is to be hoped, however, that they may be more carefully examined, and that some discovery may be made within them, from which we may learn whether they really were places for some of the purposes of the everyday life of our rude forefathers, or whether in those long, gloomy recesses were deposited the remains of the warlike tribes who peopled the slopes and fortified the summits of the western hills.

[After the publication of the above description, Mr. Blight wrote and illustrated a much more comprehensive account of another Fogou, viz: that at Trevenage in St. Hilary, very similar in plan, and of special interest. (The paper was issued by the Penzance Nat: Hist: and Antiquarian Society, in 1867). In it he described the burnt condition of the Cave and its contents, the bones, ashes, stone and iron articles, pottery (some with zig-zag ornamentation), found in and around it; the enclosing trench resembling in form that at Halligey. He more carefully considered the probable uses of Fogous, the burial-place theory, and whether or not the ditch and mound were military or sepulchral. It is far better worth reading than any of the preceding. W.L.]

HELSTON FURRY DAY.

BY THE REV. W. S. LACH-SZYRMA, B.A.

—————:0:—————

The Helston Furry Festival is notoriously one of the most singular of the institutions of Cornwall—a singular and in some senses almost an unique survival of a long forgotten age. As such it is the subject of much enquiry among archæologists, and, I may add, of many inaccurate statements and unfounded or unsatisfactory theories. The too often accepted theory that the Helston Furry day is a mere continuation or survival of the Roman Floralia is in my opinion very dubious. There was a time when it might have been taken for granted—when the fashion was to deduce everything from Greece and Rome.

The rites of the first week of May are almost co-extensive with Europe, or at least were so, until modern civilization and pseudo-culture stamped them out. They extend from the Lithuanian forest to the Land's End, from the Baltic to the Mediterranean. There is no reason by any means to associate them with the Latin races and with them only.

The deity which the heathen Britons celebrated in May it would seem not merely was not the Roman Flora, but not even a goddess at all, but the summer God Taranis, whom the Britons worshipped as bringing sunshine and rain and the fruits of the earth. He was rather like the Northern Thor, the Thunder God, than Flora the soft flower Goddess of Rome. He was honoured by the leek and hawthorne, and Mr. Elton is of opinion that the Helston Furry Day and other Cornish jubilees were survivals of British feasts in his honour.

The Furry Day, May 8th, was actually the anniversary fête of the Apparition of St. Michael, but also certainly it was the octave of May day, i.e. of St. Philip and James, as it was called in the Christian calendar, to consecrate the great spring festival of Europe. As S. Michael was the patron of Helston it is not improbable that the May festival was transferred there from May 1 (or S.S. Philip and James), when it was observed elsewhere, or from the Sunday after, to the local wake or patron's

day, i.e. May 8, the feast of the Apparition of S. Michael, which came in conveniently. We have a similar case in the observance (as at Penzance) of the Midsummer bonfires not only on Midsummer but also on S. Peter's Eve, i.e. the eve of what in the Middle Ages was a great festival.

To sum up what I mean, I regard the Helston Furry Day neither as Canon Rogers seems to put it as a survival of the Roman Floralia nor even as a Cornish festival arising from the Roman Floralia, but a survival of an ancient pre-Christian Celtic festival in honour of Taran or Taranucno, to whom the cow-horns were blown in Cornwall in May, not only on the first day but during the first week of May,—a custom the survival of which many in Penzance regret, for though very antique and poetic, it is anything but euphonious; and that the festival was observed for convenience probably at Helston on the feast of the patron coming just after, i.e. the apparition of S. Michael.

The Furry Dance itself belongs rather to the continental processional May dancers than to our old English Maypole dance. It would seem as if the Latin and Slavonic nations preferred processional dances not unlike the Roman floralia. Maypoles it would seem were never common in France. Aubrey, who enquired much into May customs at the time of Charles II, says:—"I never saw a Maypole in France; quære if there are any there." Yet in Holland there were May booms, and in Germany there are some of the most artistic Maypoles in the world, e.g. in the villages between Munich and Salzburg.

The idea in England generally, and perhaps in Germany, was dancing around the Maypole, but in many parts of the continent the custom of dancing onwards prevailed, as in ancient Greek festivals. But it would be incorrect to think that in England such processional dances were unknown, Spenser writes:—

" I saw a shole of shepherds ontgo
With singing and shouting and jolly cheer,
Before them yode a lusty Tabrere
That to them many a hornpipe played
Whereto they dancen each one with his maid.
To see these folk make such jovisance
Made my heart after the pipe to dance."

This is not so unlike, after all, a description of our Helston Furry Day.

I may say Maypoles were not rare in Cornwall. We had one in Penzance and the Corporation maintained it. There was another at Treryn, near the Logan Rock. I have seen one myself at Landrake, and I doubt not there were a score of them in divers places.

The peculiarity of the Helston Furry, which as yet I have failed to trace elsewhere (though I think it not improbable we might trace the custom in some other remote places) is the dancing in and out of the houses. This would seem to be very primitive and characteristically Cornish. Once a year at least peoples houses were not their own, and "an Englishman's house is his castle" would not apply, yet I regard it as one of the many instances of clan life in old Cornwall. Now and then people were to be reminded that there was a common fellowship in the clan, and they must not shut their doors to their neighbours.

The Decorating the houses with boughs is a survival of a very common May custom once observed even in London itself.

The actual dating of the Helston Festival is difficult. It is possible the people of the Meneage found Helston a convenient spot for a May festival, amid a rich fertile region abounding with gardens. However, the tradition of its origin as commemorating some great deliverance, either from the plague symbolised by S. Michael the patron overcoming the plague demon, or delivering from foreign foe in the Middle Ages, may not be unfounded. Helston is said to have been the chief place of Kirrier from the days of Alfred. It was mentioned in Doomsday, and incorporated by King John, and made a coinage town by Edward I. It was also incorporated in 1336. So it is possible that the custom as we have it now dates far back in the Middle Ages.

The only light we can have of the time before which it must have prevailed, is the Helston Furry Song, which with its mysterious allusions and quaint merriment, I should suppose belonged to the age of Elizabeth. The best point for dating this is the defiant allusion to the Spaniards.

"Where are those Spaniards
 "That make so great a boast O!
 "They shall eat the grey goose feather
 "And we will eat the roast O!"

This probably points no further back than to the days of Drake and the Armada, when the sea dogs of Devon and the West were "singeing the King of Spain's beard," as Drake called it. There is a chaffing defiance of the Spanish Don very characteristic of west country feeling in the Armada days. But we have no reason to suppose the Furry Dance may not have existed long before the song was composed.

Then Robin Hood is characteristic of English May Festival. The thought of Robin Hood and his merry men is linked with many a May festival. The expression about S. George illustrates how the tutelary saint of Old England was regarded in Cornwall.

Taken as a whole, then, we may say that the Helston Furry Day is a most interesting relic of Merry England of olden times. Except the dancing in and out of the houses and the furry tune itself, the festival recalls to us the memories of what Chaucer, Spenser and Shakespear must have seen and probably joined in. Still there is a local, and it may be characteristically Cornish colouring. It is, as I said, probably a survival through the Middle Ages of the antique Celtic greeting for summer. The Furry Day is then a sort of little museum of antique May customs, some very ancient, and others reproducing the memories of merrie England before Puritan days and the Civil Wars, which demolished Maypoles and May festivities.

Finally, there is one problem on which our Furry Day and other Cornish survivals may throw a light, i.e. the laws affecting the decay and survivals of ancient customs.

If I mistake not, ancient customs die out because :—

1. The motive or cause of them has passed away—they thereby lose vitality. This can hardly be said to be the case with the May customs of rural England. Our Mays are as lovely as when Chaucer sang.

" Merry time it is in May ;
The fowles syngeth her lay,
The knightes loveth the Tournay
Maydeus so dauncen and they play."

May customs have not died out for the same reason as archery, for May is never out of date.

2. "They have become vulgarized." This has been the cause of the destruction of a large section of our English

customs, especially our statute fairs. What is vulgar and ridiculous, however antique, has little vitality.

3. "They have become demoralized." This is fatal, for then the noble and good and wise feel it a duty to stamp out the ancient custom, if injurious to public morals.

As to Helston Furry Day neither the first nor last can endanger it much. May is as bright as in the days of the Canterbury Pilgrims. The good sense of the Helston folk also prevents—I hope and believe,—the Furry Day being a source of demoralization against which wise moralists feel it a duty to protest. But it might be vulgarized; and here I think all credit is due to the local aristocracy of the Meneage and the gentry of Helston, in themselves keeping it up and being actors in the strange old world scene of the Furry Day. Of course there are mixed motives of a day's outing and meeting friends, but the idea of the festival is joy and merriment. All credit to those who try to keep it up with archaic exactness and propriety. Once discontinued we should lose an important link with the Merrie England of the Middle Ages and of Tudor days, it may even be with the memories of ancient Britain.

NOTE TO ACCOMPANY SIR RICHARD GRENVILLE'S PLOTT OF
TINTAGEL CASTLE.

By H. MICHELL WHITLEY.

Amongst the Domestic State Papers of the reign of Elizabeth at the Public Record Office, is a report dated December, 1585, by Sir Richard Grenville, on the state of the fortifications at Tintagel, and his suggestions for the further defence of the Castle.

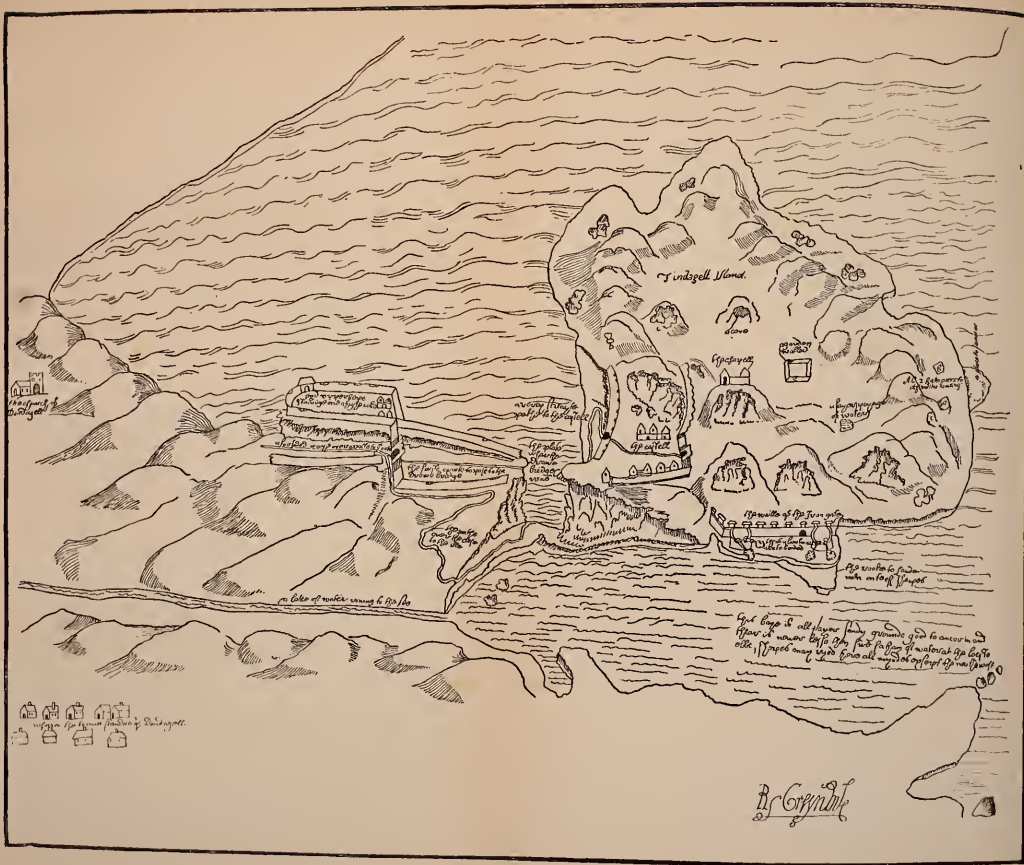
In this report, Sir Richard states he has drawn a plott (or plan) of the castle, which he sends in order to make his description clear, but this plan is not now with his report. In the Cottonian collection at the British Museum is, however, a map described as being one of Tintagel Island, county Donegal; and this, to which my attention was drawn by Mr. Tregellas, turns out to be the missing document.

Sir Richard's report itself has been already published in our Journal for 1871, so it will not be necessary further to allude to it, but the map will form an interesting accompaniment.

The annexed plate is a reduced fac-simile, half the size of the original, Sir Richard's signature to his report being added, it will be seen that it is drawn in a way that shows the great Admiral to be no mean draughtsman, the original copy is well coloured, and anyone examining it will see, that it conveys an excellent idea of the state of the fortifications at the date it was prepared.

On the mainland is noted the upper keep standing on a high rock, below is a fenced way over a valley to the gate, and inside the latter, is the first course to pass to the draw-bridge. The place where the draw-bridge was, and the straight steep path over the cliff to the Isle are duly described.

On the Island itself, the ruinous castle, the cave, the chapel, the walled garden, and the spring of water, are inserted, as well as the wall of the iron gate, where Sir Richard advises two bulwarks to be added.



Lindisell Island.

an Echo of water coming to the sea

an echo from the sea to the island

the walls of the town

the walls of the town

the walls of the town

God bless it all please God give us all
peace and unity for ever and ever
amen. I hope every one here all
the time of our lives.

- house
 - church
 - tower
 - castle
 - tower
 - house
 - house
 - house
 - house
 - house
- the walls of the town of Lindisell.

R. G. G. G.

Below is the Cove noted as being all fair sandy ground, good to anchor in, and there is never less than two fathom of water at the lowest ebb, ships may ride here all winds except the north-west.

The plott itself is a most interesting memento of one of Cornwall's noblest sons, the Great Sir Richard.

THE FORESHORES OF KEA.

By THOMAS CRAGOE, F.R.G.S.

ABSTRACT.

The foreshores of Kea, beginning at Calenick and ending at Cowlings, comprise rather a long shoreline for a single parish. This eastern boundary of the parish is traditionally the "Lower End" of Kea, spelt Keye, and prefixed by the courteous title of St. in Norden's Map.

Low-lying, very sheltered, and lapped by the warm waters of the western main, it becomes a fruit-bearing region, exhibiting a marked contrast to that inland western boundary of Kea which borders upon Gwennap.

Along the dull mud-lined shores of Calenick Creek we find few points of interest, silted up more and more within the memory of the present generation, a light punt may hardly now with a spring-tide find its way to the bridge, and a distorted channel winding through a dreary waste of mud, bounded here and there by the glaucous herbage of salt marshes, looks anything but romantic and beautiful to the eye.

Let us pass on, but be careful, these dry wiry tufts of rush and grass are favoured haunts of the viper, and Trevaster Bar is the chosen resort of the Sanderling, *Calidris arenaria*, and flights of these birds as they wheel round in graceful curves of alternate white and dun afford to the loitering naturalist a very interesting sight.

At Trevaster Point we meet with the vascular *Fucus* attached to the rocks here, divided from the rocks under Penpoll Wood by a wide expanse of mud forming Trevaster Bay.

Now the green vegetation once so abundant here is the *Ulva compressa* of Linnæus, and the *Enteromorpha compressa* of later writers, and though nothing can be more vile or common to look at casually, its gelatinous tubular fronds, more or less branched, are invested with a peculiar interest to the close observer. Ray, who was more detailed and circumstantial in his descriptions than other botanists, calls this sea-grass *Ulva marina tenuissima et compressa* (*vide* Raii Synopsi 63, 5).

But to the point in question, which is most significant. Within 30 years this once flourishing bed of *Enteromorpha* has perished, and only a few weakly patches remain scattered like green isles over a waste of mud—over our once verdant playgrounds white ooze reigns supreme.

Now comes the question. What killed the *Enteromorpha*? Mineral wash from Wheal Jane, or an ever increasing volume of town sewage? Let it be either or neither, it is not unreasonable to conclude that what killed the marine vegetation may have also destroyed the fish, and account in some measure for the great decay of the river fisheries within the memory of those now living.

Under Trevaster crops up the second bed of clay, soft and plastic as the first, and where the little bay ends a rocky shore commences, bearing the river *Algæ* common to these latitudes. In the crannies of these rocks the common crab abounds, and on the same shore five and twenty years ago the Periwinkle (*Littorina littoralis*) found a genial habitat, though now the sharpest eyes search in vain for anything more than a lone straggler of the once numerous race.

This beach skirts Penpoll Wood, whose shady cliff scars are fringed with a coarse abundant herbage of a light-green colour—the great hairy Wood Grass or rush, *Juncus pilosus* of Linnæus, *Juncus sylvaticus* of Hudson, and the *Gramen nemorosum hirsutum latifolium maximum* of Ray. It appears that Linnæus made this but a variety of the smaller kind, whereas Sowerby has followed Ray and some others in establishing two distinct species, grounding the difference upon the greater relative divarication of the panicle, but the difference indeed is very slight.

The culm of this species is about 2 feet high, and likely, under less favourable conditions, it might not attain more than 12 inches, which Gray gives as the normal height of the smaller species. The foliage of this plant is of no service, for a hungry horse will hardly touch it; but Sowerby suggests it would make an excellent packing material. The lanceolate leaf is remarkable in being “fringed with distant, long, soft, white hairs.” A remarkable and interesting vein of micaceous trap occurs at Penpoll point.

From the head of Lamb creek round by Kea ferry to Woodbury bar, and from thence to Old Kea Creek, rather a long step, no stream enters the river, but half way between the bar and creek last mentioned, is Woodbury Well, guarded by a large ash tree, which might compare with those adorning the isle of Ross in the Lakes of Killarney. This natural spring in the cliff is well known to the river men: the water is unrivalled, and during the warm season Woodbury Well is to this arid region something like the wells of El Teb to the thirsty sons of the desert.

On Woodbury cliffs there is an oak which every season puts forth its foliage a week or two sooner than any other up all the reaches from Turnaware to Tresillian. This was remarked to me by an old fisherman years ago, and it is invariably the case, though I am not aware that either the tree or the leaf differs in other respects from its congeners.

Just below this oak in a rift of the rock, a little above high water mark, is a well rooted clump of samphire. It is the first which occurs, and I believe it to be the only instance where this salt sea plant can be found on the foreshores of Kea. Whether owing to the absence of water-courses or not, it is a fact that the cuckoo rarely visits Woodbury slopes—the thrush even is not common, but all through the spring the blackbirds warble from dawn till dark. Squirrels disport themselves in the oak trees here, and the “blow” of the porpoise is sometimes heard, but not so often as formerly.

From the shadow of the old tower at Kea we pass on by the beautiful little Cove under Trevean, where a laughing rivulet discharges its waters, and rounding the next point soon reach Tolverne Ferry, not far from which under Halwyn is another outcrop of *micaceous trap*.

It is yet comparatively a long line to follow the shore under the white cottages and plum orchards of Coombe to the head of Cowling's Creek—in all four miles perhaps from Lamb Creek—to which a crow might fly in one mile from the Watergate here.

This little peninsula, then, is properly the Lower End of Kea, for though Penpoll, Trevaster (spelt Treuascus in Norden's map) and Trethowell might by courtesy be included, they are yet in a manner outside of the geographical lines. And a more

beautiful, picturesque, and fruitful spot than this—almost wrapped round by the river—it would be hard to find in the three kingdoms.

The sea-weeds common to these shores are first of all *Fucus vesiculosus* and its variety *Fucus spiralis*. Next comes *Fucus nodosus*, very marked by its fine olive colour and solitary elliptical air vessels. *Fucus serratus* is equally common; these all grow on rocks and shingle, and are used in the fruit gardens and as a dressing for grain, especially barley.

If we reckon all the *Fuci* we find on our shores, we may count from time to time almost all the denizens of the great deep.

In the rolls of sea-wrack washed up by winter storms from the deep waters outside, oft-times very conspicuous are the bright green ribband-like leaves of the *Zostera Marina*, along with huge specimens of the deep water Tangles, *Laminaria Digitata*, with its congener, the Great Furbelowed Fucus of Sowerby, *Laminaria bulbosa*, also called St. Mary's Thistle, and the largest of the British *Fuci*, besides magnificent fronds of *Fucus saccharinus*. This last fucus attains great perfection on the S.W. coast, and although Sowerby gives the extreme length of frond as six feet, there is one hanging to dry at Woodbury now quite 8 feet long, nearly a foot wide at base, and all depending from a stalk as big as an ordinary lead pencil. When quite fresh it looked like some gorgeous sash of silk—like a marvellous triumph of the millinery art, all puckered, frilled, and furbelowed throughout its entire length. This handsome variety of *Fucus saccharinus* is figured in the 9th plate of Stackhouse's elaborate work.

Along with the rolls of marine Algæ cast up on our shores we also often find the Mermaid's Purse with all its curling tendrils, also the *Nidus* of *Buccinum undatum*, fragments of *Chondrus crispus*, and I am inclined to think battered relics from the far off *Mar De Sargasso*, the whole roll sometimes bound round with the slimy olive-ropes of *Chorda filum*, for which we need not go farther than Carrick Roads. *Fucus siliquosus* and *F. tuberculosus* turn up sometimes, but I have never noticed the edible winged Fucus *Alaria esculenta*, though it grows on our coast. Nor have I noticed the Sea Lettuce or Green Laver, *Ulva latissima*, growing so far up as our shoreline.

The S.W. angle of Britain is extremely rich in marine algæ. Stackhouse was the first to describe many of the rarest *Fuci*, such as *F. Palmetta*, *F. Discors*, *F. Membranaceus*, and others.

I believe the primary scope of this Institution is rather to collect and register local facts than to go far afield for nature's greater wonders, and when we reflect that a great master in the regions of nature and of art has declared that in a few yards of an old hedge a thoughtful mind may find life-long studies, we see how vast a field is opened up by "the Foreshores of Kea."


MAWGAN CROSS,

THE INSCRIBED STONE OF THE MENEAGE.

BY THE REV. W. IAGO, B.A., WESTHEATH, BODMIN; *Hon. Local Sec. of the Society of Antiquaries, London; and one of the Council of the Royal Institution of Cornwall.*

Last Autumn, when the Royal Institution of Cornwall made an Excursion to the South-Western part of the County, the ancient stone known as Mawgan Cross* was visited.

It is situate about a quarter of a mile South-West of Mawgan Churchtown, in the Meneage District, and gives name to the small village or group of cottages around. It stands—suitably to its designation in one sense—at an intersection of roads, occupying the centre of the open space bounded by them.

Four or more ways lead towards the place but there are only three turnings, thus:— at the stone.

Since many an old Cornish Cross has been found set up at a tri-unity, or trinity, it is thought that such a site must have been chosen as emblematic of the faith connected with the Cross. The Crucified Redeemer was proclaimed to be Divine by this visible association of the sign of his Passion with the symbol of the Deity, the Trinity in Unity.

This, in one respect, reminds us of St. Patrick's teaching, which is said to have been by means of the shamrock or trefoil.

The Mawgan Stone seems to have been regarded by some as if it were a monolith of the Heathen, or a heathen relic appropriated and perhaps altered by the Christians, but every consideration connected with it points to a contrary conclusion.

A clue to its origin is afforded not only by its position, as we have seen, but also by its traditional name. It has been denominated "Cross†" probably ever since its construction, and

*The same name is applied to other well-known Crosses (viz: those in the Parish of Mawgan in Pydar, which lies on the North Coast of Mid-Cornwall). See illustrations of them in Blight's "Ancient Crosses," part I, pp. 53, 59, &c.

†In the old language of Cornwall, Maen or Mén signified "a Stone," whether of heathen or christian erection, Crois or Crows, denoted "a Cross" exclusively.

that too for a reason stronger than would have been derived merely from its location at a junction of roads.

Had it been a Pagan pillar it would not originally have been called a Cross, and it is not likely that it would have received in modern times the name of a figure which it neither resembles nor displays.

Its title then, doubtless describes what it was when complete :—a Christian memorial in the form of a lofty way-side Cross.

The stone itself supplies evidence of this, so we have more than its suggestive site and ancient name to guide us.

The massive shaft alone remains, but at the top are unmistakable traces of its four faces having been so cut as to form a shoulder about $3\frac{1}{2}$ inches deep, with a central tenon about 7 inches square, for the support of a mortised upper-stone.

Probably the head was disc-shaped, or four-holed, with a cross wrought on each of its two principal faces.

This top-stone has long ago disappeared, as well as the greater portion of the tenon which held it, and one adjacent corner of the shaft,—all broken off at the same time perhaps.

No record of any remembrance of the cross-head* has been traced during the last hundred years and more, but the stump of the tenon shews that such an upper-stone did exist.

The shaft now extends to a height of about 6 feet 9 inches above-ground. It is tapering and somewhat bulging in form. In section it is nearly square, measuring at the ground level as follows :—across North-West face, 1 foot 10 inches.

„ that opposite, 2 feet.

„ the side faces, 1 foot 8 inches, and 1 foot 9 inches, respectively.

The first mentioned, turned towards Gweek, is incised with words in two perpendicular lines, arranged to be read downward.

The other faces are plain.

*C. S. Gilbert, Vol. I, p. 187.

The Inscription,—like all the oldest yet deciphered in Cornwall,—is in Latin.*

Before entering upon a detailed account of the legend, we must note that some very fanciful and untenable statements have been made with regard to it. For instance, C. S. Gilbert observed, in his "Survey," (Vol. II, p. 781):—

"At Mawgan Cross is a very ancient stone with an inscription by no means intelligible. In a manuscript left by Mr. Peard, of Penryn, it is said to have been translated by Mr. Basset, formerly of Reskymer, who found it to be of the old Cornish language; in English thus:—'What lieth here is not the Soul!' consequently 'it must have been a funeral monument.'"

Pedler, also supposing it to be in the Cornish language, translated it quite differently, but no better.

I have elsewhere shewn the absurdity of imagining either that the sentence was written in Cornish, or that it could be translated in conformity with the suggestions which those writers so strangely advanced.†

*Besides *Latin* legends the following have been found, or vainly sought for, in Cornwall.

Cup-markings.—The late Rev. Dr. Wm. Borlase discovered what appeared to be such, on a stone near Camelford. It cannot now be identified, although a sketch of it is preserved in his M.S. collection (penes his descendant, Mr. W. Copeland Borlase, M.A., M.P., F.S.A., of Laregan).

Cromlech-groovings.—Mr. H. M. Whitley, F.G.S., has noticed marks on the stone at Caerwynneu, and suggests a more careful examination of them.

No *Oghams* have yet been recognized in Cornwall, although they are found in Devon. Professor Rhys detected notches on the edge of the Slaughter Bridge Stone, at Worthyvale. I found them to consist of five dots, just above the name Latin[us], much resembling the Ogham vowel i; but as no other marks appear in connection with them, an Ogham legend has not been established.

No *Cornish* (or *Celtic*) sentence has yet been found on any ancient stone,—notwithstanding the statement or conjectures of the late Mr. Pedler and others.

Anglo-Saxon words and distinctive runes occur on one stone in Cornwall, viz. : on the Sybstel found at Castle Goff. It is now at Lanteglos Rectory, by Camelford. (See Sir John Maclean's "Trigg Minor," Vol II, p. 281, with my illustration of it).

†The late Sir E. Smirke (an eminent authority) wrote with respect to the late Mr. Pedler's theory, "I am not prepared to adopt the ingenious author's views." R.I. of C. Report, 1862, part I, pp. 9, 16.

In the days when this stone was sculptured the people of our Western land, like those in other places, used for their monumental legends *the words and formulæ*, as well as the letters, which their religious teachers had acquired through the spread of Roman civilization.

But although in Cornwall no record in the Celtic dialect has been found on any stone, that tongue was doubtless spoken by the workmen who upreared the Latin-worded memorials, and it must have been uttered pretty freely as they proceeded with their work.

Going back to the erection of the Mawgan Stone we can almost fancy that we hear the foremost of the workmen calling upon his fellows to nerve themselves for a final effort as they struggle with the heavy mass. He may have shouted such words of encouragement as these :—

“How! Hale kettep onen!—gesouch hy yn mortar skuat* dhe godhe!”

“Ho! Haul everyone!—Into the socket, plump* let it fall.”

(This Cornish sentence occurs in an old Sacred Drama, “*Passio Christi*,” copied in the 15th century).

Whether the ponderous shaft of Mawgan Cross has been merely stuck in the earth, or whether it is fixed in rock or in a sunken stone base, does not appear.

Many authors besides C. S. Gilbert and Pedler have referred to this ancient memorial with more or less correctness, amongst others Thomas Martyn, Dr. Borlase, Moyle, Polwhele, Lysons, Hitchens, Gough (in his *Camden*), Polsue (in *Lake’s History*), Rhys, and Hübner.

In 1749, Martyn published his view of the stone as an illustration to his second-sized map, shewing with singular accuracy the letters as they still appear.

In 1754, Dr. Borlase issued his figure of it in his “*Antiquities of Cornwall*.” He omitted some of the marks, either from caution or because he failed to perceive them, and (in consequence of the nearness of the letters to each other) he mistook IV for N.

*It is not easy to find a suitable equivalent for the well-known Cornish word *scuat*, *skuat*, *squat*, (allied to *scat*), in this sentence. The expression is “Let it fall ‘squat’ into the mortise:” (crack, slap, thump, bang). See Williams’s *Cornu-Brit: Lexicon*, (articles *Malan* and *squat*).

In 1876, Professor Hübner of Berlin, not having seen Martyn's engraving, published a copy of Borlase's, somewhat amended in accordance with information received from Professor Rhys, of Oxford, who had inspected the stone.

The joint reading of these two last excellent authorities, given in "Inscriptiones Britanniae Christianae," is probably the true one, viz. :—

CNEGVMFILI
SENAIVS

Two of the letters, N and E, seem to be conjoined.

In translating this inscription a question arises as to which name should be read first.

Hübner has shewn that in some instances a name which may appear to be second is in reality first.

The words before us, have been held to signify [The Cross (or Monument)] "*of Cnegumus, son of Genaius.*"

If this reading be right, Genaius should be in the genitive case, but instead of this it looks as if it were in the nominative. If Genaius be nominative, the word Fili must be regarded as an abbreviation for Filius, and the whole sentence becomes transposed thus :—

"Genaius Cnegumi fili[us],"—"*Genaius, son of Cnegumus.*"

The inscription can only be read in one of the two ways just shewn.

With regard to the second rendering it may be objected that it is very unusual in a legend of this general form for a nominative to stand unaccompanied by the words "Hic jacet" or "Ic jacit." Most likely therefore Genaius was intended to be in the genitive notwithstanding its nominative resemblance.

Certain words of the third declension, with those of the fourth which spring from it by elision or contraction, made

the genitive (uis) end in us. Amongst them were names ending in o, taken from the Greek. As a rule these last were feminine, whereas the names on this stone should be masculine.

We therefore can hardly refer Genaius to Genaio, but it may be the genitive of Genaius.

Perhaps the name was regarded as indeclinable, and so was allowed to stand as a genitive without alteration of termination, but this is not probable.

The *most likely solution* of the difficulty is that *the scribe blundered* in the construction of his Latin sentence.

Hübner inclines to this last view, and quotes the legend before us as one of several faulty Latin inscriptions.

He shews* that (by a barbarism) names have been written in the nominative when they should have been in the genitive.

In Brecknockshire, Tegernacus occurs instead of Tegernaci; at Bowden in Devon, V[ett]aius is found instead of V[ett]aii; at Mawgan in Cornwall, Genaius seems to be put for Genaii.

This last is the very case we are considering.

He mentions also an inscription near Brecon in which fili is evidently an abbreviation.

Quoting a legend in Cardiganshire ("Corbalengi jact Ordous"), he discusses whether or not the last word should be regarded as "olim gentis nomen;" and this suggests that an enquiry might be made into the signification of Genaius; but having stated this, we have pursued the grammatical investigation far enough, and must proceed next to consider the style of the Mawgan characters.

The letters, as might be expected, agree with an age in which it is likely that a cross would have been erected. Instead

*Hübner writes to this effect:—Barbare vero interdum aut patris nomen pro genitivi nominativi formam habet. scilicet in his:—

"Catacus hic jact filius Tegernacus," (No. 35);

aut defuncti genitivo patris nominativo effertur, ut in:—

"Cnegumi fili Genaius," (No. 5);

et in:—

"Valci fili V[ett]aius," (No. 30);

aut denique ad nominativum defuncti "fili" genetivus additur, ut in mutilo hoc:—

"[.....] pugnaciio [fi]li Vendoni," (No. 49).

(Inscript. Brit: Christianæ, pp. XI, 2, &c).

of partaking of the old heathen and classical Roman style, the inscription exhibits indications of belonging to a subsequent era.

We will treat of the letters in the order of their occurrence:—

- C. The form (Ɱ) in which this initial has been cut upon the stone, is not of the most ancient type. It is angular, like three sides of the square. Such a letter was in use in the 6th and following centuries.
- N. Previous writers have indicated that this second letter is blended with the third; but the diagonal stroke downward which they have shewn, is very faint on the monument; a stronger one runs upward, from the lower part of the first upright to the top of the next which is the stem of the E, making the N appear backward (𐌺). This, hitherto, has not been noticed.
- E. The perpendicular portion of this letter, as already explained, is part of the preceding N.
- g. Instead of being like a Roman capital, this character is of later style, viz: minuscule with a flat head (Ꝛ).
- V. This is of ancient form.
- m. Square-headed minuscule.
- I.)
 F.) These lack boldness, and are not of uniform height.
 I.) They appear to be minuscule, although scarcely differing
 L.) from majuscule in form.
 I.)
- g. As before; minuscule, with T or Z-shaped head (ꝛ). The lower part of this character is indistinct. Dr. Borlase took no account of this as a letter, but he marked the horizontal stroke of its head.
- E. More rounded (Ʒ) than is consistent with great antiquity.
- N. Of ancient form.
- A. Later; having its middle-bar V-shaped like an indent, pile, or inverted chevron (A).
- I.) Of ancient form. They do not meet, but (being near to
 V.) each other) Dr. Borlase mistook them for N.
- S. This concluding letter is so much curled as nearly to resemble the figure 8.

EVESVIMI FILI
SENAIVS }
Greguni filii Genaius.

EVESVIMI
SENAIVS

2 FEET
1
9
6
3
0
INCHES

W. IAGO. B. A.

Mawgan Cross, near Helston.

The two words "Cnegumi fli" are written on the stone continuously, i.e., without any space between them.

"Genaius" in the next line is well and evenly cut. (As accounted for above, Dr. Borlase incorrectly read it "Enans.")

Of all the letters, the least distinct are those commencing each line; viz: the C and the G.

The inscription measures 3 feet 1 inch in length by 1 foot 2 inches in breadth, the tallest of the letters being $7\frac{1}{2}$ inches high. The characters are like others which we meet with on old memorials of this class. They bear a great resemblance to those on the stone* already mentioned (as containing a similar grammatical difficulty), at St. Michael's, Cwmdù, Brecknockshire.

As displayed on these lithic relics, the peculiar forms of g and m were well-known for many centuries in Latin, Erse and Anglo-Saxon records.

The style of the writing on Mawgan Cross agrees with that of the 6th century manuscripts.

The letters are the same as were in use in St. Augustine's time. With slight variations they prevailed also during the two succeeding centuries.

Allowing for the "literæ ligatæ," this inscribed cross at Mawgan may be regarded as dating† from the 6th or 7th century. It is therefore about *twelve or thirteen hundred years old*.

The illustration which accompanies this account I have drawn from sketches and rubbings which I made on the spot in the beginning of the present year, for, having been unable to visit Mawgan with the Members of the Royal Institution last Autumn, I inspected the stone subsequently, viz: on January 30th, and February 19th, 1885.—(See Plate*.*)

I found the grey granite weatherworn and somewhat disintegrated on the surface, especially towards the upper part of the shaft. The letters are dim, but can be seen when the light is favorable. They can be felt, and in the rubbings

*Hubner, No. 35, p. 15.

†See Astle, on "The history and progress of writing," Tables 8, 14, 15, 18 see also Borlase's "Antiquities of Cornwall," page 359, and Plate 30, fig. 5.

which I took, their forms are clearly traceable. The least distinct of them being (as already stated) the first letter of each line.

According to C. S. Gilbert,* Llwyd, in 1715, conjectured that Cnegumus might have been a person of such local importance that the whole South-Western area of a dozen contiguous parishes received the name of "Meneage" from this monument:—"Mên-Cneg," the stone of Cnegum. Such a supposition, although ingenious, needs no discussion. The name of the region has been otherwise derived. It can scarcely have been called after Maneg, Cornu-Celtic for a glove, (Latin, manica), its outline so very slightly resembling such a form. It is thought that the title is taken from Maen-ek, Mên-ic, or Menig, stony:—a name not unsuitable for that peninsula which, jutting boldly seaward, includes within it, besides other rocks, those of the important Serpentine district of the Lizard.

*Vol. I, p. 187, of his Historical Survey.

INSCRIBED STONES FOUND AT STAIRFOOT, IN ST. ERME, AND
ON HENSBARROW HILL, ST. AUSTELL.

Investigations as to whether their legends are ancient or modern.

BY THE REV. W. IAGO, B.A., WESTHEATH, BODMIN; *Hon. Local Sec. for Cornwall, of the Society of Antiquaries, London; and one of the Council of the Royal Institution of Cornwall.*

THE STAIRFOOT INSCRIBED STONE.

Whenever an inscribed stone (large or small, of interesting or of doubtful character) is brought to light in Cornwall, it is desirable that information should be given to the Royal Institution of the county, so that its true archæological value may be ascertained and recorded.

A water-worn granite pebble, with some marks cut upon it, was discovered in the stream, at Stairfoot, in the parish of St. Erme, and was forwarded by the Rector, the Rev. T. S. Stephens, to the Institution, in May 1882, together with a memorandum stating where it was found. Mr. Stephens has therefore deserved the thanks of our Society.

Originally the stone was wedge-shaped, triangular in section, but by the rounding off of all its angles it has become nearly spherical.—(See Plate **)

When placed to stand with (what was once) its edge upward, it measures as follows:—height 6 inches, width $6\frac{1}{2}$ inches, thickness at base 5 inches. In this position the inscription appears on its front face.

It is evident that the letters were not cut upon the stone until after its attrition had been effected, by much friction on some sea beach, or by a long period of rolling in the bed of a stream.

Having been accepted for the Museum, the stone was exhibited at the Spring Meeting of the Institution in the year above-mentioned, but no definite conclusion was then arrived at, with regard to the age of the legend, and no account of it has hitherto appeared in the Journal. I therefore offer the following notes to assist in solving any uncertainty that may surround it.

At the Meeting referred to, when the stone was first shewn, I was asked to express an opinion on its probable use and on the meaning of its characters.

I remarked that most likely it had served as a rude weight, and its letters $VIIII$ —represented the numeral 9. Other scratches appeared, but I then had no opportunity of examining them minutely. I have deciphered them since.

Mr. Hamilton James supported my general surmise by stating that he had ascertained the weight of the stone to be about 9 lbs.

It was pointed out that, for 9, the more usual sign would have been IX ; but it was thought that in this case there might have been a particular reason for its non-adoption. The shape of the stone afforded no clue to the top or bottom of the inscription, and therefore the letters were continually liable to inversion. If inverted, IX (nine) would have appeared as XI (eleven), but $VIIII$ would be unmistakable in any position; on that account, perhaps, $VIIII$ had been preferred to IX .

Many instances, however, are known in which the number was written as it appears on this stone, even when there was no risk of inversion.

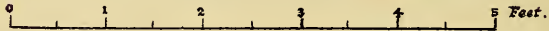
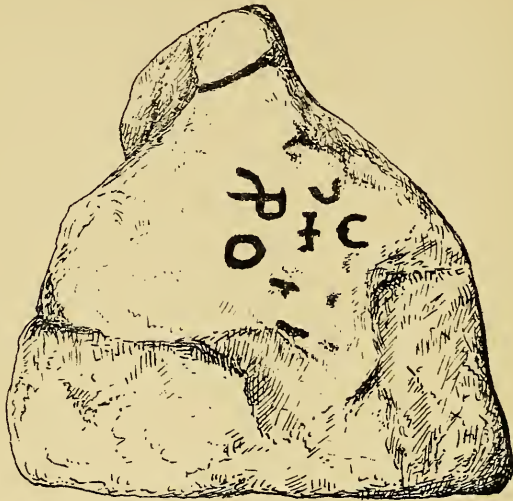
Our learned Primate, Dr. Benson, then Bishop of Truro, was present at the Meeting, and subsequently forwarded to me from London, references to numerous ancient and some modern examples, which he had most kindly collected for me, in which the letters $VIIII$ appear instead of IX . He wrote to me, "your conjecture is quite certain. . . . your conclusion is quite safe."

After that, it only remained for the age of the inscription to be determined.

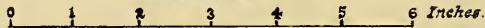
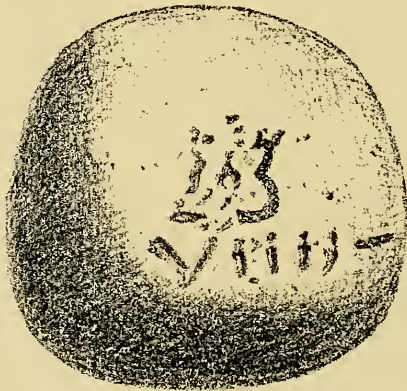
To decide this, it became necessary to consider very carefully all the marks upon the stone, and to compare them with its exact weight according to ancient and modern standards (these last of course differing from each other).

The Roman pound and foot were less than ours are. The *As*, *Libra*, or pound of the Romans, was not so heavy as $\frac{3}{4}$ of our pound avoirdupois. If, then, this stone—marked with a Roman $VIIII$ —weighed just that number of Roman pounds, it would be lighter than the same number of pounds avoirdupois.

9 lbs. Roman, are equal to about 5 lbs. 9 ounces, English.



Near North Bunney Mine, on Hensbarrow Hill, St Austell.



Found in the Stream at Stairfoot, St Erme. Weight, 9 pounds 13 ounces.

On very careful examination, the inscription became clearer, I found the V|||| to have been originally cut thus viiiij, and the scratches or faint characters above resemble L B; but on a closer scrutiny resolved themselves into the Arabic numerals 13.

The weight of the stone, instead of being 9 Roman pounds, proved to be 9 lbs. 13 oz. avoirdupois.

It will be seen that this agrees accurately with the characters ¹³ viiiij which I had succeeded in deciphering on the stone.

Judged by their style, these figures and letters may belong to the 16th or 17th century. They may be about two or three hundred years old. Taken in connection with each other they cannot be more ancient.

The Stairfoot inscription, then, whatever may be its exact age, is of Tudor or later date, notwithstanding the venerable appearance of the marks cut upon it.

THE HENSBARROW INSCRIBED STONE.

In or about April, 1883, a stone incised with letters was found within the boundary of St. Austell parish, on Hensbarrow range, by Mr. John Payne of Roche village.

On the 24th of March, 1884, Major Parkyn informed me that he had heard from Mr. Arthur Willyams of its discovery. A sketch of the incisions was enclosed with his communication.

In December following, Mr. Goodfellow of Roche, surgeon, wrote to me concerning it, expressing a doubt as to the antiquity of the letters.

On the 24th of January, 1885, I went with the last named gentleman to inspect the inscription, being accompanied to the spot by Mr. Payne, its discoverer. I then took a sketch and rubbings of it.—(See Plate ***)

The stone lies near North Bunny Mine, and is about half a mile south-east of the lofty barrow on the great hill which Carew (born in 1555) well described as “the Arch-beacon of Cornwall.” Writing of this place, his quaint words are—“If “the weather’s darkness bound not your eyesight, within his “ordinary extent you shall thence plainly discern, to the “eastward, a great part of Devon; to the west, very near the

“Land’s End; to the north and south, the ocean and sundry
 “islands scattered therein; wherethrough it passeth also for a
 “wonder,

“Hainsborough’s wide prospect, at once,
 “Both feeds and gluts your eye,
 “With Cornwall’s whole extent, as it
 “In length and breadth doth lie.”

When first found (during a search for stones) the inscribed rock on Hensbarrow was a foot or two beneath the surface, and all but one corner of it was covered. Adjacent to it is a small exploring pit dug by the old tanners.

Tin pits, large and small, and various other remains of workings abound on every side. The district is also extensively excavated for china clay. So rugged and wild is the tract of country that this lettered stone is not easily found, although it is not far from a track-way which crosses the furzy down.

The stone measures 5 feet 6 inches, by 5 feet, across; it is not of great thickness, but must be of considerable weight. It is a mass of granite, irregular in form, and seems never to have been disturbed from its natural position, resting as it does on the clay which underlies the soil of the locality. In outline it somewhat resembles a shoulder of mutton.

The letters are cut upon its upper surface and extend in different directions. With praiseworthy care, Mr. Payne had kept the characters covered with earth to protect them. After being cleared, some of the incisions were seen to be very distinct, others rather faint.

At first sight the inscription appeared to be $\left\{ \begin{array}{c} \text{U} \\ \text{✕} \\ \text{RO} \end{array} \right\}$
 surrounded by a few dim marks or cuts.

Imagination immediately supplied a variety of readings. Such a group of letters being suggestive of the following enquiries:—

Can the central symbol be a cross?

Is the semicircle U, or is it C?

If the latter, are we to read ROC around the cross?

If so, is this rock a rugged altar, or a tombstone, commemorating some mediæval christian named after St. Roche? (Roche Rock, Hermitage, Church, and Well are not far off).

On further examination it becomes clear that the central character is not a cross, but the letter **I** with a transverse stroke through it.

In connection with this, fresh ideas arise, and we are led to ask—may not **I** followed by **C** stand for “**IC (HIC) jacet**,” “Here lies,” or be a short form of **IHC**, the well-known abbreviation of a sacred name. A likeness also to the title “Christos,” being perhaps seen in the other characters, in the formation of one of which the Greek letters **X (ch)** and **P (r)** might appear to be combined?

But these appearances prove to be delusive.

A very different reading, far less mysterious and much more common-place, occurs to me as probably the true one.

Rejecting all the foregoing surmises, we may regard the matter thus:—

The ancient inscribed stones, met with in various parts of Cornwall, have been more or less reduced to regularity of outline, whereas this stone has not been so treated. It is as rough as ever it was, and has not been tooled into any sort of shape.

The ancient memorials are either wrought slabs, erect shafts or pillars. This stone seems to be a mere boulder lying on its natural bed.

In ancient inscriptions some care was taken to keep the characters in line or in a traceable order, and some formula or other was adopted. The Hensbarrow letters seem to be placed “any” way, and they are destitute of any form of expression.

No really ancient inscription has the letter **I** formed with a stroke across the middle, although such marks were sometimes cut across the ends. The **I** with central stroke was in use in the 16th and 17th centuries, and later.

I therefore think that the Hensbarrow stone was not inscribed in early times.

Possibly its lettering may be accounted for in some such way as the following:—A couple of tinnors, (perhaps at the time of their mid-day meal,) found a convenient resting place on or beside this flat rock; a pick or other iron implement being at hand, one of the men cut his initials upon the granite, and afterwards the other cut his; or both may have inscribed the

stone at the same time, one facing in one direction, the other in another.

Their names may have been, for instance, Philip or Richard Olver and John Cock, or some other such names with the same initials, (the first letter being either P or R).

Thus we behold the combination*— $\overline{R}IC$ —cut by them, each working from his own stand-point, or from where he was reclining.

The surrounding marks are more like experimental cuts than letters, and may therefore have been done carelessly while the picks happened to be in the men's hands. If one person cut the four initials, they may have been those of himself and of his sweetheart.

In digging for tin afterwards, earth was thrown back, burying the stone.

Although, from the time-worn appearance of the rock and its legend, I hoped to have been able to come to a different conclusion, I must repeat that in my opinion the inscription is not ancient.

But whilst it would seem that the marks cannot claim antiquity, they are evidently not recent. Our thanks are therefore due to Mr. Payne and others for calling our attention to them.

On my enquiring of Mr. Payne whether he considered that the letters were tinnern's boundary marks, he replied that he decidedly thought not. He pointed out small piles or pyramids of stones which served to distinguish the different portions of ground, and he expressed his belief that tinnerns never cut letters for such a purpose.

After full consideration, it appears that this inscription must be relegated to the class typified by "Bill Stumps, +, his mark," in the familiar page of Dickens.

Of course my theory on this point may be wrong, and if, after all, " $\overline{R}IC$ " does mean "Hic [jacet]," some discovery may yet be made, by raising the stone and digging under it; but the position of the rock and the general style of its characters,

*Or $\overline{R}JC$

(notwithstanding that some of them have an archaic appearance), tend very little to encourage such an expectation.

Inscribed stones, of undoubted antiquity, discovered in the parishes of CAMBORNE, CARDINHAM, ST. HILARY, MABE, TINTAGEL &c., hitherto undeciphered and consequently never yet figured, have been engaging my attention for some time past. I hope, ere long, from the rubbings and sketches which I have taken, to be able to supply illustrated accounts of them.

Messrs. Borlase, M.P., H. M. Whitley, and Capt. Gosset, have also kindly informed me of some which have come under their notice. These also claim examination, and it is to be hoped that if any others are found we may receive speedy intimation.

THE FIRING OF ARWENACK BY THE SPANIARDS.

By H. MICHELL WHITLEY, F.G.S., Hon. Sec.

The burning of Mousehole by the Spaniards in 1595 is an event well known, and noticed in every History of Cornwall, and although the similar attempt on Marazion by the French in the time of Henry 8th has not attracted so much attention, still mention of it has been made, but no notice seems ever to have been taken of the attempted firing of Arwenack by the Spaniards in the same year as the burning of Mousehole.

The times of Henry 8th and Elizabeth were times of special insecurity for dwellers in the seaside towns, along the southern coast of England, and many are the traces that remain of piratical descents of the French and Spaniards. In an old churchwarden's account book of the parish of Eastbourne, Sussex, is the suggestive entry :—

"I gave to the women that had their houses burned, and their husbands slain, and their goods taken away, 2s. 6d.

And if French Pirates swarmed along the English coast, our "Gallants of Foy" and the "Sea Dogs of Devon" were ready enough in reprisals; and the sight of English sails hovering off the sunny coasts of Normandy, carried terror into the hearts of the peasantry.

"Good folk of village, town and hall
Who love our French King well,
Take heart of courage each and all
To fight the English fell."

"Nor pig nor goose in all the land
Have they left far or wide,
Nor fowl nor fowl-house by the strand;
God send them eviltide."

News of an invader or of a piratical descent, was communicated by the firing of the beacons, of which so many hills so named exist; and also by the ringing of the "larum" from the church bells; and to the end that no confusion should exist in their sound, it was ordered that one bell only should be tolled to call the parishioners to church, whilst the alarm was given by

the whole peal being violently rung ; and this order was strictly observed on the coast of Cornwall, and mention of it is made in the following account.

The story is told in an examination of a fisherman called Richard Perne, taken at Penryn, on February 6th, 1596, before John Killegrew and Hanabal Vyvyan, the governors respectively of Pendennis and St. Mawes Castles ; and the original document, telling the story in quaint and graphic language, is here printed in its entirety.

The letter from John Killegrew enclosing it, clearly shows the unprotected state of the harbour, and the anxiety that was felt for its better defence.

In this behalf John Killegrew seems to have exerted himself for several years. In 1591* he petitions for an advance of money to fortify the castle, stating that he is no soldier, but a true subject ; and will defend the place with his life, and although the loss of life would be little, he would lose with it a home not far from the castle, which although it was of little value, was his whole commonwealth, and would be the overthrow of his posterity that depend on it.

The garrison of the castle at that time consisted of the captain, John Killegrew, Esq.,† who had 12d. a day (the same sum that the Master Mason at Boscastle pier had, but with meat and drink in addition), a deputy Captain, a Porter, a Master Gunner and two other Gunners, with the train bands of Budoek and the adjoining parishes.

* State Papers Domestic, Elizabeth, Vol. 240, Public Record Office.

† There appears to be some confusion as to the actual Killegrew who was Captain of Pendennis about this time. On the brass of John Killegrew in Budoek Church it is stated that he was made the first captain of Pendennis Castle by Henry VIII, and so continued until the ninth of Queen Elizabeth (1567), when he was succeeded by his son Sir John Killegrew, who is expressly named on his monument in the same church to have been the second captain that commanded Pendennis Fort, and to have died in the 26th Elizabeth (1583) ; these statements appear perfectly trustworthy ; and yet in the roll of fees paid to the captains, etc., of castles in the west parts (1595) it is stated that John Killegrew, then the captain, was appointed by Her Majesty's Letters Patent, dated 26th January, 1560-1, for the term of his life, behaving himself well.

These levies do not appear to have been very efficient, for when they were inspected on January 15th, 1596, although they numbered 270, most of them were unarmed, and Hanabal Vyvyan goes on to report* "Mr. Killegrew rebuked them sharply, and challenged them to say if he had wronged any of them, or if any of them did think he had not used her majesties money (yea rather more) for mounting of his great ordnance, repaying of his plotte, and other the defects the said House † wanted, he wished them there to charge him with the same, but their answer was silence, save that one of them affirmed, that the house was now far otherwise provided than it was at the Spaniards being here."

It is now time to turn to the documents referred to, which run as follows.

FROM JOHN KILLEGREW TO THE COUNCIL.

Most honourable the fourth of this monthe, this examination herein enclosed was manifested before me and Mr. Vyvyan, therefore thinking it my dewty to certefie your honours hereof I have sent this bearer. And do hereby most humbly desire your honors in this dangerous tyme to have consideration for the forfeiting of Pendenis Castell, and for the furnishing of it with arms and victualles necessary for the defending of it, if any invasione shoulde happen.

So most honorable as the place is of that regard, that it were better 1000 as good as myselfe should loose their lives, rather then the enemye should possese the place which if they should, the recovering of it would cost too many mens lyves, with so great a charge to her Majestie, and too great a mischeefe to the commonwealth.

Sir Henry Palmer at his last being in Faulmouth viewed the place and knows the defectes, unto which report I refer this cause havinge donne my dewty to put your honours in mynde hereof, praying also what so ever happen hereafter that it may be remembered that this xij monthes as appeeres by my

* State Papers Domestic, Elizabeth, Vol. 256.

† Pendennis Castle.

petitiones I have ben a suitor to your honors for this cause : and do now likewise in all humble and doughtful sorte accordinge to my allegiance herein appertayning continue my petitions for the same.

In my petition most honourable I do humbly crave your opinions may be heald of me as my desartes shall deserve, and that my over liberall offere considering my beggerly estate for the fortifying of the Castell, and furnishing of it with all necessaries, may be understood as my poore true single meaning is.

And so in all humble and dewtyfull sort I end, desiring God to send your honors long life with health.

Pendennis Castell the vjth of February 1596.

THE ENCLOSURE.

*The examination of Rich^d. Perne taken by John Killegrewe and Hanibal Vivian Esquires the 4th daye of February which examinant was delivered from a towne in Spain called S. Anderas to come for England on Christmas daye last and came to Penryn in Cornwall, the third daye of february where they took this examination as followeth :—

Imprimis Richard Peren of Penryn fisherman by a Spanish Shallope beinge taken the ———day of August last past as he was a fishinge in the night confesseth that a Portingale captaine who once was pilot with one captaine Roche & had byn often times in Mr. Killegrewes house, boasted muche of the knowledge of that place & therefore had credit from the Kinge to employ some action uppon it, because he was the leader of suche companies who came to fire the same.

This examinant being taken a Leage of the harbrough by the sayde captaine & his companies who then had put themselves in to a schallope to do theire exploit beinge stronger guarded by a man of war, which they left at sea of & on a bout the Lizarde pointe, entered the sayde harborough some fower houres before daye & landed under Mr. Kylygrewes house, kepeing the sayd examinant aborde their shallope till they returned from the house makinge no longer staye than a quarter of an houre & at their cominge backe againe vaunted,

* State Papers Domestic, Elizabeth, Vol. 256.

that the house & all in it shoulde not stande longe unfired & so staid a while till their fier worke had gotten strengthe & heringe a grett clappe from the house were very joyfull, but when they harde the larum of a bell ringinge oute they plied their owares & gott to sea aborde their shippe, only with this examinant & a littell boye a taylers sonne of Penryn.

The sayde examinant sayethe y^t he sawe xij barrells of the like fire workes, which he saythe they ment to hange aboard shippes ridinge in the harborough as also to have fired one other poore house their adjoininge & so to have carried the man & woman of the same house a waye with them, when the saide captaine reported that he knewe well & with all he ment to carrie with him Mr. Kylygrewes wife & children the chief cause of his cominge if time had suffered them & the daye not so sodainly coming on. At our arrival at St. Anderas he willed me to saye y^t the Taylers boye was a base sonne of Mr. Kylygrewe & therefore he put him into good apparell & carried him to the courte as a prooffe of his service, where he was placed a page to the kynges base sonne & much made of & affirmed to y^e Kynge that he had burnt Mr. Kylygrewes house to the grounde beinge the finest house of one of the greatest caviliers in all the weste partes for the which the Kynge gave him in rewarde a chaine of goolde 200 Ducatts and xv^{li} yerely pension during his life, this he reported to the sayde examinant at his cominge backe from courte.

Nowe this examinant affirmethe that the sayde portyngal captaine hathe at St. Andreas 500 men in paie with foure or five shippes in redines to come for the baye of falmouth which they make a counte to sacke & borne Penryn with other places they were comynge at Christmas-tyde laste and stayed only for their paie.

Further this examinant sayeth that one captaine Burleye an Inglyshman a guide & captaine to the Spaniarde at the burninge of Penzanse, came to the sayde towne of St. Anderas where this examinant was & sent for hym where the sayed Burleye tolde hym that he would have this next sommer St. Mawes Castell at his commandment & would lande at Markiewe with a greater force then fower gallies & from thence will commande as far as foye ether by sea or lande.

And so this examinant beinge sodainly discharged over nyght & sent awaye the next daye beinge our Christe day left all these forces in suche redines as before for service & was further tolde by this portingale captaine (who was sent for to the Kinge so he sayed) that their Inglysh voyage was given over and that they shoulde rather goe for the Indies then any other countrye which he holdethe verie doutefull because they are busie in prepairinge so manye barrells of fier workes which the sayed examinant reporteth he sawe.

Signed  RICHARD PERNE'S MARKE.

JOHN KYLLYGREWE,

HAN. VYVYAN.

Feb. 6th, 1596.

The Annual Excursion, 1884.

—:o:—

The Annual Excursion of the Members took place on September 5th, when the Lizard district was visited.

The route chosen was a very long one, and lay through some of the finest scenery of West Cornwall. The weather was propitious throughout (with the exception of half-an-hour's shower in the evening). The start was made from Boscawen street, Truro, at about nine o'clock on Friday morning. The party consisted of the following:—Dr. Jago, F.R.S., Mrs. Jago, Miss M. Jago, Miss J. Jago, and Miss Leverton; Dr. Barham and Miss Barham, Mr Hamilton James, Mr. Silvanus James, Miss James, and Miss F. James; Mr. R. H. Williams, and Miss Williams; Mr. G. Carpenter, Mrs. Carpenter, and Mr. G. H. Carpenter; the Rev. A. R. Tomlinson, the Rev. A. H. Malan, Major Parkyn (Hon. Sec.), and Messrs. H. M. Jeffery, F.R.S., J. Bryant, J. Barrett, J. W. Towan, C. Barrett, W. J. Criddle, A. Laverton, C. Kent, and T. Clark. Although at first threatening, the morning became a bright and sunny one, and the splendid scenery which everywhere surrounds the traveller from Truro to Gweek was seen to the best advantage. The finest piece of scenery on the route was the magnificent panorama of Falmouth Harbour, which lay beneath the excursionists while they were passing over the elevation where the Truro and Helston roads join. A halt of a few minutes having been made at Gweek, the long and picturesque drive to Trelowarren was entered. After this most pleasant part of the journey was accomplished, the party arrived at the first of the objects they had decided to visit and inspect. This was Mawgan Cross.* Mawgan Church, where the rector, the Rev. W. H. Bloxsome, acted as cicerone, was next visited.

The Church consists of Chancel, Nave, North Aisle, North and South Transepts, and Vestry; the Chancel window bears the arms of Trevelyan, Reskymmer, and others. The Arcade consists of seven arches, with the usual Cornish monolith pillars; the woodwork of the north aisle roof is well and richly carved.

* See page 280.

In a recess under the window of the South or Carminowe Aisle, are the effigies of Sir Roger Carminowe and his lady. In 1865, during some repairs to the church, a carefully-built grave was found in the south wall of this aisle, which contained a perfect skeleton laid out as if in burial. The grave was covered by a stone coffin. Outwardly there was no evidence of the existence of either grave or coffin, until the wall was moved.* The family of Carminow is one of the most ancient in Cornwall. The first rector of Mawgan of whom there is any information is Thomas de Carminow. Sir Roger Carminow in 1270 accompanied Edward in the last crusade. The effigies were taken to Mawgan Church from the domestic chapel of Carminow in the beginning of the reign of James I.

In the same aisle, close to the pulpit, is a very curious little brass,† only a few inches in length and breadth, which bears the following inscription:—

[*Monogram.*]

Haniball Basset here interd doth lye,
Who dying lives to all Eternity.

hee departed this life the 17th of Ian., 170^o, in the 22th year of his age.

A Lover of learning.

[*Skull and cross-bones.*]

Shall wee all dye
wee Shall dye all
all dye Shall wee
dye all wee Shall.

(These lines may be read horizontally or vertically).

At the angle of the south transept and chancel is a hagnioscopic arrangement, the projecting upper angle of which is supported by a slender octagonal shaft, with one of still less dimensions towards the east. The low side window in the angle is blocked by the vestry. The north transeptal recess contains the Trelowarren family pew, and the Vyvyan monuments. The font is octagonal, and is supported by a shaft curved inwardly, and four small pillars; the material is an elvan. The tower arch is well proportioned, and springs from sculptured corbels; the key stone terminates in a flat disc, on which is carved a latin cross, a figure resembling the spear and sponge, a pair of

* Royal Institution of Cornwall Journal, vol. 2, p. 143; Vol. 5, p. 220.

† Dunkin, pl: LXI., p. 91.

pincers, and a plain disc. The west window is filled with richly ornamented glass; on the keystone of the arch is the resemblance of a bishop with his staff; on the springing stones of the doorway arch are shields bearing arms, on one those of Reskymer, on another Vyvyan impaling Ferrars. The jambs are enriched with running foliage springing from crowned heads. The entrances are—a south porch, a priest's door, a vestry door, and the Trelowarren pew door. The tower, one of the finest in this part of the county, is of three stages, and is finished with battlements and pinnacles; the pinnacles are formed of clustered fluted shafts, are crocketed and finialed, and rest on grotesque corbel heads. The belfry contains three bells.

From Mawgan Church the party proceeded to Trelowarren House, where they were received with the utmost courtesy by Sir Vyell and Lady Vyvyan, whose liberal hospitality they afterwards shared. The grand old house, standing amidst its gardens and long stretching lawns and avenues, evoked great admiration. Inside there were many objects of great interest. Conspicuous amongst these were the famous pictures which hang on the walls of the mansion. In the dining-room, where luncheon awaited the visitors, are a number of family portraits by Jansen, Vandyck, Sir Joshua Reynolds, and Partridge. One of them is that of the first Lady Vyvyan, by Vandyck. Around her neck is a pearl necklace which was presented to her by Queen Henrietta, on whom she was a lady in waiting. This identical ornament was worn by the present Lady Vyvyan at a recent drawing-room. In the entrance hall is a fine portrait of Charles I. by Vandyck, given by that monarch's son to the Vyvyan family for their loyalty. In the chapel is a striking picture. It is a copy by Signora Gargalli of Vandyck's Saint Cecilia. Among the other paintings of note in the house are a view of Venice by Canaletti, and a portrait of Napoleon I., which was fetched from St. Helena. A painting which drew universal attention was that of the Roman soldiers casting lots for Christ's garment (seamless coat). In the library were a great number of specialties, including an elaborately worked quilt in pink and gold, said to be the work of Lady Vyvyan while imprisoned in the Tower. The handsome chapel, the gardens, some enormous silver firs, over twelve feet in circumference, and the walks about the house were also visited. Before leaving the house the president (Mr. A.

Pendarves Vivian, M.P.), returned thanks to Lady and Sir Vyell Vyvyan, for their great kindness, and expressed the hope that Sir Vyell would contribute to the *Journal* of the Institution an account of Trelowarren House and the pictures and other objects of interest it contains. Sir Vyell, in acknowledging the compliment, expressed his great pleasure at seeing the members, and promised to contribute the article asked for by the president.

The party next paid a visit to a subterranean cave called "The Fogou." Although difficult of entrance most of the company (including some of the ladies) scrambled into it, and made an inspection of it. It was described by Dr. Barham, who said there were several other such places in the county—one at Pendean, another in St Buryan, and a third at Tregony, discovered by himself.*

Cadgwith was then proceeded to, where an excellent dinner was laid at Williams's Hotel.

After the dinner one or two complimentary toasts were honoured, and after a delightful stroll among the rocky scenery of Cadgwith, the carriages were again resorted to and the drive home commenced. While crossing the dreary Goonhilly Downs rain fell freely, but after Helston was passed the weather cleared, and the remainder of the journey was accomplished in brilliant moonlight. Upon Major Parkyn, the Hon. Sec., fell all the responsibility of superintending the excursion; but notwithstanding the multiplicity of his duties, he executed them with much tact, consideration, and ability, and to the satisfaction of all.

* See account of this at page 243, with list of others at p. 252.

Proposed Extension of Buildings

IN CONNECTION WITH THE

MUSEUM OF THE ROYAL INSTITUTION OF CORNWALL.

The following is a copy of an appeal mentioned in the Report of the Council, with a list of the sums that have been promised in response. It has thus far been circulated, almost exclusively, among the Members of the Institution; but is now printed in the Journal to call a more general attention to the scheme, with the hope that the result already attained may lead to such an accession of funds as to encourage the Council to aim at its maturity.

At the Annual Meeting, in November last, the members unanimously supported the recommendation of the Council, that an effort should be at once made to obtain funds for the purchase of the freehold between the Museum and Pydar Street, and for providing on that site the accommodation required by the Department of Science and Art for such Classes as it may be thought advisable to establish.

It has been felt of late years by the Council—and their judgment was strongly confirmed at the Annual Meeting of the Members in 1882—that although the premises and buildings now belonging to the Institution have served tolerably well hitherto, they cannot possibly be adapted for those courses of instruction in Science and Art which it is clearly the purpose of Statesmen to establish as an essential part of our national education, with a view to the general elevation of the knowledge and taste of the community, as well as to the maintenance of the highest skill among our artizans.

It may be regarded as certain that such a School will, ere long, be established in Truro, and it ought to be a matter of course that it should be placed in close contiguity with the extensive buildings and collections already in our possession. Fortunately, the freehold site referred to as open to purchase is exactly what is wanted, affording, as it does, sufficient space immediately adjoining the Museum, with ample room for substituting, instead of its present almost concealed position, a handsome elevation in Pydar Street, in close connection with some of the new principal public edifices.

This newly-purchased freehold, and the rooms erected on it, although so close to the present Museum, will constitute an entirely distinct property, secured for educational purposes under the Trusts required by the Department of Science and Art, from which substantial aid may be expected towards the purchase of the site and the cost of building in the first place, and subsequently to the maintenance of the Classes and their Teachers by the grants on the results of instruction.

To conduct the study of *Natural Philosophy* and *Natural History* by direct and practical teaching, in accordance with the system adopted from time to time by the Department, would be the main purpose for which a Lecturer would be appointed; and it would be his business also to render the Museum as perfect as possible for the illustration of his subjects.

The cultivation of *Archæology*, the third great aim of the founders of the Institution, may be entrusted, as it has hitherto been, to voluntary efforts, the maintenance of a Library as serviceable as possible for all the objects of study being regarded as of primary importance.

Among the more active promoters of the Scientific Societies in Cornwall, a wish has often been expressed that the number of these bodies might be lessened, or that some mode of combined action among them might be introduced. It may perhaps be hoped that these ends may be in great part attained by such an interchange of Teachers as may furnish at all the centres a fairly complete course of education, without interfering with that independence and autonomy which is the mainspring of local zeal and liberality.

The distinct purposes of these Societies are sufficiently defined, and do not need mention here; but attention may properly be called to the claims of Truro as a centre for purposes of such combined concern, on account of convenience of access from all quarters, of its character as our only city, and of the extent and universal interest of the Museum.

For this reason, and because almost every part of the county is represented on the list of its Members, and has been visited in turn through the Annual Excursions, it may be hoped that the projected extension may be regarded with cordial acceptance from the Land's End to the Tamar, and that the necessary funds will be readily contributed. The amount cannot yet be stated with any approach to accuracy; it will depend in great measure on the requirements and grants of the Department of Science and Art. Meantime, while it is hoped that the utmost liberality will meet this appeal, the payment of donations may be deferred till it is ascertained that the whole amount will be obtained. On this principle two of our Members will contribute £50 each when the rest is secured.

A. PENDARVES VIVIAN, *Chairman.*

H. MICHELL WHITLEY,
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Truro, March 3rd, 1884.

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Archer, A. E., <i>Penair</i>	1	1	0	Glencross, Rev. J., M.A., (Oxon) <i>Luxtowe</i>	1	1	0
Barrett, John, 30, <i>Lemon St.</i>	1	1	0	Greenaway, J.	1	1	0
Basset, G. L., <i>Tehidy</i>	1	1	0	Grylls, W. M., <i>Falmouth</i> ...	1	1	0
Bawden, J. H.	1	1	0	Hawken, Theodore	1	1	0
Beauchamp, E. B., <i>Trevince</i>	1	1	0	Harvey, Rev. Canon, M.A., (Oxon)	1	1	0
*Boase, G. C., <i>London</i> ...	1	1	0	Harvey, Robert, C.E., <i>Chili</i> ...	1	1	0
Borlase, William Copeland, M.A. (Oxon), F.S.A., M.P., <i>Laregan</i>	1	1	0	Heard, E. G.	1	1	0
Borlase, Rev. W., M.A., (Cantab) <i>Zennor</i>	1	1	0	Hodgkin, Thos., <i>Banvell Dene</i>	1	1	0
Brown, Rev. J., M.A.	1	1	0	Hogg, Sir J. McGarel, Brt., M.P.	1	1	0
Brune, C. G. Pridaux, <i>Pri-</i> <i>deaux Place, Padstow.</i> ...	1	1	0	Hopkins, Rev. G. Hanslip, M.A., (Cantab), <i>Week, St.</i> <i>Mary, Stratton</i>	1	1	0
Bryant, James... ..	1	1	0	Iago, Rev. W., B.A., (Cantab) <i>Westheath, Bodmin</i> ...	1	1	0
Bullen, William	1	1	0	Jago, James, M.D., (Oxon) A.B. (Cantab), F.R.S. ...	1	1	0
Carew, W. H. P., <i>Antony</i> ...	1	1	0	James, Hamilton	1	1	0
Carlyon, Edmund, <i>St. Austell</i>	1	1	0	Jeffery, H. Martyr, M.A., (Cantab) F.R.S., <i>Falmouth</i>	1	1	0
Carne, Miss, <i>Penzance</i>	1	1	0	Julian, J. N.	1	1	0
Carter, R. H., <i>Falmouth</i> ...	1	1	0	Key, Miss	1	1	0
Carus-Wilson, E. S., <i>Penmount</i>	1	1	0	King, F., M.R.C.S.	1	1	0
Church, Rev. G. L., B.A., (Cantab), <i>Chacewater</i> ...	1	1	0	King, T., M.A., (Cantab), <i>Penzance</i>	1	1	0
*Clyma, W. J.	1	1	0	Lach-Szyrma, Rev. W. S., M.A., (Oxon), <i>Newlyn.</i> <i>Penzance</i>	1	1	0
Collins, Digby, <i>Truthan</i> ...	1	1	0	Lake, T. H.	1	1	0
Coode, Edward, <i>Polapit-</i> <i>Tamar, Lanuceston</i> ...	1	1	0	*Leverton, H. S., L.C.R.P., Ed.	1	1	0
Coode, Arthur, <i>St. Austell</i> ...	1	1	0	Malan, Rev. A. H., M.A., (Oxon), <i>Perran-ar-worthal</i>	1	1	0
Cornish, Rev. Canon, M.A. ...	1	1	0	Marshall, F.	1	1	0
Cornish, Thomas, <i>Penzance</i> ...	1	1	0	Martin, W. H. P.	1	1	0
Criddle, W. J.	1	1	0	Moor, Rev. Canon, M.A., (Cantab), M.R.A.S., F.R.G.S., <i>St. Clements</i> ...	1	1	0
Daubuz, J. Claude, <i>Killiw</i> ...	1	1	0	Moore, Rev. Canon, M.A., (Dur.)	1	1	0
Dorrin-Smith, T. A., <i>Tresco</i> <i>Abbey, Scilly.</i>	1	1	0	Mount Edgcombe, the Earl of	1	1	0
Dorrington, T. L.	1	1	0	Netherton, J. R.	1	1	0
Dunkin, Edwin, F.R.S., <i>London</i>	1	1	0	Nettle, W., <i>Liskeard</i>	1	1	0
Eddy, E., <i>Leadville, Colorado</i>	1	1	0	Nix, A. P., <i>Mount Charles</i> ...	1	1	0
*Enys, F. G., <i>Enys</i>	1	1	0	Paul, R. M., M.A., <i>Southleigh</i>	1	1	0
Enys, John Davies, F.G.S. ...	1	1	0	Pearce, R., F.G.S., <i>Denver,</i> <i>Colorado</i>	1	1	0
Evans, Rev. Lewis, M.A., (Cantab)	1	1	0	Pearse, G. B., <i>Hayle</i>	1	1	0
*Falmouth, the Viscount ...	2	2	0	Pease, Sir J. W., Brt., M.P.	1	1	0
Fisher, Herbert W., Vice- Warden, <i>London</i>	1	1	0	Pease, Wm., <i>Lostwithiel</i> ...	1	1	0
Fortescue, Col. Cyril, <i>Rocannoc</i>	2	2	0	Pendarves, W. Cole, <i>Penda</i> ...	1	1	0
Foster, Lewis C., <i>The Coombe,</i> <i>Liskeard</i>	1	1	0				
Foster, R., <i>Lanwithan</i> ...	1	1	0				
Fox, Howard, <i>Falmouth</i> ...	1	1	0				
Fox, Miss, <i>Penjerrick</i>	1	1	0				
Fox, Wilson L.	1	1	0				

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£	s.	d.	£	s.	d.		
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Polkinghorne, W., <i>Liskeard</i> ...	1	1	0	Teague, W., <i>Treliske</i> ...	1	1	0
Kashleigh, Jonathan, <i>Mena-</i> <i>billy</i> ...	1	1	0	Teague, W., junr., <i>Trevenson</i> ...	1	1	0
Rawlings, W. J., <i>Downes</i> , <i>Haule</i> ...	1	1	0	Tilly, H., <i>Boslowick, Ful-</i> <i>mouth</i> ...	1	1	0
Rendle, C. Bainbridge, M.R.C.S., <i>Liskeard</i> ...	1	1	0	Tomlinson, Rev. A. R., B.A., (Oxon), <i>S. Michael Penkevil</i> ...	1	1	0
*Robartes, Right Hon. Lord	2	2	0	Trelawney, Sir. J. <i>Salisbury</i> <i>Bart., Trelawne</i> ...	1	1	0
Roe, Rev. R. J., M.A., (Dub.) <i>S. Sennen</i> ...	1	1	0	Tremayne, J., <i>Heligan</i> ...	2	2	0
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St. Aubyn, Sir J., Bart., M.P., <i>S. Michael's Mount</i> ...	1	1	0	Tremenheere, H. Seymour, C.B., M.A. (Oxon). F.G.S., <i>London</i> ...	1	1	0
Rundle, Edmund ...	1	1	0	Trevail, Silvanus ...	1	1	0
St. Germans, The Earl of, <i>Port Eliot</i> ...	1	1	0	*Tweedy, R. ...	1	1	0
*Sawle, Sir C. B. Graves, <i>Bart., Perrice</i> ...	1	1	0	Vinter, H. W., B.A. (Cantab)	1	1	0
Sharpe, Edward, M.R.C.S. ...	1	1	0	Vivian, Sir Hussey, Bart., M.P., <i>Parkwern</i> ...	1	1	0
Smith, Right Hon. Sir Monta- gue, <i>London</i> ...	1	1	0	Vivian, Arthur Pendarves, <i>Bosahan</i> ...	1	1	0
Smith, Lady, <i>Fremorvah</i> ...	1	1	0	*Vyvyan, Rev. Sir Vyell, Bart., <i>Treloararren</i> ...	1	1	0
Smith, W. Bickford, M.P., <i>Trevarno</i> ...	1	1	0	West, Wm., <i>St. Blazey</i> ...	1	1	0
*Spry, E. G., B.A. (Oxon) ...	1	1	0	Whitaker, Rev. Canon, M.A., (Cantab) ...	1	1	0
Stephens, Rev. T. S., M.A., (Oxon), <i>St. Erme</i> ...	1	1	0	Whitley, N., F.M.S. ...	1	1	0
Tangye, Geo., <i>Birmingham</i>	1	1	0	Whitley, E. F. ...	1	1	0
				Williams, Michael, <i>Gnaton</i> <i>Hall, Yealmpton</i> ...	1	1	0
				*Willyams, A. C., <i>Bodrean</i> ...	1	1	0

Those marked* are Proprietors.

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£	s.	d.	£	s.	d.		
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Barrett, C. ...	0	10	0	Peter, Thurstan C. ...	0	10	0
Blenkinsop, A. ...	0	10	0	Pryor, Captain Richard ...	0	10	0
Carne, W. N., <i>Rosemundy</i> ...	0	10	0	Snell, J. ...	0	10	0
Carter, Rev. Prebendary ...	0	5	0	Symons, R. ...	0	5	0
Clarke, T. ...	0	10	0	Tripp, C. U., <i>Burton-on-Trent</i>	0	10	0
Comyns, Rev. T. M. ...	0	5	0	Tregelles, E. S. ...	0	10	0
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Henderson, J., <i>Malabar</i> ...	0	10	0	Whitaker, F. O. ...	0	10	0
Hedley, Miss ...	0	5	0	Whitehouse, Wm. Eddy ...	0	10	0
Lean, R. ...	0	10	0	Williams, Mrs. M. H., <i>Pen-</i> <i>calenick</i> ...	0	5	0

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Boase, G. C., <i>London</i>	0	5	0	Nix, Arthur P.	0	5	0
Carew, W. H. P., <i>Antony</i> ...	0	5	0	Rashleigh, Jonathan	0	5	0
Carus-Wilson, E.S. <i>Penmount</i>	0	5	0	St. Aubyn, Sir J., Bart.,			
Coode, E., <i>Polapit-Tamar</i>				M.P.	0	5	0
<i>Launceston</i>	0	5	0	Tremenheere, H. Seymour,			
Gilbert, Hon. Mrs., <i>Trelissick</i>	0	5	0	C.B., <i>London</i>	0	5	0
Glencross, Rev. J., M.A.,				Whitley, N. F.M.S.	0	5	0
<i>Lnastowe, Liskeard</i>	0	5	0	Whitley, H. M., F.G.S. ...	0	5	0
Jago, James, M.D., F.R.S. ...	0	5	0	Willyams, A. C., <i>Bodrean</i> ...	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 WEDNESDAYS, from Noon until dusk, during the winter months, and until Six o'clock in the summer months. On other days, an admission of sixpence is required.

An Annual Subscription of Five Shillings entitles the Subscriber to admission to the Museum on Mondays and Saturdays, and to attend all the Meetings of the Society.

A Subscription of Ten Shillings further entitles the Subscriber to introduce to the Museum and Meetings all the *bona-fide* resident members of the family.

A Subscription of One Guinea entitles the Subscriber to all the publications issued by the Institution, to admission to the Museum, for himself and family on every day in the week, and to the Meetings of the Society: and to ten transferable tickets of admission to the Museum whenever open.

The "JOURNAL OF THE ROYAL INSTITUTION OF CORNWALL" will be forwarded free of charge to the members subscribing One Guinea annually. To other subscribers to the Institution it will be supplied on payment, in advance, of Five Shillings a year; or the several numbers may be obtained from the Curator, or from a bookseller, at Four Shillings each.

Royal Institution of Cornwall.

SPRING MEETING, 1885.

The Annual Spring Meeting was held at the Rooms of the Institution, Truro, on May 28th, the President, Mr. A. Pendarves Vivian, M.P., in the chair.

The following list of Presents was read:—

ADDITIONS TO THE LIBRARY.

Transactions of the Bristol and Gloucestershire Archæological Society... ..	From the Society.
Proceedings of the Bath Natural History and Antiquarian Society	Ditto.
Transactions of the Royal Geological Society of Cornwall... ..	Ditto.
Journal of the Cambrian Archæological Society ...	Ditto.
Report of the Cornwall and Devon Miners' Associ- ation	The Association.
Report of the Council of the Honorable Society of Cymmrodorion—An Essay on Pennillion Singing	The Society.
Proceedings of the Colorado Scientific Society—The Engineering and Mining Journal of Colorado ...	Mr. Richard Pearce.
The Canadian Gazette	The Publishers.
Proceedings of the Huddersfield Natural History Society	The Society.
Journal of the Historical and Archæological Society of Ireland	The Society.
Journal of the Anthropological Institute of Great Britain and Ireland	Ditto.
Proceedings of the Society of Antiquaries, London	Ditto.
Monthly Notices of the Royal Astronomical Society	Ditto.
The Annual Address of the President of the Royal Astronomical Society, 1885, Mr. Edwin Dunkin, F.R.S.	The Author.
Journal of the Society of Arts, London	The Society.
Proceedings of the Geologists' Association, London	The Association.

Transactions of the Liverpool Engineering Society	The Society.
Collections Historical and Archæological of Montgomeryshire	The Powys Land Club.
Transactions of the Manchester Geological Society	The Society.
Transactions of the North of England Institute of Mining and Mechanical Engineers	The Institute.
Proceedings of the Academy of Natural Sciences, Philadelphia	The Academy.
Proceedings of the Somersetshire Archæological and Natural History Society	The Society.
Bulletin of International Meteorological Observations	American Government.
Monthly Weather Review for July, Aug., Sept., Oct., and Nov., 1884	Ditto.
Tertiary History of the Grand Canon District, United States of America	Ditto.
Second Annual Report of the United States Geological Survey	Ditto.
The Victorian Year Book—A Hand-book to the Colony of Victoria	The Agent General.
Proceedings of the Yorkshire Geological and Polytechnic Society	The Society.
Stœchiological Medicine, by John Francis Churchill, M.D.	The Author.
A List of Diurnal Birds of Prey, by Mr. S. H. Gurney	The Author.
An Essay on Liberty of Independent and Historical Research, by T. Kerslake.	The Author.
Report of the Royal Commission on Technical Education	Sir J. McGarel Hogg, Bart., M.P.
The Genealogist Magazine by Walford D. Selby ...	The Editor.
Journal of the National Society for preserving Memorials of the dead	The Society.
The Midland Medical Miscellany	The Publishers.
The New Zealand Colonization Circular	The Agent General.
Mr. R. S. Patterson on Cliff Castles	The Author.
The early Genealogical History of the House of Arundell	Lord Arundell of Wardour
MS. Map of Cornwall, by Richard Thomas ...	Mr. H. Michell Whitley.

BOOKS PURCHASED.

Journal of the Geological Society of London.
 Journal of the Meteorological Society, London.
 Nature.
 Journal of Science.
 Western Antiquary.
 Royal Society: Vol. 4., Monograph of the British Aphides.
 Palæontographical Society, Vol. 38, for 1884.
 History of Plymouth, by R. N. Worth.

ADDITIONS TO THE MUSEUM

Crystallized Galena from Glogfawr, one of the Lisburne Mines	Dr. Foster.
Collection of Photographs (30 in number) illustrating South American Scenery	Mr. Robert Harvey, C.E.
Specimen of Silver Ore from Candamena Mine, Northern Mexico	Mr. J. H. Collins.
Specimen of rich Silver Ore from Pinos Altos Mine, Northern Mexico	Ditto.
Posidonomya Becheri, from the Lower Devonian Shales of Rio Tinto	Ditto.

The President then delivered his Address, which will be found on page 335 of the present number of this Journal.

BISHOP VIVIAN.

The Rev. W. Iago gave some interesting information respecting the tomb of Bishop Vivian, Prior of Bodmin, in Bodmin Church, which, he said, was the only monument to a Bishop of mediæval times which was known to exist in Cornwall. He believed Bishop Vivian was claimed as a relative of the President's family, and also of the Vyvyans, of Trelowarren. An ancestor of the Rev. Sir Vyell Vyvyan had the monument restored in 1819, and Sir Vyell Vyvyan had now requested that it should be further restored, and had asked the speaker to superintend the operations. The base of the tomb was formerly on a level with the floor in Bodmin Church, but the latter having recently been lowered, the tomb stood considerably higher. The tomb was originally placed before the High Altar in the Priory Church at Bodmin, but when the Priory was dissolved, and the Priory Church pulled down, the tomb was preserved and placed in the Parish Church. When it was removed the bones of the Prior were also translated and placed within it in the Church. Bishop Vivian died 350 years ago, and hence he (Mr. Iago) scarcely expected to find many of his bones in the recent restoration of the tomb. On opening the tomb and taking away a large block of solid masonry, he came down upon some flat stones, and under these stones he found the skeleton of the Prior, much decayed and broken up, but not so much as might have been expected. Having collected the bones, and, with the assistance of a medical gentleman, well versed in anatomy, placed them as nearly as possible in proper

position, he had them enclosed in a zinc box. The box has been placed in the tomb, which has again been built up, and he had no doubt the bones would be preserved for another 50 years. An effigy of the Bishop, in full canonicals, lies on the top of the tomb. Four angels were sculptured as supporters, but the whole of them had been mutilated. A head and shoulders of a stone figure had been found some years ago in the wall of an hotel in Bodmin, and had been supposed to represent a mayor, who had been hanged. Mr. Iago had discovered that this was part of one of the supporting angels of the Prior's tomb, and the fragment has been restored to its place.

Mr. Iago also exhibited a bronze spoon, with figure of a cowled monk on the handle, found during some excavations at Bodmin. The metal was known as "laten," and was much in use during the middle ages.

The following papers were then read :—

Notes on "The Ancient Topography of Cornwall,"—R. N. Worth, F.G.S., Cor. Mem.

"Wheat, and wheaten bread,"—Thomas Cragoe.

"Kentish Deneholes in relation to Cornish Caves,"—S. R. Pattison, F.G.S.

"Graphite,"—Thomas Clark.

Votes of thanks were passed unanimously to the Authors of Papers submitted to the Society, to the Donors to the Museum and Library, and to the President for his Address.

Royal Institution of Cornwall.

ANNUAL MEETING, 1885.

The Annual Meeting was held at the rooms of the Institution, on November 26th.

The chair, in the unavoidable absence of the President, was taken by Dr. Jago, F.R.S.

The minutes of the last Annual Meeting were read and confirmed.

The Secretary then read the Report of the Council as follows:—

In preparing a summary of the proceedings of the Royal Institution of Cornwall for the past year, the Council have the pleasure in submitting to the Members a Report, which on the whole must be deemed satisfactory, inasmuch as it shews a steady progress in all the branches connected with our Society. Since our last Annual Meeting, we have had the accession of the following nine new Members,—Mr. John Barrett, Mr. W. B. Blenkinsop, Mr. H. W. Vinter, B.A., Mr. Arthur E. Adams, Mr. W. Whitehouse, Mr. Edmund Rundle, Mr. Edwin Dunkin, F.R.S., (President Royal Astronomical Society), Mr. G. B. Pearce, and the Rev. T. M. Comyns. We have, however, on the other hand, to regret the loss by death of three Members, viz:—Sir John S. Trelawney, Bart., Miss Nankivell, and Mr. W. Tweedy. By the death of Sir J. Salusbury Trelawney, the 9th Baronet of an ancient and honorable Cornish house, the Royal Institution has lost a worthy Member. He was through family intermarriages a descendant of the famous Bishop of Bristol, who was imprisoned by James II. Sir John himself held important public appointments in Cornwall, and was for some years Member of Parliament for the Eastern Division of the County. In Parliament he moved for a Committee to enquire into the management of the Duchy, and

in his writings treated of the following subjects—"Lucretius (books 1 and 2), Banking, Property and Labour, Church Rates, Sunday National League, and Evidence relating to the Animals Act." When we visited, as Members of the Royal Institution of Cornwall, his residence, Trelawne, during his absence in 1881, we were by his orders hospitably received, and both then, and in 1882, at Pelynt, we were shewn many objects of interest relating to the well-known members of his family.

In Miss Nankivell, the Society had the representative of a family associated with the Institution for a period bordering on half a century, who shewed by her presence at our meetings the warm interest she felt in all that pertained to our welfare.

In Mr. W. Tweedy, the Council feel they have lost a tried friend, one who for many years held the office of Treasurer, and who by his attention and courtesy in discharging the duties of his position, gained the esteem and regard of the Members of our Society. Mr. Tweedy was a member of a family well and honorably known throughout Cornwall, and to which the Institution is greatly indebted. Mr. W. Tweedy's uncle, the late Mr. W. Mansel Tweedy, for a long period was one of the leading Members of this Society—his connection with it dating from 1818, the time of its foundation—who acted for many years as Secretary, and afterwards ably filled the office of President.

The attention of the Council has recently been directed to the bequest of the late Mr. W. J. Henwood, F.R.S.,—formerly a distinguished President of the Society—of a sum of money for the purchase of a gold medal, to be issued triennially for certain specified branches of Natural Science. With the valuable aid offered by the Rev. W. Iago, our President nominate, in drawing designs for the dies, the Council are now in a position to give the orders for them, as all the conditions relating to the legacy have been fulfilled, and consequently the award of the first medal will take place in three years time. In the course of a few months the legacy of £1000 bequeathed to this Institution by the late Mr. Francis Rogers, of the Crescent, Plymouth, will be paid, and it will then be the duty of the Council to consider in what manner this Institution can be best benefitted by this munificent gift.

The Library has again received considerable attention during the past year, and it is satisfactory to know that all periodicals are complete, and bound up to the present date. Our shelves are now filled chiefly through exchanges of publications with other Societies, with the transactions of many of the learned Societies of the British Isles, the Colonies, America, and of several Continental Countries. Our Library, therefore, is becoming of considerable importance, and it is undoubtedly a great boon to students in this neighbourhood. A long-felt want connected with the Library, will, it is hoped, by the time the Spring Meeting comes round, be supplied by the completion of a Catalogue, which is now being made under the superintendence of the Rev. Canon Moor, M.R.A.S., one of our Vice-Presidents.

Through the valuable labours of Mr. Snell, one of our esteemed members, the excellent, if not in many respects unique, Botanical collection belonging to this Institution has been carefully arranged. It would appear that about half a century ago there existed in Truro a Horticultural Society of some considerable standing, and that two of its lady members, who had an extensive acquaintance with systematic Botany, collected and arranged a large number of plants. The assortment comprises the Lichens, Algæ, Mosses, Ferns, and other Cryptogamous Plants, together with the Phanerogams, indigenous to our County, and also those not natives of Cornwall. There are two volumes of beautiful specimens from Dominica, contributed by the late Mr. John Hockin, and in addition to the 28 large volumes, mostly of Arboreous species, representing the luxuriant Floras of India, Ceylon, Assam, &c., presented by the late General Jenkins, whose name must be familiar to every one interested in this Institution, by the numerous presents he continually sent to our Museum during the greater part of his lifetime. Many of the species of this collection of General Jenkins have been named by the late Sir W. S. Hooker, Bart., father of the present Director of Kew Gardens. This varied and comprehensive assemblage of plants was brought together mainly by the untiring energy and assiduity of the late Miss E. A. Warren of Flushing, and Miss E. Stackhouse of Trehane, in this County, assisted by many willing hands, many of whose

names are recorded on the specimens. The entire collection comprises many thousands of species, and several hundreds of genera, together making up most of the natural orders recognised in the present stage of Botanical science. Mr. Snell has devoted much time and attention in examining the series, and observes that although, as might be expected, some objects have suffered from the ravages of larval pests, there are, nevertheless, comparatively few which require to be removed, and that for the most part they are in an excellent state of preservation. The collection therefore must be deemed one of great value, and calculated to be of considerable advantage to the Botanical student.

The admissions to the Museum during the past year were as follows:—

Admitted Free	.. .. .	2390
Admitted by Ticket	.. .. .	86
Admitted at 6d. each	.. .. .	357
		<hr/>
		2833

These numbers show that the interest of the public in our collections has in no way lessened, comparing favorably with the admittances of former years.

On the 25th September the Annual Excursion was held, the season was unavoidably later than usual, but the weather was fine, and a most enjoyable day was spent. The district selected was that between Penzance and St. Ives. The first halt was made at Gulval, to inspect a curious stone discovered there just a week previously. It is of granite, measuring 3-ft. 11-in. long, 1-ft. 6-in. broad at one end, and 1-ft. 3-in. at the other, the thickness being about 11-in. There are deeply cut border lines, one face of the stone is divided by transverse lines, and displays some scroll work, and also lettering. On both faces is cable ornamentation. On the two sides is a kind of a key pattern extending the whole length of the block. The stone was discovered in taking down the chancel wall of Gulval Church, and will form the subject of a future paper. It is evidently part of a cross shaft.

At Towednack Church, an early Chancel Arch (date probably 1220), some Carved Bench-ends, dated 1633, and a

Communion Service of 1576, were inspected with much interest. Zennor Cromlech and Zennor Church were next visited, the former surrounded on every hand by scenery of stern magnificence, whilst at the latter, a quaint old place, possessing a very curious old Carved Bench, evidently the representation of a mermaid was noticed. In the evening the excursionists dined together at the "Western" Hotel, Penzance, under the chairmanship of Dr. Jago, F.R.S. The party were indebted to the Rev. W. S. Lach-Szyrma, Mr. George Bown Millett, and Mr. Thomas Cornish, for guidance and information.

The Meteorological Registers have been kept by Mr. W. Newcombe, with his accustomed care, and the daily observations and registers, as well as the weekly, fortnightly, quarterly, and annual summaries have been regularly presented to the public, and to government departments. It might be added here that the extensive Meteorological Reports so liberally and courteously supplied to this Institution by the American Government will be of the greatest value to our students of the English climate.

The monthly meetings were well attended, and many excellent papers were read and followed by interesting discussions. It is hoped that these meetings will be resumed in the coming month.

The Society is indebted to Mr. Robert Harvey, C.E., one of our valued Members, for a series of Photographic views of the scenery of South America, who has further offered to defray the cost of their being framed and glazed.

The valuable collection of Books bequeathed to us by the late Mr. George Freeth, of Duporth, has been received since the Spring Meeting, and is now on our shelves, enhancing considerably the value and usefulness of our Library.

The financial condition of the Institution must be deemed satisfactory, as there is a credit balance at our bankers of £180 6s. 3d. This large surplus, however, is due in a great measure to the payment in the present year of the £100 with accumulated interest, bequeathed to the Society for the general purposes of the Institution, by the late Mr. W. J. Henwood, F.R.S. It will be for the Council to consider in what manner some portion at least of this sum may be at once profitably

employed. Apart, however, from this bequest, the balance is a substantial one, and will bear favorable comparison with that of any former year. As a contrast to this, the late Dr. Barham stated a few years since, that when he joined the Society there was a debt of £1600 hanging over it.

The 30th Journal has been issued since the last Annual Meeting, and contains many articles of much interest. The Council feel that much of the success of the Journal must be attributed to the efforts of the honorary editor, Mr. H. Michell Whitley, to whom they feel they owe a deep debt of gratitude. It must be gratifying to the Members generally, to find that fresh applications for the supply of the Journal are frequently made, and that it is to be found in the Libraries of many of the learned Societies in the British Isles and America. The Index to the volume will be published with the first number of volume IX. It will be seen by reference to the last issue that the Journal affords a valuable means of recording a great variety of facts, useful to all who would study the history and characteristics of the western peninsula.

The papers last printed may be summarized as giving an encouraging account of the present state of the Institution, and its proposed extension. The number comprises a Report of its Meetings, and of the exploration of a part of Cornwall, replete with interest; a brief but highly important statement by Mr. Whitley, F.M.S., concerning the Post Glacial Period; treatises on Cornish Archæology, Old Customs, and Localities, by the late Sir Richard Vyvyan, Bart., by Mr. Blight, Rev. W. Iago, Rev. W. S. Lach-Szyrma, and Mr. H. Michell Whitley; Botanical Notes by Mr. T. A. Cragoe, F.R.G.S.; and the result of 40 years observations of the climate of Cornwall, by the late Charles Barham, M.D., whose calculations are so clearly tabulated, that they form within a convenient compass a most valuable Meteorological work.

Mr. Pendarves Vivian's two years tenure in office expires to day, and your Council have pleasure in proposing the Rev. W. Iago, B. A., Local Sec. S.A., as his successor, feeling sure that his varied attainments and sedulous use of them, which have always been at the service of this Institution, will add to its prosperity.

Your Council propose for the acceptance of this Annual Meeting, that the vacancies in the other offices be filled as follows :—*Vice-presidents*—Dr. Jago, F.R.S., Mr. H. Martyn Jeffery, F.R.S., Rev. Canon Moor, M.R.A.S., Mr. Warington W. Smyth, F.R.S., F.G.S., and A. Pendarves Vivian, Esq.; *Treasurer*—Mr. Arthur C. Willyams; *Secretaries*—Mr. H. Michell Whitley, F.G.S., Major Parkyn; *other members of Council*—Rev. Canon Cornish, Mr. Howard Fox, Mr. Hamilton James, Mr. H. S. Leverton, M.R.C.S., Rev. A. H. Malan, M.A., Mr. R. M Paul, M.A., Mr. E. G. Spry, B.A., Mr. Tweedy, Rev. A. R. Tomlinson, M.A., and Mr. Whitley, F.M.S.

Dr. Arthur C. Wilgams, Esq., Hon. Treas. Royal Institution of Cornwall. Cr.

1884.		1885.	
July 31st.	£ s. d.	July 31st.	£ s. d.
To Balance brought forward	63 1 3	By Curator's Salary	44 0 0
" Annual Subscriptions, Donations, Arrears and Illustration Fund	141 1 6	" Postage and Parcels	11 4 11
" H.R.H. The Prince of Wales	20 0 0	" Museum Expenses	15 16 7
" Visitors' Fees	8 18 6	" Printing and Stationery	6 5 4
" Sale of Journals	6 15 7	" Lake, Printing Journals (Nos. 29 and 30.)	68 11 2
" Sale of Fauna	0 5 9	" Illustrations for Journal	3 12 6
" French Book-club	3 5 0	" Printing Meteorological Tables	16 0 0
" Martyn's Letters	0 4 8	" Conversazione	0 19 10
" Executors of W. J. Henwood	127 19 4	" Repairs to Building, &c.	3 15 7
		" Sundry Expenses	11 9 1
		" Taxes	2 10 0
		" Loss on Excursion	0 8 9
		" Geological Journal	0 10 0
		" Journal of Science	0 9 0
		" Meteorological Society	1 0 0
		" Palaeontographical Society	1 1 0
		" Ray Society	1 1 0
		" Nature	0 13 0
		" Telegraph, and Gardener's Chronicle	0 11 6
		" Western Antiquary	0 15 2
		" Rainfall and Magazine	0 10 0
		Balance	180 6 7
			£371 11 7

To Balance £180 6 7

The following list of presents was then read:—

ADDITIONS TO THE LIBRARY.

Monthly Notices of the Royal Astronomical Society	The Society.
Journal of the Society of Arts	Ditto.
Journal of the Anthropological Institute of Great Britain and Ireland	The Institute.
Proceedings of the Society of Antiquaries, London...	The Society.
Proceedings of the Bath Natural History and Antiquarian Field Club	The Club.
Proceedings of the British Naturalist's Society ...	The Society.
Canadian Gazette... ..	The Publishers,
Journal of the Cambrian Archæological Association	The Association.
Transactions of the Honorable Society of Cymrodorion	The Society.
Report of the Royal Cornwall Polytechnic Society	The Society.
Transactions of the Mining Association and Institute of Cornwall	The Association.
Report and Transactions of the Devonshire Association	Ditto.
Transactions of the Edinburgh Geological Society...	The Society.
Proceedings of the Geologists' Association	The Association.
Proceedings and Transactions of the Natural History Society of Glasgow	The Society.
Greenwich Observations—Astronomical, Magnetical, and Meteorological	Royal Observatory, Greenwich, 1835.
Proceedings of the Philosophical Society of Glasgow	The Society.
Transactions of the Glasgow Geological Society ...	Ditto.
Journal of the Royal Historical and Archæological Society of Ireland	Ditto.
Transactions of the London and Middlesex Archæological Society	Ditto.
London and Middlesex Archæological Society "East Barnet," by Rev. F. C. Cass, M.A., Rector of Monkem—Hadley, Middlesex	Ditto.
Proceedings of the Liverpool Natural History Society and Field Club	Ditto.
Proceedings of the Liverpool Literary and Philosophical Society	Ditto.
Report of the Leeds Philosophical and Literary Society	Ditto.
Transactions of the Manchester Geological Society...	Ditto.
Collections of the Montgomeryshire Historical and Archæological Society	Ditto.
Transactions of the North of England Institute of Mining Engineers	The Institute.
Annual Report and Transactions of the Plymouth Institute... ..	The Institution.
Report and Transactions of the Penzance Natural History Society... ..	The Society.

Proceedings of the Academy of Natural Sciences of Philadelphia, part 2, April to July, 1885	The Academy.
Provincial Medical Journal, by Dr. Dolan	Leicester, 1885.
Collections of the Surrey Archæological Society, vol. IX, part 1.	The Society.
The Scottish Geographical Society's Magazine	Ditto.
Proceedings of the Somersetshire Archæological and Natural History Society	The Society.
Proceedings of the Zoological Society of London	The Society.
Devon and Exeter Albert Memorial Museum.	
Church Bells, from the authors	Messrs. Mears & Steinbank
Thomas Roberts and family of Stockleigh, Pomery, from the author	Paul Q. Karkeek, Esq.
The Genealogist, Nos. 1, 2, and 3, presented by	W. Copeland Borlase, Esq., M.P.
Robert Boyle, a Biographical Sketch, presented by...	Messrs. R. Boyle & Son's.
Relative dangers of Coal and Metal Mining in the United Kingdom	
Anti-Slavery Reporter, and scandals at Cairo in connection with Slavery.	
The Geology of the Rio Tinto Mines, from the author	J. H. Collins, Esq., F.G.S.
Patents—India, China, &c.—Information and forms	H. H. Remfry, Calcutta.
Cape Catalogue of Stars for the Epoch, 1850.	
Blessedness of Brytaine, by M. Kyffin, 1587... ..	Honble. Society of Cymm- rddorion.
Certain interesting Crystalline Alloys, from the author	Richd. Pearce, Esq., F.G.S.
Mining and Metallurgy, from the author	C. Le Neve Foster, Esq., D.Sc.
Alpine Winter, from the author	A. Tucker Wise, M.D.
Machinery for the manufacture of Nitrate of Soda, from the author	Robert Harvey, Esq., C.E.
Organic Philosophy, 5 vols., from the author	Dr. Doherty.
Bible Readings, from the author	Rev. S. A. Cross.

PRESENTED BY MR. R. N. WORTH, PLYMOUTH.

Sir Francis Drake and the Plymouth Corporation—2 parts.
 The Seige of Plymouth—2 parts.
 Pre-historic Devon.
 A Corner of Saxon Devon.
 Plymouth Memoirs.
 The Three Towns Bibliotheca, and two Supplements.
 The Ancient Castle of Plymouth.
 Some Notes on the Early Municipal History of Plymouth—2 parts.
 Plymouth Municipal Records.
 The Antiquity and Antiquities of Plymouth.
 Men and Manners in Tudor Plymouth.
 Men and Manners in Stuart Plymouth.
 Notes on Local Etymologies.
 The Plymouth Company.

- The early Commerce of Plymouth.
 The older Charities of Plymouth.
 Historical Notes concerning the Progress of Mining Skill in Devon and Cornwall.
 The Antiquity of Mining in the West of England.
 William Cookworthy and the Plymouth China Factory.
 Ancient Mining Implements of Cornwall.
 Plymouth Institution—Opening of the New Museum, 27th March, 1883.
 The common Seals of Devon—2 parts.
 Notes on the Ancient Heraldry of Plymouth.
 Notes on the Ancient Recorded Topography of Devon.
 Notes from the Autobiography of Dr. James Yonge, F.G.S.
 Puritanism in Devon and the Exeter Assembly.
 Were the Druids in Devon.
 Notes on the Geology of the South-east Border of Cornwall.
 The Palæontology of Plymouth.
 Historical Sea-ports of the West of England.
 On the Historical Connections of Devonshire Place Names.
 Notes on the History of Painting in Devon.
 Sir John Hawkins—Sailor, Statesman, Hero.
 Lydford and its Castle—2 parts.
 Alluvial Deposits on Plymouth Hoe.
 The Myth of Brutus the Trojan.
 A Cornish Valhalla
 Recent Geological Discoveries in the neighbourhood of Plymouth.
 Rocks of the neighbourhood of Plymouth and their Stratigraphical Relations.
 The Raised Beaches on the Plymouth Hoe.
 Raised Beaches and Submerged Forests.
 The Bone Caves of the Plymouth District.
 The Geology of Plymouth.
 On Trowlesworthite and certain Granitoid Rocks near Plymouth.
 On Glacial Conditions in Devon.
 Notes on the Rocks in the Neighbourhood of Plymouth.
 Notes on the Limestone of Yealmpton and its associated Rocks.
 The Ancient Stannary of Ashburton.
 The Economic Geology of Devon.
 On the origin of the Ossiferous Deposits in the Oreston Caves.
 Report of an Excursion of the Geologists' Association in South Devon, 21st
 July, 1884.
 Reports of the Barrow Committee—7 parts.

BEQUEATHED BY THE LATE MR. GEORGE FREETH,
 OF DUPORTH.

- C. S. Gilbert's Survey of Cornwall—2 vols.
 Davies Gilbert's Parochial History of Cornwall—4 vols.
 Lake's History of Cornwall—4 vols.
 Carey's Survey.
 Borlase's Antiquities of Cornwall.
 Borlase's Natural History of Cornwall.
 Lyson's Devonshire.
 Lyson's Cornwall.

Wallis's Cornwall Register.
 Domesday Book of Cornwall.
 Blight's Crosses of Cornwall.
 Hals Tonkin's complete History of Cornwall.
 Vivian's Visitations of Cornwall—12 parts.
 Stockdale's Cornwall.
 Carew's Survey of Cornwall.
 S. Columb Parish Register—parts 10 to 16.
 Cummins's Cury and Gunwalloe.
 Beauties of England and Wales—Cornwall.
 Pedlar's Episcopate of Cornwall.
 Lach-Szyrma's Land's End.
 Oliver's Monasticum.
 Oliver's Ecclesiastical Antiquities.
 Oliver's History of Exeter.
 Oliver's Historical Collection of Devon.
 Antiquities of Devon and Cornwall—Oliver and Jones.
 Bibliotheca Devoniensis.
 History of Devon—7 parts.
 White's Devonshire.
 Transactions Exeter Diocesan Society.
 Borlase's Scilly Isles.

MANUSCRIPTS.

Copies of Deeds, Charities, Grants, Records, &c., relating to the County of Cornwall.
 Materials for a New Survey of the History and Antiquities of Cornwall.

THE FOLLOWING FROM THE AMERICAN GOVERNMENT.

U.S.A. Bulletin of the Geological Survey—parts 2, 3, 4, 5, and 6.
 U.S.A. Geological Survey—Silver Lead Deposits of Eureka—Curtis, vol 7.
 U.S.A. Monthly Weather Review—December, 1884.
 U.S.A. Monthly Weather Review—Chief Signal Officer—Jan., Feb., March, and April, 1885.
 U.S.A. Bulletin of International Meteorology—Jan., 1884, Oct., Nov., and Dec., 1883.
 U.S.A. Bulletin of International Meteorology—Feb. March, and April, 1884.
 U.S.A. International Meteorological Observations—Jan., Feb., and March, 1884.
 U.S.A. Smithsonian Report, 1883.
 Monographs of the United States Geological Survey, Department of the Interior—Washington.
 Vol. 2—Tertiary History of the Grand Canon District—Dutton.
 Vol. 3—Geology of the Comstock Lode—Becher.
 Vol. 4—Comstock Mining and Miners—Lord.
 Vol. 5—The Copper Bearing Rocks of Lake Superior—Irving.
 Vol. 6—Older Mesozoic Flora of Virginia—Fontaine.
 Vol. 7—Silver Lead Deposits of Eureka—Curtis.
 Vol. 8—Palæontology of the Eureka District.

PERIODICALS AND BOOKS PURCHASED.

Nature.

Journal of Science.

Quarterly Journal of the Geological Society of London.

Western Antiquary.

Quarterly Journal of the Royal Meteorological Society.

Murray's Handbook—Cornwall.

Prehistoric Stone Monuments of the British Isles—Cornwall, by Rev. W. Collins Lukis.

Symons's Monthly Meteorological Magazine.

Symons's British Rainfall.

Publications of the Ray Society.

Publications of the Palæontographical Society.

Archæology in Cornu-Britannica, by William Pryce, M.D., 1790.

Roman Remains, and Silver Coins, circa A.D. 1270, found on site of S. Nicholas, Bodmin.

Mr. Spry moved the adoption of the Report, which was seconded by Mr. Criddle, and agreed to.

The Rev. W. Iago then took the chair as President for the ensuing two years, and in doing so expressed himself as being placed in an unexpected position. He only hoped the Members of the Institution would not be grievously disappointed at the manner in which he would perform his duties. He took great interest in the antiquities which prevailed in the west, and if he failed in his duty it would not be from any neglect on his part to try and give satisfaction—(applause). The Institution embraced such a large ground that the position of Chairman of it was an important position. It embraced Geology, Inventions, Natural History, and even Astronomy, and its claims were such as should warrant support from all parts of the County. There were several districts in Cornwall which had not yet been visited by the Institute, and he hoped when they did visit them they would be attended with further knowledge and experience in the different branches of science connected with Cornwall.

The following Papers were then read:—

The New Star in the Andromeda Nebula—H. Michell Whitley, F.G.S.

Notes on the Excursion of 1885—Rev. W. S. Lach-Szyrma.

The President, by request, explained that some human remains and silver coins presented that day to the Museum, were found a few days since, as the navvys were excavating for laying the new railway line to Bodmin. A burial ground was found to exist at a point near where old St. Nicholas Chapel once stood, and from the date of the coins, Henry III, and Edward I, they might be led to suppose that the date of the burial ground and the deposit of the remains there was about 1270.

Mr. Barrett proposed a vote of thanks to the Council and Officers, which was seconded by Mr. Bawden, and carried.

Mr. Vincent proposed a vote of thanks to those who during the year favoured the Society with papers and other communications, and also to the donors to the library and museum.

This was seconded and carried.

On the motion of Mr. James, a vote of thanks was given to the chairman.

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1885, from Registers kept at the Royal Institution of Cornwall.

1885.	MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level.													Days in which any consecutive 24 hours.	Between which days it occurred.					
	Month.	Mean pressure corrected to 32 deg. Fahr. at sea level.			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 in.	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 consecutive 24 hours.
		in.	in.	in.																
January	29.846	29.833	29.853	29.844	.004	29.840	.231	29.609	30.409	7	28.814	31	1.595	.090	.24	10	.53	7 & 8		
February	29.080	29.637	29.700	29.672	.003	29.669	.264	29.405	30.170	12	28.987	2	1.183	.140	.34	5	.40	27 & 28		
March	30.103	30.097	30.097	30.099	.007	30.092	.225	29.867	30.560	14	29.330	3	1.230	.091	.32	6	.47	29 & 30		
April	29.794	29.786	29.798	29.793	.004	29.789	.244	29.545	30.326	19	29.110	25	1.216	.110	.48	5	.61	23 & 24		
May	29.843	29.854	29.874	29.857	.003	29.854	.255	29.599	30.234	11	29.336	6	0.898	.065	.30	7	.59	19 & 20		
June	30.054	30.048	30.051	30.051	.001	30.050	.366	29.684	30.391	11	29.711	20	0.680	.014	.17	9	.26	8 & 9		
July	30.196	30.190	30.185	30.190	.002	30.188	.422	29.766	30.343	26	29.889	19	0.454	.036	.14	20	.20	19 & 20		
August	29.961	29.956	29.959	29.959	.004	29.955	.393	29.562	30.289	14	29.621	10	0.668	.040	.17	9	.24	29 & 30		
Sept.	29.923	29.907	29.900	29.910	.004	29.906	.389	29.517	30.305	22	29.504	7	0.801	.056	.26	10	.37	7 & 8		
Oct.	29.768	29.783	29.856	29.802	.006	29.796	.288	29.508	30.140	18	29.063	10	1.077	.120	.48	10	.44	10 & 11		
Nov.	29.854	29.850	29.817	29.850	.004	29.846	.295	29.551	30.290	7	29.178	26	1.112	.081	.37	28	.38	5 & 6		
Dec.	30.250	30.138	30.158	30.182	.003	30.079	.233	29.846	30.613	23	29.427	6	1.186	.102	.77	5	.55	7 & 8		
Means	29.939	29.923	29.939	29.926	.004	29.922	.300	29.622	30.331		29.331									

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 (+0.008), Capillarity (+0.013), height above sea (43 feet), and temperature, have been applied.

TABLE No. 2.

MONTHLY MEANS OF THE THERMOMETER.																										
1885.	MASON'S HYGROMETER.						SELF REGISTERING.						ABSOLUTE.													
	9 a.m.		3 p.m.		9 p.m.		Mean of Dry Bulb.	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.	Daily mean range.	Maximum.	Day.	Minimum.	Day.	Range.	
January	40.7	39.0	44.7	42.5	41.7	40.2	42.4	42.0	40.6	0.3	40.3	1.7	38.2	3.8	47.3	38.0	42.6	42.5	9.3	54.0	28	24.0	19	0	54.0	30.0
February	46.2	44.4	49.6	46.1	45.4	43.6	47.1	46.4	44.7	0.5	44.2	2.2	41.7	4.7	51.8	41.1	46.4	46.3	10.7	56.0	24	25.0	21	0	56.0	31.0
March	43.0	40.4	48.0	43.5	42.3	40.0	44.4	43.4	41.3	0.6	40.7	2.7	37.5	5.9	51.6	36.7	44.1	43.9	14.9	57.0	31	27.0	17	0	57.0	30.0
April	48.3	45.0	52.0	46.7	44.4	42.4	48.2	46.6	44.7	1.3	43.4	3.2	39.7	6.9	55.2	37.9	46.5	46.4	17.3	69.0	20	28.0	4	0	69.0	41.0
May	51.7	44.5	54.0	48.4	47.2	46.0	51.0	48.7	46.3	1.4	44.9	3.8	40.8	7.9	57.4	43.0	50.1	49.3	14.4	62.0	12	32.0	12	0	62.0	30.0
June	59.3	54.3	63.3	57.0	56.8	54.4	59.8	56.9	55.2	1.7	53.5	3.4	50.4	6.5	66.8	50.4	58.6	58.3	16.4	79.0	14	42.0	2	0	79.0	37.0
July	63.1	59.6	67.3	60.0	59.2	56.5	63.2	61.1	58.7	1.2	57.4	3.6	54.3	6.8	71.6	50.8	61.2	60.9	20.8	89.0	26	38.0	10	0	89.0	51.0
August	61.8	58.0	65.6	58.0	57.7	55.1	61.7	59.7	57.0	1.2	55.8	3.9	52.3	7.4	69.8	48.4	59.1	58.8	21.4	78.0	16	40.0	5	0	78.0	38.0
Sept	58.0	54.9	61.0	57.0	55.1	53.0	58.0	56.3	55.0	0.9	54.1	2.2	52.1	4.2	64.0	48.9	56.4	56.2	15.1	70.0	5	30.0	27	0	70.0	40.0
Oct	49.5	47.0	53.2	49.0	48.0	46.2	50.2	49.4	47.4	0.6	46.8	2.6	44.0	5.4	55.3	43.6	49.4	49.0	9.7	61.0	3	35.0	18	0	61.0	26.0
Nov.	49.2	47.4	51.0	48.0	48.3	46.5	49.5	48.9	47.3	0.5	46.8	2.1	44.6	4.3	53.0	44.8	48.9	48.8	8.2	58.0	28	31.0	25	0	58.0	27.0
Dec	41.4	39.6	46.1	43.2	42.5	41.0	43.3	43.1	41.3	0.3	41.0	2.1	38.5	4.6	48.9	37.6	43.2	43.2	11.3	56.0	2	20.0	11	0	56.0	36.0
Means	51.0	47.8	54.6	49.9	49.0	48.0	51.6	50.2	48.3	0.9	47.4	2.8	44.5	5.7	57.7	43.4	50.5	50.3	14.3	65.7		33.6			65.7	34.7

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.

1885.		WINDS.												AVERAGE FORCE.								
		E.		S.E.		S.		S.W.		W.		N.W.		N.		N.E.		9 a.m.	3 p.m.	9 p.m.	Mean.	
Month.		6 a.m.	9 a.m.	3 p.m.	6 p.m.	9 a.m.	3 p.m.	6 p.m.	9 a.m.	3 p.m.	6 p.m.	9 a.m.	3 p.m.	6 p.m.	9 a.m.	3 p.m.	6 p.m.	9 a.m.	3 p.m.	6 p.m.	Mean.	
January		4	4	4	3	8	8	9	0	0	6	4	5	1	1	1	3	2	4	3	2	2.4
February		0	2	0	4	14	13	12	4	6	1	3	1	0	1	1	0	2	2	2	2	2.4
March ...		6	7	6	3	3	4	4	2	2	6	6	7	7	2	4	5	4	8	4	4	2.1
April ...		3	3	5	6	3	5	5	1	1	5	4	4	6	4	4	6	4	6	4	0	2.7
May ...		2	1	3	2	11	11	11	4	6	7	8	7	7	4	3	4	1	1	0	1	2.6
June		4	2	1	7	2	4	6	2	1	3	5	8	5	5	2	2	5	5	3	3	2.2
July		4	4	5	3	6	6	4	6	5	4	8	10	4	2	2	1	3	0	1	1	1.8
August ...		6	7	7	3	4	5	6	2	2	5	5	6	6	4	6	5	4	2	1	1	1.9
Sept.		0	0	0	2	13	16	14	7	2	5	6	6	6	4	4	4	0	0	0	0	2.0
Oct.		1	3	2	2	5	5	6	2	2	10	12	7	7	4	4	6	5	2	2	2	2.7
Nov.		7	8	8	3	6	7	7	4	1	5	6	6	6	0	1	0	2	2	2	2	2.0
Dec.		2	3	2	0	6	7	8	1	1	7	5	6	6	1	1	0	7	6	8	1	1.4
Total		39	44	43	34	81	91	92	35	22	61	70	75	61	32	33	35	48	34	27	26	26.2
Means ...		42.0		33.0		29.7		88.0		31.7		68.3		33.3		36.3		2.2	2.6	1.6	2.1	

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

TABLE 4.

1885.	WEATHER.												Wet.	Dry.	SUN. Shine.	SUN. Gleam.	SUN. Cloud.	REMARKS.	
	AVERAGE CLOUDINESS.			RAINFALL.			Mean weight of vapour in a cubic foot of air.	Mean additional weight required for saturation of the air.	Mean humidity of atmosphere.	Mean elastic force of vapour.	Mean weight in grains of a cubic foot of air.	Amount of water in a vertical column of air.							
	9 a.m.	3 p.m.	9 p.m.	Mean.	Rainfall in inches.	No. of days in which rain fell.													Truro.	Depth.	Greatest fall in 24 hours.	Date.
January	8.0	8.2	7.6	7.9	3.12	16	0.58	9	3.1	87	231	551.0	3.1	21	1	40	76	17	Frost 4, 6, 7, 9, 13, 14, 18, 19. Hail 9, 13, 14, 18, 19. Snow 12, 13. Thunder storm 11. Gale 11, 12, 31.
February	8.0	7.7	5.9	7.2	5.11	21	1.20	1	3.06	84	264	542.9	3.6	19	2	35	59	25	Frost 18, 19, 21, 22. Hail 1, 2. Remarkable Rain 1. Lightning seen, Thunder not heard.
March	7.0	6.8	5.1	6.3	1.57	13	0.31	31	2.60	79	225	554.2	3.1	31	5	26	85	8	Frost 8, 9, 10, 17, 23. Gale 27.
April	5.6	6.5	4.2	5.4	3.51	15	0.68	23	2.86	78	244	545.1	3.2	40	3	17	80	10	Frost 1, 3, 8, 13, 15, 17. Gale 1, 5, 24, 25. Hail 9. Swallow seen 13.
May	7.5	7.0	6.0	6.8	3.03	18	0.82	21	2.91	74	255	543.9	3.5	34	7	21	80	13	Frost 12. Thunder heard, Lightning not seen. Remarkable Rain 21.
June	6.8	5.9	5.3	6.0	2.26	8	1.32	23	4.07	79	366	538.0	5.0	31	5	24	76	14	Remarkable Rain 23.
July	6.2	5.0	4.7	5.3	0.40	7	0.20	7	4.73	79	422	535.8	5.8	41	6	15	86	7	Fine weather.
August	5.8	5.8	5.0	5.5	3.16	11	1.06	5	4.40	78	393	533.2	5.4	49	5	8	85	8	Remarkable Rain 5. Thunder Storm 8. Hail 6.
Sept.	6.0	6.6	7.3	6.6	6.58	25	1.06	10	4.37	86	389	535.9	5.3	48	1	11	70	20	Remarkable Rain 2, 6, 10. Hail 25, 29. Lunar Rainbow 25, 8 p.m.
Oct.	8.0	7.3	7.4	7.6	8.82	27	0.86	30	3.30	83	288	542.0	3.9	31	1	30	62	31	Hail 10, 11, 12, 23, 29, 30, 31. Gale 10, 16, 30.
Nov.	8.5	7.4	8.6	8.2	4.86	22	0.90	25	3.28	86	295	543.4	4.0	17	4	39	68	22	Remarkable Rain 4, 25, 27. Gale 18, 29. Fog 7.
Dec.	7.4	7.3	6.8	7.2	2.17	14	0.10	5	2.69	83	233	551.2	3.2	21	1	40	79	14	Frost 2, 8, 9, 10, 11, 12, 22, 23, 24, 25. Hail 25. Remarkable Rain 3.
Means	7.1	6.8	6.2	6.7	44.59	19.7			3.40	81	300	543.3	4.1	30.2	3.4	25.5	75.5	16.6	

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 flat 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.

Spring Meeting, 1885.

THE PRESIDENT'S ADDRESS.

It is, I am informed, usual in the President's Annual Address, in the first place to make mention of the losses which the Institution has sustained during the preceding year by the death of any of its members. On the present occasion I regret to say the task has devolved upon me of deploring one of the greatest losses which has ever befallen this ancient society. I refer to the death of the late Dr. Charles Barham, an eminent physician; a cultured man of letters and of science; an energetic citizen devoted to the public service of his birth-place; a kind large-hearted neighbour, and full of christian charity; his loss will be felt far and wide for many a long year to come. As a member and friend of this Institution his services and devotion have been indeed remarkable. For more than half a century, I believe, he has been one of the most active, enterprising and scientific of its members, and up to a very short time before his death he was taking the lead of the youngest of us in the promotion of a scheme for extending its usefulness. May we not hope that the fact of this scheme, for extending the buildings in connection with our Museum for the science and art classes, having been so dear to our lost friend, will lend an additional zest to the contributors, and that we shall soon see the required funds collected. If this be so, I feel sure that one of his last and great desires will have been accomplished in the manner he would himself have desired most. Dr. Barham passed away at the ripe old age of over four score years, leaving behind him an example of a life spent, not only in searching out nature's secrets and problems, but for the benefit of those amongst whom he lived and died.

Another good friend of this Institution has passed away since the last Annual Meeting: I refer to Mr. Francis Rogers, of the Crescent, Plymouth, a son of a former Rector of Camborne. He was for many years a member of our Society

and took a great interest in all that related to it, especially in its journals. He died last month and left the Royal Institution of Cornwall a clear gift of £1,000.

And now Ladies and Gentlemen, I hope you will bear with me whilst I, very briefly complete, as it were, up to date, the short history of what used to be one of the largest staple products of this old county of ours, namely: Copper.

In my address last year I gave figures which shewed that twelve years before England (practically Cornwall) was producing annually 6,280 tons of Metallic Copper out of a total production of the world of 78,037 tons, or eight per cent. In 1883, this had fallen to a little more than one and a half per cent., and I regret extremely to say that 1884 shows a still further reduction. In Messrs. Merton and Co.'s tables, the production of the whole of England is placed at only 2,500 tons out of a total production of the World of 211,613 tons, or a very little over one per cent. (1.18%). The more we look into this matter the more do figures show us how the richer deposits of foreign lands—causing such vast over-production in comparison with the demand, is taking the trade away from our own country. Thirty years ago, in 1854, Cornwall produced 188,964 tons of ore, with a copper contents of 12,241 tons. In 1884, this county produced only 39,096 tons of ore, containing 2,416 tons of copper, and in consequence of the enormously increased production in other parts of the world the price had fallen from an average of £6 8s. 6d. per ton of ore in 1854, to £3 0s. 6d. in 1884. It is true that the low prices have greatly stimulated the consumption of copper, and if there was a check to the production there would no doubt be an advance, but in my opinion the high prices of former times can never again be reached. The fact is that the production of the world has increased enormously faster than the consumption in consequence of gigantic sources of supply being constantly discovered. Take for instance the United States of America, the production of which continues to increase by leaps and bounds. Thirteen years ago it produced 11,479 tons out of a total of 78,037 tons, or 14.70 per cent.; this last year (1884) it produced no less than 69,950 tons out of a total of 211,613 tons, or 30.22 per cent., not very far short of one third of the production of the

whole world; further this total output of the world has increased in six short years from 149,156 tons in 1879, to 211,613 in 1884. How can one wonder then at the rapid fall in price, and decadence of our Copper Mining. I said last year that the outlook was dark and dreary and the results since then have more than justified so gloomy a prophecy, copper having touched, since I addressed you then, a lower price than it ever reached before.

I would now, with your permission, allude briefly to another Mineral production which, although, not a native of this county, has a very great bearing on our mining industry. I mean *Coal*.

As we are all aware, the mines of this county are supplied with the fuel necessary for their working from South Wales, and I would, in as abbreviated a form as practicable, call your attention to that extensive Coal Basin, deeming that its geographical disposition, extent and geological character, will prove of interest to our members and the community at large.

The total extent of the *South Wales Coal Field* is about 1,000 square miles, of which about 104 is situated in Monmouthshire, 518 in Glamorganshire, 74 in Brecknockshire, 228 in Carmarthenshire, and 76 in Pembrokeshire. The greatest length of the coal field is 90 miles, from Pontypool on the east, to St. Brides Bay on the west; the greatest breadth is in Glamorganshire, where it measures about 21 miles. About 23 square miles of it is covered by the water of Swansea Bay, about 135 square miles lie under the Estuary of the Loughor River and Carmarthen Bay.

So much for its disposition and extent, and now a few words as to its geological position, but which I have no doubt is familiar to most of my hearers. Underneath the so-called coal measures or coal bearing strata is the "Farewell Rock," which rests on the Millstone Grit (locally called "Plumpudding Stone" from the supposed resemblance of this conglomerate to the "Englishman's Sweetheart,") and which, in its turn, rests on the Mountain Limestone and old Red Sandstone. To the west of Swansea, the Millstone Grit is generally wanting, and the Coal Measures lie directly on the Limestone; and still further west, this formation is wanting, and the measures lie upon the Lower Silurian Rocks.

The Coal Measures are divided into three series, namely :

- 1st. The Upper or Red Ash Series.
- 2nd. The Pennant Series.
- 3rd. The Lower or White Ash Series.

The first of these is about 3,000 feet in thickness, near Swansea, and about 400 feet in the so-called "South Trough." The average thickness of coal in this series is something over 66 feet, in some districts it increases to as much as 90 and 100 feet.

The second, "Pennant" Series, varies in thickness from 1,500 to 2,800 feet. In it are several good seams of coal, amongst which are the well-known Nos. 1, 2 and 3 Rhondda, the last so remarkable for its coking properties, The average thickness of coal in this series is perhaps about 45 feet, but the variation in different districts is very considerable.

The Lower or White Ash Series is separated from the Pennant by a hard Quartzzy Rock known as the Cockshor Rock ; it varies in thickness from 2,000 feet near the South crop to 500 feet on the East of the Coalfield. In this series are several valuable seams of coal varying in thickness from 2 feet up to even 10 and 12 feet, the total average thickness of coal being from 50 feet in some districts to 70 feet in others. The celebrated steam coals of the Rhondda and Aberdare Valley belong to this division, and in it, too, is found the Iron Stone ground, which in past years was of such very great value to the iron manufacturers of South Wales.

The Coal Measures have been subjected in past ages to the vast upheavals of nature, in the same way as other geological formations; these have caused what are technically called "faults," producing large and small dislocations of the Strata. Some of these displacements are as much as from 200 to 600 fathoms. There is a large anticlinal ridge passing through the Coalfields and dividing it into two troughs, the north and the south trough. The seams on the south crop of the south trough are highly inclined, lying in places at as steep an angle as forty five degrees. This anticlinal has had the effect of enabling seams to be continued to be largely worked which otherwise would have passed to an unworkable depth.

In different parts of the Coalfield various qualities of coal are found, the two main divisions being the Anthracite and the Bituminous Coal. Between these too extremes there are various minor differences, such as the "semi-bituminous," the "free-burning," and the far-famed "smokeless steam" coal. I will not weary you with a description of the geological position of these various sorts, but merely state that it has been estimated that there are 410 square miles of Bituminous Coal, the same area of Anthracite, and about 180 square miles of what may be called transition coal, lying, as before said, between those two great divisions.

Various theories have been given to account for this extraordinary variation in the coal of the same basin, some having suggested electricity, others the immense pressure which the strata has been subjected to by nature's upheavings. Very many varieties of fossil plants, ferns, reeds, &c., are found, together with shells in the Third Series, in which the ferns so abundant elsewhere are very scarce.

Some of the shafts sunk to work the coal seams are of considerable depth, the deepest at present being, I believe, over 370 fathoms, at Harris's Navigation Colliery. The mode of working the coal varies as a general rule to suit the inclination or "steepness" of the veins; where the veins or seams are pretty flat or level the system called the "longwall" prevails, whereas in the steep measures the pillar and stall mode of "getting" is found the most suitable. I will not trouble you with a description of these modes of working, which I think would be too much of technical detail for an address of this character.

In consequence of the highly inflammable and explosive nature of the gas given off by most of the seams of coal, it is absolutely necessary for the safety of the men, to have attached to every colliery some extensive means for artificial ventilation. In old days this used to be attained by a furnace at the up-cast shaft, by which means the air being rarified at the furnace, caused a tendency to a vacuum, and drew down the down-cast shaft fresh air for ventilating the workings, and making the gas escaping uninflammable. Generally speaking now this furnace

system has given way to the very superior mode of ventilation by a Fan, erected at the top of the up-cast shaft, and which drags enormous quantities of air through the underground workings.

The quantities of coal "drawn" from a colliery varies considerably, as much as 1,000 and even 1,200 tons being in some instances drawn to surface in a day.

Compressed air is extensively used for underground haulage and pumping; and electricity is coming much into vogue both for signaling and lighting.

I have here a table shewing the quantity of coal estimated by the Royal Commission as remaining unworked in the South Wales Coal Field, in 1863, first at a depth of less than 4,000 feet, and secondly at a greater depth. From this I have had taken the quantity of coal returned as worked since that year, up to 1883 inclusive, which gives the result of something over thirty six billion tons of coals remaining unworked at the end of 1883. I also have on this table the total quantities worked at each year for the last twenty years, having increased as will be seen from 8,500,000 tons in 1854, to 24,975,433 tons in 1883. This table will I hope prove satisfactory to our Cornish Miners, as shewing that although a very large quantity of coal is being consumed, yet there remains vast quantities, waiting, as it were to be worked and sent over here and elsewhere to carry on our increasing industries.

STATISTICS—SOUTH WALES COALFIELD.

The Royal Coal Commissions' Report gives the following as the quantity of coal remaining unworked:—

	FEEET.	TONS.
At a less depth than 4,000	..	33,285,541,245.
At a greater depth	..	4,108,996,750.
		<u>37,394,537,995.</u>
Worked up to and inclusive of the year 1883,	} ..	1,018,598,689.
Coal remaining unworked	..	<u><u>36,375,939,306.</u></u>

Table showing the quantity of coal raised each year, from 1864 to 1883 (a period of 20 years), in the Coalfield.

Quantity raised in the year 1854, 8,500,000 tons.

YEARS.	TONS.	
1864.—	10,976,500.	
1865.—	12,656,336.	
1866.—	13,821,443.	
1867.—	13,661,800.	
1868.—	13,210,000.	
1869.—	13,454,800.	
1870.—	13,664,132.	
1871.—	14,035,525.	
1872.—	15,047,250.	
1873.—	16,180,728.	
1874.—	15,737,722.	
1875.—	14,173,143.	(Quantity lessened by strikes.)
1876.—	16,972,284.	
1877.—	16,911,214.	(Several new Steam Coal Collieries came into work after year 1877.)
1878.—	17,417,118.	
1879.—	17,819,043.	
1880.—	21,165,580.	
1881.—	22,234,176.	
1882.—	22,817,378.	
1883.—	24,975,433.	

And now, ladies and gentlemen, I must apologise deeply for having tried your patience, and wearied you, I fear, much with this long dissertation upon coal. My only excuse is that as it is a subject which I have been so long connected with, I thought I might be able to afford some special information on it. A further excuse I hope may be found for me, in the fact that it is a subject of such vital importance to the great staple industry of our old county of Cornwall. It would be a dark outlook indeed if to the many other clouds in the horizon of the miner was to be added this, the blackest of all, namely, the fear of a large increase in the cost of our fuel, owing to too rapidly decreasing coal reserves. Thanks to a bountiful nature, this, as my figures have shewn, is not the case: and we may therefore dismiss from our minds any apprehension on this account. With this hopeful outlook of the "bottled-up sunshine" of past ages, which still remains for the benefit of our miners and the community at large, I will conclude the subject.

Before I bring this address to a final close, I would mention the very kind gift of one of the most noted of the members of our Institution, and by which a reward for industry and research is about to be permanently established. The late Mr. W. Henwood, left a sum of money in consols, from the accumulated interest of which a gold medal of the value of ten guineas is to be purchased, and awarded triennially to the person who shall, in the opinion of the Officers of the Royal Institution of Cornwall, have contributed to the Journal of the Society the best Paper on either of the following subjects, Geology, Mining Operations, Botany, &c., &c. According to the terms of the Will the first medal is to be awarded three years after the purchase of the dies. The Council is now taking steps to acquire them.

After a long delay the valuable collection of Books relating to Devon and Cornwall bequeathed to this Institution by the late Mr. G. Freeth, of Duporth, has been received, and will be an invaluable addition to our Library.

Mr. Robert Harvey, C.E., a native of Truro, now resident in Chili, has presented us with a series of beautiful photographs illustrating the scenery of certain parts of South America. Mr. Harvey is a valued Member of this Institution, and is ever ready to befriend it. He has further offered to frame the photographs, so that they may, if thought desirable by the Council, be used for the adornment of the walls of our museum.

And now Ladies and Gentlemen, I have done. I would plead your indulgence for any shortcomings in interest owing to the dulness and technicality of the subject. My object in selecting them was simply to make use of any especial knowledge I might possess which might be of interest to my kind audience and the members of the Institution at large.

NOTES ON THE ANCIENT TOPOGRAPHY OF CORNWALL.

By R. N. WORTH, F.G.S., Corresponding Member.



An inquiry into the principal features of the ancient topography of Devon, lately resumed after having been for some time laid aside, was found to extend itself into Cornwall, and to lead up to conclusions differing widely from those which are commonly accepted. I have thought it advisable therefore to lay before the Royal Institution some notes on the results of my investigation. I do not anticipate they will meet either with immediate or general acceptance; but I have sufficient confidence in the method employed to believe that in the main they will hereafter be regarded as established. And I would point out in reference to the differences of opinion between previous investigators and myself, that the only "authorities," who can be cited as such in this enquiry, are the ancient topographers whose statements are in process of interpretation, and the accepted physical and archaeological facts that have a bearing thereon. There is no reason, other than personal, why a writer in the last century should be better able to interpret the true meaning of words written many hundreds of years ago than an independent investigator of the present day; and on the other hand it is certain that the modern enquirer has the assistance of several lines of evidence unknown to his less fortunate predecessor.

The present paper is an attempt towards a solution of the vexed problems of the Ptolemaic geography of Cornwall; and of the still more difficult issues raised in the identification of the local names in the list of cities and camps of the Anonymous Chorographer of Ravenna.

The only places mentioned by Ptolemy that can have to do with the extreme West of England are:—

	Longitude.	Latitude.
Vexala estuary	16-0 ..	53-30
Hereules promontory	14-0 ..	53-0
Antivestæum promontory	11-0 ..	52-30
also Bolerium		

Damnonium promontory	12-0 ..	51-30
also Ocrinum		
Outlets of the river Cenion	14-0 ..	51-45
Outlets of the river Tamarus	15-40 ..	52-10
Outlets of the river Isaca	17-0 ..	52-20
Outlets of the river Alænus	17-40 ..	52-40
Towns of the Damnonii—		
Voliba	14-45 ..	52-20
Uxela	15-0 ..	52-45
Tamare	15-0 ..	52-15
Isca Damnoniorum	17-30 ..	52-45
Second Augustan Legion	17-30 ..	52-35

Every one of these names has been diversely assigned. The Vexala estuary is generally regarded as that of the Parret, however, and the promontory of Hercules all but universally as Hartland Point Antivestæum too has no very wide range of location, varying only between Cape Cornwall, the Land's End, and St. Ives. The Damnonian headland has been assigned to the Deadman, but is generally accepted as the Lizard. But for the fact that Ptolemy begins his survey of the southern coast with the Cenion, I should myself rather suggest the Start.

The rivers have given more trouble. The Cenion has been variously regarded as the Fal and Tamar; Tamaris as the Tamar and the Exe; Isaca as the Exe and the Wey; Alauna as the Exe and the Stour.

With the towns it is still worse. Tamare is Tamerton, Saltash, Tavistock; Voliba—Lostwithiel, Tregony, Bodmin; Uxella—Exeter, Lostwithiel, Crockernwell, Bridgwater;* Isca—Chiselborough, Exeter, Ilchester; and the Second Augustan Legion has been placed at Liskeard.

Some of these assumed identifications are so extraordinary that at first sight it is difficult to imagine how the blunders can have arisen. The problem, however, is not so very abstruse after all. The worst errors have been made by those who have

*A recent identification of Uxella with Bridgwater on the ground that *Uchal* is "bridge" in Keltic, is founded on an etymological blunder. The "bridge" in the name is really "burgh."

trusted entirely to Ptolemy's leadership, and the next place is taken by those who have been misled by fancied etymologies.

Now a cursory examination of Ptolemy will show that there is a very marked difference—as indeed was inevitable—in the accuracy of his latitudes and his longitudes. He is very little over a degree out in his estimate of the length of Great Britain from the Land's End to Dunnet Head; but he is four degrees in excess of the estimate of the much smaller distance between the Land's End and the North Foreland; and places which are really on the same meridian of longitude are set down as differing from each other nearly 14 degrees. Moreover, while Ptolemy averages nearly two degrees in excess in the latitudes given to places in this western promontory, they are relatively placed with much greater exactness, the total range of comparative error being about 40 minutes. But the longitude is quite another matter. Between the Land's End and Exeter $6\frac{1}{2}$ degrees are allowed instead of less than $2\frac{1}{4}$; while between the Land's End and Hartland 3 degrees are given instead of 1. All in fact that Ptolemy's longitudes can do, at any rate in the West, is to indicate relative position; and to pay further attention to them would only ensure error.

There is no reasonable doubt that Isca Damnoniorum is our modern Exeter. Let us see how this fact will enable us to approximate the position of its sister towns.

The latitude assigned to Voliba is 25 minutes less than that of Exeter, and we may take the longitude so far into account as to accept the statement that it is the most westerly of the group. Running along the latitude indicated we find ourselves about the middle of Cornwall, and we shall see by and bye, from other considerations, that the most likely place is Polruan.

To Uxella the same latitude as Exeter is given, and so far as longitude is concerned it would be east of Voliba. If Uxella was a port (and all Ptolemy's western towns appear to have been near the sea) this would bring us to the north coast, and indicate in all likelihood the estuary of the Camel, which would be well within the ordinary range of error. It is a curious coincidence, if nothing more, that in this locality we have Uxella echoed in such names as Porth Izaak and Lezizick, Zanzidgie, Canalidgie, and St. Issey; and there is ample evidence that the Camel was

visited by Roman ships. The attempt to associate Uxella the town with Vexala the river may be regarded as disposed of by the difference of their recorded latitudes and longitudes.

Tamare is given half a degree less latitude than Exeter, and its longitude is practically settled by its name. It must be on or near the Tamar. But Ptolemy's latitude from Exeter would give the Eddystone. We have therefore to fall back upon other considerations.

As to the place of the Second Legion, the only one to which Ptolemy assigns a special station, assuming that it is rightly given the same longitude as Exeter, the latitude would land us somewhere on the shores of Torbay.

We cannot gain any help from the comparative latitudes of the river mouths. That would place Tamare only five minutes within the Tamar estuary—satisfactory enough to those who find it in King's Tamerton; but it would place Exeter 25 minutes up the Exe, or somewhere in the neighbourhood of Exmoor.

If we take the Land's End as our standard, assuming as we very well may, its practical identity with Bolerium, Voliba is placed 10 minutes further south, somewhere in the Channel; Uxella 15 minutes to the north, and therefore sufficiently close to the parallel of Lostwithiel, one of the favourite claimants for the seat of this long-lost town. But precisely the same relative latitude is given to Isca; and Tamare is more hopelessly lost than Voliba, 15 minutes further south, and therefore all the more at sea. The Antivestæum bearings are therefore of no use.

We turn next to those of Hartland. Voliba is 40 minutes south of this promontory, and that brings us to Polruan. Uxella has a southing of only 15 minutes. That brings us to near Boscastle, and within reasonable distance of the Camel estuary. Isca has the same latitude as Uxella, and works out for Exeter with remarkable accuracy. Tamare is 45 minutes to the south, and that brings us just outside the entrance of Plymouth Sound. The Hartland bearings are hence far more accurate than in the other cases. Still Hartland fails us in the case of Tamare, and I pass that town by until I come to deal with the list of the Ravennat.

Concerning Ptolemy, I have only further to say that his Cenion is to my mind clearly the Fal, named not from *Tregony*, but from *Kenwyn*, so that Truro really, so far as we can apply the test of nomenclature, and not its rivals Tregony and Gram-pound, is the ancient head of the district.

I do not bring Richard of Cirencester into the argument. In the topographical treatise which passes under his name, it is true that Tamara, Voluba, and Cenia are mentioned as in or adjoining Cornwall; but this is now justly discarded as a modern forgery.

We come therefore to the list of names of cities and camps—*civitates et castra*—set down by the unknown writer who is commonly known as the Anonymous Chorographer of Ravenna, and who wrote subsequently to the Saxon invasion of England, and probably about the 7th century. It has been too much the fashion to regard his list as a mere collection of “barbarous names,” and although it has been suggested that the Ravennat used some kind of map, and adopted some kind of order, yet it has been confidently asserted that we cannot settle from it the position of a single town, “since we cannot discover what was the particular plan, or whether any, which the author made use of in the arrangement.” It may be venturesome on my part to attempt the solution of a problem which has puzzled so many eminent men, but I think I shall be able to give reasons in favour of my method of unriddling the mystery, which have at least an air of probability.

One point on which all commentators are agreed, is the commencement of the Ravennat’s list at the extreme West of Cornwall; and there is also a general belief that twenty-four names which form his first group, and which precede Moridunum, the next station to Exeter in the well-known Antonine Itinerary, relate to Cornwall and Devon. These names are :—

Giano, Eltabo, Elconio, Nemetotacio, Tamaris, Durocoronavis, Pilais, Vernalis, Ardua, Ravenatone, Devionisso, Statio Deventia, Stene, Duriarno, Uxelis, Vertevia, Melarnoni, Scadum Namorum, Termonin, Mostevia, Milidunum, Apanauris, Masona, and Alongium. And then a fresh start is made with Moridunum, mentioned as the next city to Exeter—Scadum Namorum.

The first thing to be settled is the place at which we are to begin. This is one of the two keys to the solution of a problem which has always appeared more difficult than it really is. The name with which we start is *Giano*. Mr. Kerslake, whose critical acumen in questions of this kind is so remarkable, identifies this place, as do others, with Ptolemy's Cenion. And this would be a very natural conclusion if the G had the hard sound. But the Ravennat, using the Italian pronunciation, would sound the G soft. Directly I recognised this fact I saw that we had here the earliest name, apart from Iktis, recorded for a Mount's Bay port, for the second syllable of *Ludgvan* was at once suggested. This was my first step. The second was taken when the identity of the Ravennat's *Giano*, with the *Jew* which closes the popular name of *Marazion*, flashed upon me. The rest was easy. The *Gian* of the old chorographer turned out to be both the *gvan* of *Ludgvan*, and the *zion* of *Marazion*, and *Lud* and *Mara* stood confessed as in all probability distinctive prefixes. It is quite possible, whatever the *Lu* or *Lud* may mean, that the *Mara* may equal *Marhas*, "market"—as commonly interpreted. I am more concerned, however, about the root word. This is variously written—gon, syowe, gou, ysowe, ju, deythow, iewe, siew, diow, iu, sion, &c., showing a far wider range of difference between these undoubted attempts to express one and the same word, than between either and our *Giano*. I do not see how the identity can be resisted, but the discovery, while naturally aiding the *Iktis* tradition, is against the rival theories that interpret *Marazion* either as *Jew's Market*, or *Thursday Market*, to say nothing of "bitterness of *Zion!*" The original word which *Gian* is intended to represent is probably the *Kornu sian* or *zian* "sea-shore" or "strand." If *Mara* represent *marhas* we have therefore evidence of ancient commerce at *Marazion*, curiously reproduced in name at the well-known "Market Strand" of *Falmouth*. The old Cornish tongue had no *j*; its *g* almost universally had the hard sound; nor is it easy to see how the *Ravennat* could have rendered the *sian* or *zian* otherwise than he did. The *o* is of course redundant and inflexional.

An omission of the *Mount's Bay* district in ancient lists of British towns or ports is really inexplicable, and the identification of *Giano*, by removing this obstacle, satisfied me I was on the right track.

Eltabo and Elconio at once suggest as their first component, the Kornu *hayle* or *hel*=river. H is a letter the Ravennat never uses, and his *e* would sound *a*. Assuming a topographical order, we naturally look for Eltabo in connection with the stream commonly known as the Helford. No possible process of accommodation will enable us to accept Helston as Eltabo. Tuban, however, is a Kornu word meaning "dam" or "bank"; and it is a very remarkable fact that not only is there a site in Helston called the Tubbans, but that there is in St. Keverne the manor of Treraboe, or Traboe. The Ravennat's name therefore still exists. It will be remembered that Condurra, at the mouth of the Helford, has yielded some of the most important traces of Roman intercourse in Cornwall.

Elconio requires very little comment. If Ptolemy's Cenion is Kenwyn, Elconio is simply the ancient equivalent of the modern "Kenwyn River," and the place signified undoubtedly Truro. And this view is strengthened by the fact that at this point the Ravennat leaves the coast for a while and takes up a line of internal communication.

That there were ancient British roads in Cornwall is undoubted; but I have never been able to trace any evidence of Roman roadmaking. I believe, moreover, that the trunk line of communication has been lost sight of by our antiquaries, who have been misled, largely by the forgery bearing the name of Richard of Cirencester, into placing it on the south coast, instead of tracing it along the high land which forms the backbone of the two counties. The Fosse Way is said by the early chroniclers to have begun in Caithness and ended in Totnes; and this Totnes we find, from the manner in which it is spoken of in the sixth century chronicle of Nennius, was not the *town* of that name, but used in a sense equivalent to the Land's End. The confusion of Totnes, the town, with this older Totnes, has led to the loss of the real route of the Fosse Way, which there is very good evidence to show crossed Dartmoor by what is still called the great central trackway, and entered Cornwall by a ford on the Tamar somewhere in the vicinity of Hingston Down.

Now the next name on the Ravennat's list is on the line of this ancient road. Nemetotacio is manifestly corrupt, even beyond the Ravennat's wont; though we do find him venturing

upon such flights of fancy as the conversion of *Isca Damnoniorum* into *Scadomorum*. "Neme" or "Nemet" is not a *Kornu* word, though "totacio" may seem to be represented in such a name as *Tokenbury* near *St. Ive*. It occurred to me, however, that the *neme* or *nemet* might really represent a transposed and inflected form of a word of frequent combination in Central Cornwall—the *Menna* of *Mennaglaze*, *Mennabroom*, *Polmenna*, *Tuelmenna*. Whether this means *maenic* "stony," or simply *maen* "stone," is of no consequence. It certainly cannot in these instances be read *manach*, monk, as in the popular derivation of *Bodmin*, and it comes remarkably close to part at least of the word we have to deal with. Are there not then fair grounds for suggestion that this barbarous *Nemetotacio* really represents—not precisely the modern *Bodmin*, but its parent, the magnificent fortified town immediately to the south-east, commonly known indeed as *Castle Canyke*, but still retaining the older name of *Castle Mannau*. *Canyke* of course is not *Keltic* but *Saxon*—the *Conig* so frequent in *Somerset*, and not unknown in *Devon*, in *Conygar*. This earthwork is clearly from its size and position one of the most important sites in ancient Cornwall, and is manifestly the parent of the more modern but still venerable *Bodmin*, which, like *Salisbury* from old *Sarum*, and *Dorchester* from *Maiden Castle*, has descended into the watered valley. And I am not at all sure that while the "neme" represents the modern affix, the *Bod* may not be found in the "tot" of the older form.

However this may be, I feel no doubt that *Castle Canyke*, or *Bodmin* if you will, is the next station of the *Ravennat* to *Truro*. The fact that *Tamaris* succeeds shows that *Nemetotacio* is between *Truro* and the *Tamar*, and the identification of *Durocoronavis* as *Launceston* appears to indicate that *Nemetotacio* stood at a place where the roads to *Tamaris* and *Durocoronavis* diverged.

Ptolemy failed to give us any certain indication of the position of *Tamaris*; but the *Ravennat* clearly strengthens the conclusion to which I have come, for reasons which cannot be given in full here, that it is to be sought on the old main line of communication into Cornwall commonly called the *Fosse Way*, which struck the *Tamar* at a ford, and must therefore be

near the head of or above the tidal reach. It is idle to believe that in the early days when this road originated, the crossing of a difficult and at times dangerous estuary would have formed part of a customary route. The great trackway on Dartmoor points clearly from Exeter to Tavistock; the crossing place of the Tamar can hardly be placed lower than Horse Bridge, and if not Tavistock then some place in its near vicinity will represent Tamaris.

Durocoronavis I have assigned without hesitation to Launceston, and this brings us to the application of the second key to the Ravennat's list, at which I hinted. He was evidently a man unacquainted with the meaning of the Kornu-Keltic names, as with Keltic generally, for he simply turns them into Latin, flavoured by Italian pronunciation, as best he may. But Saxon names or particles he understands, and commonly translates. The old name of what is now Launceston proper was Dunheved, or Dunheafod. The Ravennat knew that *heafod* meant head or summit, and so he turned it into *coronavis*.

Leaving Launceston we then, according to my theory, return to the Truro estuary. My next suggestion may appear to savour of great simplicity—the riddle may seem too easy of solution. To me, however, this solution appears one of the very strongest points of my case.

The three names which follow Durocoronavis are Pilais, Vernalis, and Ardua. Surely it is something more than a casual coincidence that we have on the upper tidal waters of the Fal, and in much the same order—Philleigh and Veryan, and Ardevora, each with its little creek harbour. The manor of Ardevora is said to have once included St. Mawes, but is shown in Norden's Map of Cornwall to the north-east of Philleigh. There is nothing in the assumed saintly origin of the names of Philleigh and Veryan to militate against their use by the Ravennat at the date commonly assigned to him.*

* The fact that Philleigh and Veryan were usually known in the middle ages by other names is no proof to the contrary. It is a very common thing for a parish to have two names running contemporaneously, and for one to obtain casual precedence. So with the different names often borne by parishes and their chief towns. The original dedications of the churches admitted, the names must in some form have continued, and if the saints are disbelieved in the names must have existed to found the saintly myth.

In Ravenatone, the *v* being sounded as *u*, we have clearly one of the Ruans; but which, without the aid of Ptolemy, it would be hard to say. There is really no evidence that either Tregony or Grampond were Roman stations; nor does it seem easy to realise the existence of an amount of commerce in these early days that would employ five ports on the various branches of the Fal, and we have placed four there already. Polruan therefore I hold to represent both Voliba and Ravenatone. It retains traces of both names; it is to all appearance the most ancient settlement remaining on the Fowey; and it has yielded unmistakable traces of early commerce with the Mediterranean. I do not, however, believe that Ruan means Roman, or that it originated in a dedication to St. Rumon. We need not go further for a meaning than Price's *ruan*=river, or *rhyn*=promontory.

Devionisso, which comes next, evidently represents the ancient Cornish word for a fortified place—*dinas*, to which the pronunciation Deuionis comes as close as a Latin or Italian rendering of a Keltic word well can. And of the reduplicative Castell-an-dinases of the county that which best suits the reference is unquestionably the finest of them all—the magnificent entrenchment on the high ground south of St. Columb.

With the exception of Uxella this completes the Cornish towns in the Ravennat's series, but for the purpose of further illustration of his method I may mention the leading features of his references to Devonshire.

Stadio Deventia is Staddon, on the east of Plymouth Sound, where remains of an ancient settlement of importance have recently been discovered. Stene survives in Stanborough, a fine "camp" commanding a wide extent of country, in Moreleigh parish. Duriarno is evidently on the Dart; but as it simply stands for "Dart river," it may be either Totnes or Dartmouth, though probably the former.

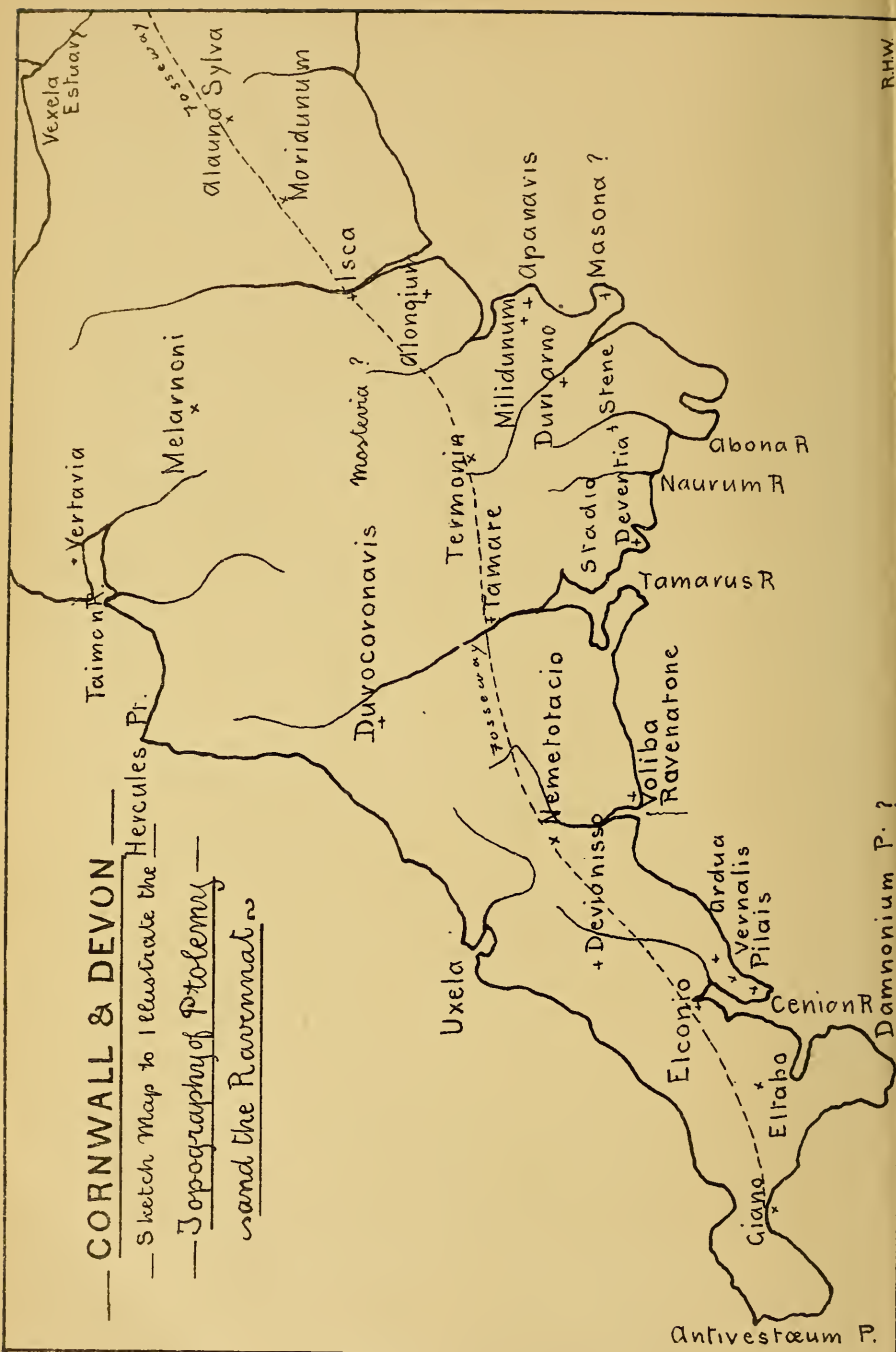
Having reached this point in exact topographical order, but for the divergence inland from Truro, the Ravennat returns to pick up the towns on the north coast which he has overpassed; and thus gives us in succession, Uxelis, Vertevia which is probably Barnstaple, Melarnoni, and Scadam Namorum. As the last is undoubtedly Exeter, and Melarnoni lies between it and

CORNWALL & DEVON

— Sketch Map to illustrate the Hercules Pt.

— Topography of Ptolemy

and the Ravennat



Vertevia, and since *arno* as in Duriarno means a river, some place on the river Mole is at once suggested, and in all probability South Molton.

And here the Ravennat again returns to take up the line of the central route left at Tamaris. His next name is Termonin, and bearing in mind that the *e* sounds *a*, and that the local pronunciation of Tor is still Tar, Termonin has a very natural rendering in Tor-hill, and we are led to locate it somewhere on the line of the great Dartmoor trackway. Without going into detail, I may say that there is a Tor-hill which shows abundant traces of ancient population, in the neighbourhood of Rippon Tor. Mostevia, which comes next, may be variously placed, but Milidunum there can be no hesitation in identifying with the great earthworks on Milber Down, near Newton Abbot. Apaunaris is indicated beyond the reach of reasonable controversy in Hope's Nose, the eastern headland of Torbay, which bore ample traces of ancient settlement. The modern Hope's is a clear corruption of the Apau which the Ravennat has preserved, and his *naris* is of course a translation of the original Scandinavian *ness*. Masona is doubtful, and may very well be Berry Head, once the site of an important station; but whether this be so or not I have no hesitation in placing Alongium on Haldon, completing the route to Exeter on the south.

It will be gathered from this that I assume the Ravennat to have worked methodically, possibly from a map, proceeding from west to east, with all the regularity possible, and taking traverses from the north to the south to complete his work. The same rule applies, so far as I am able to trace, through the counties of Somerset and Dorset; and I believe it supplies the key to the interpretation of his record for the kingdom. My belief in the correctness of this solution of his problem does not, it will be seen, depend upon a few happy guesses, or possibly chance coincidences, but upon a whole series of consecutive identifications, each of which decreases in geometrical ratio the chances of error.

The results at which I have arrived are best shown probably in the accompanying map.

THE NEW STAR IN THE ANDROMEDA NEBULA.

By H. MICHELL WHITLEY, Hon. Sec.

The Great Nebula in Andromeda is one of the best known of the many nebulæ to which the student of astronomy directs his telescope ; and is such a conspicuous object to the unarmed eye, on a moonless night, as to be often mistaken for a comet by those not conversant with the heavens : indeed, so brilliant is it, that it is a matter of surprise that it was not included in Ptolemy's list of "Nebulosæ."

It appears, however, to have been noticed in the tenth century, and the invention of the telescope was soon followed by particular attention being drawn to it.

In 1612 Simon Marius wrote an account of it, in which he describes it as resembling the light of a candle shining through horn ; closely scanned as it has been by the gigantic and space penetrating reflectors of the Herschels, Lassell, and Lord Rosse, it has yet defied all attempts to resolve it into individual stars, although the spectroscope yields a stellar spectrum, and minute stars are discernable dotted here and there over the Nebula itself, and around its borders ; but the mystery of its composition still remains unsolved.

Although the minute stars are beyond the grasp of any but the most powerful telescopes, the Nebula itself is a most beautiful object even with a small aperture.

With the appearance of the "Queen of the Nebulæ," as it has been called, I have been well acquainted since 1867, and have always seen it as a long, ill-defined, somewhat oval mass of nebulous matter, perfectly milky, and brightening very rapidly towards the centre, where the nucleus presents the appearance of a ball of milky light, obviously not a star, and the quaint description of Simon Marius "the light of a candle shining through horn" not inaptly describes it.

On August 9th of this year, at 10 p.m., the nebula presented the appearance I have always seen, the entry in my note

book being "a dim haze compressed into a ball of milky light at the centre;" but on turning the telescope on it on the night of September 3rd a most wonderful change was at once apparent: in place of the milky ball of light was a deep yellow star, of about the 7th magnitude, which shone with a steady light, void of the diffraction rings which surround stars on the dark background of the sky. It was at once apparent that a great variation had occurred, and that we had here, either the condensation of the bright nebulous matter into a brilliant sun, or that one of the small stars previously alluded to had suddenly increased in brilliancy; like the famous star of Tycho Brahe which appeared between Cepheus and Cassiopæia, in 1572.

In considering the variation in the condition of this Nebula, it becomes of great importance to ascertain what was the last date at which it was observed in its original condition.

We have seen that on August 9th I saw it apparently unchanged, and in a communication from Dr. Copeland, the director of Lord Crawford's observatory at Dun Echt, Aberdeen, I am informed that "this is a welcome confirmation of a similar observation of the same date;" at this epoch therefore there can be no doubt that no starlike nucleus was visible, but the change was near at hand; Mr. Ward claims to have detected the new star on Aug. 19th. M. Lajoie of Rheims saw it on Aug. 30th, Dr. Hartwig of Dorpat on Aug. 31st, Mr. Davis of Reading on Sept. 1st, and I observed it on Sept. 3rd, all being independent discoveries.

ITS MAGNITUDE AND COLOUR.

Like former stars which have blazed up, the brilliancy of this star gradually diminished from the first, and its colour paled: I judged it 7th magnitude on September 3rd, when it was with attention faintly visible to the unarm'd eye, and was a most conspicuous object even in a small telescope. On Sept. 27th it had diminished considerably, and was not more than 8th magnitude, whilst on Oct. 7th, it had still further declined to $8\frac{1}{2}$ magnitude.

I have placed in the following table the estimates of the magnitude of the "Nova" as rated by different observers, together with the colours assigned to it, and although personal equation causes difference in estimate, the fact of the decrease in brightness, and alteration in colour is clearly shewn.

DATE.	Magnitude of Star.	COLOUR.	OBSERVER.
1885			
Sept. 3rd	7½	... ..	Lord Crawford.
Do.	6	... ..	Ingall.
Do.	8 to 9	Orange	Huggins.
Do.	7	Deep Yellow	Whitley.
Sept. 4th	7½	Orange Red	Tarrant.
„ 5th	...	Orange	Peek.
„ 7th	...	*Reddish Yellow	Lord Rosse
„ 8th	7½	Yellowish	Denning.
„ 9th	..	Yellow	Huggins.
„ 9th	7½	Pale Yellow	Whitley.
„ 11th	7½ to 8	Pale Yellow	Whitley.
„ 13th	...	Very Pale Yellow	Hopkins.
„ 27th	...	Bluish White	Hopkins.
„ 30th	8	Pale Yellow	Whitley.
Oct. 4th	8½	Bluish White	Whitley.
„ 7th	8½	Pale Blue	Whitley.

It is evident from an inspection of this table, that not only has the star declined in intrinsic brightness, but that a noticeable change has taken place in its colour.

From having an orange hue when first observed it passed rapidly through yellow, pale yellow, and bluish white, to pale blue, *thus affording an analogy to various temporary stars* which have exhibited changes in the light emitted. Tycho Brahe's star of 1572 was first intensely white, and then passed from yellow, through red to white again.

What then is this new star that has so lately flashed upon us? That it is not the condensation of the nebula into a sun is evident, as the old nucleus, although eclipsed by its starry neighbour in small telescopes; is still distinctly visible with high powers in a large aperture; and we must therefore conclude that it is a temporary star, either in connection with the nebula itself, or between it and our system.

Where the telescope breaks down, spectrum analysis comes to our aid, in our endeavour to solve the problem.

The spectrum of the nebula itself gives a continuous rainbow tinted streak, and we must assume that (as this continuous

* Colour much the same as Aldebaran, which Smyth calls pale-rose tint, and I have always seen yellow.

spectrum is peculiar to the stars) that the nebula consists of individual stars removed to such an immense distance as to be irresolvable even in our most powerful telescopes: of infinitely minute stars: or is so full of condensed portions as to give a continuous spectrum. The spectrum of the star itself corresponds with the nebula, being a continuous one the red end, and the extreme blue being wanting, the light ceasing in the orange.

Lord Rosse examining it with his great reflector on Sept. 7th, found a continuous spectrum with a bright band or line in the green; Mr. Huggins on Sept. 3rd, with his 15-inch refractor found the same continuous spectrum, from C in the red to a little beyond F, and he also noted an apparent condensation of light from about D to B, which might be due to bright lines; and on Sept. 9th his suspicion was confirmed that there were from three to five bright lines between D and B. This evidence points therefore to the extreme probability of the star being in the heart of the nebula itself.

To sum up, the new star in the nebula in Andromeda blazed up between the 9th and the 19th of August, and from being of an orange colour, and 6th or 7th magnitude, faded to a 9th magnitude pale blue star in less than two months; whilst the evidence from spectrum analysis and otherwise, points to its being the outburst of a temporary star, within the limits of the nebula itself; but when we know all that science can tell us, we can but echo the words of the poet—

“Ye are a beauty and a mystery.”

ROLL OF FEES PAID TO MEMBERS OF SUPPRESSED CHANTRIES
AND RELIGIOUS HOUSES OUT OF THE EXCHEQUER.

2nd and 3rd Philip and Mary, (1555). Add. MSS. 8102, British Museum.

CONTRIBUTED BY THE EDITOR.

COUNTY OF CORNWALL.

£ s. d.

BODMIN, formerly a Priory.¹

FEES.—	Richard Chaumonde, head seneschal and supervisor of the said former monastery, under the seal of the aforesaid convent .. .. .per annum	12	0	0
ANNUITIES.—	William Tredenke	4	0	0
	Thomas Tredenke	4	0	0
	John Tregonwell	5	0	0
	Anthony Harvey	2	0	0
	Rich ^d Edgecombe	2	0	0
	Rich ^d Turnor	2	0	0
	John Pollarde	2	0	0
	Stephen Foxe	2	0	0
	Hugh Trevanyon	2	6	8
	John de Colorbus	4	0	0
	Roger Tallet	2	0	0
	John Dawes	2	0	0
	Henry Barre	2	0	0
	William Vyvyan	4	0	0
	John Harrye	2	0	0
	Robert Bylle	1	6	8
	John Willingtonne	2	0	0
	Henry Thomas als Relavons	3	11	8
PENSIONS.—	Rich ^d Clynor	8	0	0
	John Wylceker	5	6	8
	Thomas Hall	5	6	8

NOTE.—The extracts are given in full, in English, the original being in Latin.

1.—At the dissolution the clear value of the land belonging to Bodmin Monastery, was £270 0s. 11d. (Cott. MS. Cleo. E 4.)

John Dangall	5	6	8
Michael Pleving	2	0	0
John Best	2	0	0
Thomas Arundell and Thos. Coke, auditors of the same, by letters patent of the aforesaid Priory ..per annum.	4	0	0

LAUNCESTON, formerly a Monastery.²

FEES.—	Rich ^d Chamond, seneschal of the same, by letters patent of the aforesaid former Priory .. .. .per annum.	3	3	4
ANNUITIES.—	John Amandus	2	0	0
	John Cobbe	1	0	0
	William Denham	2	0	0
	Ralph Walker	1	6	8
	Oliver Mainwering	3	3	4
	Henry Shere	2	0	0
	Stephen George, Prior of the same ..	10	0	0
	John Hamme	6	13	4
	Rich ^d Tredenkecke	5	6	8
PENSIONS.—	Thomas Webbe	5	6	8
	John Fyrke	5	6	8
	John Shere	3	0	0

St. GERMAN'S, formerly a Monastery.³

FEES.—	Peter Corryton, seneschal of the same by letters patent, under the seal of the said Convent, formerly a Monastery .. .. .per annum.	1	6	8
ANNUITIES.—	Robert Goliton & Rich ^d Turnor ..	2	13	4
	John Grene	4	0	0
	John Benet	1	6	8
	John Swymo	2	0	0
	Walter Trelawnye	1	6	8
	John Cliffe	1	6	8

2.—The clear value of the Lands belonging to Launceston Monastery at the time of the dissolution, was £354 0s. 11d. (Cott. MS.)

3.—The clear value of the Lands of St. Germans Monastery at the dissolution, was £243 8s. (Cott. MS.)

PENSIONS.— Robert Swymmo, formerly Prior of the			
same	..	..	..per annum. 66 13 4
Stephen Segemore	..	..	„ 5 6 8
Robert Wyen	..	..	„ 5 6 8
Robert Capell.	..	..	„ 2 0 0

THE COLLEGE OF GLASNEY, formerly at Penryn.⁴

FEES.— John Killegrewe, Auditor of the former			
College by letters patent from the			
said Monastery .. ..per annum. 4 0 0			
ANNUITIES.—John Tregonwell „ 2 0 0			
Rowland Taylor „ 6 13 4			

TYWARDREATH, formerly a Priory.⁵

ANNUITIES.—William Owchins .. ..per annum. 2 6 8			
Lancem Kendall	..	..	„ 6 0 0
John Fontayne	..	..	„ 1 6 8
John Nowell	..	..	„ 1 0 0
David Harry	..	..	„ 1 0 0
Giles David	..	..	„ 1 0 0

Chantries, Colleges, Free Chapels, Guilds, &c.

PENSIONS.— John Lybbe, formerly a Monk called the			
Provost in the Church of St. Thomas,			
Glasney .. ..per annum 18 7 1			
Ralph Trelabbes, an incumbent			
in the same	..	..	„ 6 13 4
Thos. Vyvian, another incumbent	..	..	„ 6 13 4
Mathew Newcombe, another			
incumbent .. ..	..	..	„ 6 13 4
Mathew Broke, another incumbent	..	..	„ 6 13 4
Gerard John, another incumbent	..	..	„ 6 13 4

4.—See for further names below. The value of the lands at the time of the dissolution, was £205 10s. 6d. (Cott. MS.)

The College of St. Thomas, of Glasney, founded by Walter Goode, Bishop of Exeter, consisted of a Dean, seven Canons resident and five non-resident, seven Vicars, and one Chantry Priest.

5.—At the dissolution, the clear value of the Lands of Tywardreath Priory, was £123 9s. 3d. (Cott. MS.) It was one of the religious houses returned as having an income of less than £200 per annum, and came under the Act 27 Hen. VIII, Cap. 28, dissolving the smaller Monasteries.

William Kneebonde, another incumbent ,,	6	0	0
John Kelsey, another incumbent ,,	6	0	0
Robert Nese, another incumbent ,,	6	0	0
William Hawton, another incumbent ,,	6	0	0
John Chymowe, another incumbent ,,	6	0	0
Robt. James, another incumbent ,,	6	0	0
Thomas Mychell, another incumbent ,,	6	0	0
Richard Rycharde, another incumbent ,,	4	12	0
John Pounce, ⁶ another incumbent ,,	2	0	0
Thos. Molesworth, another incumbent ,,	1	6	0
Henry Kellyfrye, another incumbent ,,	1	6	0
Rich ^d Cowthe, another incumbent ,,	1	6	0
Giles Ridi, another incumbent ,,	6	13	4

The College of Crantock.⁷

Henry Kellyfry, a prebend in the College of Crantock .. per annum	4	15	10
John Pollardy, another prebend in the same ,,	3	12	0
John Ellysys, another prebend in the same ,,	5	0	0
Henry Morgan, another prebend ,,	6	13	4
Richard Baldwyne, another prebend in the same .. ,,	5	0	0
William Hardeman, another prebend ,,	3	12	0
Edmund Weston, another prebend ,,	5	0	0
William Mow, another prebend ,,	5	0	0
John Symes, an incumbent of the aforesaid College ,,	4	13	4
William Mere, another incumbent ,,	4	10	0

6.—John Pound was the bellringer, and also taught the children

7.—The Lands of Crantock College, were valued at £89 15s. 8d. at the time of the dissolution. (Cott. MS.) The staff of the College consisted of a Dean and nine Prebendaries, the Dean being also the Parson of St. Columb Minor.

Christopher Saunders, formerly dean of the aforesaid College of Crantock ,,	12	6	6
— Dawe, the last incumbent of a shrine in the Parish Church of Gulval ,,	3	18	7
William Woodwarde, an incum- bent in the former College of S. Burian ,,	5	0	0
Ludovic Jenkin, another incum- bent in the same ,,	5	0	0
Roger Wheler, another incumbent in the same ,,	2	0	0
Gentle Greinefeld, a cantarist in the Parish Church of South Petherwyn ⁸ ,,	2	0	0
John Lucas, another incumbent in the same Church ,,	6	0	0
John Langdon, the last incumbent of the Chantry of Davidstow ⁹ ,,	5	0	0
Robert Chamelet, the last incum- bent of a shrine in the Parish Church of Liskeard ¹⁰ ,,	2	7	5
Peter Warryson, the last incum- bent of a Chantry in the same called Clemens Chantry ,,	6	0	0
William John, the last incumbent of a shrine in the Parish Church of St. Clare ¹¹ ,,	2	19	0
David Henckeley, the last incum- bent of the Free Chapel of Justus de la Mayne ,,	4	12	0

8.—The Chantry at South Petherwyn was founded by William Menweneck, who left also 40 shillings yerely for the maintenance of a Scholar at Oxford, which pension Gentyll Graynfeld held in 1545.

9.—The Chantry at Davidstow was founded for the finding of a Priest to pray for the souls of the donors of lands and benefactors of the fraternity of our Lady of Dewstowe.

10.—Probably Kemp's stipendary in the Parish Church. Thos. Mowun, was incumbent in 1545, "a man mete to keep a cure."

11 —Probably the Stipendary at the Altar, in St. Annes Chapel in the Church.

William Lewson, the last incumbent of a prebendship in the Parish Church of St. Ethe ¹² ..	„	6	0	0
William Arman, formerly another prebend in the aforesaid Parish Church of St. Ethe ..	„	6	0	0
Robert Bubingtone, the last stipendary in the Parish Church of Lanteglos ¹³ ..	„	4	13	0
William Cavell, a prebend in the Parish Church of Endulyan ..	„	5	0	0
Edmund Benynyeseld, another prebend in the same church ..	„	5	0	0
John Parry, another prebend of Endellion	„	5	0	0
William Paston, the last stipendary in the Parish Church of Saltash ¹⁴	„	3	12	4
John Vyvyan, the last stipendary of a shrine in the Church of St. Columb ¹⁵	„	4	12	0
Rich ^d . Peke, the last incumbent of a Chantry in the said Church of St. Columb ¹⁶ ..	„	6	0	0
Rich ^d . Manswell, the last incumbent of one of the five Chantries in the aforesaid Church ..	„	6	0	0
Thos. Strongman, another last incumbent of one of the five Chantries in the same Church ..	„	5	0	0
Thos. French, the last incumbent of one of the five Chantries in St. Columb aforesaid ..	„	5	0	0

12.—St. Teath was a Prebendal Church, with a Vicar and two Prebendaries. Lusons and Hamons Prebendaries, both non-resident in 1545.

13.—A stipendary to minister in a Chapel in Camelford, founded by the Ancestors of Bodulgate.

14.—Smythes stipendary, to minister in a Chapel in Saltash, and to teach the children there.

15.—Probably the stipendary at the Altar of the Trinity in the Parish Church.

16.—Probably the incumbent of the Chantry in Jesu Chapel.

John Sutton, the last incumbent of one of the five Chantries in St. Columb aforesaid	„	5	0	0
Nicholas Luken, an incumbent of one of the said five Chantries called Arundell ¹⁷	„	2	13	4
Matthew Hull, a prebend in the Parish Church of St. Probus	„	4	0	0
William Rawe, the last incumbent of the Chantry of Wynnowe ¹⁸	„	4	0	0
George Chidley, another incumbent in the Church of St. Probus	„	4	19	4
Thom ^s Parker, another prebend in the said Church of St. Probus	„	3	0	0
Rich ^d White, a prebend in the said Church of St. Probus	„	1	10	0
Thomas Allway, the last incumbent of the Free Chapel of Menacuddle	„	5	0	0
John Harris, the last incumbent of St. John the Baptist in the Parish Church of Helston ¹⁹	„	6	13	4
Giles Bull, the last incumbent of the Free Chapel of St. Jacob, of Botreaux Castle	„	4	0	0
John Spry, a Minister of the Chantry of St. John the Baptist in the Church of St. Mary Wyke	„	3	6	8
Jacob Mychell, the last incumbent of a shrine in the Church of Helston	„	3	6	8
Richard Fosse, the last prebend in the Church of Trurove	„	6	0	0

17.—These five priests were the five priests of the Arundell Chantry, in the Arundell Chapel, in the South Aisle of the Church. John Lancow, Richard Typott, John Vivyan, Thomas Strongman, and John Trenoweth, were the Priests in 1545.

18.—Keyells Chantry in St. Winnow Church.

19.—St. John Baptist Chantry, founded by John Bolegh.

Michael Bathy, the last incumbent of a shrine in the Church of St. Michael of Penkevell	„	4	13	4
Thomas John, the last stipendary of a shrine in the Parish Church of Blislande	„	1	4	11
Philip John, a stipendiary in the Church of St. Burian, called the King's priest	„	4	10	0
David Barrghe, formerly Dean of the Deanery of St. Burrian at the same Church	„	25	17	4
		<hr/>		
Sum of all the Compensations in the aforesaid County of Cornwall	„	£732	4	4
		<hr/> <hr/>		

THE INSCRIBED STONE AT BLEU-BRIDGE, GULVAL.

By Rev. W. IAGO, B.A.,

This ancient monument is sepulchral, and was erected as a memorial pillar in the Romano-British Age. Some have assigned it to the 6th or 7th century, judging by the forms of its letters.

At one time it lay across the stream and was used as a foot bridge.

It has been figured and noticed by many writers, including Martyn, Dr. Borlase, Mr. Edmonds, Mr. Pedler, Professor Hübner, &c., and it has been photographed.

Fourteen years ago I visited it in company with the late Mr. Henwood of Penzance, and I have seen it again lately. It is well preserved. The words read downwards. The inscription, according to Dr. Borlase, is:—

QUENATAUS IC
DINUI FILIUS.

cut in capital letters.

This might signify—

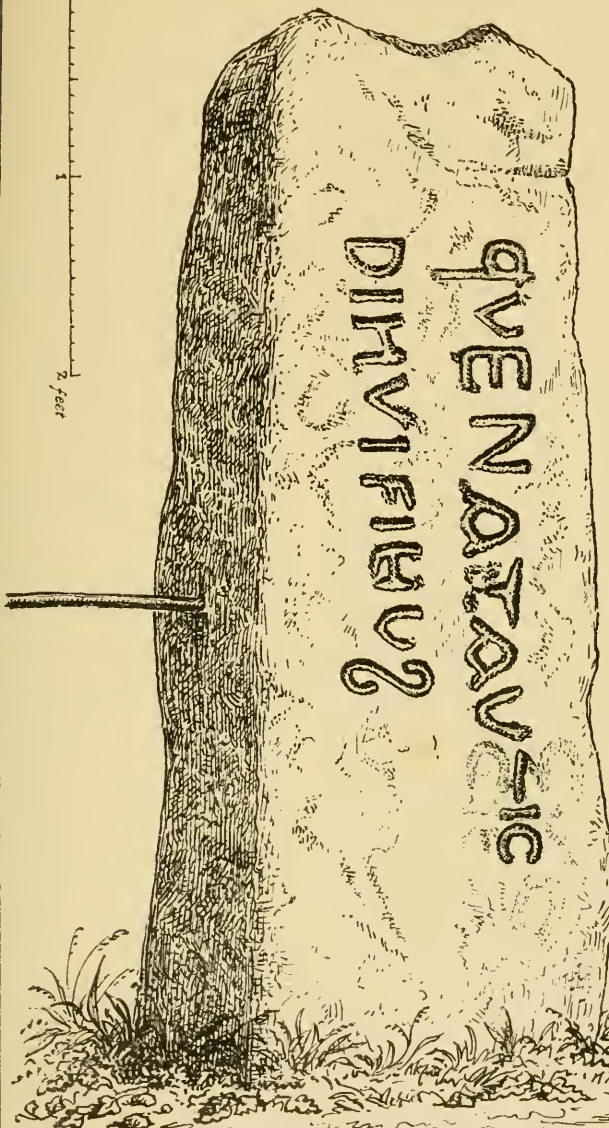
Quenatavus lies here
the son of Dinuus.

Dr. Borlase did not perceive that IC might stand for {^{HIC}JACET and therefore he read these letters as part of the following name which he made "Iedinuus." Various readings of the inscription have been suggested, perhaps the most probable is one which has been adopted by Professors Rhys and Hübner, "Quenatauci Ic," &c.

The letters display the following peculiarities:—S is made backward. N has the central stroke nearly horizontal. L and I are conjoined.

Q V E N A T A V S I C
D I H V I F I H V S ,

Some of the various Readings of the Inscription:— QVENATAV— (Quenataui), QVENATAVE (Quenatauci), QVENATAVE (E for S, Quenataug) QVENATAVIC (Quenataucic), QVENATAVE (for Quenataucus), QVENATAVZ, QVENAZAVE (Quenataug), QVE NATA V E (Que nata [A.D.] 500) ? (for D, quingentesimo ?) IC (for HIC JACET ?), ICDINVI (Icdinui), DINVI (Dirui), FILIVS (Filius).



The Legend probably signifies. HERE LIES QUENATAVUS (OR QUENATAUG, OR QUENATAUCUS), SON OF DINUUS.

W. JACO. B. A.

At Bleu Bridge, Gulval Id.

THE ORDINARY DAYES OF COYNENGE FOR MYDSOMMER
COYNAGE IN CORNWALL, JULY, 1595.

Extracted from State Papers, Domestic, Eliz., vol. 253.

COMMUNICATED BY THE EDITOR.

CORNWALL.—First at Liskard (beinge about 12 miles beyond
Saltasse) the 21 and 22nd June.

Next at Lystithiel, the 23, 24, 25 ditto.

Next at Trewrowe, the 4, 5, and 6 July.

And lastly at Helston (the furthest town, and
within 4 myles of Sir Francis Godolphins)
the 7, 8, 9 dayes of July, or p'adventur
some what after.

The Devonshire tynne are usually small peces from
1^{cwt.} to 2^{cwt.}, most of them weiging between 1
& 2 cwt.

Corneshe tynne suche as are coyned at Liskard,
are of great diversities both in forme and
waight, for many peces coyned there are lkye
the Devonshire tynne, and coyneth but 2^{cwt.}
and 250^{lb.} and some 300^{lb.}

At Listithiel, Trewrew, and Helston, they usually
waye 300^{lb.} and upward unto 400^{lb.}

A BRIEF NOTE OF ALL THE TYNNE COINED IN CORNWALL,
AT THIS MIDSUMMER COYNEDGE, ANNO 1595, FROM THE 12th
JUNE UNTILL Y^e 9th JULYE ANNO PREDICTO.

CORNWALL 842 PEECES.

		lb.	
At Liscard the 21 st and 22 nd of June.	peeses 79, weyeing	19230	
At Lisidiell the 23, 24, and 25 th of June.	peeses 73, weyeing	24030	
At Trewroe the 4, 5, and 6 th of Julye.	peeses 388, weyeing	136038	290260 ^{lb.}
At Heilston the 7, 8, and 9 th of Julye.	peeses 302, weyeing	110962	

COINED AT LISKARD, in the County of Cornwall, the 21st and 22nd
of June, 1595.

William Fuge	3 peeces	2—408	1—188		596 ^{lbs.}
Mark Tailor	2 peeces				324
Thomas Crabs	5 peeces	2 - 624	2—596	1 - 376	1596
George Homphrie	11 peeces	2 - 638	2 - 508	2 . 450	} 2796
		2 - 558	2 . 424	1 - 218	
Nicholas Warren	1 peece				252
Richard Lobbe	2 peeces				628
Roger Taprel	5 peeces	2 - 546	2 . 516	1 - 352	1414
John Brey	5 peeces	2 - 432	2 . 372	1 - 218	1022
Nicholas Bowhay	4 peeces	2 . 394	1 - 118	1 - 102	614
John Nourthy	2 peeces	.....	.....	.....	316
John Veale	4 peeces	2 . 504	2 - 482	.....	986
Ralph Westcott	4 peeces	2 - 554	2 - 528	.....	1082
James Stephens	2 peeces	1—210	1—148	.....	358
Rob ^t . Bennet	1 peece				360
J ^{no} Gay	2 peeces				428
John Rawlyn	7 peeces	2 . 628	2 - 628	1—314	} 2202
		2 . 632			
Edward Brodlake	2 peeces				380
George Tapril	2 peeces				492
Richard Fleit	2 peeces				492
Richard Rawley	4 p ^s .	2 - 608	2 - 292		900

Richard Caunter	2 p ^s .				388
John Budge	3 p ^{cs} .	2 - 412	1—300		712
John Hicks	4 peeces	2 - 650	1—118	1—122	890
Liscard	79 Peeces				19230 ^{lbs} .

COINED AT LISTIDIELL, in the County of Cornwall, the 23, 24,
25th of June, 1595.

John Mark	6 peeces	2—620	2 - 606	2 . 560	1786 ^{lb} .	
Richard B. Cock	3 p ^{cs} .	2 . 720	1 - 396		1116 "	
J ^{no} . Beard	2 p ^{cs}.	.....	.....	.....	750 "
J ^{no} . Rawline	4 p ^s .	2 - 314	2—320		634 "	
George Taprel	4 p ^s .	2 . 902	2—474		1374 "	
Tristram Canardy	2 p ^s .				722 "	
George Homphrie	1 p ^s .				134 "	
Richard Dalamane	15 peeces	{	1 - 230	2 . 664	2 - 782	} 4732
			2—442	2 . 728	2 - 546	
			2 - 628	2 . 712		
Hamet Mynhed	35 peeces	{	2 . 672	2 . 742	2 . 732	} 12686 ^{lb} .
			2 . 742	2 . 742	2 . 742	
			2 . 704	2 . 720	2 . 730	
			2 - 716	2 - 740	2—752	
			2 - 728	2 . 720	2 - 704	
			2 - 728	2 . 744	1—428	
Stephen Deny	1 p ^s.	.....	.....	.....	196
LISTIDIEL	73 peeces				24030 ^{lbs} .	

COINED AT TREWROE, in the County of Cornwall, the 4th of
July, 1595.

Robert Trethewy	16 peeces	{	2—738	2 - 708	2 . 730	} 5546 ^{lb} .
			2 - 720	2 - 712	2 - 496	
			2—714	2 . 728		
J ^{no} . Pye	35 peeces	{	2 . 728	2 . 704	2 - 706	} 12468
			2—718	2 . 710	2 - 718	
			2 - 712	2 . 700	2 - 720	
			2 - 720	2 - 720	2 . 766	
			2 - 790	2 . 706	2—694	
			2 . 660	2 . 698	1 - 298	
J ^{no} . Bove	8 peeces	{	2 - 702	2 - 744	2—658	} 2798 .
			2 - 694			
Anthony Trethewy	8 p ^s .	{	2—800	2 - 776	2 - 708	} 2912 "
			2—620			
Martin Pavert	3 p ^s .		2 - 728	1—346	1074 "	
Ralph Polkinhorn	2 p ^s .				864 "	
Richard Cole	2 p ^s .				770 "	

W ^m . Buscawen	1 peece				212 ^{lb} .
Walter Tregonow	2 p ^s .				604
Edward Mynnow	3 p ^s .	2 - 554	1—340		894
J ^{no} . Cock	3 peeces	2 - 646	1—362		1008
Martin Sandow	3 p ^s .	2 . 718	1—302		1020
Francis Richard	2 p ^s .				690
Peter Courtney	1 p ^s .				270
Richard Frekeane	2 p ^s .				640
Colane Skewey	2 p ^s .				562
J ^{no} . Pines	32 peeces	{ 2 - 720	2 - 720	2—720	} 11158
		{ 2 - 756	2 - 646	2 . 714	
		{ 2 . 762	2 - 710	2 - 700	
		{ 2 . 742	2 . 718	2 - 618	
		{ 2 - 742	2 - 726	2 - 514	
		{ 2 - 650			
J ^{no} . Coppithorne	4 p ^s .	2 - 598	2 - 620		1218
Th ^{os} . Tomlyn	3 p ^s .	2 - 702	1—466		1168
J ^{no} . Paule	1 peece				414
Reinald Mahun	4 peeces	2 - 802	2 - 588		1390
Stephen Daniel	1 p ^s .				306
Stephen Treruse	1 p ^s .				306
Anth ^y Pye	3 peeces	2 - 652	1 - 300		952
Nowel Rowe	1 p ^s .				448
Nowel Rawe	1 p ^s .				420
Henry Rowes	9 p ^{es} .	{ 2 - 872	2 - 728	1—354	} 3384
		{ 2 - 736	2 - 694		
J ^{no} . Brown	1 p ^s .				436
Pyram Outey	1 peece				404
W ^m . Julian	4 p ^{es} .	2—812	2 - 746		1558
J ^{no} . Woolcok	1 peece				374
Stephen Harry	15 peeces	{ 2 . 696	2 - 704	2 . 840	} 5750
		{ 2 . 710	2 - 720	1—502	
		{ 2 - 702	2 - 826		
		{ 2 - 696	2 - 636	2—654	
Sampson Stephens	5 peeces	{ 2—646			} 2632
Thomas Fosse	4 p ^s .	2 - 698	2 - 702		
Richard Red	10 p ^s .	2 - 646	2 - 646	2 - 604	} 3118
		2 - 588	2 - 634		
		2 - 704	2 - 702	2 - 660	
Alexander Bone	14 peeces	{ 2 - 694	2 - 676	2 - 476	} 4652
		{ 2 - 740			
Richard Donne	2 p ^s .				738
Hamet Mynheer	5 p ^s .	2—702	2 - 696	1—370	768
Nicholas Rosevear	1 p ^s .				373
J ^{no} . Hawes	11 peeces	2 - 802	2 - 812	2 - 786	} 4608
		2 - 840	2—816	1 - 552	

Anthony Hawkin	2 p ^s .				714		
W ^m . Sampson	24 peeces	}	2 - 662	2 - 766	2 - 636	}	
			2 - 682	2 - 782	2 - 578		
			2 - 688	2 - 662	2 - 706		
			2 - 694	2 - 702	2 - 498		8056
W ^m . Rawlin	2 p ^s .				730		
Th ^{os} . Richards	16 p ^s .	}	2 - 746	2—742	2 - 562	}	
			2 - 850	2—746	2 - 594		5652
			2 - 750	2 - 662			
J ^{no} . Pope	3 peeces		2 - 626	1—422		1048	
J ^{no} . Peryn	6 peeces		2 - 712	2 - 704	2 - 700	2116	
Rich ^d . Delaine	15 peeces	}	2 - 694	2 - 662	2 - 528	}	
			2 - 646	2 - 688	1 - 342		4974
			1 - 372	2 - 744	1—298		
Andrew Drewartha	1 peece				502		
W ^m . Beachamp	38 peeces	}	2—770	2 - 770	2 - 644	}	
			2—770	2 - 784	2 - 686		13746
			2—732	2 - 720	2 - 670		
			2—746	2 - 760	2 . 652		
			2 . 720	2 - 742	2 - 636		
			2 . 752	2 - 746	2 . 670		
			2—776				
Richard Tankine	2 p ^s .				720		
William Ruyn	1 peece				506		
James Freya	7 p ^s .		2 - 696	2 - 680	}		
			2 - 595	1 - 206		2176	
J ^{no} . Paskoe	2 p ^s .				626		
Oates Mare	3 p ^s .		2 - 446	1—314	760		
Walter Daniel	3 p ^s .		2 - 854	1—250	1124		
Richard Cocks	7 p ^s .	}	2 - 662	2—874	1—310	}	
			2 - 678				2524
Martin Robis	1 p ^s .				336		
J ^{no} . Christopher	1 p ^s .				162		
Oppe Tredjian	10 peeces	}	2 . 802	2—718	2 - 672	}	
			2 - 704	2—668			3564
Rich ^d . Brend	10 peeces	}	2 - 782	2 - 558	2 - 628	}	
			2 - 804	2—816			3588
Jenckine Daniel	1 p ^s .				198		
William Binian	3 p ^s .		2 - 626	1 - 306	932		
TREWROE			388 Peeces		136038 ^{lb}		

COINED AT HELSTON in the Countie of Cornwall, the 7th of July, 1595.

J ^{no} . Penberthy	3 peeces	2—736	1—464	1200 ^{lb} .
H ^y . Penlarick	1 p ^s .			508
J ^{no} . Williams	3 p	2 - 586	1 - 328	914

Henry Amdel	2 p ^s .				524				
J ^{no} . Wallis	1 p ^s .				498				
Thomas Clise	32 peeces	{ 2 . 704 2—766 2 - 750 } { 2—680 2 - 784 2 - 766 } { 2—744 2 - 764 2 - 766 } { 2 - 752 2—750 2 - 814 } { 2 - 744 2 - 760 2 - 728 } { 2—752 }	{ 2 - 736 2 - 804 1 - 414 } { 2 - 720 2 - 776 }	{ } { } { } { } { } { }	12024				
William Lanyon	4 p ^s .					1—422	2—792	1—512	1726
James Trenhail	2 p ^s .								532
Michael Rawe	2 p ^s .								750
Jonathan Trelaney	3 p ^s .					2 - 632	1 - 322		954
George Parkine	1 p ^s .								384
Edward Coad	3 p ^s .	2 - 600	1—402		1002				
Walter Burlas	9 p ^s .	{ 2 - 736 2 - 804 1 - 414 } { 2 - 720 2 - 776 }							
Thomas Gervais	1 p ^s .					396			
J ^{no} . Sandry .	3 p ^s .	2 - 682	1 - 348		1030				
Henry Polcow	3 p ^s .	2 - 712	1—388		1100				
Walter Benet	1 p ^s .				384				
W ^m . Pendervice	5 p ^s .	2 - 604	2 - 662	1—236	1502				
J ^{no} . Young	1 peece				502				
J ^{no} . Hooper	1 peece				546				
Benedick Trounson	2 p ^s .				554				
William Flank	2 p ^s .				616				
J ^{no} . Draper	5 p ^s .	2 - 790	2 - 752	1—480	2022				
Rich ^d . Warren	2 p ^s .				744				
Henry Waren	1 p ^s .				358				
Thomas Rice	6 p ^s .	2 - 652	2 - 634	2 . 570	1856				
Henry Trenwith	2 p ^s .				628				
Edmond James	8 p ^s .	{ 2—776 2 - 750 2 - 812 } { 2—732 }							
William Thomas	2 p ^s .					3070			
William Tonne	2 p ^s .				718				
Henry Trelisick	2 p ^s .				344				
Thom ^s . Waren	7 p ^s .	{ 2—776 2 - 612 1—408 } { 2 - 778 }							
J ^{no} . Bassevergis	14 p ^s .		{ 2—776 2 - 774 2 - 750 } { 2—752 2 - 766 } { 2—720 2 . 720 }			2584			
William Chiverton	1 p ^s .					5240			
J ^{no} . Wearne	1 p ^s .					362			
J ^{no} . Tregoes	1 p ^s .				330				
Michael Trenithick	1 p ^s .				256				
J ^{no} . Martyn	1 p ^s .				272				
Peter Michel	1 pece				452				
					392				

Tho ^s . Sentobyn	3 p ^s .	2 - 716	1—402		1118				
J ^{no} . Trewick	1 p ^s .				230				
Benedic Hockin	2 p ^s .				462				
Thomas Fosse	4 p ^s .	2 - 684	2 - 304		988				
Richard Michel	1 p ^s .				458				
Michael Angwin	14 p ^s .	} 2 - 686 2 - 764 2 - 752	2 - 750 2 - 720	2—788 2—776	} 5336				
J ^{no} . Davy	4 p ^s .					2 - 750	2 . 742		1492
Martyn Thomas	2 p ^s .								734
J ^{no} . Thomas	2 p ^s .				734				
Sir Frauncis Godolphine, Knight, 60 peeces		2 - 76	2 . 772	2 . 754					
		2 - 760	2 . 804	2 . 766					
		2 - 744	2 . 804	2 - 706					
		2 - 766	2 . 792	2—802					
		2 - 766	2 . 790	2 - 732					
		2 - 726	2 . 766	2—792	22990				
		2—766	2 - 766	2 - 728					
		2 - 766	2—766	2 . 750					
		2 - 786	2 . 776	2 . 770					
		2 - 728	2 . 750	2 . 750					
Christopher Udy	22 p ^s .	2—766	2—766	2—752	} 8400				
		2 - 776	2 - 766	2—760					
		2—766	2 - 764	2 - 766					
		2—766	2 . 42						
Edw ^d . Noy	7 p ^s .	} 2 - 760 2 - 668	2 - 694	1 - 312	} 2434				
J ^{no} . Richards	1 p ^s .								512
Pasco Tendean	3 p ^s .	2 . 924	1 - 374		1298				
Rob ^t . Coad	3 p ^s .	2 - 718	1 - 330		1048				
J ^{no} . Harry	2 p ^s .				552				
J ^{no} . Tonckine	1 p ^s .				284				
James Thomas	4 p ^s .	2—636	2 - 464		1100				
J ^{no} . Diggon	5 peeces	2—626	2 - 670	1 - 358	1664				
Rich ^d . Eave	8 peeces	2 - 756	2 - 750	2—742	} 3008				
		2—760							
J ^{no} . Tonne	7 p ^s .	2 - 558	2 - 684	1 - 348	} 2290				
		2 - 706							
William Williams	3 p ^s .	2 . 776	1—456		1232				
Thomas Buggyns	2 p ^s .				766				

HEILSTON 302 Peeces. 11096²lbs.

NOTES ON THE EXCURSION OF 1885.

BY REV. W. S. LACH-SZYRMA.

I esteem it a great favour that during the year of my presidency of our Penzance Natural History and Antiquarian Society, I have been permitted to assist in conducting the Royal Institution of Cornwall over some of our antiquarian curiosities of Penwith. In answer to the Secretary's suggestion, I venture to put down a few thoughts in addition to those which it was my privilege to read to your society on the spot.

Our visit was well timed, for fortunately only a few days before the interesting granite menhir at Gulval had been discovered. This menhir, built into the church-wall, was probably once crowned with a cross. The pattern carved on it, as I mentioned, appeared like one common in Roman Villas, and may mark one of the many signs we have of the survival of Roman influence in the Romano-British period of Cornish History.*

The church of Gulval itself is more interesting than generally appears. It is one of the oldest mediæval parish churches in Penwith, and some of the walling is believed by competent authorities to be very ancient. The following notes on the probable history of S. Gudowal or Gulval I gave at the spot.

The origin of the name Gulval is obscure. It is usually associated with S. Gudowal or Gurval, a bishop of the sixth century: he was bishop of S. Malo. There are grave doubts about his biography, which is supposed to be fictitious. His festival is on June 6th, and Gulval feast is on November 12th. Has not his supposed connection with Gulval been an after-thought. He does not seem to be the real S. Gulval.

*The inscription is very obscure. It was at first thought to be Ia, but recent investigation leads one to think it may be Unui.

I am rather inclined to take Llwyd's opinion that Gulval is connected with Cunoval or Cymbeline, (to use the Latinized form familiar to all readers of Shakespeare) the father of Rialobran or Rialo the great and brave, (in the Cornish sense) the chief who lies buried under the menhir, on the borders of this parish close to the Mên-an-tol which is well-known as the Mên Seryfa. If so, may I venture to conjecture that after the persecution by the heathen Teudar was over, and the Christians drove him out of Cornwall, as tradition and the "Beunans Meriasek" affirm, S. Gulval or Cymbeline settled here as a Christian, and possibly Christianised this locality and set apart the ancient oratory, which is likely to have been built into this Church.

It is quite possible that Gulval or Cymbeline may have been a layman and a soldier, for certainly some of the Cornish saints were layman—e.g., S. Gerontius, or, as we call him now, S. Gerrans, was a king and a famous British warrior; S. Constantine, who was also a king, and so on. Or if we assume that Cymbeline the father of Rialobran was the S. Gulval of this place and a bishop, it is possible that like S. Germoe he may have taken orders late in life. It should be also remembered that in the Brito-Celtic Church celibacy was not enforced.

Putting together the shreds of evidence, is it too much to suggest that the real S. Gulval may be the ancient Cornish Christian Chief Cunoval, who probably settled in this country soon after the defeat of Teudar and the expulsion of the heathens, or their conversion, and who not improbably was the first Christian chieftain of this Land's End district. In other parts we find the name of the parish church and its dedication connected with the establishment of Christianity in the district.—e.g., S. Gwinnear, after the Irish Missionary Bishop S. Gwinnear or Gwinear; S. Leven, after the Missionary Silvanus; S. Ives, after the martyr S. Ia; S. Germoe, after the Bishop and King Germoch; and the three Perrans, after the great Missionary, Bishop S. Kieran or Piran. All these titles are connected with the establishment of Christianity in the district, why should we try to connect Gulval with a bishop of S. Malo, who is half fabulous, who has never been proved to have had anything to do with Cornwall, and whose feast is 6 months distant from the parish feast of this place?

But whoever S. Gulval was, it is quite possible, I believe, that some very ancient walling has been built into this church. Mr. Loftus Broch, the learned Secretary of the British Archaeological Association, on examining the north transept, said the walling might be of any age, and that possibly the original oratory of S. Gulval was built into this present Church.

In the taxation of Pope Nicholas, this is called "Ecclesia de Lanesly." And about 1395, Bishop Stafford's register calls it the Parish Church of Gudvele, alias Wolvele." There is a S. Welvele, at Laneast.

I shall not describe in detail this beautiful and ancient edifice. I leave that to those more competent in this speciality of ecclesiastical architecture. I would, however, draw the attention of the antiquaries to it, and to the interesting stone recently found in the chancel wall.

The churchyard of Gulval being situated in one of the warmest parishes in Great Britain, has by the present vicar been adorned with many exotic plants, such as can only flourish elsewhere in conservatories. The vicarage gardens of Gulval (which we had not time to see) are extremely interesting from the stand-points of the horticulturist and climatologist, as one of the finest sub-tropical gardens in Great Britain.

Castle-an-Dinas, which we next visited, is an interesting British castle, famed among tourists and archaeologists.

In Towednack we had an interesting Cornish church different from the others in its vicinity, in its possession of a chancel and a dwarfed tower. The legend about this tower is a folk-tale, the variants of which appear in many parts of Europe, *i e.*, that the tower was intended to be lofty, but as the masons reared it by day, Satan knocked its top off by night—a sort of storm-myth connected with very old traditions.

Proceeding from Towednack we soon came in sight of the sea to the north, and then approached the interesting scene of the Eagle's Nest, I would recommend to our naturalist members the ingenious utilization of a very rugged piece of rock scenery (characteristically Cornish) into a most picturesque garden with natural rockeries of huge size. I regard the Eagle's Nest as one of the most striking scenes of the kind I have ever

beheld, and perchance it has few parallels in England. The thought of this charming little combination of art and nature might be advantageously carried out in many other parts of Cornwall, where rock scenery might be combined with landscape-gardening into charming and striking effects.

From Eagle's Nest (which I fear some of our party did not examine) our next stage was to the far-famed Zennor Quoit, a very fine dolmen, possibly a work of some Pre-Aryan race, the ancient megalithic builders of pre-historic times. Who these people were it is hard now to say, but I am inclined, for reasons which I have recently given at our Penzance Natural History and Antiquarian Society, to regard them as a people who lived here before the arrival of the Celts and Cymri into Great Britain. The tendency of recent researches is to throw back the date of our Cornish antiquities into a far remoter past than was dreamt of by Cornish Antiquaries in the last or early part of the present century.

In Zennor Church we had an interesting old church, one of the chief points of interest in which is the curious mermaid's head and bust carved on a pew end. This is connected with the mermaid legend of Zennor, *i.e.*, of how the Zennor choir once were so skilled in singing that they charmed the mermaids out of the sea, and that one of these circe undines was seen by the squire's son in Zennor church and was followed by him to Zennor Cove, where she drowned him in the waters. As a matter of fact the mermaid was held as a religious symbol by the ancient Cornish people (as we learn in the dramas).

In our return we passed very near the famous Mulfra Quoit, and the still more famous Lanyon Quoit, Mên-Seryfa, and Mên-an-Tol, each of which antiquities I could recommend to members of our Institution as worthy of a visit.

The Annual Excursion, 1885.

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The annual excursion took place on September 25th, and the following constituted the party :—The Revs. Canon Moor, G. L. Church, W. S. Lach-Szyrma, and A. H. Malan, Major Parkyn (hon. secretary of the institution) Dr. Jago, Mrs. Jago, and the Misses Jago, Mrs. Warington Smyth, Miss Masterman, and Messrs. H. M. Jeffery (Falmouth) H. James, C. B. Harvey, C. Barrett, W. J. Rawlings, W. J. Criddle, E. Heard, J. Bryant, J. Barrett, E. Parkyn, W. N. Carne, G. B. Millett, J. Symons, and T. Clarke.

A short run along the Eastern-green, and through Possescave, brought the excursionists to Gulval Church. The recently constructed entrance to the churchyard was very much admired, and also the beautiful way in which the churchyard is laid out. The Rev. W. W. Wingfield, the vicar of Gulval, met the party at the church, and kindly explained the objects of interest connected with the venerable edifice. The Rev. W. S. Lach-Szyrma, to whom the party was very much indebted throughout the excursion for much valuable and interesting information regarding the various places and things visited, also gave a short account of the probable origin of the attachment of the name Gulval to that parish, and detailed the antiquarian associations of a finely marked stone recently discovered and erected near the porch. Mr. Lach-Szyrma also took the opportunity to point out that Gulval is one of the warmest spots in all England, possessing about the mildest winter of any place in the kingdom. As an endorsement of these remarks, the Rev. gentleman directed attention to the large number of exotic plants which were planted—thanks to the vicar—in the churchyard, and which flourished there as well as they did in conservatories in other parts of the country.

Castle-an-Dinas was the next point on the programme. The summit of the very high hill having been reached, the party obtained one of the most magnificent views to be seen in the

county. The peninsular form of West Cornwall was strikingly observable from this lofty standpoint, as the sea could be seen almost entirely surrounding the land. Mount's Bay—with Penzance and Newlyn nestling in a corner—St. Michael's Mount standing out with striking picturesqueness. From this elevation the excursionists viewed "The four seas," the Atlantic, the English Channel, the Bristol Channel, and St. George's Channel. Here again the Rev. W. S. Lach-Szyrma contributed some acceptable information respecting the spot and its associations. He stated that "Castle-an-Dinas" was a repetition of the same idea in two different languages, and he likewise called attention to the triple fortifications surmounting the top of the hill.

Towednack Church was next reached, after a most enjoyable drive through one of the most wild and romantic parts of Cornwall. This church was described by the vicar (the Rev. Mr. Tyacke, of Lelant) and the Rev. W. S. Lach-Szyrma. The latter pointed out that it was a church, with a chancel, said to be the only one of the kind in Cornwall. It also possessed bench ends dated 1633, and a communion service of 1576. The legend with regard to the extreme lowness of the church tower was that "a very objectionable person," while the tower was building, would carry away in the night what the masons erected during the day, so that they at length had to give up the undertaking. From Towednack a splendid drive along the north coast brought the company to Zennor parish. Tracks were made across the heath and gorse until Zennor Cromlech was discovered, surrounded on every hand by scenery of stern magnificence. Zennor Church was afterwards visited. It is a quaint old place, profusely whitewashed internally. Some of its interesting architectural features were inspected, and a very curious old bench—evidently representing a mermaid—was noticed. From this place the homeward journey was begun, another glorious run across country bringing the excursionists to Penzance, all thoroughly delighted with their day's enjoyment. On arriving at Penzance the company dined at the Western Hotel, under the chairmanship of Dr. Jago, F.R.S.

RESULTS

OF THE

METEOROLOGICAL OBSERVATIONS

MADE AT THE

ROYAL INSTITUTION OF CORNWALL,
TRURO,

In Lat. 50° 17' N., Long. 5° 4' W.,

IN THE

Years 1840 to 1881, Inclusive,

WITH SOME

NOTES OF RESULTS AT OTHER STATIONS IN CORNWALL,
Since the Year 1728.

EDITED FOR THE INSTITUTION, BY

C. BARHAM, M.D., CANTAB., F.M.S.

TRURO

LAKE AND LAKE, PRINTERS, &c., PRINCES STREET.

1883

Summary of Meteorological Observations

REGISTERED AT THE

ROYAL INSTITUTION OF CORNWALL.

Some years have elapsed since it was determined by the Council of the Royal Institution of Cornwall that a summary of the meteorological observations made and recorded at their Museum should be prepared, and presented to the members ; and the work was entrusted to my care. Unavoidable delay has occurred ; but it has been of some advantage by adding to the series the years 1880 and 1881, which have been marked by some interesting peculiarities.

The observations recorded extend from 1840 to 1881, inclusive ; but it is only since the beginning of 1850 that the instruments have been placed as they are at present ; and it has been thought best, while shewing the annual results in regard to temperature during the whole term, to limit the full tabular statement,—combining in one view all principal meteorological elements, and exhibiting the results for each month separately,—to the period of thirty-two years throughout which the conditions have been identical. Those conditions are as follows :—

The barometer is a standard made by Barrow, and compared with the standard barometer at the Royal Observatory, Greenwich, by Mr. Glaisher. It is hung on a north wall in the Museum ; and corrections for Index error (+0.008), capillarity (+0.013), height above mid-tide (43 feet), and temperature have been applied.

The thermometers are hung in a hexagonal wooden shed, 7 feet in height, 3 feet 6 inches in width, and 2 feet 6 inches from front to back, with conical roof placed on the flat leaden roof of the Museum, with single louvres 4 inches wide, inclined outwardly in the sides at an angle of 50 degrees, above the level of 4¹/₂ feet 2 inches, with interspaces of 2¹/₂ inches vertical, between which the air passes freely, the part below being pierced by numerous holes 1 inch in diameter. The Dry

and Wet Bulb instruments are by Negretti and Zambra, and have been corrected by Mr. Glaisher. The instruments are all between 4 and 5 feet above the flat leaden roof, and from 55 to 56 feet above half-tide.

Some few years ago a Kew standard thermometer, certified by Mr. Whipple, was obtained, and has been used from time to time for verifying the indications registered.

The direction of the wind has been determined by vanes, its force estimated on a scale, inaccurate of course, from 0 to 6. For several years past a 5 inch rain-gauge by Casella has been used, but previously one 10 inches in diameter. They have stood on the flat covering of a skylight, at just the same height as the thermometers, the level of the top of the gauge being 13 inches above that of the leaden roof.

The amount of sunshine, and its brilliancy are matters of rather rough estimate, but valuable for comparison of seasons ; the bright "sunshine recorder" now in use at the Falmouth Observatory will furnish corrections.

The record of the actual weather—wet or dry—at the time of observation, is of considerable value, in relation to different years and different places.

For the estimate of cloudiness the sky has been approximately divided into ten parts—a rough guess. The results obtained at fully equipped observatories, especially those furnished from Greenwich by Mr. Glaisher, may be applied with much advantage to supplement these local attempts, which may in return furnish some elements towards completeness of knowledge.

During the greater part of this long succession of years this Institution has been indebted to its Curator, Mr. Newcombe, for punctuality and accuracy in making and registering observations, and moreover for preparing the tables of results annually issued to the members, and the communication to Mr. Glaisher weekly and Mr. Scott fortnightly, of our observations.

Through the whole term observations on temperature and rain-fall have been regularly made and recorded by Mr. Whitley at Penarth, half-a-mile east of this Museum, at an altitude of 100 feet. I need not say to what excellent account he has turned these and other like researches, especially in their bearing on agriculture.

The quantity of rain measured near his house and also at Alverton, a quarter of a mile to the N.E. of the Museum, at an altitude of 40 feet, have been published in groups of years with our own; and test observations have been constantly noted in my garden, at Strangways Terrace, 90 feet above the sea, where a float gauge, and more recently a Stevenson's stand, have been added to the older arrangements.

The establishment of one of the Government Observatories at Falmouth, furnished with self-recording instruments, has provided a valuable standard for comparison between the neighbouring coast and Truro, together with more largely based averages; and the results of the comparison of different stations have been very ably given in the Reports of the Royal Cornwall Polytechnic Society. The inquiries systematically carried out in the harbour on the temperature of the sea, serve to supplement Mr. Whitley's previous researches over a wider area, and are of the highest interest and value.

At various stations in Cornwall, observations have been carefully made and recorded during the whole of the above period, and through a great part of it in others. Among the former may be classed Bodmin, Falmouth, and Helston, and in the latter division Plymouth,—which in relation to meteorology may be included in this county,—Liskeard, Altarnun, Penzance, and Scilly. These records will not be given at all at length, but they will be used for a comparative estimate of the influence of the position of the several localities on their climate. A condensed statement will also be given of the contents of a series of like records of observations of earlier date, commencing with those of Dr. Huxham of Plymouth, in his work "*De Aere et Morbis epidemicis*," and extending from 1728 to 1752. The next in succession is the MS. of the famous Dr Borlase, noted at Ludgvan, near Penzance, beginning in 1754 and ending with August, 1772, for the loan of which I am indebted to his descendant, Mr. W. Copeland Borlase, M.P. It is marked by scrupulous regularity in its entries.

This record is followed by a third, in the form of diagram, exhibiting the daily results noted, a few miles east of Truro, for each month separately, from 1765 to 1782. The two volumes containing this beautiful example of depiction of natural phenomena were kindly given to me by the late

Mrs. Gregor, of Trewarthenick, where the observations were chiefly made by a member of that family.

The next notes in our possession were made by Mr. James, at Redruth, from 1787 to 1806; and the registers kept at Penzance by Mr. E. C. Giddy, from 1807 to 1827, are closely followed by Mr. Moyle's, at Helston, continuous subsequently with our own. The rainfall has been noticed at many other places.

The observations of earlier date are of course defective in various ways, which will be pointed out; but their value is still considerable, and they help to make up a nearly continuous secular record of unusual length of the climate of one district, and that marked by distinct characters. It may further be remarked that each set of observations, noted as they are with scrupulous attention to the method adopted, is complete within itself, so that it presents a correct view of the monthly and yearly averages and variations within its own cycle. Taking all these materials into consideration, an approximate estimate may be obtained of the climate of Cornwall during the last century and half.

C. BARHAM, M.D., (*Cantab*) F.M.S.

Results of Observations of the Temperature of the Air

AT THE
OBSERVATORY OF THE ROYAL INSTITUTION OF CORNWALL,
FOR THE YEARS NAMED.

Years	JANUARY.						FEBRUARY.						MARCH.					
	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.
1840	48.16	41.09	56	26			45.83	39.83	53	32			47.53	37.08	55	28		
1841	45.0	35.6	55	18			44.0	36.0	55	22			53.7	43.2	61	32		
1842	43.5	34.9	52	23			49.0	40.1	53	33			50.5	42.6	56	33		
1843	47.8	42.5	54	29			42.5	36.4	52	23			49.6	41.9	59	26		
1844	47.9	41.1	55	24			46.0	37.9	55	27			50.2	40.0	60	32		
1845	47.9	40.0	54	31			45.5	35.5	52	26			46.0	33.8	57	17		
1846	50.5	46.5	55	40			49.4	45.4	57	26			50.5	42.7	55	33		
1847	42.4	40.4	51	34			39.8	37.6	50	27			43.1	40.3	52	30		
1848	42.8	34.1	53	26			49.1	46.7	52	31			48.7	40.7	56	36		
1849	48.9	41.2	53	35			50.7	41.1	54	33			50.3	40.4	55	35		
1850	45.9	34.1	55	18	40.7	39.2	51.9	42.2	47	33	48.2	45.9	50.7	35.6	58	20	44.6	41.5
1851	51.1	41.1	55	30	47.16	45.51	50.4	36.5	55	27	45.0	42.82	51.7	40.7	57	29	47.9	45.3
1852	51.6	38.0	57	27	47.6	45.2	50.2	38.0	57	26	45.3	42.3	51.3	38.3	66	29	46.0	42.4
1853	50.2	39.7	55	27	46.4	43.8	43.2	30.9	50	17			53.1	35.8	62	25	43.3	40.1
1854	49.0	38.7	55	26	45.4	43.8	49.4	38.0	54	27	45.4	41.8	54.5	38.2	60	25	48.7	44.2
1855	44.1	32.9	54	19	39.2	37.2	41.1	28.5	52	10	35.9	34.4	48.6	36.1	55	25	43.9	40.8
1856	48.2	39.0	54	21	44.5	42.8	50.2	40.3	56	22	45.9	43.8	50.6	36.4	57	27	45.0	41.4
1857	47.0	37.2	54	26	41.9	39.8	49.5	36.7	54	26	44.2	41.5	50.7	37.4	56	28	45.6	42.5
1858	49.5	38.4	54	27	44.3	42.1	47.5	37.0	56	25	42.8	40.3	51.5	37.1	68	24	45.7	42.3
1859	49.3	39.9	54	25	45.3	43.4	51.9	39.0	57	28	46.4	43.8	53.0	42.7	57	29	48.5	45.4
1860	49.7	39.1	56	26	44.9	42.8	46.3	33.7	52	22	40.6	37.5	50.1	39.4	55	24	47.1	42.9
1861	46.6	36.5	57	24	42.2	40.3	50.0	37.7	57	28	45.1	42.9	52.3	40.4	58	29	47.4	44.6
1862	50.1	41.5	56	27	46.0	43.9	49.5	41.0	58	24	45.0	42.9	53.4	41.5	61	27	48.3	46.0
1863	50.0	39.1	57	27	44.5	42.5	52.2	39.7	56	26	46.3	43.9	53.6	40.3	62	28	47.5	44.7
1864	47.5	37.5	54	21	43.1	41.5	46.2	33.5	57	13	40.7	37.6	52.7	40.6	63	28	47.4	44.3
1865	46.6	35.3	53	22	41.8	40.3	47.2	37.4	53	28	42.9	41.1	47.1	34.7	56	26	42.5	39.5
1866	51.6	41.3	56	24	47.0	44.8	49.6	38.7	56	24	44.3	41.9	49.8	38.0	58	24	44.3	41.5
1867	45.3	34.4	57	8	40.1	38.6	53.0	44.5	58	23	48.9	47.4	48.8	36.9	57	28	43.2	41.3
1868	47.0	37.0	55	17	42.9	41.3	51.4	40.3	57	24	46.5	44.4	54.0	41.8	61	29	48.7	46.2
1869	51.4	42.8	56	28	47.7	46.0	53.2	44.1	64	30	49.2	46.9	48.8	37.0	55	27	43.8	41.1
1870	46.9	38.7	56	28	43.3	46.4	44.6	34.8	53	23	49.6	38.7	50.4	38.0	59	25	45.0	42.4
1871	44.0	34.5	51	18	39.7	37.4	51.5	43.4	57	31	47.7	45.6	54.0	40.9	65	30	48.5	45.2
1872	50.5	40.2	54	25	45.9	43.9	52.6	42.2	58	34	48.1	46.0	53.0	42.0	58	26	48.3	45.1
1873	49.8	41.6	55	27	46.1	44.0	45.5	36.3	53	27	44.0	38.5	51.1	40.3	50	27	46.6	43.8
1874	51.0	41.0	55	30	46.2	44.0	50.3	40.5	53	31	46.0	43.3	52.7	42.3	58	28	48.1	44.9
1875	52.3	45.4	55	32	49.9	48.3	46.1	37.2	54	28	42.1	39.6	50.0	38.2	56	26	45.2	42.2
1876	47.0	36.8	56	22	42.6	40.5	50.2	41.2	57	20	46.2	44.1	49.6	38.8	55	27	44.5	42.0
1877	52.1	40.8	56	29	57.3	45.8	52.1	43.7	57	33	48.4	45.8	51.3	37.5	59	25	45.8	42.9
1878	49.8	39.6	55	24	44.9	43.1	50.1	40.5	57	27	46.7	44.8	52.3	39.6	59	26	47.1	43.7
1879	42.7	34.0	53	16	38.9	37.2	48.9	38.4	54	25	44.1	42.7	51.1	35.9	60	24	45.0	42.8
1880	41.8	34.9	55	22	40.3	38.5	52.0	39.1	55	28	46.7	44.9	53.9	42.2	59	32	48.2	46.2
1881	42.0	28.0	53	12	36.0	33.9	48.3	37.1	54	25	43.5	42.1	52.0	39.0	58	19	46.2	43.4
32 Years	48.27	38.10	57	8	43.90	41.85	49.24	38.50	64	10	44.62	42.59	51.80	39.16	68	19	46.19	43.21

Results of Observations of the Temperature of the Air

AT THE
OBSERVATORY OF THE ROYAL INSTITUTION OF CORNWALL,
FOR THE YEARS NAMED.

Years	APRIL.						MAY.						JUNE.					
	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.
1840	57.05	43.15	68	36			61.58	49.12	69	40			63.80	51.06	70	42		
1841	56.5	43.4	74	37			62.7	49.0	77	41			62.9	50.6	66	45		
1842	53.5	40.56	64	31			59.3	46.7	67	37			69.2	51.2	76	45		
1843	54.6	44.06	60	34			57.5	48.4	62	36			63.4	51.5	76	45		
1844	54.9	41.1	67	32			63.4	45.4	73	37			68.3	51.0	74	39		
1845	58.8	40.0	68	33			60.5	46.7	68	37			67.9	51.4	83	42		
1846	53.7	45.2	59	38			59.9	50.3	69	44			68.0	53.8	77	52		
1847	50.4	41.9	55	34			58.3	48.1	67	40			62.6	52.3	69	47		
1848	53.8	43.3	61	35			63.5	48.5	70	41			61.7	51.7	66	43		
1849	50.8	40.4	57	35			59.4	48.1	65	38			63.4	51.7	69	41		
1850	56.4	45.2	61	32	51.8	48.7	58.4	42.3	68	28	53.3	49.4	68.5	49.2	83	40	62.0	57.0
1851	54.9	39.5	61	29	49.7	44.6	56.2	43.8	70	33	54.5	50.4	67.5	51.9	82	39	61.4	57.1
1852	57.3	40.5	67	26	50.9	46.4	60.4	46.5	67	34	55.1	51.6	62.9	5.9	69	11	58.2	54.8
1853	56.3	44.7	61	29			59.0	42.7	70	32			64.2	51.1	73	42	60.5	56.3
1854	61.2	41.2	69	31	53.9	48.0	59.9	43.0	70	32	54.2	50.3	63.6	50.2	73	39	58.4	55.3
1855	57.0	39.2	70	22	49.8	45.9	57.6	42.3	76	32	51.4	47.2	62.9	49.4	76	42	57.9	54.1
1856	56.3	41.6	62	31	51.2	47.6	58.0	43.7	67	31	53.2	49.7	66.2	48.2	82	36	60.9	56.2
1857	56.8	43.3	62	30	49.9	46.5	62.4	43.8	71	31	53.8	50.4	70.0	53.6	86	48	62.9	57.2
1858	57.9	42.9	70	28	51.7	48.5	61.1	45.5	74	34	54.1	49.9	70.0	55.2	82	44	63.1	58.0
1859	56.8	42.0	74	25	50.4	46.6	63.5	45.8	75	36	56.7	51.7	69.2	52.0	76	42	62.3	57.4
1860	53.8	38.5	64	27	48.0	43.5	63.3	47.9	72	35	56.9	52.4	61.8	49.6	68	43	56.0	52.4
1861	57.4	40.2	65	31	50.4	46.2	63.2	44.4	77	31	56.1	50.0	66.2	54.4	77	48	60.5	56.7
1862	57.7	45.8	69	30	52.6	49.6	62.8	48.9	70	36	56.9	52.9	64.1	50.7	71	42	58.5	54.5
1863	58.9	41.6	68	32	51.7	48.4	61.3	44.0	69	32	54.9	51.0	64.4	50.3	72	41	58.1	54.4
1864	59.6	44.5	69	31	53.2	48.8	64.9	47.1	84	35	58.5	53.8	63.9	50.2	68	36	58.9	54.8
1865	64.0	44.3	79	31	56.1	51.6	61.8	46.0	73	34	55.7	51.7	72.9	50.1	83	43	64.7	57.8
1866	56.6	44.0	66	31	50.9	47.8	60.1	42.3	71	28	53.9	48.4	68.0	51.9	86	45	61.9	57.2
1867	56.8	45.6	63	32	51.9	50.2	61.8	48.1	70	32	55.2	52.7	61.8	50.9	79	44	61.4	57.2
1868	58.5	41.4	67	28	51.5	48.8	66.0	48.0	78	36	58.1	54.6	69.9	52.4	80	41	62.5	59.1
1869	59.9	44.9	72	32	53.2	49.6	59.4	46.7	67	35	54.0	50.7	66.7	48.0	76	38	60.1	55.5
1870	58.2	39.6	67	26	51.0	47.7	61.0	45.8	74	32	55.4	51.0	68.4	52.3	82	38	62.6	55.8
1871	56.0	46.0	60	29	51.7	48.7	64.0	44.5	80	32	56.8	51.3	65.0	50.7	75	35	59.3	55.0
1872	56.0	40.6	66	30	50.4	46.6	58.3	43.0	67	32	52.9	48.7	64.7	50.7	80	41	59.1	54.4
1873	55.9	41.0	68	27	50.4	46.0	60.0	46.0	69	32	55.0	50.3	66.0	52.9	72	42	60.8	55.8
1874	58.0	44.7	70	30	53.0	48.8	61.0	43.0	69	31	55.6	50.3	67.8	50.3	75	41	61.5	55.6
1875	56.0	40.6	67	29	50.9	46.1	63.3	46.5	76	37	57.2	52.4	65.2	52.0	76	41	59.6	55.2
1876	53.4	41.3	61	29	49.8	47.1	61.6	41.1	68	31	54.5	48.8	66.8	49.3	80	39	60.3	55.3
1877	55.4	43.5	60	32	50.1	47.1	58.5	43.0	64	31	52.8	48.5	68.2	53.5	79	43	61.8	57.2
1878	56.5	43.4	61	28	51.4	48.5	61.6	48.0	67	37	55.7	52.3	67.9	52.4	84	43	61.7	57.3
1879	54.0	38.3	60	24	47.5	45.4	57.2	43.8	64	31	51.7	48.6	62.9	51.7	68	47	57.4	54.5
1880	55.4	42.2	61	31	49.8	46.5	63.5	44.7	75	31	56.0	50.9	64.4	49.8	71	36	58.2	54.7
1881	55.4	42.1	65	31	49.8	46.6	64.0	45.9	77	35	56.7	51.9	65.8	50.8	81	37	59.4	54.7
32 Years	57.01	42.32	79	24	51.26	47.37	61.10	44.94	84	28	55.03	50.78	66.23	50.93	86	35	60.36	55.87

Results of Observations of the Temperature of the Air

AT THE

OBSERVATORY OF THE ROYAL INSTITUTION OF CORNWALL,

FOR THE YEARS NAMED.

Years	JULY.						AUGUST.						SEPTEMBER.					
	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.
1840	62.06	52.54	70	44			68.33	55.13	73	44			69.63	52.70	73	36		
1841	64.2	52.9	70	48			65.6	54.3	71	46			63.7	54.5	71	43		
1842	67.3	54.9	76	47			69.7	57.2	77	47			62.5	52.4	68	43		
1843	66.06	55.1	78	48			68.7	54.2	80	45			67.9	53.7	75	45		
1844	69.6	53.3	79	45			65.5	52.4	70	41			66.4	50.1	78	37		
1845	60.05	53.6	70	46			66.2	51.9	79	44			63.7	49.7	73	32		
1846	66.5	58.2	74	50			67.0	59.5	71	55			63.8	55.6	69	51		
1847	67.8	57.1	73	51			66.4	55.4	72	45			62.3	51.3	64	44		
1848	66.1	54.9	72	49			64.1	54.2	66	50			62.8	51.4	68	42		
1849	66.5	55.4	71	51			66.0	56.6	70	50			63.2	59.4	72	43		
1850	68.4	54.5	76	45	63.2	59.3	66.9	52.5	77	39	61.5	58.0	65.0	49.0	73	39	59.3	55.6
1851	67.7	51.8	76	40	62.3	57.9	70.7	55.7	79	41	65.1	61.1	68.1	46.6	76	34	59.8	55.5
1852	74.3	56.5	82	50	66.9	61.5	69.7	52.7	78	43	63.5	58.2	65.8	49.7	73	35	60.5	56.2
1853	66.0	55.1	77	44	61.8	58.2	69.2	51.7	76	44	61.7	58.4	64.3	48.3	70	38	58.8	55.6
1854	67.5	54.8	80	44	62.7	58.4	69.9	52.3	84	40	63.8	58.7	70.1	50.7	79	39	63.2	57.6
1855	69.0	56.0	77	48	64.0	60.4	69.9	54.2	80	42	64.0	60.2	68.6	46.8	76	32	61.2	56.4
1856	68.7	55.0	83	44	63.1	59.3	72.4	57.2	89	48	66.9	62.3	64.5	50.3	73	41	59.0	55.6
1857	71.3	56.5	81	45	64.4	59.8	73.9	56.8	83	48	65.9	60.9	69.6	52.3	77	42	62.3	58.6
1858	68.4	54.0	77	31	61.1	56.4	70.8	50.3	81	44	63.4	58.1	67.3	54.8	81	44	61.1	58.1
1859	77.2	55.6	85	47	69.3	53.1	72.1	54.5	86	47	65.2	60.2	64.7	51.5	71	40	59.3	55.5
1860	68.3	50.8	75	44	61.6	56.0	64.0	52.9	68	45	59.2	55.5	62.8	45.6	73	34	56.2	52.6
1861	67.6	55.4	72	47	61.7	57.8	69.6	56.5	77	47	62.9	59.0	66.4	50.2	79	37	59.4	55.8
1862	66.3	52.6	71	43	60.5	56.8	68.7	53.5	75	42	61.3	58.4	66.1	51.8	74	39	60.1	57.4
1863	72.7	51.3	86	37	64.6	58.8	68.9	54.5	75	42	63.0	59.0	62.0	47.5	68	36	56.4	52.3
1864	71.2	53.5	81	43	64.7	58.8	69.6	50.2	82	36	62.7	56.8	65.0	52.0	74	40	60.1	56.8
1865	69.3	55.2	79	43	63.6	59.6	68.5	54.5	82	44	62.2	59.2	71.6	56.5	76	45	65.0	61.4
1866	70.8	54.5	84	47	63.8	59.5	66.8	54.6	73	43	61.3	58.2	62.9	50.2	69	35	57.6	54.7
1867	69.9	53.4	79	40	62.9	58.8	71.2	55.6	78	45	63.9	59.1	65.9	49.8	75	38	59.9	55.2
1868	76.6	57.0	84	45	68.3	64.5	69.5	56.0	79	47	63.6	61.0	69.0	53.7	82	44	62.4	60.2
1869	71.3	53.0	81	41	64.8	60.5	71.7	52.5	85	39	64.4	60.0	65.0	53.3	70	40	60.0	57.7
1870	71.9	56.7	84	46	65.7	59.5	71.0	53.0	81	38	64.7	57.9	67.5	50.1	74	36	60.8	55.5
1871	67.0	55.8	78	45	61.7	58.1	73.6	56.4	85	46	64.6	61.8	65.6	51.1	75	39	59.3	55.7
1872	69.1	56.0	83	48	63.0	59.2	69.8	54.0	80	43	63.6	58.5	64.5	53.0	72	31	59.2	55.3
1873	68.6	53.0	79	43	63.3	58.3	67.6	55.9	81	45	62.8	58.9	63.3	50.8	70	40	57.9	54.3
1874	70.0	54.5	78	41	64.8	59.2	68.0	54.0	79	45	62.7	58.4	65.0	52.6	74	39	59.8	56.3
1875	67.3	52.7	78	41	61.6	57.0	70.2	54.4	77	42	64.1	59.2	68.0	54.8	76	41	62.7	59.0
1876	73.5	55.3	86	39	66.9	60.9	71.3	55.9	81	48	64.4	59.3	63.8	52.8	69	44	58.6	55.3
1877	67.7	53.0	78	43	61.6	57.9	68.3	54.4	74	38	62.4	58.7	63.5	46.6	68	33	57.1	53.6
1878	73.2	56.0	85	46	66.2	60.8	69.8	56.3	74	46	64.0	60.1	66.3	52.2	75	43	60.4	56.6
1879	64.1	53.5	74	47	58.8	56.0	66.1	54.3	73	41	61.0	57.5	63.8	48.3	70	35	57.7	54.9
1880	69.3	53.3	77	46	62.3	58.0	73.8	59.4	82	44	65.7	61.0	67.3	54.0	79	44	61.2	57.7
1881	70.8	53.8	83	37	63.5	58.7	66.9	53.0	76	41	61.2	57.3	66.3	46.6	70	36	57.9	54.3
32 Years	69.84	54.28	86	31	63.58	59.03	69.70	54.28	89	36	63.39	58.88	65.92	50.73	82	31	59.82	56.08

Results of Observations of the Temperature of the Air

AT THE
OBSERVATORY OF THE ROYAL INSTITUTION OF CORNWALL,

FOR THE YEARS NAMED.

Years	OCTOBER.						NOVEMBER.						DECEMBER.					
	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.	Mean of all Highest.	Mean of all Lowest.	Absolute Highest.	Absolute Lowest.	Dry Bulb.	Wet Bulb.
1840	55.03	45.03	59	35			45.50	40.60	58	34			40.74	37.57	55	23		
1841	56.7	43.8	64	40			51.5	42.6	57	29			48.4	40.9	54	27		
1842	53.9	41.7	60	32			50.3	44.4	56	34			50.7	45.8	56	35		
1843	56.4	47.7	69	33			51.9	42.8	57	33			52.8	45.9	55	33		
1844	57.9	46.0	65	31			52.1	43.2	59	28			43.8	36.9	53	21		
1845	58.2	47.8	64	34			53.8	44.6	58	34			50.3	40.9	54	28		
1846	53.6	48.8	60	38			49.7	45.5	56	32			38.3	33.0	47	24		
1847	58.7	50.9	62	44			54.7	45.6	60	32			49.3	42.2	56	30		
1848	56.4	46.8	66	36			50.4	41.6	54	34			50.7	43.0	58	32		
1849	57.2	48.6	63	40			53.5	45.7	59	39			47.2	38.7	56	26		
1850	57.2	41.2	63	29	51.3	48.8	55.2	44.5	62	31	51.1	48.9	52.3	40.9	60	24	47.8	45.8
1851	59.9	48.2	67	32	55.7	53.3	50.8	35.3	56	24	45.1	42.7	50.0	38.8	60	26	45.8	43.7
1852	57.9	44.3	62	32	53.0	50.0	56.3	45.6	60	28	52.0	49.5	54.7	43.9	58	28	50.9	48.9
1853	59.2	47.4	64	36	55.0	52.1	53.6	39.7	60	23	48.9	46.5	45.3	34.4	52	23	41.1	39.0
1854	59.6	53.3	73	34	54.2	51.7	51.9	36.8	60	20	45.4	43.3	51.3	42.0	54	26	47.0	44.6
1855	59.0	47.4	67	34	54.2	51.5	50.2	38.7	59	27	46.0	43.1	48.0	37.1	54	21	43.8	41.5
1856	60.9	50.1	67	37	56.5	54.0	52.5	41.9	61	28	47.9	45.5	50.4	40.3	62	29	46.1	44.2
1857	61.4	50.0	70	41	56.1	51.2	55.0	43.0	61	32	49.9	47.8	53.2	44.8	59	32	49.9	47.9
1858	59.1	46.5	66	30	52.9	50.3	51.4	39.9	57	27	45.9	43.1	51.3	41.8	56	29	46.8	44.9
1859	60.6	46.9	73	30	54.6	51.3	53.6	44.2	60	26	49.1	46.5	47.7	34.4	57	9	41.8	39.9
1860	58.9	47.9	65	35	54.2	51.6	51.1	41.1	56	33	46.6	44.1	46.6	33.9	55	11	42.3	39.4
1861	63.2	49.6	73	37	56.8	54.1	51.2	37.2	58	21	44.0	42.1	50.1	40.7	57	26	45.3	43.0
1862	60.2	50.1	67	29	55.3	53.4	51.6	35.5	59	26	43.5	42.0	52.8	44.6	58	32	48.8	47.3
1863	58.5	47.9	64	33	53.8	51.4	54.1	46.7	58	30	50.8	48.8	51.5	43.5	54	29	48.0	46.4
1864	59.0	47.3	65	32	53.8	51.2	52.0	40.0	57	26	46.5	44.4	45.8	36.3	55	22	41.2	40.0
1865	62.0	49.1	71	31	56.2	53.0	54.3	42.0	58	31	48.8	46.2	51.7	42.3	58	25	47.3	45.3
1866	60.9	48.4	66	37	55.4	53.2	55.0	45.0	61	29	50.8	48.7	53.5	44.6	58	32	49.3	47.5
1867	59.3	47.2	67	35	53.9	50.6	53.1	38.3	62	27	45.5	42.5	48.7	39.2	57	22	43.8	41.7
1868	58.6	45.1	67	32	52.9	50.7	51.0	39.5	57	27	45.7	43.7	53.6	46.0	59	38	49.9	48.0
1869	59.6	48.7	75	38	54.5	51.4	54.3	40.2	58	27	48.5	46.2	47.0	36.3	56	10	42.0	40.0
1870	60.8	47.7	69	31	55.4	51.6	51.4	39.2	58	30	45.8	43.5	43.0	31.9	56	14	37.8	35.9
1871	59.0	48.0	63	36	54.6	51.7	50.0	39.3	57	22	44.7	41.6	48.4	34.7	53	21	42.0	39.4
1872	55.8	42.8	62	31	50.8	47.9	52.2	43.3	59	33	48.4	46.0	50.9	42.0	56	27	46.8	44.9
1873	57.7	44.5	72	26	51.9	48.8	51.6	43.5	56	31	48.1	45.7	50.9	41.0	54	25	46.4	44.3
1874	59.0	48.0	63	38	54.5	51.4	54.4	44.3	61	31	50.0	47.6	46.5	35.5	54	26	41.3	38.8
1875	58.6	47.7	66	36	53.5	50.9	51.3	42.5	60	21	47.4	44.8	47.2	37.7	55	21	43.3	41.1
1876	59.5	49.6	68	35	55.1	52.8	51.3	41.0	60	23	48.5	46.1	52.9	41.8	57	30	48.0	46.4
1877	60.5	45.2	68	32	54.2	51.0	54.8	42.1	59	32	49.4	46.9	50.6	39.2	54	29	46.0	43.7
1878	60.5	48.7	67	34	55.4	52.4	48.6	37.3	54	26	43.6	41.3	44.7	30.6	55	13	38.5	36.7
1879	59.4	46.6	66	31	53.8	51.2	50.0	35.6	56	25	43.9	41.3	45.9	31.8	54	17	39.6	38.0
1880	56.1	41.7	69	25	49.3	46.5	52.1	43.0	58	28	47.4	45.1	52.2	43.2	56	29	48.1	46.0
1881	57.6	43.3	65	25	51.5	48.2	57.1	45.3	62	32	52.9	50.5	50.6	37.1	57	23	44.6	42.6
32 Years	59.36	47.20	75	25	54.08	51.22	52.59	40.92	62	20	47.51	45.17	49.67	39.13	62	9	44.84	43.05

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.

Years	PRESSURE OF ATMOSPHERE.										TEMPERATURE OF AIR.							WIND.								RAINFALL.				WEATHER.			
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean elastic Force of Vapour.	Mean Pressure of dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Wet Bulb.	Mean Dew Point.	PROPORTIONATE DIRECTION.								Total in Month.	Greatest Fall in 24 Hours.	Number of days on which Rain fell.	AT TIME OF OBSERVATION.										
												E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.				Dry.	Wet.	Shine.	Gleam.	Cloud.	Average Cloudiness.					
1850	30.062	30.089	29.454	2.8	29.774	45.9	34.1	55	18	40.7	39.2	37.1	5	5	8	2	2	14	7	2.95	18	74	19	15	4	43	7.6						
1851	29.733	3336	28.758	3.00	433	51.1	41.1	55	30	47.16	45.5	43.6	3	3	10	29	8	5	2	9.58	29	60	33	18	9	35	7.1						
1852	29.781	380	29.170	2.70	511	51.6	38.6	57	27	47.6	45.2	40.6	2	1	6	28	4	6	6	7.83	24	64	29	26	6	30	6.3						
1853	29.770	325	29.130	2.76	491	50.2	39.7	55	27	46.4	43.8	41.2	1	6	28	4	6	6	6	3.88	24	74	19	16	23	23	6.0						
1854	29.825	565	28.611	2.72	553	49.0	38.7	55	26	45.4	43.8	40.8	1	5	2	8	4	9	1	6.02	29	74	19	16	23	23	7.7						
1855	30.173	560	29.344	2.14	959	44.1	32.9	54	19	44.5	42.8	40.9	2	13	2	1	6	4	3	.65	8	76	17	17	4	41	6.8						
1856	29.566	655	28.915	2.74	282	48.2	39.0	54	21	39.2	37.2	33.9	14	13	16	15	9	6	3	3.98	22	76	17	17	4	41	6.8						
1857	29.852	408	29.234	2.53	599	47.0	37.2	54	26	41.9	39.8	37.7	4	4	1	13	12	23	24	4.67	20	73	20	20	5	37	7.3						
1858	30.322	318	29.817	2.41	081	49.5	38.4	54	27	44.3	42.1	39.2	1	11	8	18	17	13	14	1.70	18	81	12	22	7	33	7.5						
1859	30.195	851	29.394	2.65	930	49.3	39.9	54	25	45.3	43.4	40.7	8	1	6	21	13	11	11	3.82	19	77	16	10	6	46	7.8						
1860	29.649	369	28.711	2.49	400	49.7	39.1	56	26	44.9	42.8	40.6	1	5	9	19	18	20	18	6.91	26	65	28	18	4	40	7.2						
1861	30.121	564	29.899	2.29	892	46.6	36.5	57	24	42.2	40.3	37.5	10	13	20	26	8	1	6	1.12	13	70	23	15	1	46	7.3						
1862	29.969	405	29.158	2.66	643	50.1	41.5	56	27	46.0	43.9	41.7	4	13	13	14	16	13	16	5.10	22	73	20	10	9	43	7.5						
1863	29.805	556	28.976	2.54	547	50.0	39.1	57	27	44.5	42.5	39.6	3	3	23	19	23	14	8	5.02	25	71	21	20	9	33	7.0						
1864	30.146	492	29.703	2.47	895	47.5	37.5	54	21	43.1	41.5	38.6	6	15	19	12	7	5	16	3.62	18	69	24	13	10	39	7.4						
1865	29.611	319	28.866	2.35	372	46.6	35.3	53	22	41.8	40.3	38.3	7	4	5	19	15	10	24	6.40	22	74	19	30	2	30	6.7						
1866	906	689	841	2.75	627	51.6	41.3	56	24	47.0	44.8	42.8	6	1	30	24	21	10	1	6.92	18	72	21	28	2	34	7.1						
1867	979	246	850	2.07	468	45.3	34.4	57	8	40.1	38.6	37.3	14	6	3	21	9	11	8	1.36	23	72	20	23	4	36	7.0						
1868	950	518	29.020	2.35	711	47.0	37.0	55	17	42.9	41.3	39.9	4	4	4	23	12	16	13	7.15	21	64	29	16	7	39	7.1						
1869	984	498	28.918	2.08	684	46.9	38.7	56	28	47.7	46.0	44.5	6	22	6	30	18	8	1	6.84	1	64	29	16	2	37	8.0						
1870	30.006	681	29.306	2.38	764	46.9	38.7	55	25	43.3	41.4	39.0	8	10	7	15	16	3	23	3.19	65	71	21	17	8	37	7.5						
1871	29.843	326	28.876	1.98	641	44.0	34.5	51	18	39.7	37.4	34.3	12	6	8	11	10	18	20	4.29	80	74	19	20	2	40	7.3						
1872	621	166	222	2.60	357	50.8	40.2	54	25	45.9	43.9	41.3	5	3	10	30	20	20	5	8.13	28	63	30	16	4	42	7.5						
1873	728	230	578	2.61	463	49.5	41.6	55	27	46.1	44.0	41.4	8	2	14	33	15	11	4	5.32	25	66	27	12	3	47	8.3						
1874	30.115	620	29.387	2.60	851	51.0	41.0	55	30	46.2	44.0	41.3	4	4	2	24	24	25	12	4.80	23	73	20	20	1	41	7.7						
1875	29.903	561	0.44	322	576	52.3	45.4	55	32	49.9	48.3	46.9	4	15	2	15	20	8	1	7.98	1	62	31	11	51	8.6							
1876	30.263	651	6.00	325	30.034	47.0	36.8	56	22	42.6	40.5	37.5	7	17	8	21	5	5	11	1.06	22	84	9	23	1	38	7.2						
1877	29.831	573	28.818	2.75	29.552	52.1	40.8	56	29	47.3	45.3	42.8	5	19	23	19	17	5	8	7.18	1	58	35	23	1	38	7.3						
1878	30.251	669	29.577	2.65	982	49.8	39.6	56	24	44.9	43.1	41.8	2	2	12	15	8	29	18	6.63	90	78	15	23	1	38	7.4						
1879	29.957	401	3.03	208	745	42.7	34.0	53	16	38.9	37.2	35.6	15	23	8	10	2	7	28	2.68	10	70	23	11	1	50	8.4						
1880	30.102	693	30.021	2.07	891	44.8	34.9	55	22	40.3	38.5	35.4	27	29	7	4	7	3	7	85	53	8	23	5	34	7.3							
1881	29.860	501	28.759	1.75	685	42.0	28.0	53	12	36.0	33.9	31.0	7	16	1	10	3	8	3	2.50	80	79	14	24	3	33	6.4						
32 Years.	29.923	851	.611	.244	.679	48.27	38.10	57	8	43.87	41.95	39.33	221	278	235	577	363	319	337	4.857	202	75.0	18.5	18.8	47	43.7	7.3						

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall from 1850 to 1881 inclusive.

FEBRUARY.

Years	PRESSURE OF ATMOSPHERE.					TEMPERATURE OF AIR.					PROPORTIONATE DIRECTION.						RAINFALL.				WEATHER.								
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest fall in 24 hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Gloom.	Cloud.	Average.
1850	30.180	30.598	29.472	2.98	29.804	51.8	42.2	57	33	48.2	45.9	43.0	4	3	3	23	10	17	7	2	2.78		12	70	14	16	5	35	7.9
1851	30.058	4.43	1.99	2.66	7.89	50.4	36.5	55	27	45.0	42.8	40.0		13	1	15	1	2	7	5	1.42		8	75	9	24	12	20	5.9
1852	30.159	.669	.409	2.43	.904	50.2	38.0	57	26	45.3	42.3	37.7		1		8	8	6	20	5	1.13		13	75	12	26	10	22	5.5
1853	29.780	.281	28.979			43.2	30.9	50	17													2.38		11	71	18	17	22	5.8
1854	30.286	.708	29.747	2.47	30.035	49.4	38.0	54	27	45.4	41.8	38.2	8	4	1	7	7	8	23	4	6.02	29							7.7
1855	1.73	1.23	.254	.197	29.485	41.1	28.5	52	10	43.9	40.8	31.6	28			6	3	1	8	3	3.47	15							8.1
1856	.037	.555	.534	.277	.757	50.2	40.3	56	22	45.9	43.8	41.3	11	13	4	27	10	2	10	9	3.21	13							7.8
1857	.046	.547	.199	2.41	.802	49.5	36.7	54	26	44.2	41.5	39.5	4	15	7	17	18	4	13	6	1.99	13							7.6
1858	29.876	.249	4.57	2.20	.635	47.5	37.0	56	25	42.8	40.4	36.8	18	22	2	31	12	14	19	5	3.63	13							7.7
1859	30.094	.698	1.180	.255	.736	51.9	39.0	57	28	46.4	43.8	40.7	5			8	4	5	16	3	2.18	13							8.1
1860	1.05	.628	.381	1.80	.922	46.3	33.7	52	23	40.6	37.5	33.1	5			3	12	12	21	24	1.69	17							7.4
1861	29.775	.762	.055	2.44	.528	50.0	37.7	57	28	45.1	42.9	40.2	11	18	9	22	13	4	15	4	5.84	19							7.5
1862	30.042	.655	.148	.257	.782	49.5	41.0	58	24	45.0	42.9	39.6	11	18	9	10	8	10	2	16	1.51	12							7.0
1863	.303	.556	.806	.257	30.043	52.2	39.7	56	26	46.3	43.9	41.7	1	12	5	16	17	16	15	2	1.11	11							6.3
1864	29.987	.421	.201	.199	29.745	46.2	33.5	57	13	40.7	37.6	33.1	13	5	4	13	4	5	17	3	2.36	23							6.1
1865	.611	.573	.118	.225	.694	47.2	37.4	53	28	42.9	41.1	38.6	15	4	8	4	25	16	13	12	5.41	81							6.5
1866	.813	4.19	28.607	.224	.586	44.6	38.7	56	24	44.3	41.9	37.5	1			13	23	22	13	2	3.37	26							6.5
1867	30.112	.624	29.158	.309	.800	53.0	44.5	58	28	48.9	47.4	45.7	5	11	5	19	21	21	2	2	4.28	13							8.2
1868	.235	.670	.420	.265	.967	51.4	40.3	57	24	46.5	44.4	42.1	2			4	24	16	21	9	3.88	45							7.1
1869	.067	.567	28.918	.276	.788	53.2	44.1	64	30	49.2	46.9	44.4	2			4	4	16	5	8	3.61	80							7.5
1870	29.832	.357	29.312	.213	.619	41.6	34.8	53	23	40.6	38.7	36.1	11	4	8	7	14	16	25	5	2.19	53							7.8
1871	30.058	.514	.474	.277	.778	51.5	43.4	57	31	47.7	45.6	43.0	4	8	13	15	23	15	5	1	6.98	83							7.2
1872	29.756	.244	.388	.284	.469	52.6	42.2	58	34	48.1	46.0	43.6	6	14	13	21	24	2	3	4	5.03	117							7.8
1873	30.117	.703	28.988	.202	.912	45.5	36.3	53	27	41.4	38.5	34.8	16	6	2	5	5	20	21	14	5.03	117							7.8
1874	29.578	.566	.947	.247	.728	50.3	40.5	53	31	46.0	43.3	40.0	12	9	10	16	10	24	1	2	4.35	90							7.6
1875	30.037	.324	29.345	.215	.819	49.1	37.2	54	28	42.1	39.6	36.5	14	7	4	10	6	5	8	31	2.45	69							8.0
1876	29.857	.386	.258	.275	.579	50.2	41.2	57	29	46.2	44.1	41.7	6	4	2	28	22	10	8	9	4.62	93							8.0
1877	30.069	.370	.537	.263	.803	52.1	43.7	57	33	48.4	45.8	41.7	12	15	2	12	29	33	8	8	2.01	26							7.0
1878	.268	.630	.847	.265	30.000	50.1	40.5	57	27	46.7	44.8	41.7	4	4	5	18	7	15	21	15	1.97	60							8.4
1879	29.560	.269	28.874	.255	29.302	48.9	38.4	54	25	44.1	42.7	40.8	12	15	2	8	21	8	23	9	7.482	60							7.3
1880	.802	.380	.603	.265	.891	52.0	39.1	55	28	46.7	44.9	41.7	2	9	14	27	18	9	6	2	4.08	96							7.1
1881	.837	.304	29.167	.255	.579	48.3	37.1	54	25	43.5	42.1	40.8	16	9	4	13	9	13	4	18	4.36	81							7.8
32 Years	29.965	30.762	28.603	.249	.716	49.25	38.50	64	10	45.10	42.76	39.57	227	238	168	497	404	379	334	266	3.382	1.17	17.7	68.6	16.2	20.2	5.2	31.6	7.21

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.

Years	PRESSURE OF ATMOSPHERE.						TEMPERATURE OF AIR.						PROPORTIONATE DIRECTION.						RAINFALL.			WEATHER.							
	Mean Atmospheric.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic force of Vapour.	Mean Dry Air.	Mean of all Daily.	Mean of all Daily.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest fall in 24 hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Glean.	Cloud.	Average Cloudness.
1850	30.299	30.768	29.617	2.12	30.050	50.7	35.0	58	20	44.6	41.5	37.6	9	12	6	6	1	4	8	23	1.16	8	84	9	38	3	21	5.0	
1851	29.833	30.481	28.706	2.52	29.451	51.7	40.7	57	29	47.9	45.3	42.1	1	3	8	19	5	17	21	3	7.11	2	74	19	36	3	23	6.1	
1852	30.125	30.726	29.200	2.38	30.880	51.3	38.3	66	29	46.0	42.4	37.2	16	35	4	1	1	1	2	3	1.72	9	86	7	29	6	27	5.9	
1853	29.939	30.717	29.307	2.34	30.688	53.1	35.8	62	25	43.3	40.1	36.5	1	5	12	4	8	2	9	3	1.32	11	7	15	27	7	28	5.2	
1854	30.390	30.716	29.718	2.76	30.047	54.5	38.2	60	25	48.7	44.2	40.2	1	1	5	4	5	11	17	4	1.08	21	7	8	8	4	30	7.1	
1855	29.705	30.534	28.838	2.54	29.464	48.6	36.1	55	25	43.9	40.8	36.7	10	12	8	16	16	11	13	5	4.49	5	85	8	28	4	30	6.2	
1856	30.023	30.618	29.692	2.42	30.774	50.7	37.4	56	28	45.6	42.5	39.6	19	45	9	6	12	19	20	8	1.85	18	74	19	24	9	29	7.5	
1857	29.857	30.512	29.100	2.61	30.589	50.7	37.4	57	27	45.0	41.4	37.9	7	12	5	21	19	10	25	12	4.71	17	76	17	17	5	39	7.7	
1858	29.948	30.506	29.297	2.29	30.712	51.5	37.1	68	24	45.7	42.3	38.0	7	1	2	15	19	20	27	12	3.55	25	76	17	22	8	32	6.9	
1859	30.035	30.481	29.065	2.70	30.718	53.0	42.7	57	29	48.5	45.4	42.8	1	1	1	9	19	28	30	4	2.78	21	72	21	25	8	34	7.9	
1860	29.885	30.594	28.717	2.15	30.663	50.1	39.4	55	24	47.1	42.9	38.2	1	1	1	3	9	19	28	6	5.07	24	70	23	23	5	34	7.9	
1861	29.877	30.468	29.298	2.59	30.611	52.3	40.4	58	29	47.4	44.6	41.7	11	19	13	15	7	16	6	6	2.57	14	80	13	29	8	25	6.7	
1862	29.603	30.095	28.728	2.78	31.318	53.4	41.5	61	27	48.3	46.0	42.8	2	3	8	9	15	11	9	8	2.42	17	78	14	34	5	23	6.1	
1863	29.907	30.581	29.066	2.65	30.635	53.6	40.3	62	28	47.5	44.7	41.7	2	14	6	9	15	11	19	8	2.79	17	79	15	20	6	26	8.7	
1864	29.683	30.331	29.005	2.53	30.527	52.7	40.6	63	28	47.4	44.3	41.7	5	9	2	7	3	19	41	7	4.63	18	82	11	30	6	28	6.6	
1865	29.954	30.546	29.334	2.15	30.732	47.1	34.7	56	26	42.5	39.5	34.0	6	7	6	8	13	16	19	18	1.01	18	82	11	30	6	26	8.7	
1866	29.700	30.472	28.923	2.34	30.359	49.8	38.0	58	24	44.3	41.5	38.6	6	7	6	11	13	16	19	18	4.63	18	82	11	30	6	26	8.7	
1867	29.746	30.603	29.248	2.45	30.494	54.0	41.8	61	29	48.2	45.1	39.5	23	11	1	15	25	29	16	2	3.31	20	77	16	37	8	28	6.6	
1868	29.089	30.592	29.065	2.75	30.807	54.0	41.8	61	29	48.7	46.2	43.8	3	4	3	4	5	20	22	32	2.46	15	80	13	38	6	54	6.4	
1869	29.914	30.351	29.308	2.25	30.682	48.8	37.0	55	27	43.8	41.1	38.5	3	3	3	9	6	8	25	20	2.45	9	81	12	25	7	17	6.7	
1870	30.113	30.487	29.370	2.37	30.869	50.4	38.0	59	25	45.0	42.4	38.9	13	6	2	14	10	12	14	15	1.57	20	87	6	38	5	27	5.5	
1871	29.052	30.508	29.408	2.61	30.784	54.0	40.9	65	30	48.5	45.2	41.4	22	14	1	10	12	11	13	10	3.98	19	76	17	29	5	28	6.8	
1872	29.802	30.337	29.177	2.60	30.535	53.0	42.0	58	26	48.3	45.1	41.3	10	12	7	9	9	9	11	18	4.05	17	82	10	31	4	27	6.8	
1873	29.655	30.220	29.077	2.53	30.540	51.1	40.3	59	27	46.6	43.8	40.6	22	2	2	11	19	12	13	10	1.10	20	75	17	29	5	28	5.5	
1874	30.264	30.710	29.720	2.58	30.999	52.7	42.3	58	28	48.1	44.9	41.1	12	4	4	11	20	31	14	2	1.17	17	83	10	27	1	34	7.1	
1875	29.151	30.570	29.270	2.44	30.900	50.0	38.2	56	26	45.2	42.2	39.6	16	7	4	13	2	16	19	19	1.39	52	70	23	26	2	34	7.2	
1876	29.655	30.220	29.643	2.34	30.414	49.6	38.8	55	27	44.5	42.0	38.6	9	11	4	10	12	16	24	20	4.67	22	82	11	33	3	27	7.2	
1877	29.836	30.340	28.790	2.33	30.596	51.3	37.5	59	25	45.8	42.7	38.5	1	4	2	12	16	27	9	6	2.62	22	82	11	33	3	26	6.6	
1878	30.218	30.683	29.260	2.33	30.978	52.3	39.6	59	26	47.1	43.7	38.5	3	1	2	8	14	29	21	15	1.66	32	16	83	10	30	5	27	6.8
1879	29.997	30.510	29.500	2.44	30.756	51.1	35.9	61	24	45.0	42.2	39.6	34	22	10	8	9	4	4	13	1.89	24	83	10	30	3	29	6.9	
1880	30.075	30.408	29.373	2.98	30.770	53.9	42.2	59	32	48.2	46.2	44.9	9	10	3	13	9	4	4	3	2.82	17	80	13	30	3	29	6.9	
1881	29.913	30.617	29.156	2.53	30.600	52.0	39.0	58	19	46.2	43.4	40.7	9	10	3	13	9	26	14	9	3.86	14	78	15	28	5	29	6.5	
32 Years	29.979	30.768	28.706	2.50	29.729	51.18	38.85	68	19	46.19	43.21	39.77	287	309	165	335	330	500	511	296	2.914	1.31	16.37	9.0	14.0	32.1	5.1	25.0	6.6

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.
APRIL.

Years	PRESSURE OF ATMOSPHERE.						TEMPERATURE OF AIR.								WIND.								RAINFALL.				WEATHER.			
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Pressure of Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	PROPORTIONATE DIRECTION.								Total in Month.	Greatest fall in 24 hours.	Number of days in which rain fell.	AT TIME OF OBSERVATION.						
													E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.				Dry.	Wet.	Shine.	Gleam.	Cloud.	Average Cloudness.	
																														S.	S.W.	W.	N.W.	N.	N.E.
1850	29.821	30.457	29.043	3.11	29.506	56.4	45.2	61	32	51.8	48.7	44.7	5	12	9	24	7	10	6	4	4.84	16	74	16	24	11	25	7.0		
1851	.905	.297	.492	.246	.655	54.9	39.5	61	29	49.7	44.6	38.0	11	5	5	4	3	2	15	2	2.38	13	80	10	32	7	21	5.9		
1852	30.076	.389	.687	.266	.806	57.3	40.5	67	26	50.9	46.4	40.3	8	37	3	1	2	1	2	1	4.04	6	81	9	40	5	15	3.9		
1853						56.3	44.7	61	29													17								
1854	.128	.573	.403	.283	30.047	61.2	41.2	69	31	53.9	48.0	42.0	3	12	11	1	1	3	16	5	.22	4						4.2		
1855	.119	.451	.426	.261	29.854	57.0	39.2	70	22	49.8	45.9	39.8	2	14	9	4	1	16	31	8	.73	6						5.3		
1856	29.720	.305	.190	.266	.450	56.3	41.6	62	31	51.2	47.6	43.1	6	8	12	22	12	12	13	11	4.81	18	74	16	26	10	24	6.4		
1857	.764	.408	.123	.281	.479	56.8	43.3	62	30	49.9	46.5	44.8	1	11	5	22	13	19	10	9	5.19	22	69	21	21	7	32	7.8		
1858	.875	.328	.226	.287	.584	57.9	42.9	70	28	51.7	48.3	43.0	8	12	18	11	13	3	18	7	5.51	17	73	17	30	2	28	6.5		
1859	.753	.197	.147	.263	.486	56.8	42.0	74	25	50.4	46.6	41.7	8	9	13	10	21	6	17	6	3.98	20	69	21	20	9	31	6.9		
1860	.988	.393	.115	.216	.768	53.8	38.5	64	27	48.0	43.5	37.4	11	3	5	7	8	10	27	15	1.26	16						5.6		
1861	30.133	.517	.567	.272	.857	57.4	40.2	65	31	50.4	46.2	41.7	20	16	7	3	1	6	25	12	.86	17	78	12	27	9	24	5.5		
1862	29.994	.336	.510	.309	.681	57.7	45.8	69	30	52.6	49.6	47.0	7	4	5	10	13	13	7	12	2.44	12	74	16	37	9	14	6.1		
1863	30.028	.464	.500	.285	.787	58.9	41.6	68	32	51.7	48.4	44.8	1	16	17	4	3	15	18	1	1.22	10	79	11	40	5	15	5.0		
1864	.070	.337	.707	.276	.790	59.6	44.5	69	31	53.2	48.8	42.8	16	16	17	4	3	16	18	1	1.63	9	82	8	36	5	19	5.2		
1865	.095	.393	.643	.310	.781	64.0	44.3	79	31	56.1	51.6	47.4	14	18	26	6	4	14	14	2	1.07	9	82	8	36	5	19	5.2		
1866	29.875	.352	.110	.276	.595	56.6	44.0	66	31	50.9	47.8	42.3	18	17	11	16	5	5	8	4	3.94	19	74	16	34	7	19	6.8		
1867	.890	.510	.127	.334	.552	56.8	45.6	63	32	51.9	50.2	47.9	11	3	3	20	22	31	10	15	3.46	17	61	29	27	4	31	7.3		
1868	.997	.437	28.852	.298	.695	58.5	41.4	67	32	53.2	49.6	45.4	15	4	3	13	19	15	25	1	3.61	10	78	12	34	6	20	6.1		
1869	30.038	.385	29.420	.299	.735	59.9	44.9	72	32	53.2	49.6	45.4	13	4	1	17	16	8	18	2	2.97	12	81	9	38	4	48	5.7		
1870	.215	.521	.474	.283	.928	58.2	39.6	67	26	51.0	47.7	43.5	13	12	2	8	14	22	17	3	1.18	9	88	2	44	6	10	5.1		
1871	29.862	.213	.200	.303	.555	56.0	46.0	60	29	50.7	48.7	45.3	12	6	8	11	26	17	7	3	4.14	12	81	9	38	4	48	5.7		
1872	.950	.510	.290	.267	.679	56.0	40.6	66	30	50.4	46.6	42.0	2	4	10	19	2	11	34	8	2.77	17	71	19	31	6	23	7.3		
1873	30.075	.356	29.377	.257	.814	55.9	41.0	68	27	50.4	46.0	41.0	14	6	4	10	19	2	11	34	5.1	12	79	11	36	5	19	5.6		
1874	29.889	.210	.164	.281	.604	58.0	44.7	70	30	53.0	48.8	43.4	19	7	4	12	18	21	8	1	1.96	13	85	5	43	2	15	5.8		
1875	30.040	.570	.270	.263	.773	56.0	40.6	67	29	50.0	46.1	41.7	36	5	3	7	8	11	9	11	1.94	14	81	9	42	1	17	5.3		
1876	29.864	.517	.318	.285	.575	53.4	41.3	61	29	49.8	47.1	43.8	7	14	10	14	20	13	9	3	3.17	11	81	9	33	3	24	5.8		
1877	.816	.201	.320	.286	.526	56.5	43.4	61	28	51.4	48.5	43.8	23	11	18	1	13	9	16	2	10	13	85	5	30	3	27	6.7		
1878	.739	.217	.066	.285	.450	55.4	43.5	60	32	50.1	47.1	43.8	18	5	6	11	13	9	2	6	4.09	16	72	18	27	3	29	6.7		
1879	.715	.387	.243	.265	.449	54.0	38.3	60	24	47.5	45.4	41.7	2	2	6	10	15	24	9	18	2.56	16	77	17	33	2	30	7.4		
1880	.906	.440	.386	.263	.642	55.4	42.2	61	31	49.8	46.5	41.7	5	8	5	13	14	12	9	24	2.56	16	77	17	33	2	33	6.5		
1881	.926	.300	.647	.263	.663	55.4	42.1	65	31	49.8	46.6	41.7	31	7	10	4	9	17	6	6	1.36	11	80	10	32	2	26	6.9		
32 Years.	29.946	30.573	28.852	.275	.671	57.00	42.34	79	22	51.08	47.19	42.98	347	315	256	327	347	398	447	213	2.592	1.42	1.37	172	198	32.6	5.0	23.4	6.1	

MAY.

Years	PRESSURE OF ATMOSPHERE.				TEMPERATURE OF AIR.				WIND.						RAINFALL		WEATHER.										
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic force of Vapour.	Mean Pressure of Dry Air.	Mean of all Daily Maximum.	Mean of all Daily Minimum.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	PROPORTIONATE DIRECTION.		Total in Month.		Greatest Fall in 24 Hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Gleam.	Cloud.	Average Clouds.			
	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.																			
1850	29.978	30.445	29.553	.296	29.680	58.4	42.3	68	28	53.3	49.4	43.3	7	2	15	5	5	13	2.02	14	79	14	32	12	18	6.3	
1851	30.148	.509	.565	.312	.834	56.2	43.8	70	33	54.5	50.4	44.8	3	3	3	9	32	3	1.46	11	87	6	37	9	16	5.3	
1852	29.932	.302	.521	.338	.612	60.4	40.5	67	34	55.1	51.6	47.1	5	6	1	10	5	1	3.93	16	77	16	26	10	26	6.3	
1853	.825	.258	1.60	.316	.507	59.9	43.0	70	32	54.2	50.3	45.2	2	1	5	6	10	15	1.04	8						6.4	
1854	.823	.220	.212	.261	.570	57.6	42.3	76	32	51.4	47.2	39.8	5	19	1	11	13	22	4.35	13						7.4	
1855	.818	.288	.365	.293	.523	57.0	42.3	67	31	53.2	49.7	44.0	2	12	17	8	15	10	3.32	16	85	8	27	14	21	6.9	
1857	.884	.246	.175	.315	.507	62.4	43.8	71	31	53.8	50.4	46.0	9	23	9	19	7	1	3.07	15	84	9	26	4	32	6.7	
1858	.939	.236	.301	.488	.636	61.1	45.5	74	34	54.1	49.9	45.1	2	6	21	6	21	11	2.33	17	83	10	35	4	22	6.5	
1859	.924	.234	.639	.296	.626	63.5	45.8	75	36	56.7	51.7	44.9	11	19	27	3	1	18	2.20	11	81	12	34	4	19	5.4	
1860	.896	.366	.346	.310	.584	63.3	47.9	72	35	56.9	52.4	46.1	5	11	19	21	12	18	4.04	18	72	21	36	6	22	6.2	
1861	30.113	.476	.507	.277	.834	63.2	44.4	77	31	56.1	51.0	44.1	7	9	6	11	4	47	1.72	7	81	12	35	11	16	6.0	
1862	29.897	.261	.504	.319	.576	62.8	48.9	70	36	56.9	52.9	47.2	3	6	13	10	18	3	2.87	17	82	11	37	9	16	6.5	
1863	30.033	.345	.614	.246	.785	61.3	44.0	69	32	54.9	51.0	47.0	6	8	14	7	11	32	2.40	8	83	10	36	9	17	6.2	
1864	.026	.235	.544	.340	.684	64.9	47.1	84	35	58.5	53.8	48.2	13	14	5	8	9	24	1.27	9	80	13	32	9	21	6.2	
1865	.924	.422	.540	.322	.600	61.8	46.0	73	34	55.7	51.7	47.9	4	8	14	32	9	8	2.58	9	80	12	34	4	24	6.7	
1866	.980	.385	.542	.246	.732	60.1	42.3	71	28	53.9	44.4	39.9	24	16	3	4	9	14	2.45	57	12	81	12	34	4	21	6.7
1867	.837	.245	.402	.347	.508	61.8	48.1	70	32	55.2	52.7	48.3	17	31	15	13	2	1	3.53	17	83	10	33	3	26	6.9	
1868	.825	.306	.402	.365	.627	68.0	48.0	78	36	58.1	51.6	49.2	16	49	6	24	12	7	1.69	37	17	83	10	33	3	26	6.9
1870	30.008	.424	.287	.308	.787	61.0	45.8	74	32	55.4	51.0	45.8	19	15	3	10	14	11	2.52	20	73	20	28	7	58	7.1	
1871	.125	.385	.824	.305	.817	64.0	44.5	80	32	56.8	51.3	45.5	23	9	9	6	17	22	1.72	11	89	4	36	11	15	5.8	
1872	29.989	.441	.527	.288	.698	58.3	43.0	67	32	52.9	48.7	44.0	5	1	4	6	19	20	2.55	22	5	91	2	52	2	8	4.2
1873	30.033	.401	.728	.300	.728	60.0	46.0	69	32	55.0	50.3	45.2	22	2	1	4	21	24	1.49	50	9	85	8	44	2	16	6.0
1874	.012	.411	.565	.294	.715	61.0	43.0	69	31	55.6	50.3	44.5	18	10	3	9	6	23	1.84	74	10	88	5	39	3	20	6.2
1875	.039	.460	.540	.325	.711	63.3	46.5	76	37	57.2	52.4	47.2	7	4	7	20	19	6	2.35	68	14	84	9	45	17	5.7	
1876	.171	.448	.751	.266	.902	61.6	41.1	68	31	54.5	48.8	41.9	31	10	1	1	8	16	1.13	108	3	90	3	52	10	4.5	
1877	29.916	.291	.423	.286	.653	58.5	43.0	64	31	52.8	48.5	43.8	11	15	10	12	20	4	4.03	82	14	84	9	39	2	31	6.1
1878	.803	.258	.331	.347	.433	61.6	43.0	67	37	55.7	52.3	49.0	6	11	15	17	15	9	4.86	62	25	74	19	30	2	20	7.4
1879	30.069	.540	.490	.298	.708	57.2	43.8	64	31	51.7	48.6	44.8	7	8	8	13	32	9	1.75	38	19	82	11	29	8	25	6.9
1880	.119	.517	.703	.310	.809	63.5	44.7	75	31	56.0	50.9	46.1	22	9	11	7	9	21	1.35	83	5	90	3	47	6	9	5.3
1881	.135	.679	.611	.310	.825	64.0	45.9	77	35	56.7	51.9	46.1	11	5	4	19	13	27	.79	33	8	88	5	47	4	11	4.8
32 Years	29.979	.679	29.117	.295	29.684	61.16	44.98	84	28	55.05	50.80	45.40	324	309	261	338	323	399	2.441	1.20	83.0	9.8	37.2	5.8	19.9	6.1	

Years

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.

JUNE.

Years	PRESSURE OF ATMOSPHERE.				TEMPERATURE OF AIR.							WIND.										RAINFALL.				WEATHER.				
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest fall in 24 hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Gleam.	Cloud.	Average Cloudness.	
1850	30.151	30.498	29.695	.386	29.754	68.5	49.2	83	40	62.0	57.0	51.7	3	10	6	6	8	13	19	19	.84		8	83	7	35	9	16	4.7	
1851	.117	.557	.672	.402	.714	67.5	51.9	82	39	57.1	52.2	52.2	6	8	5	12	9	5	14	14	1.46		10	78	12	38	2	20	5.4	
1852	29.784	.080	.226	.378	.355	62.9	50.9	69	41	58.2	54.8	50.5		6	4	23	5	19	27	2	4.15		18	70	20	29	12	19	7.7	
1853	.964	.178	.685	.401	.562	64.2	51.1	73	42	60.5	56.3	52.1	6	1	3	15	6	13	27	2	2.68		14	69	21	28	16	16	7.1	
1854	.917	.241	.503	.395	.521	63.6	50.2	73	39	58.4	55.3	51.4	6	1	3	4	9	12	11	1	3.35		17						7.9	
1855	30.028	.450	.405	.362	.660	62.9	49.4	76	42	57.9	54.1	49.1	1	7	16	4	6	14	26	5	3.72		13						7.1	
1856	.073	.373	.560	.353	.719	66.2	48.2	82	36	60.9	56.2	51.4	1	1	6	11	12	17	39	3	1.51		7	81	9	34	6	20	5.8	
1857	29.965	.352	.457	.441	.595	70.0	53.6	86	48	62.9	57.2	54.9	8	3	16	10	13	8	27	6	1.34		12	83	5	37	9	14	6.5	
1858	30.089	.401	.810	.393	.82	64.4	53.2	82	44	63.1	58.0	52.3	3	3	16	17	10	27	14	8	.67		7	86	4	36	13	11	6.2	
1859	29.942	.220	.513	.388	.583	69.2	52.0	76	42	62.3	57.4	50.0	2	10	22	5	7	8	28	8	1.53		8	86	4	36	13	11	6.2	
1860	.765	.364	.202	.347	.417	61.8	49.6	68	43	56.0	52.4	47.0	6	5	21	5	25	11	1	7	7.38		27	59	31	19	11	30	8.2	
1861	.979	.258	.471	.393	.586	66.2	54.4	77	48	60.5	56.7	53.1	1	6	5	22	7	9	13	21	3.19		17	74	16	28	11	21	7.5	
1862	.964	.241	.039	.288	.675	64.1	50.7	71	42	58.5	54.5	49.1	1	6	5	8	14	25	36	1	3.61		16	76	14	34	4	22	7.1	
1863	.910	.291	.344	.358	.551	64.4	50.3	72	41	58.1	54.4	49.1	5	5	17	17	17	21	23	10	1.45		19	78	12	35	5	22	7.2	
1864	30.019	.368	.684	.321	.697	63.9	50.2	68	36	62.6	55.8	50.2	5	10	8	15	19	17	7	2	3.19		17	74	16	28	11	21	7.5	
1865	.529	.510	.316	.372	.836	72.9	50.1	83	43	64.7	57.8	52.1	8	14	18	3	2	12	31	3	1.79		4	86	4	41	8	11	4.6	
1866	29.936	.286	.542	.393	.545	68.0	51.9	86	44	61.9	57.2	52.3	12	10	8	15	19	17	7	2	3.27		15	77	13	37	7	16	6.1	
1867	30.158	.629	.738	.393	.764	61.8	50.9	79	44	61.4	57.2	52.0	12	10	8	15	19	17	7	2	3.27		15	77	13	37	7	16	6.1	
1868	.191	.365	.683	.436	.755	69.9	52.4	80	41	62.5	59.1	54.7	7	4	3	4	11	36	22	7	.54		27	6	89	1	45	5.4		
1869	.159	.424	.581	.351	.807	66.7	48.0	76	38	60.1	55.5	49.9	7	4	3	5	4	22	28	3	.26		26	0	80	3	44	6	9	5.4
1870	30.212	.550	.885	.358	.873	68.4	52.3	82	38	62.6	55.8	48.2	4	7	8	4	13	19	22	3	.32		7	87	3	42	4	14	5.8	
1871	29.996	.360	.569	.365	.630	65.5	50.7	75	35	59.3	55.0	50.3	6	3	13	6	13	10	13	3	1.19		19	74	16	34	4	17	6.4	
1872	.968	.323	.415	.353	.614	64.7	50.7	80	41	59.1	54.4	49.4	6	10	6	9	18	32	9	4	2.77		16	79	11	35	6	19	6.9	
1873	30.038	.347	.513	.370	.667	66.0	52.9	72	42	60.8	55.8	50.7	1	7	8	10	17	25	18	4	1.38		31	11	35	5	35	3	22	6.9
1874	.140	.517	.617	.357	.782	67.8	50.3	75	41	59.5	55.6	49.7	12	6	13	4	17	23	9	1	1.84		8	80	10	42	3	15	5.5	
1875	29.965	.290	.485	.377	.587	65.2	52.0	76	41	59.6	55.2	51.2	6	3	7	15	15	18	21	4	2.56		37	19	84	6	36	5	19	6.6
1876	30.047	.265	.813	.377	.669	66.8	49.3	80	39	57.4	55.3	51.2	6	3	5	12	15	18	21	4	.94		25	13	78	12	40	20	6.0	
1877	.034	.296	.351	.380	.653	68.2	53.5	79	43	61.8	57.2	51.4	15	10	13	14	10	13	15	5	2.62		9	84	6	34	3	23	6.6	
1878	29.959	.284	.437	.407	.551	67.9	52.4	84	43	61.7	57.3	53.3	8	19	17	8	13	21	4	3	3.71		18	82	8	36	3	21	6.6	
1879	.818	.194	.485	.388	.429	62.9	51.7	68	44	57.4	54.5	52.0	5	5	20	34	17	9	9	7	6.72		26	74	16	25	7	28	7.7	
1880	.971	.340	.580	.375	.590	64.4	49.8	71	36	58.2	54.7	51.1	6	10	12	11	18	8	23	2	2.23		77	13	31	2	27	7.3		
1881	30.005	.341	.464	.365	.640	65.8	50.8	81	37	59.4	54.7	50.2	3	3	14	18	8	30	16	1	3.29		75	15	38	5	17	6.4		
32 Years	30.023	30.629	29.039	.381	29.642	66.18	51.08	86	35	60.36	56.00	51.06	158	230	310	364	373	561	628	97	2.400	1.92	13.3	79.8	40.2	35.3	6.5	19.3	6.2	

Years

Years	PRESSURE OF ATMOSPHERE.					TEMPERATURE OF AIR.					PROPORTIONATE DIRECTION.					RAINFALL.			WEATHER.										
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Dry Air.	Mean of all Daily Maximum.	Mean of all Daily Minimum.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest fall in 24 hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Gleam.	Cloud.	Averages.
1850	30.041	30.254	29.742	.453	29.586	68.4	54.5	76	45	63.2	59.3	55.7	3	3	6	7	5	12	27	2	3.1	1.53	10	85	8	35	14	13	6.3
1851	29.970	.250	.543	.417	.536	67.7	51.8	76	40	62.3	57.9	53.3	1	1	11	3	16	18	18	18	2	3.29	15	81	12	31	9	22	6.2
1852	30.039	.260	.800	.469	.518	74.3	56.5	82	50	66.9	61.5	56.6	2	10	7	1	4	13	14	13	4	.83	8	89	4	45	4	13	4.3
1853	.042	.360	.375	.432	.608	66.0	55.1	77	44	61.8	58.2	54.3	1	5	5	8	12	16	14	14	2	3.59	16	76	17	22	21	7.9	7.3
1854	29.952	.224	.610	.446	.504	67.5	54.8	80	44	62.7	58.4	54.8	8	12	18	7	19	22	8	2	2.73	16	16	16	17	17	17	21	7.4
1855	.918	.271	.582	.466	.450	69.0	56.0	77	48	64.0	60.4	56.3	1	8	9	8	21	27	21	2	1.90	14	82	11	25	5	32	7.2	
1856	30.028	.299	.562	.431	.595	68.7	55.0	83	44	63.1	59.3	56.1	1	1	11	15	27	15	22	2	2.26	15	80	13	21	8	23	7.1	
1857	.038	.355	.650	.445	.591	71.3	56.5	81	45	64.4	59.8	58.2	2	3	5	18	16	15	19	11	3.83	18	84	9	32	3	27	7.0	
1858	29.909	.247	.485	.362	.605	68.4	54.0	77	47	61.1	56.4	50.1	2	3	9	18	16	15	19	2	2.73	16	89	4	40	6	16	5.2	
1859	30.104	.358	.700	.483	.619	77.2	55.6	85	47	69.3	63.1	58.0	2	2	27	7	11	10	24	10	1.90	14	87	6	38	10	14	6.3	
1860	.032	.426	.617	.395	.635	68.3	50.8	75	44	61.6	56.0	50.2	3	5	13	5	10	19	25	13	3.59	15	84	9	29	8	25	7.5	
1861	29.739	.286	.191	.458	.289	67.6	55.4	72	47	61.7	57.8	53.8	2	3	4	30	20	21	13	2	1.58	8	87	17	29	8	25	7.5	
1862	.939	.313	.364	.399	.538	66.3	52.6	71	43	60.5	56.8	52.3	13	2	13	5	4	15	37	4	3.01	16	74	19	32	9	21	7.5	
1863	30.132	.438	.928	.383	.747	72.7	51.3	86	37	64.6	58.8	52.7	9	12	5	10	17	16	26	6	1.74	6	89	4	44	6	11	5.0	
1864	.014	.246	.728	.399	.643	71.2	53.5	81	43	64.7	58.8	52.7	9	12	5	10	17	16	26	6	1.74	6	89	4	44	6	11	5.0	
1865	29.984	.368	.703	.439	.545	69.3	55.2	79	43	63.6	59.6	56.3	2	2	5	33	11	26	15	1	4.31	17	83	10	37	9	16	6.3	
1866	.006	.378	.358	.427	.577	70.8	54.5	84	47	63.9	59.5	54.6	9	12	6	3	19	27	16	1	.85	20	85	8	41	8	13	6.3	
1867	29.932	.336	.256	.410	.520	69.9	53.4	79	40	62.9	58.8	54.3	6	11	7	11	19	13	24	2	3.81	15	81	12	44	5	13	6.2	
1868	30.095	.342	.655	.529	.564	76.6	57.0	84	45	68.3	64.5	60.3	14	5	3	5	5	14	40	4	1.04	34	8	89	4	51	2	10	5.1
1869	.148	.460	.853	.443	.703	71.3	53.0	81	41	64.8	60.5	55.8	15	10	3	15	11	15	20	4	.35	14	9	90	3	42	8	43	5.1
1870	.058	.263	.764	.419	.637	71.9	56.7	84	46	65.7	59.5	54.1	16	5	3	9	11	23	21	3	1.49	6	86	7	39	5	18	6.1	
1871	29.925	.244	.521	.428	.495	67.0	55.8	78	45	61.7	58.1	54.7	3	2	7	22	34	17	8	5	5.24	20	80	13	34	4	24	7.0	
1872	.902	.314	.713	.443	.517	69.1	56.0	83	48	63.0	59.2	55.3	9	18	19	4	8	18	42	11	3	3.69	134	80	13	46	2	14	6.1
1873	30.010	.261	.549	.410	.598	68.6	53.0	79	43	63.3	58.3	53.5	4	10	4	18	42	11	3	1	2.69	134	80	13	46	2	14	6.1	
1874	.049	.337	.631	.418	.629	70.0	54.5	78	41	64.8	59.2	54.0	10	3	7	15	20	28	9	1	1.60	49	87	6	48	2	12	6.0	
1875	.016	.393	.400	.407	.607	67.3	52.7	78	41	61.8	57.0	53.3	7	3	1	9	22	24	21	6	2.70	90	15	81	12	43	1	18	6.2
1876	.148	.464	.723	.391	.755	73.5	55.3	86	39	66.9	60.9	52.3	10	13	6	10	20	11	19	4	.88	26	10	86	7	39	4	19	5.5
1877	.004	.397	.387	.436	.566	67.7	53.0	78	43	61.6	57.9	55.2	3	1	11	29	31	7	7	6	3.53	80	15	76	17	30	2	30	7.4
1878	.114	.406	.840	.461	.651	73.2	56.0	85	46	66.2	60.8	56.7	9	15	5	5	12	21	20	6	1.51	53	9	86	7	44	1	17	5.8
1879	29.905	.224	.413	.405	.498	64.1	53.5	74	47	58.8	56.0	53.2	4	4	8	19	25	32	5	5	3.58	47	20	78	15	23	6	33	8.0
1880	.953	.286	.451	.423	.530	69.3	53.3	77	46	62.3	58.0	54.4	3	3	12	24	27	22	4	1	3.44	146	16	83	10	43	2	17	6.3
1881	30.074	.336	.474	.410	.664	70.8	53.8	83	37	63.5	58.7	53.5	3	4	6	18	14	28	18	2	2.69	95	11	84	9	41	5	16	6.2
32	30.012	30.464	29.191	.429	29.583	69.60	54.32	86	37	63.58	59.00	54.60	164	193	249	396	509	612	564	93	2.606	146	132	80.1	9.6	36.8	6.1	18.4	6.3

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.

AUGUST.

Years	PRESSURE OF ATMOSPHERE.										TEMPERATURE OF AIR.					WIND.								RAINFALL.				WEATHER.													
	Mean Pressure of Atmosphere.					Pressure observed.					Mean of all Daily Maxima.		Mean of all Daily Minima.		Absolute Maximum.		Absolute Minimum.		Mean of Dry Bulb.		Mean of Wet Bulb.		Mean Dew Point.		PROPORTIONATE DIRECTION.								Total in Month.				AT TIME OF OBSERVATION.				
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest fall in 24 hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Gleam.	Cloud.	Average Cloudness.												
1850	30.096	30.488	29.755	.428	29.664	66.9	52.5	77	39	61.5	58.0	54.0	3	1	13	14	12	24	7	1.62		20	82	11	39	8	15	6.2													
1851	1.15	.276	.893	.480	.623	70.7	55.7	79	41	65.1	61.1	57.2	5	1	9	3	9	11	24	2.93		13	86	7	27	4	21	5.6													
1852	29.855	349	28.942	.405	.446	69.7	52.7	78	43	63.5	58.2	52.4	2	1	17	5	11	6	1	4.57		13	84	9	41	10	11	5.2													
1853	.981	.617	29.176	.436	.541	69.2	51.7	76	44	61.7	58.4	54.6	6	1	7	3	7	20	2	2.50		11	83	10	30	14	18	5.8													
1854	30.076	.498	.743	.444	.628	69.9	52.3	84	40	63.8	58.7	54.8	8	3	5	3	13	35	3	.88		9						6.2													
1855	.020	.369	.691	.466	.550	69.9	54.2	80	42	66.9	62.3	58.6	6	23	11	14	11	10	12	2.05		14						5.6													
1856	29.889	.201	.161	.482	.403	72.4	57.2	89	48	66.9	62.3	58.6	9	10	11	7	9	31	6	3.02		12	86	7	34	7	21	6.0													
1857	30.164	.318	.644	.504	.656	73.9	56.8	83	48	65.9	60.9	56.1	1	2	8	14	13	30	4	6.3		14						6.3													
1858	.014	.379	.579	.379	.631	70.8	50.3	81	44	63.4	58.1	55.6	1	5	12	15	23	10	5	3.02		12	83	10	40	5	17	5.0													
1859	29.972	.332	.698	.424	.544	72.1	54.5	86	47	65.2	60.2	55.6	2	1	21	15	23	10	4	4.35		12	85	8	33	9	20	7.6													
1860	.748	.138	.274	.377	.367	64.0	52.9	68	45	59.2	55.5	51.2	1	2	12	25	32	21	7	5.78		21	69	24	27	8	27	7.6													
1861	30.014	.323	.645	.439	.571	69.6	56.5	75	47	62.9	59.0	54.9	2	3	17	24	15	22	17	1.46		12	78	15	33	7	22	7.0													
1862	29.964	.236	.432	.436	.524	68.7	53.5	75	42	61.3	58.4	55.2	2	5	16	11	16	16	1	2.04		10	83	10	32	14	16	6.8													
1863	.912	.206	.239	.423	.485	68.9	54.5	75	42	63.0	59.0	55.4	2	5	6	33	16	13	17	4.01		21	80	13	33	8	21	6.8													
1864	30.119	.415	.710	.358	.757	69.6	56.5	82	36	62.7	56.8	49.8	7	2	11	5	18	26	6	1.14		21	86	3	42	2	13	5.2													
1865	29.906	.400	.406	.439	.463	68.5	54.5	82	44	62.2	59.2	56.7	12	9	8	23	20	23	10	5.33		17	82	11	31	8	23	6.4													
1866	.870	.186	.474	.436	.430	66.8	54.6	73	43	61.3	58.2	55.2	4	6	14	21	30	13	2	4.69	1.05	17	77	16	33	9	20	6.8													
1867	30.000	.236	.718	.427	.569	71.2	55.6	78	45	63.9	59.1	53.6	6	9	14	21	17	10	2	.99	.21	14	83	10	44	6	17	6.0													
1868	29.940	.371	.432	.470	.466	69.5	56.0	79	47	63.6	61.0	57.7	8	3	9	15	31	11	3	2.99	.82	14	83	10	42	3	17	6.0													
1869	30.223	.430	.870	.456	.763	71.7	52.5	85	39	64.4	60.0	54.9	4	6	3	14	14	14	34	4.8		11	10	88	5	46	5	42	4.3												
1870	.052	.361	.732	.378	.670	71.0	53.0	81	38	64.7	57.9	51.3	15	2	3	6	7	5	45	10	2.25	.62	9	90	3	53	4	4.1	4.1												
1871	.068	.556	.183	.467	.597	67.6	56.4	85	46	66.4	61.8	57.1	19	7	6	9	18	17	2	1.85	.90	11	85	8	49	1	12	4.8													
1872	.021	.364	.519	.409	.608	69.8	54.0	80	43	63.6	58.5	53.4	17	8	3	11	20	24	1	1.99	.52	12	88	5	45	2	15	5.4													
1873	29.996	.403	.577	.433	.559	67.6	55.9	81	45	62.8	58.9	55.0	6	1	4	21	30	30	1	4.81	.57	24	81	12	30	6	19	6.1													
1874	30.016	.438	.477	.421	.551	68.0	54.0	79	45	62.7	58.4	54.2	15	1	1	17	28	23	2	3.71	1.06	16	80	13	39	4	26	7.1													
1875	.086	.383	.681	.427	.655	70.2	54.4	77	42	64.1	59.2	54.6	4	7	11	20	11	19	6	2.78	1.36	12	84	9	39	2	14	6.2													
1876	.010	.349	.430	.427	.639	71.3	55.9	81	48	64.4	59.3	54.6	11	5	12	14	30	9	2	4.37	.92	14	82	11	46	2	14	5.9													
1877	29.913	.183	.333	.422	.487	68.3	54.4	74	38	62.4	58.7	54.4	5	14	15	18	14	24	3	5.84	.85	21	71	16	34	1	27	6.7													
1878	.788	.289	.306	.487	.297	69.8	56.3	74	46	64.0	60.1	58.3	7	12	7	23	20	10	1	4.49	.77	24	79	14	34	5	23	6.6													
1879	.884	.337	.580	.407	.473	66.1	54.3	73	41	61.0	57.5	53.3	5	6	16	27	20	10	2	5.33	.87	24	69	24	32	4	26	7.3													
1880	30.033	.349	.480	.461	.572	73.8	56.4	82	44	65.7	61.0	56.7	19	15	14	8	3	14	9	1.19	.06	4	84	9	39	2	21	6.1													
1881	29.912	.346	.497	.407	.505	66.9	53.0	76	41	61.2	57.3	53.3	3	3	12	21	16	37	1	3.55	.55	18	84	9	33	4	25	6.9													
32	29.989	30.617	28.942	.433	29.556	69.70	54.21	89	36	63.39	59.09	54.86	205	195	274	446	454	584	517	3.016	1.36	14.4	81.9	10.8	3.74	5.2	19.8	6.1													

Years.

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.

OCTOBER.

Years	PRESSURE OF ATMOSPHERE.				TEMPERATURE OF AIR.				PROPORTIONATE DIRECTION.								WIND.				RAINFALL.				WEATHER.			
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Force of Vapour.	Mean dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest Fall in 24 hours.	Number of days on which Rain fell.	Dry.	Wet.	Shine.	Gleam.	Cloud.	Average.
1850	30.010	30.552	29.348	.320	29.684	57.2	41.2	63.5	29	51.3	45.5	1	1	1	1	5	12	15	18	2.48	17	17	83	10	31	8	23	7.0
1851	29.939	30.405	28.902	.370	56.8	59.9	48.2	67	32	53.3	49.7	1	1	1	2	2	4	9	11	3.89	14	17	82	11	27	14	21	6.7
1852	30.015	30.479	29.385	.331	57.8	57.9	47.3	62	32	55.0	46.4	1	1	1	2	2	4	9	11	6.74	14	17	83	10	23	18	21	5.7
1853	30.067	30.442	29.346	.346	57.1	59.2	47.4	64	36	55.0	47.8	2	2	2	6	5	5	15	15	4.70	27	27	78	15	18	15	29	7.1
1854	30.081	30.576	29.033	.349	53.6	59.6	47.1	73	34	54.2	48.0	1	1	1	4	4	9	22	4	4.91	20	26	84	9	17	7	38	7.5
1855	30.078	30.282	29.132	.348	53.2	59.0	47.4	67	34	54.2	48.0	4	4	4	11	20	23	9	11	5.10	20	26	84	9	17	7	38	7.5
1856	30.084	30.448	29.423	.365	53.6	59.6	47.4	67	34	54.2	48.0	4	4	4	11	20	23	9	11	5.10	20	26	84	9	17	7	38	7.5
1857	30.081	30.257	28.784	.331	53.2	59.6	47.4	67	34	54.2	48.0	4	4	4	11	20	23	9	11	5.10	20	26	84	9	17	7	38	7.5
1858	30.081	30.585	29.376	.323	53.2	59.6	47.4	66	30	56.1	47.0	3	3	3	13	19	9	6	6	6.38	23	23	74	19	20	7	35	7.6
1859	30.043	30.171	28.839	.328	53.4	59.6	47.4	73	35	54.2	48.0	6	6	6	17	16	24	16	3	6.10	22	22	75	18	23	2	40	6.9
1860	30.041	30.497	29.421	.335	53.4	59.6	47.4	73	35	54.2	48.0	6	6	6	17	16	24	16	3	3.14	18	18	74	19	23	2	40	7.8
1861	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1862	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1863	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1864	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1865	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1866	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1867	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1868	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1869	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1870	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1871	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1872	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1873	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1874	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1875	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1876	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1877	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1878	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1879	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1880	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
1881	29.929	30.264	29.244	.365	53.8	63.2	49.6	75	37	56.8	54.1	13	12	12	20	13	6	6	11	6.34	24	24	80	13	20	6	36	7.2
32	29.899	30.614	28.727	.336	29.563	59.33	47.01	75	25	54.13	48.08	268	307	274	414	359	510	398	239	4.819	3.00	19.7	78.5	14.5	27.2	6.1	29.8	6.9

Years.

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.

Years	PRESSURE OF ATMOSPHERE.					TEMPERATURE OF AIR.						WIND.						RAINFALL.			WEATHER.								
	Mean Atmospheric Pressure observed	Maximum Pressure observed	Minimum Pressure observed	Mean Elastic force of Vapour.	Mean Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Wet Bulb.	Mean of Dry Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest fall in 24 hours.	Number of days on which rain fell.	Dry.	Wet.	SUN.		Average Cloudiness.	
																										Shine.	Gleam.		Cloud.
1850	30.031	30.439	29.103	.321	29.706	55.2	44.5	62	31	51.1	48.9	45.9	3	3	1	17	10	13	6	1	5.16	21	21	73	17	20	8	32	7.2
1851	.044	.623	.572	.249	.791	50.8	35.3	56	24	45.1	42.7	38.4	5	5	4	17	1	5	22	2	3.59	22	22	78	12	34	5	22	5.9
1852	29.558	311	28.840	.340	1.164	56.3	45.5	60	28	52.0	49.5	47.2	1	1	4	4	4	4	5	2	10.51	26	26	61	29	4	14	42	7.8
1853	30.040	.610	29.556	.285	.751	53.6	39.7	60	23	48.9	46.5	42.2	1	1	4	5	4	1	18	3	4.90	17	17	77	13	20	4	36	6.7
1854	29.885	.582	28.943	.264	.617	51.9	36.8	60	20	45.4	43.3	39.9	4	4	4	5	4	3	7	16	2.55	19	19						6.4
1855	30.007	.275	29.514	.252	.751	50.2	38.7	59	27	46.0	43.1	38.6	22	16	9	10	2	6	43	7	1.07	10	10	76	14	17	9	24	7.4
1856	.150	.555	.552	.267	.697	52.5	41.9	61	32	49.9	45.5	42.3	9	8	4	16	6	3	8	13	3.42	18	18	78	12	21	4	35	7.5
1857	.013	.676	1.162	.312	.507	51.4	39.9	57	27	45.9	43.1	38.9	15	30	11	7	5	4	22	2	3.28	22	22	80	10	20	7	33	6.9
1858	29.798	.473	28.900	.287	.709	53.6	44.2	60	26	49.1	46.5	42.8	1	1	1	15	17	27	19	9	4.26	17	17	69	21	29	5	26	6.3
1859	.932	.567	.958	.271	.512	51.1	41.1	56	33	46.6	44.1	41.7	25	19	9	5	5	12	8	7	6.39	25	25	75	15	27	6	23	7.4
1860	29.768	.436	29.186	.252	.612	52.0	40.0	57	26	46.5	44.4	41.7	8	18	6	2	20	10	17	15	4.63	17	17	72	18	22	2	36	7.6
1861	.761	.532	1.138	.238	.519	51.2	37.2	58	21	44.0	42.0	38.6	7	3	5	15	4	7	11	6	3.82	24	24	75	15	27	6	27	6.3
1862	.957	.434	.480	.244	.769	51.6	46.7	58	30	50.8	48.8	45.9	8	18	6	2	20	10	17	15	4.97	18	18	75	15	27	7	23	6.5
1863	30.035	.413	.278	.334	.697	54.1	46.7	57	26	46.5	44.4	41.7	13	3	2	22	8	16	12	16	4.77	24	24	75	15	27	6	27	6.3
1864	29.782	.669	28.777	.265	.513	52.0	42.0	58	31	48.8	46.2	43.7	3	9	4	18	19	31	5	4	3.06	19	19	69	21	17	9	34	7.9
1865	.890	.346	.639	.285	.728	55.0	45.0	61	29	50.8	48.7	45.9	1	6	1	18	19	31	5	4	3.06	19	19	69	21	17	9	34	7.9
1866	30.041	.345	29.540	.309	.728	55.0	45.0	61	29	50.8	48.7	45.9	1	6	1	18	19	31	5	4	3.06	19	19	69	21	17	9	34	7.9
1867	.289	.649	.466	.233	30.052	53.1	38.3	62	27	45.5	42.5	39.0	18	10	2	10	1	14	15	17	5.81	16	16	77	13	22	5	33	6.9
1868	.175	.659	.017	.253	29.918	51.0	39.5	57	27	45.7	43.7	41.2	15	6	5	9	2	31	27	12	4.81	23	23	71	19	24	7	59	7.2
1869	.062	.537	.235	.285	.773	54.3	40.2	58	27	48.5	46.2	43.4	15	3	2	17	12	15	16	15	4.13	23	23	78	12	24	6	30	6.5
1870	29.833	.505	29.188	.254	.575	51.4	39.2	58	30	45.9	43.5	40.7	15	3	2	17	12	15	20	25	2.28	25	25	78	12	24	6	30	6.5
1871	.999	.368	.568	.225	.770	50.0	39.3	57	22	44.7	43.0	37.6	11	9	7	31	15	23	9	8	5.96	8	8	66	24	30	1	27	6.5
1872	.833	.447	.634	.278	.551	52.2	43.3	59	33	48.4	46.0	43.1	23	6	6	31	15	23	10	7	4.05	23	23	74	16	24	1	38	7.7
1873	.881	.448	.200	.292	.605	51.0	43.5	56	31	48.1	45.7	42.5	23	6	7	12	10	29	10	1	4.43	22	22	69	21	22	1	34	7.6
1874	.967	.443	28.747	.295	.668	54.4	44.3	61	31	50.0	47.6	44.6	11	8	9	16	10	29	10	1	4.43	22	22	69	21	22	1	34	7.3
1875	.866	.270	29.150	.253	.609	51.3	42.5	60	21	47.4	44.8	40.6	13	2	2	15	17	19	1	22	5.47	18	18	70	20	25	3	39	6.8
1876	.840	.426	1.103	.285	.560	51.3	41.0	60	23	48.5	46.1	43.8	13	14	7	10	16	12	5	7	7.09	27	27	70	20	30	4	26	7.2
1877	.720	.478	28.726	.276	.440	54.8	42.1	59	32	49.4	46.9	42.8	13	4	13	29	19	22	2	2	7.09	27	27	74	16	28	8	24	7.1
1878	.888	.428	29.346	.234	.620	48.6	37.3	54	26	43.6	41.3	38.6	13	4	1	5	2	29	28	3	5.78	22	22	74	16	28	1	27	6.6
1879	29.273	.667	.848	.234	30.035	50.0	35.6	56	25	43.0	41.3	38.6	8	4	5	2	4	11	8	3	4.04	20	20	76	14	28	2	30	6.4
1880	29.940	.460	28.806	.275	.29.665	52.1	41.0	58	28	47.4	45.1	42.8	4	5	2	29	17	11	8	16	4.04	20	20	68	22	25	3	32	7.4
1881	.904	.423	29.013	.335	.563	57.1	45.3	62	32	52.9	50.5	48.0	3	10	13	39	14	10	1	1	5.39	20	20	68	22	25	3	32	7.4
32	29.942	30.676	28.639	.273	29.669	52.59	40.92	62	20	47.57	45.97	42.07	278	266	162	428	392	442	426	346	4.379	176	19.1	74.1	15.9	24.4	4.7	31.8	6.9

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1850 to 1881 inclusive.
 DECEMBER.

Years	PRESSURE OF ATMOSPHERE.					TEMPERATURE OF AIR.					PROPORTIONATE DIRECTION.								WIND.			RAINFALL.				WEATHER.			
	Mean Pressure of Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Pressure of Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Wet Bulb.	Mean Dew Point.	E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.	Total in Month.	Greatest Fall in 24 Hours.	Number of days on which rain fell.	Dry.	Wet.	Shine.	Gleam.	Cloud.	Average Cloudiness.	
1850	30.147	30.728	29.243	.265	29.879	52.3	40.9	60	24	47.8	45.8	40.4	18	9	5	3	10	2	3.59	15	15	70	23	23	8	31	6.3		
1851	.286	.567	.601	.268	30.025	50.0	38.8	60	26	45.8	43.7	40.4	3	5	3	6	6	2	2.96	24	24	84	16	19	8	38	7.2		
1852	29.742	.261	.097	.328	29.411	54.7	43.9	58	28	50.9	48.9	46.7	3	3	3	3	1	2	2.96	22	22	72	21	11	19	32	7.3		
1853	.898	.449	.098	.227	.668	45.3	34.4	52	23	41.1	39.0	35.6	19	2	2	2	12	6	3.40	25	25	80	13	20	4	36	6.7		
1854	30.098	.639	.287	.282	.813	51.3	42.0	54	26	47.0	44.6	41.9	9	9	5	26	27	4	3.44	18	18	80	13	20	4	36	7.3		
1855	29.861	.326	28.966	.246	.612	43.8	37.1	54	21	43.8	41.5	38.0	9	4	1	12	4	20	3.76	16	16	75	18	16	4	42	8.0		
1856	.805	.579	.754	.262	.540	50.4	40.3	62	29	46.1	44.2	42.1	6	5	2	21	3	9	5.69	25	25	78	12	16	4	42	8.1		
1857	30.261	.599	29.598	.326	.932	53.2	44.8	59	32	49.9	47.9	46.3	6	6	3	36	11	3	1.87	21	21	78	12	16	4	42	8.0		
1858	29.907	.318	.219	.287	.617	51.3	41.8	56	29	46.8	44.9	43.9	1	1	15	13	20	4	6.11	25	25	73	20	22	3	37	6.8		
1859	.756	.625	28.449	.215	.538	47.7	34.4	57	9	41.8	39.9	46.2	7	11	7	19	15	9	5.85	20	20	74	19	17	8	37	6.3		
1860	29.596	.319	.629	.197	.896	46.6	33.9	55	11	42.3	39.4	35.3	13	10	10	6	13	5	7.84	17	17	81	12	24	8	30	7.1		
1861	30.081	.419	29.160	.253	.825	50.1	40.7	57	26	45.3	43.0	40.7	12	17	7	14	5	15	3.94	12	12	81	12	24	8	30	7.1		
1862	.050	.483	.300	.309	.738	52.8	44.6	58	32	48.8	47.3	44.8	7	8	2	24	16	20	4.15	29	29	68	25	14	4	44	8.7		
1863	.196	.561	.480	.289	.904	51.5	43.5	54	22	48.0	46.4	43.8	7	2	2	18	24	20	4.19	22	22	73	20	13	14	35	7.6		
1864	29.998	.533	.356	.215	.780	45.8	36.3	55	22	41.2	40.0	37.7	11	6	9	23	19	27	5.34	13	13	79	14	26	6	36	7.1		
1865	30.158	.812	28.913	.275	.880	51.7	42.3	58	25	47.3	45.3	42.9	4	16	8	27	11	3	5.04	26	26	61	32	17	4	41	7.9		
1866	.004	.501	29.256	.298	.703	53.5	44.6	58	32	49.3	47.5	44.8	3	8	4	10	15	32	2.90	21	21	68	25	19	5	38	7.3		
1867	.113	.408	.040	.244	.766	48.7	39.2	57	22	43.8	41.7	39.6	9	4	5	24	16	26	5.04	1	1	78	15	13	7	42	7.9		
1868	29.552	.263	28.885	.309	.240	53.6	46.0	59	38	49.9	48.0	46.1	8	14	28	19	2	2	2.90	26	26	61	32	17	4	41	7.9		
1869	.842	.517	29.260	.225	.614	47.0	36.3	56	10	42.0	40.0	38.0	3	8	14	28	19	2	8.26	30	30	71	22	18	6	37	7.0		
1870	29.930	.551	.037	.188	.739	43.0	31.9	56	14	37.8	35.9	33.1	10	8	6	11	12	6	5.62	27	27	74	19	21	5	38	7.8		
1871	30.151	.568	.217	.212	.936	48.4	34.7	53	21	42.0	39.4	36.0	5	5	26	11	15	19	2.90	1	1	51	12	23	5	34	6.4		
1872	29.571	.050	29.900	.268	.300	50.9	42.0	56	27	46.8	44.9	42.1	2	4	8	32	12	17	1.07	30	30	62	29	25	6	29	6.2		
1873	30.307	.638	29.583	.262	.804	42.5	41.0	54	25	46.4	44.3	41.5	8	6	17	8	29	12	2.81	12	12	51	12	23	5	34	6.4		
1874	29.843	.285	28.873	.206	.634	46.5	35.5	54	26	41.3	38.8	35.3	3	2	26	11	15	19	5.04	18	18	76	17	27	6	29	6.2		
1875	30.138	.537	29.600	.234	.901	47.2	37.7	55	21	43.3	41.1	38.6	5	9	32	12	17	15	1.76	24	24	66	27	25	2	35	7.6		
1876	29.431	.250	28.568	.285	.143	52.9	41.8	57	30	48.0	46.4	43.8	1	10	16	12	7	6	2.81	12	12	51	12	23	5	34	6.4		
1877	30.109	.663	29.343	.244	.862	50.6	39.2	54	29	46.0	43.7	39.6	3	2	8	31	10	28	1.23	18	18	81	12	25	7	30	6.6		
1878	29.766	.356	.338	.190	.573	44.7	30.6	55	13	38.5	36.7	33.3	2	7	11	11	22	29	8.04	24	24	71	22	25	7	30	6.6		
1879	30.312	.756	.514	.218	.300	49.1	45.9	54	17	39.6	38.0	36.7	10	7	16	12	38	7	2.21	27	27	85	8	25	1	34	7.3		
1880	.346	.603	30.021	.283	.061	52.2	43.2	57	29	48.1	46.0	43.8	5	1	20	7	9	11	3.38	9	9	70	23	22	5	35	7.2		
1881	.011	.640	29.240	.244	.297	46.7	37.1	57	23	44.6	42.6	39.6	5	12	3	18	26	13	10.59	27	27	73	20	22	4	44	8.3		
1881	.011	.640	29.240	.244	.297	46.7	37.1	57	23	44.6	42.6	39.6	5	12	3	18	26	13	4.65	17	17	73	20	22	4	44	8.3		
32	29.977	30.756	28.449	.248	29.729	49.67	39.13	62	9	45.04	43.03	40.58	155	224	210	532	425	439	4.65	19.8	19.8	73.0	18.9	19.9	5.4	37.4	7.1		

Summary of preceding Tables, shewing the Average Yearly and Monthly Results of the Observations recorded from 1850 to 1881.

Months.	PRESSURE OF ATMOSPHERE.					TEMPERATURE OF AIR.						WIND.								RAINFALL.				WEATHER AT TIME OF OBSERVATION.					
	Mean Pressure of Atmosphere.	Maximum Observed.	Minimum Observed.	Mean Elastic Force of Vapour.	Mean Dry Air.	Mean of all Daily Maxima.	Mean of all Daily Minima.	Absolute Maximum.	Absolute Minimum.	Mean of Dry Bulb.	Mean of Wet Bulb.	Mean Dew Point.	PROPORTIONATE DIRECTION.								Total in Month.	Greatest Fall in 24 Hours.	Number of Days on which Rain fell.	Dry.	Wet.	SUN.			Average Cloudiness.
													E.	S.E.	S.	S.W.	W.	N.W.	N.	N.E.						Shine.	Gleam.	Cloud.	
Jan.	29.923	30.851	28.611	.244	29.679	48.27	38.10	57	8	43.87	41.95	39.33	221	278	235	577	375	363	319	337	4.857	2.02	20.2	75.0	18.5	18.8	4.7	43.7	7.3
Feb.	.965	.792	28.603	.249	.716	49.25	38.50	64	10	45.10	42.76	39.57	227	238	168	497	404	379	334	226	3.382	1.17	17.7	68.6	16.2	20.2	5.2	31.6	7.2
March	.979	.768	28.706	.250	.729	51.18	38.85	68	19	46.19	43.21	39.77	287	309	165	335	330	500	511	296	2.914	1.31	16.3	79.0	14.0	32.1	5.1	25.0	6.6
April	.946	.573	28.852	.275	.671	57.00	42.34	79	22	51.08	47.19	42.98	347	315	256	327	347	398	447	213	2.592	1.42	13.7	77.2	12.8	32.6	5.0	23.4	6.1
May ..	.979	.679	29.117	.295	.684	61.16	44.98	84	28	55.05	50.80	45.40	324	309	261	338	323	339	563	196	2.441	1.20	13.1	83.0	9.8	37.2	5.8	19.9	6.1
June	30.023	.629	29.039	.331	.642	66.18	51.08	86	35	60.36	56.00	51.06	158	230	310	364	373	561	628	97	2.400	1.92	13.3	79.8	40.2	35.3	6.5	19.3	6.2
July...	.012	.464	29.191	.429	.583	69.60	54.32	86	37	63.58	59.00	54.60	164	193	249	396	509	612	564	93	2.606	1.46	13.2	80.1	9.6	36.8	6.1	18.4	6.3
Aug.	29.969	.617	28.942	.433	.556	69.70	54.21	89	36	63.39	59.09	54.86	205	195	274	446	454	584	517	101	3.016	1.36	14.4	81.9	10.8	37.4	5.2	19.8	6.1
Sept.	.979	.562	28.854	.393	.586	65.96	50.73	82	31	59.82	56.17	52.22	278	313	204	400	461	478	405	135	3.488	1.67	16.1	77.7	11.0	33.5	6.2	21.4	6.1
Oct. ...	.899	.614	28.727	.336	.563	59.33	47.01	75	25	54.13	51.23	48.08	268	307	274	414	339	510	398	239	4.819	3.00	19.7	78.5	14.5	27.2	6.1	29.8	6.9
Nov.	.942	.676	28.699	.273	.669	52.59	40.92	62	20	47.57	45.97	42.07	278	266	162	428	302	442	426	346	4.379	1.76	19.1	74.1	15.9	24.4	4.7	31.8	6.9
Dec.	.977	.756	28.449	.248	.729	49.67	39.13	62	9	45.04	43.03	40.88	155	224	210	532	425	439	436	299	4.650	1.69	19.8	73.0	18.9	19.9	5.4	37.4	7.1
Yearly	29.958	30.851	28.449	.641	29.651	58.32	45.01	89	8	52.93	49.70	45.88	243	265	231	421	388	472	462	214	3.462	3.00	16.4	77.31	16.0	31.3	5.5	26.8	6.6

It is not intended to give the results of the observations made in Cornwall generally during the period embraced in the foregoing Tables, but it will be interesting to append a brief extract from a comparative view of the Means at five important stations for the five years 1875 to 1879 published in the Report of the Royal Cornwall Polytechnic Society for 1879, in sequence to several excellent summaries of the same nature.

West Cornwall—Means for Five Years, 1875 to 1879.

PLACE.	PRESSURE OF AIR.					TEMPERATURE OF AIR.							WIND.				Rain.	
	Mean Pressure of the Atmosphere.	Maximum Pressure observed.	Minimum Pressure observed.	Mean Elastic Force of Vapour.	Mean Pressure of Dry Air.	Mean Temperature of the Air.	Mean of Daily Maxima.	Mean of Daily Minima.	Mean Daily Range.	Mean Monthly Range.	Absolute Maximum.	Absolute Minimum.	Mean Dew Point.	RELATIVE PROPORTION OF				
														N.	E.	S.		W.
Bodmin ...	29.930	30.760	28.110	.310	29.622	52.2				28.7	83	15	45.9	84	60	104	117	55.88
Truro .....	.959	.756	.568	.317	.642	51.1	57.8	44.9	12.9	32.8	86	13	45.9	93	74	81	117	45.19
Falmouth	.951	.807	.201	.318	.633	51.0	55.0	47.1	7.9	22.3	80	24	45.9	89	61	89	126	53.94
Helston ...	.979	.967	.488	.305	.674	51.8	59.5	45.0	14.4	33.1	94	20	44.8	97	84	92	92	43.25
Scilly .....	.937	.730	.530	.350	.588	52.3	55.5	48.8	6.7	19.0	74	30	47.9	77	90	81	108	39.81
Means .....	.951	.804	.379	.320	.632	51.7	56.9	46.4	10.5	27.2			46.1	88	74	90	112	47.45

The above brief Table represents with sufficient accuracy the comparative results of the observations made in the respective localities during longer periods. Under the head of Temperature, it will be necessary to a true estimate of the differences between the Stations to take into account the conditions of exposure of the Thermometers, the more important of which may be here stated.

At *Bodmin* the Thermometers are hung four-and-a-half feet above the ground, facing north.

At *Falmouth* the directions of the Meteorological Office have been strictly followed. The Thermometers are hung in a stand, louvered at the sides, open at the bottom, not very materially differing from a Stevenson's stand, with which it has been lately ascertained by the observations of Mr. Wilson Fox to yield almost identical results.

At *Helston* closed stands have never been used.

At *Scilly*, the Thermometers have been hung in a Stevenson's stand. These differences in the exposure of the instruments will account for a considerable part of the differences of results at various stations. The *Truro* stand corresponds, in results, very nearly with that used at Greenwich, and differs little from one louvered on three sides and open to the north, as is proved by Mr. Whitley's long record at Penarth; but in a Stevenson's stand in my garden, in close proximity to one open to the north, the minima in clear nights are commonly from 3 to 5 degrees higher, and the maxima of fine days as much lower. This subject, one of much consequence, is treated more fully in No. XXI of our Journal, page 280.

Penarth is 204 feet above mean sea level, instead of 100 as stated by mistake at p. 2.

No. 1—Diagram showing the MEAN HIGHEST DAY TEMPERATURE, the MEAN HIGHEST NIGHT TEMPERATURE, and the MEAN TEMPERATURE, for the Year; together with the same for each Month in the 32 years, 1850 to 1881 inclusive, at the ROYAL INSTITUTION OF CORNWALL, Truro, in Lat. $50^{\circ} 17' N.$, Long. $5^{\circ} 4' W.$

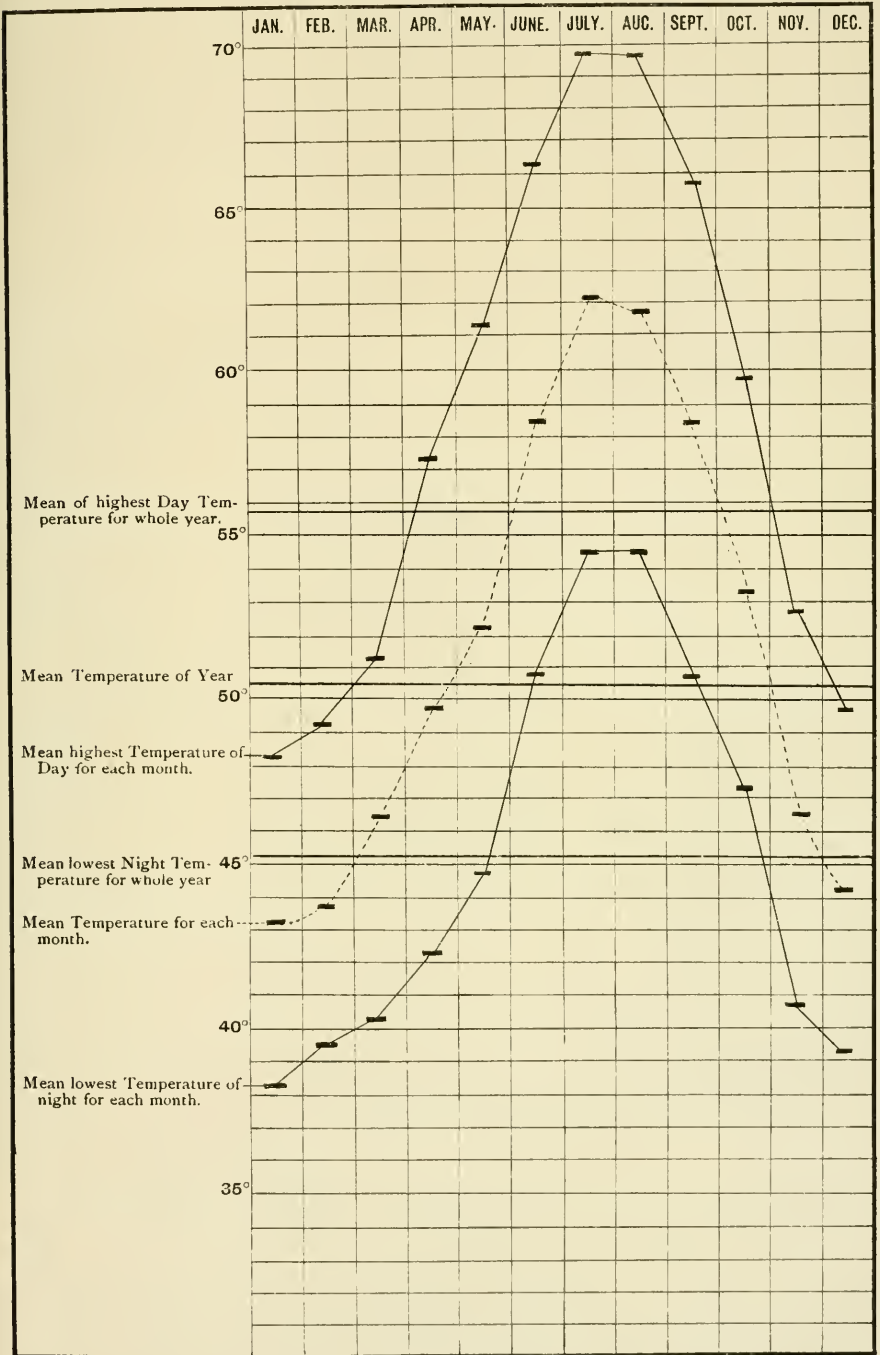
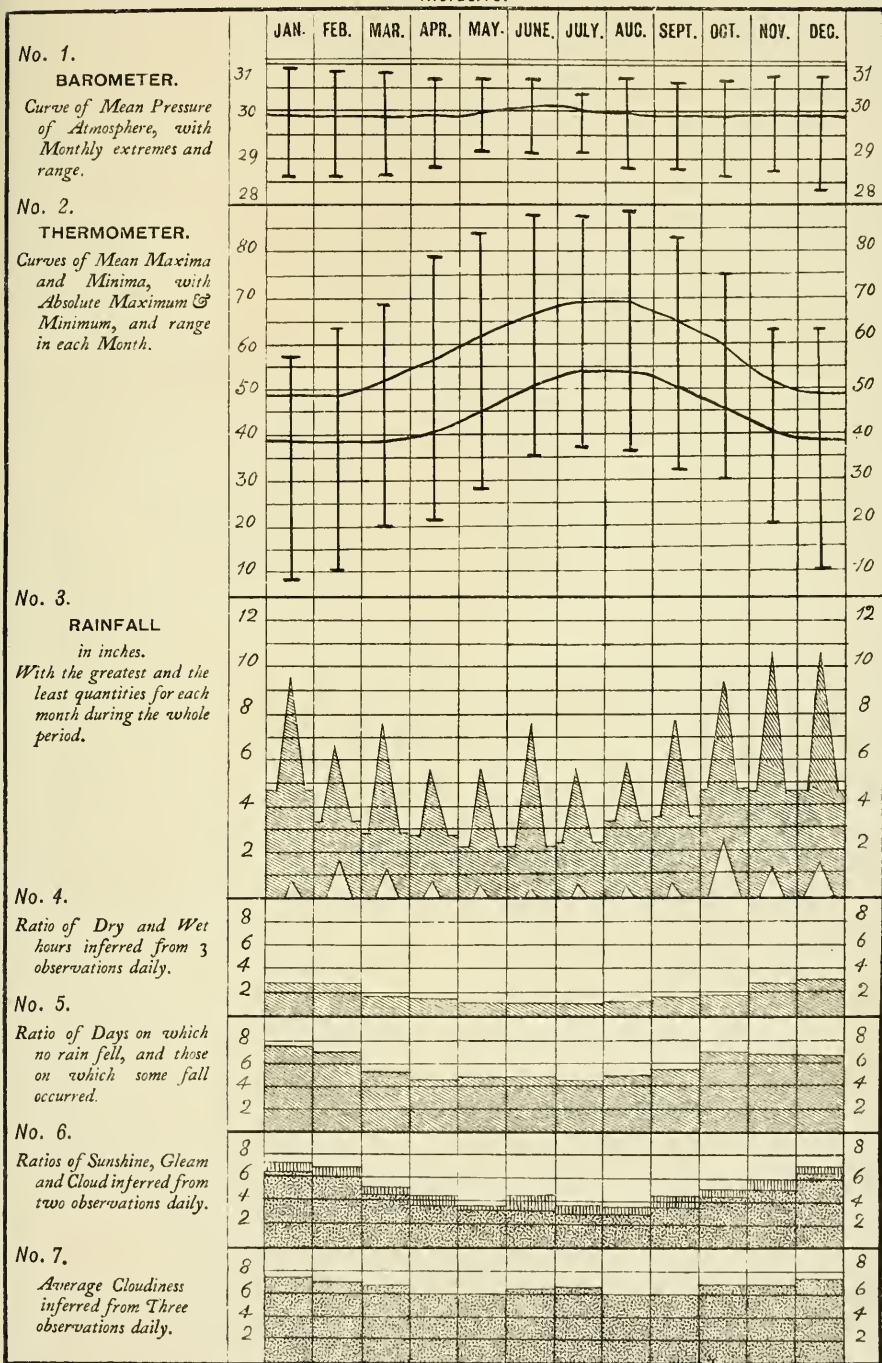


DIAGRAM of SUMMARY of RESULTS of METEOROLOGICAL OBSERVATIONS made at the ROYAL INSTITUTION OF CORNWALL, TRURO. in the Years 1850 to 1881, inclusive.





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