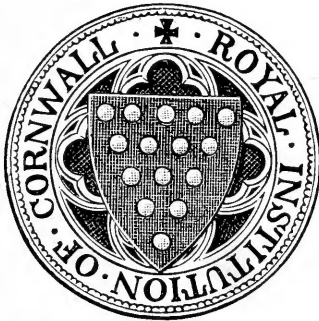


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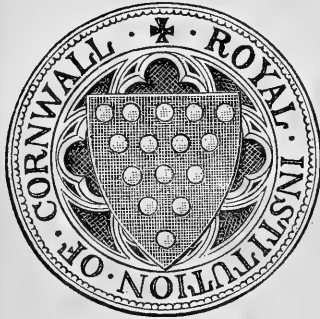




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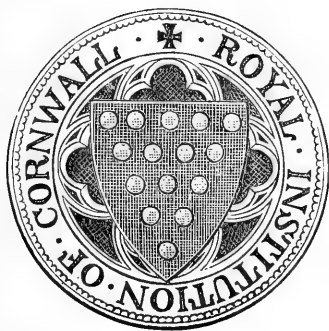
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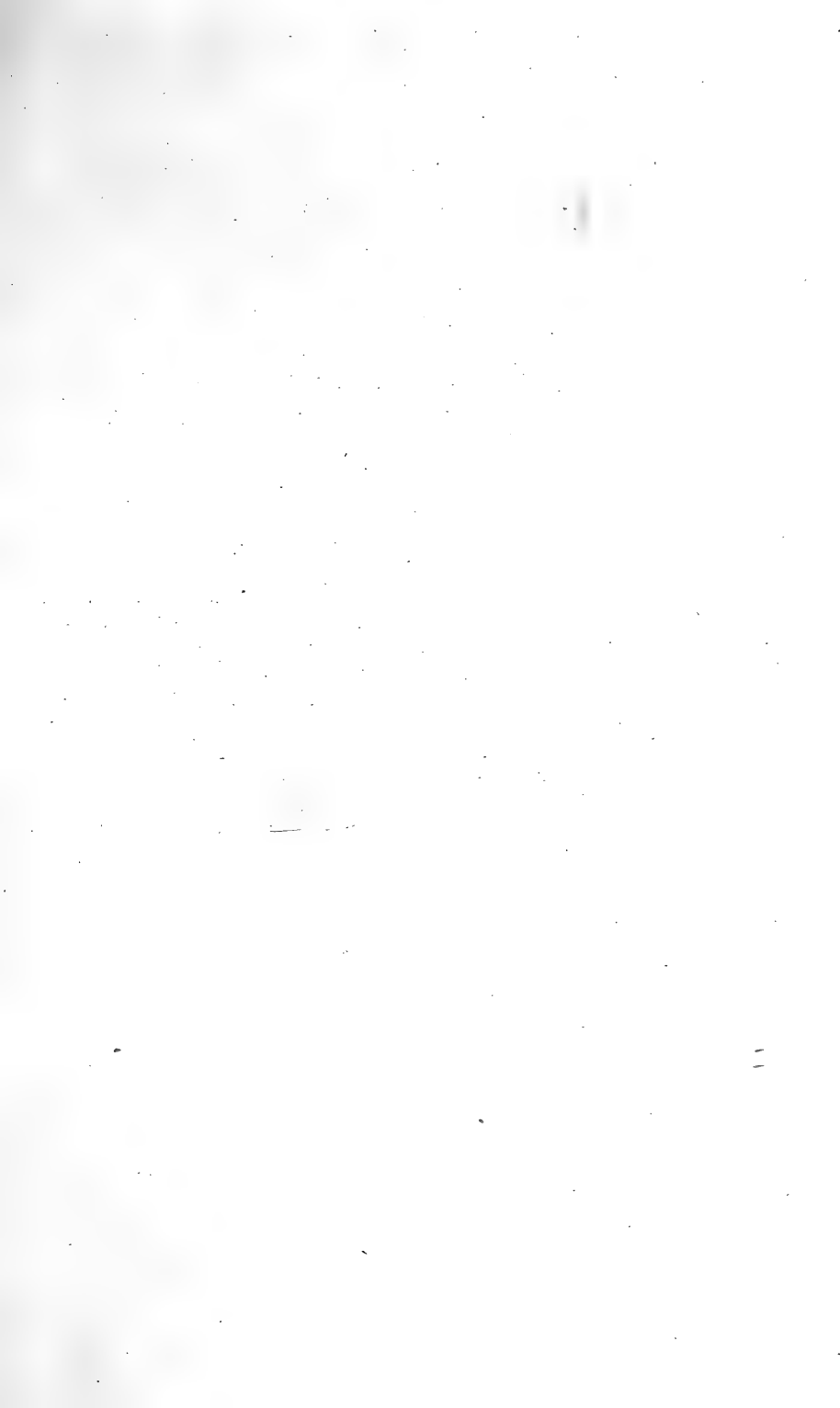
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OF MENABILLY, CORNWALL,

FOUNDER OF THE RASHLEIGH COLLECTION OF MINERALS

BORN 1729, DIED 1811.

*From a Painting by John Opie.*

## Royal Institution of Cornwall.

—◆—  
 SPRING MEETING, 1901.  
 —◆—

The Spring Meeting was held on Tuesday, May 30th, 1901, at the rooms of the Institution, the President, Mr. J. C. Williams, of Caerhayes Castle, presiding. There were also present Mesdames Rogers, Donaldson, Dixon, Truran, Share, Clark, Plunket, Paull, Tomn, and Leverton; Misses Snell, Share, Cornish, Tomn, Clyma, Dixon, M. Reynolds, and Burall; Archdeacon Cornish, Chancellor Worledge, Canons Flint, A. P. Moor, J. H. Moore, and Donaldson, the Revs. S. Rundle, D. G. Whitley, S. H. Farwell Roe, R. St. John Mitchell, and T. M. Comyns; Messrs. J. D. Enys, F.G.S., T. C. Peter, H. Fox, F.G.S., J. Osborne, F.G.S., Hamilton James, J. C. Daubuz, S. Trevail, W. J. Clyma, W. G. N. Earthy, J. Henderson, H. W. Vinter, M.A., H. Barrétt, Prof. Clark, A. C. Dixon, T. B. Dixon, W. Rose, J. T. Porter, W. Hicks, jun., J. Barrett, A. Blenkinsop, J. Thomas, F. Cozens, T. Clark, Major Parkyn, F.G.S., Hon. Sec., and Geo. Penrose, Curator and Librarian.

Letters regretting inability to be present were received from the Bishop of Truro, Rev. W. Iago, B.A., Sir Robert Harvey, Mr. Robert Fox, and Mr. F. H. Davey. Mr. Iago wrote that family bereavements had made it impossible for him to complete the account of the Harlyn discoveries. He had all the necessary materials in hand, and hoped nothing further would occur to delay it. Mr. Fox wrote that he hoped some practical arrangement might be made by which the ancient cemetery at Harlyn might be safely guarded for present and future generations. Mr. Davey, writing from Lostwithiel, said he was working an unexplored part of the county and hoped to be able to report his discoveries to the Institution. Major Parkyn said that he had received from the Keeper to H.M. Privy Purse a letter stating that His Majesty would be pleased to accede to the request to grant his patronage to the Royal Institution of Cornwall.

Mr. Williams said it was a satisfaction to be able to announce that the Institution was still pursuing a useful and prosperous career, and that the interest in the Society had been fully maintained since the last meeting. It was his first duty to allude to the death of Her late Majesty Queen Victoria, whose beneficent reign will go down to posterity as the most glorious in the annals of these realms. She had been well described as "The soul of honour and of honest dealings." This Society was honoured by Her Majesty's patronage throughout her long reign. It was with much satisfaction that he was able to announce that day that His Majesty King Edward VII had graciously signified his willingness to take the place of Her late Majesty as Patron of this Institution. It was pleasing to remember that the Sovereigns of this realm have been Patrons of this Society since its establishment in 1818. The Society had further to regret the loss, by death, of one of the most notable of Cornishmen, and a patron of the Institution, in Mr. John Tremayne. Cornwall was a community which felt, perhaps, in a greater degree than any other in these islands the loss of such a personality. Their county was in some respects nothing more than an island attached to the mainland by Saltash Bridge. Consequently, their people were thrown more on each other and on their own resources than those of any similar piece of ground within these islands. The passing away of a man like Mr. Tremayne must necessarily be severely felt. Such natural abilities, combined with such steady training, and readiness to place them at the disposal of the public, came seldom to any community, and one almost despaired, when a man like Mr. Tremayne passed away, that his place would be filled again by anyone in their lifetime. There could scarcely be a person in that room who had not noticed, and with much regret, the absence of the Rev. W. Iago from the meeting. The President was sure everyone present deeply sympathised with him in his recent afflictions, and was glad to read a letter written by him the evening before, to Major Parkyn, in which he hopefully anticipated being present on a future occasion. Death had also taken from them Mr. Gregg, who for upwards of seven years acted as curator and librarian to the Society. Mr. Gregg came as a perfect stranger to the city, but soon made a multitude of friends. He was a devoted officer of the Society,



and it was a source of regret to the Council that his appointment on the teaching staff of the Technical Schools necessitated his removal.

It was gratifying to find that there was no falling off in the number of members of the Society. During the last year there was an addition of twenty new subscribers, one of them being a life member. The Museum continued to attract a large number of people, over 3,350 having been admitted during the past year. Of these many had come from schools and other institutions for educational purposes, thus indicating the instructional value of the Museum. Much work remains to be done in the classification and labelling of a large number of the objects, which is now being taken in hand. Many valuable additions had been made to the Museum, including stone cists, skeletons, flints, spindle whorls, rings, bracelets, beads, and brooches from Harlyn Bay. Mr. John D. Enys, ever mindful of the interests of the Society, had presented many objects of much interest and value, including a number of Cornish birds and birds' eggs. Objects of that kind were very acceptable for replacing specimens requiring renewal. Professor Clark had given a considerable number of specimens illustrative of the Fauna of Cornwall and would during the course of the afternoon speak on them. He had offered to hand over to the Museum from time to time further specimens of a similar nature and to write an annual report on the natural history of the county for publication in the Journal. The interest Professor Clark was showing in the proceedings of the Society would undoubtedly be of great service. The library continued to be still indebted to Mr. J. D. Enys, Canon Moor, and Mr. Richard Pearce, H.M. Vice Consul at Denver, Colorado, a very old and generous friend to the Society, for valuable gifts. The Institution was favored by way of exchange with the proceedings of many of the learned Societies of Great Britain, the United States and the Continent of Europe. To display the numerous objects which were constantly being presented to the museum, it would be necessary to provide, from time to time, cases for their reception in the room which was now available. This would necessarily involve considerable expense, and it was hoped that the interest felt in the institution and the attraction which its museum offered would lead to a still further increase in the

number of subscribers. The meteorological observations had been made during the year with the usual care, and Mr. Penrose, the curator, at the request of the Council, had undertaken to prepare a summary of the observations from 1882 to the end of the last century, similar to that prepared by the late Dr. Barham for the years 1840 to 1881. The time for the award of the fifth Henwood gold medal would be in the spring of next year.

Interesting notes on the "Camberwell Beauty" butterfly (*Vanessa Antiopa*) were sent by Mr. T. J. Porter, of Hayle, and are included in the "Notes on the Natural History of Cornwall," printed in this Journal. Only one other specimen was known to have been caught in Cornwall, and that was at Tregothnan, in 1832. Mr. Frohawk, of Croydon, thought it very likely that other specimens would be met with in the summer or autumn. Professor Clark exhibited seven varieties of the Camberwell Beauty taken in different parts of Europe.

Mr. THURSTAN PETER, in a paper, said he had often asked himself lately whether the Institution was serving as useful a purpose in the county as it might. He feared the answer must be a very decided "No." Twice a year they held a meeting, at which papers were read, and the best of these were printed in their journal, but often enough they were not such papers as they ought to look for. In the first place, natural science was very inadequately represented; indeed, during the last two or three years the interesting papers of Messrs. Davey and Vallentin had been almost the only ones they had had. The mineralogy and geology of the county had of late been almost ignored. But he was not so much concerned about natural science, partly because (to his shame, he acknowledged) it was a sealed book to him, and partly because there were so many other agencies for the collection and diffusion of knowledge on the subject, their friend Prof. Clark being especially conspicuous in his efforts to enforce scientific observation and exact reasoning. What he was especially concerned about was the history of their county, a subject to which few devoted any thought or labour. Indeed, in these days, when people cared for little but sensational love stories and narratives of war and adventure, and would only read even them, as a rule, if very short, so as not to strain the attention, even the reading of history, to say nothing of its study, was

much neglected. To argue for the value of such a study was useless; everybody recognised it. But he did not think the value of the study of local history was appreciated as it should be. Yet what could be better calculated to produce a cultured race than a knowledge of and interest in the places where they lived? He believed that it should be taught in all schools, whether higher grade or elementary, and that the result would be of inestimable value. At present that was impossible as far as Cornwall was concerned, for no one had collected the material. Perhaps it would be better to teach what was written in such books of history as they had than to teach nothing at all; but to do so was to run the risk of a great shock to any who in later life found out how very unreliable these books were. What was required, and what that institution ought to provide, was an organised division of labour. Take, for example, a single subject which must be cleared up and fully explained before the history of Cornwall was possible to be undertaken—he meant Domesday Book. He did not know if there was anyone there who had formed an idea of the size of the Domesday acre in Cornwall, who could tell them why Cornwall was in the 11th century so lightly taxed compared with other counties, who could explain why, in the time of Edward the Confessor, its gelding hides were estimated at 155, while a few years after in Domesday Book they were increased to 399. Was the light taxation connected with the poverty of the land suggested by the small population (the recorded population was 5,438 and assuming each of these to represent five in family they had one person for every 32 acres only), and by the fact that there were, in the opinion of the Domesday jury, only half the plough teams in the county, for which there was room. Or were there in Cornwall an unusual number of estates unhidated by privilege? If so, what estates were they? Or was the paucity of hides in Cornwall merely the result of a confusion arising from the attempt to thrust on the Celtic land a measure which would not fit it? Reference to some of the old charters showed that much land in Cornwall was not measured by hides at all, and a very little study of the Ordnance Map would show how difficult it would be to divide the county by measures that suited well most parts of England. If there were any in that room who could

enlighten them, he invited such to place their knowledge at the disposal of the Institution. The understanding of Domesday was the key that would unlock many a problem as to the social condition of their ancestors, and throw much light on a subject hitherto only glanced at superficially by their writers, namely, the history of their Manors and Bartons. A splendid start had been made by Mr. Michell Whitley in the last volume of their journal, but no one would be more ready than Mr. Whitley himself to acknowledge that it was only a start. To thoroughly clear the ground would take a strong committee, and give them years of work, but work full of interest, and with a splendid result to look forward to at the end. It was, at any rate, work which must be done, if they were ever to have a history of their county worth the name. Unless by some means they collected the straw, it was useless complaining that their historians did not make the bricks. The work would be laborious, but he hoped Cornishmen were not so degenerate that they would shrink from the study of a useful and interesting subject merely because of that. Mr. Michell Whitley had given some helpful translations from the Exeter Domesday, and some valuable tables, but what was wanted in the first place was a copy of the original and not a translation by any one however talented. A translation was certainly easier reading to most of them than the original Latin, but until the meaning of every technical term used was understood, a translation was only calculated to mislead. As long as men like Eyton, Round, Ellis, Maitland, and Whitley could translate the same passage in a different way, as long as they could not agree as to how many acres there were in a hide, or even how many units there were in a hundred, so long were humbler scholars justified in asking for the original, that they might at any rate not be led astray by the glamour that surrounded any of those great scholars' names. He offered to the Council a copy of a MS. in the University Library at Cambridge, which, as far as he could ascertain, had never hitherto been published. It was a part of the register of St. Buryan College in the time of Dean Robert Knollys, 1473 to 1485. Mr. Peter then referred to the collection being made of materials for a record of all known and existing mural paintings in Cornish churches, and added that the results of their inquiry

ought to be accompanied by illustrations, and illustrations cost money. He could not but believe that their many wealthy friends would gladly help them if they could only satisfy them that they were doing real work; that they were in their journal storing up information worth storing, and not aiming merely to produce a volume of light reading for the lazy hours of a summer afternoon. He felt at present that they could give no such assurance. Except the writings of Mr. Baring-Gould and Mr. Whitley's notes, what serious contribution to their history had that Society made in the last ten years? He should like them to form an Index Committee, that they might have readier means of consulting the Cornish histories and the publications of the Rolls Office, and the same committee might correct the errors in the latter volumes arising from a want of local knowledge. They perhaps could not attain perfection at once—that was no reason why they should not make some effort towards it. If in Devonshire they could do such good work as they had, let Cornwall not be too proud to imitate them, that they in Cornwall might do it too.

MR. ENYS, ARCHDEACON CORNISH and MR. TREVAIL emphasised the importance of the essayist's suggestions, Mr. Trevail remarking that if the rush of life would only permit, and those gentlemen who had the leisure would devote the time to it, there was a splendid field for a historical record of the county, and nowhere more so than in the city of Truro. The PRESIDENT said the other subjects, which it was necessary for almost everybody to have a more or less minute acquaintance with, reduced the leisure time of everyone to a point beyond which they could not go.

Dr. CLARK contributed "Notes on the Natural History of Cornwall," and Mr. RUPERT VALLENTIN "Notes on the Fauna of Falmouth," both of which are printed in this Journal.

CANON DONALDSON proposed a vote of thanks to the contributors of papers and other communications, and to the donors to the library and Museum, and emphasised the great importance of setting to work without delay to secure a good history of Cornwall, because the longer it was postponed the more difficult it would be to obtain it. The trend of modern

education was to obliterate individualism, and as years passed by that earlier generation of Cornishmen, who had the gift of interpreting the records that remained, would be taken from them, and perhaps the new generation would have lost some of that special power of interpretation, and the county would have lost a vast amount of knowledge worthy of being retained. Mr. HOWARD FOX seconded the motion, which was unanimously carried. A vote of thanks was accorded the president, on the proposition of Messrs. J. C. DAUBUZ and HENDERSON.

Mr. WILLIAMS, in response, said one thing struck him in sitting there, and that was the difficulty of conducting and keeping the interest of all connected with the Institution focussed on any paper or any subject. One tendency of knowledge, or the increase of knowledge in these modern days, was to encourage the specialist and destroy the interest in a subject of those who were only smatterers in anything. As knowledge increased in all the innumerable branches, so developed the specialist, who was the only man who knew anything on any one subject, and he talked a jargon which no one else could understand. His impression was that in an Institution of that sort they would have to fall back more and more upon the good old-fashioned smatterers, who knew a little of everything and not much of anything.

A CATALOGUE OF SAINTS CONNECTED WITH CORNWALL,  
WITH AN EPITOME OF THEIR LIVES, AND LIST OF  
CHURCHES AND CHAPELS DEDICATED TO THEM.

By The Rev. S. BARING-GOULD, M.A.

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PART IV. *Ki—Ma.*

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S. KIERAN, Abbot, Confessor.

There were two Saints of this name, Kieran, of Saighir, and Kieran, of Clonmacnoise. The latter was never out of Ireland. Martyrologists agree in identifying Kieran, of Saighir, with Piran, of Peranzabuloe.

The period at which the Saint lived has been confused by interested persons for a definite object. At the beginning of the eleventh century, perhaps as late as the twelfth, a desire manifested itself among the chieftains of Munster to have an archbishop of their own; and to give colour to a demand for one, it was pretended that there had been four bishops in the South of Ireland before the arrival of S. Patrick, and these were Kieran, Ailbe, Declan, and Ibar. Something to this effect was accordingly foisted into their lives. This, however, produced sad anachronisms; for we know that these four saints belonged to the Second Order, that is to say such as succeeded the mission under S. Patrick.

According to the garbled Life, Kieran was born in 352, and yet he was made a contemporary of S. Finnian who died two hundred years later. The Martyrologist of Donegal, confronted by these difficulties, extricated himself by fabling that Kieran lived to the age of three hundred and sixty years.\*

The extraneous matter thrust into his life related that he had studied at Rome, where he met S. Patrick, that he was ordained by Pope Celestine (422-432) and sent to Ireland before S. Patrick received his mission. All this stuff must be eliminated. Kieran's life brought him in contact with Kings, whose period

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\* Dr. Todd : Life of S. Patrick, 1864, pp. 198-221.

can be determined with accuracy, and with Saints, whose date is also fairly certain. But if the 11th and 12th century writers thrust him back to a period too early, Dr. Lanigan is wrong in advancing him to another too recent.

In order to understand the history of S. Kieran, and to arrive at a judgment as to the reasons for his settling in Cornwall, it is necessary for us briefly to consider the limits and condition of the old kingdom of Ossory.

This kingdom anciently occupied the entire tract of land between the Suire, the Barrow and the Slieve Bloom Mountains. The name signifies the land between the waters. It is one that comprises three extensive plains separated from each other by parallel ridges of mountains. Northernmost is the Magh (plain) Aiget Ros, extending south to the Thornback chain. The middle plain is Magh Reighna, bounded on the south by the Dundergh range, twelve miles below Kilkenny. Magh Feimhin is the third or southernmost plain, and included in it the Rock of Cashel.

From a century before the Christian era the Kings of Munster claimed a fine from the Kings of Leinster, called the Eric of Eidersceal, to be levied annually on the two southernmost plains of Ossory. The enforcement of this fine proved a fruitful source of feuds down to the end of the 10th century.

The Ossorians attempted to shake off the burden in the 2nd century. They were assisted by Lughaid Laoghis, from Leinster, but, as a price for this aid, were forced to surrender a portion of the northern plain between the Nore and the Barrow, which was now constituted into the kingdom of Leix under the suzerainty of Leinster.

Another cession of land took place later, when a slice was yielded to the Hy Bairrche.

Next, Corc, King of Munster, abandoned the old royal seat at Knock Grafton, and seized on the Rock of Cashel in Magh Reighna, thus commanding the middle Ossorian plain. At the same time he redemanded the payment of the hated tax. At this time Ruman Duach was King of Ossory, and he was the founder of the Hy Duach, a subclan of the royal race of the Hy Connla.



Corc, of Munster, was succeeded by his grandson Aengus Mac Nadfraich, who was converted to the faith by S. Patrick, in or about 470.

Before this date a struggle had been undertaken by the Hy Connla to free their country from subjection to Munster, but with the most disastrous results. Aengus invaded Magh Feimhin, at the same time that a kinsman Cucraidh poured into the two upper plains and overran them. Aengus constituted of these upper plains an Ossorian kingdom which he gave up to Cucraidh, to be held under the overlordship of Munster, and he swept all the Ossorians out of the southernmost plain and delivered it over to the Deisi of Waterford, to repeople and hold as their own.\*

Most of the royal race of Ossory were slaughtered, but Lughaidh, grandson of Ruman Duach, was spared and sent into banishment among the Corca Laoighe, his wife's family, in the south, the sea-board of the present county Cork from Cork harbour to Bantry Bay.

Lughaidh was married to Liadhain, daughter of Maine Cerr, related to Aengus and Cucraidh, and it was due to this that his life was spared. Whilst his parents were in exile, S. Kieran was born on Inis Chiar, now Clear Island, the southernmost point of Ireland.

The family of Kieran was pagan, but the child was given to an exile, Cuach of the Clan Cliu, to be nursed, and she was a Christian; she formed his young mind, and instilled into his heart the love and fear of God. We are hardly wrong in attributing to her the giving of direction to Kieran's whole after life (*see* Kewe or Kywe).

Cuach whom we may identify with S. Kew, returned with her tribe from exile in 458. Kieran's birth cannot be fixed with any certainty. It may have taken place as early as 438 when the Cliu Clan were exiled, or it may have taken place somewhat later. We are told in his Life that he was aged thirty when he left Ireland and was baptised, and that he remained twenty years abroad. He was certainly back in Ireland in 474, and then in communication with Aengus, King of Munster. It is conse-

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\* See "The Expulsion of the Dessi," by Dr. Kuno Meyer, in *Y Cymmrodor*, vol. xiv, 1901.

quently difficult to understand how he can have spent twenty years out of his native land. He may have been aged thirty when he was baptized, but he was certainly younger by many years when he left Ireland.

Whither he went we do not know, for all the story of his expedition to Rome and ordination by Pope Celestine must be dismissed as unhistorical. Probably he visited Cornwall whither apparently, many Ossorians had fled when Aengus devastated Magh Feimhin, and after expelling the Ossorians gave up their land to the Deisi.

Dr. Lanigan puts S. Kieran at a later date, because in the Life of S. Finnian, of Clonard, Kieran is spoken of as his pupil. But this must have been his namesake of Clonmacnois, whom the Martyrologist of Donegal tells us was Finian's pupil, and the same writer does not include Kieran, of Saighir, among them. Finnian died in 548.

Probably Kieran returned to Ireland in 474, and he then at once went to King Aengus Mac Nadfraich to settle some terms with him, by which he might be allowed to start a monastic institution for the advantage of the Ossorians. The moment was not propitious. A son of Ere Mac Duach, one of his own kinsmen, had maliciously killed a horse belonging to S. Patrick, whilst the saint was visiting Aengus. The king, not sorry for an excuse to deal sharply with one of the family of the expelled Clan, obtained his arrest, and declared his intention of putting him to death. Kieran interceded for his kinsman, and undertook to pay the eric or legal fine for the horse; when, however, he endeavoured to raise the money he found a difficulty in so doing. He was happily succoured by accident. Aengus caught a chill that settled in his eyes, producing acute inflammation. He at once concluded that Kieran had "ill-wished" him, and in a panic sent for him, made peace, released the man who had killed the horse, and remitted the fine.

Soon after his return to Ireland, Kieran would seem to have revisited Cliar Island, where he had been born, and there founded a church, of which the ruins remain, the site having been granted to him by the chieftain of his mother's family. A sculptured cross and an ancient pillar-stone remain near the strand called to this day Strath-Ciaran.

Then he departed to undertake the work of organising ecclesiastical institutions for Ossory, but would not venture to plant his monastery within the confines of the new kingdom of the intrusive Cucraidh. He selected a spot near the centre of Ireland, on the boundary between the northern and southern divisions of Ireland, but on the Munster side. This is now a small village in the barony of Ballybritt, in King's county, not far from the north western extremity of the Slieve Bloom Mountains.

In the legend, as afterwards elaborated, it was a spot to which Patrick had bidden him repair, when they were together on the Continent, and where was the well of Uaran, probably one to which sanctity attached in Pagan times.

According to the story, Kieran began by occupying a cell in the midst of a wood, living as a hermit, and his first disciples were a boar, a fox, a badger, a wolf, and a doe. Happily we are able to unravel this fable. One of his pupils was S. Sinnach, of the clan of the Hy Sinnach or the Foxes, in Teffia, near Saighir. Another may have been a member of the Broc tribe in Munster. *Os* (doe) was unquestionably an Ossorian disciple. S. Kieran's wolf was none other than his uncle Laighniadh Faeladh, but *faeladh* has a double meaning, it is "hospitable," as well as "wolfish." There is a Kiltorcan which must have been founded by a *Torc* (boar), another pupil. By this we can see how marvels were developed out of simple facts.

S. Kieran induced his mother, Liadhain, to found a religious house for women at Killeen, not far from Saighir. Into it was received her namesake, the granddaughter of Cucraidh, who afterwards became abbess. Kieran had inflicted upon him Carthagh, a son, or, more probably, a grandson of Aengus Mac Nadfraich, and this Carthagh eventually succeeded to the abbacy of Saighir. It is difficult to resist the conclusion that this was due to arrangement with the King of Munster and the usurper of the throne of Ossory. Aengus agreed to allow Kieran to organise the religious communities on the Ossorian frontiers, on condition that his own son or grandson should be made coarb, with succession to the ecclesiastical headship, and in like manner Cucraidh sent his granddaughter to Liadhain on the stipulation that she was to succeed there. By this arrangement it was

provided that the headship of the two great ecclesiastical and educational establishments should ultimately pass into the hands of scions of the usurping family.

Carthagh, who had been thrust upon Kieran, gave him much trouble. He carried on an amour with one of the young pupils of Liadhain's establishment, and when Cuach, Kieran's fostermother, had placed herself under Kieran's direction, and had established herself either at Killeen or close by, Carthagh carried on the same game with one of her damsels. At length the scandal became so flagrant that Kieran advised Carthagh to travel, and sow his wild oats at Rome. S. Itha said of this escapade:—

“Carthagh will come to you  
A man who exalts Faith;  
A son will be born to Carthagh,  
Who will do no credit to his parentage.”\*

A damsel named Bruinech the Slender was with S. Liadhain at Killeen. She inspired Dioma, chief of the Hy Fiachach tribe in West Meath, with passion, and he carried her off. The story has already been told (*see* S. Buriena).

The relation in which Kieran stood to S. Patrick is uncertain. That the sons of Ere, of the Duach family, did steal his horses we are told in the life of S. Patrick, as that he cursed them for so doing.† There is, however, no mention in it of the intervention of Kieran. *Why* they showed such hostility to the great apostle we are not informed. There exists a popular tradition among the Irish of Ossory that Kieran and Patrick were not on the best of terms, and that when they met Kieran refused to salute the apostle. This tradition may be perfectly worthless. One thing is clear that Patrick did encounter some opposition from the bishops and clergy, as his “Confession” was clearly written to disarm this opposition.

It is quite possible that the missionary bishops and abbots of the southern half of Ireland were jealous of the supremacy of Armagh.

\* Feliré of Oengus, Mch. 5.

† Tripartite Life, I, p. 109.

In the "Life" of S. Kieran we read that King Aengus went with Patrick, to Saighir, and called on the Abbot to entertain the whole royal and ecclesiastical retinue. This Kieran did; he slaughtered eight oxen, and broached so many casks of wine, that it was said he must have turned the water of his well into wine to furnish so much good liquor. Aengus no doubt did visit Saighir, probably with some suspicion, but hardly can Patrick have done so.

Whether on this occasion or on another, we do not know, but seven of King Aengus's harpers or bards were laid hold of and concealed in a bog. It is likely that the abduction was committed by some of the Mac Duach, who did not relish hearing the bards sing exaggerated accounts of the exploits of the victor, and of their own expulsion from the land of their fathers. Aengus took the matter in this light, sent for Kieran, and stormed and threatened. Kieran was able to appease his resentment only by recovering for him the seven men, who had been kept in concealment in an inaccessible fastness surrounded by bogs. In the "Life" he resuscitates dead men.

One autumn day, Kieran noticed a magnificent bank of blackberries, so large and luscious that, to preserve them from rain and frost, he threw his mantle over it.

Now it fell out that Aengus, King of Munster, and his wife Ethnea, "the Odious," arrived on a visit to Cucraidh, the usurper, in his *dun*. Ethnea was daughter of Crainthan and granddaughter of Enna Cinnselach, who had banished the Clan Cliu, and with it Cuach, Kieran's nurse. Ethnea was peculiarly odious to the Hy Duach. A prophecy had been made to the Deisi, of Waterford, that the man who should marry Ethnea, who was being fostered among them, would give them wide and fertile lands to colonise. Legend says that they fed her on the flesh of infants to ripen her early—but this is an after adornment of the tale. What is true is that, when she married Aengus, mindful of her obligations to the Deisi, and perhaps of the prophecy, she goaded on her husband to drive out the Ossorians from Magh Feimhin and give up their lands to the Deisi.

When the royal pair arrived at the residence of Curcaidh, they were well received, and Ethnea conceived a criminal passion

for her host. This put Cucraidh in difficulties. He had no desire to embroil himself with his over-king; and in his dilemma he sent for Kieran, who arrived bringing with him a basket of blackberries as a present for the queen.

The legend writer, so as to distort a very ordinary fact into a marvel, pretends that the season was Easter. It is far more probable that it was Samhain, the great feast and visiting time of November. Partaking of the fruit served the purpose of cooling the queen's irregular desires. This incident occurred after Saighir was well established, and probably not before 480. Eithne Uatach and her husband Aengus fell soon after in battle, 489, and according to the "Life" of S. Kieran, Aengus was succeeded by his son Ailill.

A gloss in the *Lebar Brece* on the *Feliré* of Oengus, thus describes the monastic establishment of Kieran, at Saighir. "Numerous were his cattle. There were ten doors for his kine, and ten stalls at every door, and ten calves at each stall, and ten cows to every calf. . . . Moreover there were fifty docile horses for the tilling and ploughing the ground. And this was his meal every night—a little bit of barley bread, and two roots of *Murathach*, and water from the spring. Skins of fawns were his raiment, and a wet hair-cloth over these. He ever slept on a pillow of stone." The gloss is late, but it represents the tradition that Saighir was a large place, and that the head of it lived abstemiously.

Cairnech (*Carantog*), the Bald, was Kieran's scribe; but it is most doubtful if this can be the same as the *Carantog* who was engaged in the compilation of the *Seanchus Mor* in 438. Indeed we can hardly suppose it possible that he should be associated with Kieran at the close of the century. Cairnech wrote books for Kieran that were long preserved at Saighir, and among them a record of Kieran's travels.

Situated as Saighir was on the confines of Munster, it was liable to be ravaged in times of war. We hear of the king of Ireland, probably Lugaidh, son of Laogaire (483-506), marching against Ailill, king of Munster, and camping on the north side of the river Brosnach, by Saighir, and Ailill was camped on the Munster side, on Kieran's land.

Happily so much rain had fallen on Slieve Bloom that the river was in flood, and this interfered with military operations. Kieran took advantage of the occasion to pass over the stream in his coracle, and to negotiate a suspension of hostilities. This must have taken place shortly after 489, but we cannot determine the exact date.

Lugaidh had not embraced Christianity, and he favoured the reaction which was setting in against the new faith. When he died by a flash of lightning, it was boldly asserted by the Saints that this was due to the vengeance of Heaven for his obstinate paganism.

He was succeeded by the turbulent Murtogh Mac Earca, who had been mixed up in internecine war in Ireland ever since his return from Britain in 488.

As Saighir grew in importance, and its daughter establishments increased, it became, inevitably, a centre of resort for all the disaffected and discontented. Members of the Hy Duach and the Hy Conaill took refuge within its territory and enjoyed the privileges of sanctuary. Kieran had, moreover, extended his authority north over the Hy Fiachach, and the king of Munster and the intrusive king of Ossory perceived that Saighir was a danger to them. This, we can hardly doubt, was the moving cause of Kieran abandoning his foundation and quitting Ireland. Carthagh had returned from his rambles and it might be hoped had mended his morals; and Liadhain, the younger, had grown up, and was capable of governing a convent. Although not told that Kieran received so much as a hint to quit, and make room for Carthagh, we cannot hesitate in admitting that it was so.

When he left Ireland, he took his pupil Bruinech with him, as also, (if I am right in my identification of Ladoca and Kew with Cuach), his faithful fostermother, to organise the female education in Cornwall, where already many Ossorian families were settled. A companion, Medhran also accompanied Kieran, and Medhran's brother is probably the Saint of Lanhydrock, (*see* Madron and Hydroc).

With one exception, the Irish hagiographers have nothing to tell us about the close of the life of S. Kieran. The lives terminate abruptly, and his name does not occur, after the time,

in the accounts of contemporaries. John, of Tynemouth (*circa* 1360), says that he came to Cornwall, where he died, and he represents the current mediæval tradition. Leland quoting from the legend of S. Piran preserved at Perranzabuloe, says:—“Piran, who is also Pieran and Kyeran in Ireland, was born in the province of Ossory. His father’s name was Domnel, and that of his mother Wingela. He was a disciple of S. Patrick. He came to Britain and died, and was buried in Britain.” He is mistaken in the names of the parents, and also in thinking that because an Ossorian, he was born in Ossory.

Some of the legends that attach to S. Kieran may be added. S. Brendan was his friend, but a young one, as he was born in 483. Kieran hearing that Brendan was in bad straits sent to ask him whether he had a supply of milk. Brendan in reply sent him a bowl of water—that was his drink. He had not any milk. Kieran at once sent him one of his cows. “God grant,” prayed the younger saint, “that to Kieran may be given a cow in milk unto the end of time.”

The story of the milk is not told like this. In the 10th and 11th centuries it was regarded as pointless, unless miraculous, accordingly it was fabled that Brendan had turned the water into milk, whereupon Kieran had reconverted it into water.

The incident of Kieran and Germoe has been already noticed, (*see* Germoe).

One day S. Kieran, of Clonmacnois, and the two Brendans visited the monastery. The steward came to the abbot in dismay and said, “There is nothing to offer these distinguished guests except some scraps of bacon and water.”

“Then serve up the bacon and the water,” said the saint, and when they were brought on the table, the guests assured Kieran that his bacon tasted better than anything they had hitherto eaten, and as to the water, it was as good as wine. But there was a lay brother at the table, and he thrust his platter away angrily, for he was tired of bacon, and had expected something better, when distinguished visitors were present. “Hah!” exclaimed Kieran flaring up, “The time will come when you, son of Comgall, shall eat ass’s flesh in Lent, and soon after you will lose your head.”



Kieran is the Kerian to whom a Church is dedicated in Exeter. The name has become Piran in Cornwall in obedience to a phonetic law that Gaelic hard *C* becomes *P* in Welsh and Cornish. Thus Cenn, *head* in Irish, is *Pen* in Welsh, and the Latin *purpur* is turned into *corchair*.

The name of S. Kieran occurs in the Hereford Missal, and is among the later entries in the 12th century Exeter Calendar. It is in Grandisson's Legendarium and Calendar in the 14th century, in a Welsh Calendar of the 15th century, and in the Norwich Calendar of the same date. Whytford in his "Martyrologe" 1525, gives him as "Saynt Ciaue." He occurs in every Irish Martyrology. His day is March 5.

William of Worcester says that November 18 was observed in his honour at Launceston, probably on account of a Translation. A Calendar of the diocese of Léon gives September 17.

The date of his death can be fixed only approximately. It is not given by the Irish annalists. He probably died early in the 6th century.

Dedications to him are:—

The church and holy well at Perranzabuloe. In Domesday this church is spoken of as collegiate.

The church of Perran-ar-worthal, where also there is a holy well.

The church of Perran-Uthno.

The church of S. Kevern was anciently a foundation of S. Akebran, but as he was forgotten, and his legend did not exist, the dedication was transferred to S. Kieran. In 1266, in Bishop Bronescombe's Register it is S. Kaveranus or Keranus, but S<sup>ta</sup> Keverana in the same Register, 1269. In Stapeldon's, 1310, it is the Church S<sup>ti</sup> Keverani, in Stafford's, 1403, S<sup>ti</sup> Kyerani. So in that of Grandisson 1341 and 1362.

Authorities:—

A Latin Life of S. Kieran in the Codex Salamanticensis.

Another from the Codex Kilkeniensis in Colgan.

A fragmentary Life in Irish, Egerton MSS. 91.

Another, a transcript made 1780-2, *Do* 112. The transcript is from a MS. in the Royal Irish Academy. It has been printed in the *Silva Gadhelica*, 1891.

Another, very similar, ed. Mulcahy, Dublin, 1895.

These last Irish "Lives" are independent translations of a Latin original.

A work on S. Kieran, by John Hogan: "S. Ciaran, Patron of Ossory," Kilkenny, 1876, is a vain attempt to show that the Saint preceded S. Patrick.

The original of all the lives was probably "The migrations of Ciaran," attributed to his scribe, Cairnech the Bald, a book long preserved at Saighir. The glossator on the *Feliré* of Oengus, says that it existed in his day, and that it was a book of wondrous writing with many *gressa* (illuminations?) and with the colophon "Let everyone who shall read it give a blessing to the soul of Cairnech the Bald."

In Art, S. Kieran should be represented with a heron on a tower, or with a bunch of blackberries. As he was a bishop, he should have his staff, but be habited in fawn-skins.

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#### S. KNET, Hermit, Confessor.

Ecton, in his "Thesaurus Rer. Eccl." gives S. Knet as the patron of Lesnewth, now rededicated to S. Michael.

Knet would seem to be a contraction for Cennydd or Kenneth, the son of Gildas, the historian, but a child of incest, if the story in Capgrave be true. Owing to the scandal connected with his birth he was exposed in an osier coracle on the waves of the Luchwr, and washed up on Gower. He was rescued by a shepherd, but Kenneth grew up a cripple; one of his legs was so bent that the calf adhered to the thigh.

Eventually he became a hermit in the peninsula of Gower, but though a hermit, perhaps before he adopted this life, he married and became the father of S. Eval and S. Filius; he learned the ecclesiastical curriculum in the school of S. Illtyd.

The legend concerning him in Capgrave is very wild. It relates how as a child he was surrounded by seagulls, which brought him a brazen bell as a feeding-bottle. Every day a doe came from the forest to be milked into the bell.

In his first edition, Wilson arbitrarily set down November 10 as the date for the commemoration of Kenneth, but changed the day in his second edition to August 1, on which day the Bollandists print his legend. Whytford is a better authority for August 1. Kenneth's brothers in Cornwall were Gwynog (Winnow), who settled on the Foye river, and S. Aedan or Madoc, Bishop of Ferns, but who has also left traces of himself in Cornwall. His two sons were founders of churches in the peninsula, so was his aunt Gwenafwy (Wenappa). That he went on into Brittany (where his father Gildas had become a man of importance and influence) is apparent, for he is venerated at Plumelin (Morbihan) and Plaintel (Côtes du Nord), where he has chapels, also at S. Caradec (Côtes du Nord). He is called S. Quidy in Brittany, and the *pardon* is celebrated on the first Sunday in August.

In Art, he should be represented as a cripple with a seagull near him and a bell in his hand.

Lesnewth derives its name from Lis newedd, the new court. The church has been rebuilt in tasteless fashion and rededicated to S. Michael.

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#### S. LADOCA, Virgin, Abbess.

In the Episcopal Registers, the patroness of Ladock is given as S<sup>ta</sup> Ladoca.

Mr. Copeland Borlase assumed that Ladock stands for Llan-Cadoc, and on the strength of this his somewhat positive assertion, a figure of S. Cadoc has been placed in stained glass in a window of the parish church.

In Bronescombe's Register, 1268; in Quivil's, 1281; in Bytton's, 1303 and 1307; in Stapeldon's, 1308, 1318, 1322; in Grandisson's, 1330, 1331, 1337, 1338; and in the registers of succeeding bishops, the church is invariably given as that S<sup>tu</sup>

Ladocæ. A scribe may accidentally err, but a succession of scribes will hardly continue in the same error.\*

We may consequently reject the identification with S. Cadoc, and we must look for a female Saint for Ladock. I can but offer a suggestion as to who S. Ladoca may be. I suspect that the original name of the Church was Llan-ty-Coca; *i.e.* the Llan or Sanctuary of Cuach, or Coca, the nurse or fostermother of S. Kieran, and the organiser under him of his colleges for females. *See under* Kewe. Ladock Feast is on the first Thursday in January. In the Irish Calendars Cuach is marked on January 8; but her name occurs again on June 6 and June 29, and again as the "Wolfgirl" on April 29,

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S. LAMANA.

Looe Island was probably a Cornish "Holy Isle"; on it certainly stood a chapel. It was a benefice called in Bishop Grandisson's Registers "Rectoria." It pertained to the cell of St<sup>a</sup> Lamana in Talland, subject to Glastonbury. St<sup>a</sup> Lamana is also mentioned in the taxation of Nicolas IV. Possibly Lamana is a corruption of Llan Manacha, the Church or Sanctuary of the Nuns.

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S. LANTY.

Ecton in his "Thesaurus Rer. Eccl." 3rd ed. Lond., 1763 gives S. Lanty as patron of Lanteglos by Fowey, and Lanteglos by Camelford. A blunder. Lanteglos means the Llan of the Church. Lanteglos by Fowey is dedicated to S. Willow, the other Lanteglos to S. Julitta.

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S. LEVAN, Priest, Confessor.

S. Levan's Church is in the district colonised by Irish settlers, and he is not unknown to the Irish.

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\*In Bishop Brantyngham's Register, 1390, occurs a concession of licence for service in a chapel at Tregamedene "in Parochia Sancte Kyclodoce," apparently a reduplication of the name under two forms of Kygve and Ladoca.

We must reject as untenable the assertion made by Dr. Oliver, and others after him, that Levan is Livinus or Liafwín, apostle of the Frisians, who died in 773; concerning whom a "Life" was forged in the 11th century.

Levan is the Irish Leobhan. The Irish *bh* is pronounced as a *v*. He was a saint at Killevan in Clonfert and Kilmore, where are three chapels dedicated to him. Killevan was his monastic foundation.

In the Egerton MS. list of the four and twenty persons in holy orders who were with S. Patrick, he is classed as one of his smiths. "Mac Cecht (Laebán) of Domnach Laebán—it is he that made the [bell called] Findfardech." Which means "the sweet-toned." Colgan also holds that Leobhan and Mac Cecht (son of a plough) are one and the same. But in the list of S. Patrick's household in the "Spotted Book" he is distinguished from Mac Cecht, erroneously we think.

As so very little is known of him in Ireland,—so completely does he disappear from among the disciples of the apostle, that we may suspect that he, like Carantog, left him, and that moreover at an early period in Leobhan's career. The Welsh form of his name is Llywan or Llywyn, and we are informed that he was a friend of the Armorican Cadvan, and was with him for a while in Bardsey.

We next hear of him as associated with Paul of Leon when he left Wales and came to Brittany. Then he accompanied S. Tugdual to Paris, with eleven other disciples. On that occasion, as none of these Celtic monks could speak the Frank tongue, they asked S. Albinus of Angers to serve as their interpreter. The object of Paul and Tugdual going to the Frank King, Childebart, was to obtain a confirmation of their several grants of land. S. Albinus, or Aubin, was a native of Vannes, and therefore able to speak the British tongue. In 538-40 Conmore usurped the regency of Domnonia, and it was probably then that Tugdual and Paul visited Childebart.

This same Loewan, or Levan, wrote the life of S. Tugdual, a life that is still extant,\* that was originally written in Irish. Tugdual died in or about 553 or 559.

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\* De la Borderie, Saint Tugdual, Textes des trois vies, vita Ima, Mémoires de la Soc. Archéol. des Côtes du Nord, 2nd ser., T. II, p. 84.

The most probable date for the death of S. Patrick is 493.† We cannot say at what time in his apostolic work Levan was with him, perhaps late, and then only for a short while. There is however a difficulty in reconciling the dates, and if the Patrician Leobhan be the same as the Leovan who wrote in Irish the life of Tugdual, he must have lived to an advanced age.

In Ireland, S. Leobhan, of Ath-egais, occurs in the Martyrologies on June 1, but the place cannot be identified; and the name, without indication of place, on August 9. As in Brittany his *Pardon* is observed on the second Sunday in August, this seems to identify Leovan with the Leobhan on August 9.

At S. Levan in Penwith, the feast is observed on October 15.

As an associate of S. Paul, he founded Treffaouenan in the diocese of Leon, and as a companion of S. Tugdual he has a chapel at Ploulech in Treguier. He has also a chapel at Plounevez-Moedec.

Probably Porthleven had originally a chapel bearing his name. Dr. Borlase visited the church of S. Leven in 1740, and says:—"Whilst we were at dinner at the inn, it was very pleasant to hear the good old woman, our land-lady, talk of S. Levan, his cursing the name of Johannah, his taking the same two fishes twice following, his entertaining his sister, Manaccan; and as a confirmation of everything, we were desired at our departure to observe his walk, the stone he fished upon, with some other particulars of like importance."

The original oratory and the holy well of the Saint were on the edge of the cliff, a little below the Church. Some remains of the well may yet be seen. In the church, on one of the bench-ends, he is represented with a cap, in which is a pilgrim's scallop, in a mantle, and in one hand a knotted rope, in the other a book.

He has left no trace of his presence in Anglesey, nor does his name occur in any Welsh Calendars.

In Art, he should be represented with a bell and a smith's tool.

At Ploulech, in Brittany, he is figured as an abbot, bare headed, a staff in one hand and an open book in the other.

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† Shearman, *Loca Patriciana*, Dublin, 1882, p. 451

## S. LIDY, Virgin, Abbess.

The body of S. Lidy reposed at S. Issey. She has been confounded with S. Elid or Lide of Scilly by Grandisson and others. Lidy has been corrupted into Gidgey (*see* S. Gidgey).

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## S. LO or LAUDUS, Bishop, Confessor.

Lo, Laudatus or Llewddad, was an Armorican, a son of Alan, and a member of the congregation of S. Iltyd. He was afterwards dean of the College of S. Padarn in Cardiganshire. He returned to his native Brittany, and became Bishop of Coutance, and was consecrated in 528. He assisted at the second and third councils of Orleans in 536 and 538. He attended the funeral of S. Paternus, of Avranches, about 565. He is said to have given his patrimony to his church. His death took place about 568.

There was a chapel dedicated to him at Veryan, in ruins when Leland visited it. Mabe church is actually a chapel dedicated to S. Lo or Laudus. At Broadwood Widger, in Devon, is an holy well in a wood, called Slew, possibly a corruption of S. Llewddad.

His day, as observed in Cornwall, according to the Bodmin Antiphony, was September 21, but this is an error of either William of Worcester or Nasmith, for September 22, the day on which commemorated at Coutance, and in the Gallican and Roman Martyrologies.

His life in Smet: *Catalogus hagiographicorum Bibl. Lat. in Bibliotheca Nat. Parisinesis*, Brussels, 1889, I, pp. 496-500. See also Pigeon (A) *Vies des Saints du diocèse de Coutance*. . . . avec leurs Actes anciens en Latin, Avranches, 1892 (T. I).

In Art, S. Lo is represented with a fiery dove, which is said to have appeared when he stood at the altar.

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## S. LUDGVAN, Abbot, Confessor.

The parish of Ludgván appears in Domesday as Luduham. In the Exeter Transcript as Luduam. In the Episcopal Registers

as Ludewan (Stapeldon 1324, Grandisson 1330), or as dedicated to Sanctus Ludwanus (Bytton 1312, Stapeldon 1312, 1318.) This settles the sex of the Saint.

Mr. Copeland Borlase suggested that Ludgvan stands for Llan Dwynwen, and was named after one of the daughters of Brychan. This is quite inadmissible, as the church is out of the district colonised by the family of that prince, and is in that of the Irish settlers.

Ludgvan is apparently Lithgean of Clonmore. His feast in the Irish Calendars is on January 16, and the Ludgvan feast is observed in the week of the festival of the Conversion of S. Paul, January 25. Add eleven days to Jan. 16, required to obtain O.S. Ludgvan feast and we have S. Lithgean's Day, January 27.

Of S. Lithgean not much is known. He was the son of Laignech descended from Cucorb, King of Leinster, and belonged to the clan of the Hy Cormaic, who occupied the country west of the Wicklow mountains on the borders of Wicklow and Kildare. The family cemetery is at Killeen Cormac, between Dunlavin and Ballitore, and is known to archaeologists as having yielded several Ogham inscriptions. His mother Melda or Bronfin was sister to S. Ibar who was not on the best terms with S. Patrick, and he was related to S. Cuach, Kieran's foster-mother, whom I have identified with S. Kewe and S. Ladoca. She was buried in the family cemetery at Killeen. More remotely he was related to S. Fiecc of Sletty, the Cornish Feock. Lithgean had six brothers, all saints, but the most important of them was S. Abban, of Killabban. The manner in which the whole family entered religion seems to point to its having been involved in the banishment of the Cliu Clan for having embraced Christianity, and to its being allowed to return on condition that the members embraced the ecclesiastical profession. We find a Lithgean also spoken of as brother of S. Achebran or Kevern and a son of Bochra. We must not take the title of son or brother too strictly, or these may be different persons. S. Lithgean had a foundation at Clonmore in the territory of the Hy Failghe or Ophaly, but it cannot now be identified. He probably moved to Cornwall about the same time as the rest from Ossory and



Wexford, for he belongs to that period. If the Clonmore, where S. Lithgean was, be the Clonmore near Seir Kieran in the barony of Ballybritt, then he must have been a neighbour and intimate with S. Kieran, and have been in close touch with his cousin S. Cuach. It is most probable that the same political reasons which induced so many to leave the south-east of Ireland operated on Lithgean. Lithgean signifies "festal birth," and in Cornish the Gaelic *th* would become *d*.

Lithgean is not to be confounded with Laidhgean, of Clonfert Molua, who belongs to a much later period. This latter is, however, an interesting personage as preserver of a crude Latin hymn by Gildas, which he took to Ireland, and which is preserved, and is the only early specimen we have of Welsh hymnody. It has been published by Stokes in his "Irish Glosses."

The local tradition at Ludgvan is that the holy abbot brought a stream of water from its source at a distance, to flow under the churchyard wall; and it was held that a child baptized in S. Ludgvan's water is miraculously enabled to respond at its own baptism. The stream still flows, and supplies the village with drinking water.

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#### S. MABE.

The chapelry of Mabe is called in the episcopal Registers Lanvabe, i.e. Llan Fab, the church of the son. The district, at the time of the Conquest was under the jurisdiction of Tremiloret, i.e. the *Tref* of Milor, and in Wolsey's Inquisition, 1521, it is called Milor la Vabe.

There is no Saint Mabe. The dedication is to S. Laudus or Lo, and the name implies no more than that the *llan* is affiliated to that of Milor.

The Feast at Mabe is on September 21.

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#### S. MABENNA, Virgin, Abbess.

One of the many daughters or granddaughters of Brychan, who sought their fortunes in north-east Cornwall, when expelled

from Brecknockshire by the invaders from the north. She is not named in the Welsh lists, but is given in Leland's Itinerary and by William of Worcester.

The only church dedicated to her is S. Mabyn, on a wind swept hill, but with pleasant wooded vales in the folds of the upland country. The church tower is fine and serves as a landmark.

Unquestionably the saint did not plant herself on this bleak eminence, but made her cell in one of the combes that dip to the Alan or the Camel, probably at Treveglos (Tref-Eglws), where is a holy well, a quarter of a mile north of the village. The place is better known now as Paul's Ground, from a family of the name of Paul having resided there in former times. There were formerly chapels at Colquite, Helligan, and Trevesquite. For this information and that concerning the holy well I am indebted to Canon Vautier.

S. Mabenna is represented crowned, and bearing a palm in one hand and a book in the other, in the Wives' Window at S. Neot. Mr. Copeland Borlase assumed somewhat recklessly that the church was named after Mabon, the brother of S. Teilo. But the Episcopal Registers, Bronescombe, 1266, Bytton, 1317, Stapeldon, 1317, Stafford, 1415, Grandisson, 1330, 1340, 1362, &c., with one accord make the Saint, a female, and the testimony of the S. Neot window is conclusive.

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#### S. MACRA, Virgin, Martyr.

Maker church is held to derive its name from a dedication to S. Macra. The Episcopal Register call the parish Macre.

The virgin martyr suffered at Fimes near Rheims, about 303. It is said in her Acts based on popular legend, that her breasts were cut off, and she was dragged over hot coals till she expired.

The day of her martyrdom was March 7.

Whytford gives Jan. 6 and June 18; and Jan. 6 is the day in the Bollandist "Acta Sanctorum."

She is represented in Art with a book, and her breasts cut off and resting on the book.

## S. MADOC, Bishop, Confessor.

*See S. Hugh.*

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## S. MADRON, Abbot, Confessor.

In B. Bronescombe's Register, 1276, the patron of Madron is called Maternus. In Stapeldon's Register, 1309, he is Madernus, so also in Grandisson, 1344, 1349, 1363; and in Stafford's, 1407.

The object of the Bishops of Exeter was to transform a local saint of the Celtic church into one who had a place in the Roman Calendar. So at Madron, they converted the original founder into Maternus, Bishop of Trèves a reputed disciple of S. Peter, but actually belonging to the 3rd century. Madron, however, is the Irish Medran, a favourite pupil of S. Kieran, of Saighir.

Medran and his brother Odran were natives of Muskerry, and came as boys of from ten to fourteen to Kieran to consult him relative to a pilgrimage they had desired to undertake. When, however, Medran saw the venerable abbot, a waft of commonsense came over him, and he thought it would be a much better course for him and his brother to remain with Kieran and enter into his school. When Medran proposed this to Odran, the latter was indignant. "This," said he, "is not according to the agreement wherewith we started from home." Then Odran turning to Kieran said, "I pray you do not back up my brother against me."

"The Lord judge between you both," said the Abbot, "Let Medran hold a lantern in his hand and blow at the wick; if it kindles, then he shall stay with me."

Then, according to the story, the candle flamed up, and Medran attached himself to Kieran. This method of determining a course by breathing on the still-smouldering snuff of a recently extinguished light, occurs in other stories.

Odran went on his way sorrowful, and travelled far, but eventually returned, and is probably the saint of Lanhydroc. The name Odr or Huydr takes after it indiscriminately the diminutive *an* or *oc* and becomes either Odran or Hydroc, like Aedh which becomes Aedan or Mo-aedoc.

The Irish have no record of the death of Medran; it is therefore probable that he accompanied his master to Cornwall, and there continued till he died.

His name occurs in the Irish Martyrologies on June 6.

He is not to be confounded with another saint of the same name, who was a disciple of S. Comgall, and is commemorated on September 15 in the Scottish Calendars.

The Feast at Madron is on May 17, which is the day following the commemoration of his brother Odran.

The two boys came to Kieran about 480. We may suppose that Madron died about 540.

S. Madron's well was formerly famous for the miraculous cures supposed to be effected by the water. At the present time, the people go in crowds to the well on the first Sunday in May, when the Wesleyans hold a service there, and a sermon is preached, after which divination goes on by dropping pins, pebbles, and little crosses of rush-pith into the water.

S. Madron should be represented as an abbot holding a lighted lamp or lantern.

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#### S. MALO, Bishop, Confessor.

A moor in Mullion is named after S. Malo, but there is no evidence that a chapel stood there with this dedication.

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#### S. MANACCA, Virgin, Abbess.

The church of Manaccan or Minster, was formerly a monastic establishment, probably at its first institution for women.

Manacca, according to popular tradition, was either sister or nurse to S. Levan.

In Bishop Stapeldon's Register, 1308, the church is called "ecclesia Stæ Manacæ in Menstre." No Minster would be without a founder, but it is not easy to discover who the founder or rather foundress here was.

That she was Irish, appears from the situation of the church, and from the tradition associating her with S. Levan. And if there be any reliance to be placed on this tradition, then she belonged to the close of the 5th and beginning of the 6th centuries.

The name Manacca is the same as Monaca, in Irish Midnach, or Midhnech or Midnat.

Now we do find that there was such a person placed by S. Patrick in a hermitage called Disert Phaidrig, where was a holy fountain, in the west of Ireland. Her principal church seems to have been Killucan, the situation of which is not determined.

A statement is made by one Irish author that she was a child of Darerca, sister of S. Patrick.

But we can obtain nothing approaching to certainty relative to S. Manacca. It is possible enough that Manaccan means no more than Minster, a monastic establishment.

The day of S. Midhnach is Aug. 4 or Nov. 18.

Manaccan feast is on October 14.

#### S. MANACCUS or MANGUS, Bishop, Confessor.

Lanreath church is dedicated to S. Monach or Manaccus. William of Worcester says that he was a bishop, and that his body reposed at Lanreath.

Manaccus is the Welsh Mygnach, who was the son of Mydno, of Carnarvon, and he was for sometime registrar of the College of S. Cuby at Holy-head, and afterwards its abbot.

A dialogue in verse between him and Taliesin is published in the Myvyrian Archæology.

It is somewhat noticeable how much Lleyn the promontory of Carnarvon was frequented by saints of Cornwall. Llangybi there was an important foundation of S. Cuby. S. Petrock also had a settlement there at Llanpedrog. Jestin, Aelhaiarn, and Madryn are common to both peninsulas.

As Mygnach's friend and master, Cuby lived for some time and had important foundations in Cornwall; it is probable that he either followed Cuby there, or, more probably was sent there by

his master to look after his institutions. It may be noticed that Mygnach's settlement at Lanreath adjoins that of Cuby at Duloe.

In Bishop Stafford's Register, his name is given as Managhan.

Lanreath Feast is now observed on August 3, although, according to William of Worcester, the commemoration formerly was on the Thursday after Whit-Sunday.

In the Young Women's Window, at S. Neot, he is represented in episcopal vestments.

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#### S. MARTIN, Bishop, Confessor.

Three churches in Cornwall bear the name of S. Martin, as well as one of the Scilly Islands.

Martin was Bishop of Tours, in 371, and died November 11, 401.

His relics were translated, July 4.

Bishop Browne, of Bristol, says:—"There are in all, no less than 3,668 churches (in France) dedicated to S. Martin. There are eight of the eighty-six dioceses which have more than a hundred churches thus dedicated, and all of these eight are in the regions opposite to the shores of Britain. . . . The Christian poet of the sixth century, writing at Poitiers of S. Martin, declares that the Spaniard, the Moor, the Persian, the Briton, loved him. This order of countries is due only to the exigencies of metre. Gaul is not named, because it was the centre of the cult of S. Martin, and there Fortunatus wrote."\*

This enormous popularity was due to the Biography written by Sulpicius Severus, a book that somehow acquired an extraordinary influence, and was read throughout the Christian world with avidity. This is surprising, as nothing can be more inept, often silly, than the work.

Camborne church is dedicated to S. Martin, and the feast is there held on November 11, S. Martin's Day.

East Looe church is also dedicated to S. Martin.

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\* "The Christian Church before Augustine," S.P.C.K., 1897.

At S. Martin in Meneage, the feast is held on November 14.

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S. MARTIN, Priest, Confessor.

S. Martin in Meneage is in the midst of Irish foundations, and it is *possible* that it may have been founded by the Irish Martin from Ossory.

This man was only Irish so far that he laboured in Ireland, and belonged to S. Patrick's mission, but he was a native of Britain. In the Homily on S. Patrick in the Lebar brecc we read, "Patrick went into Ossory and founded churches there," (this was in 474), "and he said that there would always be nobles and clerics of the men of Ossory, and that no province should prevail against it so long as they remained docile to him. Patrick afterwards, bidding them farewell, left with them Martin, an Elder, and a party of his people, where is at this day Martartech in Magh Roighne."\*

Martartech is the Cemetery consecrated for the interment of the middle Ossorian plain-dwellers.

Martin, accordingly, had the shaping of the church in Mid-Ossory. He did not however confine himself to this part of the kingdom, but also founded churches in Inverk and in Upper Ossory.

Kieran, who was at Saighir, held him in the highest respect. From the fact that he, himself, belonged to the expelled royal family and that Ossory was in the hands of conquerors, who regarded him with mistrust, he was not able to travel about in Ossory, and was glad of the assistance of Martin, who, as a foreigner, was not looked on with suspicion. So highly indeed did Kieran appreciate him, that he made Martin promise that when they died they should repose side by side.

Eventually Martin retired to Torry Isle (Tor inis) off Donegal and there died. A copy of the Gospels that he valued highly was laid on his breast when he was buried. S. Columba, of Hy, visited Torinis, opened the tomb, and carried off the sacred volume.

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\* "Tripartite Life," II, p. 469

Great confusion has sprung up between Martin, the Patrician Missionary and Martin of Tours, that was furthered by the fact of the former being of Torinis and the latter of the "Turones." For instance, in the life of S. Senan, we are told that he visited Tours to converse with Martin, and he found the latter incessantly engaged upon a Gospel he was transcribing. Then said Senan, "I would that these diligent hands of yours should minister the Eucharist to me on the day of my decease." "They shall indeed do it," replied Martin.

Then the two men swore brotherhood, and in token of affection Martin presented Senan with the book of the Gospels he had been copying.

Some years later, when Senan lay adying:—"The angels of God uplifted Martin from Tours, in a heavenly cloud, and set him down in the place where Senan was biding, and he gave him communion and sacrifice." After which Martin was carried back to Tours in the same way. Now as Martin, of Tours, died in 401, and Senan was born about 480, this is clearly impossible. The late redactor of the "Life" found in his original text that Senan had made friends with Martin, of Torinis, who gave him a Gospel and ministered the communion to him, and he jumped to the conclusion that this must have been Martin of Tours, and then he put in the above miraculous touches. That Martin, of Torinis, should have ministered to Senan on his death-bed is chronologically impossible.

That Martin, who was a Briton, may have accompanied S. Kieran to Cornwall is not improbable, and it is possible that the church of S. Martin in Meneage may be a foundation of this Martin. The Feast there is on Nov. 14, six days after the day on which Martin, the Patrician Missionary, is commemorated at Temple-Marten in Ireland, but also three days after the Feast of Martin, of Tours.

At Temple-Marten, near Kilkenny, is a holy well of the saint.

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#### S. MARUAN, Abbot, Confessor.

Maruan is said by Leland to have been one of the company that arrived in Cornwall from Ireland with SS. Senan, Breaca,



&c. Maruan is either a mistake by Leland, or of the printer, for Mo-ruan. The saint is no other than S. Ruan (*see* S. Ruan).

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S. MATERIANA, Widow.

Madryn was the daughter of Vortimer, and wife of Ynyr Gwent, king of that portion of Monmouthshire which lies on the east side of the Usk. Its capital was Caer Gwent. Her sister Anne was married to Gynyr, of Caer Gawch, and mother of S. Non. Madryn had five children, four of whom are numbered among the saints, by the Welsh.

One of these was a girl named Dogwe, who fell in love with a young carpenter engaged in building a palace for her father. The king was vastly incensed, nor did the mother relish the connexion, but the girl was headstrong, and the parents had to give way. The carpenter, however, was not so amorous as Dogwe, or felt overwhelmed with the honour, and he deserted his wife, being ashamed, we are told, at having only a humble house to which to conduct her. The young wife then retired from the world and embraced the religious life under S. Beuno.

Ynyr received S. Tathan, an Irish Saint, when he came to Gwent, and settled him at Caer Gwent, where he formed a college and became the ecclesiastical director to the king and his family.

S. Cadoc was trained by S. Tathan, and Tathan's holy life and teaching deeply impressed Madryn.

For what follows we have only popular tradition.

In the troubles that ensued on the bad government of Vortigern, and the wrath of the Britons against him for having introduced the Saxons into the country, that prince was compelled to fly from his own insurgent subjects, and took refuge in a valley under Yr Eifel in Carnarvonshire, where he had a *dun* of wood. If any reliance whatever may be placed on the History of Nennius, then S. Germanus was a strong motive power in causing the rebellion, but at the head of the revolted Britons was Aurelius Ambrosius.

According to the legend Madryn was with her grandfather, and had with her her eldest child Ceidio, when the wooden castle was surrounded and set on fire. Vortigern perished in the flames,

according to one account, but Madryn fled with Ceidio in her arms to Carn Madryn, a solitary hill crowned by rocks, and there sheltered. Afterwards Ceidio founded a church there, and the Lord of Madryn has right of presentation to it.

The troubles of her native land probably caused Madryn to take refuge in Cornwall. She is said by the Welsh authorities to have retired from the world with her maid Ahun.

Her son Caradoc succeeded to the principality, and was the father of S. Malo.

Madryn's day in the Welsh Calendars is April 9.

This is also the day of S. Materiana, according to William of Worcester, but he inaccurately describes her as *Virgo*. The death of Vortigern is set down approximately as taking place in 464, and we may suppose that Madryn died in the first years of the succeeding century.

Dedications to her are:—

Minster, near Boscastle, where her body lay.

The parish church of Tintagel.

Tintagel feast is on October 19.

Boscastle feast is on November 22; but Minster feast is on April 9.

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S. MATEBNUS, *see* Madron.

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S. MAWES, Abbot, Confessor.

The two Lives of this saint, as well as the hymns for his festival, and the lections from the several breviaries, that concern him, have been printed and subjected to criticism by M. de la Borderie ("Saint Maudez" Rennes, 1891). The first Life was written towards the end of the 11th century. The second is an unsatisfactory production, not earlier than the 13th century. The first formed the basis for this second, and the gaps left by the writer of the first were filled in with fanciful tales by the composer of the second.

S. Maudez, in Irish Moduit, was the son of a kinglet in Ireland, named Erleus, and his mother's name was Gentusa. As the tenth son of the royal couple, he was dedicated to God.

After his education was completed in Ireland, he left his motherland. This is all that the author of the first Life knew, the composer of the second was not satisfied, so he added this:—A pestilence raged in Ireland and carried off King Ercleus and his nine children. Then a pretender laid his hand on the crown. The nobles thereupon sought out Maudez, who was abbot of a monastery, and insisted not only on his assuming the regal dignity, but also on his marrying the daughter of the pretender. Maudez asked for a night and a day to consider the proposal, and he prayed to God to deliver him, whereupon he became covered with the most disgusting sores, at the sight of which the nobles declined to favour his elevation, and the damsel absolutely refused to receive him as a husband.

The author of the Life knew no more of the early history of the saint than that he came from Ireland, and he invented or borrowed the farrago of nonsense with which he has stuffed the first part of his story.

It is doubtful whether any trust can be put in what is said of the names of his parents. Gentusa is not an Irish name. Erc is Irish and may have served as a kernel for Ercleus. No trust can be set on the statement of the author of the second Life relative to the plague; but the Yellow Death did rage from 547 to 550, and saints and sinners alike fled from it across the water. If there be any truth in the statement, then we may say that about 548 Maudez left Ireland. He appears next in Wales, if we may identify Tudwg, who now becomes his disciple, with a Welsh saint of that name. Then Maudez started for Brittany but tarried on his way in Cornwall with his disciples Bodmael and Tudy (Tudwg). He halted on a creek of the Fal, in the parish of S. Just, but never obtained any grant of land for himself.

The ancient chapel of S. Mawes was existing till 1812, when it was pulled down and a new church erected on the site. The well of S. Mawes is still in use and supplies the little place with water. Leland says, in his Itinerary:—"A praty village or fischar town with a pere, callid S. Maw's; and there is a chapelle of hym, and his chaire of stone a little without, and his welle. They caulle this saint there S. Mat.... He was a bishop in

Britain, and [was] painted as a scholmaster." Probably Leland saw him represented with his disciples Tudy and Bodmael, and holding his staff.

From this chair, according to the Life, Mawes instructed his disciples Tudy and Bodmael, and others who are not named. When they were not listening to his teaching or praying, they were wont to assemble by the chair near the water, and go over the instruction they had received, so as to engrave it deep on their memories. They were, however, much disturbed by a great seal that came up and stared at them, gamboled, and made noises. And this came to the ears of Mawes.

One day he was on his way to the chair, from his cell, when he saw the seal, and immediately rushed at it, armed with a stone. The brute took to the water at once, but when it rose, Mawes hurled at it the stone, struck it, and it sank. The spot where it rose was on a rock that stood up out of the water, now called Blackrocks, and the stone he threw remained lodged on the top. It was a notable cast, for the spot is nearer Pendennis Point than S. Mawes' cell. This poor seal the saint was convinced was an evil spirit—"a Tuthe," as the author of the Life says the Britons called it. In Breton this would be Tuz, and we may find in the word the "Deuce," so commonly used in the west of England as expressing a spirit of mischief and contrariety. In fact, one of those genii of whom S. Augustine says, "Dæmones quos Dusios Galli nuncupant."

According to Cornish tradition, after a while Mawes left Cornwall and crossed over to Brittany, and we learn from his biographer that he arrived in the island that has since borne his name in the Bréhat archipelago. Here he founded a monastery. One day the fire had gone out, and Mawes sent his disciple Bodmael across to the mainland when the tide was low to fetch him some. Bodmael entered a cottage, when a woman consented to give him red-hot coals if he would carry them in his lap. To this he consented; but as he was returning with the fire the tide rose, and Mawes, to his dismay, saw that his pupil would be engulfed. However, he prayed, and a rock rose under the disciple, and as the tide lifted so did the rock, and when the tide had ebbed, Bodmael came to the island uninjured, and the fire unextinguished.

The Life was probably composed by a monk of l'Île Modez, and he has transferred to it the incidents of the quest of fire and the seal. There is an old thorn tree on the island which goes by the name of the Chaire de S. Modez.

At Landeleau in Finistère, S. Mawes is venerated along with S. Teilo. His statue is in the church, and one of the basins of the holy well there is placed under his tutelage. But his principal foundation is at Lannedern in the same department. He has a chapel also at Coat-ar-Roc'h.

S. Modez or Mawes is especially invoked to cure a tumour caused by the pressure of the wooden *sabot* on the instep. This tumour is called the *arwez Sant Maudez*. The treatment is as follows: A handful of sea-wrack is dipped in the well and then applied to the place affected. Then the dust from the church or the earth from the church-yard is examined till a worm has been found that has knots in it. This worm is then placed on the gathering, and as it dies so does the patient recover.\*

In 878, when the Normans ravaged the coast of Brittany, the body of S. Modez was taken to Bourges, where it remained till the disturbances caused by the Calvinists, when it was lost.

In the dioceses of Léon, Treguier, Quimper and Dol, the Feast of S. Maudez was celebrated on November 8, but it varies considerably, at Quimper and Dol now on November 16, and at Bourges on November 20.

In the Île Modez is his ancient cell, in good preservation. It is a bee-hive hut on high ground, and because it serves as a sea-mark is periodically restored. It goes by the name of the Oven of S. Modez.

The cave once occupied by the saint is shown near Lannion.

In Art he is represented as an Abbot.

At Lannedern he is figured with a black cloak over his shoulders and his hand resting on a stout stick.

We have very slender data for fixing the period of S. Mawes, but it was about the middle of the 5th century, and we may put his death as occurring in the latter half of that century or the beginning of the 6th.

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\* Annales de Bretagne, T. VIII, (1893), p. 235.

A S. Maoduit, of Kill Moduit, in Galway, is entered in the Irish martyrologies, but of him nothing whatever is known. His day is Feb. 10.

There are several dedications to S. Modez in Brittany. Saint Maudez, Côtes du Nord, has two fine granite crosses in the church-yard.

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S. MAWGAN, Abbot, Confessor.

Mawgan is the same as the Welsh Meugaint and the Irish Mancen or Maucen.

*Meu* or *Maw* is the Welsh equivalent of the Irish *Mo*, a common prefix; and Meugaint signifies "My illustrious One."

There were several saints of the same name, or with names very similar, but there are two alone between whom we have to decide which is the saint who came to Cornwall.

One of these is Monin, Mancen, or Maucan, son of Dubhtach, chief bard to King Laoghaire. The other is Meugaint, son of Gwyndaf Hên, first cousin to S. Samson. His mother was Gwenonwy, a sister of Anna, mother of S. Samson, as his father was brother to Amwn the black, father of S. Samson.

The Cornish Mawgan is most probably the former, because his settlement in Meneage is among the Irish colonists, and that in Pyder is almost in connexion with the chain along North Cornwall, within a few miles of Perranzabuloe and Carantoc; and if my conjecture be right that S. Columba was the abbot of Tir da Glas, then close to a very large Irish settlement, there also.

Another reason for the identification is that the Feast of S. Mawgan in Meneage is on the same day as that of the Irish saint.

There can be no question as to which was the most important man of the two. The cousin of S. Samson lived at a later period, and was confessor and chaplain in the monastery of S. Illtyd, and afterwards superior of the college of S. Dubricius at Caerleon. In his old age he retired to Bardsey, where he died about the middle of the 6th century. The only churches connected with him by name are S. Maughan's in Monmouthshire and Capel Meugan in Anglesey.

Mancen or Maucan, the Irish saint, belonged to a family of professional bards, and as already said, his father was the poet attached to the person of Laoghaire, the High King of Ireland.

Dubhtach must have known something about Christianity before the arrival of Patrick, for, from the first, he warmly seconded the apostle, who entertained the highest opinion of the poet, and consulted him in many of his difficulties.

Dubhtach contributed largely to the success of S. Patrick, in that he had the ear of the king, and that he was a man of wisdom and prudence. He used his best endeavours to disarm opposition to the progress of the gospel, and Ireland has never thoroughly recognised how much she has owed to his good offices.

At the same time that Dubhtach was baptized, 447, his son Mancen was received into the Church.

When S. Patrick went into Tirawley in Mayo, he converted the seven sons of the king, Amalghaid, or Awley, on which occasion twelve thousand persons followed the example of their chiefs. This abundant ingathering demanded a corresponding supply of labourers, and S. Patrick placed over them this same Mancen "surnamed *The Master*, a holy man, well read in the Scriptures, and at each of faith and doctrine." These epithets do not apply to him at this period, but describe the Mancen who was left in Tirawley, as he was afterwards, well known as "The Master,"—a great teacher of theology.

The apostle of Ireland crossed between Waterford and Porth Mawr in Pembrokeshire, about 468. In the life of S. David we are told that the apostle took a vast fancy to the spot, where he could sit on a rock, afterwards called "The Chair of S. Patrick," and watch the summer sun go down in amber and gold behind the mountains of distant Waterford. He would have liked to remain there, but felt that the good work he had begun must be carried on and completed; and he went back to his duties. However, he seems to have fixed on this spot, within sight of Ireland, as a suitable site for a nursery of missionaries for Munster and Leinster. Over this establishment he placed Mancen. In like manner for Ulster and the whole north, a collegiate establishment was founded at

Candida Casa or Witherne in Galway, over which S. Ninian presided. The house in Wales was Ty Gwyn, the White House, or "The Old Bush."

Ty Gwyn is situated above Porth Mawr, and about two miles from S. David's. It stands on the south slope of Carn Llidi, with the purple rocks above it, springing out of the heath, with here and there a gorse bush, like a puff of flame breaking out of the crannies of the rock. Below it, near the sea, are the foundations of S. Patrick's chapel, near the site of his embarkation.

The foundations of the church at Ty Gwyn, the cradle of Christianity among the southern Irish, are trodden under foot by sheep and oxen, that wander over the wide cemetery where lie thick in narrow coffins of unshaped stones, the bodies of the first inmates of that earliest Mission College in Britain. When I visited the spot in 1898, the farmer had torn up the grave-slabs of the tombs in the cattle-yard, and the drainage of his cow-stalls and pig-styes soaked into the places where the ancient fathers of the British and Irish churches had crumbled to dust.

Much confusion has arisen between the White House in Menevia and the Candida Casa in Galloway, as the names are the same, and those also of their first presidents are also similar. For Mancen is also called Ninnio, and Ninian was the head of Candida Casa. Incidents connected with one establishment have been transferred to the other. Another cause of confusion has been that Ty Gwyn has been supposed to be the monastery of that name on the Teify, which, however, was not founded till Norman times.\*

Let us now take in order the incidents in the life of S. Mancen.

His conversion and baptism took place in 447.

He was placed in charge of the new converts in Tirawley in 455. About 465 he was recalled and sent with his kinsman S.

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\* Mrs. Dawson, in *Archæologia Cambrensis*, 1898, conclusively proves this to be the site of the Ty Gwyn, the nursery of saints and missionaries. She wrote this without being aware of the extensive remains of an early christian cemetery that is there, or that the foundations of the old church remain.



Fiacce to evangelise their relatives the Hy Cinnselach in Wexford. He went thence very shortly after to South Wales to organise the college of Ty Gwyn. In the collections of Tirechan he is called Manchan, but in the Tripartite Life he figures as Ninidh. There can, however, be no doubt as to these two names belonging to the same person.

There is but one incident recorded relative to his work among the Hy Cinnselach. S. Fiacce of Sletty had a bad leg. S. Patrick heard of it, and sent him a chariot and a pair of horses, to enable him to get about. This aroused the jealousy of Sechnall (Secundinus), another of his missionaries, and he scolded Patrick soundly as giving way to partiality. But after he became cool, Sechnall repented; he had intercepted the present, and he sent it to Mancen, and begged him to forward it to Fiacce. This Mancen did, with an apology; but Fiacce, too charitable to receive a gift that had caused heart-burnings, restored chariot and horses to Patrick, and refused to use them.

Mancen is called variously "The Master," as the great trainer of saints, and "The Bard," as a member of an hereditary family of poets. To him, but hesitatingly, is attributed a Latin hymn on the occasion of a plague.

Parce domine peccantibus  
 Ignosce penitentibus  
 Miserere nobis rogantibus  
 Salvator omnium Christe  
 Respice in nos Jesu, et miserere.†

We next hear of him at Ty Gwyn or Rosnat. He is named as its master in the Lives of the Saints who were his pupils.

In the life of S. Tighernach, the monastery is called "Monasterium Rosnacence, alio nomine Alba"; and in the life of S. Eoghain we are expressly told that "Sanctus et sapiens Nennio qui Mancennus dicitur, de Rosnacensi monasterio," received him and Tighernach. Another name by which the establishment was known was "Monasterium Magnum" or Banchor. It was one of those double houses that afterwards became common, and were introduced among the Northumbrians from Hy. The arrangement had great practical disadvantages.

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† Liber Hymnorum, ed. Henry Bradshaw Soc., 1898, p. 24.

That the monastery may have existed before Mancen took charge of it is probable, and it is also possible that thence S. Patrick drew some of the British assistants for his work. Among the pupils received was a daughter of Drust a north British king, who reigned from 523-28. Whether the incident about to be related occurred at Ty Gwyn or at Witherne is uncertain. It is told as having occurred whilst Meugint was master, and Meugint is the same as Mancen. In the monastery at the same time were Finnian, afterwards of Movice, Rioc a reputed nephew of S. Patrick, afterwards of Inis-bofinde, and Talmach, afterwards with S. Finbar. The girl Drustic fell in love with Rioc, and bribed Finnian to be her go-between, by the promise of transcripts of all Meugint's books. Finnian agreed, but treacherously substituted Talmach for Rioc, and by him she became a mother. Meugint or Mancen was highly incensed when this vulgar intrigue reached his ears, and he gave a serving boy a hatchet, and bade him hide behind the chapel, and when Finnian came to mattins to hew at him and kill him. But by some fatality the first to arrive was Meugint himself, and in the dark the lad, not recognising him, struck him on the head with the weapon and felled him to the ground: Happily the blow was not fatal.

In the life of S. Frigidian, of Lucca, who has been confounded with Finnian, of Movice, the same story is told, but with a difference; it is there said that Meugint was envious of Finnian's popularity as a teacher, and this caused him to plan the attempt on Finnian's life.

It is probable that the story has suffered exaggeration, and that all Meugint sought was to administer to Finnian a sound thrashing, such as he richly deserved by his infamous conduct. S. Non, mother of S. David and daughter of Gynyr, a princeling living hard by, was also sent to Ty Gwyn, and thence was carried off by Sandde, son of the British prince Cedig.

For how long Mancen, Meugint, or Mawgan governed the college we have no means of saying. He was succeeded by Paulinus, who had been for a while his disciple.

It is remarkable that no date is given by the Irish annalists for the death of a man of so great importance, and this leads us to suppose that he died out of Ireland.

He is identified by Mr. Shearman (*Loca Patriciana*) with the Irish professor who carried into Armorica the Book of Cuilmenn. As no other copy existed in the island, a deputation was sent by the chief poet, in 580, to Brittany to recover it. This is probable enough. Maugan is venerated in Brittany as a founder of La Méauçon. It is also likely that an institution such as Ty Gwyn should have branches in Cornwall and in Armorica, as places for recruiting students and missionaries for the work undertaken by the mother house.

The feast at Mawgan in Meneage is June 18.

The day of the saint's *pardon* at La Méauçon is June 19.

The feast at Mawgan in Pyder is July 25.

This is the day of his commemoration in the Irish Calendars as Ninnio the Aged.

There is in these calendars a second commemoration as Mancen the Wise, on January 2.

He is included in the Exeter Litany of the 10th century as Sanctus Maucan, and is placed between S. Winnow and S. Gildas.

A difficulty may be felt in accepting the change from *n* into *u* or *w* in the name. But this has taken place even in Irish, wherein he is called indiscriminately Mancen and Meugint. Not only is the *n* often confounded with *u* in script, but also on the tongue, thus *Lan* has in several instances become *Lau*.

The churches in Cornwall dedicated to S. Mawgan or Meugint are but the two, one in Pyder and the other in Meneage. That in Brittany Lan Méauçon now La Méauçon is on the narrow rocky valley of the Gouet, near S. Brieuç, there is also S. Maugean in Ille et Vilaine.

In Art, S. Maugan should be represented in black habit, with a book and a staff, and with his foot on a harp, as indicating that he had abandoned the hereditary profession of bard for the Christian ministry and as teacher.

At La Méauçon, Côtes du Nord, near S. Brieuç, he is represented in stained glass of the 15th cent., vested in chasuble and holding in his hands a pyx.

ANNUAL EXCURSION, 1901.

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When our members were considering where they should go for their excursion, Mr. John Charles Williams, the President for the time being, said it would be a source of great pleasure to him to see them at Caerhays Castle. This cordial invitation was gladly accepted, and the Hon. Secretaries accordingly made the arrangements for Thursday, the 25th of July. Heavy rain and high wind overnight, coupled with the prospect of a continuation of the showers, did not set the party of thirty in the best of spirits when they met at Truro in the morning. Still, the more hopeful and prophetic among the number ventured the opinion that the weather would not be so bad as some might imagine—there would come a “break” bye-and-bye. And as the day wore on these prophets proved to be correct. Never once did the sun shine, but at no time were the excursionists inconvenienced by any serious fall of rain, though the darkest clouds frequently gathered over them, and the air was rather chilly.

The first halting place was the Church of St. Michael Penkivel, which was reached by way of the lovely carriage drive of Tregothnan, which Viscount Falmouth had kindly opened to the visitors. Half an hour was spent at St. Michael Penkivel, whose church is a fourteenth century edifice, though rebuilt on former lines in 1862. This beautiful church contains many objects of interest—provision for four altars for the four priests of this archpresbytery (one of them being in the tower)—two fine mediæval coffin slabs in the south porch—an altar slab in the south transept, with crosses on it and the initials IC (no doubt those of John Carminow), and, most interesting of all, the original foundation stone, of which an illustration is given.

This may probably be extended as “Sanctus Michaelis Archangelus, Walter Episcopus,” meaning Walter Bronescombe, Bishop of Exeter, who on 13th August, 1261, dedicated the church. The chancel of that date appears to have been preserved



Foundation Stone, St. Michael Penkivel Church.

SCALE: 1—9 ACTUAL SIZE.



when the nave and transept were rebuilt in the 14th century. Circa 1300 Sir John de Trejagu, Knight, the lord of Fentongollan, undertook to perfectly repair this church, and proposed to found in it chantries for four priests, to offer perpetual prayers for himself, his wife, his parents and others named by him. The Bishop approved, and made the church collegiate, and the chief of the four clergymen an archpriest, specially charging him with the care of the parishioners. In February, 1320, Bp. Stapeldon made an ordination of the archpresbytery. The whole of this very interesting ordination, which provided (*inter alia*) for the four chaplains living in common, is printed in Preby. Hingeston-Randolph's edition of Regr. Stapeldon (pp. 339-341). At the Dissolution the Chantry property was reunited to the Manor of Fentongollan, John Carminow having acquired it from the Crown (Hals). Within the church are brasses of (1) John Trenowyth, 1497 (O.S.), owner of the Manor of Fentongollan, to which the advowson is attached; (2) John Trembras, 1515, a Rector of the parish,—the figure in academical dress; (3) Edward Boscawen, 1619—left moneys by will for up-keep of this and St. Allen Churches; on a scroll above his and his wife's effigies is a Latin paraphrase of St. John V, 24; (4) Marie Coffin, widow, 1622. Above the effigy the Boscawen Arms; (5) John Boscawen, 1564 (engraved 1634). From the top of the tower, seventy feet high, a good view of the surrounding country was obtained. The next stage of the journey was to Lamorran Church, now doomed to disuse for general worship, consequent upon a re-arrangement of the ecclesiastical district. This church was dedicated by Bishop Bronescombe on the day before its neighbour St. Michael Penkivel. The font of Catacleuse stone was considered by several of the party to be a modern copy of a Norman original, but may be an original piece of work recarved by some not very competent craftsman. In the yard is the octagonal shaft of a cross, in Pentewan stone. In the window of the south wing of the transept is some old glass bearing the de Halep arms (or, three bendlets sable). There is a detached campanile in the yard containing three 18th century bells. This campanile is stated in some of the guidebooks to be part of a former priory here, but there do not seem to be any grounds for the assertion. Farther on the party had a look at

another interesting old country church, that of Ruan-lanihorne, where Whitaker, author of "The Cathedral of Cornwall," was rector for thirty years. On a shield affixed to the south wall it is stated "Built 1321." There does not appear to be sufficient ground for this date. Dr. Oliver in the *Monasticon* has confused this church with Lanreath, and is probably responsible for the date so given, but the entry in the original Register of Bishop Stapeldon is quite clear "Dominus dedicavit ecclesiam de Lanreythou." In the south transept is a fine 13th century coffin lid with a recumbent figure of an ecclesiastic (see 51st Report of R.I.C., p. xix), and above it a brass coffin plate, inscribed, "Ricardvs Trestean natvs 23 ° | die Avgvsti 1579 hic sepelitvr | 5 ° die Septembris 1664 | Requiem æternam dona ei Domine | et lxx perpetva lveat ei Amen." He was of Trelonk in this parish (See Dunkin's *Mon. Brasses of Cornwall*, p. 91). There is a squint at the angle of the south transept and chancel.

From this point a long stretch of narrow, winding, sharp-cornered roads, often with high hedges, brought the excursionists to Caerhays, where a little time was devoted to an inspection of the nicely-kept church, formerly a chapel of St. Stephens-in-Branel. It was dedicated 5th October, 1259. The object most admired was the north doorway which is Norman, and has a tympanum on which is sculptured an Agnus Dei. There are only six Norman tympana in Cornwall having figured sculpture on them, namely two at Egloskerry,—on one of which is an Agnus Dei, and on the other a dragon,—at Perranarworthal and at St. Thomas the Apostle, on each of which is the Agnus Dei, and at Tréneglos, where is a tree with an animal on each side of it. Of the Caerhays example we give an illustration. An able and well illustrated article on our Cornish tympana by Mr. A. G. Langdon is to be found in "The Reliquary and Illustrated Archæologist," vol. IV. The party had not sufficient time to visit the tower, which is of especial interest as retaining the whole of its mediæval peal of bells as scheduled temp. Edward VI. They are well described and illustrated in Dunkin's "Church Bells of Cornwall," where the author has, however, fallen into one of his rare errors in describing No. 1 bell. He says that the legend is followed by "a Roman V inverted." It is the Founder's mark, 2 triangles overlapping, like a capital





*Photo by B. Kempfe.*

**TYMPANUM, ST. MICHAEL CAERHAYS CHURCH.**



W with the serifs gone; found also on some other bells in Cornwall and the neighbouring County.

Another mile and a half, and the conveyances were drawn up at Caerhays Castle, the beautiful home, enriched by many art treasures, of Mr. and Mrs. J. C. Williams, who extended to their guests a simple and cordial greeting. The castle, once the seat of the Trevanions, was rebuilt early in the last century from designs by Nash, the architect who remodelled Buckingham Palace in 1825. In the syllabus of the excursion it is stated that on the wall of the entrance hall are the arms of Henry VIII in stone. This information was taken from a guidebook and proved to be incorrect. There are no such arms there, and, as far as Mr. Williams knows, there never were. The Committee who drew up the syllabus did not visit the Castle and fell into the too frequent mistake of repeating a statement which they had not verified. The castle has a delightful, secluded situation, close to the seashore, in the neighbourhood of Goran Haven. At the end of a four hours drive the pleasure-seekers were quite ready for the excellent luncheon which Mr. and Mrs. Williams had prepared for them. The head of the house and Mrs. Williams, with the rest of their house-party, sat down with the visitors and did their best to make them happy. There were no speeches—merely a few words of sincere thanks tendered to Mr. and Mrs. Williams by Mr. J. D. Enys, F.G.S., and Mr. S. Trevail,—and gracefully acknowledged by Mr. Williams. A couple of hours were spent in viewing the house and grounds, and in partaking of tea, also laid within the castle. Some of the party examined the fine collection of Roman coins, part of the hoard found near by in 1869, and of which thirty are in our museum, to which they were presented by our President's late father, Mr. J. M. Williams. The entire collection comprises coins of 13 Emperors who were in power between A.D. 253 and 276 (see 43rd Report of R.I.C., p. xxix). Some studied the works of Romney, Millais, Opie and others (the collection of paintings being exceptionally fine and containing some good specimens of Opie's work), while a few accompanied Mr. Williams to view some of the rare plants for which he is so celebrated. By six o'clock the party had once more taken their

seats on the conveyances, after the exchange of a hearty handshake and a homely "good-bye" with the respected family at Caerhays. The return journey to Truro was made via Grampound. There was an idea of visiting St. Ewe Church on the way, but limited time caused that item to be erased from an enjoyable programme.

## Royal Institution of Cornwall.

83rd ANNUAL MEETING, 1901.

The Annual Meeting of the Royal Institution of Cornwall was held at the Museum, Truro, on Tuesday afternoon, the 10th of December. Mr. J. C. Williams, Caerhays Castle, the retiring President, occupied the chair, and there were also present, Sir Robert Harvey (President-elect); Mesdames A. H. Jenkin, P. Jenkin, Clark, Truran, Kitto, Tomm, Paull (Bosvigo), J. P. Paull, G. Dixon, Dorrington, Cornish, Whitley, and Leverton; Misses Tomm (Trehaverne), Jenkin, J. A. Muller, Henderson, Blenkinsop, James, Stephens, Dixon, Snell, Leverton, Tomm, and Cornish; Archdeacon Cornish, Canon A. P. Moor, Sub-dean Gardiner, Precentor Donaldson, Canon J. H. Moore, the Revs. D. G. Whitley, H. H. Mills, and R. E. S. Buck, Prof. Clark, Messrs. J. D. Enys, F.G.S., T. C. Peter, T. Clark, J. Rogers, H. James, A. H. Jenkin, A. P. Jenkin, A. de C. Glubb, J. Henderson, F. H. Davey, W. J. Clyma, A. Blenkinsop, C. E. Tregoning, W. G. N. Earthy, W. J. Stewart, J. D. Gwennap D. Moore, H. H. Share, J. R. Collins, Dixon, S. E. Martyn, E. Sharp, W. N. Carne, Robert Fox, E. Kitto, Silvanus Treveil, J. P. Paull, T. Worth, J. C. Daubuz, W. N. Gill, W. E. Penrose, Henry Barrett, H. W. Vinter, Major Parkyn, F.G.S. (Hon. Sec.), and Geo. Penrose (Curator and Librarian).

Letters regretting inability to attend were received from the Bishop of Truro, Chancellor Worlledge, the Revs. W. Iago and S. Rundle, Mr. James Osborne, and Mr. Howard Fox.

The minutes of the Spring Meeting having been read and confirmed, Major Parkyn presented for the Council their Annual Report.

### 83rd ANNUAL REPORT OF THE COUNCIL.

The Council of the Royal Institution of Cornwall in presenting their 83rd Annual Report and Balance Sheet for the past year, have pleasure in again being able to congratulate the society on

its steady progress and continued prosperity. Established in 1818 by the leading men of the county, it can point, with no small degree of satisfaction, to an unvaryingly useful and successful career; and in the papers of the Journal are to be found treatises of great importance and use to those interested in the county.

Although it has had to encounter the usual vicissitudes, to which all societies are subject by the death and resignation of members, it is satisfactory to learn that the roll of subscribers has more than maintained its numbers.

The loss sustained by the lamented death of her late Most Gracious Majesty Queen Victoria, whose patronage extended over a period of 63 years; of Mr. John Tremayne, a noble and typical English gentleman; and of Mr. R. A. Gregg, for many years your valued curator and librarian, was feelingly referred to by our President at the Spring Meeting in May last. Since then we have had to regret the loss by death of Capt. Josiah Thomas and Mr. F. W. Michell, C.E.

Capt. Josiah Thomas, so well-known as the manager of Dolcoath, the richest and deepest tin mine in the world, was ever regarded as the leading spirit in Cornish mining. It is to him that we are indebted for the introduction into this county of the Rock Drill, Californian Stamps, Frue Vanners, and other modern machinery for economizing the cost of raising and treating the ores. Capt. Thomas was for many years an associate of this Society, and his contributions on mining and mineral deposits will always be valued.

Mr. F. W. Michell, C.E., took considerable interest in all that related to our society, and the council had for many years the benefit of his experience as one of its members. Mr. Michell made a particular study of the history of our county, and he was greatly interested in the habits, manners and customs which prevailed here in the last century.

The following address of condolence to His Majesty King Edward VII on the loss of our late Patron and Sovereign, and of congratulation on His Majesty's Accession to the Throne, was presented by the Council on behalf of the Institution in March last:

TO THE KING'S MOST EXCELLENT MAJESTY.

MAY IT PLEASE YOUR MAJESTY.

WE, your Majesty's most dutiful and loyal subjects, the Vice-Patrons, President, Vice-Presidents, and Members of the Royal Institution of Cornwall, beg leave respectfully to express to your Majesty our deep sense of the loss which we, in common with the whole Empire, have sustained in the death of Her Most Gracious Majesty Queen Victoria. We desire to record our thankfulness for the unexampled progress made in Science and the Arts, and in all other branches of knowledge, under her fostering care and that of your august and honoured father, the Prince Consort.

We respectfully offer our congratulations to your Majesty on your Accession to the Throne of your Ancestors, and desire to express our attachment and fidelity to your Majesty's person, and we will ever pray that your Majesty, with your Royal Consort, our Gracious Queen Alexandra, may long and prosperously reign over your loyal and devoted people.

*Signed on behalf of the Officers  
and Members of the Royal  
Institution of Cornwall.* } J. C. WILLIAMS, *President.*  
} EDW. PARKYN, *Hon. Sec.*

Dated, Truro, 11th March, 1901.

Also the following Address soliciting His Majesty's Royal Patronage :

TO THE KING'S MOST EXCELLENT MAJESTY.

MAY IT PLEASE YOUR MAJESTY.

WE, your Majesty's most dutiful and loyal subjects, the Vice-Patrons, President, Vice-Presidents, and Members of the Royal Institution of Cornwall, desire humbly to express our hope that your Majesty will condescend to permit us still to bear at the head of our Institution, the name of our Sovereign as we have borne the names of your Majesty's illustrious predecessors, King George IV., King William IV., and Queen Victoria, since the date of our foundation in the year 1818 ; and that your Majesty will graciously consent to renew to us the Patronage and Protection which we enjoyed during their reigns, thereby enabling us to extend the benefits of Science and Literature in the Ancient and Loyal Duchy of Cornwall.

*Signed on behalf of the Officers  
and Members of the Royal  
Institution of Cornwall.* } J. C. WILLIAMS, *President.*  
} EDW. PARKYN, *Hon. Sec.*

Dated Truro, 11th March, 1901.

To these Addresses His Majesty has been pleased to return a most gracious answer, and has condescended to continue to the Institution the patronage vouchsafed by our late sovereign.

An Address was also presented to His Royal Highness the Duke of Cornwall and York, asking His Royal Highness to become Vice-Patron in succession to His Majesty the King. A reply was received to the effect that the application would be laid before His Royal Highness on his return from the colonial tour.\*

The Council refer with pleasure to the increasing interest shown by students and the general public in the collections in the Museum. During the past year more visits have been made by children of the various Day Schools, under the direction of their teachers, than previously noted. The number of admissions during the year were as follows :

|                           |       |
|---------------------------|-------|
| Admitted free .. .. .     | 2,809 |
| Members and Friends .. .. | 344   |
| Admitted on payment .. .. | 333   |
|                           | 3,486 |

The gifts to the Museum during the past year have been numerous and valuable.

Occupying the foremost position are the Skeletons, Fibulæ, and other interesting relics excavated at Harlyn Bay.

Sir Robert Harvey, who has already done so much for this Society by valuable gifts to the Museum, has recently presented a very interesting collection of Cornish portraits, which he has generously had framed, and they are now hung in the entrance hall of the Museum.

Professor Clark has presented a large number of objects to commence the formation of a type collection of the Fauna of Cornwall. These include an unique specimen of the Oleander Hawk Moth—two specimens of a variety of the Peacock butterfly (*Vanessa Ioides*), evidently new to Britain,—about 200 species of local beetles, and a number of Crustacea, Sponges, Polyzoa, and Mollusca, as representatives of the sub-littoral fauna of our coast.

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\* His Royal Highness has since graciously acceded to the above invitation.



Mrs. Perrin, of Mawgan, has given a beautiful series of Mollusca from the Oolite, Lias, Gault, Barton Clay, and various other deposits, also a fine collection of Sponges, Echinoderms, Corals, and Palatal Teeth, for the most part from the Jurassic System, and a number of the rarer recent British Mollusca, collected by her husband, the late Rev. G. Perrin.

A Silver Medal of much interest—gained at the Truro Grammar School by G. G. Badcock in 1790—has been presented by Mr. S. H. Budd, formerly of Ruanlanihorne (through Mr. W. Kerby).

Mr. John D. Enys, F.G.S., has added to his many former gifts, by presenting a number of Cornish Birds and Birds' Eggs to replace inferior specimens; also autograph letters of Commandant Joubert, Dr. Leyds, and T. W. Reitz, officers of the late Transvaal Government.

From Mr. T. B. Bolitho comes a nice collection of Butterflies, Moths and Beetles, which include many rare British species.

Mr. J. Sydney Davey, of Bochym, has presented the fragments of a Cinerary Urn, dug up in a field near his residence.

The thanks of the Society are due to the Smithsonian Institution and other learned societies, for valuable contributions to the library; also to Mr. John D. Enys and Canon Moor for having again presented a number of books.

In addition to the routine work necessary for the care and preservation of exhibits, much work has been done in the Museum in other directions.

The whole of the very valuable collection of minerals, presented by Mr. J. C. Williams, has been carefully gone through, cleaned, and classified according to the great mineral groups. It is hoped that during the coming year more space will be available for this collection, when each specimen will be properly mounted, and a special label attached giving particulars of its chemical, physical, and other properties.

A start has been made towards the formation of a type collection to illustrate the Fauna of Cornwall. Professor Clark has been of great help in this direction, having, as already stated, presented a number of rare and interesting objects. He has also offered to contribute notes on the Natural History of Cornwall for publication in the Journal.

The usual Meteorological Observations have been made throughout the year by the Curator, and reports furnished to the Registrar General, the Cornwall County Council, and to the Press.

The Institution is again indebted to Mr. J. C. Daubuz, Killiow; Mr. W. J. Lean, Truro Waterworks; and to Mr. H. Tresawna, Lamellyn, for returns of the rainfall in their respective districts.

In response to the request of the Council, Mr. G. Penrose, our Curator, has prepared a Summary of the Meteorological Observations made and recorded at this Institution during the years 1882 to 1900 inclusive. This in conjunction with the Summary for the years 1840 to 1881, published by the late Dr. Barham in 1883, will form an unbroken meteorological record from 1840 to the end of the century. The work is of great interest and importance, and the Summary will be printed in the next number of the Journal.

The 47th number of the Journal, published in May last, contains many papers of permanent value. This number completes the 14th volume of the Journal.

The Annual Excursion took place on Thursday, the 25th July.

The Committee appointed by the Council to prepare a list of the Mural Paintings and other traces of coloured decoration, now and formerly existing in Cornish Churches as far as can be ascertained, have steadily proceeded with their task during the past twelve months, and their report has now been completed; although before the list is published some further doubtful points will require to be cleared up.

It will be the duty of the Council in the spring of the coming year to again award the Henwood Gold Medal, which will be given for the best paper in the judgment of the Council which has appeared in the Journal during the last three years.

Mr. J. C. Williams having filled the office of President for the last two years now retires, and the Council have pleasure in proposing as President, Sir Robert Harvey, a native of Truro, and a generous donor to this Institution. They further nominate the following to hold office during the ensuing year :

President :

SIR ROBERT HARVEY.

Vice-Presidents :

Rev. W. IAGO, B.A.

Mr. JOHN D. ENYS, F.G.S.

The Rt. Hon. L. H. COURTNEY.

Rev. S. BARING-GOULD.

Sir J. LANGDON BONYTHON.

Mr. J. C. WILLIAMS.

Treasurer :

Mr. A. P. NIX.

Secretaries :

Major PARKYN, F.G.S. & Rev. W. IAGO, B.A.

Other Members of Council :

Ven. Archdeacon CORNISH.

Mr. HOWARD FOX, F.G.S.

Mr. HAMILTON JAMES.

Rev. D. G. WHITLEY.

Rev. CANON MOOR, M.A.

Chancellor PAUL, M.A.

Mr. THURSTAN C. PETER.

Rev. S. RUNDLE, M.A.

Mr. JAMES OSBORNE, F.G.S.

Professor J. CLARK, D.Sc., M.A.

Corresponding Secretary for East Cornwall :

Rev. W. IAGO, B.A.

Joint Editors of the Journal :

Mr. THURSTAN C. PETER & Major PARKYN, F.G.S.

Librarian and Curator of Museum :

Mr. GEORGE PENROSE.

Capt. Henderson, in moving the adoption of the report, remarked that though the Institution had passed its 80th year it showed no symptoms of senile decay. They regretted the retirement from the chair of its worthy occupant, Mr. Williams, whose hospitality at Caerhays and many other kindnesses they would never forget, but they might congratulate themselves that his mantle had fallen upon the shoulders of Sir Robert Harvey, a most excellent man, a native of Truro, and one who was gifted in many ways.

Mr. Gwennap D. Moore seconded the resolution, which was unanimously adopted.

Sir Robert Harvey, in assuming the presidential chair, said he much valued the high honour conferred upon him. He lacked the knowledge of scientific subjects which would qualify him better for the attainment of that position, but he would endeavour to carry out the duties of the office to the best of his ability.

Mr. Geo. Penrose (Curator) reported the receipt of numerous gifts to the Museum and Library, particulars of which are given elsewhere.

The Rev. D. Gath Whitley, Baldhu, dealt with the Harlyn Burials in the light of recent archæological discoveries in Europe, in a paper printed in this number of the journal.

Mr. S. Trevail said he would be inclined to take coins and other marks of a particular period as evidences of the date of burial. He asked the President whether within his knowledge the Indians of Chili and Peru did not bury their dead in the same contracted form as had been observed at Harlyn. There was no evidence to show that they did not at a particular date bury in exactly the same mode as they did 1,000 years previously. He could not help thinking that the evidence found in the Harlyn graves of a later period was the superior evidence, and very likely the dead were buried in that contracted form hundreds of years after the Neolithic Age.

Sir Robert Harvey said that in constructing railways and making cuttings in Chili and Peru, he had come across several Indian burying grounds, and observed a large number of bodies which were interred in the "knee and nose" fashion.

Mr. F. H. Davey, Ponsanooth, who, with the assistance of a large body of botanists in all parts of the county, is engaged in a scientific investigation of the flora of the county, read a paper entitled "Contributions to a Cornish Flora."

Mr. Trevail said he thought some expression ought to go out from this Institution to try to prevent the calamity of the county being denuded of its rare and beautiful plants. He knew several valleys that were quite denuded of rare specimens by the ruthless stealing which was carried on by people from a distance.

Papers were also read by (or for) Professor Clark on "The Birds of Cornwall;" Mr. Rupert Vallentin on "The Plankton of the Looe Pool;" Mr. Otho B. Peter on "The Ancient Earth-fenced town and village sites in Cornwall;" and by Mr. H. M. Whitley and his co-workers on "Mural Paintings in Cornish Churches." These papers are all printed in this journal, except Mr. Vallentin's, which is reserved for a future issue.

On the proposition of Canon Donaldson and the Rev. R. E. S. Buck, a vote of thanks was accorded those who had contributed papers and the donors of gifts to the Museum and Library.

Mr. Robert Fox proposed a vote of thanks to Mr. Williams for his services as president during the past two years, and Mr. T. C. Peter, in seconding, remarked that though Mr. Williams would not loom largely in the pages of the Institution's record, yet no one could estimate the extraordinary influence he had exerted on the working of the Society.

Mr. Williams acknowledged the vote, and a similar compliment was accorded the Chairman and the Hon. Sec., on the proposition of Canon Moor and Archdeacon Cornish.

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GIFTS TO THE MUSEUM.

|  |   |  |
|--|---|--|
| Preserved Specimens of following birds :—Kingfisher, Cuckoo (2), Water Ouzel, Bramble Finch (2), Sparrow Hawk, Wheatear, Long eared Owl, Red Grouse, Golden-crested Wren, Woodpecker, Swift, Reed Bunting, and Head and Feet of Albatross. Also eggs of the following birds :—Manx Shearwater, Sandwich Tern, Night Heron, Nightjar, Hawfinch, Crow, Cirl Bunting, Black-headed Bunting, Crested Tit and Great Grey Shrike. Pod of the Cocoa tree, cut open to show growth of bean, from Trinidad. Autograph letters of Commandant Joubert, Dr. Leyds, and T. W. Reitz, Officers of the late Transvaal Government. | } | Mr. J. D. Enys,<br>F.G.S.                  |
| Specimen of Gneiss from Higher Treluswell ...  |   | Mr. T. Clark.                              |
| A number of named specimens of rare Insects, Mollusca and Crustacea to go to the formation of a complete type series of the Fauna of Cornwall.   | } | Prof. Clark.                               |
| Specimens illustrating the preparation of China Clay ... ..  | } | Mr. Geo. Penrose.                          |
| Pewter Flagon, formerly used at Grade Church, apparently 17th century ... ..   | } | Mr. T. C. Peter.                           |
| Piece of Pottery found at Polberro Mine ... ..   |   | Mr. Pope.                                  |
| Silver Medal gained at Truro Grammar School, by G. G. Badcock, in 1790 ... ..  | } | Mr. S. H. Budd,<br>(through Mr. W. Kerby). |
| Collection of Mollusca from the Oolite, Lias, Gault, Barton Clay and various other deposits, also Sponges, Echinoderms, Corals and Palatal teeth, chiefly from the Jurassic System, and a number of the rarer recent British Mollusca collected by the late Rev. G. Perrin ... ..  | } | Mrs. Perrin,<br>Mawgan.                    |
| Collection of Corals ... ..  |   | Mr. J. Morgan.                             |

|  |     |  |     |     |     |   |
|--|-----|--|-----|-----|-----|---|
| 2 Cornish Tokens   | ... | ...  | ... | ... | ... | Mr. G. H. Chilcott.                       |
| Fossil ( <i>Pteronotus mirus</i> ) from Bedruthan Steps.                           | }   | Photograph of contorted beds at Gunwalloe... | }   |     |     | Mr. H. Fox, F.G.S.                        |
| Collection of Portraits of Cornishmen, framed in Oak                               |     |  |     |     |     |   |
| Collection of Natural Grasses and Seeds  | ... | ...  |     |     |     | Messrs. Sutton & Co.                      |
| Collection of Butterflies, Moths, and Beetles, including many rare British species | ... | ...  | }   |     |     | Mr. T. B. Bolitho through Mr. J. D. Enys. |
| Seychelles Cocoa Nut   | ... | ...  |     |     |     |   |

#### GIFTS TO THE LIBRARY.

|   |     |     |   |  |  |                                      |          |
|---|-----|-----|---|--|--|--------------------------------------|----------|
| Review of Reviews for Australasia                                     | ... | ... | } |  |  | The Agent-General Western Australia. |          |
| Notes on the Polychæte fauna of Plymouth                              | ... |     |   |  |  |                                      |          |
| U.S. Diplomatic and Consular Reports                                  | ... | ... |   |  |  | Mr. R. Pearce.                       |          |
| Journal Royal Colonial Institute vols. 22-28, and Nos. 5-8 vol. 32    | ... | ... | } |  |  | Mr. J. D. Enys.                      |          |
| Proceedings   | ... | ... |   |  |  |                                      | vol. 32. |
| British Association Report for 1900                                   | ... | ... |   |  |  |                                      |          |
| Geological Survey, 5 parts  | ... | ... |   |  |  |                                      |          |
| Journal, Bath and West of England Society, vols. 1-4                  | ... | ... |   |  |  |                                      |          |
| List of Members of House of Commons from 1213, 4 volumes and appendix | ... | ... |   |  |  |                                      |          |
| History of St. Martin's, by Looe                                      | ... | ... |   |  |  |                                      |          |
| Journal Royal Geographical Society, Nos. 2-4 of vol. 16 and vol. 17   | ... | ... | } |  |  | Rev. Canon Moor.                     |          |
| Bulletin Geological Institute of Mexico                               | ... | ... |   |  |  |                                      |          |
| Aquatint view of Falmouth, 1835                                       | ... | ... | } |  |  | Rev. S. Rundle.                      |          |
| British Christianity during the Roman Occupation                      | ... | ... |   |  |  |                                      |          |
| Photographs of Stars, Star Clusters, &c.                              | ... | ... |   |  |  | Dr. Isaac Roberts.                   |          |
| Reports on Mines and Quarries for the year 1900                       | ... | ... |   |  |  | Dr. Foster.                          |          |
| A number of the early reports of the Society                          | ... | ... |   |  |  | Mr. T. Worth.                        |          |

#### BOOKS PURCHASED.

|                            |   |                                |
|----------------------------|---|--------------------------------|
| Ray Society.               | The Larvæ of British Butterflies and Moths. | Vols. 6, 7, 8, 9.              |
|                            | Taylor.                                     |                                |
| „                          | The Tailless Batrachians of Europe.         | Vols. 1 & 2. Boulenger.        |
| „                          | Monograph of British Annelids.              | McIntosh.                      |
| „                          | „   | British Coccidæ. Newstead.     |
| „                          | „   | British Tyroglyphidæ. Michael. |
| Palæontographical Society, | Monographs.                                 |                                |

Nature.  
 Zoologist.  
 Knowledge.  
 British Rainfall.  
 Post Tertiary Geology of Cornwall. Ussher.  
 Portfolio of Photographs of the Cromlechs of Anglesey and Carnarvonshire, by J. C. Griffith.  
 Episcopal Registers of Exeter. Grandisson. Parts 1, 2, and 3. Rev. F. C. Hingeston-Randolph.  
 Barlow's Family Names.  
 Boutell's Heraldry.  
 Cornish Magazine.

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EXCHANGES WITH OTHER SOCIETIES.

|   |                            |
|---|----------------------------|
| Academy of Natural Sciences of Philadelphia ...                                       | Philadelphia.              |
| Australian, South, School of Mines ...  | Adelaide.                  |
| Anthropological Institute of Great Britain and Ireland ...                            | } London.                  |
| Antiquary ...   |                            |
| Bath Natural History and Antiquarian Field Club                                       | Bath.                      |
| Belfast Naturalists' Field Club ...   | Belfast.                   |
| Berwickshire Naturalists' Club ...  | Cockburnspath.             |
| Birmingham Natural History and Philosophical Society ..                               | } Birmingham.              |
| Boston Society of Natural History ...   |                            |
| Bristol and Gloucester Archæological Society ...                                      | Gloucester.                |
| Bristol Naturalists' Society ...  | Bristol.                   |
| British and American Archæological Society of Rome ...                                | } Rome.                    |
| Bulletin National Museum, U.S.A. ...  |                            |
| Bulletin Geological Survey, U.S.A. ...  | Washington, D.C.           |
| Bulletin Comité Géologique de St. Petersburg ...                                      | St. Petersburg.            |
| Cambrian Archæological Society ...  | London.                    |
| Canadian Institute ...  | Toronto.                   |
| Colonial Museum of New Zealand... ..  | } Wellington, New Zealand. |
| Colorado Scientific Society ... ..  |                            |
| Cumberland and Westmoreland Association for the Advancement of Literature and Science | } Carlisle.                |
| Department of Mines and Agriculture ..  |                            |
| Devonshire Association ..   | Tiverton.                  |
| Eastbourne Natural History Society ...  | Eastbourne.                |
| Elisha Mitchell Scientific Society ...  | Chapel Hill, U.S.A.        |
| Essex Field Club. ...   | Stratford.                 |
| Geologists' Association ... ..  | London.                    |

|   |                               |
|---|-------------------------------|
| Geological Society of Edinburgh ... ..                                  | Edinburgh.                    |
| Geological Society of Glasgow ... ..                                    | Glasgow.                      |
| Geological Society of London ... ..                                     | London.                       |
| Greenwich Observatory ... ..  | Greenwich.                    |
| Geographical Society of Australasia ... ..                              | Adelaide.                     |
| Leeds Philosophical and Literary Society... ..                          | Leeds.                        |
| Liverpool Literary and Philosophical Society ... ..                     | Liverpool.                    |
| Liverpool Engineering Society .. ..                                     | Liverpool.                    |
| Liverpool Naturalists' Field Club ... ..                                | Liverpool.                    |
| London and Middlesex Archæological Society ... ..                       | London.                       |
| Lloyd Museum and Library ... ..   | Cincinnati, O.                |
| Manchester Geological Society ... ..                                    | Manchester.                   |
| Meriden Scientific Society ... ..                                       | Meriden, Con. U.S.A.          |
| Mining Association and Institute of Cornwall ... ..                     | Camborne.                     |
| Mineralogical Society of Great Britain ... ..                           | Cambridge.                    |
| Missouri Botanical Gardens ... ..                                       | Missouri, U.S.A.              |
| Natural History Society of Glasgow ... ..                               | Glasgow.                      |
| New York Academy of Sciences ... ..                                     | New York.                     |
| North of England Institute of Mining and<br>Mechanical Engineers ... .. | Newcastle-upon-<br>Tyne.      |
| Nova Scotian Institute of Natural Science ... ..                        | Halifax, Nova Scotia          |
| Ohio State University... ..   | Columbus, U.S.A.              |
| Penzance Natural History and Antiquarian Society                        | Penzance.                     |
| Philosophical Society of Glasgow ... ..                                 | Glasgow.                      |
| Plymouth Institution ... ..   | Plymouth.                     |
| Powys-land Club .. ..   | Welshpool.                    |
| Quekett Microscopical Club ... ..                                       | London.                       |
| Rochester Academy of Science ... ..                                     | Rochester, New York<br>U.S.A. |
| Royal Astronomical Society ... ..                                       | London.                       |
| Royal Cornwall Polytechnic Society ... ..                               | Falmouth.                     |
| Royal Dublin Society... ..  | Dublin.                       |
| Royal Society of South Australia ... ..                                 | Adelaide.                     |
| Royal Geological Society of Cornwall ... ..                             | Penzance.                     |
| Royal Society of Antiquaries of Ireland ... ..                          | Dublin.                       |
| Royal Institution of Great Britain ... ..                               | London.                       |
| Royal Irish Academy ... ..  | Dublin.                       |
| Royal Physical Society of Edinburgh ... ..                              | Edinburgh.                    |
| Royal Society of Edinburgh... ..  | Edinburgh.                    |
| Smithsonian Institution ... ..  | Washington.                   |
| Society of Antiquaries, London ... ..                                   | London.                       |
| Society of Arts... ..   | London.                       |
| Surrey Archæological Society ... ..                                     | Guildford.                    |
| Société Mineralogique de France ... ..                                  | Paris.                        |
| Société Polymathique du Morbihan ... ..                                 | Vannes.                       |
| Société Archéologique du Finistère ... ..                               | Finistere.                    |



|   |        |                      |
|---|--------|----------------------|
| Somersetshire Archæological and Natural History Society | ... .. | } Taunton.           |
| Sussex Archæological Society                            | ... .. | Lewes.               |
| Upsala Geological Institution                           | ... .. | Upsala.              |
| Victorian Year Book                                     | ... .. | Westminster, S.W.    |
| Wagner Free Institute of Science                        | ... .. | Philadelphia.        |
| Western Australia Year Book                             | ... .. | Perth, W. Australia. |
| Y. Cymmrodorian Society                                 | ... .. | London.              |
| Yorkshire Geological and Polytechnic Society            | ... .. | Halifax.             |

BALANCE SHEET OF ACCOUNTS.

**Dr.** Arthur P. Dix, Esq., in account with the Royal Institution of Cornwall. **Cr.**

| 1900.      |  | 1901. |    | 1901. |                            |      |    |    |
|------------|--|-------|----|-------|----------------------------|------|----|----|
| July 31st. | To Balance                             | £     | s. | d.    | By Curator                 | £    | s. | d. |
|            | ...                                    | 68    | 3  | 2     | ...                        | 75   | 0  | 0  |
| July 31st. | " Subscriptions ...                    | 152   | 2  | 0     | " Donation to Mr. Gregg    | 6    | 5  | 0  |
|            | " Life Subscription (R. Glencross) ... | 10    | 10 | 0     | " Repairs ...              | 1    | 13 | 2  |
|            | " H.R.H. Prince of Wales ..            | 20    | 0  | 0     | " Books, Printing, &c. ... | 8    | 1  | 7  |
|            | " Excursion ...                        | 7     | 12 | 0     | " Fuel and Gas ...         | 12   | 9  | 1  |
|            | " Visitors ...                         | 8     | 4  | 6     | " Rates and Taxes ...      | 2    | 3  | 3  |
|            | " Journals ...                         | 4     | 10 | 0     | " Harlyn Exploration ...   | 5    | 0  | 0  |
|            | " Sundries ...                         | 0     | 3  | 2     | " Reserve Fund ..          | 10   | 10 | 0  |
|            |  |       |    |       | " Magazines ...            | 2    | 9  | 0  |
|            |  |       |    |       | " Excursion ...            | 8    | 12 | 4  |
|            |  |       |    |       | " Fire Insurance ...       | 4    | 14 | 0  |
|            |  |       |    |       | " Caretaker ...            | 5    | 0  | 0  |
|            |  |       |    |       | " Sundries ...             | 11   | 16 | 2  |
|            |  |       |    |       | " Journal ...              | 84   | 18 | 9  |
|            |  |       |    |       | " Balance ...              | 32   | 12 | 6  |
|            |  |       |    |       |                            |      |    |    |
|            | Balance                                | £271  | 4  | 10    |                            | £271 | 4  | 10 |
|            |  | £32   | 12 | 6     |                            |      |    |    |

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1901, from Registers kept at the Royal Institution of Cornwall, by the Curator, Mr. Geo. Penrose.

TABLE No. 1.

| 1901.     | MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level. |        |        |                        |                                    |                             |                       |                           |                                      |      |                                      |      | Days between which |                              |                     |                                 |      |  |
|-----------|---|--------|--------|------------------------|------------------------------------|-----------------------------|-----------------------|---------------------------|--------------------------------------|------|--------------------------------------|------|--------------------|------------------------------|---------------------|---------------------------------|------|--|
|           | 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. | Day. | Corrected absolute minimum observed. | Day. |                    | Extreme range for the month. | Mean diurnal range. | Greatest range 9 a.m. to 9 p.m. | Day. | Greatest range in any 24 consecutive five hours. |
|           | 9 a.m.  | 3 p.m. | 9 p.m. |                        |                                    |                             |                       |                           |                                      |      |                                      |      |                    |                              |                     |                                 |      |  |
| Month.    | ins.  | ins.   | ins.   | ins.                   | in.                                | ins.                        | ins.                  | ins.                      | ins.                                 | ins. | ins.                                 | ins. | ins.               | ins.                         | ins.                | ins.                            | ins. |  |
| January   | 30.049  | 30.019 | 30.290 | 30.119                 | .004                               | 30.115                      | .234                  | 29.885                    | 30.554                               | 23   | 29.317                               | 19   | 1.237              | .121                         | .57                 | 19                              | .83  |  |
| February  | 30.123  | 30.098 | 30.110 | 30.110                 | .003                               | 30.107                      | .181                  | 29.929                    | 30.689                               | 15   | 29.240                               | 28   | 1.449              | .102                         | .36                 | 28                              | .51  |  |
| March     | 29.803  | 29.807 | 29.830 | 29.813                 | .007                               | 29.806                      | .216                  | 29.597                    | 30.840                               | 23   | 29.064                               | 2    | 1.776              | .110                         | .33                 | 29                              | .79  |  |
| April     | 29.851  | 29.876 | 29.870 | 28.865                 | .004                               | 29.861                      | .264                  | 29.601                    | 30.344                               | 17   | 29.373                               | 11   | 0.971              | .104                         | .34                 | 11                              | .60  |  |
| May       | 30.075  | 30.067 | 30.083 | 30.075                 | .003                               | 30.072                      | .312                  | 29.763                    | 30.415                               | 12   | 29.384                               | 7    | 1.031              | .078                         | .25                 | 8                               | .43  |  |
| June      | 30.084  | 30.089 | 30.082 | 30.085                 | .001                               | 30.084                      | .338                  | 29.647                    | 30.484                               | 25   | 29.621                               | 22   | 0.863              | .067                         | .26                 | 22                              | .42  |  |
| July      | 30.020  | 30.023 | 30.028 | 30.023                 | .002                               | 30.021                      | .443                  | 29.580                    | 30.303                               | 17   | 29.570                               | 24   | 0.733              | .061                         | .16                 | 1                               | .34  |  |
| August    | 30.079  | 30.080 | 30.088 | 30.082                 | .004                               | 30.078                      | .410                  | 29.072                    | 30.376                               | 20   | 29.683                               | 25   | 0.693              | .071                         | .18                 | 25                              | .30  |  |
| September | 29.880  | 29.877 | 29.887 | 29.881                 | .004                               | 29.877                      | .421                  | 29.460                    | 30.281                               | 28   | 29.354                               | 22   | 0.827              | .075                         | .42                 | 17                              | .73  |  |
| October   | 29.950  | 29.946 | 29.974 | 29.956                 | .006                               | 29.950                      | .335                  | 29.621                    | 30.370                               | 27   | 29.291                               | 18   | 1.079              | .088                         | .27                 | 9                               | .49  |  |
| November  | 30.213  | 30.190 | 30.220 | 30.207                 | .004                               | 30.203                      | .243                  | 29.964                    | 30.628                               | 28   | 29.123                               | 12   | 1.505              | .082                         | .27                 | 11                              | .81  |  |
| December  | 29.716  | 29.723 | 29.706 | 29.715                 | .003                               | 29.712                      | .243                  | 29.472                    | 30.463                               | 1    | 28.823                               | 24   | 0.640              | .173                         | .87                 | 12                              | .71  |  |
| Means     | 29.986  | 29.982 | 30.014 | 29.994                 | .004                               | 29.990                      | .303                  | 29.682                    | 30.478                               |      | 29.320                               |      | 1.067              | .094                         | .35                 |                                 | .58  |  |

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 (+0.108), height above sea (43 feet), and temperature, have been applied.

TABLE No 2.

MONTHLY MEANS OF THE THERMOMETER

| 1901.     | MASON'S HYGROMETER. |           |           |           |           |           |                   |                                    |                        |                   |                                    |                            | SELF REGISTERING.     |                 |                            |                         |                         |                        | ABSOLUTE.                 |                    |                   |          |      |          |      |        |    |
|-----------|---------------------|-----------|-----------|-----------|-----------|-----------|-------------------|------------------------------------|------------------------|-------------------|------------------------------------|----------------------------|-----------------------|-----------------|----------------------------|-------------------------|-------------------------|------------------------|---------------------------|--------------------|-------------------|----------|------|----------|------|--------|----|
|           | 9 a.m.              |           | 3 p.m.    |           | 9 p.m.    |           | Mean of Dry Bulb. | Mean correction for diurnal range. | True mean of Dry Bulb. | Mean of Wet Bulb. | Mean correction for diurnal range. | Mean temp. of evaporation. | Wet Therm. below dry. | Mean dew point. | Dew point below Dry Therm. | Mean of all the Maxima. | Mean of all the Minima. | Approximate mean temp. | Correction for the month. | Adopted mean temp. | Daily mean range. | Maximum. | Day. | Minimum. | Day. | Range. |    |
|           | Dry Bulb.           | Wet Bulb. | Dry Bulb. | Wet Bulb. | Dry Bulb. | Wet Bulb. |                   |                                    |                        |                   |                                    |                            |                       |                 |                            |                         |                         |                        |                           |                    |                   |          |      |          |      |        |    |
| January   | 42.4                | 40.7      | 46.0      | 43.7      | 40.4      | 43.7      | 0.4               | 43.3                               | 41.6                   | 0.3               | 41.3                               | 2.0                        | 38.6                  | 4.7             | 47.7                       | 37.8                    | 42.7                    | 0.1                    | 42.6                      | 9.9                | 54                | 16       | 27   | 0        | 8    | 27     | 0  |
| February  | 39.2                | 36.6      | 44.0      | 39.6      | 37.7      | 40.3      | 0.7               | 39.6                               | 37.4                   | 0.5               | 36.9                               | 2.7                        | 32.0                  | 7.6             | 46.6                       | 32.7                    | 39.7                    | 0.1                    | 39.6                      | 13.5               | 55                | 28       | 21   | 23       | 15   | 34     | 21 |
| March     | 43.2                | 39.8      | 45.2      | 41.4      | 39.8      | 42.7      | 1.0               | 41.7                               | 39.8                   | 0.6               | 39.2                               | 2.5                        | 36.5                  | 5.2             | 48.7                       | 35.6                    | 42.2                    | 0.2                    | 42.0                      | 13.0               | 57                | 12       | 23   | 23       | 29   | 34     | 23 |
| April     | 51.6                | 47.3      | 53.5      | 48.8      | 45.5      | 50.2      | 1.6               | 48.8                               | 46.4                   | 1.3               | 45.1                               | 3.7                        | 41.7                  | 7.1             | 57.0                       | 40.4                    | 48.7                    | 0.1                    | 48.6                      | 16.6               | 72                | 24       | 32   | 32       | 2    | 40     | 32 |
| May       | 59.6                | 52.1      | 61.2      | 54.1      | 50.1      | 56.9      | 2.3               | 54.6                               | 51.4                   | 1.4               | 50.0                               | 4.6                        | 46.1                  | 8.5             | 65.5                       | 44.1                    | 55.0                    | 0.8                    | 54.2                      | 21.3               | 75                | 22       | 36   | 36       | 2    | 39     | 36 |
| June      | 61.2                | 55.5      | 63.1      | 56.2      | 53.4      | 59.2      | 2.9               | 56.3                               | 54.3                   | 1.7               | 52.6                               | 3.7                        | 48.2                  | 8.1             | 66.3                       | 50.6                    | 58.4                    | 0.3                    | 58.1                      | 15.7               | 77                | 27       | 41   | 43       | 26   | 36     | 41 |
| July      | 67.0                | 61.3      | 69.0      | 62.2      | 60.5      | 65.5      | 2.1               | 63.4                               | 60.6                   | 1.2               | 59.4                               | 4.0                        | 55.6                  | 7.8             | 73.4                       | 55.4                    | 64.4                    | 0.3                    | 64.1                      | 18.0               | 89                | 19       | 43   | 43       | 16   | 46     | 46 |
| August    | 64.2                | 59.1      | 67.4      | 60.6      | 58.7      | 63.4      | 2.0               | 61.4                               | 58.8                   | 1.2               | 57.6                               | 3.8                        | 53.5                  | 7.9             | 70.4                       | 53.3                    | 61.8                    | 0.3                    | 61.5                      | 17.1               | 85                | 19       | 45   | 45       | 23   | 40     | 45 |
| September | 60.6                | 57.4      | 62.6      | 58.2      | 55.7      | 60.1      | 1.7               | 58.4                               | 57.1                   | 0.9               | 56.2                               | 2.2                        | 54.2                  | 4.2             | 66.1                       | 53.2                    | 59.6                    | 0.2                    | 59.4                      | 12.8               | 72                | 13       | 43   | 43       | 15   | 29     | 43 |
| October   | 54.0                | 51.4      | 56.1      | 52.3      | 49.8      | 53.3      | 0.8               | 52.5                               | 50.7                   | 0.6               | 50.1                               | 2.4                        | 48.0                  | 4.5             | 59.2                       | 46.3                    | 52.7                    | 0.4                    | 52.3                      | 12.9               | 65                | 2        | 32   | 32       | 27   | 33     | 32 |
| November  | 44.4                | 42.3      | 49.4      | 46.1      | 41.3      | 45.0      | 0.6               | 44.4                               | 42.8                   | 0.5               | 42.3                               | 2.1                        | 39.6                  | 4.8             | 52.8                       | 37.6                    | 45.2                    | 0.1                    | 45.1                      | 15.2               | 63                | 2        | 21   | 21       | 17   | 42     | 21 |
| December  | 44.1                | 42.2      | 46.0      | 43.5      | 43.2      | 44.0      | 0.2               | 44.2                               | 42.5                   | 0.3               | 42.2                               | 2.0                        | 39.6                  | 4.6             | 48.7                       | 37.5                    | 43.1                    | 0.2                    | 42.9                      | 11.1               | 55                | 6        | 21   | 21       | 21   | 34     | 21 |
| Means     | 52.6                | 48.8      | 55.3      | 50.5      | 48.2      | 52.0      | 1.3               | 50.7                               | 48.6                   | 0.9               | 47.7                               | 2.9                        | 44.4                  | 6.2             | 58.6                       | 43.7                    | 51.1                    | 0.3                    | 50.8                      | 14.7               | 68                |          | 32   | 32       |      | 36     | 32 |

The Thermometers are placed on the leaded 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.

| 1901.       | 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. |  |  |
|             | a.m.   | p.m. | d. | a.m. | p.m. | d. | a.m. | p.m. | d. | a.m. | p.m. | d. | a.m.           | p.m. | d. | a.m. | p.m. | d. | a.m. | p.m. | d. | a.m. | p.m. | d. | a.m.   | p.m. | d.   | a.m.   | p.m. | d.   | a.m.   | p.m. | d.   |       |  |  |
| January     | 1      | 2    | 1  | 4    | 6    | 6  | 3    | 1    | 1  | 1    | 5    | 1  | 4              | 1    | 8  | 8    | 8    | 8  | 8    | 0    | 0  | 0    | 4    | 3  | 3      | 1·0  | 1·4  | 1·1    | 1·2  | 1·0  | 1·1    | 1·1  |      |       |  |  |
| February    | 1      | 1    | 1  | 0    | 0    | 0  | 1    | 1    | 1  | 2    | 3    | 1  | 2              | 1    | 6  | 8    | 2    | 8  | 2    | 9    | 4  | 4    | 6    | 5  | 3      | 0·9  | 1·1  | 0·6    | 0·8  | 0·9  | 1·1    | 0·8  |      |       |  |  |
| March ...   | 4      | 6    | 2  | 1    | 1    | 0  | 0    | 0    | 0  | 4    | 5    | 3  | 4              | 2    | 6  | 7    | 5    | 6  | 6    | 2    | 2  | 2    | 5    | 3  | 6      | 1·2  | 1·3  | 0·9    | 1·1  | 1·2  | 1·3    | 1·1  |      |       |  |  |
| April ...   | 5      | 4    | 1  | 1    | 2    | 3  | 3    | 4    | 2  | 6    | 6    | 5  | 2              | 3    | 5  | 9    | 8    | 2  | 1    | 0    | 0  | 3    | 1    | 0  | 3      | 1·1  | 1·1  | 0·7    | 1·0  | 1·1  | 1·1    | 1·0  |      |       |  |  |
| May ...     | 9      | 10   | 2  | 6    | 6    | 0  | 0    | 2    | 2  | 1    | 1    | 2  | 2              | 3    | 7  | 7    | 5    | 0  | 0    | 2    | 2  | 5    | 2    | 1  | 2      | 1·0  | 1·0  | 0·5    | 0·9  | 1·0  | 1·0    | 0·5  | 0·9  |       |  |  |
| June .....  | 3      | 2    | 0  | 1    | 1    | 1  | 3    | 3    | 2  | 5    | 6    | 4  | 3              | 1    | 9  | 10   | 10   | 2  | 2    | 1    | 2  | 3    | 0    | 2  | 3      | 1·0  | 1·0  | 0·6    | 0·9  | 1·0  | 1·0    | 0·6  | 0·9  |       |  |  |
| July .....  | 1      | 2    | 1  | 2    | 2    | 0  | 2    | 0    | 0  | 3    | 5    | 2  | 3              | 3    | 14 | 13   | 8    | 0  | 5    | 1    | 2  | 1    | 1    | 2  | 1      | 1·0  | 1·0  | 0·5    | 0·8  | 1·0  | 1·0    | 0·5  | 0·8  |       |  |  |
| August ...  | 4      | 5    | 1  | 1    | 2    | 0  | 2    | 1    | 1  | 5    | 8    | 5  | 4              | 5    | 5  | 8    | 5    | 2  | 2    | 0    | 2  | 2    | 2    | 1  | 0      | 1·1  | 1·1  | 0·5    | 1·0  | 1·1  | 1·1    | 0·5  | 1·0  |       |  |  |
| September   | 3      | 5    | 2  | 4    | 2    | 2  | 7    | 8    | 4  | 2    | 4    | 4  | 1              | 1    | 4  | 7    | 4    | 1  | 0    | 0    | 2  | 1    | 1    | 2  | 1      | 1·0  | 1·2  | 0·8    | 1·0  | 1·0  | 1·2    | 0·8  | 1·0  |       |  |  |
| October ... | 0      | 2    | 1  | 2    | 1    | 0  | 4    | 2    | 1  | 5    | 7    | 5  | 6              | 4    | 5  | 8    | 6    | 4  | 3    | 0    | 4  | 3    | 1    | 3  | 2      | 1·2  | 1·2  | 0·7    | 1·1  | 1·2  | 1·2    | 0·7  | 1·1  |       |  |  |
| November    | 1      | 1    | 1  | 3    | 4    | 2  | 2    | 1    | 1  | 1    | 2    | 0  | 6              | 7    | 2  | 2    | 0    | 4  | 6    | 2    | 4  | 6    | 8    | 1  | 6      | 1·0  | 1·3  | 0·5    | 1·0  | 1·0  | 1·3    | 0·5  | 1·0  |       |  |  |
| December    | 0      | 1    | 1  | 2    | 2    | 2  | 4    | 4    | 2  | 5    | 4    | 3  | 1              | 6    | 12 | 10   | 5    | 2  | 4    | 3    | 2  | 4    | 3    | 1  | 0      | 1·3  | 1·2  | 1·0    | 1·2  | 1·3  | 1·2    | 1·0  | 1·2  |       |  |  |
| Total ...   | 32     | 41   | 14 | 27   | 29   | 16 | 31   | 27   | 17 | 43   | 56   | 43 | 43             | 42   | 83 | 97   | 66   | 32 | 38   | 15   | 39 | 31   | 19   | 39 | 31     | 12·8 | 13·9 | 8·4    | 12·0 | 12·8 | 13·9   | 8·4  | 12·0 |       |  |  |
| Means ...   | 29·0   |      |    | 24·0 |      |    | 25·0 |      |    | 47·3 |      |    | 39·6           |      |    | 82·0 |      |    | 28·3 |      |    | 29·6 |      |    | 1·0    |      |      | 1·1    |      |      | 0·7    |      |      | 1·0   |  |  |

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

TABLE 4.

| 1901.       | WEATHER.            |     |        |     |           |      |       |    |   |                              |                                   |                               | REMARKS. |                                 |                                    |                         |      |  |
|-------------|---------------------|-----|--------|-----|-----------|------|-------|----|---|------------------------------|-----------------------------------|-------------------------------|----------|---------------------------------|------------------------------------|-------------------------|------|--|
|             | AVERAGE CLOUDINESS. |     |        |     | RAINFALL. |      |       |    | Mean weight of vapour on a cubic foot of air. | Mean humidity of atmosphere. | Mean elastic force of vapour.     | Mean weight in grains of air. |          | Total hours of Bright Sunshine. | No of Days on which the sun shone. | Average Daily sunshine. | Dry. | Wet.   |
|             | 9 a.m.              |     | 3 p.m. |     | 9 p.m.    |      | Mean. |    |   |                              |                                   |                               |          |                                 |                                    |                         |      |  |
|             | 9 a.m.              |     | 3 p.m. |     | 9 p.m.    |      | Mean. |    | Rainfall in inches.                           |                              | Greatest fall in 24 hours, Truro. |                               |          | Depth.                          |                                    |                         |      |  |
| January     | 6.2                 | 5.9 | 5.4    | 5.8 | 4.14      | 25   | 1.24  | 18 | 2.7   | 0.5                          | 84                                | 531.4                         | 70.5     | 24                              | 2.3                                | 80                      | 13   | Frost, 3, 4, 6, 7, 8, 9, 11, 12, 18. Snow, 8. Hail, 23, 29, 30. Fog, 1, 2, 3, 10, 11, 17, 18. Remarkable Rain 18.  |
| February    | 6.1                 | 4.4 | 5.4    | 5.3 | 2.50      | 19   | .55   | 26 | 2.1   | 0.7                          | 77                                | 539.0                         | 98.7     | 20                              | 3.5                                | 75                      | 9    | Frost, 1, 4, 7, 8, 13, 15, 16, 18, 21, 22. Hail, 4, 7, Sleet, 4, 5. Fog, 4, 7, 8, 11, 12, 19, 21, 27.  |
| March ...   | 5.6                 | 6.0 | 4.2    | 5.3 | 3.56      | 17   | 1.27  | 20 | 2.5   | 0.5                          | 84                                | 536.7                         | 137.4    | 26                              | 4.4                                | 77                      | 18   | Hail, 1, 2, 3, 4, 5, 6, 27. Thunder & Lightning, 1, 2. Fog, 13. Frost, 9, 10, 13, 19, 22, 23, 25, 26, 27, 28, 29. Sleet and Snow, 20 (heavy) 21, 25, 26, 27, 28, 29. |
| April ..... | 4.8                 | 4.4 | 4.2    | 4.5 | 4.68      | 17   | 0.90  | 30 | 3.0   | 0.8                          | 79                                | 530.0                         | 203.6    | 27                              | 6.5                                | 77                      | 13   | Remarkable Rain, 3, 4, 30. Hail, 12. Lunar Halo, 23. Thunder and Lightning, 23. Very Dry month, No rain from 11th to 29th  |
| May .....   | 2.4                 | 3.0 | 2.2    | 2.5 | 1.15      | 8    | 0.57  | 30 | 3.5   | 1.2                          | 74                                | 522.5                         | 327.7    | 31                              | 10.5                               | 88                      | 5    | Heavy rain, 23. Thunder & Lightning, 29.   |
| June .....  | 5.7                 | 5.8 | 5.0    | 5.5 | 1.86      | 12   | 0.64  | 22 | 3.8   | 1.2                          | 75                                | 520.3                         | 219.8    | 27                              | 7.3                                | 81                      | 9    | Fog, 4, 9. Heavy rain, 24. Dry month.  |
| July .....  | 4.1                 | 3.8 | 3.8    | 3.9 | 1.06      | 9    | 0.70  | 24 | 4.9   | 1.5                          | 77                                | 512.6                         | 225.4    | 28                              | 7.2                                | 81                      | 12   | Remarkable rain, 16, 22. Fog, 22, 24, 30.  |
| August ...  | 6.4                 | 5.0 | 4.0    | 5.1 | 1.34      | 13   | 0.59  | 13 | 4.6   | 1.4                          | 77                                | 514.8                         | 216.1    | 28                              | 5.9                                | 80                      | 13   | Fog, 11, 12, 13, 14, 15, 16, 20, 22, 23, 25, 26, 27. Lightning, 21. Lunar Halo, 24.  |
| September   | 7.4                 | 6.6 | 6.9    | 7.0 | 4.05      | 17   | 1.10  | 16 | 4.7   | 0.7                          | 87                                | 517.8                         | 133.3    | 27                              | 4.4                                | 79                      | 11   | Fog, 4, 5, 6, 7, 8, 9, 15, 16, 25. Frost, 7, 8, 15, 16, 17, 18, 25. Hail and sleet, 15.  |
| October ... | 6.5                 | 5.6 | 4.3    | 5.4 | 2.57      | 21   | 0.49  | 17 | 3.8   | 0.6                          | 86                                | 524.4                         | 113.1    | 26                              | 3.6                                | 79                      | 14   | Fog, 4, 5, 15, 16, 17, 19, 20, 24, 27. Frost, 19, 20, 21, 22, 23, 28. Hail, 13, 17, 18, 24, 25. Snow, 15. Lunar Halo, 23.  |
| November    | 5.4                 | 5.9 | 4.0    | 5.0 | 1.01      | 13   | 0.26  | 11 | 2.8   | 0.5                          | 84                                | 533.3                         | 86.0     | 22                              | 2.8                                | 82                      | 8    |  |
| December    | 7.0                 | 7.4 | 6.2    | 6.9 | 7.49      | 28   | 0.81  | 11 | 2.8   | 0.5                          | 84                                | 533.3                         | 52.6     | 19                              | 1.7                                | 65                      | 28   |  |
| Means ...   | 5.6                 | 5.3 | 4.6    | 5.1 | 35.41     | 199* | 0.76  |    | 3.4   | 0.8                          | 80                                | 526.6                         | 188.2*   | 305*                            | 5.0                                | 78                      | 12   |  |

\* Totals.

Cloudiness is estimated by dividing the sky into ten parts, and noting how many of these are obscured. The sunshine is taken by a Jorjian's Photographic Sunshine Recorder, presented by J. D. Enys, Esq., F.G.S. The rain gauge is placed on the flat roof of the Royal Institution, at about 40 feet from the ground.

COMPARISON OF RAINFALL IN THE NEIGHBOURHOOD.

| 1901.         | J. C. DAUBUZ, Esq.,<br>Killow. |       |                            |        | W. J. LEAN, Esq.,<br>Truro Water Works. |      |              |       | H. TRESAWNA, Esq.,<br>Lamellyn, Probus. |        |                                     |      | GEO. PENROSE,<br>Royal Institution of Cornwall. |       |                            |        |                                     |      |    |
|---------------|--------------------------------|-------|----------------------------|--------|---|------|--------------|-------|---|--------|-------------------------------------|------|---|-------|----------------------------|--------|-------------------------------------|------|----|
|               | Total depth.                   |       | Greatest fall in 24 hours. |        | No. of days on which 'or more fell.     |      | Total depth. |       | Greatest fall in 24 hours.              |        | No. of days on which 'or more fell. |      | Total depth.                                    |       | Greatest fall in 24 hours. |        | No. of days on which 'or more fell. |      |    |
|               | Inches                         | Depth | Date                       | Inches | Depth                                   | Date | Inches       | Depth | Date                                    | Inches | Depth                               | Date | Inches  | Depth | Date                       | Inches | Depth                               | Date |    |
| January ...   | 4.28                           | 1.19  | 18                         | 3.85   | 1.29                                    | 18   | 3.69         | 1.04  | 18                                      | 4.14   | 1.24                                | 18   | 4.14  | 1.24  | 18                         | 4.14   | 1.24                                | 18   | 25 |
| February ...  | 2.28                           | .64   | 28                         | 2.17   | .49                                     | 28   | 1.94         | .47   | 26                                      | 2.50   | .55                                 | 26   | 2.50  | .55   | 26                         | 2.50   | .55                                 | 26   | 19 |
| March ...     | 3.53                           | .89   | 21                         | 3.69   | 1.25                                    | 20   | 3.21         | .90   | 20                                      | 3.56   | 1.27                                | 20   | 3.56  | 1.27  | 20                         | 3.56   | 1.27                                | 20   | 17 |
| April ...     | 4.31                           | .81   | 29                         | 4.66   | .88                                     | 30   | 4.08         | .86   | 30                                      | 4.68   | .90                                 | 30   | 4.68  | .90   | 30                         | 4.68   | .90                                 | 30   | 17 |
| May ...       | 1.33                           | .53   | 30                         | 1.31   | .54                                     | 30   | 1.27         | .37   | 7                                       | 1.15   | .57                                 | 30   | 1.15  | .57   | 30                         | 1.15   | .57                                 | 30   | 8  |
| June ...      | 1.97                           | .53   | 19                         | 2.14   | .76                                     | 23   | 2.14         | .60   | 22                                      | 1.86   | .64                                 | 22   | 2.14  | .60   | 22                         | 1.86   | .64                                 | 22   | 12 |
| July ...      | 1.13                           | .76   | 24                         | 1.11   | .68                                     | 24   | 1.25         | .76   | 24                                      | 1.06   | .70                                 | 24   | 1.25  | .76   | 24                         | 1.06   | .70                                 | 24   | 9  |
| August ...    | 1.61                           | .81   | 13                         | 1.38   | .69                                     | 13   | 1.44         | .63   | 13                                      | 1.34   | .59                                 | 13   | 1.44  | .63   | 13                         | 1.34   | .59                                 | 13   | 13 |
| September ... | 4.05                           | 1.23  | 16                         | 4.39   | .91                                     | 16   | 3.95         | 1.17  | 22                                      | 4.05   | 1.10                                | 16   | 3.95  | 1.17  | 22                         | 4.05   | 1.10                                | 16   | 17 |
| October ...   | 2.54                           | .43   | 17                         | 2.73   | .43                                     | 17   | 3.19         | .45   | 17                                      | 2.57   | .49                                 | 17   | 3.19  | .45   | 17                         | 2.57   | .49                                 | 17   | 21 |
| November ...  | 1.05                           | .31   | 11                         | 1.28   | .36                                     | 12   | .98          | .38   | 12                                      | 1.01   | .26                                 | 11   | .98   | .38   | 12                         | 1.01   | .26                                 | 11   | 13 |
| December ...  | 7.29                           | .66   | 24                         | 7.66   | .92                                     | 29   | 6.96         | .73   | 11                                      | 7.49   | .81                                 | 11   | 6.96  | .73   | 11                         | 7.49   | .81                                 | 11   | 28 |
| TOTAL ...     | 35.37                          |       | 171                        | 36.37  |   | 179  | 34.10        |       | 144                                     | 35.41  |                                     | 199  | 34.10   |       | 144                        | 35.41  |                                     | 199  |    |

# SUMMARY OF METEOROLOGICAL OBSERVATIONS AT TREWIRGIE, REDRUTH.

Longitude 5° 13' 48" W.

BY ARTHUR P. JENKIN, Esq.

Latitude 50° 13' 44" N.

| 1901.<br>Month. | MASON'S HYGROMETER. |                   |                      |                 | THERMOMETER ABSOLUTE. |          |         |          |      |        | RAINFALL.               |                         |                              | CLOUD.       |              | WIND.                 |                            |       | REMARKS. |                       |                         |    |    |  |
|-----------------|---------------------|-------------------|----------------------|-----------------|-----------------------|----------|---------|----------|------|--------|-------------------------|-------------------------|------------------------------|--------------|--------------|-----------------------|----------------------------|-------|----------|-----------------------|-------------------------|----|----|--|
|                 | Mean of Dry Bulb.   | Mean of Wet Bulb. | Wet Ther. below Dry. | Mean Dew Point. | Relative humidity.    | Maximum. | Day.    | Minimum. | Day. | Range. | Mean of all the Maxima. | Mean of all the Minima. | Approximate mean temperature | Monthly mean | Total depth. | Number of rainy days. | Greatest fall in 24 hours. | Date. |          | Mean amount at 9 a.m. | Relative Proportion of. | N. | E. | W.   |
| January ..      | 41.7                | 40.5              | 1.2                  | 39.0            | 90                    | 49.7     | 27.25.6 | 8        | 24.1 | 45.6   | 38.0                    | 41.8                    | 7.6                          | 4.38         | 23           | 1-22                  | 23                         |       | 7.5      | 30                    | 32                      | 24 | 34 | Gales, 9, 18, 27. Snow, 6 (very light) 7, 8, 20, 30. Hail, 25, 28, 29, 30. Hoar Frost, 11.   |
| February        | 38.6                | 36.7              | 1.9                  | 34.2            | 84                    | 49.9     | 28.27.0 | 15       | 22.9 | 43.2   | 34.1                    | 38.6                    | 9.1                          | 2.67         | 18           | 49                    | 28                         |       | 6.2      | 60                    | 6                       | 24 | 22 | Gale, 4. Snow, 1, 14. Sleet, 14. Hail, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31. Hoar Frost, 9, 22. Fog, 10, 11, 13. Snow, 19, 20, 21, 25, 26, 27, 28.                                     |
| March ..        | 41.1                | 39.0              | 2.1                  | 36.4            | 84                    | 51.5     | 13.27.0 | 26       | 24.5 | 45.3   | 35.6                    | 40.5                    | 9.7                          | 3.53         | 22           | 1-20                  | 20                         |       | 6.5      | 43                    | 8                       | 39 | 34 | Gale, 1, 5, 6. Thunderstorm, 1. Hail, 1, 2, 5, 24, 27, 28, 31. Hoar Frost, 9, 22. Fog, 10, 11, 13. Snow, 19, 20, 21, 25, 26, 27, 28.   |
| April ...       | 48.6                | 45.8              | 2.8                  | 42.6            | 80                    | 66.7     | 24.32.5 | 5        | 34.2 | 53.3   | 40.4                    | 46.8                    | 12.9                         | 5.15         | 16           | 1-39                  | 30                         |       | 6.4      | 34                    | 32                      | 20 | 34 | Snow, 4, 5. Hail, 8. Thunder and Lightning, 8, 10.   |
| May ..          | 56.0                | 51.4              | 4.6                  | 47.1            | 72                    | 69.1     | 28.39.3 | 12       | 29.8 | 60.7   | 45.6                    | 53.1                    | 13.1                         | 1.07         | 7            | 63                    | 31                         |       | 3.0      | 40                    | 20                      | 50 | 14 | Hail, 7. Fog, 3, 19. Winds mostly light to moderate. Absolute drought, 19 days—11th to 29th inclusive.   |
| June ..         | 57.7                | 54.0              | 3.7                  | 50.1            | 78                    | 68.4     | 28.46.0 | 13       | 22.4 | 62.1   | 50.8                    | 56.5                    | 11.3                         | 2.46         | 11           | 84                    | 20                         |       | 6.0      | 47                    | 22                      | 19 | 28 | Gale, 22. Fog, 5, 6, 30. Thunder, 29. Winds generally moderate to fresh.   |
| July ...        | 62.9                | 59.8              | 3.1                  | 57.1            | 81                    | 80.3     | 19.48.0 | 7        | 32.3 | 67.6   | 55.1                    | 61.3                    | 12.5                         | 1.28         | 11           | 69                    | 24                         |       | 5.8      | 62                    | 10                      | 21 | 27 | Fog, 2, 4, 5, 27. Partial drought, June 23rd to July 22nd inclusive; 30 days rainfall—28 in.   |
| August ...      | 62.4                | 58.5              | 3.9                  | 55.2            | 77                    | 75.1     | 19.49.5 | 11       | 25.6 | 66.0   | 53.8                    | 59.9                    | 12.2                         | 1.74         | 17           | 63                    | 13                         |       | 6.3      | 23                    | 23                      | 25 | 49 | Fog, 2, 7, 31. Thunder, 9.   |
| September       | 58.6                | 56.4              | 2.2                  | 54.4            | 86                    | 66.2     | 24.46.0 | 15       | 20.2 | 62.5   | 52.5                    | 57.5                    | 10.0                         | 4.35         | 22           | 92                    | 16                         |       | 7.3      | 22                    | 49                      | 16 | 33 | Fog, 12, 28, 30. Gale, 17, 19.   |
| October ...     | 52.9                | 50.8              | 2.1                  | 48.7            | 85                    | 62.2     | 11.39.8 | 21       | 22.4 | 56.4   | 47.1                    | 51.8                    | 9.3                          | 3.29         | 18           | 61                    | 17                         |       | 6.9      | 31                    | 27                      | 10 | 49 | Fog, 4, 5, 6. Gale, 11, 12. Hoar Frost, 7, 8, 16, 17, 18, 24, 25, 26. Hail, 13, 14, 23. Snow, 14, 15. Lightning, 14.   |
| November        | 44.9                | 43.2              | 1.7                  | 41.2            | 87                    | 57.2     | 2.29.5  | 26       | 27.7 | 49.6   | 40.4                    | 45.0                    | 9.2                          | 1.39         | 16           | 40                    | 11                         |       | 5.8      | 25                    | 21                      | 41 | 33 | Fog, 3, 4, 9, 98. Gale, 7, 8, 9, 12, 13, 22, 30. Hail, 9, 11, 15, 17, 18, 19, 20, 24, 25, 26, 28. Snow, 14, 15, 16. Thunder, 10. Hoar Frost, 20.   |
| December        | 43.1                | 41.4              | 1.7                  | 39.4            | 87                    | 53.0     | 8.29.1  | 21       | 23.9 | 46.8   | 38.9                    | 42.8                    | 7.9                          | 7.80         | 28           | 86                    | 11                         |       | 7.4      | 34                    | 29                      | 11 | 50 | Fog, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Hail, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Thunder, 10. |
| Means           | 50.7                | 48.1              | 2.6                  | 45.4            | 82                    | 62.4     | 36.6    | 25.8     | 54.9 | 44.4   | 49.6                    | 10.6                    | 10.6                         | 39.11        | 209          | *                     | *                          |       | 6.3      | 38                    | 23                      | 25 | 34 |  |

Totals\*

Readings taken at 9 a.m. local time. All instruments with Kew Certificates, and where applicable are placed in a Stevenson Screen. Height above sea levelled from Ordnance Bench Mark) 385 feet. Top of rain gauge 1 foot above ground. Wind is calculated as follows.—N=4 N. N.W.=2 N. S.W.=2 S. W. W.S.W.=3 W. W.1 S. and so forth.



## NOTES ON THE FAUNA OF FALMOUTH FOR 1900.

BY RUPERT VALENTIN.

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On glancing over my note-books kept during the past year, I have failed to detect the record of anything of great interest beyond the ordinary seasonal changes in the plankton. Taken as a whole, the year 1900 did not come up to the average, in spite of the fact that the early months were unusually mild. During July, August, and the first half of September, the average surface temperature of the sea was very low; and this accounts for the exceptional scarcity of all pelagic forms, and the almost entire absence of oceanic visitors. During the early portion of the year the prevailing winds were from the S.W., and as a natural consequence the usual invasion of warm water from the Atlantic followed. This exceptional warmth acted as a stimulus on the littoral fauna, many nudibranchs being detected depositing their ova on the sides of the coal hulks moored in the inner harbour during the commencement of January. About this time I noticed that those hulks which were moored by one or two cables from the bow, and so were able to swing with the tide and wind, invariably had a good representative fauna on the port side; which, owing to the prevailing winds, would be exposed to the southward and so enjoy all the additional heat and warmth caused by the sun's rays. The starboard sides of these hulks which faced the northward had but little life on them. In one instance, an ice-hulk was moored by four cables: two from the bow, and two from the stern, so that she was held fast facing the East. In this instance the starboard side was crowded with animal life and sea-weeds, and the port side only sprinkled with barnacles (*Balanus balanoides*). It should be noted that all these hulks are usually beached at least once a year to have their sides scraped and afterwards to receive a coat of tar or pitch extending to a short distance above water-line. This black colour forms a splendid heat-absorbing surface, a fact discovered long ago by the nudibranchs, which flock thither to deposit their ova in so favorable a locality. During a warm summer's day it is by no means unusual to see the pitch in a

semi-liquid state on the sides of these hulks above water-line. Indeed the heat is so intense that one cannot lay the hand on a plank for more than a few seconds.

As in former years, I will now proceed to record the changes in the surface-temperature of the sea, and point out any objects of exceptional interest captured either in the townet or along the shores during 1900. The most important changes in the plankton are drawn up in a tabular form, and added as an appendix to the paper.

January.—On the 1st the surface temperature of the sea was 49°F., and during this month it varied from 48°F. to 50°F., the minimum being recorded on the 9th, the maximum on the 17th.

February.—This month was, as usual, not only the most unsettled, but also the coldest of the year; the prevailing winds being from the N.E. On the 1st 46·3°F. was noted, and from that day to the 6th (on the morning of which 42°F. was recorded) the surface temperature of the sea fell steadily about 1°F in every twenty-four hours. This surface temperature remained almost unchanged till the 15th, when a rise of 1°F. was observed. After that date a slow but steady increase in the surface temperature was noticed; 48·9°F. being registered on the 28th.

March.—The surface temperature of the sea on the 2nd had fallen to 46°F. On the 6th when the first townet gathering was made for the year, all forms of pelagic life were very scarce. Indeed this scarcity of the plankton was apparent during the whole season, and it was not till August that an average gathering could be made.

On the 10th the only forms observed in the gathering made on that morning were quantities of *Tintinnus ampulla*. This species of Infusorian usually abounds in the higher portions of Truro River and Penryn Creek, where the water is brackish: and to find it in abundance at the mouth of the harbour is interesting. A few specimens of *Clausia elongata* covered with diatoms were also noticed in the same gathering.

April.—By far the most interesting capture for the year was made on the morning of the 6th. On that occasion a few specimens of the free swimming oceanic rotifer, *Synchaeta Baltica*

were secured. The presence of this species in this district is of exceptional interest, for I have been on the look-out for it for many years, and this is the only time I have ever met with it in any of my gatherings. P. H. Gosse detected the presence of this rotifer in July, 1850, in some water sent him from the Naze, on the Essex coast. The same gentleman four years later observed numbers of the same species in the sea at Tenby. Lastly, Mr. Hood, of Dundee, captured some specimens in the estuary of the Tay, about twenty years ago. These are all the recorded instances I have been able to discover of this species having been detected in sea-water on the shores of the United Kingdom.

Perhaps the most striking feature in connection with this species is the fact that it is one of the causes of luminosity of the sea. From as close an examination as possible of the limited material at my disposal, I am inclined to imagine that this phosphorescence is not confined to any one spot, but is scattered throughout the entire animal.

From the 2nd, when 46°F. was recorded, to the 20th, when 50°F was noted, there was a slow but almost unbroken rise in the surface temperature of the sea. During the remaining ten days of this month the temperature varied but little, 51·6°F being recorded on the 30th.

The gelatinous alga, *Tetraspora Pouchetii*, whose presence in the sea has been recorded during the past ten years in varying quantity, was first noticed this year on the 27th, and from that day to the 10th of the following month they steadily increased in quantity. Once only, viz., on the 10th May, were these Tetraspores present in sufficient numbers to be easily detected in the sea with the naked eye; and on no occasion did their presence interfere with the use of the tow-net.

May.—The surface temperature of the sea during this month was very uniform. On the 1st 52°F. was noted, and by the 16th the temperature had risen only to 52·6°F. From that day to the close of the month it altered but little, varying from 53·9°F on the 23rd to 54°F. on the last day of the month.

The contents of the various townnettings made during this month contained nothing of interest.

June.—The surface temperature of the sea was very low for the time of year, and as, in the previous month, varied but little. On the 1st 56°F was noted, and from that date to the 29th it never varied beyond 1°F.; a sudden fall to 54°F. taking place on the 30th.

Again the various gatherings shewed great scarcity in all forms of pelagic life.

July.—With the commencement of this month there was a distinct improvement both in the quantity and variety of the plankton; although in richness the various gatherings were not equal to those made in former years.

The following is a list of the principal changes in the surface temperature of the sea during this month. 55°F. was recorded on the 1st, 60°F. on the 13th for the first time in the year, and 64·6°F. at noon on the 19th. This rapid rise in the surface temperature of the sea was confined to the inshore waters: for on the 19th at 10 a.m. only 61·9°F. was noted a mile and a half S.E. of the Lighthouse. During the remaining eleven days the surface temperature varied from 63°F. to 64°F.

On the 19th a little medusa only 2 m.m. in diameter was observed in a gathering made one mile S.E. of the Lighthouse. On forwarding it to my friend, Mr. Edward Browne, he kindly replied as follows:—"The medusa is an early stage of *Solmaris*. Too young for the determination of the species." This specimen possessed only twelve tentacles, and so would correspond with the smallest specimen mentioned by that gentleman in his Report on the medusæ secured in Valentia harbour.

August.—On the 1st the surface temperature of the sea was 61·9°F, and during the whole month it varied but 2°F., 60°F. being noted on the 31st.

The siphonophore, *Muggiæa atlantica* occurred in some considerable numbers on the 7th, many of these had eudoxomes attached. On the 11th a small number of the attractive Radiolarian *Acanthometra elastica*, which has become an almost constant feature in the summer gatherings, again appeared. Specimens of this species were present in varying quantities in the numerous collections made for at least a month; but all, without a single exception, were dead, and in a more or less

advanced state of decomposition. This fact I ascribe to the unusually low average surface temperature of the sea during the entire month. Several specimens of the luminous Infusorian *Noctiluca miliaris* appeared on the last day of the month. Included in the same gathering was the decidedly scarce larva, *Pilidium*.

September.—The surface temperature of the sea during the first half of the month, when my observations were discontinued for a time, was very uniform in spite of the prevailing winds being from the eastward; 59·9°F. to 60·9°F. were the two extremes recorded during that time. *Noctiluca miliaris* rapidly increased in numbers, and with them vast quantities of dead *A. elastica* were noticed.

On the 4th, numbers of *Peridinium reticulatum* and *P. spiniferum* were observed in a townet gathering made under the shelter of Carricknath Point, the fresh easterly wind which was blowing at the time, accompanied by a heavy sea, effectually preventing any but large boats from venturing beyond the shelter of the lighthouse. *Peridinium reticulatum* is comparatively common in the numerous estuaries of Falmouth harbour; *P. spiniferum* is rare here.

October.—On the 15th of this month when my investigations recommenced, the surface temperature of the sea was 58°F. From that day to the 31st a slow but steady fall took place, 56°F. being noted on that morning.

In a surface gathering made on the last day of this month all forms of pelagic life were exceptionally scarce. Indeed I do not remember ever having gathered such a poor collection during this time of the year.

November.—From the 1st, when 56°F. was noted, to the 20th, when 49·9°F. was recorded, there was a continuous decline in the surface temperature of the sea. This was followed by a slight rise on the 21st to 51·3°F. During the following five days, *i.e.*, from the 22nd to the 27th the temperature remained unchanged at 50·3°F., a sudden fall taking place on the 29th to 48·6°F.

There was a slight increase in the quantity obtained in a gathering made on the 3rd, *Clausia elongata* being very numerous

This increase in the plankton was not maintained, for in a gathering made on the 13th a distinct decrease in the quantity obtained was noticed; although the net was towed after my boat at the usual pace for the customary time, fifteen minutes.

In this gathering two specimens of *Microniscus calani* were noticed, each being firmly attached to a single *Clausia elongata*.

December.—The surface temperature of the sea remained exceptionally uniform during the whole of this month. All pelagic forms were very scarce indeed during this time. The following were the principal changes in the surface temperature of the sea:—49·9°F. on the 1st. This remained unaltered till the 4th when 51°F was noted. From that day to the 11th it remained unchanged, and the next morning, the 12th, 52°F. was observed. From thence to the end of the year no great change in the surface temperature was noticed; it varied but 1°F during that time.

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#### FAUNA NOTES.

MEDUSÆ. Although no ephyræ were obtained in any of the tow-nettings made in the spring, the adult medusa, *Aurelia aurita* was observed in the sea on several occasions this year. The first adult specimen of this species was seen on the 10th May, and on being secured was found to measure 42 m.m. in diameter. On the 17th, and again on the 28th of the same month, several shoals of the same medusa were seen in the harbour. On the 16th August a few battered specimens of *Aurelia* were observed for the last time this year.

With the exception of an abundance of *Sarsia gemmifera* and *S. prolifera*, all species of medusæ were decidedly scarce in this district during the year. Indeed on some calm mornings I frequently returned from a collecting trip in my pram quite empty handed; not having even seen a single medusa.

NUDIBRANCHES. *Eolis coronata* and *Goniodoris castanea* were found in abundance on the sides of the coal-hulks, and also on the ice-hulk moored within the docks, during the first half of January; a few specimens of *G. nodosa* being also observed with them. The specimens of the first-named species were exception-

At 10:30 AM  
 10/10/1917

400  
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ab

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10/10/1917  
 10/10/1917





| Date.      | Wind. | Sea (temperature). | Tide.          | Locality.                     | Algae & Diatoms.                                   | Badiolaria<br>Inversia and<br>Pillaria.                | Melusae.   | Echinoderm<br>larvae.               | Worm larvae.                                   | Chaetognaths.                                 | Crustacea larvae.                                    | Entomostraca.   | Mollusc larvae.                           | Tunicata.          |
|------------|-------|--------------------|----------------|-------------------------------|--|--|--|-------------------------------------|--|---|--|---|---|--------------------|
| 1900.      |       |                    |                |                               |  |  |  |                                     |  |   |  |   |   |                    |
| Mar. 6th.  | calm  | 47° F              | 1 hour ebb.    | Harbour.                      | Halosiphonia viridis<br>Peridinium reticulatum. C. | —  | —  | —                                   | Nereis.<br>Polydora.                           | —   | Nauplii.<br>Zoeae of Cancer<br>pavulus.              | Clausia elongata. Das longiremus.<br>Corycaeus anglicus. A.   | Veligers.                                 | Appendicularia. A. |
| " 10th.    | S.E.  | 46° F              | 1 flood.       | do.                           | —  | Campanella<br>pelagica.<br>Fistulina<br>ampullis. D.   | —  | —                                   | do.  | —   | Nauplii.   | C. elongata D. Centropages typicus. A.<br>Das longiremus. Eudae Nordmanni. A.                                       | —   | do. do.            |
| " 30th.    | S.W.  | 47° F              | 1 ebb.         | do.                           | —  | —  | Obelia lucifera. C.  | —                                   | —  | —   | do.<br>1 Euphausia. †                                | C. elongata. Othonia spinifrons.<br>C. typicus. D. longiremus.  | —   | —                  |
| April 6th. | S.W.  | 46° F              | h. v.          | do.                           | H. viridis.<br>(bacteroid).                        | Synchaeta<br>Dalloni. A.                               | —  | Nereis—2 stages.                    | —  | —   | Nauplii. 2 stages. C.<br>Zoeae of Cancer<br>pavulus. | C. elongata. O. spinifrons.<br>Thalassia mysis. † E. Nordmanni †  | —   | —                  |
| " 18th.    | calm  | 46° F              | 1 ebb.         | do.                           | Chaetoceros.<br>Rhizosolenia.                      | —  | Phialidium temperarium.<br>3 specimens.  | —                                   | do.  | —   | Nauplii 2 stages.                                    | C. elongata. D. O. spinifrons.<br>T. mysis (1 specimen).  | —   | —                  |
| " 22th.    | N.    | 51° F              | 1 flood.       | do.                           | Tetrasporae. A.                                    | —  | P. temperarium.  | —                                   | do.  | —   | do.  | do. do.<br>Calanus finmarchicus.<br>Eudae Nordmanni, with subzygos.   | —   | —                  |
| May 1st.   | N.    | 53° F              | 1 ebb.         | do.                           | do. C.<br>Coccolithaceae.                          | —  | Obelia lucifera.<br>Margellium octopunctatum.<br>Bougainvilles Britannica  | —                                   | do.  | —   | do.  | do. do.<br>Centropages typicus. C. hians.   | —   | —                  |
| " 5th.     | S.W.  | 52° F              | 1 hour ebb.    | do.                           | Tetrasporae. C.                                    | —  | P. temperarium.  | —                                   | —  | —   | Cypris stage of<br>Balanus.                          | C. elongata. O. spinifrons.<br>C. typicus. C. anglicus.<br>D. longiremus. E. Nordmanni.                             | —   | Appendicularia. A. |
| " 10th.    | S.E.  | 52° F              | 1 flood.       | do.                           | do.  | C. pelagica.   | do.  | —                                   | —  | —   | Nauplii. D.<br>Zoeae sp. (5).                        | Clausia elongata. D.<br>others as on 6th.   | Veligers.                                 | —                  |
| " 29th.    | N.    | 50° F              | h. w.          | do.<br>5.40—6 a.m.            | do. A.   | —  | Margellium octopunctatum.<br>Clytia Johnstonii.<br>Lar. sabellorum.<br>Sipunculus marshallis.<br>Boreo ovata (2 specimens) | —                                   | tube dwelling<br>Terebellid A.                 | —   | —  | Calanus finmarchicus.<br>C. elongata. D. longiremus.<br>O. spinifrons. Podon intermedium. A.                        | do.<br>Eggs<br>punctilucous               | —                  |
| June 6th.  | W.    | 56° F              | 1 hour ebb.    | 1 mile out.                   | —  | Ceratium<br>tripos A.                                  | O. lucifera.   | Plutei.                             | —  | —   | Zoeae of var. spec. of<br>decapod crustacea          | C. elongata. A. D. longiremus.<br>T. mysis.   | do.                                       | —                  |
| " 11th.    | E.    | 55° F              | 2 hours flood. | 2 miles out.                  | Tetrasporae. A.                                    | —  | Margellium octopunctatum.<br>Clytia Johnstonii.<br>Cocymorpha nutans.  | —                                   | Actinotrocha 2.                                | —   | —  | C. elongata. D. longiremus.<br>T. mysis. A. Calanus hians chicus.<br>Podon intermedium (2 specimens).               | Veligers.                                 | —                  |
| " 18th.    | S.W.  | 55° F              | h. w.          | 1 mile out.                   | —  | —  | O. lucifera.<br>M. octopunctatum.<br>C. Johnstonii.<br>Sarsia gemmifera.<br>Boreo.   | —                                   | —  | —   | Zoeae and megalop<br>stages of decapod<br>crustacea. | C. elongata. D. do.<br>do. do.<br>Centropages typicus.  | do.<br>Eggs<br>punctilucous.              | —                  |
| " 27th.    | S.W.  | 56° F              | 1 hour ebb.    | do.<br>5.50 a.m.              | —  | —  | Sarsia gemmifera.<br>S. prolifera.<br>C. Johnstonii D.<br>Obelia lucifera D.   | —                                   | —  | Sagitta bipunctata<br>3 †                     | do.  | C. elongata A. D. longiremus.   | do.                                       | —                  |
| July 2d.   | N.W.  | 54° F              | do.            | Harbour—9 fms.                | —  | —  | Sarsia prolifera.<br>S. gemmifera.<br>C. Johnstonii.<br>O. lucifera.   | Plutei.                             | —  | —   | do.  | do. do.<br>Cypris stage of<br>Balanus.  | Veligers.<br>Echinophoron<br>diaphanum 1. | Appendicularia D.  |
| " 11th.    | S.E.  | 54° F              | 2 hours flood. | 3 miles out.<br>18 fms.       | —  | —  | Lar. sabellorum.<br>Sarsia prolifera D.<br>S. gemmifera D.<br>O. lucifera.<br>Boreo.                                       | do.<br>several stages.              | —  | Sagitta bipunctata.                           | Porcell. longicornis,<br>2 stages.                   | C. elongata. D. longiremus.<br>A. Pateronii.  | Veligers.                                 | do.                |
| " 17th.    | N.W.  | 59° F              | 1 hour ebb.    | —                             | —  | —  | Sarsia prolifera D.<br>S. gemmifera D.<br>S. tuberosa  | do.                                 | Acanularia 1.<br>Leucore ciliata.              | do.   | Pennis larv.   | do.<br>Podon with winter egg.   | do. A.                                    | do.                |
| " 19th.    | N.E.  | 61° F              | h. w.          | 1 mile S.E. of<br>Lighthouse. | —  | —  | do. do.<br>Solmaris.   | do.                                 | —  | —   | do.  | do.   | —   | —                  |
| " 20th.    | S.W.  | 63° F              | 1 ebb.         | Harbour—10 fms.               | Ceratium tripos A.                                 | —  | Willis A.<br>Sarsia prolifera D.<br>S. gemmifera D.<br>Phialidium temperarium.<br>Endosomes of M.<br>Athaliae.             | do.                                 | 1 didium.<br>Tosaris 1.<br>Terebellid larva 1. | do.   | Balanus.   | C. elongata. Thalassia mysis.<br>O. spinifrons. Corycaeus anglicus.<br>C. finmarchicus. Podon with subzygos.        | Veligers A.<br>Eggs<br>punctilucous.      | —                  |
| Aug. 7th.  | W.    | 58° F              | 1 flood.       | Harbour.                      | —  | Acanthometra<br>elastica †                             | Sarsia prolifera C.<br>S. gemmifera C.<br>M. Athaliae.<br>Willis.<br>O. lucifera.  | —                                   | Spid larv.<br>re. spec.<br>Terebellid larva.   | —   | do. do.  | —   | do. do.                                   | Appendicularia.    |
| " 16th.    | E.    | 59° F              | do.            | do.<br>6.30 a.m.              | —  | —  | O. lucifera.<br>M. athaliae.   | Plutei<br>advanced stages           | —  | —   | Balanus.   | O. spinifrons. C. elongata.<br>A. Pateronii. D. longiremus.<br>Eudae and Podon (both winter eggs).                  | Veligers.                                 | —                  |
| " 20th.    | —     | 60° F              | do.            | Harbour.                      | —  | A. elastica. †   | do. do.<br>C. Johnstonii.  | do.                                 | Leucore ciliata.                               | —   | do.<br>Pennis larv.                                  | do. do.<br>do. do.<br>Centropages hians.  | do.                                       | —                  |
| " 31st.    | N.    | 60° F              | do.            | Harbour.<br>8 a.m.            | —  | Acanthometra<br>elastica. †<br>Nectibia<br>miliaris A. | Margellium octopunctatum.  | Plutei<br>advanced and<br>changing. | Pilidium.<br>Actinotrocha.                     | Sagitta bipunctata.                           | Megalop.   | Das longiremus. C. anglicus.<br>Eudae and Podon.  | —   | Appendicularia.    |
| Sept. 4th. | E.    | 60° F              | do.            | Harbour.                      | Peridinium<br>reticulatum.<br>P. spiniferum.       | A. elastica.<br>N. miliaris.<br>D.                     | —  | do.                                 | Pilidium A.                                    | do.   | —  | do. do.<br>Centropages hians A.<br>C. elongata. T. mysis.   | —   | do.                |
| " 10th.    | N.W.  | 61° F              | 1 ebb.         | 1 mile out                    | —  | —  | Obelia lucifera.<br>M. athaliae 1.   | do.                                 | do. A.   | Megalopa stage of<br>Porcellanid longicornis. | —  | C. elongata. Centropages 5 pieces.<br>C. anglicus. D. longiremus.   | —   | —                  |
| Oct. 31st. | S.E.  | 56° F              | h. w.          | Harbour.                      | —  | —  | M. athaliae. †<br>Obelia lucifera.   | —                                   | do. A.   | —   | —  | C. finmarchicus. C. anglicus.<br>T. mysis. D. longiremus.   | —   | do. A.             |
| Nov. 3rd.  | S.W.  | 56° F              | 1 flood.       | do.                           | —  | —  | Phialidium<br>temperarium 3.   | —                                   | —  | —   | —  | do. do.<br>do. do.<br>Monstrilla regalis. C. typicus.<br>T. mysis. †  | Veligers A.                               | —                  |
| " 13th.    | W.    | 54° F              | h. w.          | do.                           | —  | —  | do. 2.   | —                                   | —  | S. hexaptera A.                               | —  | C. anglicus. † 2 Microscopic Calan.<br>C. finmarchicus. C. elongata D.<br>D. longiremus. C. anglicus.<br>C. typicus | —   | —                  |
| " 21st.    | N.    | 51° F              | 1 hour flood.  | do.                           | —  | —  | —  | —                                   | —  | —   | —  | C. elongata. C. anglicus.<br>male specimens only.   | —   | Appendicularia.    |
| Dec. 4th.  | W.    | 51° F              | do.            | do.                           | —  | —  | M. athaliae. †   | —                                   | —  | S. hexaptera.                                 | —  | —   | —   | —                  |
| " 10th.    | S.W.  | 50° F              | flood.         | —                             | —  | —  | —  | —                                   | —  | do. 2†  | —  | C. elongata. D. longiremus.   | —   | —                  |

In the above table the following symbols have been used—

\* Ova attached to abdomen; † sexual elements in a ripe condition.  
† These specimens recorded were dead.

A.—Few. B.—Average.  
C.—Many. D.—Exceptionally numerous.

| 1894 | 21.0 K. | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 |
|------|---------|------|------|------|------|------|------|------|------|
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895    | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |

| 1894 | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
|------|------|------|------|------|------|------|------|------|------|
| 1894 | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |
| 1894 | 1895 | 1896 | 1897 | 1898 | 1899 | 1900 | 1901 | 1902 | 1903 |

ally large, some measuring 30 m.m. in length. Most of the *G. castanea* were of a distinct dark chocolate colour, and the little white spots which were sprinkled over the dorsal area were most conspicuous against this dark back-ground. The coils of spawn deposited by the two first-named species were most abundant about the water-line of these vessels. No coils of the spawn of *G. nodosa* were noticed.

On the 13th July during the low-water spring tide, a single specimen of *Eolis punctata* was found near the end of the northern breakwater crawling on the under surface of a large flat stone. This specimen measured 27 m.m. in length. This was the only one of the species seen.

Towards the end of March, medium-sized specimens of *Archidoris tuberculata* were fairly plentiful along the fore-shores of the harbour, and especially numerous on the vertical granite wall of the eastern breakwater during low-water.

An uncommon mollusk, *Doris Johnstonii*, was fairly plentiful on a bank composed of stones and oyster shells, exposed during the spring tides of March, about half a mile to the north east of St. Just Creek.

With this communication my work at Falmouth ends. I have now transferred my effects to Newquay, where, under healthier surroundings and purer ocean water, richer and more varied lists of plankton captures may be confidently expected.

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#### REFERENCE.

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PART REGISTER OF ST. BURYAN COLLEGE, *temp.* DEAN  
ROBT. KNOLLYS, 1473-1485.

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MS. Ee. 5. 34 Cambridge University Library.

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(begins)

cuidam Magistro Johanni Donmow pure contulit eundemque Magistrum Johannem canonicum et prebendarium canonicè instituit in eadem.

xxvj<sup>o</sup> die decembris anno domini proxime supradicto idem decanus dictum Magistrum Johannem donmow per personam Mathei Johannis<sup>1</sup> eius procuratorem<sup>2</sup> in corporalem possessionem dictorum canonicatus et terciè minoris prebende realiter induci fecit pariter et mandavit.

vltimo die mensis february anno domini Millesimo cccc<sup>o</sup> lxxiiij<sup>o</sup> idem decanus ecclesie siue capelle predictè canonicatum et prebendam de Trethyne in ecclesia siue capella predicta quos Magister henricus Gorlyng preobtinuit per mortem eiusdem henrici vacantes cuidam domino Johanni howyll Capellano pure contulit eundemque dominum Johannem Canonicum et prebendarium canonicè instituit in eadem (*sic*).

xx<sup>o</sup> die mensis marci anno domini Millesimo cccc<sup>o</sup> lxxiiij<sup>o</sup> Idem decanus dictum dominum Johannem howyll per personam willelmi hethhurd eius procuratorem in corporalem possessionem dictorum<sup>3</sup> canonicatus et prebende realiter induci et inuestiri fecit pariter et mandavit.

xv<sup>o</sup> die mensis Junii anno domini Millesimo cccc<sup>o</sup> lxxiiij<sup>o</sup> in domo habitacionis Thome Brown in et infra parochiam sancti Gregorii Ciuitatis Londoniarum in dicti Thome publici [auctoritate

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1. MS. John.

2. Clerical error for *procuratoris*. It will be noted that errors are frequent in the MS.

3. MS. dict', may be *dicte* or *dictorum*.

apostolica]<sup>4</sup> notorii et testium fidedignorum presencia personaliter constitutorum Magister Johannes Eston quondam Canonicus vt asseruit et prebendarius prebende de Rospaynell in capella et ecclesia colligiata (sic) sancte Beriane predicta volens solidare et stabilire quod prius fecerat dictum Canonicatum et prebendam de Rospaynell predictam in manus dicti decani sui in hac parte ordinarii quatenus de iure aut de facto vltius poterat in scriptis sponte simpliciter et pure iterum resignavit et ab omni iure titulo et possessione suis in dicta prebenda per eum prehabitis totaliter recessit et eisdem vt prius omnino renunciavit instrumentum quoque publicum super sua huiusmodi resignacione et renunciacione fieri procuravit et obtinuit atque de eodem dicto suo huiusmodi ordinario notificavit et intimavit cuius instrumenti publici tenor in presenti subscribitur et continetur registro quam quidem resignacionem et renunciacionem predictam idem decanus et ordinarius antedictus quatenus de iure aut de facto poterat iterum admisit et acceptavit eosdemque canonicatum et prebendam Magistro Willelmo Spryg in legibus bacallario pariter et licenciato quatenus de iure aut de facto potuit ex superabundanta cautela iterum vt prius contulit atque eum in corporalem possessionem eorundem canonicatus et prebende induci et inuestiri iterum fecit et mandavit cautela ex superhabundanti.

Tenor instrumenti super huiusmodi Resignacione sequitur et est talis: In dei nomine Amen.—per presens publicum Instrumentum cunctis appareat euidenter quod Anno Domini Millesimo quadringentesimo septuagesimo quarto Indiccione septima pontificatus sanctissimi in Christo patris et domini nostri domini Sixti diuina prouidencia pape quarti anno tercio<sup>5</sup> mensis Julii die quintodecimo In domo habitacionis mei Thome Browne infra parochiam sancti Gregorii Ciuitatis londoniarum situata meique eiusdem Thome Notarii publici subscripti et testium infrascriptorum presencia constitutus personaliter discretus vir dominus Johannes Eston Capellanus ac Canonicus vt asseruit ecclesie collegiate siue libere capelle Regie Sancte Beriane et prebendarius prebende de

4. The words within square brackets are crossed out later, no doubt after the Reformation—perhaps at the time when Henry 8 ordered Thomas of Canterbury's name to be struck out of all books, &c.

5. *tercio* is written over an erasure.

Rusparell in eadem *Exoniensis* diocesis quasdam Resignacionem et dimissionem simul in scriptis redactas palam et publice fecit legit et interposuit ipsosque canonicatum et prebendam cum suis iuribus et *pertinenciis* vniuersis sub modo et forma infrascriptis resignauit et dimisit ac cetera fecit sub hac forma *verborum* In dei nomine amen. Coram vobis *autentica* persona et testibus fidedignis hic *presentibus* Ego Johannes Eston Capellanus ac Canonicus ecclesie collegiate siue libere capelle regie Sancte Beriane et prebendarius prebende de Rusparell in eadem *Exoniensis* diocesis volens et affectans ex *certis* causis veris et *legitimis* me et animam meam in hac parte mouentibus a iure titulo et possessione meis in *dictis* canonicatu et prebenda prehabitis penitus exui et exonerari eosdem canonicatum et prebendam cum suis iuribus et *pertinenciis* vniuersis In manus venerabilis viri Magistri Roberti Knollys decani dicte ecclesie collegiate siue libere capelle regie antedicte, aut alterius cuiuscunque resignacionem *dictorum* canonicatus et prebende potestatem admittendi habentis, pure sponte simpliciter et absolute ac ex mea mera libera et spontanea voluntate resigno et eos dimitto ac a iure titulo et possessione meis prehabitis in eisdem renuncio et ab eisdem totaliter recedo in hiis scriptis. Acta sunt hec prout supra inscribuntur et recitantur sub anno domini Indiccione pontificatu mense die et loco predictis presentibus tunc ibidem discretis viris Willelmo Coke generoso et Johanne Bevylye Notario publico londoniis commorantibus testibus ad premissa vocatis specialiter et Rogatis.

Et Ego Thomas Browne clericus Norwicensis diocesis publicus [auctoritate apostolica]<sup>6</sup> notarius premissis omnibus et singulis dum sic vt premittitur sub anno domini indiccione pontificatu mense die et loco predictis agebantur et fiebant vnacum prenominate testibus presens personaliter interfui. Eaque omnia et singula sic fieri vidi et audiui scripsi publicauit et hanc publicam formam redegit Signoque et nomine meis solitis et consuetis signaui rogatus et requisitus in fidem et testimonium omnium premissorum.

Vicesimo sexto die Mensis Maii Anno domini Millesimo cccc<sup>mo</sup> Septuagesimo octauo Idem decanus Ecclesie siue Capelle predictae

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6. These words within brackets crossed through later.

Canonicatum et prebendam de Rospaynell in eadem quos Magister Willelmus Sprige in legibus licenciatus nuper preobtinet per mortem eiusdem Magistri Willelmi vacantes cuidam Magistro Willelmo Wagott in decretis Bacallario pure contulit Eundemque Magistrum Willelmum Wagott canonicum et prebendam canonicè instituit in eadem cum suis iuribus et pertinenciis vniuersis.

Vltimo die Mensis Maij Anno domini supradicto idem decanus dictum Magistrum Willelmum Wagott in corporalem possessionem dicte Canonicatus et prebende de Rospaynell predictæ per personam Willelmi Hethurde literati, suum procuratorem ad hoc legitime constitutum<sup>7</sup> realiter induci fecit pariter et mandauit.

Penultimo die mensis Augusti Anno domini Millesimo cccc<sup>mo</sup> septuagesimo octauo Idem Decanus ecclesie siue Capelle predictæ<sup>8</sup> Canonicatum et prebendam de Trethine in eadem quos dominus Johannes howell nuper preobtinet per mortem eiusdem Johannis vacantes cuidam Magistro Johanni Combe in decretis bacallario pure contulit Eundemque Magistrum Johannem Combe canonicum et prebendam canonicè instituit in eadem cum suis iuribus et pertinenciis vniuersis.

[blank] die mensis [blank] anno domini supradicto idem decanus dictum Magistrum Johannem Combe in corporalem possessionem dicte Canonicatus et prebende de Trethine predictæ per personam Willelmi Hethurde literati suum procuratorem (*sic*) ad hoc legitime constitutum (*sic*) realiter induci fecit pariter et mandauit.

Vicesimo primo die mensis Nouembris Anno domini Millesimo cccc<sup>o</sup> septuagesimo octauo Idem decanus ecclesie siue Capelle predictæ canonicatum et prebendam quos Magister Owynus lloid nuper preobtinet per mortem eiusdem Magistri Owyni vacantes cuidam Willelmo Clouyle Clerico pure contulit Eundemque Willelmum canonicum et prebendam canonicè instituit in eadem cum suis iuribus et pertinenciis vniuersis.

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7. Clerical error for *Sui procuratoris x x x constituti*.

8. I take this word to qualify *capelle*—it may, however qualify *canonicatum*.

Decimo septimo die mensis *Januarii* Anno domini *Millesimo* *cccc*<sup>mo</sup> *septuagesimo octauo* Idem decanus ecclesie siue Capelle *predicte* *Canonicatum* et *prebendam* quos *Magister* *Owynus* *lloid*<sup>9</sup> *dictum* *Willelmum* *Clouville* *Clericum* in *corporalem* possessionem *dictorum* *Canonicatus* et *prebende* *per* *personas* *Johannis* *poulyn* et *Martini* *pendre* *coniunctim* et *diuisim* *suos* *procuratores* *ad* *hoc* *legitime* *constitutos* *realiter* *induci* *fecit* *pariter* et *mandauit*.

Quarto die *Mensis* *februarii* Anno domini *Millesimo* *cccc*<sup>mo</sup> *lxxx*<sup>mo</sup> *quarto* Idem decanus ecclesie siue Capelle *predicte* *Canonicatum* et *prebendam* de *Rospeynell* in eadem quos *Magister* *Willelmus* *Wagotte* *nuper* *preobtenuit* *per* *mortem* *eiusdem* *Magistri* *Willelmi* *vacantes* *cuidam* *Magistro* *Johanni* *Combe* in *legibus* *Bacallario* *pure* *contulit* *enndemque* *Magistrum* *Johannem* *Combe* *Canonicum* et *Prebendarium* *canonice* *Instituit* in eadem *cum*  *suis* *Juribus* et *pertinenciis* *vniuersis*.

Quinto die mensis *Marci* Anno Domini *Millesimo* *cccc*<sup>mo</sup> *lxxx*<sup>o</sup> *quarto* Idem Decanus ecclesie siue Capelle *predicte* *Canonicatum* et *prebendam* quos *Magister* *Willelmus* *Wagot* *preobtenuit* *dictum* *Magistrum* *Johannem* *Combe* in *corporalem* *possessionem* *dicte* *Canonicatus* et *prebende* de *Rospeynell* *predicte* in *personam* *Magistri* *Willelmi* *Nycoll* *Rectoris* de *Mawgan* in *Keryer* *procuratoris* *sui* *ad* *hoc* *legitime* *constituti* *per* *dominum* *Johannem* *Cowlyng* *Capellanum* *Curatum* *ecclesie* *siue* *Capelle* *predicte* *realiter* *induci* *fecit* *pariter* et *mandauit*.

Quinto die *Mensis* *februarii* Anno domini *M*<sup>l</sup>. *cccc* *lxxx*<sup>mo</sup> *quarto* Idem decanus ecclesie siue Capelle *antedicte* *Canonicatum* et *prebendam* de *Trethyne* in eadem quos *Magister* *Johannes* *Combe* *nuper* *preobtenuit* *per* *resignacionem* *dicti* *Magistri* *Johannis* *Combe* in *manibus* *suis* *factam* et *per* *ipsum* *admissam* *iam* *vacantes* *Magistro* *Nicholao* *Gosse* in *Ecclesia* *Cathedrali* *Exoniensi* *Cancellario* *pure* *contulit* *eundemque* *Magistrum* *Nicholaum* *Canonicum* et *prebendarium* *canonice* *Instituit* in eadem *cum*  *suis* *Juribus* et *pertinenciis* *vniuersis*.

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9. Apparently words are omitted here. The whole paragraph is full of errors.



Quinto die Mensis Marcii Anno domini M<sup>l</sup> cccc<sup>mo</sup> lxxx<sup>mo</sup> quarto dictus decanus Ecclesie siue Capelle predictae Canonicatum et prebendam de Trethyne quam (*sic*) Magister Johannes Combe preobtinuit predictum Magistrum Nicholaum Gosse ecclesie Cathedralis Exoniensis predictae Cancellarium in corporalem possessionem dictorum Canonicatus et prebende per personam Magistri Willelmi Nicoll procuratoris sui ad hoc legitime constituti realiter induci fecit pariter et mandauit per dominum Johannem Cowlyng capellanum ibidem.

xvj<sup>to</sup> die mensis Aprilis Anno domini M<sup>l</sup> cccc lxxx<sup>mo</sup> quinto Idem decanus ecclesie siue Capelle predictae Canonicatum et prebendam terciam Minorem appellatam quos Petrus Seyntabyn preobtinuit in Ecclesia siue Capella predicta per resignacionem eiusdem Petri vacantes cuidam domino Hugoni lynke clerico pure contulit eundemque dominum Hugonem Canonicum et prebendarium canonicis instituit in eadem cum suis Juribus et pertinenciis vniuersis.

Decimo nono die Mensis Aprilis Anno domini supradicto dictus Decanus ecclesie siue Capelle predictae predictum dominum Hugonem lynke clericum in persona sua propria in corporalem possessionem dictorum Canonicatus et prebende per dominum Edwardum Davy Capellanum realiter Induci fecit pariter et mandauit.

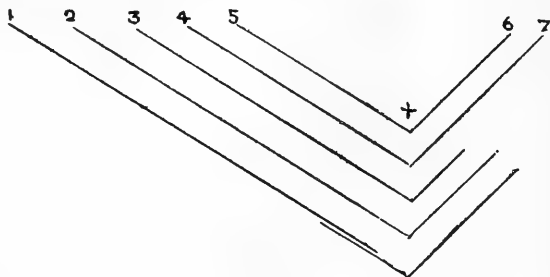
duodecimo die Mensis nouembris Anno domini Millesimo cccc<sup>mo</sup> Octuagesimo quinto Magister Robertus Knollys decanus Ecclesie siue Capelle predictae Canonicatum et prebendam de Trethyne in Ecclesia siue Capella predicta quos Magister Nicholaus Gosse in Ecclesia Cathedrali Exoniensi Cancellarius preobtinuit per mortem eiusdem Magistri Nicholai vacantes cuidam Magistro Willelmo Sylke legum doctore pure contulit eundemque magistrum Willelmum Sylke Canonicum et prebendarium canonicis Instituit in eadem cum suis Juribus et pertinenciis vniuersis.

Quintodecimo die Mensis Nouembris Anno domini M<sup>l</sup> cccc<sup>mo</sup> Octuagesimo quinto supradicto dictus decanus Ecclesie siue capelle predictae predictum Magistrum Willelmum Sylke legum doctorem in corporalem possessionem dictorum Canonicatus et prebende per

*personam Magistri Willelmi Nycoll procuratoris sui ad hoc legitime constituti realiter Induci fecit pariter et mandavit per dominum Johannem Cowlyng curatum ibidem.*

(Here ends the eleventh page of a six-leaf quire, of which the twelfth page is blank. It is impossible to say whether it was originally an eight-leaf quire, of which the first and last leaves are now gone).

The structure of the rest is as follows:—



Leaf 1 (on the guard of a leaf cut out), 2, 3, 4, blank, 5<sup>a</sup> blank; *Ea que inferius* etc (p. 92 hereof) 6<sup>a</sup>—7<sup>a</sup> “*Edwardus dei gratia*” etc. (p. 94 hereof) 7<sup>b</sup> blank: 8, 9, 10 cut away.

*Ea que inferius scribuntur inveniuntur in libro qui dicitur Domesday pro quibusdam liberis capellis domini regis.*

Beriana. Canonici *sancte beriane tenent eglosbirie que fuit libera Tempore Regis Edwardi. Ibi est vna hida terre octo caruce et sex<sup>10</sup> et sex bordarii et viginti acre pasture et valent x<sup>s</sup>. quando comes terram illam occupat valet quadraginta solidos.*

*Alie evidencie tam pro quadam dedicatione eiusdem capelle quam pro quadam cartula regis ethelstani et pro articulis dictarum dedicationis et capelle.*

10. The word that fills this space can be made nothing of. It looks like *buntuli* or *bunculi*. Domesday Book (from which this is evidently intended to be an extract) has *villani*. The scribe perhaps tried to facsimile that which he could not read.

*primus articulus.* Willelmus<sup>11</sup> miseratione diuina exoniensis episcopus vniuersis etc. Nouerit vestra deuocio quod nos gracia dei adiuti dedicauimus presentem ecclesiam sancte beriane in Cornubia<sup>12</sup>.

*secundus articulus.* Item notificamus omnibus et singulis nos dedicasse (sicut predictum est) eandem ecclesiam ad confirmationem protectionem et defensionem sanctuarii et libertatis sue ab antiquo sibi concessorum a felicis et clare recordacionis ethelstano rege anglorum et tenorem concessionis ipsius sicut in ipsa ecclesia scriptum vidimus presenti autentico de uerbo ad uerbum fecimus ad firmitatem et fidem perpetuam annotari.

#### Tenore omisso causa breuitatis

*tercius articulus* Ego ethelstanus rex anglorum etc. <sup>ad pro</sup> petitione nobilium meorum dedi quandam particulam terre ecclesie sancte beriane ea videlicet condicione ut libera sit ab omni censu nisi ab oratione quam clerici michi promiserunt id est centum missas et centum psalteria et quotidianas oraciones Ego ethelstanus rex totius britannie hoc cirographum cum signo sancte crucis ✠ corroborauit Ego Huselmus<sup>13</sup> archiepiscopus consensi et subscripsi. Et ego ecketset<sup>14</sup> archiepiscopus affirmaui et subscripsi cum pluribus aliis. Et ego ethelstanus dux testis. Et ego Elsihe<sup>15</sup> dux testis cum pluribus aliis.

11. William Briwere, Bp. of Exeter, 1224-1244

12. See a full copy of this Regr. Grandisson, ii. 25*b*, Hingeston-Randolph's edition, vol. 1, p. 84.

13. *Huselmus*, probably stands for *Hulfelmus* or *Wulfelmus*, Archbishop of Canterbury, 923-942.

14. *echelset*, is probably *Oscytel*, Archbishop of York, 956-971, but if so, the dates indicate an extraordinary error on the part of the scribe. The word is not clear, but is evidently not *Ethelfel*, as in copy at Exeter.

15. *Elsihe* (in MS. *Elsh*). All these names should be compared with those in the Exeter copy (Hingeston-Randolph ut supra) where the confusion though not identical is equally great.

quartus Et nos ad innouationem et perpetuam memoriam et ne  
 articulus preuilegium (*sic*) et scriptum sanctuarii et libertatis  
 predicte ab antiquo constitutorum deperire possent propter  
 vetustatem presens memoriale autenticum in missali et  
 in autenticis libris sepedicte ecclesie precipimus annotari  
 ut maneant valeant et sint in testimonium veritatis.

Data dedicacionis anno domini Millesimo cc<sup>mo</sup> tricesimo octauo.

Data carte regis predicti anno ab incarnatione domini nostri iesu  
 Christi D cccc xl<sup>o</sup> iij<sup>o</sup> 16 [xix lis] 17 cicli vij<sup>o</sup> indictione ija mei vero  
 imperii vj<sup>o</sup> cicli lunaris v<sup>o</sup> xj<sup>a</sup> luna pridie nonas octobris in villa  
 que dicitur Kyngstona.

Plures alie sunt evidencie in placitis contente.

Edwardus dei gratia rex anglie et francie et dominus hibernie dilectis  
 sibi Ricardo leycy Thome Collys<sup>18</sup> Johanni Lannargh et Roberto  
 Trenyhton<sup>19</sup> in decretis Bacalariis ac Thome Matta et Ricardo  
 Martyn In iure Canonico Scolaribus Salutem Quia datum est nobis  
 intelligi quod in libera capella nostra Sancte Beriane virginis in  
 Comitatu Cornubie que ab omni iurisdictione ordinaria exempta  
 est et immunis In qua capella ac prebendis maneriis et membris  
 eiusdem quam plures defectus imminent hiis diebus et quam plura  
 terre tenementa redditus et possessiones dictarum capelle et  
 prebendarum per Custodes et firmarios earundem vastantur et  
 dilapidantur ac diuersa libertates immunitates exempciones et  
 priuilegia eidem Capelle concessa per incuriam et negligenciam  
 decanorum eiusdem capelle qui pro tempore fuerint libri et  
 vestimenta et alia ornamenta capelle predicte ob defectu [sic]  
 custodie surripiuntur et alias distrahuntur et quod ministri

16. These dates are hopelessly confused, as they are also in the copy at Exeter. The 6th year of Athelstan was 931, and the other guides to the date (the indiction, &c.) are equally wrong. Moreover, he died in 940, i.e., 3 years before the date here given for this charter.

17. xixlis = decem novennalis. This has had a line drawn through it, and above it is written what is apparently meant for Solaris, as if the copyist had again tried to facsimile what he could not read.

18. Perhaps for Collys = Collyns.

19. or Treuython.

Officiarii capelle illius vitam ducunt nimis dissolutam et officiis diuinis in eadem capella non intendunt vt tenentur Et quod penciones oblaciones redditus et emolumenta ad dictam capellam pertinentia que in reparacionem Capelle illius defectuum ac solucionem communiarum et stipendiorum ministrorum eiusdem Capelle ac aliorum omnium ibidem emergencium conuerti deberent aliis vsibus applicantur in diminucionem [Capelle illius<sup>20</sup>] diuinorum obsequiorum Elimosinarum et aliorum piorum operum in eadem Capella pro animabus progenitorum nostrorum predictorum abolim stabilitorum in detrimentum capelle illius ac contra ordinaciones et statuta de obseruanciis dictam capellam tangentibus antiquitus edita Nos premissa si sic habeant vltcrius nolentes relinquere incorrecta ac de vestris circumspeccione et industria confidentes assignauimus vos quinque quatuor tres et duos vestrum ad dictam capellam quam in capite quam in membris ac decanum Canonicos Vicarios et alios ministros et officarios eiusdem Capelle necnon ad requirendum per sacramentum proborum et legalium hominum de dicto Comitatu Cornubię per quos rei veritas melius sciri poterit nec non per examinacionem Ministrorum Capelle predictę et parochianorum eiusdem super defectibus in Capella prebendis et maneriis ac membris predictis existentibus per quos et quibus temporibus defectus illi deueniunt ac de gestu decani prebendariorum et aliorum ministrorum predictorum nec non custodum et firmariorum Maneriorum ac terre et tenementorum ad Capellam predictam pertinencium cum et que maneria terre et possessiones dicte Capelle vt premittitur collata siue dissipata vastata alienata seu alias elongata que eciam libertates exempciones immunitates seu priuilegia eiusdem Capelle amissa existunt et per quos et in quorum defectu quo tempore qualiter et quomodo et ad omnia terras et tenementa et possessiones que sic subtracta conelata alienata dissipata et elongata ac eciam libertates immunitates exempciones et priuilegia que sic amissa inveneritis, in statum debitum reducendum et reformandum nec non ad omnia alia et singula que premissa seu eorum aliquod concernunt aut concernere poterunt faciendum et exequendum et ad certificandum nos in Cancellaria nostra de toto facto nostro<sup>21</sup> in premissis. Et ideo vobis mandamus quod ad dies quos vos quinque quatuor tres vel duo

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20. Words in brackets are crossed out.

21. Error for *vestro*.

*vestrum ad hoc providentes ad dictam capellam ac ecclesias et capellas ab eadem capella dependentes accedentes premissa omnia et singula faciatis et expleatis in forma predicta Mandauimus enim vicecomiti nostro comitatus predicti quod ad certos dies quos vos quinque quatuor tres vel duo vestrum ei scire faciatis venire faciat coram vobis quinque quatuor tribus seu duobus vestrum in capella predicta Tot et tales probos et legales homines de Comitatu predicto per quos rei veritas in premissis melius sciri poterit et inquiri, et etiam decano et capitulo capelle predictae quod in omnibus et singulis premissis vobis quinque quatuor tribus vel duobus vestrum pareant intendant et respondeant In cuius rei testimonium has literas nostras fieri fecimus patentes Teste me ipso apud Westmonasterium xiiij<sup>o</sup> die Julij Anno nostri Tercio decimo.*

*Edwardus dei gratia Rex anglie et francie et Dominus hibernie dilectis sibi Ricardo laycy Thome Collys Johanni Iannargh et Roberto Trenythen in decretis Bacalariis ac Thome Mata et Ricardo Martyn in iure canonico scolaribus et eorum cuilibet Salutem licet nos nuper ex certis causis nos tunc mouentibus per literas nostras patentes assignauerimus vos quinque quatuor tres et duos vestrum ad Capellam nostram sancte Beriane Virginis in Comitatu Cornubie que ab omni iurisdictione ordinaria exempta est et immunis tam in capite quam in capite [sic] quam in membris ac decanum Canonicos vicarios et alios Ministros et Officiarios eiusdem Capelle ac aliarum ecclesiarum et capellarum ab eadem Capella dependentium visitandos et ad superuidendos statum earundem ac librorum et aliorum ornamentorum eiusdem Capelle et ad quedam alia in literis nostris predictis specificata faciendum et exequendum prout in literis predictis plenius continetur. Quibusdam tamen aliis certis de causis Nos ammouentibus vobis et vestrum cuilibet mandamus firmiter iniungentes quod cuicumque executioni literarum nostrarum predictarum in aliqua parte earundem faciendum supersedeatis omnino volumus enim vos et vestrum quemlibet de omni executione literarum illarum erga nos penitus exonerari Teste me ipso apud Westmonasterium xj<sup>o</sup> die decembris anno regni xiiij<sup>o</sup>.*

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[The italics in this copy represent the extensions].

THE HARLYN BURIALS IN THE LIGHT OF RECENT  
ARCHÆOLOGICAL DISCOVERIES IN EUROPE, &c.

BY THE REV. D. GATH WHITLEY.

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The purpose of the following paper is to produce some little-known facts which may be found useful in fixing approximately the date of the burials recently discovered at Harlyn. In doing so, I shall not refer, as a rule, to recent English discoveries, as these are well known and can easily be studied, but I shall produce facts presented by the prehistoric graves and megalithic remains in Western Europe, Africa, and Asia, which cannot easily be referred to by the generality of students. The result of this investigation will be to show that the interments at Harlyn form a link in a chain of sepulchres extending over thousands of miles, bearing similar characteristics, and probably constructed during the same era. The manner of investigation is similar to that by which the approximate date of our dolmens or cromlechs may be established. In studying these monuments we should trace their geographical distribution. We should show that they form a chain along the shores of the Mediterranean through France to Great Britain, we should see that they could not have been erected before or after a certain era, and we should produce evidence from folk-lore and tradition, to show by whom they *were not* and by whom they probably *were* erected. What are the chief characteristics of the Harlyn burials? They are,—the stone slabs enclosing and sometimes covering the graves; the bent and contracted positions of the skeletons; the dolichocephalic type of the skulls; the prognathism of the face; the various trinkets, ornaments, and weapons found alongside the skeletons, as well as the height of the latter, which is from 5 feet to 5 feet 6 inches, the average being 5 feet 4 inches. Taking these as salient points, let us pass the evidence from foreign lands under review. Now, there are four great tests by which the age of prehistoric burials may be approximately established. The *first* is, the animal remains which occur with the human bones. Thus if, in undisturbed

soil, there were found lying with human skeletons, bones of the lion, elephant, or rhinoceros, we might safely conclude that the burial was of Palæolithic date, as these animals became extinct in Western Europe before the dawn of the Neolithic period. This test, however, is useless in burials of the later Stone, Bronze, and Iron ages, as the fauna of these eras was absolutely identical. This test cannot be applied at Harlyn, since only a few animal remains have been found, and these have not been identified: they are probably those of domestic animals. *Secondly* there is the test of included weapons. Bronze and iron weapons, if found in all parts of the deposit, fix its date, but stone weapons are more doubtful. Bone harpoons and darts are a better guide, for the very beautiful sets of polished bone harpoons found in the Palæolithic caves of France and Switzerland are absolutely distinct from any such implements made in later eras. Stone spear-heads are found at Harlyn as well as flints, and their evidence ought to be duly weighed, but I am not aware that any bone implements have as yet been discovered. *Thirdly* there is the evidence of the trinkets and ornaments found with the burial, for pierced shells, bits of minerals, and teeth, were used as necklaces in prehistoric times. In the Duruthy Cave in Western France human bones and a skull were found, and by their side lay a necklace of pierced teeth. Forty of these teeth were those of the bear, but three belonged to the lion. Moreover, as these teeth were carved with the well-known Palæolithic designs and representations, the Palæolithic age of the burial is clearly established. *Lastly* there is the position of the skeleton to be noted, whether it is extended, or lies in a contracted position with the knees tucked up to the chin. This is the usual form of burial of the skeletons at Harlyn. Cremation is generally referred to a later era.

The burial of the dead has been practised from the very earliest times. In cheap text books it is often stated that burial was unknown in the Palæolithic period. This is an extraordinary mistake, and reflects little credit on the knowledge of the authors of those works. It is true that there are no cases of Palæolithic burials in England; but there are other regions in the world besides the British Isles, and there are learned archaeologists besides those who dwell within the boundaries



of Great Britain. Palæolithic burials are numerous on the Continent, and in France and Belgium they form a most interesting study. One way of burying the dead in Palæolithic times, was to place the bodies, one above the other, in a natural hole, at the end of a cave, and close the aperture by a large stone slab. The sepulchre in the cave of Frontal in Belgium illustrates this.<sup>1</sup> A natural aperture at the end of the cave had been filled by sixteen bodies, the skulls of which were brachycephalic, and the opening had been closed by a perfectly fitting large slab of limestone. The chamber had, after the burial, been covered by a vast flood-deposit of yellow clay, which had forced the door-slab out of its place and buried the entrance. This yellow clay is a Palæolithic deposit, as it contains the bones of the lion and hyæna, and in many parts of the neighbourhood it is overlaid by another Palæolithic deposit, the Loess, which also contains the bones of the extinct mammalia. As the burial took place before the yellow clay was deposited, and as it is certain that the yellow clay is a Palæolithic deposit, it follows that the Palæolithic age of the burial in the cave of Frontal is unanswerably demonstrated.<sup>2</sup> It is often thought that in the Neolithic period men must have been acquainted with metal tools in order to have shaped the stone slabs which face the graves, such as we find at Harlyn. But in the cave at Frontal we find that the Palæolithic men were able with rude stone tools to form and square a limestone slab to an exact size as a door for the sepulchral chamber. Much more then could the Neolithic men frame and fit stone slabs without metal tools. The burial place in the cave of Frontal is therefore a test case which should be carefully studied.<sup>3</sup> Unfortunately it is generally ignored in English text books, little indeed to the credit of their authors!

During Palæolithic times bodies were often, also, buried stretched at full length, singly, with the arms and legs extended. This is well shown in the burial place of Solutré, near Mâcon, in Eastern France, which is undoubtedly the most wonderful relic-ground of Palæolithic man in Europe. On the top of a barren

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1. *L'Homme pendant les Ages de la Pierre*, by E. Dupont, pp. 195-201.

2. *Etudes sur les cavernes des bords de la Lesse*, 1865, by E. Dupont.

3. See also, *Étude sur l'Éthnographie de l'homme*, by E. Dupont.

hill, under a lofty rock, the soil is full of the bones of the lion, hyæna, horse, reindeer, and elephant, and at this place the bones of *at least* 100,000 horses have been discovered, many of which have been broken by man to extract the marrow. Genuine Palæolithic implements are found all through the deposit, save at the top, and human skeletons are buried at all depths. Some are enclosed in graves of stone slabs covered also with stones, like chests. Some are simply surrounded by a ring of stones and others lie stretched on ancient hearths. The skulls are large and show that a very high mental capacity belonged to these ancient men who feasted on the lion, hyæna, and elephant. The age of these Palæolithic burials is proved, also, from the fact, that when a skeleton lies on the hearth, the hearth is always the same size as the skeleton.<sup>4</sup> Strange to say, and deeply to be deplored it is, that English scientific works persist in ignoring this most wonderful burial place at Solutré, and talk about burial being unknown in the Palæolithic period! One would think that the authors of these works knew nothing of any discoveries save those made in England, twenty years ago!<sup>5</sup>

Another form of burial practised in the Palæolithic age was to place the body in a cavern in a contracted position, with the knees drawn up to the chin and the hands before the face. This is the way in which two Palæolithic skeletons were found buried in a cave at Bruniquel in France, where they lay in undisturbed cave-earth under a sheet of stalagmite, alongside of the bones of the horse, Irish elk, reindeer, and rhinoceros. Another Palæolithic skeleton in the same contracted position was found with the extinct mammalia, in the cave of Laugerie Basse, and similar Palæolithic skeletons in the same contracted positions were discovered in the caves of Spy and Chancelade. All the heads of these skeletons were dolichocephalic (like those at Harlyn). Indeed I do not know a single skeleton of the Palæolithic age, buried in the contracted position, which does not possess a dolichocephalic skull. Burial in the contracted position is therefore a survival from the Palæolithic period.

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4. Ferry—*L'Age du Renne en Mâconnais*.

5. There is a good account of Solutré in Joly's *Man before Metals*. (International Scientific Series). *Edd.* See also *The Age of the Mammoth*, by J. Southall, chap. vii.

But the Harlyn sepulchres cannot be of the Palæolithic age, because they contain no Palæolithic animal remains. The human remains also are different. The skeletons found at Cattedown (Plymouth), are genuine remains of Palæolithic men and they are quite different from the Harlyn bones and skulls.<sup>6</sup> Thus, the Cattedown skulls are orthocephalic, the Harlyn skulls are dolichocephalic. The Cattedown skulls are orthognathous, the Harlyn skulls are prognathous. Besides this the Cattedown skeletons (4 feet 9 inches to 5 feet) are much shorter than those from Harlyn. It is certain, therefore, that the bodies at Harlyn were not interred during Palæolithic times, since their skeletons are quite different from those of the men who lived in Devonshire during the early stone period.

The Neolithic age, is the era of burials *par excellence*, for cremation was only occasionally practised, and, judging from the enormous number of skeletons which have been found of this age, we may conclude that Western Europe was at this period very populous. Sometimes the corpses were laid one on the other in a natural orifice, the opening of which was closed by a large slab to keep out wild beasts. The well-known sepulchre of Aurignac in S. France is a good illustration of this form of burial. Frequently, at this epoch, the dead were buried in caverns, the corpses being laid on the back, at full length, with the limbs stretched out. In the cave of Nutons in Belgium, 18 brachycephalic skeletons were found in this position, and in the cave of L'Homme Mort in S. France, 50 Neolithic skeletons were discovered stretched at full length on the sand, and at Baumes Chaudes 300. The artificial grottoes of the Marne (France), which are of Neolithic age, contained no fewer than 2,000 extended skeletons.<sup>7</sup> But the form of burial which specially prevailed in the Neolithic period was, to lay the body in a contracted position, with the knees bent up towards the chin, and the hands before the face. This is the usual form of Neolithic burials in England and Ireland, and this is the usual way in which the bodies at Harlyn are buried. So characteristic of the Neolithic age is this position of the skeleton, that Professor Boyd Dawkins has declared that burials may be

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6. *Transactions of the Devonshire Association*, 1887.

7. *L'Archéologie Préhistorique*, by M. de Baye.

considered proved to be Neolithic by this contracted position alone. Apart from Harlyn, we have two specially striking cases in Cornwall. The first contracted skeleton was found in a barrow on Trevalga head, near Newquay, and has been pronounced by Mr. Borlase to be the oldest in Cornwall, and the second in an interment near Sheveock. A third doubtful case is reported from a barrow at Lesnewth, near Tintagel. Mr. W. C. Borlase has also pointed out that many of our pre-historic graves in Cornwall are too small to receive the body unless it was very much bent.

Let us now trace this contracted form of burial in Neolithic times into various countries, remembering that the characteristics of the skeletons at Harlyn are the dolichocephalic skull, and the contracted position of the skeleton. We meet with it in Scandinavia, and the cists in the dolmens in the Channel Islands, explored by Mr. Lukis, contained contracted skeletons of Neolithic age in coffins of stone slabs. In Belgium, also, the Neolithic cave of Chavaux has furnished contracted and dolichocephalic skeletons, while near by, in the cave of Nutons, lay 18 Neolithic skeletons, with brachycephalic heads, and in an extended position.<sup>8</sup> Here, then, we have two different races inhabiting Belgium during the later stone age. In France (which is the Paradise of archæologists) the Neolithic contracted burials abound everywhere. In the barrows, dolmens, and cists, they are found again and again, and are supposed to be the oldest sepultures of the Later Stone age. One case is specially striking. In the artificial grottoes of the chalk in the valley of the Marne there are 2,000 skeletons all buried in the extended manner. But there is one skeleton amongst them buried by itself, in the contracted position. Probably it belonged to a slave of an earlier race, who was buried by his fellow bondmen amongst his masters, in the old position in which his ancestors laid their dead to rest. Switzerland, also, furnishes us with Neolithic burials in the contracted position, with dolichocephalic skulls; the skeletons being often found in graves bordered by stone slabs.<sup>9</sup> The same kind of burials are found in Italy. The famous skeletons of the Mentone caves have been thought to be

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8. *L'Homme pendant les Ages de la Pierre*, by E. Dupont, p. 230.

9. *La France Préhistorique*, by E. Cartailhac, pp. 230-231.

of Neolithic age, though the fauna and weapons found with them are Palæolithic. The first of these skeletons, found in 1873, lay in the bent position, the knees being tucked up, and the head dolichocephalic. The body had been dressed for burial and lay as if in sleep. It had been painted and adorned with necklaces of shells, while weapons were placed close to the hands. From the quantity of hair found under the skeleton, it has been concluded, that the body was wrapped in the skin of some wild beast (probably a bear) when it was buried.<sup>10</sup>

Further to the east, on the Italian coast, we find the burial places of Finale, which are truly Neolithic. The skeletons are dolichocephalic and are all contracted like those of Harlyn, while the well-known Neolithic trinkets, weapons, and earthen vases were found with the skeletons. The island of Sardinia is full of Neolithic remains, "Giants' graves," and shell mounds, and among them dolichocephalic skeletons lie buried in the contracted position. Similar sepulchres and skeletons occur in the caves of Spain; and in the shell-mounds in Portugal, which have been considered to be some of the oldest relics of the Neolithic era, we find the skeletons lying in the bent-up position, and characterised, like those of Harlyn, by a skull truly dolichocephalic. The ancient inhabitants of the Canary Islands, known as Guanches, were, when first visited by Europeans, in a stone age, being ignorant of metals, and tilling the fields with bullocks' horns. They are supposed to represent a primitive dolichocephalic race which in the Neolithic period spread over Northern Africa. They buried their dead in caverns in a sitting posture, the body being placed with the knees drawn up to the chin. All Northern Africa is full of megalithic remains, Algeria containing more dolmens and menhirs than any other country in the world. In these are numerous burials, nearly all of which are characterised by the dolichocephalic head, and the contracted position of the skeleton. It is curious that Herodotus states, that in his time all the people of North Africa buried their dead in an *extended* position, except the Nasamones who laid the bodies in the graves in a sitting posture. These Nasamones, therefore, may be considered as descendants of the Neolithic inhabitants of

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10. *L'Antiquité de l'Homme dans les Alpes Maritimes*, by E. Riviere.

Northern Africa, who retained their primitive form of burial. Recent discoveries in Egypt have brought to light the remains of a prehistoric people, among whom similar burial customs prevailed. In a grave lately opened on the west side of the Nile lay a skeleton with the knees drawn up to the chin, a dolichocephalic skull, and the hands placed before the face as at Harlyn, while rough flints were placed around. The body lay on its left side, and the height, 5 feet 9 inches, curiously agreed with that of many skeletons found at Harlyn. In Palestine, also, in the land of the Ammonites, to the east of Jordan, many dolmens containing dolichocephalic skeletons, lying in the contracted position, occur.

Thus it appears that a long chain of similar burials can be traced from Palestine, along the south coast of the Mediterranean, through Spain and France, to Great Britain. All these burials are considered to be of Neolithic age, all are characterised by the dolichocephalic skull, and in them all the skeletons lie in the contracted position. These Neolithic burials are common in England, and the cemetery at Harlyn takes its place amongst them, and forms one of the many links of the long chain of burials which extends eastwards as far as Palestine. I do not see, therefore, that it is possible to avoid coming to the conclusion that the Harlyn cemetery is of Neolithic age. As far as I have been able to examine them, many of the trinkets in the Harlyn graves correspond with those found in the French sepulchres, indeed it would be easy to find on the coasts of Brittany Neolithic cemeteries, buried beneath the sand, with coffins of stone slabs, exactly like those at Harlyn.<sup>11</sup> The prognathous skulls found in the Harlyn graves, also, much resemble the prognathous skulls of Neolithic age from Denmark. Another link in the chain of evidence is very curious. We often find in the Neolithic graves in France and Switzerland, where the bodies have been placed in graves formed of stone slabs, that the heads of skeletons, here and there, have been removed, and laid in a special place in the cist. The same thing has been observed, in at least one of the graves at Harlyn, and it forms another witness to the Neolithic date of the greater portion of this burial place.

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11. *La France Préhistorique*, by E. Cartailhac, p. 207.

This statement may be doubted, because at Harlyn trinkets of bronze, iron, and even Roman pottery have been found, but we must be careful how we allow the later relics to influence our judgment, or we shall fall into strange errors. To take a few parallel cases. In the cavern of Kozarnia in Poland, the cave-earth contained the bones of the mammoth and rhinoceros, also a bronze fibula, an iron spear-head, and a Roman coin of Antoninus Pius, who was Emperor in the 2nd century after Christ. Is the coin to fix the date of the cave-earth, and must we conclude that the mammoth and woolly rhinoceros were living in Northern Europe two hundred years after Christ? Of course not; no archæologist would dream of coming to such a conclusion. Roman pottery was found in a neighbouring cave, by the side of the bones of the lion and hyæna, but the pottery had evidently been introduced at a later period. At the burial place of Solutr  bronze and Roman relics lie amongst the box tombs made of stone slabs, and side by side with the bones of the lion and elephant,<sup>12</sup> but we cannot believe that these animals were living in France in the days of the Roman occupation of that country. Beneath the dolmens in France and England Roman coins are often found, but surely no one believes that dolmen-building went on in these countries under the eyes of Romans. The Neolithic burial places in France have been ransacked again and again, during the ages of bronze and iron, and also in Roman times. The French archæologists record numerous instances of this and of later burials in the old cemeteries, while in some cases the exact amount of disturbance done in Roman days can be accurately ascertained.<sup>13</sup> Until further evidence is produced, I shall therefore regard the bronze, iron, and Roman relics at Harlyn as merely later introductions, as they have been proved to be in many French Neolithic burial places. One is led to ask, who were these people who buried in stone-faced graves, in contracted position? Were they connected with the dolmen-building race? Were they even the same people? The theory is plausible, for the distribution of the dolmens follows almost the same line, along the southern shore of the Mediterranean through Spain and France to England, as

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12. *La France Pr historique*, p. 96.

13. *Ibid.*, Chap. xvii.

that followed by the graves with contracted burials. The stone-chamber for the burial, also, is almost exactly similar to the chamber of the dolmen though on a smaller scale. At the present day we find burial in a contracted position practised by the Eskimo, and Bashkir Tartars in the north; by the natives of Laos, and by the inhabitants of the Andamans, and the Solomon Islands on the south; while in America it prevailed among the ancient Aztecs and Peruvians. All this points to a race not Indo-European or Aryan, but Turanian or Mongolian.

Be this as it may, I think that we are justified in holding, until further investigations disprove it, that the discoveries on the continent of Europe strongly testify that the burial-place at Harlyn belongs to the Later Stone Age, or Neolithic Period, although it contains some intrusive burials of a later era.



THE ANCIENT EARTH-FENCED TOWN AND VILLAGE SITES  
OF CORNWALL.

By OTHO B. PETER, Launceston, F.R.I.B.A.

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The following account of the ancient earthworks in the North Eastern or Launceston division of the county of Cornwall is the result of recent explorations in that district, and researches into the writings of the few authors who have described the rude monuments of the early inhabitants of this corner of England.

The existing remains of the homes of the old inhabitants of Cornwall carry us back to the very earliest times, when earth and unwrought stones enclosed the villages; saplings, turf, clay, and rushes formed their huts; and hard stones and bronze their cutting tools.

Mr. St. John Hope, the secretary of the London Society of Antiquaries, informs me that he knows of no good work on such earthworks as ours are, and that the spade and pick are the only means of studying them. It is only by comparing the objects known to have been dug up within and near to these ancient sites, with the prechristian relics found in other lands that the modern investigator is able to lift the cloud which has hung over the unrecorded history of our county, and to reveal to us that ages before the Roman invasion and the rise of Christianity, Cornwall must have been inhabited by a highly civilized, active and industrious people. The relics found disclose the fact that very early commerce with the Continent and the East flourished here, that the Cornish were miners, artificers in stone, bronze and iron, and able potters. They were a numerous people, and herding and farming must have been carried on by them to supply the necessary food. Earth-fenced hamlets and villages were more frequent here than in any other portion of England. Each village was linked to its neighbour by well defined track-

ways, some of which were good enough to serve the military Romans on the only occasion that one of their legions is known to have made a march through the county. They were also skilled in arms.

In Cornwall the Romans found a race\* trained in mining and in removing rocks and earth, habituated to strangers and profiting by commerce. That race they never conquered, nor did they probably wish to conquer it, for their traders were welcomed. No known excavations in Cornwall have disclosed the foundations of a Roman villa, station, or tessellated pavement, such as have been discovered in Devon and other counties, nor is there any undisputed evidence of a Roman road, or other indication of the Romans having settled here. The coins dug up at various points clearly suggest trading posts only.

The earth ramparted "Rings" and "Rounds" still to be seen throughout the county were the homes of the old Cornishmen, and no error has probably caused more historical mischief than the unfounded belief that they were ever "Camps" or "Castles" in the modern acceptation of those terms. Their towns were set on hills, and could not be hid. The rampart and the ditch were as necessary to them as the walls of a house are to us. Their main purpose was less for fighting than for residence. Their number and disposal demonstrate the extent and industry of the settled inhabitants. As to these earthen enclosures being once "town places" in the same sense as we use those words, some of them are still occupied. In Cornwall Launceston is, perhaps, the best instance. There we may see skeletons of two periods, but of one species, the ramparts of the Dunmonii, surmounted by Anglo-Norman stone walls, with precipitous dykes outside them. At St. Dennis, in Mid-Cornwall, the parish church is within an old circular entrenchment. In Devon, Exeter may be taken as a link in the chain of proof.

Superstition and fear have probably been causes of the preservation to the present day of many of our old earthworks. "To dig in one would cause bad luck, or such a storm of thunder and lightning as had never been heard before." As to their

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\* The Romans must have found in Cornwall more than one race, Celts and the races which the Celts had found here.—*Edd.*

origin the popular beliefs are that "battles had been fought on their sites," or that "the walls had been thrown over, and that the Castle had sunk down out of sight in the middle." But the Board Schools are teaching the people not to heed such idle tales, with the result, I am sorry to find, that even the sites of the parish "rounds" are now often unknown to cottagers who live close to them. Masons and roadmakers are allowed to quarry under their old ramparts for stone and no newspaper thunders, or judicial lightning flashes upon them.

In my perambulations through north-eastern Cornwall in search of these old "Rings" I have seemed to live in a new land. The Rings generally stand some distance from the modern highway and are approached by old trackways which I had never traversed before, and always lead to some hill slope commanding magnificent views. Just as in these days we travel from a tiny cluster of cottages to a spreading town, so these "Rounds," their old-time predecessors, vary in size, those inland enclosing areas of from one to fifteen acres, and those which are on the sea-cliffs from 30 to 100 acres, and even more. Their age, therefore, cannot be gauged by their dimensions, for social groups varied then as now, but the larger may be assumed to be the later examples from the implied magnitude of the population.

With regard to their forms, some few have two rings of ramparts and ditches, the inner one being of fairly regular contour, and the outer irregular, but the majority have only one rampart and ditch. Some are oval, others circular, and others square with rounded corners. Their entrances generally face towards the north-east or south-west. Many have two entrances, one opposite the other, but most of them have only one, and that one at the lowest point, so that the rain fall should drain off freely from the spaces enclosed. The skill with which their sites were selected and outworks planned so as to cover the most vulnerable points of attack is truly remarkable. They always stand on the slopes or summits of hills which either overlook the landward ends of deep coombs near trading spots along the coast, or some inland river ford and valley. Projecting sea cliffs were also used as safe places for encampments, for there are many such promontories in Cornwall with ramparts stretching across from cliff to cliff, and a ditch outside them on the land

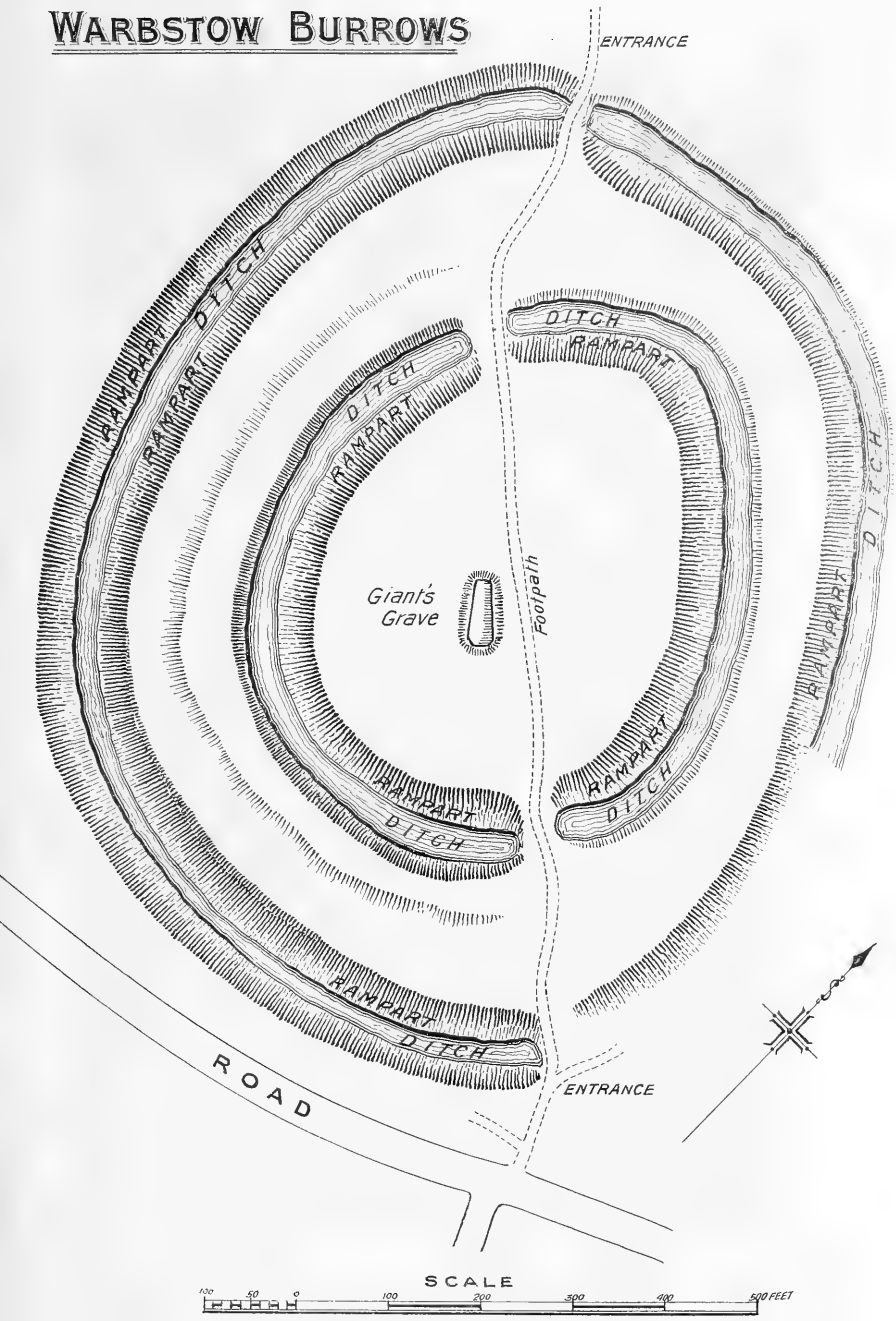
side. Near or within those earthworks which occupy the most important stations, I frequently found raised mounds, probably used for beacon fires by which communication might be made with the neighbouring villages, in the chains of them that ran across and around the county.

For the building material of their ramparts the old Cornishmen used what came handiest, earth generally, and stones mixed with the earth when they were plentiful and the soil thin, as it is on our moor uplands.

Standing on Windmill Beacon, above Launceston, let me point out the lines of the old village "rings" and "rounds" radiating from it throughout the Launceston division of the county, the boundary of which varies from ten to twenty-six miles towards the west, north, and south, and also give you an idea of their approximate size.

First we look towards the west up the Kensey Valley and catch a glimpse of the '*Ring*' on *Kestle* farm in St. Thomas parish, which I shall more particularly describe later on; then comes *Tregeare Beacon*, in Egloskerry, on the summit of a furze-brake just above Tregeare mansion. It has an inner area of 150 by 120 feet; a partially demolished rampart about five feet high, with a ditch outside 8 feet wide, surrounds it. Within the enclosure is a circular banked-up space 20 feet in diameter where beacon fires may have been lighted. From Tregeare we pass over to *Warbstow Burrows*, one of the best preserved and largest earthworks in Cornwall. It forms a crown for an uncultivated hill above Warbstow churchtown (altitude 807 feet), and stands in the fork of two roads. It has two ramparts, and two entrances. The inner area measures 370 feet by 450 feet, and is defended by a rampart 500 yards in circumference, and a ditch 20 feet wide. Outside this is an annular space, varying from 60 to 150 feet wide, with a second rampart round it 950 yards in circumference, averaging 15 feet high with a ditch outside it 15 feet wide. In the inner enclosure is a small mound known as "the Giant's grave." This magnificent "encampment" could accommodate from 800 to 1000 people and their cattle, and the outer ring would have made a convenient place for the chariot and horse races and sports, in which, no doubt, the inhabitants once indulged. The view from the ramparts takes in the country as far as the Devon and Cornish hills

# WARBSTOW BURROWS





and Morwenstowe, and back along the sea coast to *Poundstock*, where there is a large single-dyked oval "Ring" at the head of a valley leading down to Millhook (or Melhuac) Haven, on Trebarfoot farm, measuring about 180 paces in length by 100 paces in width. From here we walk along the coast road to St. Gennys parish, past a small camp at *Trenayor*, on the Dizzard headland, and on to *Tresparrett Posts*, where we find the outlines of two partly destroyed ramparted sites, one of which, situated near the road and now covered with furze, is square, and measures 150 by 170 feet, and the other called *Pengoldbury*, a little larger, is on the top of a high bank about half-a-mile away at the head of a wooded valley that runs inland from Crackington Haven. Following the highway, and on its seaward side in a line with the first of these sites, is a remarkable chain of nine large burial, or beacon, barrows, with *Tremorle Ring* just below them commanding the Boscastle creek. Continuing westward we next come to *Trenalebury "Ring,"* in Tintagel parish, on rising ground overlooking St. Nectan's Kieve Valley and Bossiney Beach, and the cliff camp at *Willapark*, and then we pass on to the *Tregear "Rounds,"* in St. Kew, which can be seen from the railway station at Port Isaac Road. This Tregear is a well preserved double vallum earthwork. It stands within a field that adjoins the road and slopes gently towards the south-east. Both its ramparts are oval in contour, the inner one enclosing a space 240 by 315 feet, and having an encircling rampart averaging 10 feet high and a ditch 8 feet wide, and the outer a rampart 15 to 20 feet high with a ditch 12 feet wide. The space between them is about 70 feet wide. Tregear has only one entrance, and the approach to it is fortified by an extended circular embanked area. About a mile off on the west and south, in fields by the side of highways, can be traced the faint outlines of *Trevinnick* and *Polrode Rounds*, also in St. Kew, which cover areas of about 240 by 250 feet. From Trevinnick we move in the direction of Roughtor (1312 feet high) and Brown Willy (1375 feet high) and note the small but well preserved station called *Castle Goff*, near Lanteglos-by-Camelford church. Goff has an internal diameter of 144 feet, and is fenced by a 14 feet high furze-clad dyked rampart. Close to it, on its eastern and western sides, are rounded hillocks, and a ramped space,

forming outworks. Two or three fields distant further down the slope of the same hill, and near the Delabole slate quarry, is *Newbury Round*, another earth-hedged circle, 420 feet in diameter. This was probably the home of the clan, while the more strongly fortified, but smaller, "Castle Goff," may have been the residence of its chief. Three miles further on along the Wadebridge road we reach the large circular hill-top fence of *Helsbury Beacon*, in Michaelstow, which has an inner area of 405 by 384 feet. Within it is a square raised platform 70 by 80 feet. The rampart of this ring is formed of large blocks of granite and earth, and is from 10 to 15 feet high, with a well formed ditch outside it. Like that of the last described Tregear, there is here a large extended outwork to protect the only entrance. From Helsbury we pass to a high ridge commanding the mouth of the Camel River, and find there *Kelly Rounds*, in Egloshayle, a double vallum structure, the ground within being now an arable field. Here the outer and inner ramparts are 35 feet apart, and not far from circular, the area covered being 396 by 330 feet. Outworks, and a small detached camp, are on its north, east, and west sides. Four miles from Kelly, on the highest ground within Pencarrow Park, in the same parish, and with a carriage drive passing through them, are the *Pencarrow Rounds*, another specimen of the double-ramparted village site. Oak trees now cover its high earth fences. The internal area of the inner oval is 144 by 165 feet, and is encircled by a high rampart and deep ditch, but the outer fence and ditch are very irregular in width, varying from 60 feet on the south to a few feet only on the north. The southern entrance is defended by a third earth fence and ditch, and about 700 feet off down the south slope is a large oblong earth-hedged inclosure which may possibly have been used as a cattle yard in connection with this "encampment."

To return to our Windmill Beacon, on the north-east, up the Tamar Valley, the first "Rings" to come in view, are two on the Devon side of the river, just opposite *Bradridge Wood*, and in the parish of St. Giles-in-the-Heath, but they have been ploughed over too frequently to make them easily definable. We come next to an oval enclosure called *Hilton Wood Castle*, in Whitstone, Cornwall. This has an inner area of 215 by 170 feet, a rampart 14 feet high, and a ditch 12 feet wide, in good preservation. On



the slope of a hill opposite Hilton Wood, in the same parish, is another earth-fenced space called *Froxston Castle*, with an area of 160 by 145 feet, but its outline is becoming year by year less distinct on account of the site being used for tillage. Week St. Mary, which adjoins Whitstone parish, has three village rounds, one at *Ashbury Down* covering a space of four acres, and having a well-formed vallum and dyke, another at *Swannacot* with an area 150 by 130 feet and a bank and ditch, and a smaller one close to the church, the last two being rather obscure. In Launcells, on Scorsham farm, is a peculiar earthwork called *East Leighburys*, consisting of three enclosures joined and communicating one with another; the middle one is the smallest, and has an area of 126 by 108 feet, and each of the other two is 204 by 144 feet. At the head of a coombe in the same parish, on *Hobbacott farm*, is a small ploughed down village site, and in Stratton there is an oval encampment called *Yerdbury*, 327 by 250 feet internally. From Stratton we travel on through *Poughill* and *Kilkhampton*, where there are remains of no less than five oval shaped single ramparted "rings," occupying high points along the valley of the Strat and the old trackway to Stowe Barton. In addition to these there is at the head of Stowe Coombe, just below Penstowe House, an earthwork which differs in construction from all others that I have seen, in that it can only have been used for defence, and not as a dwelling place. This remarkable earthwork caps a very steep-sided conical hill overlooking a sea creek where boats could land, and probably formed the fighting fort of the numerous clans who dwelt in the immediate neighbourhood. It measures internally about 100 by 400 feet, and has semi-circular ends, one entrance and a ditch outside its rampart. The space inside is filled with large rounded hillocks, that rise about 30 feet above the level of the vallum.

South-west of our Windmill Beacon, *Battle Ring*, on Brockle Farm, in Southpetherwin, is first in the line of sight. It forms a complete circle 200 feet in diameter, but the plough has here again almost destroyed the outline. In *Trelaske Wood*, Lewannick, is an eggshaped enclosure, near the Inney river, measuring internally 250 by 150 feet. Within the same parish are two other sites. One just above Polyphant freestone quarry on *Trethinna Farm* is intersected by hedges and cannot easily be

traced. It covers an area of about 300 by 180 feet. The other is a mile or two distant in an oak coppice close to the Lynher river near Knighton, called *Upton Castle*, and is a rounded dyked enclosure, 80 feet in diameter, hedged around with rough blocks of granite, and situated on a boulder-covered hillock. Part of its site is said to have been subsequently used by the prior and convent of S. Stephen, Launceston, as a monk's cell. On *Langstone Farm*, near Coad's Green, in Northhill, is a circular "Ring" 400 feet in diameter, on high ground overlooking the country from the Cornish to the Devon tors. Its site is still well defined, but the outer mound has been nearly defaced by the plough. On lower ground, half-a-mile eastward, and on a steep bank near the Inney, is *Killabury Beacon*, on Lanoy farm, an oval dyked site, 200 by 100 feet, and by the Lynher, near Trebartha, is an earthwork called Allabury. In Linkinhorne, are two ramparted and dyked rings, one called *Roundabury*, on Browda farm, covering about an acre of land, and the other slightly smaller, close to the village.

South-east from Windmill Beacon, down the Tamar valley, lie two more nearly obliterated village sites, the one at *Cal Hill*, on Lawhitton Down, and the other on the summit of *Castle Hill Park*, in Greystone Wood, two miles further on. At Inney Foot in *Carthamartha Wood*, is a well defined oval embankment measuring 300 by 400 feet within. From this place we travel four or five miles along the Callington road to the historical *Hingston Down*, and on to the top of that noted landmark *Kit Hill*, where at an altitude of 1091 feet, is an ancient earthwork of apparently later construction than any of the others mentioned in this paper. It is square in form with an external round at each corner, and has an internal area of 150 by 140 feet. From it is obtained a most extensive view, including the sites of four other "Rings" which I did not inspect, one about a mile south of Callington called "*Castlewitch*," another at the head of a valley running in from the Tamar, just above Cotehele, in S. Dominick parish, and the other two in St. Ive and Quethiock, called "Tokenbury" and "Hammett" camps. About a mile from Callington by the Lynher, and in S. Ive parish, is the last of the old world "encampments" in my list, *Cadsonbury*. This occupies the whole of the flat summit of a conical hill rising

directly from the river bed, the slopes of which are as steep as those of the Keep hill of Launceston Castle. The trackway to its entrance, which faces the north-east and steepest side, winds around from the south-west and passes along the bottom of the ditch outside the high earth rampart that encircles the whole hill top. It has an inside area of 650 by 400 feet.

From the foregoing account it will be noted that there is scarcely a parish in the district which has not one or more old village sites within its boundary, also that the four double-ramparted areas in Warbstow, St. Kew, and Egloshayle are of nearly the same design, and that they and the remaining single-ramparted areas, with perhaps the exception of that on Kit Hill, all probably had the same early origin, the simple wall of earth and stones, with the ditch outside it, forming their defence.

Of Cliff ramparts, with the exception of Tintagel headland, concerning which the historian Leland exclaimed "Good Lord! what deep ditches, what precipices are here. I look upon it as a very great wonder both of art and nature," there are few to be seen within easy reach of Launceston, but further west they are common. For instance, Little Dinas cliff, in St. Anthony, has a dyked rampart across it enclosing a space 500 by 200 yards. Half-a-mile from Tehidy is another promontory cut off on the land side by a double ramp and ditches. In St. Agnes is an earth wall two miles long called 'the trench,' which is 20 feet high in some parts, and has a ditch outside it 17 feet wide. It extends from Porth Chapel Coombe to Breanick Coombe.

Closely connected with all these old earthworks which so clearly attest how numerous and industrious the ancients of Cornwall were, are the burial mounds (called barrows, and tumuli) of their dead, which abound in every part of the county, and of which many have been described in the Journal of this Institution.

I will now attempt to describe the earth-fenced village site which is nearest Launceston. It adjoins Kestle farm, in St. Thomas parish (see plan) and is situated about 300 yards from the road on the southern side of Tredidon lane, and occupies a ridge which gradually rises from the Kensey river. The old approach to it was by a trackway branching off from the Bodmin

road just beyond Tregadillett. This 'way' first takes a winding course to the homestead of Kestle, and then passes on to the western end and entrance to the site. From the ring fence the trackway descends in a rounding sweep to Tankerslake Mill, and then on to Tredidon Lane. Water was one of the chief desiderata in fixing the situation for the pastoral home of our forefathers, and of this they had here an excellent supply, for in addition to Tanker's streamlet, which, until quite recently, formed a portion of the water supply of Launceston, they had the Kensey flowing at the foot of their hill.

The earthen surrounding rampart of the St. Thomas Ring encloses a space 370 feet from east to west by 320 feet from north to south, and forms an irregular square with the corners, and the side which overlooks Tredidon Lane, rounded. From three to four hundred persons might have dwelt within it. The present entrance is by a modern gateway on the south side, but the old western opening, 20 feet wide, can be easily discerned. The ditch around outside the rampart averages 8 feet wide at its base, and both it and the 14 to 18 feet high earth wall are covered with oak coppice and ferns. Towards the west a second embanked enclosure continues for 350 feet as an outwork to protect the entrance (see B on the plan).

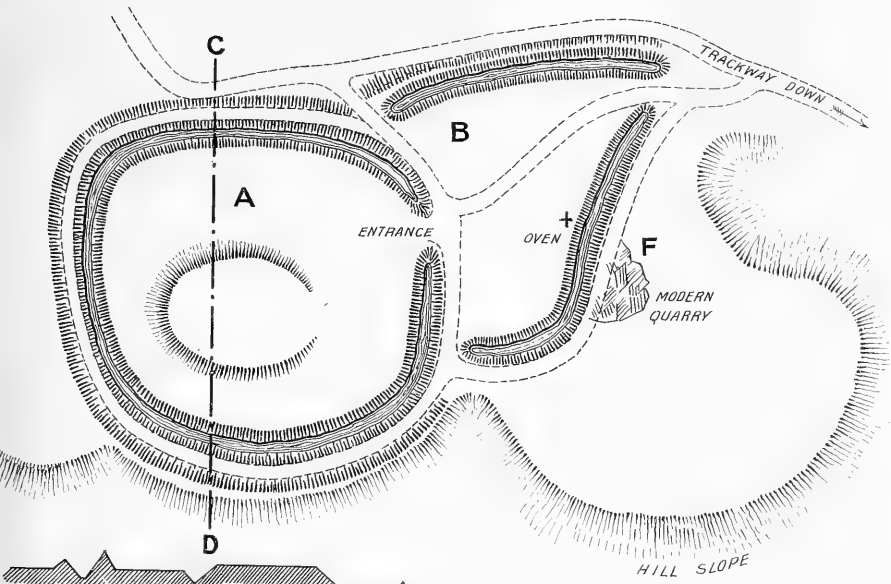
Since writing the above paper, by the kind permission of Miss Gurney, the owner of the property in St. Thomas parish, mentioned in connection with the last described old village site, I have been allowed to make excavations within, and in the neighbourhood of, these earthworks for the Launceston Scientific and Historical Society. The objects found have been sent to Mr. C. H. Read, the keeper of British Antiquities at the British Museum, and I append a list of them as named by him.

1. Two stone spindle whorls, one  $1\frac{3}{4}$  inches in diameter, and the other 1 inch in diameter.

2. Part of a little stone hammer, or mace-head, formed out of a sea pebble, the orifice in which seems to have been made partly by picking and afterwards grinding. These may be classed with late stone period objects.

3. A piece of flint apparently fashioned by man; it is of an unusually fine quality very much like chalcedony.

"RINGS" IN ST. THOMAS PARISH  
NEAR LAUNCESTON.



SKETCH SECTION C.D.





4. Nodule of iron pyrites  $1\frac{1}{2}$  inches in diameter, which may have been used with a flint for a strike-a-light. I was told that several of these balls had been found within the ramparts and also near the barrows on the hill opposite. This circumstance is probably the origin of the local belief that they were musket balls fired from one place to the other during a battle. Similar nodules are said to have been ploughed up within the Ring at Poundstock.\*

5. A number of sea pebbles, all of about the same size ( $1\frac{3}{4}$  ins. by  $1\frac{1}{2}$  ins.) and colour, and found in most of the trenches which I cut within and without the ramparts. These were, perhaps, slingstones. Some were near the surface and others 3 feet, and more, below it.

6. At F on the plan is a quarry opened up about 16 years ago. The cart track to it was cut through the adjoining rampart. I sunk a trench along this track and found under it, near the foot of the outer slope of the rampart, the rough foundation lines of two walls 4 feet apart, and a fireplace surrounded by blackened stones and wood ashes. On removing the back stone of the fireplace an oven was disclosed 2 feet wide by 18 inches deep, full of wood ashes. Its sides were formed by upright stones, and its bottom of burnt clay rounded off like a dish. In the loose rubble within the wall lines I found a well made fragment of the upper portion of an urn of blackened earthenware which, Mr. Read says, "seems to have been lathe turned, and is therefore not probably of pre-Roman date." In 1896 a workman quarrying stone in the above mentioned quarry found near the surface a bronze coin which he gave to me soon after he picked it up. Mr. H. A. Grueber, the keeper of the coins in the B.M. to whom I sent it, pronounced it to be Roman, but said its state of preservation would not admit of more minute identification.

7. In most of the trenches sunk within the ramparts at A were little clumps of wood ashes from 3 feet to 3 feet 6 inches below the surface. These may have been the ends of hut posts.

8. At one spot on and under the surface and on the outside face of the southern rampart I found a quantity of what is locally known as "quince coal," a substance like refuse from a

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\* Also elsewhere, *e.g.*, Carn Brea.—*Edl.*

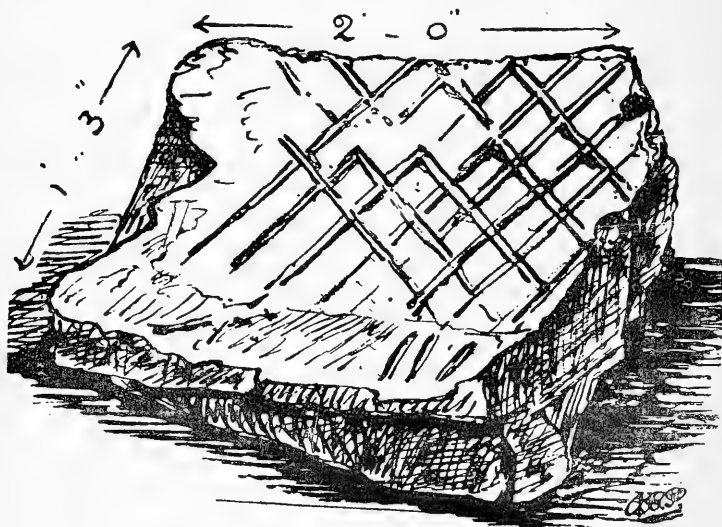
furnace, but which I am told is a mineral found in bunches in the old manganese workings of the district; it is composed of manganese and iron.

All the above finds are now placed in the Launceston Museum.

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SUPPOSED ROMAN STONE.

Mr. O. B. Peter sends us the subjoined sketch of a supposed Roman stone, recently found by him in the hedge of a lane leading to the farm house of Trevithick, St. Thomas, and by permission of Miss Gurney, the land-owner, now placed in Launceston Museum.



*Sketch of a scored stone taken from  
a lane hedge on Trevithick Farm,  
near Launceston Oct. 1901.*

Mr. Peter adds:—It is a kind of white tufa whose unwrought general surface is tolerably smooth but is covered with oblique



cross lines. The scoring appears to have been done before the block was wedged off for hedging purposes. Mr. Arthur Langdon and Mr. Romilly Allen, to whom I have sent a rubbing of the marks, pronounce them Roman. Similar ornamentation on the surface of stones is to be seen at Vandalana (Chesterholm), one of the stations on Hadrian's Wall.

## CONTRIBUTIONS TO A CORNISH FLORA.

By FRED. HAMILTON DAVEY.

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Since preparing the paper which I read in this room twelve months ago, wherein were recorded several important additions to the flora of Cornwall, a deal of really serious work has been going on. While attention has been given chiefly to that portion of the county lying between Looe and Mainporth, on the south coast, and between Bedruthan Steps and Hayle, on the north, profitable search has been made in other districts, and valuable lists, with voucher specimens of the more critical species, have been received from the many correspondents who have volunteered assistance in the scheme for elucidating one of the most puzzling sections of the British flora. As a result, I am able to offer you to-day information calculated not only to interest Cornish folk, who are ever glad to hear something new and pleasing about their own county, but, by virtue of its valuable bearing on the great problems relating to the geographical distribution of plants, of considerable importance to botanists everywhere.

Botanically, it can now be claimed for Cornwall that it contains a larger number of species and more specialities than any other county of equal size. Including the additions which I shall submit to-day, there are, or have been found, in the county 1,251 kinds of flowering-plants, ferns, and charas, or just 707 short of the total number recorded for Great Britain, Ireland, and the Channel Islands. When it is remembered that Norfolk, with its extensive "Broads" and "Fens," so favourable to paludal plants, has only 1,164 plants, and Berkshire, with its calcicole flora, only 1,208, it will be seen to what extent Cornwall has these and several other counties at a disadvantage. It is further worthy of note, as showing the insular character of its vegetation, that Cornwall has sixteen species which are not known to occur in any other part of the British Isles.

Side by side with the field work which has enlarged our knowledge of the flora of Cornwall, thanks to the facilities

offered by the Director-General of Kew Gardens, the Director of the Natural History Department of the British Museum, the Council of your own Institution, Mr. W. H. K. Wright, of Plymouth Free Library, Mr. J. D. Enys, and Mr. A. O. Hume, phytological literature, commencing with Gerard's *Herbal*, published in 1633, and works relating to Cornwall, from Carew's *Survey* (1602), have been searched for earliest mention of Cornish plants. In this way not only has the distribution of each plant been traced, but its age as a Cornish subject has been fixed as far as published records will serve. The result will presently appear in the form of a volume to be printed for the use of my co-workers, and for distribution among the several botanical societies.

In one respect this searching of the older literature has brought a pang of sorrow. Although it has furnished many new localities for some of the rarer plants—or at least localities which had been over-looked by modern writers—and has made it clear that for nearly two centuries the Cornish flora in its entirety has been to the botanist what the North Pole has been to the explorer, it has also revealed the fact that *pari passu* with the discovery of new plants several important species have become extinct. It is pleasing to note, however, and is excellent testimony to the conscience of the average botanist, that in one case only has extinction resulted from ruthless collecting.

#### PLANTS NEW TO CORNWALL.

The first thing to strike the attention in the subjoined list of thirty-five plants now for the first time recorded for Cornwall is the number of additions to the almost unique flora of the Lizard peninsula. Notwithstanding all that was done in that district by an unbroken galaxy of botanists from the early years of the last century down to the well-directed efforts of Messrs. J. Cunnack, J. G. Baker, and J. Ralfs, thirteen new species must now be added. What is perhaps more noteworthy still is that the major part appear not to be waifs or strays from cultivation but true natives of the soil. Of a certainty this is the case with *Thalictrum majus*, *Ranunculus heterophyllus*, *Rumex maritimus*, *Juniperus nana*, *Potamogeton heterophyllus*, *P. praelongus*, *P. filiformis*, *Zannichellia polycarpa*, and *Carex Bænningshausiana*.

Two items which will come as great surprises are *Romulea Columnæ* and *Bromus rigidus*. The only other British station for the first-named is the Warren, between Dawlish and Exmouth, where it was first discovered 67 years ago, while the latter has hitherto found its way into British botanical literature solely on the strength of its occurrence in the Channel Islands. Everything points to the probability that the little Iris has legitimate claims to indigeneity. If such strong proof cannot be advanced for the grass, it must, at any rate, be accepted as a thoroughly naturalized subject.

*Glaucium phæniceum*, *Brassica monensis*, *B. adpressa*, *Medicago sylvestris*, *Lathyrus hirsutus*, *Anthemis tinctoria*, *Galeopsis versicolor*, *Cuscuta Europæa*, *Orobanche Picridis*, *Phalaris paradoxa*, *Lagurus ovatus*, and *Avena pratensis* are of purely accidental occurrence west of the Tamar. It may be doubted if any one of them is seen in the same place for more than two successive seasons.

The Stock at Newquay has been recorded in several of the local "Guides" as *Mathiola sinuata*. On careful examination it turns out to be *M. incana*, a much rarer species. It is perfectly at home over a good portion of the cliffs around the harbour, and with the Wall-flower gives a distinct touch of beauty to the slopes in early summer. The London Pride (*Saxifraga umbrosa*, var. *punctata*) has obtained a permanent hold of a long stretch of a wayside hedge near Lostwithiel; and near the same town and at Perranwell the Yellow Martagon Lily (*Lilium pyrenaicum*) has long secured a footing. *Lactuca Scariola*, var. *dubia* is not only new to Cornwall, but is now noticed for this country for the first time. If it obtains permanency in its Cornish station, as it promises to, it will have to be included in future lists of British plants. *Malva parviflora* has been very abundant at Par this season, but it is one of those fickle species which appear and disappear almost without rhyme or reason. *Doronicum Pardalianches* is a good example of a stray from cultivation becoming a denizen.

Early this year considerable interest was manifested by British botanists in the announcement that I had found in several localities *Scirpus maritimus*, var. *monostachys*. Up to that time it was not known as a British plant. The British Museum had only a single specimen of it, and that a continental one, while

the herbarium at Kew was poorer still. No doubt it is merely a depauperated form of *maritimus*, but after comparing a set with the var. *compactus*, no one can deny that it merits varietal rank. The probabilities are that it is generally diffused through the country, but has hitherto escaped the notice of botanists.

An asterisk is placed against the plants which are known to occur in the neighbouring county.

| NAME OF PLANT.  | WHERE FOUND.  | FINDER.          |
|---|---|------------------|
| <i>Thalictrum majus</i> , Crantz ...                                | Kennack Sands, Lizard ...   | A. O. Hume.      |
| <i>Ranunculus heterophyllus</i> , Bab.                              | Between Helston and the<br>Lizard, and near Lizard<br>Town ... ..           | R. V. Tellam     |
|   | Mullion ... ..  | Late J. Cunnack. |
| <i>Glaucium phœniceum</i> , Crantz                                  | Deyoran ... ..  | F. H. Davey.     |
|   | Penzance ... ..   | F. T. Richards.  |
| <i>Fumaria muralis</i> , Sonder ...                                 | Looe. Swanpool-bar ...  |                  |
|   | Connor Downs ... ..   | A. O. Hume.      |
| <i>Mathiola incana</i> , R. Br. ...                                 | Newquay ... ..  | J. V. S. Müller. |
| <i>Brassica monensis</i> , Huds. ...                                | Penzance ... ..   | F. T. Richards.  |
| „ <i>adpressa</i> , Boiss. ...                                      | Par ... ..  | R. V. Tellam.    |
| <i>Malva parviflora</i> , Linn. ...                                 | Par, abundant ... ..  | A. O. Hume.      |
| <i>Medicago sylvestris</i> , Fr. ...                                | Penzance ... ..   | F. T. Richards.  |
| <i>Saxifraga umbrosa</i> , Linn.,<br>var. <i>punctata</i> , Don. .. | Lostwithiel, very luxuriant<br>and known there nearly<br>fifty years ... .. | A. O. Hume.      |
| <i>Anthemis tinctoria</i> , Linn. ...                               | Cadgwith ... ..   | F. T. Richards.  |
| * <i>Doronicum Pardalianches</i> ,<br>Linn. ... ..                  | Pengreep, Gwennap ...   | W. Rowe.         |
| <i>Lactuca Scariola</i> , Linn.,<br>var. <i>dubia</i> , Jord. ...   | Par ... ..  | A. O. Hume.      |
| <i>Cuscuta europæa</i> , Linn. ...                                  | Lizard ... ..   | F. T. Richards.  |
| <i>Orobanche Picridis</i> , F. Schultz                              | Porthoustock ... ..   | „                |
| * <i>Rumex maritimus</i> , Linn. ...                                | Lizard ... ..   | „                |
| <i>Salix alba</i> , Linn., var. <i>cærulea</i>                      | Roadside near Mainporth   | F. H. Davey.     |
| „ <i>aurita</i> , Linn., + <i>viminalis</i>                         | Newlyn East ... ..  | C. C. Vigurs.    |
| „ <i>purpurea</i> , Linn. + <i>viminalis</i>                        | Sewrah Moor, Stithians  | F. H. Davey.     |
| <i>Juniperus nana</i> , Willd. ...                                  | Near Gue Graze, Lizard  | F. T. Richards.  |
| * <i>Romulea Columnæ</i> , Seb. &<br>Maur. ... ..                   | Near Fowey .. ..  | Miss Kempe.      |

| NAME OF PLANT.   | WHERE FOUND.   | FINDER.                         |
|--|--|---------------------------------|
| * <i>Lilium pyrenaicum</i> , Gouan.                                      | Restormel, Lostwithiel ...<br>Perranwharf, two places            | Miss S. Imeson.<br>F. H. Davey. |
| * <i>Potamogeton coloratus</i> ,<br>Hornem.                              | Launceston ... ..  | W. Wise.                        |
| * " <i>heterophyllum</i> ,<br>Schreb.                                    | Lizard ... ..  | F. T. Richards.                 |
| " <i>praelongus</i> ,<br>Wulf.   | Loe Pool ... ..  | "                               |
| " <i>filiformis</i> ,<br>Nolte.  | Hayle Kimbra, Lizard ...   | "                               |
| <i>Zannichellia polycarpa</i> , Nolte.                                   | Gunwalloe ... ..   | "                               |
| <i>Scirpus maritimus</i> , Linn.,<br>var. <i>monostachys</i> , Sond. ... | Lostwithiel, Perranwharf,<br>near Flushing, Swan-<br>pool ... .. | F. H. Davey.                    |
| * <i>Carex Boenninghausiana</i> ,<br>Weihe.                              | Barres Moor, St. Gluvias<br>Poljew, Lizard ... ..                | "<br>F. T. Richards.            |
| <i>Phalaris paradoxa</i> , Linn. ...                                     | Penzance ... ..  | "                               |
| * <i>Calamagrostis epigios</i> , Roth.                                   | Tintagel ... ..  | J. G. Baker.                    |
| <i>Lagurus ovatus</i> , Linn.  | Garden Weed, Tresco,<br>Scilly Isles .. ...                      | F. T. Richards.                 |
| <i>Avena pratensis</i> , Linn. ...                                       | Cadgwith ... ..  | "                               |
| <i>Bromus rigidus</i> , Roth. ...  | Par ... ..   | A. O. Hume.                     |
| * <i>Elymus arenarius</i> , Linn. ..                                     | St. Minver ... ..  | R.D.S. Stephens+                |

## NEW LOCALITIES FOR SOME OF THE RARER PLANTS.

This list affords striking proof of how the flora of any given district is affected by human agency. In 1856 Mr. H. C. Bastian furnished the Royal Cornwall Polytechnic Society<sup>†</sup> with what was then considered a complete list of the plants growing in and around Falmouth. Twenty-six years later Mr. Ernest Bullmore was able to increase the number by 58,<sup>‡</sup> while only six years from the publication of Mr. Bullmore's paper the Rev. A. R. Eagar furnished particulars of another thirteen.|| Last year I

+ "A list of plants found in the parishes of St. Minver, Cornwall, and Bradford Abbas, Dorset." By R. Darel S. Stephens, F.L.S., &c., in "Proceedings" of the Dorset Natural History and Antiquarian Field Club, Vol. xxi, 1900.

† Annual "Report," 1856.

‡ Ibid, 1882.

|| Ibid, 1888.

credited six new plants to the district, and this season, as the lists appearing in this paper show, sixteen more have appeared.

The discovery of a colony of *Nasturtium palustre* at Lostwithiel restores a vanished plant to our flora. In 1835 it was recorded from the banks of the Lynher, near St. Germans,\* but when Briggs published his *Flora of Plymouth*, in 1880, it was registered "extinct." In Dr. Ralfs' *MSS. Flora of West Cornwall*† there is the following entry:—"Formerly grew on the wall of the basin at Copperhouse, but the wall has been repaired and the plant destroyed." Mr. Tellam once found the plant on a ballast heap at Par, and it has been recorded for the Scilly Isles,‡ but in both places it made but a short stay.

*Arenaria verna*, at one time thought not to occur in Cornwall off the serpentine district, has been discovered in two distant parts of the county, the St. Minver locality constituting a new vice-county record. Similarly, the distribution of *Juncus pygmaeus* has been extended ten or twelve miles by being found on the borders of the Loe Pool. Further, a comparison of the following list, with the list given above of plants new to the county, will show that three new Docks, three Pondweeds, and four Sedges are contributed to the Lizard flora. The only previous record for *Cnicus eriophorus* is 105 years old, Truro being quoted as a Cornish station by Withering.§ Hitherto *Fibichia umbellata*, one of the rarest of British grasses, has kept to the one place in Cornwall where it was discovered nearly 215 years ago, viz.: between Penzance and Marazion, just opposite Gulval church.

| NAME OF PLANT.                        | WHERE FOUND.                    | FINDER.         |
|---------------------------------------|---------------------------------|-----------------|
| <i>Nasturtium palustre</i> , DC. ...  | Lostwithiel * ... ..            | A. O. Hume.     |
| <i>Sisymbrium allissimum</i> , Linn.  | Falmouth Docks and<br>Ponsanoth | F. H. Davey.    |
| <i>Erysimum perfoliatum</i> , Crantz. | Falmouth Docks and<br>Devoran   | "               |
|                                       | Penzance ... ..                 | F. T. Richards. |

\* *West Devon and Cornwall Flora*, by Rev. J. Jacob, LL.D.

† *The Flora of West Cornwall*, by John Ralfs, M.R.C.S., in 10 volumes; now the property of Penzance Library Committee.

‡ Abstract of a paper on "The Flora of the Scilly Isles," by the Rev. H. Boyden, in "Transactions" of Penzance Natural History and Antiquarian Society, 1889-90.

§ *Arrangement of British Plants*, ed. 3, in 4 vols., 1796.

| NAME OF PLANT.                               | WHERE FOUND.                            | FINDER.                      |
|--|---|------------------------------|
| <i>Erysimum repandum</i> , Hojer.            | Falmouth Docks ...                      | F. H. Davey.                 |
| <i>Lepidium virginicum</i> , Linn. ...       | Hall Walk, above Bodin-<br>nick ... ..  | A. O. Hume.                  |
|  | Polruan, near Fowey ...                 | Mrs. W. J. Graham            |
|  | Par, frequent ... ..                    | F. H. Davey.                 |
| <i>Lepidium perfoliatum</i> , Linn.          | Falmouth Docks ... ..                   | "                            |
| <i>Saponaria Vaccaria</i> , Linn. ...        | Devoran ... ..                          | "                            |
| <i>Arenaria verna</i> , Linn. ...            | St. Minver ... ..                       | R. D. S. Stephens.           |
|  | Nanswhyden, St. Columb                  | W. N. Winn.                  |
| <i>Vicia Orobus</i> , DC. ... ..             | Trecussick, Treneglos ...               | W. Wise.                     |
| <i>Lathyrus tuberosus</i> , Linn. ...        | St. Minver ... ..                       | R. D. S. Stephens.           |
| <i>Caucalis daucoides</i> , Linn. ...        | Devoran and Falmouth<br>Docks ... ..    | F. H. Davey.                 |
| <i>Matricaria discoidea</i> , DC. ...        | Little Petherick ... ..                 | R. V. Tellam.                |
|  | Par ... ..                              | A. O. Hume.                  |
| <i>Cnicus criophorus</i> , Roth. ...         | Lizard ... ..                           | F. T. Richards.              |
| <i>Mariana lactea</i> , Hill. ... ..         | Gyllingvase, Falmouth ...               | J. Lawson.                   |
| <i>Linaria supina</i> , Desf. ... ..         | Menheniot Station ..                    | A. O. Hume.                  |
|  | Railway, near Golant ..                 | F. H. Davey.                 |
|  | Point Neptune, Fowey ...                | Miss S. Imeson.              |
| <i>Lanium intermedium</i> , Fr. ...          | Padstow ... ..                          | A. O. Hume.                  |
| <i>Plantago arenaria</i> , Waldst. &<br>Kit. | Ponsanooth ... ..                       | Miss Davey.                  |
| <i>Amaranthus retroflexus</i> , Linn.        | Par ... ..                              | F. H. Davey.                 |
|  | Mawgan-in-Pydar and<br>Porthpean ... .. | Miss Spettigue.              |
| <i>Atriplex littoralis</i> , Linn. ...       | Par ... ..                              | F. H. Davey.                 |
| <i>Rumex limosus</i> , Thuill. ...           | Lizard .. ..                            | F. T. Richards.              |
| " <i>domesticus</i> , Hartm. ...             | " ... ..                                | "                            |
| <i>Mercurialis annua</i> , Linn. ...         | Lostwithiel ... ..                      | Cornish Money-<br>wort Club. |
|  | Newquay ... ..                          | C. C. Vigurs.                |
|  | Pentewan ... ..                         | F. H. Davey.                 |
| <i>Cannabis saliva</i> , Linn. ...           | Par male & female plants                | "                            |
| <i>Fungus pygmaeus</i> , Rich. ..            | Loe Pool ... ..                         | J. Lawson.                   |
| <i>Sparganium neglectum</i> , Beeby.         | Lizard ... ..                           | F. T. Richards.              |
| <i>Lemna trisulca</i> , Linn. ..             | " ... ..                                | "                            |
| <i>Carex curta</i> , Good. ... ..            | " ... ..                                | H. S. Thompson.              |



| NAME OF PLANT.                              | WHERE FOUND.               | FINDER.         |
|---|----------------------------|-----------------|
| <i>Carex acuta</i> , Linn. ... ..           | Newquay ... ..             | C. C. Vigurs.   |
| „ <i>pallescens</i> , Linn. ... ..          | Lizard ... ..              | F. T. Richards. |
| <i>Panicum Crus-galli</i> , Linn. ... ..    | Par ... ..                 | A. O. Hume.     |
| <i>Setaria viridis</i> , Beauv. ... ..      | Falmouth Docks ... ..      | F. H. Davey.    |
|   | Cultivated fields, Redruth | W. N. Winn.     |
| <i>Fibichia umbellata</i> , Koel. ... ..    | Falmouth ... ..            | J. Lawson.      |
| <i>Briza maxima</i> , Linn. ... ..          | Lizard ... ..              | F. T. Richards. |
|   | Penzance ... ..            | H. S. Thompson. |
| <i>Poa Chaixii</i> , Vill. ... ..           | Glyn, near Bodmin Road     | R. V. Tellam.   |
| <i>Glycrria aquatica</i> , Sm. ... ..       | Lizard ... ..              | F. T. Richards. |
| „ <i>distans</i> , Wahlenb. ... ..          | Marazion ... ..            | „               |
| <i>Festuca arundinacea</i> , Schreb. ... .. | Cadgwith ... ..            | „               |
| <i>Bromus erectus</i> , Huds.... ... ..     | Lizard ... ..              | „               |
| „ <i>madritensis</i> , Linn. ... ..         | Par ... ..                 | R. V. Tellam.   |

## NEW ALIENS.

Some years ago, Mr. W. A. Glasson, of Penzance, and Mr. E. Bullmore, of Falmouth, gave considerable attention to plants introduced into this county. Mr. Glasson published the results of his observations in the "Transactions" of the Penzance Natural History and Antiquarian Society, 1888-90. Mr. Bullmore's researches were incorporated in the paper referred to *ante*. It will also be remembered that several interesting cases were cited in the paper which I read at the last annual meeting of this Institution. Twenty-one plants, hailing from almost every quarter of the globe, must be added. Three of these have become denizens, viz.: *Arabis albida*, *Coronilla varia*, and *Potentilla recta*, while several of the others have occupied the position they now hold for three or four years.

*Solanum rostratum*, an interesting North American plant, was found in two places in the same week. *Nicandra physaloides*, a striking Peruvian species, grew plentifully on a rubbish heap with such plants of uncertain appearance as *Saponaria Vaccaria* and *Glaucium phaniceum*. It fruited freely, and may therefore be expected to re-appear next year.

| NAME OF PLANT.                           | WHERE FOUND.   | FINDER.                                |
|--|--|--|
| <i>Wilckia maritima</i> , Scop. ...      | Falmouth Cliffs ... ..                                 | J. Lawson.                             |
| <i>Arabis albida</i> , Steven ..         | „ „ ... ..   | F. H. Davey.                           |
| <i>Lunaria annua</i> , Linn. ...         | Lostwithiel ... ..                                     | Miss S. Imeson.                        |
|  | Newquay ... ..   | C. C. Vigurs.                          |
|  | Mylor and Gwennap ...                                  | F. H. Davey.                           |
|  | Penzance ... ..  | F. T. Richards.                        |
| <i>Portulaca oleracea</i> , Linn. ...    | Par ... ..   | F. H. Davey.                           |
| <i>Coronilla varia</i> , Linn. ..        | Par ... ..   | A. O. Hume.                            |
| <i>Potentilla recta</i> , Linn. ...      | St. Cubert ... ..                                      | R. H. Wyatt.                           |
| <i>Lythrum Graefferi</i> , Tenore ...    | Loe Pool ... ..  | E. S. & C. E.<br>Salmon.               |
| <i>Calendula officinalis</i> , Linn. ... | Lostwithiel, Par, Falmouth<br>Devoran, Gwennap, Lizard | F. H. Davey.                           |
| <i>Carduus chrysacanthus</i> , Tenore    | Penzance ... ..  | F. T. Richards.                        |
| <i>Centaurea Verutum</i> , Linn. ...     | „ ... ..   | R. V. Tellam.                          |
| „ <i>Salmantica</i> , Linn.              | Falmouth ... ..  | Dr. Shere, <i>vide</i><br>F. Williams. |
| <i>Campanula Medium</i> , Linn. ...      | Lizard ... ..  | F. T. Richards.                        |
| <i>Solanum rostratum</i> , Dun. ...      | Hessenford ... ..                                      | Miss E. Buller<br>Pole.                |
|  | Par ... ..   | A. O. Hume.                            |
| <i>Nicandra physaloides</i> , Gaertn.    | Devoran ... ..   | F. H. Davey.                           |
| <i>Lycopersicum esculentum</i> , Mill.   | Par and Falmouth Docks                                 | „                                      |
| <i>Euphorbia Characias</i> , Linn. .     | Penzance ... ..  | W. N. Winn.                            |
| <i>Bromus patulus</i> , Mert. & Koch.    | Perranwharf ... ..                                     | F. H. Davey.                           |
| „ <i>unioloides</i> , H.B. & K.<br>Nov.  | Penzance .. ..   | F. T. Richards.                        |
| <i>Triticum vulgare</i> , Vill....       | „ ... ..   | „                                      |
| „ <i>Spelta</i> , Linn. ..               | „ ... ..   | „                                      |
| <i>Hordeum hexastichon</i> , Linn. ...   | Par, Flushing, Falmouth                                | F. H. Davey.                           |
|  | Penzance ... ..  | F. T. Richards.                        |

## EXTINCTIONS.

Thirteen plants have become extinct in Cornwall. As their disappearance is a matter of more than local interest, I have been at great pains to trace the history of each species. One of

the plants—*Diotis candidissima*—has also been lost from every other British habitat, although it still holds its own in one favoured locality in Ireland. *Mathiola sinuata*, *Lathyrus maritimus*, and *Euphorbia Peplis* are among the plants which for some reason yet unknown are gradually diminishing everywhere, and will some day soon be expunged from British lists.

*Ranunculus circinatus*, Sibth. First mention of this local Water-crowfoot will be found in a paper by Dr. J. C. Montgomery in the "Transactions" of the Penzance Natural History and Antiquarian Society, for 1854. Its only Cornish home was Trengwainton lower pond, in the parish of Madron. In the third of Dr. Ralfs' volumes, bearing date 1879, it is placed among extinctions, the cause assigned for its disappearance being the introduction of swans.

*Mathiola sinuata*, R.Br., was first reported in Merrett's *Pinax Rerum Naturalium*, 1666, as growing "in the sands at Bude, near Stratton." Since then Cornwall has always being reckoned among the counties where it grows, but it does not appear that any one has seen it on the mainland for more than two hundred years. In 1853 it was recorded as having been found on the Scilly Isles twelve months previous,\* but it could never be found there by the several botanists who have given special attention to the flora of those islands. In the adjoining county it still flourishes in a place or two which are fortunately away from the track of the average collector.

*Hypericum linarifolium*, Vahl., was introduced into the flora of Cornwall by the late Professor Babington, who found it on July 19th, 1839, at Cape Cornwall, "on a steep slope above the sea, between two prominent masses of rock, on the south side of the promontory, before reaching the lower part which connects the conical headland with the rest." It was duly recorded in the *Phytologist*, for 1841. Strangely enough, although repeated search has been made, no one has seen it there since. In Mr. H. C. Bastian's list of Falmouth plants, already quoted, Mr. W. P. Cocks is the authority for the plant near Budock church, but here also there was either a confusion in identity or the plant has failed in the struggle for position.

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\*"Wild flowers and ferns of the Isles of Scilly," by Misses L. and M. Millett, in the "Transactions" of the Penzance Natural History and Antiquarian Society, 1853.

*Athæa officinalis*, Linn., has been found in three places. Withering, *l.c.* mentioned it for the "sea-shore between Marazion and Penzance"; Couch included it in his plants of Polperro;\* and in 1850, the *Botanical Gazette* credited it for St. Breock. When the late Mr. J. Cunnack drew up a list of West Cornwall plants for Mr. H. C. Watson in 1861, and which list is preserved in the library at Kew, he endorsed this Mallow "extinct."

*Lathyrus maritimus*, Bigel., has only been found on the beach near Penzance. It appears to have been first published as a Cornish plant in Gibson's second edition of Camden's *Britannia*, 1722, and is another example of early extinction after being recorded. When H. C. Watson sent forth his *Cybele Britannica* in 1847, he made the announcement that the plant had not been seen in Cornwall for many years.

*Potentilla argentea*, Linn. This charming little plant was added to our county's flora by the late Mr. T. R. Archer Briggs, who recorded it in the *Journal of Botany*, 1865, for a turfy spot at Trevol, in the parish of Antony. It was Mr. Briggs' misfortune to witness the extirpation of his pet child, for in his *Flora of Plymouth*, 1880, he says that, after appearing in the same place at intervals until 1878, it was lost sight of, having been "apparently rooted out by some ruthless collector."

*Pyrus domestica*, Ehrh., found its way into the older botanical references to Cornwall on the strength of a specimen preserved in the herbarium of the Rev. A. Buddle at the British Museum, labelled "Hilly places in Cornwall." There is no date, but as the Rev. gentleman died in 1715, the first and last authentic record for the plant can be fixed approximately.

*Lythrum Hyssopifolia*, Linn., was gathered at Ludgvan by a Dr. Penneck, and mentioned by Mr. J. S. Courtney in his *Guide to Penzance*, 1845. In the *Phytologist* for 1846, Mr. G. S. Gibson, a keen student of the Cornish flora, speaks of having vainly searched the locality for it, and in 1879 we find Dr. Ralfs classing it with plants which had died out.

*Diotis candidissima*, Desf. This is one of the good things which Ray was privileged to see when he made his fruitful tour

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\* "The Botany of Polperro and its neighbourhood," by T. Q. Couch, in the Annual "Report" of the Royal Cornwall Polytechnic Society for 1848.

through Cornwall in 1662, and we find him chronicling it for "the gravelly-shore between Pensans and S. Michael's Mount" in his *Catalogus Plantarum Angliæ*, 1670. How long it continued in occupation of the place is uncertain, but we do know that it had disappeared soon after the birth of the last century, if not before, for the authors of the *Botanist's Guide*, 1805, make no mention of it, and in his *Botanical Tour*, 1820, Jones tells us he could get no information concerning it. In 1881, like a voice from the past, a single plant sprang up at Pra Sands, and was duly placed on record in the "Transactions" of the Penzance Natural History and Antiquarian Society, 1884, by Dr. Ralfs.

*Corrigiola littoralis*, Linn., the recent disappearance of which from the Loe Pool comes as a great grief to Cornish botanists, is first noticed in the *Botanist's Guide*. Until 1897 it maintained its ground in varying numbers from year to year, but owing to the raising of the outlet of the Pool the shelving rocks, where the little rarity abounded, are now covered with water, and it is to be feared that we may not see the plant there again. In all probability Mr. J. D. Enys was the last person to find it.

*Euphorbia Peplis*, Linn. Most of the extinctions, it will be observed, were one-station species. The one now under notice grew in several. Merrett knew it between Penzance and Marazion in 1666, and the last record for it there is in the *Phytologist*, 1851. In T. Q. Couch's "Addenda" to the Flora of Polperro, in the Royal Cornwall Polytechnic Society's Report, 1849, Mr. C. Peach is quoted as the authority for it at "Lantick Bay, in abundance on some parts of the beach." It has long since disappeared from that place, and owing to the action of the sea the habitat itself has been destroyed. Whitsand Bay, near the Rame, was another stronghold, but no one has seen it there since 1847, when Mr. F. P. Pascoe found a solitary plant, and announced the fact in the *Phytologist* of the same year. In 1852, a Mr. J. Wood, in a letter to Dr. Ralfs, which afterwards appeared in the Penzance Natural History and Antiquarian Society's "Transactions," claimed to have gathered the plant on the Scilly Isles, but Dr. Ralfs was never able to verify the record.

*Urtica pilulifera*, Linn., is both a one-locality and a one-record plant. In Borlase's *Natural History of Cornwall*, 1758, it is said

to have been gathered in a shady ditch at Velinvrân, August 4th, 1754. This is the plant mentioned by Parkinson in his *Theatrum Botanicum*, 1640, as growing near Romney, in Kent, where it is recorded Julius Cæsar landed, and concerning which he has the following amusing statement:—"It is reported that the souldiers brought some of the seede and sowed it there for their use, to rubbe and chafe their limbes, when through extreame cold they should be stiffe and benumbed; being told before they came from home, that the climate of Brittain was so extreme cold that it was not to be endured without some friction or rubbing, to warme their bloods, and to stirre up natural heat." Cornish people *may* have put the Cornish plant to a similar use after Borlase's announcement of its occurrence, and thus have robbed the county's flora of a nettle with a curious history!

*Trichomanes radicans*, Sw. The inclusion of this fern, as rare as it is beautiful, in Cornish lists has been the subject of much dispute. First mention of it is made by Master Tracey Millett, who places it with nine other species of ferns new to the county, in a contribution to the "Transactions" of the Penzance Natural History and Antiquarian Society for 1854, but on what authority or from what place does not appear. Next reference to it is met in the Annual Report of the Cheltenham College Natural History Society, for 1870, where it is said to have been gathered by one of the members in Cornwall. In a notice of the Report in *Nature*, February 23rd, 1871, it is stated this record "must be received with caution. Although this would not be 'the only spot in England where that fern has yet been found' (there being old records of its having been gathered in Derbyshire, and it having recently been unquestionably met with in North Wales), and there is no inherent improbability in its growing in Cornwall, yet the specimen stated to have been gathered 'not half an inch high' can scarcely have been satisfactorily determined to be this rare fern. Seedling ferns of all kinds are extremely difficult to distinguish, and when growing in damp places frequently simulate the filmy appearance of the Irish fern."

So far it would seem as if a strong case had been made against the occurrence of the fern in Cornwall; but on April 27th following, the weight of evidence is turned in the opposite direction by the following letter from Mr. Everard F. im Thurn:

“Owing to an accident I did not see *Nature* for the 23rd of February till yesterday. In a note which appears in it, on the Report of the Cheltenham College Natural History Society, a doubt is expressed as to the accuracy of the statement that the fern, *Trichomanes radicans*, has been found in Cornwall. Knowing that it has not yet been recorded for that county, I have, for some years past, intended to take an early opportunity to make the following facts public; time has, however, slipped away, and I have never yet done it.

“In August of the year 1867, at St. Knighton’s Kieve, a romantic ravine and waterfall on the northern coast of Cornwall, about two miles from Tintagel Castle, I obtained an undoubted specimen of this fern. It grew on a rock overhanging the water, about a quarter of a mile below the fall. It was an exceedingly small patch, and I accordingly contented myself with a small root bearing two fronds. Wishing to grow this specimen instead of drying it, and having unfortunately placed it in a hot-house, the plant died. I have, however, preserved it, and when I return to London, where my herbarium is, I shall be glad to produce it for the satisfaction of any sceptics. In the following year (1868) I paid an exceedingly hurried visit to the same spot, but failed to find the fern; never having been in the neighbourhood since, I have been unable to confirm or to dispel my fear that the plant has been discovered by some ruthless collector. I may add that I have long since mentioned this fact to various friends interested in botany.”

Commenting on this record, Keys, in Part V of his *Flora of Devon and Cornwall*, appearing in the “Transactions” of the Plymouth Institution and Cornwall Natural History Society, 1871, adds:—Mr. Robert Were Fox, F.R.S., of Penjerrick, saw it growing in the place mentioned in 1866 or 1867. It was shown to him by the owner of the place, who, it would appear, first found it there; and Mr. Fox advised him to protect it carefully from being all taken away by visitors. Previously to this date the existence of the fern in that locality was unknown.”

From which no unprejudiced person can doubt that the Killarney Fern has really patronized Cornish soil.

## CORRECTIONS IN "FIRST RECORDS."

The publication in 1869 of Messrs. Trimen and Dyer's *Flora of Middlesex* was the inauguration of a welcome departure in the preparation of County Floras. For the first time, at great expense of time and labour, the "first record" for each species was extracted from British botanical literature, thus affording students definite information about the period each plant had been known in that county. Since that time this important study has been carried a step further by Mr. W. A. Clarke, F.L.S., of Oxford.\* With astonishing patience, Mr. Clarke has endeavoured to hunt down the history of the native and naturalized flowering plants of Great Britain and Ireland, and has given us a compendium of useful matter. Starting with the works of William Turner, covering the thirty years from 1538, he has worked through most printed botanical matter to the date of publication of his own book, and has therefore been able to say who first found each plant, and where, and in what book, magazine, or other publication it was first mentioned.

In collecting material for such a work, the pitfalls which beset the way are so numerous that it is simply impossible to establish a reputation for infallibility. Few writers, for instance, would feel equal to the task of looking up all "Reports" of local societies, and yet these are just the very places where prizes are hidden. Mr. Clarke's book credits Cornwall with many "first records" for the country. These I have carefully tested, and save in four cases they are correct. The exceptions are important, and in view of the high position which Mr. Clarke's book has taken with botanists, and the keen interest now manifested in any and everything connected with the flora of Cornwall, it will be well to offer corrections.

*Ornithopus ebracteatus*, Brot. Mr. Clarke's first record for this little rarity is *Annals and Magazine of Natural History*, Series 1, vol. II, p. 349, 1839. A reference, older by twelve months, will be found in a letter written by Rev. H. Penneck to Dr. Barham, dated November 5th, 1838, and printed in the "Report" of the Royal Institution of Cornwall for that year.

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\* *First Records of British Flowering Plants*, second edition, 1900.



*Agrimonia odorata*, Mill. First notice of this plant is said to be in *Annals and Magazines of Natural History*, Series 2, vol. ix, p. 363, 1853. As a matter of fact it was mentioned by Mr. Joseph Woods in the "Transactions" of the Penzance Natural History and Antiquarian Society for 1852.

*Scrophularia Scorodonia*, Linn. In this instance Mr. Clarke quoted the following from Ray's *Synopsis Methodica Stirpium Brit.*, ed. 3, 1724, and on the strength of it establishes the "first record:" [Found] by Mr. Edward Lhwyd near the sea-shore about St. Ives in Cornwall." Ray's information, although unacknowledged, had been gleaned from a letter from Edward Lhwyd in *Philosophical Transactions*, vol. xxvii, p. 527, 1712, and to that date must the first printed reference to *Scrophularia Scorodonia* be assigned.

*Allium triquetrum*, Linn. This plant was first recorded in the *Journal of Botany*, vol. xi, p. 206, 1873, and not in the same publication two years later.

It remains to thank the several ladies and gentlemen whose names appear in this paper for so liberally placing the results of their own investigations at my disposal, and for the loan of a number of valuable books. Gratitude is also expressed to the Committee of the Penzance Library for granting me the use of the late Dr. Ralfs' MSS., and to Messrs. J. G. Baker, F.R.S., J. Britten, F.L.S., Arthur Bennett, F.L.S., E. G. Baker, F.L.S., and the Rev. E. F. Linton, F.L.S., for their valuable advice on many critical species.

## MURAL PAINTINGS IN CORNISH CHURCHES.

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Report of the Committee—consisting of Mr. J. D. ENYS, Mr. THURSTAN C. PETER, and Mr. H. MICHELL WHITLEY—to prepare a list of the Mural Paintings and other remains of colour decoration, now or formerly existing in Cornish Churches.

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The committee have now the pleasure of presenting their report, together with a list of the wall paintings and other remains of colour decoration, now or formerly existing in Cornish Churches, as far as can be ascertained.

Adopting the valuable list compiled for the South Kensington Museum\* by Mr. C. E. Keyser, F.S.A. as a basis, they added to it from their personal knowledge and enquiries; and then issued a circular to the clergy throughout the diocese asking their assistance in correcting the list already compiled, and in furnishing new examples which had been omitted, and the replies received have been very complete, and have aided the committee materially in drawing up the following list.

It will be seen, however, how small a proportion of churches of ancient foundation now possess any traces of the Mediæval paintings, which, undoubtedly, in the great majority of cases, if not all, at one time adorned their walls.

Our ancestors did not hesitate to add to the beauty of form the warmth of colour. Our mediæval churches glowed with colour—the walls covered with paintings; the roofs and screens bright with scarlet and white and gold; richly wrought hangings; tombs adorned with polychrome; and windows filled with richly coloured glass; brought the building to one harmonious whole, which suited better our northern climate, than the cold bare church so much in vogue until almost the present time, although, fortunately, we are now gradually returning to an appreciation of the use of decorative colour.

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\* A list of Buildings in Great Britain and Ireland having Mural and other painted decorations, 3rd edition, 1883, hereafter referred to as "SK List."

At the time of the reformation, texts were ordered to be painted over the pictures, and the successive numerous coats of whitewash hid the mediæval mural decorations from view, so that, except in a few cases, no remains were visible, although it may be assumed that nearly all pre-reformation churches had their walls adorned with paintings, and in cases where the original whitewash remains, that under it they still exist. It is to be hoped that a diligent search will be made for them in those churches which have not yet been restored.

In the middle ages, The Crucifixion and the Last Judgment were the favorite subjects connected with our Lord. There were representations of The Crucifixion, at Lanivet, St. Clement, St. Columb Major, and Talland, all now destroyed; whilst a figure of Christ stanching his wounds, surrounded by implements of trade, etc., was at Lanivet; and another painting of the same subject (Representative Christian) is at each of the churches of Breage (which possesses the finest set of mural paintings in Cornwall), St. Just-in-Penwith, and Poundstock.

At Talland, in addition to the Crucifixion, were paintings of Our Lord and the Woman of Samaria and The Miraculous draught of fishes, whilst at St. Clement were The flight into Egypt and The Entry into Jerusalem; all these now being destroyed. At Linkinhorne was a figure of our Lord surrounded by the Seven Acts of Mercy.

The composition known as the Doom—Our Lord seated on the rainbow in Judgment—His mother kneeling on his right pleading for mankind; below, St. Michael weighing souls; the dead rising, with companies of souls passing to take their place on Christ's right or being dragged down by demons on the left into the mouth of hell (usually represented by the jaws of an immense fish) was a favorite. It was often painted over the chancel arch, but no instance is recorded in Cornwall. Was it for the lack in our churches of the space which was usually thus utilized?

No doubt there were many representations of the Virgin in our churches, but none have been clearly identified in the paintings existing at present. The mutilated statue at St Sennen is probably one.

Amongst the saints, St. Christopher and St. George were the most popular, and there were few pre-reformation churches which did not possess a painting of the former saint, who owed his popularity to the belief that whoever looked on his picture would be safe from a violent death during the day: two verses commemorating this idea are often found in conjunction with the portrait.

“Each day that thou the image of St. Christopher dost see  
That day no frightful form of death will make an end of thee.”

In Cornwall there is a good example at Breage, slightly “touched” in recent times. St. Christopher is depicted as an aged man, of gigantic size, carrying the infant Christ (holding an orb and in the act of benediction) across a stream, whilst a hermit on the bank in the background holds up a lantern to light the saint across the ford, and fishes, a mermaid, and a ship are depicted below. At St. Keverne is another example; and at Poughill are two, one on the north wall (the usual position, that it might be seen at once by all who entered the church) the other on the south, both unfortunately brilliantly repainted, and a crown added to one. Other examples were at Virginistow, Ludgvan, Mylor, and St. Clement—all now destroyed.

The latter painting, which was discovered in 1844, was conjectured to “commemorate the return of Admiral Hawkins, of Trewithan, in the adjoining parish of Probus, one of the Commanders of the English fleet which conquered the “Invincible Armada,” with Queen Elizabeth welcoming him home, and his countrymen also testifying their joy at his return!”

St. George, the patron saint of England, was also a very popular subject, and examples occur at St. Just-in-Penwith and at Calstock.

Of other Saints, St. Margaret was at St. Clement; St. Michael the Archangel, St. Thomas of Canterbury, St. Giles and St. Corentin at Breage; St. Hubert at Crantock; St. Cuthbert at Cubert; and St. Roche at Launceston.

Paintings of the Seven Deadly Sins were very usual, and there is one at Poundstock, where they are grouped about a tree. At the top is the head of Pride with an attendant demon, and the other sins are depicted at the ends of the branches.

During the seventeenth and eighteenth centuries, life-sized paintings on panel of Moses and Aaron were often placed on each side of the altar, as at Launceston, Kilkampton, and elsewhere.

Two or more series of paintings are often found in one church. Thus at Talland, the first series (which may date from the 13th century and the colour of which was extremely vivid) was painted over with a second series of demons, dwarfs, etc.; and examples also exist at Tintagel and Breage, at which latter place one of the superimposed texts has been wisely allowed to stand when the other pictures were cleaned at the recent restoration.

There are, however, still a few churches unrestored in which the original surface remains, although covered with whitewash, and it is to be hoped that when these churches are taken in hand a careful search, under the guidance of an expert, may be made to discover and carefully uncover the mediæval paintings which in all probability still exist, although hidden from view.

Twelve Consecration Crosses were usually painted on the interior walls of the church (three on each face) on the spots which the Bishop anointed with holy oil at the ceremony of dedication, but no examples in Cornish churches are now known to exist.

Passing from the Mural decorations, it is sad to record the havoc that has been wrought in screens and roofs, timber work which once glowed with colour, and panels filled with painted Saints and Bishops.

What would we not give now to possess the great Rood Screen of St. Columb Minor Church, "a most curious and costly piece of workmanship, carved and painted with gold, silver, vermilion, and bice, the masterpiece of art in these parts of that kind," but it was destroyed ruthlessly in 1795; or that of the chapel of S. Michael's Mount, carved and painted with the history of the Passion, now removed; or that of Morwinstow, carved with the most beautiful workmanship, with doves flying amongst oak leaves and vine branches with foxes, richly gilt and painted, cut down and burnt by the Parish Clerk in 1834?

What St. Burian has lost by the destruction in 1814 of the beautiful oak screen, reaching clear across the church, of rich

carved work with huntsmen, hounds, foxes, deer and birds, and glowing with gold and colour, may be judged by the scanty fragments remaining.

At Lanreath, the panels of the screen were decorated with paint and gilding, with portraits of the four Latin Fathers—SS. Gregory, Ambrose, Jerome, and Augustine, and also of St. Elizabeth of Hungary, St. Barbara, and St. Catherine. The person employed to clean and renovate some of the woodwork of this screen several years ago, scraped off and effaced almost all this old ornamentation, and what now remains owes its preservation to the fortunate arrival of the vicar.

The great wave of church restoration that swept over Cornwall in the latter half of the 19th century (of immense importance in the quickening of church life, and the broadening of church influence), was unfortunately, in most cases, accompanied by a general disregard, and sweeping away, of the ancient work.

Oak roofs which, with some slight repairs, would have stood for years to come, and which *would* have been allowed to stand *now*, were thrown down and replaced by pitch pine; the old slate monuments in the floor, telling their tale of the former inhabitants of the parish, were in many cases removed and replaced by Minton and other tiles; and what might have been, under wiser guidance, a gain, not only to the living Church, but also to Art, Architecture, Painting, and History, its handmaids, often resulted in the destruction of all architectural continuity with the church of our forefathers.

Happily we have entered on a more conservative period, when church restoration as a rule aims at preserving wherever possible, and not destroying the work of the men who toiled so nobly and so well in rearing the stately houses of God throughout our land.

LIST OF MURAL PAINTINGS AND OTHER REMAINS OF  
COLOUR DECORATION NOW OR FORMERLY EXISTING  
IN CORNISH CHURCHES.

J.D.E.—J. D. ENYS.  
T.C.P.—THURSTAN C. PETER.  
H.M.W.—H. MICHELL WHITLEY.

**ADVENT.** Principals of roof richly painted and gilt (“S.K. List,” p. 3.) No colour visible at present.—H.M.W.

**ALTARNON.** Two paintings on deal panels: 1.—The Lord’s Supper being administered—the table stands clear of the wall,—the celebrant standing behind it facing west, on it two candlesticks with lighted candles, a chalice and two dishes of small loaves, a male figure on either side of the celebrant while two figures kneel in front of the table facing east. 2.—The Crucifixion; the Saviour’s side being pierced by the soldier’s lance. Date about 1620.

Traces of colour on the font. A. H. MALAN, Vicar.

**ANTHONY (East).** When the whitewash was removed during restoration, some few traces of red diagonal lines were found on the plaster. J. F. KITSON, Vicar.

**BLISLAND.\*** Rood Screen once richly coloured, the lower part only remains. (“S.K. List,” p. 30). Recently restored by Eden.

**BODMIN.†** Old pulpit showed signs of elaborate colour and gilding, on the panels are vestiges of paintings of personages. (Maclean, Hist. Deanery of Trigg Minor, I, p. 154.)

**BREAGE.** On the north wall (1) St. Christopher bearing the Infant Christ on his shoulder. Ship, hermit in boat, and mermaid with glass on the water. (Retouched, and head of Infant Christ restored). (2) Our Lord stanching his wounds, and surrounded with implements of trade, etc. (the outline of

\* The S.K. List includes this on authority of Maclean Trigg Minor, Vol. I, p. 54 (1873). Shortly after that work was published, what was left of this Screen was deliberately destroyed by Jonathan Parkyn, Curate in charge.

† The old pulpit was hollowed out of one tree trunk, the several flat outer faces of which appeared, as panels, through cusping externally attached. The old painted portion is now removed. On a hill named “the Bery,” at Bodmin, stands the Tower of the ancient Holy Rood Guild Church, in which was a painting of St. Christopher. Rev. W. Iago informs us that it is referred to in the original building account, still preserved in MS.

Christ's figure has been strengthened)—*see* Lanivet and St. Just-in-Penwith. (3) On the eastern splay of next window, St. Hilary as a bishop in mitre and vestments. (4) Between two windows, a Bishop, St. Corentin in cope (the lettering has been touched up), dalmatic, and alb, and with pastoral staff. Above his head the legend *Sċe quarentine ora p̄ n̄bs*. By his side a fish (*see* his legend). (5) St. Michael the Archangel. (6) An unknown Archbishop—St. Ambrose? (7) Chancel, a Sixteenth Century text. On the south wall (8) St. Giles with legend *Sc Aegid*—the Saint has a crutch, and at his feet is a hart with a claw tearing its side, and behind can be seen the beast's ears. On the Saint's robe is portrayed a heart pierced by arrow. An unknown king (probably St. Germoe) and an Archbishop, whose mitre is pierced by a sword, St. Thomas of Canterbury. A few lines have been added to this last figure.

Discovered during the restoration in 1890, mostly under 16th century texts, such as the one preserved in the chancel.

**BUDOCK.** Remains of screen, upper part painted in polychrome, lower part having 27 paintings of Saints roughly executed within niches. (*Ecclesiologist*, vol. 12, p. 436).

**CALSTOCK.** Over and around second arch from west, on north side of Nave is a painting (found in 1866) representing the triumph of St. George over the dragon. The princess leads the latter by her girdle towards the city, where the king, her father, is watching her return. St. George follows the dragon on horseback ready with lance to urge the beast on if necessary. The western end of picture is much damaged and the subject not clear. T. HULLAH, Rector.

**CARDYNHAM.** Decayed paintings in the Chancel. (*J. R. Inst. C.*, 1872, p. 57).

**CONSTANTINE.** Head and hand of a Bishop, mitred, on north wall of transept, known as Bosahan Aisle. A. HARRISON, Vicar.

**CRANTOCK.** Chancel walls originally decorated with conventional masonry jointing in red—two large patches of plain chocolate red had been on each side of east window. On north wall of Nave, traces of a long device, a border of red and yellow in diagonal stripes—a running hart head lost above



(probably remains of a painting of the legend of St. Hubert—H.M.W.), indistinct traces of walls having been coloured generally. G. M. PARSONS, Vicar.

CUBERT. Hals says that there was formerly a painting of St. Cuthbert on the walls of this church, but it had been plastered over thirty years prior to his writing. Old parishioners state that there were others, but do not know subjects.  
T.C.P.

CURY. Sculptured heads of our Lord blessing the cup, and the Apostles, coloured and gilt, probably portions of an altar piece. ("S.K. List," p. 82).

DAVIDSTOW. Remains of rood and parclose screens; the panels of the latter had been filled with figures of saints, one still remaining (Exeter Diocesan Architectural Society, Vol. 4, p. 289). Remnants of the latter form part of a screen at west end of new church. H.M.W.

FOWEY. Some poor modern paintings on whitewash destroyed at the restoration in 1876. H. N. PURCELL, Vicar.

GLUVIAS. Two "Tudor" roses, one red and one blue on arch of one of north aisle windows. A. A. VAWDREY, Vicar.

GORAN. On north respond, north transept, and north side an Agnus Dei coloured; red cross on flag staff surmounted with cross within a circle of about twenty inches in diameter, much mutilated at restoration. C. R. SOWELL, Vicar.

GRADE. Principals of roofs of chancel and transepts painted in red, black, white, and yellow. ("S.K. List," p. 115).

Now an absolutely new church, the old one was pulled down 1861.

GULVAL. South side of nave, on moulding of third arch, were formerly traces of ancient painting. ("S.K. List," p. 219). Gulval has since been re-built. When east wall of chancel was rebuilt in 1885, there was found a black diaper on a buff ground with yellow double fleurs-de-lys in the openings. This was copied on new wall. On south-western pillar of nave is a shield with the "ragged staff" on a red ground. This is the only old painting remaining. W. W. WINGFIELD, Vicar.

- GUNWALLOW.** On panels of rood screen paintings of the Apostles with their emblems, St. John with chalice and serpent issuing from it, St. James the Great with scrip and staff, St. Matthew with axe, etc. ("S.K. List," p. 118.) The colours are very dim. These panels are now used as doors!
- HELLAND.** Painted wall plate of former roof, loose under the tower, with quatrefoils coloured alternately, blue and yellow on red ground. ("S.K. List," p. 127).
- KILKHAMPTON.** Four highly coloured ovals surrounding texts. A. THYNNE, Rector. Portraits of Moses and Aaron, formerly as an altar piece, said to have been presented by the builders of Stowe. (C. S. GILBERT, *Hist. of Corn.*, V. 2, p. 548).
- LANIVET.** South aisle, Figure of Christ surrounded with various implements (*see* Breage and St. Just-in-Penwith). The descent of our Lord into Hades; Our Saviour with the blood flowing from his side into his two hands open to receive it. A Royal personage (St. Ursula ?) holding a chaplet of beads; a crowned figure, also group of warriors fighting. North aisle—several figures. In splay of window—a female saint with inscription on label over head "S. Crede;" other remains of paintings in porch and elsewhere. (Illustrated in *Journal R.I.C.*, Vol. 1, pp. 76-80, and Vol. 3, p. 172; "S.K. List," p. 154). All destroyed at the restoration in 1863. H.M.W.
- LANREATH.** Nine painted panels on screen in good preservation (J. B. Kitson, Rector). On panels of the screen, the Doctors of the church, SS. Elizabeth of Hungary, Barbara, and Catherine (*The Antiquary*, 1882, VI, p. 220; "S.K. List," p. 315). C. S. Gilbert states (1820), "The rood-loft or screen was at first curiously painted and gilded, but it is now so much injured that it is difficult, if not impossible, to ascertain the subjects which it once exhibited." Mr. Baring-Gould (*Book of the West*), refers these paintings to end of 15th or beginning of 16th century.
- LANTEGLOS-BY-FOWEY.** On back of recess under canopy over the tomb of Thomas de Mohun, under whitewash, a representation of the resurrection in colours. Traces of figures on the south walls under whitewash. J. T. MUGFORD, Vicar.

- LAUNCELLS.** Lower part of screen, figures of the Apostles ("S.K. List," p. 155). Destroyed many years ago. J. W. BLACK, Vicar.
- LAUNCESTON, S. THOMAS'.** Figure of St. Roche with plague spots, with the angel and the dog giving him bread (J. R. Inst. of Cornwall, Vol. 4, p. 57, and Exeter Dio. Arch. Assoc., N.S., Vol. 3, p. 60). This painting is near the foot of the north wall at the eastern end of the south aisle. It measures 3-feet square, and is inclosed in a wooden frame with folding doors. On the south wall (opposite this St. Roche) is a plain stone piscina, on which is painted a crocketed canopy. This is protected in the same sensible method as the picture of Roche. There is a small foliated design high up on the north wall, not far from the St. Roche. Colouring on Norman pillar and capital. Chequered panelling, circa 1550, painted over the rich, chequered and flowing outlines of the original decoration. On Pulpit, which was brought from North Petherwin, panel paintings of saints ("S.K. List," p. 155). The original colours apparently blue, red, and white. Now covered with brown paint.—J.D.E. Paintings of Moses and Aaron on panels on each side of the altar in 1820. (C. S. Gilbert's Hist. of Cornwall, Vol. 2, p. 502).
- LINKINHORNE.** When whitewash was removed during the restoration in 1890, a life-sized figure of our Saviour not on the cross, but with blood streams on his arms, surrounded by small figures, and scenes portraying the Seven Acts of Mercy was discovered, dating from the 14th century. (Murray's Handbook of Cornwall, 11th ed., 1893).
- LOSTWITHIEL.** Over the north door alabaster alto-relievo of the flaying of Saint Bartholomew. Colouring restored. ("S.K. List," p. 165).
- LUDGVAN.** On north wall, painting of St. Christopher bearing the Infant Christ, with hermit, etc., now destroyed. (Described and illustrated from a drawing in MSS. of Dr. Borlase, in possession of Lord St. Levan, J. R. Inst. C., Vol. 4, p. 50).
- LUXULLIAN.** Formerly (before 1820) there was a rood-screen and loft which displayed full length figures of the Apostles

painted and gilded. This ancient screen, with the figures still visible, has been cut to pieces, merely to patch up old seats. (C. S. Gilbert's *Hist. of Cornwall*, vol. 2, p. 870).

**MABE.** Painted and gilt sculptures, fragments of the reredos. (1) Represents the Martyrdom of a Bishop; he is in a cauldron of boiling pitch, which the tormentors are pouring over him, executioner with sword by side, king in background. (2) A female saint (probably St. Genevieve). (3) The Scourging of Christ. (4) A saint with nimbus in a doorway, raising of Lazarus. (5) A building. (6) Woman with hands clasped. (7) Priest in pulpit. ? The presentation of our Lord in the temple on Candlemas Day. (8) St. Stephen. And other fragments.—(Described and illustrated, *J. R. Inst. C.*, vol. iv, p.c. Vol. 14, p. 411.)

**MADRON.** Colour on part of rood-screen, also some (nine) figures (probably portions of a reredos) carved in alabaster and gilt, with inside of wings coloured alternately red and blue, representing the heavenly hierarchy. (Illustrated, *Blight's Churches of West Cornwall*, p. 20).

Fragments of 16th century rood-screen discovered during restoration in 1887, and incorporated into new screen.—T.C.P.

**MAWNAN.** Four panels of rood-screen bear paintings of four Apostles, identical with those at Budock and Gunwalloe. H. L. LEVERTON, Rector. (“S.K. List,” p. 175).

**MENHENOT.** Remains of ancient colour on bosses and rafters of the north porch, traces of coats of arms on some of the shields against wall plates of north aisle. C. E. HAMMOND, Vicar.

**MINSTER.** South Aisle. Figure of a man and other mural decorations, discovered during restoration and destroyed. Formerly a fine carved oak rood screen existed in this church, but it was removed about 60 years ago, it is said, by order of the Rural Dean. (Maclean, *Hist. Trigg Minor*, Vol. 1, p. 606).

**MORWENSTOW.** On north wall of Chancel, under a rounded trefoil arch coloured yellow, a female figure (St. Morwenna?) with veil, yellow dress, and cloak outlined in red, giving the benediction over the kneeling figure of a priest with his

hands clasped—? the priest who built the chancel in the 13th century invoking the blessing of the patron saint on his work; date about 1250. (This is illustrated in vol. 6 of *The Western Antiquary*, p. 143).

On north side of Chancel, a curious piece of wood carving with a castle and various animals and heads, all richly gilded and coloured, may date from the 16th century. C. E. KEYSER, *Arch. Journal*, March, 1901.

This piece of wood carving was brought by Rev. R. S. Hawker from Tamerton. "It represents a castle attacked by a dragon with two heads. From the mouth of a beardless face issues a dove, which is represented flying towards the castle \* \* \* \* On the other side of the castle was originally a bearded head and a dove issuing in a similar manner from it, but it has been broken away. See illustration and description in *Blight's Crosses, and Life of R. S. Hawker*, BARING-GOULD, p. 62. And thus were our churches robbed, see *Launceston*.—H.M.W.

There were various rude outlines of figures on old walls of the nave, much defaced and scarcely capable of preservation before the whole church was restored. Nothing seen of them until the upper coat of plaster was removed in 1881. J. TAGERT, Vicar.

Some fragments of 16th century rood screen, doves flying amongst oak leaves and vine branches, and a fox running after them, richly gilt, still exist; remainder of screen cut down and burnt by the parish clerk 1834. This carved screen of most beautiful workmanship, was erected in 1575, chiefly at the expense of the Kempthornes. (C. S. GILBERT, *Hist. of Cornwall*, vol. 2, p. 556).

MYLOR. North wall of Nave: St. Christopher, destroyed; a female saint, etc.; numerous layers of paintings and texts; painted figure of an angel holding a St. George's Cross. Wall re-built at restoration, 1889, and paintings destroyed.—T.C.P. Portions of rood screen, painted and gilded with figures of saints and inscriptions in the Cornish language. (Described and illustrated *J.R. Inst. C.*, Vol. 3, pp. 168-170; Vol. 4, p. 53).

- NEWLYN EAST.** Some old panneling, now replaced in a new chancel screen, bears traces of colour. F. J. BONE, Vicar.
- NORTH PETHERWYN.** Traces of colour on east wall of Chancel [Vicar, J. B. Trentham, says "apparently E. E." sed qu.]. On Nave arcades remains of bordered texts, post-Reformation, with earlier paintings beneath. None of these preserved at restoration of 1876.
- PADSTOW.** Chancel roof laid out in panels of wood and tufted with gilt knots at the angles. (Whitaker, *Ancient Cathedral of Cornwall*, Vol. 1, p. 128).
- POUGHILL.** Two large paintings of St. Christopher (one on north wall and other on south wall), unfortunately brilliantly repainted at the instance of the late vicar, a crown being added to one, date about 1470. C. E. KEYSER, *Arch. Journal*, March, 1901.
- POUNDSTOCK.** Portion of screen with painted figures. ("S.K. List," p. 201). On the north wall of the north aisle—(1) The tree of the seven deadly sins, showing the head of pride with an attendant demon at the top, and the other sins at the extremities of the branches. Scrolls with the title of each sin were originally painted around, but only one now remains. (2) Christ surrounded by various implements, figure outlined in yellow, rather indistinct, partly in armour?; border around with red roses at the corner, date about 1450. C. E. Keyser, *Arch. Journal*, March, 1901.
- These paintings are not restored. There are traces of colour under the whitewash. The church was painted more than once; several texts in different parts have been discovered. E. P. HEPPLETHWAITE, Vicar.
- PROBUS.** Lower portion of rood screen, constructed of panels taken from the old screen when it was destroyed in 1723, inscription in gold letters, "Jesus hear us thy people and send us Grace and Good for ever." Chancel roof decorated in 1886.—H.M.W.
- S. ANTHONY-IN-ROSELAND.** On the walls old paintings, chiefly in black and red, discovered during the restoration. ("S.K. List," p. 217). None now existing.—H.M.W.

S. BURYAN. Remains of rood screen richly painted and gilt (Blight, *Churches of West Cornwall*, pp. 5, 128; "S.K. List," p. 218; *Cornish Magazine*, vol. 1, pp. 308-314).

C. S. Gilbert states (*Hist. Cornwall*, Vol. 2, p. 725) that the beautiful oak screen which formerly reached across the church, and was ornamented with a rich variety of carved work and gilding, representing a profusion of figures, such as huntsmen, hounds, foxes, deer, and birds, was destroyed in 1814.—H.M.W.

S. CLEMENT. North wall of Nave: large painting of St. Christopher discovered in 1849, and destroyed during the restoration in 1865. Paintings were found on the splays of the windows of the south aisle—a female saint, St. Margaret? The Entry into Jerusalem *or* The Flight into Egypt (subject indistinct), and the Crucifixion. Principals of old oak roof of chancel painted scarlet and white and gilt. (Described and illustrated, *J.R. Inst. C.*, Vol. 2, pp. 44-46). All the plaster was stripped from the walls, the paintings destroyed, and the oak roof, which with some repairs would have lasted many years, was taken down and broken up.—H.M.W.

S. COLUMB MAJOR. Remains of paintings were discovered during the restoration in 1845. Traces of colour on lower panels of rood screen. ("S.K. List," p. 218). There were found in the spandrils of N. arcade of nave on removing plaster in 1840, paintings of (1) The Crucifixion, (2) The Creed (or Lord's Prayer), in black letter, enclosed in a border. These were plastered over and so remain. Two large niches in east wall of north chapel show traces of colour. E. J. WALKER, Rector.

C. S. Gilbert (*Hist. of Cornwall*, Vol. 2, p. 662) states (1820) The pulpit is ornamented with shields bearing coats of arms of Arundell, Carminowe, Granville, Moyle, etc., but most of the colours are wrong.—H.M.W.

S. COLUMB MINOR. "Rood-screen and loft (yet standing, though without a rood to it), a most curious and costly piece of workmanship, carved, and painted with gold, silver, vermilion, and bice, is the masterpiece of art in these parts

- of that kind" (Hals). Put up in 1521, destroyed in 1795. (C. S. Gilbert, *Hist. Cornwall*, Vol. 2, p. 674).
- S. ENDELLION. Distemper paintings, discovered on the walls, subjects uncertain. ("S.K. List," p. 219). None now exist. R. H. TREFFRY, Rector.
- S. ERVAN. At restoration in 1888, traces of painting showing some fish were found on wall of S. transept. The walls were re-built and paintings destroyed. H. M. BARTON, Rector.
- S. EVAL. Traces of colour on masonry of window in north wall and on chancel screen. F. R. SELL, Vicar.
- S. EWE. The Tregonnan aisle on the north wall is (1820) inclosed by a carved screen, with doors handsomely painted and gilded, and further enriched by a variety of armorial bearings. (C. S. Gilbert, *Hist. of Cornwall*, Vol. 2, p. 851). Rood screen bears traces of original colour. J. K. RASHLEIGH, Rector.
- S. FROCK. Texts and colour discovered on the walls during the restoration and restored. (*Ecclesiologist*, Vol. 4, p. 252).
- S. GERMANS. Wooden figure of a monk, with carved robes, bearing a smaller image, about 3-feet high, painted, and face vermillioned, kept in Priory 1804. (Whitaker, *Ancient Cathedral of Cornwall*, Vol. 2, p. 121).

"Beside the hye altare of the same priory on the right hand is a tumber y<sup>e</sup> the walle with an ymage of a bishop, and over the tumber a xi bishops paynted with their names and verses as token of so many bishops biried there, as that ther had beene so many bishoppes of Cornewalle that had theyre seets ther." (Leland's *Itin*, vii, 122).

- S. JUST-IN-PENWITH. On north wall of north aisle, St. George and the Dragon, and a large figure of Christ surrounded by quaint devices, a mermaid with comb, scales, an anvil, boat with fish, etc. *See* Breage and Lanivet. ("S.K. List," p. 219; J. R. Inst. C., Vol. xiv, p. 185).

At the restoration by J. Piers St. Aubyn in 1866, others were found, namely on west wall of north aisle, a city besieged; on south wall two of which I have been unable



to learn the subjects. These and the mermaid picture are gone.—T.C.P.

S. KEVERNE. This painting occupies a prominent position as usual upon the north wall of the Nave, over the north door and opposite to the south or principal entrance.

The date is about 1480. The picture is enclosed in an ornamented scroll border of elegant design. The gigantic figure of Saint Christopher occupies the main field of the painting. He bears the infant Christ upon his right shoulder and looks towards him, while with his two hands he grasps the uprooted sapling that steadies him in fording the river. He wears, as usual, a sort of turban, and has a red mantle wrapped over the left shoulder, the under-tunic being white and flounced below the waist; and beneath this appear baggy trunk hose, the legs below the knee being bare. A number of fish of various kinds are swimming in the stream. On one of these, a large plaice, the orange spots are realistically depicted. A heron is shewn perched on a rock on the left bank.

This stream is depicted as flowing between undulating banks with trees on it, a ship in full sail, having a pennon streaming from the mast, and, to the right of the spectator, is the hermit's cell with a winding path leading up to it. This cell has a small tower at one end with a door in it, and a gabled roof, and below, on the margin of the stream, is the usual figure of the hermit holding out with both hands a lantern to light the saint across. Behind him are trees, one bearing apples, and two rabbits peeping out of a hole.

Around this main subject are eight smaller ones, arranged in square panels, four on either side, and forming a sort of inner border. I have no doubt that the incidents depicted in these are taken from the legend of the same saint's life; but they are unfortunately in a very mutilated state, and it is difficult to be quite certain as to what incidents some of the scenes relate to. The uppermost on either side is half destroyed, and the second on the left hand has not been freed from whitewash. The two lower panels on the left side contain each a male and a female figure standing on a tiled floor. Probably we have here the incident of the two women

sent by King Dagon to lead Christopher into unchastity and idolatry. The woman in one of these scenes wears an ermine-bordered gown and the steeple head-dress so characteristic of the ladies of Edward the IV's reign; and, similarly, the saint is attired in the short jerkin, long hose and black shoes of that period. In one scene he is carrying a club over his shoulder, and in the other he grasps an uprooted sapling.

Nothing can be made of the half-destroyed top panel on the right. It appears to contain a small seated figure and a larger one standing. The next below represents the saint bound to a great post, while King Dagon's soldiers (diminutive figures) are shooting arrows at him: the arrows, in accordance with the legend, are shewn as hanging in mid-air; but one is turning round and darting to put out the eye of the wicked king, whose face can be made out in the left of the picture. The fetters round Christopher's ankles are very distinct.

The third scene from the top appears to have reference to Christopher as one of the race of the Cynocephali, or dog-headed men, in which guise he is said to have appeared at the gate of the city of Samos. A monstrous white beast, with its head thrown back, is apparently causing great wonderment to the men of the city, three of whom can be made out in the picture. According to the legend, Christopher prayed that a sign might be given to convert the people, and when he had planted his iron staff in the ground it forthwith put forth leaves and bloomed: no trace of this tree is visible, however in the painting.

The lowest panel in the right hand tier shews the nimbed figure of the saint as if in the act of falling, while another smaller figure in a quaintly shaped hat (not unlike Punch's traditional headgear) is bending over him with a pair of hand-cuffs or fetters. This probably represents the incident of the collapse of the iron chair into which Christopher was thrust by command of the tyrant king, that he might be roasted over a slow fire.

The difficulty of deciphering these remains of the painting is increased by the existence of portions of a later piece of wall decoration (probably a 16th or 17th century

text within a frame or border), fragments of which still adhere to the original painting.

I do not know of any other mural painting of St. Christopher in which these "events" in his legendary history are depicted in addition to the main subject of his bearing the Christ: this Cornish painting has therefore an unique interest, and it is perhaps worthy of note that the above incidents are taken from the Greek form of the legend. PHILIP M. JOHNSTON.

In the last-named panel there is also a fetter ring fastened to the wall.\*

- S. LEVAN. On the roof of the south aisle are remains of rich painting and gilding, the principals painted blue and gold, arranged chevron-wise with gilt bosses, and fragments of open fleur-de-lys work gilt. Lower part of rood screen has traces of painting on the panels. (Exeter Dio. Arc. Soc., 2nd Series, Vol. 2, p. 217). All gone, new roof placed there in 1874.—T.C.P.
- S. MAWES CHAPEL. In Leland's time there was a painting of the patron saint as a schoolmaster in this chapel. This chapel fell into ruins many years ago and was pulled down.—H.M.W.
- S. MICHAEL'S MOUNT CHAPEL. Rood loft: "carved and painted with the history of the Passion, and not inelegantly for former times." (Polwhele, Hist. of Cornwall, Vol. 2, p. 188). Now removed.—H.M.W.

Three painted and gilt fragments of alabaster reredos. The head of St. John the Baptist in a charger, surrounded by St. Peter and St. Christopher bearing our Lord on the right, an Archbishop (St. Thomas of Canterbury—H.M.W.) and St. James the Great, above the charger, the three persons of the Trinity, below, the Virgin and child; Pilate washing his hands; and The Service of the Mass. (J.R.I.C., Vol. 14, p. 244).

- S. MINVER. Very fine rood screen, painted and gilt, removed in 1837; a portion repaired and set up under the tower arch. (Maclean, Hist. Trigg Minor, Vol. 3, p. 23).

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\* It is hoped to give an illustration of this painting in the next Journal.

- S. MINVER. St. Enodock's Chapel. Formerly remains of paintings on panels of old roof? ("S.K. List," p. 220). Lower portion of rood screen repainted and gilt according to the ancient ornamentation. (Maclean, Hist. Trigg Minor, Vol. 3, p. 34).
- S. NEOT. Slight traces of colour over "St. Neot's tomb" in the chancel. W. R. S. MAJENDIE, Vicar.
- S. TEATH. C. S. Gilbert states that "the pulpit was given to the church by one of the Carminowes in the year 1630, and is ornamented with the arms of that family, with crest and supporters, carved and coloured. The motto in the old Cornish language is "Cala rag Wethlow," in English, a straw for a tale bearer (1820)—H.M.W. This pulpit, with coloured arms of the Carminowes and the motto, still remains in the church. A. D. BARCLAY, Vicar.
- S. TUDY. Shields from old bench ends, with gilded letters, affixed to roof of chancel. (Maclean, Hist. Deanery of Trigg Minor, Vol. 3, p. 318).
- S. VEEP. In 1867, traces of colouring remained on south wall. Hy. OVERY, Vicar.
- S. WINNOW. Traces of colour on screen. ("S.K. List," p. 220). Also on woodwork of roof. R. H. BOLES, Vicar.
- SALTASH. Bosses of roof painted. ("S.K. List," p. 223).
- SANCREED. Remains of the wood screen preserved in the vestry with traces of rich colouring. (Blight's Churches of West Cornwall, p. 25; "S.K. List," p. 223).
- SENNEN. On east wall of south aisle a 15th century painting, The heavenly Jerusalem, two embattled and canopied towers and one side of a third tower, all on a bridge over a stream (*see* Revelation, xxi, 13), perhaps the earthly Jerusalem where many theologians held that our Lord would appear at the last day.—H.M.W. Mutilated alabaster figure, probably the B. V. Mary, found hidden in the wall, painted with gold, vermilion, and blue bice (Hals), now whitewashed ("S.K. List," p. 226). (Painting and figure are described and illustrated in Cornish Magazine, Vol. 2, p. 143).

The walls of the north wing of the transept were covered with paintings, but could not be preserved at restoration of 1870. Subjects unknown. J. H. MICHELL, Vicar.

TALLAND. Two series of paintings of different dates. Lowermost in brilliant colours. The Crucifixion with group of weeping females and some soldiers below. A figure in cloak reaching a little below the knees, standing beside the wells, and drawing water from the centre one. A figure departing from the well bearing on his back a leather vessel slung upon a spear. Our Lord and the Woman of Samaria ("S.K. List," p. 247). A ship in full sail. Detached limbs of figures: two figures pointing to the Crucifixion. These paintings at a subsequent date were covered with plaster, and a second series was drawn in black on a white ground. The paintings included a most horrible picture of Satan with scarlet saucer eyes, at his feet a loathsome reptile. A nun resting her elbow on the back of an ugly dwarf, and a prison with two windows and a door. The original paintings appear to be coeval with the church. All destroyed (Couch's History of Polperro, pp. 66-69). Painted Screen ("S.K. List," p. 247).

Coloured shields of the Bevills and Grenvilles on bench ends of north aisle. (Murray's Handbook of Cornwall, 1893).

TAMERTON. Canopy of pulpit, gilt ornaments on a blue ground. (Lysons' Cornwall, ccxxxii).

TINTAGEL. Numerous paintings were found during the restoration, one set painted over another, amongst the lowest being arcades in bold zigzag patterns of the Norman period (?) they are now again covered with yellow-wash. (Ecclesiologist, Vol. 12, p. 234).

Square-shouldered oak doorway from chancel to chapel on north, once painted a deep red.—H.M.W. ("S.K. List," p. 253).

TREVALGA. Walls painted throughout; on removal of the white-wash, the colours were as brilliant as when first executed:

diaper and other wall decorations in yellow, black, red, and orange. ("S.K. List," p. 255).

Traces of red and yellow colouring on the stones of the arches of the transept windows. H. LINES, Rector.

**TRURO CATHEDRAL.** Old St. Mary's south aisle. Powdering of quatrefoils on granite pillars (nineteenth century).—H.M.W.

The old chancel removed for the Choir of the Cathedral had, in 1820, paintings of Moses and Aaron with Seraphs sounding their trumpets.—H.M.W.

**TYWARDREATH.** Richly ornamented screen: on lower part, paintings of figures in white robes holding the symbols of the crucifixion. (Lysons' Cornwall, cexxxii).

This splendid rood-loft, C. S. Gilbert states, was taken down a few years before 1820, and, with other ornamental work, was then a heap of lumber on the floor of a cross aisle on the northern side.—(Hist. Cornwall, Vol. 2, p. 874).

**UNY LELANT.** Chancel and Parclose screen painted and gilt; roof of chancel painted scarlet, white, blue, and gilt. H.M.W.

**VERYAN.** A rood-screen and loft coloured formerly (1820) stood in this church, with carving below, one of which represented Our Saviour betrayed by Judas Iscariot.—(Gilbert, Hist. Corn., Vol. 2, p. 837).

**VIRGINSTOW.** The original church was pulled down about 1845, when the present building was erected. There were some paintings on the walls, one of which represented St. Christopher bearing the infant Christ on his shoulder across the stream.

The fine carved rood screen was hacked down and given to the villagers for firewood. M. R. BUTLER, Vicar.

**WENDRON.** Mural paintings existed (as also paintings on centre pillar of the arches dividing N. transept from nave) at restoration, circ. 1868, but all destroyed and subjects forgotten. E. L. KINGSFORD, Vicar.

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BREAGE CHURCH.

ST. CHRISTOPHER.

*North Wall of Nave.*







BREAGE CHURCH.

OUR SAVIOUR BLESSING THE IMPLEMENTS OF TRADE.

*North Wall of Nave.*





BREAGE CHURCH.

ST. HILARY.

*Splay of Window North Wall of Nave.*





BREAGE CHURCH.

ST. CORENTINE.

*North Wall of Nave.*

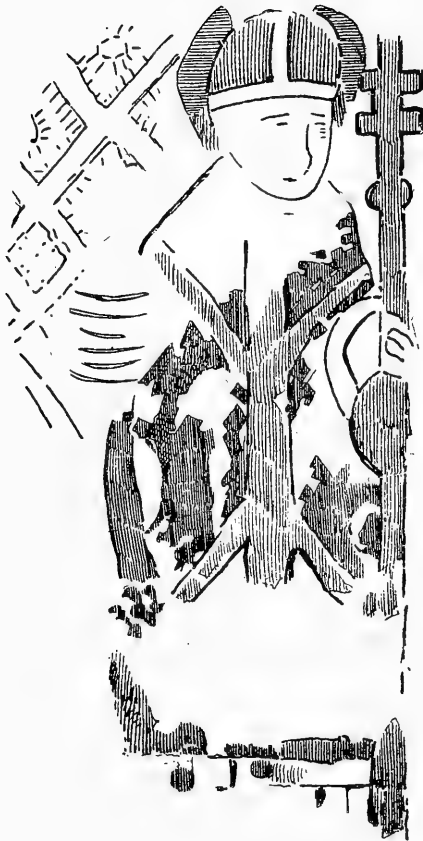




BREAGE CHURCH.  
ST. MICHAEL THE ARCHANGEL.  
*North Wall of Nave.*







BREAGE CHURCH.

AN ARCHBISHOP.

*Splay of Window North Wall of Nave.*





BREAGE CHURCH.

ST. GILES.

*South Wall of Chancel.*





BREAGE CHURCH.

ST. THOMAS OF CANTERBURY.

*Splay of Window South Wall of Chancel.*





BREAGE CHURCH.  
A KING. ST. GERMOE?  
*South Wall of Nave.*







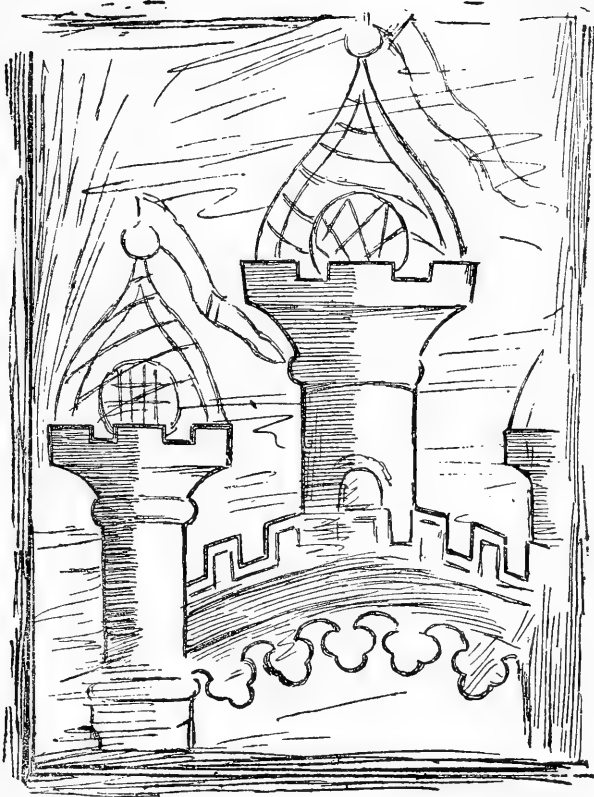
PAINTING, "ST. CHRISTOPHER,"  
ON NORTH WALL OF POUGHILL CHURCH,  
CORNWALL.





PAINING, "ST. CHRISTOPHER,"  
ON SOUTH WALL OF POUGHILL CHURCH, CORNWALL.





PAINTING ON EAST WALL OF SOUTH AISLE  
OF ST. SENNEN CHURCH.



LIST OF THE REMAINING CHURCHES AND CHAPELS OF ANCIENT  
FOUNDATION IN CORNWALL,

*Which either no longer possess old colour decoration, or of which no  
certain report has been received.*

N.B.—Those within brackets are in ruins; those in italics have  
been rebuilt in modern times.

*St. Agnes.* *St. Agnes, Isles of Scilly.* St. Allen. St. Anthony-  
in-Meneage. St. Austell.

St. Blazey. Boconnoc. Botus Fleming. Boyton. Bradoc. St.  
Breock. St. Breward. Broadoak. Broadwoodwidge. St.  
Bryher, Isles of Scilly. Budock. St. Buryan.

Callington. Camborne. St. Cleer. St. Clement. *St. Clether.*  
Colan. Cornelly. Creed. Crowan. Cuby.

St. Dennis. St. Dominick. Duloe.

Egloshayle. Egloskerry. St. Enoder. *St. Erme.* St. Erney.  
St. Erth.

Forabury.

St. Gennys. St. Germoe. St. Gerrans. St. Giles in the Heath.  
Golant. *Grade.* Grampound Chapel to Creed. Gwennap.  
Gwinear. Gwithlian.

*St. Hilary.*

*Illogan.* St. Ive. St. Ives.

Jacobstow. St. John. St. Juliot. St. Just-in-Roseland.

*Kea.* *Kenwyn.* St. Kew. St. Keyne.

Ladock. Lamorran. Landewednack. Landrake. Landulph.  
Laneast. Lanhydrock. Lanlivery. Lansallos. Lanteglos  
by Camelford. Lawhitton. Lesnewth. Lewannick.  
Lezant. Liskeard. *Little Petherick.* St. Petrock Mi.

St. Mabyn. Maker. Manaccan. Marazion. Marhamchurch.  
St. Martin. St. Martin-in-Meneage. St. Martin, Isles of  
Scilly. St. Mary, Isles of Scilly. Mawgan-in-Meneage.  
Mawgan-in-Pydar. St. Mellion. St. Merryn. Merther.  
Mevagissey. St. Mewan. St. Michael Caerhays.

St. Michael Penkevil. Michaelstow. Morva. Morval.  
Mullion.

North Hill. North Tamerton.

Otterham.

Paul. Pelynt. Perranuthnoe. Phillack. Philleigh.  
St. Pinnock.

*Redruth.* Roche. Ruan Lanihorne. Ruan Major. Ruan Minor

Sheviock. Sithney. South Hill. South Petherwyn.  
St. Stephens-in-Brannel. St. Stephens-by-Launceston.  
St. Stephens-by-Saltash. Stoke Climsland. Stratton.  
Stythians.

Towednack. Treneglos. Tresmere. Trewen. Truro, St. Mary  
—S. Aisle only.

Warbstow. Warleggan. Week St. Mary. *St. Wenn.*  
*Werrington.* Whitstone. Withiel.

Zennor.

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LIST OF SUBJECTS.

|               |   |
|---------------|---|
| Bodmin. . .   | St. Christopher.                                |
| Breage. . .   | 1 St. Christopher.                              |
|               | 2 Christ surrounded by implements of trade, &c. |
|               | 3 St. Hilary.                                   |
|               | 4 A Bishop, St. Corentin.                       |
|               | 5 St. Michael the Archangel.                    |
|               | 6 St. Ambrose. ?                                |
|               | 7 St. Giles.                                    |
|               | 8 St. Germoe. ?                                 |
|               | 9 St. Thomas of Canterbury.                     |
| Calstock. . . | St. George and the Dragon.                      |
| Cubert. . .   | St. Cuthbert (destroyed).                       |
| Goran . . .   | An Agnus dei.                                   |
| Lanivet . . . | 1 Christ surrounded by implements of trade, &c. |
|               | 2 Descent of our Lord into Hades.               |
|               | 3 Our Saviour with pierced side .               |
|               | 4 A royal personage, St. Ursula ?               |
|               | 5 St. Crede.                                    |



- Launceston. St. Roche.
- Lanteglos-by-Fowey. The Resurrection.
- Linkinhorne. Our Saviour with pierced side.
- Ludgvan... St. Christopher.
- Morwenstow. The priest who built chancel invoking blessing of  
Patron saint ?
- Mylor. . . St. Christopher (portion only).
- Poughill. . . Two paintings of St. Christopher (repainted).
- Poundstock. 1 Tree of the seven deadly sins.  
2 Christ surrounded by implements of trade, &c.
- St. Clement. St. Christopher.  
St. Margaret ?  
Entry into Jerusalem.  
Flight into Egypt.  
The Crucifixion (all destroyed).
- St. Columb Ma. The Crucifixion (destroyed).
- St. Keverne. St. Christopher.
- St. Just-in-Penwith. St. George and the Dragon.  
Christ surrounded by implements of trade,  
&c.
- Sennen. . . The heavenly Jerusalem.
- Talland. . . The Crucifixion.  
Our Lord and the woman of Samaria.  
The miraculous draught of fishes.  
A second series of demons, etc., painted over the  
former.
- Tintagel. . . Two series one over the other.
- Trevalga. . . Decorated with diaper throughout.
- Virginstow. St. Christopher.
-

|   | Scenes depicted. | Destroyed. | Still Remaining |   |
|---|------------------|------------|-----------------|---|
| St. Christopher                               | .. .. .          | 9          | 5               | 4 |
| Christ surrounded by implements of trade, &c. | .. .. .          | 4          | 1               | 3 |
| St. George and the Dragon                     | .. .. .          | 2          | 0               | 2 |
| The Crucifixion                               | .. .. .          | 2          | 2               | 0 |
| St. Michael the Archangel                     | .. .. .          | 1          | 0               | 1 |
| Entry into Jerusalem                          | .. .. .          | 1          | 1               | 0 |
| Flight into Egypt                             | .. .. .          | 1          | 1               | 0 |
| Our Lord and the woman of Samaria             | .. .. .          | 1          | 1               | 0 |
| The miraculous draught of fishes..            | .. .. .          | 1          | 1               | 0 |
| St. Crede                                     | .. .. .          | 1          | 1               | 0 |
| St. Hilary                                    | .. .. .          | 1          | 0               | 1 |
| St. Giles                                     | .. .. .          | 1          | 0               | 1 |
| St. Roche                                     | .. .. .          | 1          | 1               | 0 |
| St. Thomas of Canterbury..                    | .. .. .          | 1          | 0               | 1 |
| The Resurrection                              | .. .. .          | 1          | 0               | 1 |
| Descent of our Lord into Hades                | .. .. .          | 1          | 1               | 0 |
| Panels of 7 Acts of Mercy                     | .. .. .          | 1          | 0               | 1 |
| Tree of the seven deadly sins                 | .. .. .          | 1          | 0               | 1 |
| Our Saviour with pierced side                 | .. .. .          | 2          | 1               | 1 |
| St. Margaret (?)                              | .. .. .          | 1          | 1               | 0 |
| St. Corentin                                  | .. .. .          | 1          | 0               | 1 |
| St. Ambrose (?)                               | .. .. .          | 1          | 0               | 1 |
| St. Germoe                                    | .. .. .          | 1          | 0               | 1 |
| St. Cuthbert                                  | .. .. .          | 1          | 1               | 0 |
| Agnus Dei                                     | .. .. .          | 1          | 0               | 1 |
| St. Ursula (?)                                | .. .. .          | 1          | 0               | 1 |
| Priest invoking blessing                      | .. .. .          | 1          | 0               | 1 |
| Heavenly Jerusalem                            | .. .. .          | 1          | 0               | 1 |

## REPORT ON BONES FROM HARLYN BAY.

BY JOHN BEDDOE, M.D., LL.D., F.R.S., V.P. Anthropol. Inst.

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Considerable interest may be attached to the stature and physical development of these ancient Harlyn people, and to the size of the long bones, which yield evidence on the subject. The method of utilizing evidence of this kind has been studied by several investigators. The matter is of great medico-legal as well as anthropological interest. The great Orfila attacked it from that point of view; and he published a quantity of material with the view of rendering it more easy to recognise the stature of the deceased owners of separated limbs. Unfortunately, he did not describe with sufficient precision his methods of measurement. The supposed age and sex, the presence or absence of the terminal cartilages, the degree of dryness and of decomposition of animal matter, the position in which the bones (especially the most important one, the femur) are placed for measurement, the inclusion or exclusion of terminal prominences, such as the styloid processes,—all these differences, though some of them may appear trifling, bulk somewhat largely when the total length of the body comes to be estimated. In the case of the arm-bones the side chosen, right or left, may make a considerable difference: the right arm is very generally longer in right-handed people; and so, apparently, but less distinctly, is the *left* leg.

Orfila was followed by our countryman, Humphry, whose figures were utilised by Thurnam and Rolleston. Quetelet only touched the subject. Then Topinard, our great master in physical anthropology, advanced it a stage, and put out a system of computation, based on the proportion per cent. of the length of each long bone to that of the whole body, which he stated, however, to be only provisional, in the absence of what he thought would be sufficient material. This plan, however, was adopted by General Pitt-Rivers in his great book, with the result that the Romano-British villagers of Rotherley came out remarkably short. I followed next, and using chiefly Orfila's, Humphry's,

and Topinard's material, devised a scheme for the estimation of stature, which I still think to be about the most simple and practical in the field. Though based on the length of the femur only, yet as it automatically provides for the greater proportionate length of limb in tall persons, I believe it yields fairly good results;—and more than fair results, more than an approach to accuracy, cannot be attained even when four or more long bones are taken into account. My plan consists in adding 13 inches to thrice the length of the femur in English, or 330 millimeters to thrice its length in French measure, together with half the excess of length, if any, beyond 19 inches or 480 millimeters. In the case of women, read 12·5 and 17·5 instead of 13 and 19, or 320 and 445 for 330 and 480. It will be observed that, except in the case of absolute dwarfs, the 13 inches added is always less than the length of the femur; and the longer that bone is, the less proportion does 13 inches, or 33 centimeters, bear to that length, and the larger proportion does the length of the femur bear to the entire stature. It would not be very difficult to construct a similar shifting yet simple rule for the other long bones; but as Manouvrier and Pearson have both worked out rules from Rollet's data, it is scarcely worth while to do so.

Rollet of Lyon, who was the next in the field, made a most valuable contribution to our knowledge on the subject by supplying a new, large and accurately observed mass of material from the hospitals of that city—measurements of the six principal long bones in 100 corpses whose length had been previously ascertained. He also drew up a tabular rule for the reconstruction of stature, based on his new material, but being rather more a surgeon than an anthropologist, he committed a curious error, pointed out afterwards by Manouvrier, by ranging his facts in the order of stature rather than of the length of bones. He thus missed the cardinal fact of the greater proportion borne by the trunk to the limbs in most short-legged people, and his table is not very accurate except for statures approaching the medium.

A distinguished anthropologist, however, Manouvrier, and his accomplished pupil Rahon, took up and recast Rollet's material; and Manouvrier's tables, and Rahon's applications of them, are now in pretty general use. Constant reference to these tables, and some readiness in calculation, are required for their

utilization; but there are no apparent defects in Manouvrier's plan except two, which have been pointed out by Professor Pearson, the latest worker in the field, and which affect such bones as we have to do with at Harlyn. They are these:— Rollet's bones were fresh, moist, and full of animal matter; but ours are ancient and dry, and have lost much of their organic substance, and are probably from 1 to 3 millimeters short of their original length. Manouvrier does not seem to have made any provision for this reduction; and I apprehend that his computed statures must on an average be a little too low on that account. Manouvrier appears, moreover, to have used the oblique measurement of the femur, that which is gotten by adjusting both its condyles to a plane, and its head to a parallel one, instead of the maximum length, which Topinard favours. This plan would give a smaller stature, in most cases, than the other, by perhaps 7 millimeters or over a quarter-inch.

Next followed Professor Carl Pearson, who also based his method on Rollet's facts. It was unfortunate that the greater part of these facts related to old or at best elderly subjects. Of his 50 men, no less than 37 were aged 50 or upwards, 25 of these 60 or upwards, and 18 past 70 years. Of his 50 women also, exactly a half had passed their sixtieth year. It so happened that an undue proportion of the older people were of tall stature, and both Rollet and Pearson thought the inclusion of these old people would not notably vitiate their averages, and accordingly included therein the entire hundred. Manouvrier and Rahon thought differently, and made use of the younger 50 only; and that they did so rightly may, I think, be easily shewn.

Thus, although some femora belonging to aged persons seem to lose a little of their length through the bending of the neck from continued pressure, so that the angle of incurvation at the trochanters appears less obtuse, I find that Rollet's oldest 10 men, averaging 1631 mm. (corpse-length), had an average femur-length of 445·8 mm., while in 13 men of 51 and under, averaging about the same stature (1636 mm.), the femur-length was only 437 mm., or about 9 mm. less. In ten of his oldest women, with an average stature of 1526, the femur measured 419·6, while in ten women of 40 years or less, with a stature of 1529, the femur-length was only 408·9, less than in the

old women by quite two-fifths of an inch; whence I conjecture that these same old women had lost about an inch and a half of their adult stature. Similarly with the humerus. Ten men over 70, and averaging 1683 mm. of corpse-length, had humeri of 336·8 mm., while ten men under 47, and averaging 1683 mm., had humeri of 328·4 mm. only, *i.e.*, about  $\frac{1}{3}$ -inch shorter, which would correspond to a shortening of stature in the old men of about  $1\frac{2}{3}$ -inches.

It is true, as Professor Pearson points out, that in ancient as in modern burying-grounds, we often have to deal with a large percentage of old persons; but this consideration does not seem to me to be of much significance, seeing that the average stature we desire to ascertain is not that of the immature or the decrepid, but that of developed adults before they begin to decline.

There is another drawback to Professor Pearson's system, which it shares with all the others. It is based upon corpse-length, and we do not—I may almost say we cannot—know what is the true relation between corpse-length and living stature. We know that a living man measures more in the horizontal than in the vertical position; but that is nearly all we know upon the subject. Provisionally, we may adopt M. Manouvrier's estimate, *viz.*: that the corpse measures about two centimeters, or  $\frac{8}{10}$  of an inch more than the erect and living body.

Pearson's plan is based on formulæ of regression for the organs concerned. I confess that I am not mathematician enough to follow him always. But he is the only one of us who has applied a competent knowledge of mathematics to the questions dealt with; and he has certainly worked them out more elaborately than any previous writer. On the qualifications necessary to be applied to Rollet's material, such as the modes of measurement, the thickness of cartilages, the dextro-sinistral differences, the effect of drying on the length of bone, he is extremely good. Manouvrier and he have worked out, both what the former calls the paradox involved in the varying proportion of increasing stature to bone-length, and the analogous one affecting the stature of women. This second paradox consists in the fact that whereas, speaking generally, in women as compared with men, the body is long and the limbs are short, nevertheless, any given length of femur usually indicates a

higher stature in a man than in a woman, because the comparison is made between a tall and therefore relatively short-bodied woman and a short and therefore relatively long-bodied man. For this fact I made an allowance, perhaps an insufficient one, in my scheme. Manouvrier and Pearson have, as I think, made too great a one, and Rollet himself, blinking the paradoxical fact, allows a greater stature to the woman on an equal length of bone. Sappey found a quite trivial deficiency. To sum up the merits of the several ways of estimating stature from long bones, I believe that:—

Pearson's is capable of yielding the most accurate results; but it is troublesome in application, requiring a good deal of computation: it probably under-estimates the stature of tall men and women, who are almost absent from Rollet's material.\*

Manouvrier's is tolerably easy of application, and fairly accurate; but its results are probably always a little below the truth.

Topinard's method is simple, and it yields good results for middle statures, but deficient ones for low and excessive for high statures. Of Rollet's the same may be said, and his figures for tall women are specially exaggerated.

My own plan has the merit of simplicity and easiness: it probably errs by excess in the higher statures; and in single cases the possible error is greater than where several bones are used; but where a whole series of femora is available there is little chance of going far wrong, the femur being decidedly the bone most nearly correlated with the stature.

A real criterion is almost unattainable. Criminals furnish nearly the only one possible; and Manouvrier availed himself of them. Eight malefactors, whose living height had been ascertained in the ordinary way, were beheaded and anatomized. Their stature, calculated according to the several plans that have been mentioned, was by every one below the actual fact.

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\* Rollet has only three men in his lists over 1730 mm. (5 feet 8.1 inches), and only two women over 1630 mm. (5 feet 4.2 inches). His subjects were natives of Lyon and the surrounding departments, mostly brachycephals of the Alpine race or type, and perhaps in bodily proportions somewhat different from our northern long-heads.

Thus the average deficiency was :

|                               |                  |
|-------------------------------|------------------|
| By Manouvrier, with the femur | —12 millimeters. |
| with 4 bones                  | — 6     ,,       |
| By Pearson .. with femur      | —33     ,,       |
| mean of 10 methods—           | 23     ,,        |
| By Rollet .. with femur       | —44     ,,       |
| with 4 bones                  | —15     ,,       |
| By Beddoe .. with femur       | —11     ,,       |

The number, however, was insufficient to yield a trustworthy average; and the proportions of some of these wretches were apparently rather abnormal.

Other criteria, employed by Pearson in default of better ones, seem of little or no value. Such are those afforded by the bones of the Aino, the Bushmen, the Andamanese. Pearson's method comes out extremely well in the Aino, and Manouvrier's and mine fairly; in the other races just mentioned, Pearson's appears to me to fail, while what he calls Flower's, which is pretty nearly Topinard's, answers better. The reason of all this I take to be, that the Aino are a race who would be tall if they could, a race stunted by unfavorable conditions, such as cold and starvation; whereas the Bushmen are genuine hereditary pygmies, and are, quoad bones at least, normally proportioned.

#### GENERAL RESULTS FROM HARLYN BAY.

|             |                               | inch. | mm.      | according to | Estimated<br>Stature.<br>mm. |
|-------------|-------------------------------|-------|----------|--------------|------------------------------|
| Male femora | [10] average                  | 17·1  | or 434·6 | Pearson      | 1629                         |
|             |                               |       |          | Beddoe       | 1634                         |
|             |                               |       |          | Manouvrier   | 1629                         |
| Do.         | (excluding aged), [7] ,,      | 17·3  | or 439·6 | Pearson      | 1639                         |
|             |                               |       |          | Manouvrier   | 1637                         |
|             |                               |       |          | Topinard     | 1628                         |
|             |                               |       |          | Beddoe       | 1649                         |
| Male Tibiæ  | (excluding 2 as aged), [8] ,, | 14    | or 357   | Pearson      | 1635                         |
|             |                               |       |          | Manouvrier   | 1628                         |
| Male Humeri | .. [8] ,,                     | 12·3  | or 313   | Pearson      | 1612                         |
|             |                               |       |          | Manouvrier   | 1631                         |
| Male Radii  | .. [6] ,,                     | 9·6   | or 238·8 | Pearson      | 1640                         |
|             |                               |       |          | Manouvrier   | 1639                         |



|                         |    |     |    |                |            |      |
|-------------------------|----|-----|----|----------------|------------|------|
| Male Ulnæ               | .. | [5] | ,, | 10·1 or 256·8  | Manouvrier | 1646 |
|                         |    |     |    |                | Rollet     | 1650 |
| Femora, probably female | }  | [4] | ,, | 16·75 or 425·4 | Pearson    | 1556 |
|                         |    |     |    |                | Manouvrier | 1559 |
|                         |    |     |    |                | Topinard   | 1575 |
|                         |    |     |    |                | Rollet     | 1581 |
|                         |    |     |    |                | Beddoe     | 1596 |

We are now prepared to form an estimate, at least for the males, with some approach to confidence. I should fix the average stature at about 1640 mm.=64·55 inches, that for females being probably about that given by Pearson's formula, viz.: 1556 mm. or 61·2 inches. My own figure is too high for the women, on the assumption that we have a fair sample of the community. But I am inclined to think the figure for the males an under-estimate, for the following reason:—Some of what would seem to be the largest and thickest femora, and those with the largest heads, are in fragments incapable of redintegration, and therefore of measurement. As a rule, large bones have a better chance of survivance than small ones, and therefore apparently male than female bones; but whether this superiority may be so distinct in very dry soil like the Harlyn Bay sand, I cannot say.

Anyhow, our observations go to swell the mass of evidence that the general population of Britain, before and after the Christian era, was not, in spite of Strabo, of tall stature. It would appear that the stalwart bronze race had not been sufficiently numerous to elevate much, if at all, the stature of the neolithic population. Thus, pretermittting the older and better known lists of Davis and Thurnam, we have from Pitt-Rivers and Garson notes of 6 male femora from Worbarrow in Wiltshire belonging to an extremely dolichocephalous strain (cranial index 69·3), which, according to Pearson, yield a stature of 1625 (exactly 64 inches), Manouvrier's estimate being scarcely lower (1622), and mine very little higher (1632). The subsequent intrusion of the bronze race, whose stature nobody puts much lower than 1700 mm. (67 inches), and most of us a good deal higher (my own figure being 1762), this intrusion, I say, though it may have had something to do with the enlargement of the

cranial index to 75, had left the stature only about an inch higher, according to these Harlyn Bay data.

For the effect which the Roman invasion, dominion and colonization, had on the race in the south-west of England, we have valuable data from the south-western part of Wiltshire, to be gathered from the great work of the lamented General Pitt-Rivers.

#### STATURE OF MALE ROMANO-BRITONS.

|   |                          | mm.  | in.    |
|---|--------------------------|------|--------|
| Rotherley excluding aged, by Pearson and Manouvrier |                          | 1623 | =63·9  |
|   | by me ... ..             | 1627 | =64·1  |
|   | by Garson after Topinard | 1584 | =62·36 |
| Woodcuts & Woodyates, by Pearson and Manouvrier     |                          | 1654 | =65·12 |
|   | by me ... ..             | 1670 | =65·68 |
| Worbarrow, secondary { by Pearson and Topinard      |                          | 1663 | =65·55 |
| interments, { by Manouvrier ... ..                  |                          | 1658 | =65·27 |
|   | by me ... ..             | 1686 | =66·38 |

Here the figures from Rotherley represent probably a tolerably pure British population of servile status, diminished in physique by tyranny and oppression, and by the subtraction of the finer men for military service. In the other villages, and in the burials at Worbarrow, we have an admixture of the ruling caste, as is evidenced in some cases by the cranial aspect, and by remains of military accoutrements, indicating an Italian or more probably a German legionary. Following these, in the same neighbourhood, and investigated by the same zealous hands, are the remains of the Saxon settlement of Winklebury. Here the stature rises again distinctly with the introduction *en masse* of a race hitherto occurring only sporadically. As the average height increases, or rather as the bones lengthen, estimates range more widely: the lowest for these Saxons is Manouvrier's of 1687 mm. (66·44 inches), then follow Pearson's 1693 mm. (66·65 inches), Garson's version of Topinard's 1709 mm. (67·28 inches), my own and Topinard's 1734 mm. (68·26 inches), and finally, Rollet's at 1740 mm. (68·50 inches).

There is very little tendency to platykemia in the Harlyn Bay bones. Perforation of the fossa of the olecranon, in the humerus, occurs in some instances. The length of the clavicle averages only 136 mm., males and females both included. This

is a low average; it is even a trifle below that of the Romano-Britons of Rotherley, and that of the only one of the old Warbarrow neolithians whose clavicle has been preserved, viz. 138 mm. In all these cases there would probably be a deficiency in breadth of shoulder; but it must be confessed that the basis for averaging is rather a small one.

The method of interment is curious and interesting. It is found largely in East Central Europe, apparently at divers epochs; and Zaborowski, who has studied it, affirms its frequent use in Switzerland among the long-headed neolithic people, before the bronze-using folk introduced cremation. But here we are certainly in the late Keltic, one may say post-cremation, period. The presence or near neighbourhood of the slaty rock, which afforded these slabs, may have had much to do with the survival of the practice. I leave the subject of posture to Mr. Iago and Mr. Baring-Gould, who had the best opportunity of studying it; and I wish to confine my attention to the bones themselves.

It is somewhat disappointing that out of so large a number of disinterments we have so few skulls that are at all measureable. The dry sand that preserved them probably also lent assistance to the perishing of the animal matter contained, and thus left them exceedingly brittle. We have, however, enough wherefrom to draw some conclusions.

I have ascertained the cranial index of breadth in thirteen crania and calvaria. Of these one belonged to a child, and was rather broader (79·7) than those of the adults, with one exception, the male one now in the Plymouth museum. Another, apparently female, gave me an index of 63·63; but I have no hesitation in ascribing this extreme narrowness to posthumous distortion from superincumbent pressure. We have now ten remaining dolicho-, or mesokephals, with an average index of 74·49, and one brachykephal of 82·22. The ten range from 70 to 78·61,\* 5 being dolicho and 5 mesokephalic. There are several other skulls which may, I hope, be put together, one or two of which may further help us in forming an opinion as to the facial types. One among them gives me the impression of belonging to a brachykephal, but certainly the tribal form was dolichokephalic,

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\* Or perhaps a little less. See Notes on the skulls.

perhaps raised a little in index by a broad-headed cross. The vertical aspect shews the varieties of form usually found in long-headed folk, in some cases an elliptic, often an oval, sometimes a coffin-shaped or hexagonal outline. The profile, or lateral aspect is perhaps more often low, but sometimes very well developed, the brows often rather prominent, the parieto-occipital or lambda region flattish, and the anterior sagittal region elevated or slightly acuminate. The occipital aspect is more often rounded than pentagonal or carinate. Some of the crania, rounded and with prominent brows, seem to approach the Sion type of His and Rutimeyer. The parietal bosses are not generally much marked. Absatzung (capsulation of occiput) occurs; so does phænozygy; but in rare instances have zygomata been preserved. Nor, unfortunately, in most cases have the orbits survived; but I think the square form of orbit prevailed, though sometimes megaseme. Nor is there much evidence as to the form of nose; only we see that it was, sometimes at least, aquiline or high-bridged, and leptorrhine (very narrow). Of few and fragmentary maxillæ, two exhibit very marked prognathousness, which is a very rare feature in the neolithic race: one of these two belonged to a female, the other probably to a young dolichocephalic male subject. If it be a race feature, it may have been derived from the broad-headed bronze race, in which it is not so uncommon, or possibly from even later colonists, of whom more than one wave or swarm had doubtless arrived and spread themselves in South Britain between the bronze conquest and the period of our interments.

One must say a few words on the one measurable brachycephalic skull, which is in Plymouth museum, and is of great interest. It is a male skull of fair capacity (1473 by estimate), and of a cuboid or trapezoid form, in the vertical aspect sphenoboloid, as I suppose Sergi would call it, having the maximum breadth placed far back, but in the lateral and posterior aspects platycephalic (flattened), and with a very flat though slightly capsulated occiput. The orbits are megaseme; and it is leptorrhine or mesorrhine. It is extremely unlike to all its quondam neighbours, and to the delicately formed dolichocephalic female skull which now accompanies it. Nor does it resemble the ordinary British brachycephalic of the bronze period; but in

almost all points it seems to me to be like the well-known Disentis type of Switzerland, so called by His and Rutimeyer, or the Sarmatic type of Von Hölder, a type which occurs plentifully, not only in its proper Alpine or Sub-Alpine habitat, but in Bretagne and among the Walloons, and which, crossed in varying degree with the pure blond dolichocephal, becomes the Sarmato-Germanic type of Von Hölder, the Kymric of some other writers, and in a highly diluted form seems to be fairly common in the North of England and North Wales. In its pure form it goes with short stature, as is the case in the present instance; for Professor Pearson and I would both make the man about 5 feet 2 inches, and Manouvrier and the rest somewhat less. The flattish nasal bones, again, are quite unlike the strong prominent feature which is so conspicuous in the vigorous and stalwart bronze race. The occurrence of a skull of this type and these proportions is, I think, one of the most interesting details connected with the Harlyn Bay discovery; for, as I have explained, it is not mere short-headedness or round-headedness that is in question. The word "round," indeed, is often very incorrectly applied as a generic equivalent to brachycephalic. The present cranium is really anything but round; and the application of this word to skulls which are rather square, or wedge-shaped, or heart-shaped, than round, simply because they are short and broad, is to be deprecated.

The altitudinal, or length-height index, was capable of computation in only 5 cases; in four of which it was low, a little below 70 in every case, including the brachycephal. The remaining skull (the first one in my list, marked Q), was a fine large one of the coffin-shaped type, very narrow in proportion, but lofty and capacious. The owner, however, was neither tall nor of a large frame: in all respects he must have conformed to the old neolithic, or, as we often call it, Iberian type.

Several of the other skulls are of large dimensions. In one only of these, however, can the capacity be estimated; and it is very considerable. This one also approaches a common neolithic type, though not so closely as Q. Another (N), probably the largest of all, is much broader, with some resemblance to the Sion type, and probably a strong cross of the blood of the bronze race.

On the whole there is more resemblance, I think, to the Rotherley series of Romano-British skulls than to any other with which I am acquainted; but I cannot recognize at Rotherley the inclination towards the Sion type which strikes me in some of the Harlyn Bay series. The average dimensions, if we compare the males, are pretty nearly the same, the Harlyn Bay means being a little broader and lower.

|              | Av.<br>Length. | Av.<br>Breadth. | Av.<br>Height. | Indices. |         |
|--------------|----------------|-----------------|----------------|----------|---------|
|              |                |                 |                | Breadth. | Height. |
| Rotherley .. | 185·6          | 138             | 134            | 74·5     | 72·2    |
| Harlyn ..    | 185·7          | 139·6           | 133            | 75·1     | 71·6    |

Judging by the eye, I should say that the bronze type is even now not uncommon in Cornwall, whereas in Wiltshire it is certainly very rare.

A word yet on the condition of the teeth. Caries was not in all cases entirely absent, but it was very rare. On the other hand the surfaces of the teeth were extensively worn down in the older subjects, and to a less degree even in the younger ones. One may conjecture that these people fed largely on grain or other coarse and hard vegetable food. This would accord with the conclusion to be drawn from the absence of weapons and of notable wounds, that this was a peaceable and sedentary community, not a nomadic or predatory one. As for the date of their deposit, these bones can tell us little, but we may conjecture with some confidence that it was after the Gallo-Belgic and before the Roman conquest. As Sir John Evans has well said, the finding of but a single coin might have put a different aspect on the matter.









| No. | Name            | Age | Sex    | Religion   | Marital Status | Education   | Occupation           | Income   | Assets    | Liabilities | Net Worth |
|-----|-----------------|-----|--------|------------|----------------|-------------|----------------------|----------|-----------|-------------|-----------|
| 1   | John Doe        | 45  | Male   | Christian  | Married        | High School | Teacher              | \$30,000 | \$100,000 | \$50,000    | \$50,000  |
| 2   | Jane Smith      | 35  | Female | Catholic   | Single         | College     | Nurse                | \$25,000 | \$80,000  | \$20,000    | \$60,000  |
| 3   | Robert Brown    | 55  | Male   | Protestant | Married        | University  | Engineer             | \$40,000 | \$150,000 | \$70,000    | \$80,000  |
| 4   | Emily White     | 25  | Female | Jewish     | Single         | College     | Software Developer   | \$35,000 | \$90,000  | \$10,000    | \$80,000  |
| 5   | Michael Green   | 60  | Male   | Muslim     | Married        | High School | Retired              | \$20,000 | \$70,000  | \$30,000    | \$40,000  |
| 6   | Sarah Black     | 40  | Female | Buddhist   | Single         | College     | Marketing Specialist | \$28,000 | \$85,000  | \$15,000    | \$70,000  |
| 7   | David Lee       | 50  | Male   | Hindu      | Married        | University  | Lawyer               | \$50,000 | \$200,000 | \$100,000   | \$100,000 |
| 8   | Alice King      | 30  | Female | Sikh       | Single         | College     | Accountant           | \$22,000 | \$75,000  | \$12,000    | \$63,000  |
| 9   | James Hall      | 48  | Male   | Christian  | Married        | High School | Construction Worker  | \$18,000 | \$60,000  | \$25,000    | \$35,000  |
| 10  | Olivia Taylor   | 28  | Female | Catholic   | Single         | College     | Graphic Designer     | \$24,000 | \$78,000  | \$8,000     | \$70,000  |
| 11  | Benjamin Adams  | 52  | Male   | Protestant | Married        | University  | Business Owner       | \$60,000 | \$250,000 | \$120,000   | \$130,000 |
| 12  | Mia Baker       | 32  | Female | Jewish     | Single         | College     | Investment Advisor   | \$32,000 | \$95,000  | \$18,000    | \$77,000  |
| 13  | Lucas Wilson    | 42  | Male   | Muslim     | Married        | High School | Sales Representative | \$26,000 | \$82,000  | \$22,000    | \$60,000  |
| 14  | Isabella Moore  | 22  | Female | Buddhist   | Single         | College     | Student              | \$15,000 | \$50,000  | \$5,000     | \$45,000  |
| 15  | Ethan Clark     | 58  | Male   | Hindu      | Married        | University  | Retired              | \$28,000 | \$92,000  | \$40,000    | \$52,000  |
| 16  | Ava Lewis       | 38  | Female | Sikh       | Single         | College     | Project Manager      | \$30,000 | \$88,000  | \$14,000    | \$74,000  |
| 17  | Noah Walker     | 47  | Male   | Christian  | Married        | High School | Truck Driver         | \$21,000 | \$72,000  | \$28,000    | \$44,000  |
| 18  | Charlotte Young | 27  | Female | Catholic   | Single         | College     | UX Designer          | \$29,000 | \$86,000  | \$9,000     | \$77,000  |
| 19  | Liam King       | 53  | Male   | Protestant | Married        | University  | Finance Analyst      | \$38,000 | \$120,000 | \$60,000    | \$60,000  |
| 20  | Zoe Green       | 33  | Female | Jewish     | Single         | College     | Public Relations     | \$27,000 | \$84,000  | \$16,000    | \$68,000  |
| 21  | Jack White      | 43  | Male   | Muslim     | Married        | High School | Warehouse Worker     | \$19,000 | \$65,000  | \$24,000    | \$41,000  |
| 22  | Amelia Black    | 23  | Female | Buddhist   | Single         | College     | Intern               | \$12,000 | \$45,000  | \$3,000     | \$42,000  |
| 23  | William Brown   | 57  | Male   | Hindu      | Married        | University  | Retired              | \$31,000 | \$105,000 | \$45,000    | \$60,000  |
| 24  | Harper King     | 31  | Female | Sikh       | Single         | College     | Operations Manager   | \$25,000 | \$80,000  | \$11,000    | \$69,000  |
| 25  | Oliver Lee      | 41  | Male   | Christian  | Married        | High School | Construction Worker  | \$17,000 | \$62,000  | \$26,000    | \$36,000  |
| 26  | Evelyn Taylor   | 26  | Female | Catholic   | Single         | College     | Product Designer     | \$23,000 | \$76,000  | \$7,000     | \$69,000  |
| 27  | Lucas Adams     | 51  | Male   | Protestant | Married        | University  | Business Owner       | \$55,000 | \$230,000 | \$110,000   | \$120,000 |
| 28  | Abigail Baker   | 34  | Female | Jewish     | Single         | College     | Investment Advisor   | \$33,000 | \$98,000  | \$19,000    | \$79,000  |
| 29  | Henry Wilson    | 44  | Male   | Muslim     | Married        | High School | Sales Representative | \$27,000 | \$83,000  | \$23,000    | \$60,000  |
| 30  | Victoria Moore  | 24  | Female | Buddhist   | Single         | College     | Student              | \$14,000 | \$48,000  | \$4,000     | \$44,000  |
| 31  | Isaac Clark     | 54  | Male   | Hindu      | Married        | University  | Retired              | \$29,000 | \$94,000  | \$38,000    | \$56,000  |
| 32  | Madison Lewis   | 36  | Female | Sikh       | Single         | College     | Project Manager      | \$26,000 | \$81,000  | \$13,000    | \$68,000  |
| 33  | Benjamin Walker | 46  | Male   | Christian  | Married        | High School | Truck Driver         | \$20,000 | \$71,000  | \$27,000    | \$44,000  |
| 34  | Ella Young      | 25  | Female | Catholic   | Single         | College     | UX Designer          | \$24,000 | \$79,000  | \$8,000     | \$71,000  |
| 35  | Leo King        | 56  | Male   | Protestant | Married        | University  | Finance Analyst      | \$37,000 | \$115,000 | \$58,000    | \$57,000  |
| 36  | Scarlett Green  | 32  | Female | Jewish     | Single         | College     | Public Relations     | \$28,000 | \$85,000  | \$17,000    | \$68,000  |
| 37  | Robert White    | 42  | Male   | Muslim     | Married        | High School | Warehouse Worker     | \$18,000 | \$64,000  | \$25,000    | \$39,000  |
| 38  | Grace Black     | 22  | Female | Buddhist   | Single         | College     | Intern               | \$11,000 | \$44,000  | \$2,000     | \$42,000  |
| 39  | Samuel Brown    | 52  | Male   | Hindu      | Married        | University  | Retired              | \$30,000 | \$102,000 | \$42,000    | \$60,000  |
| 40  | Chloe King      | 30  | Female | Sikh       | Single         | College     | Operations Manager   | \$24,000 | \$78,000  | \$10,000    | \$68,000  |
| 41  | Jack Lee        | 40  | Male   | Christian  | Married        | High School | Construction Worker  | \$16,000 | \$61,000  | \$24,000    | \$37,000  |
| 42  | Madeline Taylor | 27  | Female | Catholic   | Single         | College     | Product Designer     | \$22,000 | \$75,000  | \$6,000     | \$69,000  |
| 43  | William Adams   | 50  | Male   | Protestant | Married        | University  | Business Owner       | \$52,000 | \$220,000 | \$105,000   | \$115,000 |
| 44  | Penelope Baker  | 33  | Female | Jewish     | Single         | College     | Investment Advisor   | \$34,000 | \$100,000 | \$20,000    | \$80,000  |
| 45  | James Wilson    | 43  | Male   | Muslim     | Married        | High School | Sales Representative | \$26,000 | \$82,000  | \$24,000    | \$58,000  |
| 46  | Isabella Moore  | 23  | Female | Buddhist   | Single         | College     | Student              | \$13,000 | \$47,000  | \$3,000     | \$44,000  |
| 47  | Isaac Clark     | 53  | Male   | Hindu      | Married        | University  | Retired              | \$28,000 | \$93,000  | \$37,000    | \$56,000  |
| 48  | Madison Lewis   | 35  | Female | Sikh       | Single         | College     | Project Manager      | \$25,000 | \$80,000  | \$12,000    | \$68,000  |
| 49  | Benjamin Walker | 45  | Male   | Christian  | Married        | High School | Truck Driver         | \$19,000 | \$70,000  | \$26,000    | \$44,000  |
| 50  | Ella Young      | 26  | Female | Catholic   | Single         | College     | UX Designer          | \$23,000 | \$76,000  | \$7,000     | \$69,000  |

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## [SECOND PART OF DR. BEDDOE'S REPORT].

## NOTES ON THE HARLYN BAY SKULLS.

*The numbers and letters below refer to the explorers' table of interments.*

*Letter Q.* Male. Young adult; 15 teeth: sutures complete. [Head found displaced and lying by the feet; the lower jaw was discovered near]. Large skull of coffin shape in vertical aspect: posterior aspect high and rounded: in profile some parieto-occipital flattening. Cranial Index 70.0. Altitudinal Index 73.68. Capacity, estimated by Broca-Manouvrier scheme (v. Topinard's *Anthrop.*, p. 681) 1565.

A fibula of 349 mm., which cannot belong to this skull.

*No.* 28. 1—Female. Young: wisdom teeth not yet through. Elliptic in vertical aspect; in the lateral a vertical forehead and slight occipital absatzung: occipital aspect rounded: skull light and thin. Cranial Index 76.70; altitudinal 68.18. Estimated capacity 1210.

2—A small skull, vertically ovoid, occipitally rounded. Forehead bombé; but the skull is thick. Sex doubtful. Cranial Index 75.28.

3—Posthumously deformed calvarium, thin vault, narrow vertical forehead.

4—Male. Imperfect. Oval, narrow, thick, brows moderately prominent.

*No.* 44. 1—Imperfect calvaria, probably masculine; it has rather a brachykephalic look, is thick and heavy.

2—A frontal bone, with suture; minimum breadth 99.

3—Another defective frontal.

Long bones, decayed, useless.

*No.* 36. [Found with two bronze fibulæ]. Fragments of a female pelvis; do. of another pelvis.

*No.* 14. One imperfect calvaria; and one imperfect frontal.

*Nos.* 5 & 6. Fragments: nothing valuable except:—

*No.* 6, Skull. Male. Oval, very well filled; laterally shews prominence of brows, a little saddling at bregma, and a little capsulation behind; no temporals, but probably maximum breadth was parietal. Index 72·66. Also portions of 2 calvaria: one is the right side of an apparent dolicho: the other consists of an occipital, a left mastoid and part of left parietal, very singular and rugged in form; these may possibly be put together with other fragments. Also some cranial and other bones of a child.

*No.* 8. Bones of more than one person. One of them was a sturdy big-boned man.

*Letter M.* 1—Upper burial of two. Male adult. Oval skull, well filled; in lateral aspect slight absatzung: occipital aspect fairly rounded: facial fragments capable of restoration: orbits apparently megaseme: teeth only moderately worn. Cranial Index 76·18.

2—Lower burial. Calvaria very defective on right side, and not measureable: it is very thick and heavy, and apparently very low, especially in the frontal region: it belonged probably to a very old man, to whom the very short femora and tibia may be attributed: the femora have their necks much flattened down. Some teeth, probably of this old man, much ground down.

*No.* 29. Labelled as Skull and entire Skeleton. Male adult. Skull in fragments, but frontal and face pretty perfect. Fine aquiline nose, leptorrhine, orbits squarish, glabella prominent. This was a tall, strongly-made man of 5-feet 7½-inches, or perhaps more. There are three tibiæ, and duplicates of other bones, unconformable. The other was evidently a smaller person, probably a woman.

*Letter C.* Skull in fragments. It appears to have been of dolichoid type, with depressed forehead. Clavicle short, about 126 mm., probably female.

*No.* 2 & 000. Broken bones of a small person or persons.

- No.* 28 (a second 28). Many Bones of two if not three bodies. Two very large heads of femora; but these could not be completed for measurement.
- No.* 42 (or 32?). With a Spindlewhorl. Cist said to have contained bones of two adults and three children. I doubt the number of children. Jaws and teeth. In one forehead in the middle line, a small depression about half a centimeter in breadth, apparently produced during life.
- No.* 27 and *No.* 30 (below 29). Crania only, perhaps pieceable.
- No.* 19. Male skull, long and large, inclining to the coffin shape: posterior aspect rounded;inion prominent and clawlike: nose long, nasal bones depressed, but whether originally so? Cranial Index 72.54. Altitudinal Index 69.95. Estimated capacity 1614 centimeters.
- No.* 5. Fragments of skulls of doubtful sex. One complete jaw in two pieces. Teeth neither carious nor ground down, except the incisor-points. 15 teeth. An upper jaw with 16 teeth (2 amissing). A frontal bone, rather masculine looking; but the long bones are slender, and the femur not much over 16 inches in length. A sternum.
- No.* 39. Crania and other bones at Plymouth: (see further on). A large thick, and very much bowed femur, the perpendicular of the arc of concavity being 79 mm. Shaft, 104 mm. in circumference, but much pilastered. Shaft of tibia 35 x 22 mm. All systems, except that of Pearson, would put this man's stature over 68 inches.
- 1—Male brachykephal of Disentis type. Cranial Index 82.2. Altitudinal Index 69.4. Capacity 1473. Middle-aged, with large teeth pretty-well worn. Vertical aspect sphenobeloid, scarcely phænozygous, lateral and posterior aspects quadrangular, platykephalic, occiput flat with slight absatzung at lambda; brows little prominent; orthognathous: facial aspect sphenoid (wedgelike). Auricular diameter taken both at meatus and in fossa above root of zygoma. Orbits squarish: interorbital breadth 25.5, external orbital 112.

- 2—(Restored by Mr. Buddicom; said to be from octagonal cist). Cranial Index 73·41; Altitudinal Index 69·36; estimated capacity 1187. Female dolichocephal, young: has 32 teeth but little worn: incisors most so. Vertical aspect ovo-elliptic; lateral aspect shews elevation of antero-central parietal, with moderate parieto-occipital flattening. Posterior aspect rounded, slightly carinate, facial aspect oblong, with eversion of angles of maxilla. Orbits oblong; nose aquiline.
- No. 26. 1—A long narrow thin calvaria, in my opinion posthumously distorted, carinate, with narrow forehead: only length and breadth measurable. Female doubtless.
- 2—Fragmentary and worthless, probably female: flat supraciliaries.
- 3—Fragment, left side of skull, with zygoma complete, the only one hitherto; skull smallish, may or may not have been dolichocephalic, but must have been phænozygous.
- Nos. 10 and 11, Fragments; jaws particularly; teeth much ground down. Probably two females, but one jaw looks rather masculine.
- From storage at Trescore. 1st box, a female skeleton much decayed. Do. 2nd box. A tibia, 378·5, and a radius 254 mm. Stature 1686=66·38 inches by Manouvrier.
- No. 7. Portions of skull. Sex doubtful, probably female. Left half of mandible, *very* prognathous: all teeth (8) present, scarcely at all worn. Stature, by Manouvrier, 1567=61·6 inches.
- Letter N. 1—Imperfect calvaria of old man, with well-ground teeth in a fragment of jaw. Vertical aspect of Sergi's byrsoid type, and slightly phænozygous. From deficiency in lower frontal, a true maximum long diameter is not quite attainable: the index, 78·61, is probably too high. The skull is large and well-filled.
- 2—Ovo-elliptic calvaria, well-filled, very slightly phænozygous, not capable of measurement, but apparently dolichomeso.
- 3—Female small imperfect calvaria, not measurable.

4—Fragments. Frontal reconstructed.

5—Fragments of a calvaria, apparently dolichocephalic and youngish: an imperfect orbit, seemingly megaseme.

*Letter N*2. Fragments of other bones belonging to N, but useless. One Tibia measured 360·7 mm. Stature, by Manouvrier 1635, by Rollet 1634, by Pearson 1643=64·68 inches.

*Letter E*. Young male adult. Calvarium rather thin and light: vertical aspect oval. Glabella prominent. Prominent narrow chin. Jaw strong and square-angled, but whole skull narrow. Two perfect styloid processes. Face can be perfectly restored. Index 72·28. Short humerus and long forearm. Stature estimates vary from 1606 (Topinard) to 1630 (Beddoe).

*No. 3*. Skull marked 11. An old male: vertical aspect a full oval: laterally a high domed forehead with prominent brows. Teeth much ground: femur much bowed and pilastered. Stature good notwithstanding. By Pearson 1657=65·23 inches; by my plan 1686=66·4.

*No. 9*—Portions of two skulls: two maxillæ: one skull may probably be made almost complete: this one is apparently orthognathous: teeth much ground down: the subject probably an oldish male: leptorrhine. A slender femur.

*No. 6*. 1—Fragment of a calvaria, including greater part of an occipital and two parietals, small and thin, belonging probably to a young person, not fully grown.

2—Imperfect calvarium with one temporal detached: a maxilla, perfect on right side, with 7 teeth through (=14=28), and part of the mandible.

3—Imperfect adult skull, probably of a young man, not measureable, but apparently dolicho— or meso-kephalic, rather platykephalic in occipital view, but with a lateral profile such as we have seen in several instances, *i.e.* with parieto-occipital flattening and prominence of antero-central parietal region. Prognathous: a rather long palate, with a wisdom tooth appearing. Bigonial diameter 88. This skull might probably be well put together.

No. 42. 1—Two imperfect (male?) calvaria. The best one pentagonal in vertical aspect with more distinct parietal bosses than usual, and in occipital aspect moderately pentagonal. Some fine teeth not worn down. Index 77·2.

2—Adult skull of good size, in fragments, but apparently of the usual form.

Child's skull and broken bones: the skull in moderately good order. Index 79·75. Capacity estimated 994.

At Bodmin, (from Trescore storage). A frontal with some facial bones. Leptorrhine.



## THE BIRDS OF CORNWALL.

BY JAMES CLARK, D.Sc., M.A., A.R.C.S.

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No systematic catalogue of the birds of the county has been attempted since the publication of Rodd's "Birds of Cornwall," in 1880. Many changes have taken place in the Cornish fauna since that time, but the general ornithological record for this long interval is very disappointing. Two papers by Smart on the Birds of Scilly in the Transactions of the Penzance Natural History and Antiquarian Society, the references to Cornish Birds in D'Urban and Mathews' Birds of Devon, a number of notes by T. Cornish, J. Gatcombe, and others in the Zoologist, and the records of rare and accidental visitants in the second edition of Harting's "Handbook of British Birds" are the principal contributions to the literature of the subject during the last twenty-two years. To this scanty material I have been able to add considerably from the systematic observations, local lists, jottings, recollections and specimens so generously placed at my disposal by many bird-lovers throughout the county and elsewhere, and from the valuable mass of ornithological data collected during the past two years by the members of the Cornwall Nature Study Society. Without such assistance this attempt to draw up an annotated list of the Birds of the County could not have been undertaken, as a personal record over such a large area is unsatisfactory for common birds and impossible for rare ones. To each and all of my helpers and co-workers I tender my sincere thanks with the hope that at some future time I may have a fitting opportunity to make more detailed acknowledgment.

When I began my present task the intention was to write a supplement to Rodd's "Birds of Cornwall." As the work proceeded, however, I found this idea of a supplement somewhat impracticable, so partly on this account, partly for the sake of the many bird-lovers both old and young who have no chance of consulting Rodd's book, I re-cast the list in an independent form and made it fairly complete in itself by the incorporation of the most important occurrences of rare birds given by Rodd. I have

devoted much care and time to the verification of the facts given, but more especially of the data now published for the first time, and have not allowed a record to appear about the accuracy of which I have any reasonable doubt without expressing the same. Among the accidental visitors on the list I have included three, the records for which are probably correct, but the evidence is not sufficiently satisfactory—namely, the Pine Grosbeak, the Sooty Tern, and the Little Egret. These are enclosed in square brackets in the list, and are not included in the totals. The order followed throughout is that adopted in the second edition of Howard Saunders' "Manual of British Birds."

As I have attempted to give the precise status of each bird in the county as resident, migrant, casual, or accidental straggler, a few words may not be out of place as to the exact meaning of the terms employed. Few birds are actually resident in the sense that the individuals remain in one particular district or county both summer and winter. Nearly all in fact are more or less migratory, but so long as the species can be found in the described area all the year round it is regarded ornithologically as a resident. In the winter, for instance, the hedge sparrows that nested in Cornwall have gone south into Spain or Northern Africa, while their place in the county has been taken by birds from the North. In spite, however, of these extensive migratory movements, this bird is always with us, and is therefore looked upon as a resident species. In other words when the areas of summer and of winter distribution overlap the bird is considered a resident wherever this overlapping occurs. Throughout that part of the breeding area that lies outside the overlap the bird is a summer migrant, and similarly throughout the area of winter distribution outside the overlap it is described as a winter visitor. Where the areas of summer and winter distribution are completely discontinuous the species can nowhere be described as resident, and in the intervening districts over which it passes in its journey to or fro it would be described as a passing visitor in spring or autumn or both, as the case may be. As the flyline taken by many species on their way to winter quarters is often very different from that adopted on the return journey, many of these veritable birds of passage are seen in the county only in spring or autumn instead of at both seasons as is the case when the same flyline is followed

on the double journey. In districts contiguous to the usual areas of summer and winter distribution, or in proximity to the lines of flight a species may be a casual visitor in so far as its occurrence though uncertain would reasonably fall within the margin of expectation. A bird on the other hand that had wandered far beyond its geographical range, or whose sedentary habits render its occurrence far from that range a matter of great improbability, is described as an accidental visitor.

The problems connected with the migration of Cornish birds are exceedingly complex, more so, perhaps, than for any similar area in Great Britain. This complexity is due chiefly to the peculiar geographical position of the county and to the extraordinary convergence upon it of routes or flylines of the various incoming birds from almost every direction. Recent researches have shown that land-birds on migration avoid high lands, adhere more or less closely to well-defined routes, often skirt the general shore line for great distances, enter upon the land at certain openings in the coast, and when passing overland usually follow the direction of the river-valleys. The best defined routes followed by immigrant Cornish birds seem to be these\*:

I. Many birds from the continent enter England by the Wash and the northern sea-board of Norfolk, stream up the river systems of the Nen and Welland across the low-lying central English plain into the valley of the Avon, pass down the Severn into the Bristol Channel and along the coast of South Wales, then cross over St. George's Channel and enter Ireland at County Wexford. A branch of this stream diverges southward and enters Devonshire at Barnstaple Bay, and a portion of this branch passing up the valleys of the Taw and Torridge enters East Cornwall by way of the Tamar. Another branch passing over Lundy Island skirts the north coast of Cornwall, and strikes upon Scilly after giving off sundry divergent streams that pass inland at Bude, Padstow and probably Hayle. By this general route the south-west counties evidently receive in the autumn the majority of the Redwings, Fieldfares, Woodcock, immigrant Thrushes, Goldcrests, Starlings and Lapwings; and in the spring the Quails and several of the Warblers.

\* In all that pertains to migration I wish to express my great indebtedness to W. Eagle Clarke's digest in the Proceedings of the British Association for 1896, and also to the introduction to D'Urban and Mathews' Birds of Devon.

II. Of the continental immigrants that strike the Kentish shore many stream down through the Straits of Dover and westward along the south coast of England and, by way of Cornwall, ultimately reach in greatly diminished numbers the south-east coast of Ireland. Many of the migratory birds from Central Europe travel by this route, particularly Rooks and Larks.

III. Streams and flocks of such birds as Wheatears, Chiffchaffs, Whitethroats, Wagtails, Pipits, Swallows, House Martins, Sand Martins and Swifts undoubtedly come across to our south coast in various directions from the opposite shores of the continent, from Cape de la Hague southwards. Some birds probably come direct from Northern Africa by skirting the coast of Spain and Portugal and crossing the Bay of Biscay, others cross the Mediterranean, enter France at the Gulf of Lyons, and reach us by way of Bordeaux and the west coast of France.

IV. As might have been expected after consideration of the second route, there is extensive autumn emigration from the south and south-east of Ireland to the north and occasionally to the south coast of Cornwall.

V. Departing birds in autumn pass in a great stream down the west coast of Great Britain, and in part at least over the western extremity of the county. This stream no doubt unites at times with that from the south-east of Ireland.

VI. Autumn migrants from the northern countries of Europe, and to some extent from the north of Asia, together with sea-birds that have nested on the islands in the Arctic Seas to the north of these two continents converge in great numbers upon the north coast of Scotland and joining similar streams from Iceland, the Faeroes and Greenland, turn southward in part along route V, and in part coast round by the west of Ireland. Many such wanderers come inland at Hayle estuary or strike on Scilly. Probably most, if not all, of our many accidental visitors from America arrive by this route instead of across the Atlantic.

Such in brief outline are the principal routes traversed yearly with occasional variations by the incoming or immigrant birds. Most of the travellers by routes II and V are necessarily birds of passage, though the majority of species adopting these routes are represented in the county by a fairly strong resident or at least

breeding contingent. Some birds seem constant to one particular fly-line, but others enter the county by more than one route, and are evidently influenced in their choice by the prevailing winds and the nature of the season.

The routes pursued by the emigrant birds are not so well understood. Many species return more or less closely along the same fly-line as they followed in coming. Some adopt considerable variations; others return by totally different routes. Flocks of Swifts and Starlings seem to go much further west in autumn than they do in spring, and so, as D'Urban and Mathew suggest, by getting a good "offing" from the land before keeping away to the south, they avoid the mountain ranges of Spain and Portugal, and "fetch" the Azores, Madeira, and the north-west coast of Africa.

As my object in introducing this outline sketch of the migration of county birds is to stimulate enquiry by directing observation into definite channels, I reserve for another time all detailed examination of the migration of individual species, and also of those variable winter movements that depend on the severity of the weather. At the same time I appeal to Bird-lovers throughout the county to co-operate in the work that has made such satisfactory progress during the last three years. To arrive at a true knowledge of the facts simultaneous observations are necessary all through the county, and in spite of gratifying increase the number of watchers is not nearly sufficient, and many of the districts are still without an observer.

To aid the student a little in picturing the migratory movements, I have indicated on the accompanying list the distribution of the breeding area in western or middle Europe for the so-called residents, but have not as a rule attempted to trace its eastward limits. The summer range in Europe, at least, of our winter visitors and the area or southern limit of the winter quarters of our summer migrants I have also given, though it must not be concluded that the individual birds that leave us in autumn descend to the extreme south of their winter distribution. This, as a rule, would only be the case when Cornwall was at or near the northern boundary of the breeding area, for it seems that only the most northerly breeding birds of any given species winter at or near the southern limit. The summer and winter

quarters of our passing visitors, our casuals, and more vaguely of our accidental waifs and strays are also indicated. My chief authority for the distribution is Howard Saunders' Manual.

As the list which follows is a tentative one intended primarily for the many workers in the county, a detailed analysis is scarcely desirable. It contains 298 species, exclusive of the Pine Grosbeak, sooty Tern, and little Egret already referred to, and two non-naturalised escapes, the Spur-winged Goose and the Barbary Partridge. Twelve other species have at one time or other been claimed for the county, but the evidence in their favour is not strong enough to justify their inclusion, or else the claim is too ancient to admit of investigation. According to the 2nd edition of D'Urban and Mathew's "Birds of Devon" (1895) the ornithology of the sister county consists of 294 species. The following table shews the status of the birds in the two counties:—

|                        | <i>Cornwall.</i> | <i>Devon.</i> |
|------------------------|------------------|---------------|
| Residents .. ..        | 80               | 85            |
| Summer Migrants ..     | 27               | 31            |
| Winter Visitors ..     | 41               | 38            |
| Passing Visitors ..    | 16               | 17            |
| Casual Visitors ..     | 70               | 64            |
| Accidental Visitors .. | 60               | 53            |
| Introduced Species ..  | 4                | 6             |
|                        | 298              | 294           |

In addition to the 107 annual breeders in Cornwall, 12 other species have probably nested at least once in the county since 1840, viz. :—

|                |                    |
|----------------|--------------------|
| Redstart.      | Quail.             |
| Hawfinch.      | Woodcock.          |
| Honey Buzzard? | Wood Sandpiper.    |
| Night Heron?   | Redshank?          |
| Teal?          | Roseate Tern.      |
| Hoopoe.        | Black-headed Gull. |

The Roseate Tern and the Black-headed Gull at one time bred regularly in the county; the Quail is an irregular summer migrant. In the case of the four birds marked ?, the actual nests were not found, but the evidence is fairly conclusive.

Among the Accidental Visitors to the county, there are no less than eighteen American species :—

|                        |                          |
|------------------------|--------------------------|
| Red-winged Starling.   | American Stint.          |
| Yellow-billed Cuckoo.  | Buff-breasted Sandpiper. |
| Hawk Owl.              | Bartram's Sandpiper.     |
| Little Green Heron.    | Solitary Sandpiper.      |
| American Bittern.      | Yellow Shank.            |
| Surf Scoter.           | Red-breasted Snipe.      |
| Killdeer Plover.       | Esquimaux Curlew         |
| Pectoral Sandpiper.    | Bonaparte's Gull.        |
| Bonaparte's Sandpiper. | Ivory Gull.              |

Apart from introduced species there are sixteen birds that have occurred in Devonshire and not in Cornwall :—

|                         |                             |
|-------------------------|-----------------------------|
| Nightingale.            | White-winged Crossbill?     |
| Red-spotted Bluethroat. | Nutcracker.                 |
| Black-headed Warbler.   | Buff-backed Heron.          |
| Rufous Warbler.         | Red-breasted Goose.         |
| Alpine Accentor.        | American Green-winged Teal. |
| Crested Tit             | White-eyed Duck.            |
| Water Pipit.            | Caspian Tern.               |
| Serin.                  | Great Black-headed Gull.    |

Of these the Nightingale is a summer migrant, the Crested Tit a casual, and all the others accidental visitors. The little Egret has occurred in Devonshire and may have to be added to the above list.

Twenty-three species have occurred in Cornwall that have not as yet been found in Devon :—

|                          |                       |
|--------------------------|-----------------------|
| Ashy-headed Wagtail.     | Collared Pratincole.  |
| Tawny Pipit.             | Baillon's Crake.      |
| Red-breasted Flycatcher. | Little Ringed Plover. |
| Two-barred Crossbill?    | Killdeer Plover.      |
| Ortolan Bunting.         | Bartram's Sandpiper.  |
| Red-winged Starling.     | Solitary Sandpiper.   |
| Short-toed Lark.         | Yellowshank.          |
| Scop's Owl.              | Esquimaux Curlew.     |
| Spotted Eagle.           | Roseate Tern.         |
| Iceland Falcon.          | Bonaparte's Gull.     |
| Lesser Kestrel.          | Brünnich's Guillemot. |
| Little Green Heron,      |                       |

Of these the Roseate Tern formerly bred in Cornwall, Baillon's Crake is a casual; the others are accidental visitors.

N.B.—The two Crossbills marked? may be the same species.

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TENTATIVE LIST OF CORNISH BIRDS.

**Mistle Thrush**; resident, common and generally distributed; immigrant flocks occasionally seen in autumn and winter; a winter visitor to Scilly; nests throughout western and central Europe.

**Song Thrush**; resident, common and generally distributed; many birds arrive in September; migratory movements in winter often considerable, and at times very few seem to be left in the county; nests throughout northern and central Europe.

**Redwing**; a winter visitor, breeding in northern Europe; usually common and generally distributed on higher ground throughout the county, but numbers and distribution depend in great measure upon the severity of the weather; earliest record for Cornwall September 24th, but arrives in flocks usually from the middle of October onwards; departs middle or end of March, latest record May 16th; gregarious and somewhat sedentary.

**Fieldfare**; a winter visitor breeding in northern Europe; usually common and generally distributed, but variable, and in some years comparatively scarce, especially in the north-east of the county; earliest record October 1st, latest April 25th; the immigrant flocks, often very large, appear about the end of October, and the birds generally leave about the end of March; gregarious but nomadic.

**White's Thrush**; an accidental visitor from Asia; two Cornish specimens have been obtained, one at Probus in 1874, and one at Scilly in December, 1886.

**Blackbird**; resident, abundant and generally distributed; evidently increasing; breeds from Norway southwards into Northern Africa and Asia Minor.

**Ring Ouzel**; a summer migrant, wintering in northern Africa; breeds on the Bodmin Moors; one nest found last year near Morwenstowe; has been seen near Falmouth on the 14th



April; young birds were seen near the Lizard on the 16th June, 1899; many birds pass through the county in spring and autumn on their way to and from their northern breeding stations; a not uncommon passing autumn visitor at Scilly; arrives in the county early in April (earliest record April 3rd) and leaves in the beginning of October.

**Wheatear;** a summer migrant, wintering south of the equator; common on uncultivated land, and especially on stony upland wastes and moderately rocky coasts; commoner during the breeding season in the east than the west of the county, but abundant in the Lizard and in some parts of the Land's End district; more widely spread on fallow land in the spring and autumn when numbers pay a passing visit; earliest record February 21st; usually arrives about the end of March, and leaves late in October; breeds at Scilly.

**Whinchat;** a summer migrant wintering in northern Africa; rare and local; has bred lately near Callington; a nest and eggs found at Portsatho in the first week of June, 1899; several birds seen at Landrake, May 20th, 1900; in the west and at Scilly chiefly an occasional autumn migrant; arrives about the end of April, departs in October.

**Stonechat;** resident; fairly abundant but somewhat local; commoner in summer than in winter; partial to furze-commons, bramble hedges, heath land and cliffs; at Scilly a summer migrant; breeds locally in central and abundantly in southern Europe.

**Redstart;** a casual summer visitor which breeds in northern and central Europe, and winters as far south as Madeira; has nested in the east at Trebartha, and has been seen in April on the Tamar, but is a rare autumn straggler in the rest of the county, including Scilly.

**Black Redstart;** now a fairly regularly winter visitor, breeding in north-central Europe; generally occurs in small numbers; during the last five years has been observed at Hayle, Marazion, Falmouth, Caerhayes, Par, Saltash, Wadebridge, and Bude; fairly regular at Trebartha on autumn migration; recorded from Scilly.

**Redbreast**; resident; abundant throughout the county; flocks of young birds been seen at times congregating in the autumn on the south coast, as if on the point of emigrating; breeds throughout Europe and north-western Africa.

**Whitethroat**; a summer migrant wintering in northern Africa; unevenly distributed throughout the county; particularly fond of thick hedges; arrives with various other warblers about the middle of April, first seen last year on April 10th; unusually abundant at Nance, Truro, in September, 1900; an autumn migrant in Scilly.

**Lesser Whitethroat**, a rare casual autumn visitor, fairly abundant in the south-eastern counties of England as a summer migrant; has been obtained once at Scilly in the autumn of 1857; other county records doubtful.

**Blackcap**; a summer migrant, wintering south of the Mediterranean; very local in Cornwall, though not uncommon in the east of the county; breeds as far west as Lostwithiel; further west is of rare occurrence; in Scilly an autumn migrant; the principal arrival of this bird is about the middle of April, but it has been seen at Calstock as early as the 20th of March; shyest of the warblers.

**Garden Warbler**; a summer migrant wintering as far south as Cape Colony, and reaching us about the end of April; probably breeds annually in the east, but except round Falmouth, is rare in the rest of the county, including Scilly; a nest with eggs found at St. Mawes, Aug. 16th, 1897. On September 27th, 1900, a small flock of garden warblers, evidently on migration, but driven back by stress of weather, was observed in the neighbourhood of Truro, where it rested for two days.

**Dartford Warbler**; this resident and essentially non-migratory bird was in the late seventies fairly common in the Land's End district, and bred throughout the county. The severe winters of 1880-81 and 1886-87 seem to have exterminated it both in Cornwall and Devon, and there appears to be no further Cornish record of it until the summer of 1899, when it was seen at Hayle; since then has twice been recorded near Truro; breeds locally in France, the Spanish peninsula, Italy and northern Africa,

**Gold Crest** ; resident, fairly common and generally distributed, but not nearly so abundant as twenty years ago; in the autumn its numbers often reinforced by great immigration flocks or "waves" from the continent; at Scilly an autumn and winter visitor: the most restless of a restless family; nests throughout Europe from the Northern limit of Fir trees down to the Mediterranean.

**Fire Crest** ; a casual winter visitor, breeding in central and southern Europe; has occurred so regularly in late years from Truro westward to Scilly that it might be regarded as a rare but regular winter visitor.

**Chiff Chaff** ; the first of our summer migrants to arrive; earliest record for Falmouth, March 2nd; seen in Truro last year 9th March, and usually arriving in numbers about the end of that month; some occasionally spend the winter in Cornwall; has been seen at Scilly in May, but no nest recorded; commonly distributed throughout the county; winters in northern Africa and from Asia Minor southward.

**Willow Wren** ; a summer migrant wintering around the Mediterranean and in the oases of the Sahara; occurs in considerable numbers locally throughout the county; this year (1902) first seen in the county March 23rd; earliest previous record March 26th, but the great rush occurs about the middle of April; begins to depart in small flocks about the end of August, and has entirely left us by the first week in October; been observed at Scilly only in autumn.

**Wood Wren** ; a summer migrant, wintering as far south as Madeira and the Gold Coast; a bird of the woods with a special liking for tall deciduous trees; common in a few localities in the east of the county, where it appears in the beginning of May, the earliest record being April 20th; about 1870 frequently reported from Scilly, but there is no subsequent record; twice obtained on the western mainland.

**Reed Warbler** ; a summer migrant wintering round the Mediterranean basin and in Central Africa; common in the south-eastern and midland districts of England, but very rare in Cornwall; has bred at Swanpool, and in 1900 and 1901 at Pencalenick, Truro; a nest with eggs found near St. Mawes, in

1897, and another on Park Moors, Truro, in 1899; does not seem to be known in the east of the county; an irregular summer and autumn visitor at Scilly.

**Sedge Warbler**; a summer migrant arriving about the middle of April (earliest record March 22nd), and leaving at the end of September; in winter migrates as far as South Africa; locally distributed throughout the whole county, including Scilly; frequents reed beds and willow plots, sedgy bottoms and bush-covered river banks, and occasionally copses, furze-commons, and bramble-covered hedges.

**Grasshopper Warbler**; probably a summer migrant in the west of the county, as it is seen and heard regularly about Falmouth during the breeding season, and its nest has been found three times; other records received are doubtful. As a summer migrant it has a fairly general distribution throughout the greater part of England and Wales; not reported from Scilly.

**Hedge Sparrow**; resident, abundant, and generally distributed, though scarce on the Bodmin Moors; extensive migratory movements take place throughout the winter; breeds from the northern limits of forest growth southwards to the Pyrenees and the Alps.

**Dipper**; resident, nesting by the rapid streams in the east of the county, but not often seen elsewhere; nests regularly in the valley of the Kennall, and also near Truro; not known at Scilly; breeds throughout the greater part of Europe.

**Bearded Titmouse**; a rare accidental visitor, two specimens having been obtained in the west of the county, one near St. Levan Church in Jan., 1846; a rare resident in the eastern counties; essentially a non-migratory bird.

**Long-tailed Titmouse**; resident and fairly abundant, but local throughout the county; unknown at Scilly; small flocks occasionally arrive on our southern coast in winter; unusually abundant about Truro during the spring and summer of 1900 and 1901, but this year remarkably scarce; breeds locally throughout the west of central Europe.

**Great Titmouse**; resident, common in woods, shrubberies, and gardens throughout the county, including Scilly; common over the whole of Europe.

**Coal Titmouse** ; resident, fairly common in fir and pine plantations in the east of the county, formerly scarce in the middle and west. but now locally quite plentiful ; unknown in Scilly. The olive-brown back of the British variety distinguishes it from the grey-backed continental form.

**Marsh Titmouse** ; resident, but local, breeding in the east of the county, and freely in the west round Falmouth ; unknown in Scilly ; breeds in central and western Europe south of the Pyrenees.

**Blue Titmouse** ; resident, common and generally distributed ; a winter visitor in Scilly ; winter immigrants occasionally land on our south coast ; breeds throughout the greater part of Europe.

**Nuthatch** ; resident, a familiar bird in our eastern woodlands ; nests regularly as far east as Doublebois, and occasionally in the south-west ; been seen near Falmouth throughout the breeding season ; common in the middle and west as a winter visitor ; breeds from the Baltic south to the Mediterranean.

**Wren** ; resident, common, and generally distributed ; its numbers during winter seem to be increased by immigration ; breeds throughout the whole of Europe, except the extreme north.

**Tree Creeper** ; resident ; nesting and fairly common in most of the old woods throughout the county ; not known in Scilly ; breeds from middle Scandinavia south to the Mediterranean.

**Pied Wagtail** ; resident, abundant, and generally distributed ; migration from the continent to our southern coast a common spring occurrence ; very common at Scilly ; on the continent almost restricted to the west ; breeds sparingly in the north-west of France.

**White Wagtail** ; a not uncommon casual spring visitor on our south coast between Falmouth and Penzance ; is the continental representative of the British Pied Wagtail ; has been recorded from Scilly on several occasions ; may be a summer visitor, but its nest does not seem to have been found in Cornwall.

**Grey Wagtail** ; resident, but more abundant as a winter visitor ; breeds near Altarnon, at Trebartha and other localities

in the east of the county, and for the last two years in the neighbourhood of Truro; often seen in the autumn at Scilly; breeds locally throughout the mountainous and rolling ground of central and southern Europe.

**Blue-headed Wagtail**; this continental form of our yellow wagtail is a casual spring and summer visitor to the west of the county; two specimens were procured at Scilly in September, 1871; breeds throughout western Europe, migrating in winter to the south of Africa.

**Ashy-headed Wagtail**; a sub-species of the preceding, breeding in southern Europe and northern Africa, and migrating as far south as the Transvaal; of the two specimens taken in England, one identified by Gould was obtained near Penzance.

**Yellow Wagtail**; a spring and autumn visitor, passing to and from its breeding haunts that range from Somerset northward, and often lingering in the county for several weeks on both journeys; for the past three seasons at least several birds have spent the winter in Truro; its winter migrations extend down the coast of West Africa; occasionally seen in migration at Scilly.

**Meadow Pipit**; resident, abundant and generally distributed on the commons, heaths, moors, downs, and indeed in all open situations throughout the county during the warmer months of the year, but almost entirely restricted to lower-lying ground in winter; resident at Scilly; a considerable influx takes place in autumn and the return migration in spring; its breeding range extends from the extreme north of Europe to the Pyrenees.

**Tree Pipit**; a summer migrant, wintering round the Mediterranean basin; abundant in the east of the county, occasionally seen in the middle but not recorded from the west, except occasionally from Scilly in the autumn.

**Tawny Pipit**; an accidental visitor, breeding in Holland and the north of France, wintering south of the Mediterranean; represented in Cornwall by a single specimen, shot at Tresco, Scilly, Sept., 1868.

**Richards' Pipit**; a casual visitor from Asia, of which at least eight specimens have been obtained in Cornwall, including four from Scilly, two from Penzance, and two from Falmouth; seen at Landrake, March, 1900.

**Rock Pipit** ; resident ; essentially a shore bird, common along our rocky coasts ; resident in Scilly ; the British form seems to be confined on the continent to the northern and western shores of France.

**Golden Oriole** ; an annual passing visitor in spring to West Cornwall and Scilly, usually appearing in April ; a common summer bird in Europe, except the extreme north, its winter migrations extending far south into Africa.

**Great Grey Shrike** ; a rare casual winter visitor, taken in the county three times, including once at Gweek, Helston, about thirty years ago, and once at Bodmin, Nov. 26th, 1898 ; breeds in central Europe, and is a fairly frequent and regular winter visitor in the east of England.

**Lesser Grey Shrike** ; a very rare accidental visitor, a single specimen having been procured at Scilly early in November, 1851 ; wintering in South Africa, it is a regular summer visitor to south and central Europe.

**Red-backed Shrike** ; a comparatively scarce summer migrant in the west and north of the county, but commoner in the north-east ; a clutch of four eggs unfortunately taken near Marazion about the end of May, 1899 ; a nest with six eggs found near Killiow, Truro, early in June, 1902 ; a single specimen seen at St. Mary, Scilly, in Sept., 1870 ; breeds throughout central Europe, and extends its winter migration to Natal and the Cape.

**Wood Chat** ; an accidental visitor to Scilly, once in Sept., 1840, and again in the autumn of 1849, when several specimens were obtained ; a rare and irregular visitor to England, though common enough in the breeding season on the opposite shores of the continent.

**Waxwing** ; a casual winter visitor, erratic in its appearance, and very variable in its numbers ; many specimens taken in Cornwall in the winter of 1849-50, since which date it does not seem to have occurred in the county ; breeds in the Arctic regions within the limits of tree growth, and in winter wanders as far south as Provence and northern Italy.

**Spotted Flycatcher** ; one of our latest summer migrants, appearing about the middle of May, and leaving us in August

and September (earliest record April 18th, latest Sept. 30th); fairly common and generally distributed; an autumn migratory visitor at Scilly; winters throughout Africa.

**Pied Flycatcher**; a casual autumn visitor to Scilly; one specimen has been taken at Penzance, two at Looe, and one at Par; breeds annually in some parts of Wales, and in adjacent parts of England, but its British head quarters are in Westmoreland and Cumberland; migrates in winter down the west coast of Africa.

**Red-breasted Flycatcher**; an accidental autumn and winter visitor, one having been obtained at Constantine in Jan., 1863, one at Scilly Oct., 1863, and one at Tresco, Scilly, in 1865; breeds sparingly in central Europe, and goes south in winter.

**Swallow**; a summer migrant, abundant and generally distributed; usually arrives about the 11th of April (earliest record March 21st), and begins to leave early in September, most birds having left by the third week in October; on the 4th November, 1900, five young birds seen near the Truro viaduct flying westward; in winter found all over Africa.

**Martin**; a summer migrant, abundant and generally distributed; only a casual visitor at Scilly; usually arrives about the end of April (earliest record 31st March), and leaves about the middle of October; a flock of over fifty, however, was seen near Budock on the 10th November, 1901; probably winters in central Africa.

**Sand Martin**; a summer migrant, generally distributed where suitable nesting sites are available; a casual visitor at Scilly; breeds in old sandpits, quarries, river banks, sand banks, and old masonry; the earliest of the swallows to arrive and the first to depart, frequently appearing in numbers by the end of March, while flocks have been observed leaving the county for their winter quarters in south-eastern Africa, by the end of August; latest record for the county Sept. 24th.

**Greenfinch**; resident, common and generally distributed; a winter visitor in considerable numbers to Scilly; large flocks come into Cornwall in September or October, especially on our southern coast, and depart in the early spring; several unusually large flocks seen in the autumn of 1894; found during the breeding season over the greater part of Europe.



**Hawfinch** ; a scarce but regular winter visitor, evidently increasing in numbers, at least in the middle of the county, but is the shyest and most retiring of British birds ; has nested at least once near Launceston ; a casual visitor at Scilly ; breeds throughout the south-eastern counties and on the continent throughout central and southern Europe.

**Goldfinch** ; resident, but seemingly nowhere abundant, except on thistle land in the autumn, when its numbers appear to be re-inforced from the continent ; a winter visitor to Scilly ; numbers killed during the severe winter of 1894-5 ; breeds throughout the continent though rare in the north.

**Siskin** ; a rare but regular winter visitor in the west of the county, including Scilly, where small flocks have been observed ; not unfrequently seen at Ludgvan ; nests freely in Scotland from Perthshire northwards and on the continent from the Pyrenees and Alps northward as far as fir trees grow.

**House Sparrow** ; resident, extremely abundant and generally distributed wherever human habitations are to be found ; somewhat scarce on the Bodmin Moors ; found everywhere in Europe where grain will grow.

**Tree Sparrow** ; a casual winter visitor, very rarely recorded ; probably confused with the house-sparrow, but easily distinguished by its chestnut-brown head and two white transverse bars across each wing ; breeds sparingly in several English counties, and abundantly in many places in central and south central Europe.

**Chaffinch** ; resident, very abundant and generally distributed ; a winter visitor to Scilly ; large immigrant flocks have been observed in winter ; breeding-range extends from the Arctic Circle to the Mediterranean.

**Brambling** ; a winter visitor, usually rare, but during the past few years met with annually in the east of the county ; occasionally seen at Scilly ; several thousands visited the west of the county in the winter of 1890-91 ; breeds throughout the sub-arctic forests of pine and birch, migrates in severe winters across the Mediterranean.

**Linnet** ; resident, common and generally distributed ; a winter visitor at Scilly ; large flocks occasionally seen in autumn

and winter; breeds from middle Scandinavia south to northern Africa.

**Mealy Redpole**; a casual visitor represented by an adult male shot at Carrythenick; breeds in northern Europe, and occurs annually on migration along the east coast of Scotland, and irregularly in the east of England.

**Lesser Redpole**; a casual winter visitor from the north of England, rarely seen in Cornwall, and not known in Scilly; a female shot at Stratton on October 2nd, 1900; breeds sparingly in Gloucestershire, and more abundantly to the north and east.

**Twite**; a very rare casual winter visitor, breeding abundantly in Scotland, and locally over the northern half of England; after the cold stormy weather of March 1901, seven birds seen near Cardynham and two shot; not known at Scilly.

**Bullfinch**; resident, locally distributed throughout the county, and in some places fairly numerous; at Scilly frequently seen in recent years, but no nest recorded; breeds commonly throughout west-central Europe.

[**Pine Grosbeak**; a doubtful accidental visitor from the pine forests near the Arctic Circle; Mr. J. Gatcombe reported having seen two at St. Germans in November, 1868, the only Cornish record.]

**Crossbill**; a casual visitor of very irregular occurrence; on several occasions seen in flocks, and these in August and September, 1898, were specially abundant all over the county; one specimen obtained at Newquay, June 1901; nests throughout the pine forests of Europe, and occurs irregularly on migration throughout the British Isles; a large flock occurred at Scilly in July, 1868.

**Two-barred Crossbill**; a single specimen of this accidental English visitor was recorded from Larigan in 1843; breeds in the pine forests of northern Russia and Siberia, and migrating in winter on the west coast as far as the north of France.

**Corn Bunting**; resident, somewhat local, but fairly well distributed near the coast throughout the county, except in the north-east; abundant in the Lizard district; a resident in Scilly; about Truro has a strong partiality for telegraph wires; its breeding range extends from the Baltic to northern Africa.

**Yellow Bunting**; resident, abundant and generally distributed; a rare winter visitor to Scilly; in winter often moves restlessly in small flocks—evidently migratory at that season; breeds from the north of Norway to the Pyrenees.

**Girl Bunting**; resident but local; more frequently seen in the middle and west of the county than in the east; more abundant in winter than in summer; almost as shy as the Hawfinch; only a few nesting places in the county, which remain unchanged for years; two nests with eggs seen near Truro in May, 1902; two specimens obtained at Scilly; breeding range extends from France to Algiers.

**Ortolan Bunting**; a single specimen killed at Scilly in Oct., 1851; an accidental visitor to the British Isles; breeds irregularly throughout Europe; is eminently migratory.

**Reed Bunting**; resident in colonies throughout the county; a winter visitor at Scilly; frequents reedy marshes; seen in 1900 at Marazion and near St. Germans; breeds locally throughout the whole of Europe.

**Snow Bunting**; a fairly constant but not very common winter visitor in the west of the county, visiting Scilly in flocks; nests abundantly in the Arctic Regions and migrating as far south as the Mediterranean.

**American Red-winged Starling**; an accidental visitor from North America, of which a single specimen was shot at Swanpool, Falmouth, in August, 1881.

**Starling**; fifty years ago only a winter visitor, now a generally distributed resident over the east and middle of the county; in 1900 and 1901 nested at Gwinear; further west as yet only a winter visitor; large numbers still come in autumn and leave in spring throughout the whole county, and varied migratory movements are common during the winter; breeds throughout central and greater part of northern Europe.

**Rose-coloured Pastor**; a casual visitor of fairly common occurrence in the west of the county from April to October; been taken once at Scilly; rarely occurs singly; nests in large colonies in the south-east of Europe and in Italy.

**Chough**; resident in small numbers on the north coast; five adult birds seen east of Tintagel, June, 1901, two at

Lostwithiel in April of the same year; still locally abundant in most of the lofty mountain ranges of southern and central Europe; essentially non-migratory.

**Jay**; resident, but naturally confined to the wooded parts of the county; not unfrequent in the east; till a few years ago of somewhat casual occurrence in the west, but now fairly common near Truro; not known in Scilly; breeds in suitable localities throughout Europe, except in the far north.

**Magpie**; resident, generally distributed and not uncommon throughout the wooded parts of the county; unusually abundant in the neighbourhood of St. Stephen-in-Branwell, and also near Camborne; two specimens recorded from Scilly; breeds throughout Europe.

**Jackdaw**; resident, abundant and generally distributed; numbers probably increased in the autumn by immigration; an occasional winter visitor to Scilly; breeds from the Arctic circle to the Mediterranean.

**Raven**; resident, occurring in pairs at fairly regular distances along both the north and south coast, and occasionally breeding inland; a casual wanderer to Scilly; breeds throughout Europe.

**Carrion Crow**; resident, fairly general throughout the county, except in the north east and on some parts of the north coast; breeds in western Europe from Belgium southwards.

**Hooded Crow**; a casual visitor, more frequently met with in the west than in the middle or east of Cornwall; two seen near Week St. Mary, in December, 1899, and one at Perranwell, October, 1901; recorded from Scilly; in Scotland an abundant resident, to England a regular and numerous visitor; in summer abundant in northern Europe.

**Rook**; resident, very abundant in wooded districts and generally distributed except on the north coast where in several almost treeless and much exposed parishes it is practically unknown; a casual visitor in small flocks to Scilly; immigrant flocks in autumn probably common on our south coast; a very large flock of dilapidated looking birds appeared near Falmouth, on January 10th, 1887; breeding-range extends over the greater part of northern and central Europe.

**Sky-lark**; resident, common and generally distributed; during autumn and winter immense flocks at times reach the county presumably from central Europe.

**Wood-lark**; resident, local but probably much more abundant than generally imagined, as even where numerous it is but rarely seen and its song is generally mistaken for that of the Sky-lark; lately seen about St. Stephens-in-Branwell, Truro, Budock, and Gerrans; a casual visitor to Scilly; breeds from South Scandinavia to the Mediterranean.

**Crested Lark**; an accidental visitor from central and southern Europe, represented by three specimens taken near Penzance, two in 1846 and one in 1850, and one at Budock in 1865.

**Short-toed Lark**; an accidental visitor, of which a single example was obtained at Scilly, in September, 1854; breeds abundantly in south west Europe and north west Africa.

**Shore-lark**; a casual winter visitor, breeding in the north of Europe and Asia beyond the limits of tree growth, and occurring irregularly on migration throughout the greater part of Europe; two specimens shot near Padstow, November, 1879.

**Swift**; a summer migrant, wintering as far south as Natal and the Cape; common, in some districts abundant and increasing, but somewhat local; a passing spring visitor at Scilly; arrives about the beginning of May, earliest county record April 8th, leaves by the middle of August but stragglers may be seen six or even eight weeks later.

**Alpine Swift**; a rare accidental summer visitor; one specimen taken off the Lizard, one at Looe, one at Mylor in 1859, and a fourth seen off Land's End; nests regularly in Switzerland, Savoy and the mountain ranges of central and southern Europe.

**Nightjar**; a summer migrant, rarely appearing till early in May and often later; date of departure evidently very variable; frequent but local throughout the county; common at Altarnon and nesting as far west as Falmouth and Camborne; an autumn visitor at Scilly; partial to bracken and heather in the neighbourhood of woods and high hedges; its winter quarters extend far south in Africa.

**Wryneck**; an occasional casual autumn visitor in the west of the county, including Scilly, not observed further east than Ludgvan; last recorded visit, Penzance, Sept., 1891; a regular summer migrant to the south-east of England; winters in Africa as far south as Senegambia.

**Green Woodpecker**; resident; till a quarter of a century ago a rare casual visitor to the west, though well known in the east of the county from the Tamar to Lostwithiel; first seen in the Falmouth district about 1866 and has now gradually diffused itself all over the mainland; not unfrequently seen in autumn on moorland far away from trees; once recorded from Scilly; though usually non-migratory its numbers increased considerably in the severe winter of 1894-95; breeds commonly throughout Europe from Belgium southwards to the Mediterranean coast.

**Great Spotted Woodpecker**; resident; breeds annually in the east of the county; till recently an extremely rare visitor to the west, but gradually extending in that direction; has frequented Enys for the past six years and probably breeds there; nested in 1900 and 1902 at Tregothnan and in 1901 at Lamorran and probably at Clowance; shy, silent, frequenting tree-tops and very rarely coming into the open, this bird may often be overlooked; common throughout Europe.

**Barred Woodpecker** (Lesser Spotted); till lately probably the rarest of Cornish residents and practically unknown even as a casual visitor to the middle and west of the county; for the past ten years has been gradually diffusing westward; has nested not unfrequently about Tregothnan and at least once near Kea; recorded from Doublebois, Lostwithiel, Tregothnan, Ruan; probably often overlooked, as it prefers the tops of tall trees and is not much larger than a linnet; generally distributed throughout the greater part of Europe.

**Kingfisher**; resident; not uncommon on many of our streams, creeks, estuaries, and along some of our somewhat rocky sea-coasts; numbers in some years greatly increased in autumn; an accidental visitor to Scilly; breeds from Germany south to the Mediterranean.

**Roller**; an accidental autumn visitor that has occurred at least seven times in the west, the last records being Land's End,

June, 1861, and St. Buryan, Oct., 1887; not recorded from Scilly; nests commonly in central and southern Europe, and in winter is spread over southern Africa.

**Bee-Eater;** a very rare accidental summer visitor, breeding abundantly in southern Europe, and wintering as far south as the Cape; a flock of four seen at Madron, in 1807, a flock of twelve (eleven shot) at Helston, in May, 1828, and one repeatedly seen at Scilly, June, 1878.

**Hoopoe;** a regular spring visitor, occasionally re-passing in autumn; often observed at Scilly; nests abundantly in southern Europe, and in gradually diminishing numbers as far north as South Sweden; winters south to Senegambia; nested last year near St. Columb; persecution alone prevents this bird from becoming a regular summer migrant.

**Cuckoo;** a common summer migrant, generally distributed, at times much more abundant at Scilly than on the mainland; usually appears in the middle of April and departs in July, though young birds are often seen in September and October; this year (1902) all old birds had left the Truro district before July 11th; has been heard and seen in Cornwall, on April 2nd, Miss F. E. Tripp's earliest record for Altarnon being April 7th; breeds throughout Europe and central Asia, and in winter reaches Natal, Ceylon, Burmah, and the Philippines.

**Yellow-billed Cuckoo;** an extremely rare accidental visitor from North America; one Cornish specimen referred to by Yarrell and one picked up dead near Helston, October, 1887.

**Barn Owl;** resident; commoner in the east than in the west, but much less frequent than formerly; only a single specimen recorded from Scilly; common throughout western Europe from Denmark southwards.

**Long-eared Owl;** a winter visitor to the southern half of Cornwall, but a casual in the north; commoner in the west than in the east of the county, but evidently local; a casual visitor to Scilly; resident in fir plantations throughout the greater part of England.

**Short-eared Owl;** a winter visitor arriving about the middle of September, and leaving before the end of March; frequents upland moors, heather and gorse land, and turnip

fields; common at Scilly; nests throughout the greater part of Europe, winters abundantly in Spain and Morocco.

**Tawny Owl**; resident; generally distributed throughout the woodland districts of the county and in some places abundant; not known in Scilly; breeds throughout the greater part of Europe.

**Little Owl**; an accidental visitor that has occurred once at Helston; on the Continent from the Baltic southwards a commonly occurring non-migratory resident.

**Snowy Owl**; an accidental visitor from the far north, represented in the Cornish ornis by a single storm-battered specimen found near St. Germans in 1838.

**Hawk Owl**; an accidental visitor, a single specimen having been taken in 1830 off the coast of Cornwall in an exhausted condition; the European form breeds in the pine forests of Scandinavia and Northern Russia, and descends to North Germany in winter; the American type, to which the Cornish specimen belongs, ranges from Labrador in summer to Pennsylvania in winter.

**Scop's Owl**; an accidental visitor, taken once at Scilly, in 1847, and once at Trevethoe, near Hayle, in 1871; breeding abundantly in southern Europe, it extends its summer migration exceptionally as far as Holland, and its winter migration to Abyssinia.

**Marsh Harrier**; a rare casual visitor; has occurred a few times in the west, twice at Scilly, once at Liskeard, and once at Kilkhampton; is a summer migrant on the Continent to the south of Sweden; abundant throughout the year in Spain; a winter visitor to Abyssinia and perhaps the Transvaal.

**Hen Harrier**; a casual visitor occasionally met with on moorland throughout the county; recorded once from Scilly; breeds throughout central Europe northwards; in winter migrates to north Africa.

**Montagu's Harrier**; a scarce summer migrant to the west of the county; bred in the Lizard district as late as 1899 and may still do so; about 1870 was fairly common in the west of the county; a rare casual visitor to Scilly; on the Continent breeds commonly but locally from Denmark southwards, and in winter passes down to the Cape.



**Common Buzzard**; resident, common, breeding on the coast in the north-east of the county and in the Land's End district; very common in the autumn from Morwenstowe to Carthamartha; a casual visitor at Scilly; breeds generally throughout west central Europe up to the south of Sweden.

**Rough-legged Buzzard**; a casual visitor of very rare occurrence; one specimen killed near Truro, one in the Land's End district (1880); was formerly reported from Bodmin Moors; nests commonly on the high mountains of Scandinavia and in winter migrates south-east of the Caspian.

**Spotted Eagle**; an accidental visitor; one shot at Hawk's Wood, near the Cheeswring, December, 1860, and one at Carnanton, November, 1861; breeds from the basin of the Danube southwards and is a summer visitor as far north as Holland; in winter ascends the Nile.

**Golden Eagle**; a casual visitor of very rare occurrence, one being mentioned in Couch's "Cornish Fauna," and another obtained on Lanherne Downs, Mawgan, in October, 1861; still breeds in the highlands and islands of Scotland and throughout the mountains and most of the great forests of Europe.

**White-tailed Eagle**; a casual visitor, resident in the north and west of Scotland and in suitable localities in northern and central Europe; one shot near Kilkhampton, November, 1844; one seen at Skewjack, Sennen; one seen on north coast, near Tehidy, in autumn, 1877; one shot at Bude Haven, November, 1893; one seen at Morwenstowe, November, 1901.

**Sparrow Hawk**; resident, generally distributed in suitable woodlands throughout the county; a winter visitor to Scilly; breeding range extends from the limits of forest growth south to the Mediterranean.

**Kite**; a casual visitor, now of very rare occurrence, the last two records for Cornwall being at Trebartha Hall, in 1867 and Clowance, Camborne, in 1882; still nests in a few localities throughout Great Britain and is generally distributed over middle and western Europe; not a great migrant.

**Honey Buzzard**; a casual visitor, chiefly in the autumn; has been recorded about half a dozen times from the west of the county and once at Scilly; a summer migrant to the wooded

districts of central and northern Europe, a limited number passing westward into Great Britain in May or June and returning in November; has probably nested once in Cornwall.

**Greenland Falcon;** an extremely rare accidental visitor, one specimen having been taken at the Lizard in 1830, a second on the Lynher river in 1834, and a third on Goonhilly downs; probably never nests south of the Arctic circle.

**Iceland Falcon;** an extremely rare accidental visitor, a single specimen having been secured at Scilly, in 1895; breeds in Iceland but is a rarer visitor to the British Isles than the Greenland Falcon.

**Peregrine;** resident; breeds regularly at intervals along the south coast; nested last year near Crackington Haven; bred formerly at Scilly but now only a visitor there; probably nested once near Zennor; breeds along the entire west coast of Europe.

**Hobby;** a fairly common summer casual occurring throughout the county, but more frequent in the east than in the west; probably not been seen at Scilly; no certain record of its having nested in Cornwall; breeds throughout Europe as far north as the Arctic circle and in winter passes southwards towards the Cape.

**Merlin;** a winter visitor, at no time common and occasionally not recorded for the year; an autumn casual at Scilly; seen near Launceston, January, 1902; breeds regularly in Britain in suitable localities from Derbyshire northward.

**Red Footed Falcon;** an exceedingly rare accidental visitor, represented by one specimen from Budock in February, 1851, and another from Helston in autumn, 1867; a common bird throughout eastern Europe, but irregular in its occurrence in the west.

**Kestrel;** resident; the commonest of our hawks, breeding annually along our rocky coast and at Scilly; breeds throughout Europe except in the far north; very abundant in Spain.

**Lesser Kestrel;** an extremely rare accidental visitor, not only to Cornwall but the British Isles generally; has occurred once at Scilly, in March, 1891, and probably in the west in 1876; breeds abundantly in the south of Spain and is a summer straggler as far as Normandy; great flocks pass northward over the Mediterranean in February and return early in October.

**Osprey**; a casual autumn visitor to the estuaries of the west and to Scilly; been very rarely seen for fifty years, last county records, Hayle, 1864, and Pendarves, Camborne, about 1882; a few protected eyries exist in Scotland; an almost cosmopolitan bird; breeds freely from Lapland to Spain.

**Cormorant**; resident; common and generally distributed along our coasts and estuaries; most abundant in the west; resident at Scilly; generally distributed over Europe, Asia, and northern Africa.

**Shag**; resident; commoner than the Cormorant, especially in our estuaries; resident at Scilly; breeds along the Atlantic coasts of France, Spain, Portugal, and Morocco.

**Gannet**; a winter visitor, following the shoals of pilchards in the autumn, often remaining till the late spring; commonly occurring as far east as Mevagissey; at Scilly is to be seen the whole year round, but does not breed there; essentially a bird of the north; descends in winter as far as north Africa; abundant in north America.

**Heron**; resident; not uncommon but somewhat local; frequents our estuaries, creeks, and mudflats; a common visitor at Scilly, but does not breed there; very abundant on the Fal and Truro river, thirty-six having been counted on a single journey between Falmouth and Truro; breeds in suitable localities over the greater part of Europe.

**Purple Heron**; an accidental visitor of rare occurrence, one having been obtained at Killiow, Truro, one near St. Buryan, in 1850, one on the Tamar in 1851, one at the Lizard in 1867, and one at Scilly in 1878; essentially a bird of southern Europe it breeds as far north as Holland; migrates into Africa on the approach of winter.

[**Little Egret**; two specimens mentioned in Couch's "Cornish Fauna" as having occurred in Cornwall about 1825; one or two on the Tamar recorded in 1862; fairly common in the Mediterranean region, it occasionally wanders to the north of France and Holland.]

**Squacco Heron**; an accidental spring visitor at irregular intervals chiefly to the west of the county, including Scilly; been taken more than twenty times; a summer migrant from Africa into

southern Europe, and an occasional straggler to Holland and the north of France.

**Night Heron**; a casual visitor that may have bred in the county; nearly all the recorded specimens have been from the west, including one from Scilly; nests in Spain and sparingly in France; occasionally wanders as far north as the south of Sweden; an almost cosmopolitan bird.

**Little Green Heron**; the only British specimen of this bird from tropical and temperate America was shot at Penrice, St. Austell, on October 27th, 1889.

**Little Bittern**; a casual visitor of rare occurrence; recorded occasionally both in the east and in the west, including one at Scilly in 1866, but not known in the middle of the county; its constant habit of skulking in secluded spots under thick cover may have caused it to be overlooked; on the continent its migration in summer extends north to the Baltic and in winter south into Africa.

**Common Bittern**; a winter visitor in very irregular numbers occurring annually on snipe marshes and swampy moors; particularly abundant in December, 1867, and in the winter of 1890-91; recorded thrice from Scilly; a bird of nocturnal habits, feeding at night and sitting close in thick reed beds during the day; a resident in the warmer portions of Europe and a summer straggler as far as the south of Norway.

**American Bittern**; an accidental visitor from north and central America; the only Cornish example was shot at Tresamble, Gwennap, November 4th, 1873.

**White Stork**; an accidental visitor, probably from Holland, where it breeds abundantly; represented in the Cornish ornis by a single specimen killed in the Land's End district in May, 1848.

**Black Stork**; an accidental visitor; one shot on the Tamar in November, 1831, one at Scilly in September, 1887, and another in October, 1890; breeds sparingly from the south of Sweden to the Danube and Black Sea and also in Spain; winters as far south as the Cape.

**Glossy Ibis**; an occasional accidental autumn visitor to Scilly and the west of the county; one specimen obtained at Saltash, October, 1900, and another in November of the same

year at Hayle; nests in Spain and along the valley of the Danube and passing south in winter.

**Spoonbill**; a casual visitor, usually in autumn, occurring not unfrequently, but at irregular intervals, from Scilly east to Liskeard and occasionally in St. German's river; breeds in Holland, in the south of Spain and along the valley of the Danube, migrating southward in winter.

**Grey Lag Goose**; a casual winter visitor that has occurred once at Marazion in 1862, once in Scilly in 1863, once at Hayle, in 1875, and at Falmouth in 1890; breeds in the south of Iceland, in Scandinavia and locally further south; winters around the Mediterranean.

**White-fronted Goose**; a winter visitor, generally rare, but often plentiful in severe weather, especially in the west of the county; occasionally recorded from Scilly; nests in Greenland, Iceland, and Novaya Zemlya; winters as far south as the Mediterranean.

**Bean Goose**; a winter visitor; in hard winters occurring in considerable flocks in the west; abundant in the autumn of 1890; recorded from Scilly; breeds on Kolguev and Novaya Zemlya and winters as far south as the Mediterranean.

**Bernacle Goose**; a casual visitor in small flocks to the west of the county in hard winters; a fairly large flock seen in Helford river, in January, 1895; observed on various occasions in Scilly; breeds in considerable numbers as far north as Scoresby Sound and descends on its winter migration along the north-west coast of Europe.

**Brent Goose**; a winter visitor, occasionally occurring in large flocks in the west of the county, as in the winter of 1890-1891 and in January, 1895; has been recorded from Scilly; breeds abundantly in Spitsbergen, Franz Josef Land, Novaya Zemlya, Kolguev, West Greenland, and Grinnel Land.

**Canada Goose**; an introduced species, the two recorded for the county having probably escaped from some ornamental water.

**Egyptian Goose**; probably an escape from captivity.

**Spur-winged Goose**; an African bird of which the single specimen shot at St. Germans, in June, 1821, was in all probability an escape from some ornamental water.

**Whooper Swan**; a casual winter visitor in small flocks after long-continued frosts; occasionally reported from Scilly and the west and once from Bude; several flocks seen from Truro to Scilly in 1890-1891, nine seen near Hayle early in February, 1895; breeds in Iceland, in Arctic Norway, Sweden, and northern Russia; in severe winters migrates as far south as Algeria.

**Bewick's Swan**; a casual visitor in severe winters; not recorded for the county since 1890; its breeding haunts lie to the east of the White Sea; in winter it occasionally wanders south to the Mediterranean.

**Mute Swan**; introduced; semi-domesticated throughout the British Isles.

**Sheldrake**; a casual winter visitor, common only in severe weather; recorded from Scilly, the Land's End district, Falmouth, Truro River, 1891, and Saltash; breeds locally throughout the western shores of Europe and in winter extends south to the tropic of Cancer; is a fairly common resident in suitable localities in the east of England and in Wales, but rare and local in Devon, Somerset, Dorset, and Hants.

**Ruddy Sheldrake**; an accidental visitor of extreme rarity from south-eastern Europe or northern Africa; at least one specimen shot on the Helford River in 1892, the year of the great invasion.

**Mallard**; a scarce resident but usually abundant winter visitor; breeds annually in Scilly, and during the last few years has nested at Bishop's Wood near Truro, on the edge of Baldhu Moors, near Old Kea, at Ruan, near Constantine, and in 1898 at Pendarves, Camborne; a summer migrant to Iceland and throughout western Europe, it crosses to England in immense flocks during the cold months of the year and in a hard winter enormous numbers may be seen in the west of the county; breeds in suitable localities throughout Europe from the Arctic circle southwards.

**Gadwall**; a casual winter visitor of which at least four specimens have been shot in Cornwall, one at Trengwainton Ponds, one at Gyllyngvase, one at St. Austell, 1864, one at King Harry Passage during the severe frost of 1881; now semi-domesticated in large numbers in Norfolk; breeds in Iceland,

south-east Sweden and in Spain; fairly common throughout central and western Europe and the Mediterranean basin on migration and during winter.

**Shoveller**; a winter visitor, at times fairly common in the west after severe weather; frequently reported from Scilly; a flock of over a hundred seen for some days on the marshes near Land's End, about the end of January, 1894; a small flock seen near Truro, February 14th, 1902; nests abundantly in Scotland, especially between the Forth and Tay, and somewhat sparingly in the north and east of England; on the Continent breeds from Denmark to the north coast of Africa; in cold winters migrates as far as the Cape.

**Pintail**; a winter visitor to the Land's End district and sometimes in large numbers to Helford River, where twenty were shot in one day a few years ago; specially abundant in the winter of 1890-1891; one specimen shot on the Tamar in 1853; breeds in Iceland and northern Europe down to Holland; in winter spreads over the rest of the Continent to northern Africa.

**Teal**; a winter visitor arriving in the Land's End district sometimes about the last week in August, sometimes as late as the second week in November; usually plentiful around Falmouth and in the neighbourhood of Truro; occurs yearly at Scilly where it has probably nested; breeds all over Ireland, in the east and north of England, but very sparingly in the south; on the Continent is most abundant in the north, but in winter spreads over Europe to north Africa.

**Garganey**; a passing visitor in spring; not uncommon in the west of the county, and occurring at intervals in Scilly; nests regularly in Norfolk and abundantly in north and eastern Europe, spreading in winter over southern Europe and northern Africa.

**Wigeon**; a winter visitor of regular occurrence and sometimes in very large numbers in the west; appears annually in Scilly, and in hard winters is abundant; remarkably scarce around Falmouth; earliest record for the county, August 26th, but large flocks rarely appear till the end of October; breeds in Iceland and the Faeroes and very abundantly in Scandinavia, wintering as far south as Abyssinia and as far west as the Azores.

**Red Crested Duck** ; an accidental visitor from southern and eastern Europe, of which a single specimen was shot at Swanpool, in February, 1845.

**Pochard** ; a regular winter visitor to the west of the county including Scilly ; occurs irregularly along the whole of our southern coast ; two shot near Pencalenick early in January, 1902 ; in the breeding season mainly confined to north central Europe and in winter found in abundance in the Mediterranean basin.

**Tufted Duck** ; a winter visitor in small flocks to the south and south-west of the county ; an occasional visitor to Scilly ; breeds freely but locally in Scotland and sparingly in England ; on the Continent is common for some distance south of the Arctic Circle ; in winter extends southward into Africa.

**Scaup** ; a scarce but regular winter visitor, occasionally in large numbers after heavy autumn gales ; reported from Scilly at irregular intervals ; seen on Truro River for the last three winters ; probably occurs regularly in large flocks some miles out at sea ; breeds in great numbers in Iceland and in Arctic Europe ; in winter rare in the western Mediterranean.

**Golden-Eye** ; an annual winter visitor in small numbers to the west and north east of the county ; occasionally seen near Truro ; a frequent visitor to Scilly ; very common all along our south coast in the winter of 1890-1891 ; breeds in northern Europe up to the tree limit ; in winter spreads over central Europe and in severe weather reaches the Mediterranean.

**Long-tailed Duck** ; a casual winter visitor of which over a dozen specimens have been recorded from the county, usually on the south coast, but once at Padstow and once inland ; has occurred at least four times in Scilly ; a circumpolar Arctic breeder migrating in severe weather as far south as the Swiss and Italian Lakes.

**Eider** ; a casual winter visitor, breeding far beyond the Arctic Circle ; a single specimen killed on Looe River, and two at Scilly in April, 1882, are the only certain records for the county.

**Common Scoter** ; a winter visitor, occurring in large flocks some miles out at sea, but stragglers are often driven into the creeks and estuaries by stormy weather ; occasionally seen in



Scilly; nests sparingly in the extreme north of Scotland and abundantly in northern Europe; in winter occurs regularly along the Atlantic sea-board as far as the Azores.

**Velvet Scoter**; a casual winter visitor that has occurred about half a dozen times in the county; not recorded from Scilly; breeds commonly in Scandinavia and northern Russia; a common winter visitor to the waters of western Europe.

**Surf Scoter**; an accidental visitor from north America of which three specimens have been procured in Cornwall, two from Scilly and one near Pendennis Castle.

**Goosander**; a casual winter visitor, breeding for the most part in northern Europe and wintering as far south as Spain and north west Africa; occurs at irregular intervals round the coast; reported several times from Scilly, latest record, Jan., 1884.

**Red-Breasted Merganser**; a winter visitor of regular occurrence; in some seasons, as in 1870-71 and 1894-5, very abundant not only out at sea but on our tidal rivers; a common winter bird at Scilly; breeds in Greenland, Iceland, the Faeroes, and northern Europe; in winter ranges southward occasionally as far as the Mediterranean.

**Smew**; a casual winter visitor of very irregular occurrence on the south coast during very severe weather, chiefly between Penzance and Truro, two shot near Malpas, February 15th, 1902; nests in Finnish Lapland, and northern Russia, numbers migrating south west to Morocco by way of the Atlantic seaboard.

**Wood Pigeon**; resident, abundant and generally distributed in the wooded districts throughout the county, including Tresco Abbey; common over the greater part of Europe and northern Africa.

**Stock Dove**; formerly a winter visitor throughout the county, usually in large flocks; bred at Trebartha in 1886 and again in 1888, and now seems fairly established as a resident in the east of the county; in 1896 a nest with three eggs found near Liskeard; an occasional visitor to Scilly; has of late years greatly increased in numbers throughout England; resident over the greater part of Europe.

**Rock Dove**; formerly considered a casual visitor to the cliffs of our south coast, but for several years now has bred annually on the cliffs east of Portscatho and has nested at least twice during the last six years at Killigerran Head; not known in Scilly; breeds sparingly and very locally along the Welsh coast, abundantly in Scotland, Ireland and the Faeroes.

**Turtle Dove**; a summer visitor, sometimes in fair-sized flocks, but not common; no record of its breeding in the county; at Scilly an occasional winter and spring visitor; nests abundantly in the eastern counties and midlands.

**Pallas's Sand-Grouse**; an accidental visitor from the vast sandy steppes of central Asia that in 1863 and again in 1888 made an extraordinary eruption into western Europe. In 1863 two specimens were obtained, one near the Land's End, the other in Scilly, and in 1888 a flock of eleven appeared in the Land's End district of which three were killed and one captured alive; in 1889 one killed near St. Just in Penwith.

**Black Grouse**; almost extinct as a resident, a careful search on the Bodmin Moors in the spring of 1900 giving only two nests as the result; much commoner in Devon; a native of central and northern Europe. Hybrids have been obtained near Jamaica Iun between this bird and the pheasant; one such hybrid shot at Trebartha in the autumn of 1900.

**Pheasant**; introduced, semi-domesticated and generally preserved; probably brought into Europe many centuries B.C., traditionally from the banks of the Colchian Phasis, now the Riou, an Asiatic affluent of the Black Sea; nearly all the Cornish birds obviously hybrids with the Chinese ring-necked pheasant, introduced into England towards the close of the eighteenth century.

**Partridge**; resident, abundant, and generally distributed, except on some of the granite districts towards the north coast, where on some estates not a single covey may be seen for the year; gregarious except in the breeding season; introduced into Scilly, though with little success; common throughout Europe from the Baltic southwards.

**Barbary Partridge**; the single specimen shot at Killiganon in 1865 was undoubtedly introduced, probably in a clutch of eggs.

**Quail**; a fairly common but casual summer visitor to the west of the county, occasionally breeding there; unusually abundant in 1870, in 1892 and in 1893 when nests and young birds were fairly numerous; two nests found near Falmouth in 1899; flocks occasionally touch at Scilly in autumn; a regular summer migrant throughout the greater part of England, arriving in May and leaving in October, but remaining in small numbers during mild winters; breeds locally over the greater part of Europe; in winter many reach Madagascar, Mauritius and the extreme South of Africa.

**Landrail**; a summer migrant, not uncommon but somewhat local; arrives about the beginning of May, earliest county record April 24th; an autumn migrant in Scilly; breeds throughout the greater part of Europe, north of the Alps and Pyrenees; in winter wanders as far south as Natal and the Cape.

**Spotted Crake**; a regular winter visitor to the snipe marshes throughout the county, most frequent in September; has twice occurred in Scilly; generally overlooked on account of its skulking habit and small size; a regular summer migrant to England, breeding sparingly and very locally; nests abundantly in central and north central Europe; winters in northern Africa.

**Little Crake**; a casual visitor from its breeding quarters in south central Europe; winters in equatorial Africa; a single specimen recorded for the county, captured by a cat at St. Dominic, in March 1878.

**Baillon's Crake**; a casual visitor recorded at least four times in the west of the county, namely from Penzance, from Zennor, from Land's End in 1856, and from Marazion marshes in 1877, but doubtlessly often overlooked as it is extremely difficult to flush and only weighs two ounces; nests locally from Holland southwards; widely diffused in Africa at all seasons.

**Water Rail**; not an uncommon resident in marshy land, watercourses and bramble covered ditches, but of very shy retiring habits; has bred in recent years near Stratton, on the Bodmin Moors, in Bishop's Wood, Truro, and near St. Erth; common at Scilly in autumn and winter, but does not breed here.

**Moor Hen**; resident, common and generally distributed on marshy land, reed beds and ditches; breeds in Scilly; nests in numbers from the Baltic to northern Africa.

**Coot** ; resident, but somewhat scarce ; frequents mud-banks covered with dense reedbeds, and the reedy margins of open pools ; many immigrants appear at times in autumn and winter ; common in winter in Scilly ; nests in suitable localities from south Sweden to the Mediterranean ; in winter there is on the continent a strongly marked south and south-west migration from the basin of the Baltic and northern Germany.

**Crane** ; a casual visitor ; breeds in the European morasses from the south of Norway to the Mediterranean, and winters in northern Africa ; a solitary specimen frequented the banks of the Tamar for some time in the autumn of 1826, and was ultimately shot on the Devonshire side of the river ; one shot at Tresco, Scilly, in the spring of 1881.

**Great Bustard** ; a casual winter visitor, usually resident on the plains of Germany and the Danube, and not unfrequent in Spain ; represented in Cornwall by at least three specimens, one from Goonhilly Downs in 1843, one from St. Austell in 1854, and a third from Looe in Dec., 1879.

**Little Bustard** ; a casual visitor of which about twenty have been recorded for the county chiefly from the west, though one has been obtained at Padstow and another near Looe ; probably once seen in Scilly ; latest county record St. Mawes, 1893 ; common but local on the continent.

**Stone Curlew** ; a winter visitor in small numbers to the west of the county, once recorded in Scilly ; in the rest of England a summer migrant ; Cornwall and south Devon seem to be on the northern limit of its winter habitat.

**Collared Pratincole** ; an accidental visitor from the south of Europe, where it is a summer migrant ; one shot at Truro in September, 1811, and one near the Lizard on June 9th, 1874.

**Cream-coloured Courser** ; an accidental visitor, breeding in Northern Africa ; a rare straggler to central Europe ; a single specimen shot at Mawgan near St. Columb in December, 1884.

**Dotterel** ; a rare casual visitor to the open moors on the south coast ; last records for the county, two killed at the Lizard lighthouse, April, 1880, a trip seen and one bird shot at Pentuan early in May, 1891 ; breeds sparingly in the Lake district

and in Scotland, and in considerable numbers in the extreme north of Europe; winters in North Africa, Egypt, and Palestine.

**Ringed Plover**; resident, fairly common and generally distributed in our estuaries and on our shingle beaches; a common resident in Scilly; in the autumn large immigrant flocks spread round our coasts leaving again for their favourite breeding haunts in the Polar regions early in May.

**Little Ringed Plover**; an accidental visitor represented by a single specimen shot at Tresco, Scilly, in October, 1863; one of the rarest accidental visitors to England, but fairly common in summer on sandy expanses on inland lakes and rivers from Scandinavia to northern Africa.

**Kentish Plover**; a casual visitor, recorded twice between Penzance and St. Michael's Mount, and once from Penzance Bay (Aug., 1871); a summer migrant to the east of England; breeds somewhat commonly on the coast and in the estuaries of the west of Europe from Denmark southward and round the Mediterranean Basin; in winter may migrate as far as the Cape.

**Killdeer Plover**; an accidental visitor from the New World, where it extends from the United States to Colombia; has only occurred twice in England, namely at Tresco, Scilly, in January, 1885, and at Christchurch, Hants, in 1859.

**Golden Plover**; a winter visitor generally distributed throughout the south of the county, but somewhat local in the northern half; usually common at Scilly and in severe winters abundant; occasionally seen early in September, but the large immigrant flocks appear from October onwards; the departure begins in March, but at times there are many stragglers; breeds abundantly from Derbyshire northward, and also in Ireland; on the Continent a regular summer migrant to Iceland, the Faeroes, and northern Europe, and breeding as far south as Switzerland; winters in the basin of the Mediterranean, but generally wanders south along the coast to the Cape.

**Grey Plover**; a passing visitor in spring and late autumn, probably commoner on the return visit; not uncommon from Falmouth westward to Scilly, but evidently rare elsewhere, except in the north-east of the county; breeds on Kolguev, Northern Siberia and Arctic America, and in winter visits the greater part

of Asia, Australia, Africa, and Central America, as well as the whole coast line of Europe.

**Lapwing**; resident, not uncommon in the breeding season on the wild moorlands; immense immigrant flocks or stands arrive during the autumn and winter; extraordinarily abundant in the west of the county during the first fortnight of Jan., 1891; nests throughout Europe and northern Africa; a usually abundant winter visitor at Scilly.

**Turnstone**; formerly a passing visitor in spring and autumn, frequently noted in the west of the county, particularly at Scilly, where it gradually became a regular and abundant winter visitor, more or less in evidence all the year round; is now a resident, as for at least three years it has bred on the sands there; breeds in great numbers in the Polar regions, and as far south as the Baltic; in winter an extensive wanderer, found along the entire coast line of Europe.

**Oyster Catcher**; resident, breeding in Scilly, at Perranporth, and occasionally elsewhere on the western mainland, but chiefly a passing visitor in spring and autumn; large flocks often seen during winter, when it is usually common on the creeks of the Fal and the Truro river; occurs yearly at Newquay; essentially a coast bird; breeds locally throughout the European coast from North Cape to the Adriatic; in winter migrates on the west coast as far south as Senegambia.

**Avocet**; an accidental visitor of which only four specimens have been recorded for Cornwall, one at Swanpool, in November, 1845; one near Land's End, Sept., 1847; one on St. German's river, Sept., 1871; and one near Truro, in Aug., 1880; formerly a regular summer migrant to the east of England; breeds locally in Denmark, Holland, and on the southern shores of the Baltic, and is abundant in south-eastern Europe.

**Black-winged Stilt**; an accidental visitor from south and south-eastern Europe, of which a single specimen was obtained at Swanpool in 1851.

**Grey Phalarope**; a passing visitor in autumn of very irregular occurrence; one specimen shot at Par in May, 1878, is the only spring record; an occasional visitor at Scilly; large flocks appeared in the county in 1846, 1866, and 1891; nests in

Greenland and other circumpolar regions; in winter passes down the west coast of Europe to North Africa.

**Red-necked Phalarope**; a casual visitor in autumn, recorded from Swanpool, Helford, Land's End and Scilly; one specimen shot on Dosmare Pool and another at Looe; several seen on Helford River in October, 1891, in a large flock of Gray Phalaropes; an arctic circumpolar breeder.

**Woodcock**; a winter visitor; a solitary specimen seen at Stratton early in August, 1890, but the first flights generally arrive about the second week in October, and the birds leave us early in March; very abundant at Scilly where the latest date is March 1st; a nest with four eggs found at Callington, 1853; breeds in most parts of the British Isles and on the continent from the limit of tree growth down to northern Italy; in the Mediterranean chiefly a winter visitor.

**Great Snipe**; a casual autumn visitor, occasionally met with on the moors of the west; one specimen obtained in Scilly in 1877; recorded from St. Austell and Camelford; breeds in Scandinavia, Denmark, and Northern Germany; scarcely known as a migrant in the west of France; evidently an annual autumn visitor in small numbers to England.

**Common Snipe**; resident, breeding locally in favourable situations, nests having been found during the past five years at St. Cleer, at St. Stephens-in-Branwell, and near Laneast; mainly, however, a winter visitor, flocks beginning to arrive early in September, and culminating as a rule the first week in October, and often remaining till March or even middle April; occurs in large numbers in Scilly; breeds in the marshes of the eastern counties, and generally distributed in the north and in Ireland; nests abundantly in Iceland, the Faeroes, and throughout northern and temperate Europe to the marshes of northern Italy; in winter reaches as far south as Senegambia; a very dark form of the birds known as Sabine's Snipe, has been occasionally shot in the county.

**Jack Snipe**; a winter visitor, generally distributed throughout the wet moorlands of the county; fairly common in Scilly; earliest record 3rd September, but the heaviest arrivals occur in October; departs northward early in April; not known to nest

in the British Isles; breeds abundantly north of the Arctic circle and as far south as St. Petersburg; in winter visits North Africa.

**Pectoral Sandpiper**; an accidental visitor from the American continent; one shot at Scilly in May, 1840, five in September, 1870, one in September, 1883, and one in 1890; one obtained at Gyllyngvase, Falmouth, in the late forties.

**Bonaparte's Sandpiper**; an accidental visitor from North America, of which two were shot near Hayle in 1846; one at Scilly, October, 1854; another in October, 1870; and one at the Lizard a few days later.

**Dunlin**; resident, breeding very sparingly on the Bodmin Moors; large flocks of foreign birds frequent our estuaries during the greater part of the year, but especially in winter; breeds very sparingly in south and central England, but commonly in Scotland; its head breeding quarters lie far within the Arctic circle.

**Little Stint**; a rare passing visitor in spring and autumn, in the west and at Scilly; Hayle and Swanpool seem to be the most favoured localities; chief breeding grounds are in northern Siberia, but it nests sparingly in northern Europe; large numbers winter in the extreme south of Africa.

**American Stint**; an accidental visitor, breeding in Labrador and in winter visiting south America; one shot on Marazion Marsh in October, 1853, and one near Penzance in Sept., 1890; only four examples been recorded for the United Kingdom.

**Temminck's Stint**; a casual visitor in autumn at Marazion Marsh and Scilly; one specimen shot near Devoran, 1899; breeds in northern Europe beyond the limit of tree growth; numbers winter around the Mediterranean, others go much further south.

**Curlew Sandpiper**; a not uncommon passing visitor in early autumn; frequent at Scilly, Hayle, and the west of the county generally, but evidently rare elsewhere; a flock of about thirty birds of the year in buff-white and gray seen on the Camel, near Wadebridge in the second week in September, 1900; once reported from Bude Haven; breeds in northern Siberia east of the Yenesei; in winter has been found in Cape Colony.

**Purple Sandpiper**; a fairly common winter visitor on our south coast; often abundant outside Falmouth harbour; an



occasional visitor at Hayle ; one bird in summer plumage shot at Looe ; recorded from Scilly ; has a strong preference for rocky shores thickly covered with sea-weed ; breeds at the Faeroes, Iceland, and in abundance far beyond the Arctic circle ; in autumn its passage can be traced down the Atlantic sea-board to Morocco.

**Knot** ; a passing visitor, common in autumn but rare in spring ; first flocks arrive in the west by the middle of August, and sometimes earlier, and often linger for several weeks ; well-known at Scilly ; breeds in north Greenland and Arctic America ; on passage it swarms on the coast of Western Europe, and continues down west Africa to Damara Land.

**Sanderling** ; a passing visitor in spring and autumn, occasionally remaining in the county for the winter ; of fairly frequent occurrence in the west, but not recorded east of Ports-catho ; a common winter visitor at Scilly ; breeding haunts circumpolar and extending beyond latitude 80° ; common on passage along the Atlantic coast, some winter round the Mediterranean, others push southward to the Cape.

**Ruff** ; a casual visitor during autumn migration occurring irregularly from Falmouth to Land's End and Scilly ; no specimen with the "ruff" recorded from the county ; breeds from northern Scandinavia and Russia to the north of France ; winter range extends to the Cape.

**Buff-breasted Sandpiper** ; an accidental visitor from the American continent ; one specimen shot between Marazion and Penzance, Sept., 1846, a second near Chung Castle, Morvah, Sept., 1860, and a third on St. Bryher, Scilly, Sept., 1870.

**Bartram's Sandpiper** ; an accidental visitor breeding in north and wintering in South America ; eight specimens recorded for England, of which one was shot at Mullion, Nov. 1865, and one at St. Keverne, Oct., 1883.

**Common Sandpiper** ; a summer migrant, but commoner as a passing visitor in spring and autumn ; earliest record for Hayle, April 10th ; generally leaves in Sept., but one was shot on Nov. 12th, 1874 ; a passing autumn visitor at Scilly where it occasionally lingers ; nests not uncommonly by moorland streams ; breeds abundantly throughout Europe from the arctic circle to the Alps

and sparingly further south; in winter occurs along the whole of the African coast line.

**Wood Sandpiper**; a passing visitor in spring and autumn, occasionally fairly common; earliest record April 15th; has been shot in May and in June; may nest in the county; a casual visitor in Scilly; breeds commonly throughout northern Europe and as far south as the Danube; in winter passes down to south Africa.

**Green Sandpiper**; a passing visitor in autumn, but has been recorded in the west for every month from July to May; small flocks of not unfrequent occurrence between Towednack and Land's End; an early autumn visitor in Scilly; nests in marshy woods from the Arctic circle to central Europe; winters in northern Africa and passes up the Nile over the Great Lakes to Cape Colony.

**Solitary Sandpiper**; an accidental visitor from north and south America; three specimens only have occurred in the United Kingdom,—one on the Clyde in 1870, one in Scilly, Sept., 1881; and one at Marazion marsh in January, 1885.

**Yellowshank**; an accidental visitor from North and South America of which only three have occurred in the country, including one at Marazion on Sept. 12th, 1871.

**Redshank**; a winter visitor, though in some years commoner as a passing autumn migrant; abundant near Truro Quay in Dec. and Jan., 1901-2; of fairly frequent occurrence in Scilly from early autumn to mid-winter; may nest in the county as birds have been seen for the last two years during the nesting season; breeds in Iceland, the Faeroes, northern Europe, and south to Morocco; in winter occurs at the Cape and in Natal.

**Spotted Redshank**; a casual visitor occasionally met with in the month of August on the western marshes; once recorded from Scilly; breeds in northern Scandinavia and Russia; winter quarters extend from the Mediterranean to the Cape.

**Greenshank**; a passing visitor in autumn and occasionally in spring; recorded from the north-east, the south, and the west of the county, but nowhere common; generally irregular in its visits except at Scilly; breeds around the northern Scottish Lochs and in northern Europe; in winter ranges over the greater part of the eastern hemisphere down to the Australian region.

**Red-breasted Snipe** ; an accidental visitor represented by a single specimen shot at St. Mary's, Scilly, in Oct., 1857 ; breeds in arctic America and eastern Siberia, winters in central and south America.

**Bar-tailed Godwit** ; a passing visitor in autumn occasionally in large flocks ; small groups may linger on the mud-flats of our estuaries for several weeks ; in autumn and winter fairly common at Scilly ; breeds from the Yenesei Valley westward through the Siberian tundras to the marshes of Finland ; irregularly distributed in the winter months throughout Europe down to the Mediterranean.

**Black-tailed Godwit** ; a casual spring and autumn visitor in the south-west of the county from Swanpool to Scilly ; last recorded specimen Sept., 1893 ; formerly nested in the Fen districts of England, and now breeds commonly in north Europe as far south as Holland ; its winter quarters are from the Mediterranean southwards.

**Curlew** ; resident, breeding about Rowtor and Brown Willy and probably near Kilkhampton ; spends the winter by the sea shore ; one of the most vigilant of birds ; frequents Scilly all the year round but does not breed there ; breeds in western Europe as far south as Brittany.

**Whimbrel** ; a regular passing visitor in the beginning of May and again from July to the end of September ; common in the Land's End district and at Scilly ; nests in Iceland, the Faeroes, and in Scandinavia to the limit of forest growth ; in winter migrates coast-wise as far as the Cape.

**Esquimaux Curlew** ; an accidental visitor breeding throughout arctic America from Hudson's Bay to Alaska, and wintering in south America ; seven specimens shot throughout the United Kingdom, including one at Tresco, Scilly, in Sept., 1887.

**Black Tern** ; a fairly regular passing visitor in autumn, but very rare in spring ; abundant near Padstow in Sept., 1900, and not as a rule uncommon in the autumn either on the north or south coast or at Scilly ; formerly nested abundantly in the alder swamps of the eastern counties ; breeds over the greater part of Europe and south to the marshes of northern Africa ; in winter wanders as far south as Loango.

**White-winged Black Tern**; an accidental visitor, so far only twice recorded for the county, viz., in May, 1882, from Tresco, Scilly, and in 1887, from Sennen; probably often overlooked; nests in central and southern Europe, and winters in Africa, Australia, and New Zealand.

**Whiskered Tern**; an accidental visitor of rare occurrence in England; a single specimen obtained at Tresco, Scilly, in Aug., 1851; breeds in the marshes of south-west Spain, in the Danube swamps, and in north Africa; a very rare summer and autumn straggler to northern Germany; in winter occurs at the Cape.

**Gull-billed Tern**; an accidental visitor, very rare in England; one example killed near Tresco, May or June, 1852, and another at St. Just, Penzance, in July, 1872; breeds abundantly on Spanish sand banks near Cadiz, and on a few spots as far north as the west coast of Denmark; a bird of unusually wide distribution.

**Sandwich Tern**; a regular summer migrant to Scilly till lately, but for the past few years no nests have been recorded there; still an autumn straggler along our south coast from Swanpool westwards; nests in large colonies from Jutland to the Netherlands and sparingly further south; in winter reaches the Cape on the west, and Natal on the east.

**Roseate Tern**; a casual visitor not recorded since 1846, though in 1840 it nested at Scilly; an oceanic and southern species, now merely a straggler to the eastern coasts of the North Sea, though several colonies still breed in favourite spots in the west of France; breeds in the new world along the east coast from New England to the West Indies and Venezuela.

**Common Tern**; a summer migrant, but more abundant as an autumn visitor; large passing flocks occasionally seen in spring; breeds sparingly along the coast, and in diminishing numbers at Scilly; elsewhere is the predominant Tern along the shores of the Channel and on the west side of Great Britain; is widely distributed in summer on the coasts, rivers, and lakes of Europe and north Africa, as well as in north America; in winter can be traced down the west coast to Cape Colony.

**Arctic Tern**; a summer migrant, and very abundant as a spring and autumn visitor, formerly outnumbered the Common

Tern in its breeding haunts at Scilly, where it is now in the minority; generally arrives in May and leaves in October; in summer is completely circumpolar and has been found in the highest latitudes reached; migrates down the Atlantic sea-board as far as Table Bay.

**Little Tern**; not an unusual visitor to the west in spring and autumn, and occasionally seen in July; thrice seen at Scilly; nests sparingly throughout Great Britain; is abundant in summer south of the Baltic extending along the large rivers to the Mediterranean; breeds also in North Africa and in the west descends in winter to the Cape.

[**Sooty Tern**; an accidental visitor of which a single specimen was probably seen at Tresco, Scilly, in 1883; exceedingly rare in Europe; generally distributed during the breeding season in the West Indies, Polynesia, throughout the Indian Ocean, and in immense colonies on Ascension.]

**Sabine's Gull**; an accidental visitor from August to December, rare in Cornwall and in England generally; has been obtained at Looe, Falmouth, and from Penzance westwards; last specimens recorded in the county shot at Newlyn, Oct., 1891, and at Wolf Rock, Sept., 1894; an almost circumpolar bird breeding in very high latitudes.

**Bonaparte's Gull**; an accidental visitor widely distributed in summer over the Fur countries of North America; of the six records for the United Kingdom three are from west Cornwall, namely, one in Falmouth Harbour and another at Penryn in Jan., 1865, and one near Newlyn in Oct., 1890; has not yet been obtained on the continent.

**Little Gull**; a casual visitor from Falmouth westwards in the autumn and winter; last recorded birds from St. Just and Hayle in 1889, and from Hayle in 1896; breeds abundantly round Lake Ladoga and in the Ural Swamps; in winter abundant, but local in the Mediterranean Basin.

**Black-headed Gull**; a winter visitor, often in large flocks, especially on the south coast; observed on St. German's river, July 18th, 1883; does not now breed in the county, though it formerly did so at Scilly; frequently occurs at Hayle in immense numbers; in the fourth week in January, 1902, a small flock

could be seen daily from Boscawen Bridge, Truro; still breeds in Dorsetshire and throughout the continent from South Norway to the Mediterranean; in winter common on the Red Sea and in Nubia.

**Common Gull**; a winter visitor but not at all plentiful; arrives in August and leaves about the middle of April; has occurred all round our coast, and for the last two years has been a frequent visitor at Nance, where it was seen this year (1902) as late as the 29th of April; very rare at Scilly; nests abundantly on the coasts and moorland Lochs of Scotland and on the continent up to the North Cape; in winter common in the Mediterranean Basin.

**Herring Gull**; resident, breeding on most of the inaccessible cliffs round our coasts and at Scilly, and very common throughout the year; breeds abundantly along the northern half of the western coast-line of Europe.

**Lesser Black-backed Gull**; resident and occasionally very common in winter and early spring; breeds in great numbers at Scilly, commonly on Mullion Island, on Gull Rock, Falmouth, and possibly in scattered pairs on the western mainland; eggs taken at Perranporth, in June, 1899; numerous in summer in the north of England, Scotland, and the Faeroes, as well as on the coast of Norway.

**Great Black-backed Gull**; resident at Scilly, where it breeds regularly; for the most part a winter visitor singly or in pairs, commoner on the north coast than on the south; breeds annually at Perranporth; resident in Iceland and the Faeroes, but probably does not nest on the continent except in north-west France; as far south as the Canaries.

**Glaucous Gull**; a casual visitor from January to March in small numbers and at very irregular intervals; last record for the county, Dec., 1891; a common resident in Iceland, and breeds throughout the entire circumpolar regions; in winter migrates to the Mediterranean.

**Iceland Gull**; a casual visitor in winter, most frequently seen from December to February, but twice in April; formerly very rare, but not unfrequent between Truro and Penzance since 1895; appeared in large numbers in 1873, in the winter of

1874-5, and again in 1895; rare at Scilly; breeds in Jan Mayen Island in Greenland; in winter wanders as far south as the west of France.

**Kittiwake**; resident, abundant round our coast and in our creeks, especially in winter; some years ago bred in large colonies on Gorregan, Scilly, but the numbers rapidly diminished and recently the rocks there have been deserted; still breeds at Mullion Island, on Gull Rock, Falmouth, and occasionally at least on the mainland; on the continent not known to nest further south than Brittany.

**Ivory Gull**; an accidental visitor from the coasts of Arctic America, Labrador, and Newfoundland; has occurred about thirty-five times in the British Isles and twice in the county, namely at Quilquay and at Penzance in February, 1847; has a completely circumpolar breeding range in high northern latitudes, and in winter wanders down the European coast to France.

**Great Skua**; a casual visitor to our seas throughout the year except during the breeding months; seldom seen on the coast, and evidently much rarer now than twenty years ago; breeds in the Shetlands, the Faeroes, and Iceland; in winter sometimes seen on the north-west Atlantic coast of Africa.

**Pomatorhine Skua**; a casual autumn visitor of somewhat uncertain appearance, but increasing both in numbers and frequency; occasionally appears in large flocks as in 1879, when it seems to have been abundant from Looe westward to Falmouth, and in 1890; a specimen shot near the Manacles, June 15th, 1883; nests in the north of eastern Siberia, in arctic America, and in north Greenland; in winter is found along the west coast of Africa down to Walfisch Bay.

**Richardson's Skua**; a casual visitor in autumn and winter, of rare occurrence on the south coast; seen twice at Scilly; nests on the Shetlands and sparingly on the Orkneys and Hebrides; breeding haunts circumpolar, but not extending so far north as several of the gulls; in winter is found at the Cape.

**Buffon's Skua**; a casual visitor in autumn and winter, represented by three specimens in the Cornish ornithology up till the autumn of 1891, when a large flock visited the south-west of England, and the bird was seen in numbers near Polperro and

Fowey; breeds in north Swedish Lapland, Spitzbergen, and across the Siberian tundras; in winter visits the Mediterranean.

**Razorbill**; resident; breeds in great numbers at Scilly and at one or two other places on the south coast, notably Gull Rock, Falmouth; except at the breeding season spends most of the time on the water some distance out at sea.

**Common Guillemot**; resident, with the same breeding stations as the Razorbill, though not so abundant at Scilly; in spring and summer abundant round the coast, but in winter usually keeps out at sea; the variety known as the Bridled or Ringed Guillemot occurs not unfrequently.

**Brunnich's Guillemot**; an accidental visitor; breeding stations in the Arctic Seas from latitude 64° northward; a straggler to the coasts of the North Sea in winter; of the twenty occurrences in Britain one was reported from Rosemullion Head.

**Black Guillemot**; a casual visitor breeding abundantly in the north of Scotland and on the continent up to the North Cape; two specimens have been shot in the county, one at Mount's Bay, and one at Gylyngvase; wanders but little in winter.

**Little Auk**; a regular winter visitor occurring singly or in pairs in most of our estuaries; has been observed on Truro river in December or January for the last five years; the smallest of our cliff birds; breeds in incredible numbers on and about Spitzbergen and commonly west to Baffin's Bay and east to Novaya Zemlya.

**Puffin**; resident, breeding in great numbers at Scilly; may nest on the mainland, possibly in rabbit holes, as it is locally common in the breeding season on the south coast as far east as Falmouth; from August till early May it lives far out at sea, being essentially an oceanic bird; forms vast breeding colonies in the Hebrides, on the Faeroes, in Arctic Norway, and in Iceland, and breeds abundantly in western Ireland.

**Great Northern Diver**; a winter visitor in increasing numbers to the west of the county; common at Scilly; occasionally occurs in small flocks and in some seasons is fairly abundant, as in 1874-75, 1886-87, 1890-91; a western species, Iceland being its eastern breeding limit; plentiful in South Greenland and in the Fur countries of North America.



**Black-Throated Diver** ; a casual winter visitor to the south coast, reported from Portscatho to Mount's Bay ; since 1890 not unfrequent at the former station ; breeds commonly, but locally, in Northern Scotland and from the lakes of Scandinavia eastward and northward ; in winter met with down the Atlantic coast to the Mediterranean.

**Red-Throated Diver** ; a regular winter visitor of fairly common occurrence especially on the south coast, but its numbers fluctuate considerably from year to year ; the commonest of our Cornish divers ; breeds irregularly in the Highlands and Islands of Scotland and throughout the Arctic and Sub-arctic regions of Europe, Asia and America ; migrates south to the Mediterranean.

**Great Crested Grebe** ; a regular winter visitor, not uncommon on our south coast ; occasionally occurs in flocks of twelve to fifteen ; more or less a resident in England, Wales, and Ireland, and in steadily increasing numbers.

**Red-Necked Grebe** ; a winter visitor occurring annually but in very variable numbers along our south coast ; common in January, 1891, in January, 1895, and in December and January, 1901-1902 ; breeds in South Norway, Denmark, Holland, and North Germany, as well as to the east and north of that region ; migrates in autumn to the east coast of England in considerable numbers.

**Slavonian Grebe** ; a casual winter visitor of not uncommon occurrence in our estuaries and creeks ; very rare at Scilly ; observed in considerable numbers at Padstow early in 1900 ; has been recorded for the last four years from creeks of the river Fal ; may be a regular winter visitor ; breeds regularly in Ireland, Scandinavia, and Russia, and in autumn wanders southward through Europe to the Mediterranean.

**Eared Grebe** ; a casual winter visitor, occurring at intervals in most of our estuaries, but most commonly in Helford river and the creeks of the Fal ; breeds in suitable localities throughout Europe from the Baltic southwards, and is abundant in the Mediterranean Basin ; essentially a southern bird.

**Little Grebe** ; resident, fairly common in suitable localities throughout the county ; abundant by the marshy ponds in the Land's End district ; in the east and middle of the county generally nesting in rushy margins of sluggish streams ; complex

migratory movements seem to occur in winter; fairly common in summer from Northern Germany south to the Mediterranean.

**Stormy Petrel**; resident, breeding on Rosevear, Scilly in greatly diminishing numbers, and probably on the mainland near Logan Rock and near Tintagel; being nocturnal in its habits, it often escapes observation; nested on the Gull Rock, Falmouth, in 1866; for the greater part of the year generally keeps far out at sea; the smallest web-footed bird.

**Leach's Petrel**; a winter visitor, but not often seen except when driven into estuaries or on to the land by violent gales; common some miles out at sea; breeds sparingly on the Hebrides and in Iceland; common in America from Labrador to the Bay of Fundy, wintering southward to Virginia.

**Wilson's Petrel**; an accidental visitor that breeds on Kerguelen Island in the Antarctic Ocean, but is an extensive wanderer; of rare occurrence in England; one picked up dead at Polperro in 1838.

**Great Shearwater**; a winter visitor to our seas, but being exclusively oceanic is seldom seen on land; sometimes, as in August, 1899, appears in large numbers off the south coast; occurs in flocks at Scilly every autumn; not much observed on the north coast, but reported from Hayle and off Bude; probably breeds on islands in the Southern Hemisphere.

**Sooty Shearwater**; an accidental visitor, recorded once from Mount's Bay and once from Falmouth harbour; generally distributed over the Atlantic and Pacific Oceans, but probably breeding only in the Southern Hemisphere.

**Manx Shearwater**; resident, but most numerous as a passing visitor in spring and autumn; rarely seen on land or in our estuaries except after violent gales; breeds on Annette, Scilly; essentially on Atlantic species.

**Fulmar**; a casual winter visitor, of which half-a-dozen specimens have been found in the county between Falmouth and Land's End and one at Looe; usually picked up dead or in an exhausted condition after tempestuous weather; an ideal oceanic bird; breeds in immense numbers at St. Kilda, the Faeroes, Iceland, and elsewhere within the Arctic circle.

*Truro, July 12th, 1902.*

METEOROLOGICAL OBSERVATIONS AT THE ROYAL  
INSTITUTION OF CORNWALL, 1850 to 1900.

By GEO. PENROSE, Curator.

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At the request of the Council of the Royal Institution of Cornwall, I have prepared the accompanying Summary of the Meteorological Observations made and recorded at their Museum during the years 1882 to 1900, and in order that a still better idea may be obtained of the climatic conditions of Truro, I have, with the aid of the Summary prepared by the late Dr. Barham\* for the years 1850 to 1881, given the means for the last 51 years, viz. : 1850-1900.

Whilst engaged in the preparation of these tables, it occurred to me that a short account explaining the nature of the instruments in use, together with some remarks on the different phenomena of meteorology, would form a suitable introduction, and would enable a number of persons to better understand the use of such tables.

The establishment of an Observatory at this Institution was mainly due to the late Dr. Barham, who, on the 3rd March, 1838, addressed a meeting of the members on the importance of accurate observations of the weather, with a view to a comparison of this country with other parts of the world.† This resulted in the purchase of a number of instruments and the daily observation of meteorological phenomena. During the year 1850 additional instruments were provided, and the observations conducted on a more extensive plan, which has been continued up to the present time.

The Geographical Position of the Royal Institution buildings is: Latitude  $50^{\circ} 17' N$ ; Longitude  $5^{\circ} 5' W$ .

**Hours of Observation.** The hours of observation are 9 a.m., 3 p.m., and 9 p.m., local time. The maximum and minimum thermometers are read and set at 9 p.m., and the readings

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\* R.I.C. Journal, Vol. 8.

† R.I.C. Annual Report for 1838.

entered to the day on which they are observed. The rainfall is read at 9 a.m., and entered for the previous day.

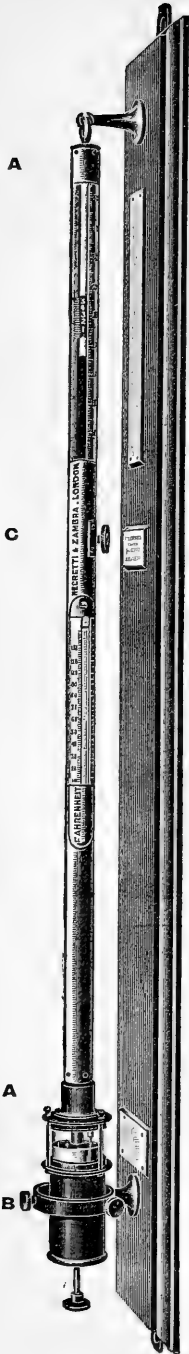
**Atmosphere.** Enveloping the crust of the earth is a vast invisible ocean of gaseous vapour, known to us as the air or atmosphere. It is within this ocean that such wonderful natural phenomena as rain, clouds, thunder, lightning, and storms, so full of interest to the meteorologist, take place. By the ancients air was considered to be an elementary substance, but chemistry has demonstrated it to be a mixture of gases, the two chief ingredients being nitrogen and oxygen. Traces of other gases also occur, as will be seen by the following table, which gives the average composition of normal air :

|                |    |    |    | Vols. per 1,000 |
|----------------|----|----|----|-----------------|
| Nitrogen       | .. | .. | .. | 779·0600        |
| Oxygen         | .. | .. | .. | 206·5940        |
| Aqueous vapour | .. | .. | .. | 14·0000         |
| Carbon dioxide | .. | .. | .. | 0·3360          |
| Ammonia        | .. | .. | .. | 0·0080          |
| Ozone          | .. | .. | .. | 0·0015          |
| Nitric Acid    | .. | .. | .. | 0·0005          |
|                |    |    |    | 1000·0000       |

Like all gases the air is very elastic and compressible, consequently its density, which is greatest at the earth's surface, being pressed down by the mass above, rapidly diminishes as the altitude increases, until at a height of about seven miles it becomes so attenuated that breathing is impossible.

It is important that the pressure or weight of the atmosphere, which is never constant, varying in different places and at different times, should be estimated, and for this purpose an instrument known as the *barometer* (Greek *baros*, weight; *metron*, a measure), is used.

**Barometer.** The standard barometer, which is hung on the north wall of the Museum, has been compared with the standard barometer at the Royal Observatory, Greenwich. It is constructed on Fortin's principle, which has been proved to be the most reliable, and consists essentially of three parts. (A) is a glass tube (mounted in a brass frame) about 34 inches long,



closed at the upper end. This tube contains a column of pure mercury, about 30 inches high, inverted over (B) a cistern also containing mercury. The pressure of the atmosphere on the mercury in the cistern supports the column of mercury in the tube, and as the pressure increases or diminishes, the mercury rises and falls accordingly. A graduated scale, together with a vernier (c) for reading, is attached to the brass frame parallel to the tube. The special feature of barometers constructed on Fortin's principle is that the level of the mercury in the cistern can always be adjusted previous to each observation to a fixed zero point, consequently any loss of mercury through leakage or oxidation is of little importance, as it does not affect the accuracy of the readings of the instrument.

The mean annual value for pressure, as will be seen from the last page of the tables (see also diagram 1) is 29·967 inches. The maximum pressure observed, 30·937 inches, was reached on January 18th, 1882, and the minimum pressure, 28·330 inches, occurred on December 29th, 1899, which gives an extreme range of 2·607 inches.

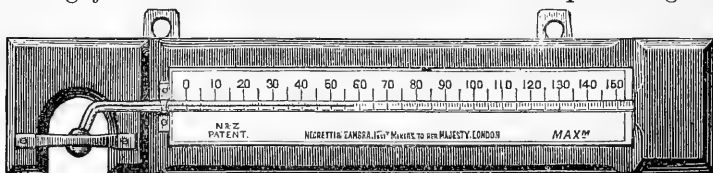
Corrections for Index error (+ 0·008), capillarity (+ 0·013), height above mid-tide (43 feet), and temperature have been applied to the tables.

**Temperature** (Diagram 2). The mean temperature of the air is of great importance in determining the suitability of the climate for persons having a tendency to any particular disease and also for health purposes generally. It is also important for hygienic reasons, that the range of temperature or difference between that of the day and night should not be great. Cornwall is particularly fortunate in these respects. At Truro the mean annual tempera-

ture is  $53^{\circ}$ , and the daily range of temperature  $13^{\circ}$ . For determining the temperature of the air an instrument known as the thermometer is used. It consists of a closed glass tube with a bulb at the bottom, which is filled with mercury. Heat causes mercury to expand. The tube is graduated to correspond with the temperature which is indicated by the height of the column of mercury.

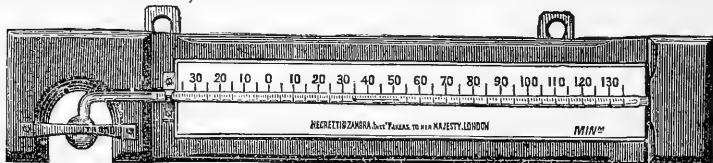
The thermometers are hung in a hexagonal wooden shed, 7 feet in height, 3 feet 6 inches in width, and 2 feet 6 inches from front to back, with conical roof. This shed stands on the flat leaden roof of the Museum and, above the level of 4 feet 2 inches, is furnished all round with horizontal louvres 4 inches wide, inclined outwards at an angle of 50 degrees and with interspaces  $2\frac{1}{2}$  inches wide, through which the air passes freely. The underportion is pierced by numerous holes 1 inch in diameter. All thermometers have Kew certificates.

**Maximum Temperature.** This takes place during the day and is registered by the maximum thermometer. This instrument differs from the ordinary form of thermometer, by having just above the bend near the bulb a small piece of glass



MAXIMUM THERMOMETER.

which acts as a valve, allowing the mercury to pass upwards as the temperature increases, but not permitting it to return when the temperature gets lower. It therefore registers the *maximum temperature*. The highest temperature registered at Truro was  $92^{\circ}$  on June 19th, 1893.

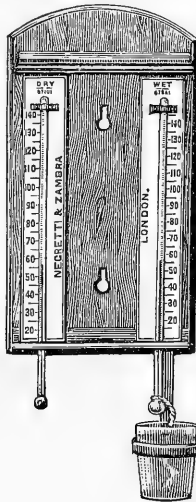


MINIMUM THERMOMETER.

**Minimum Temperature.** This takes place during the night and is registered by the minimum thermometer. Instead

of the bulb and part of the bore being filled with mercury it usually contains alcohol, in which floats a black index. On a decrease of temperature the alcohol recedes taking with it the index; on an increase of temperature the alcohol alone ascends in the tube, leaving the index behind indicating the *minimum temperature*. The lowest temperature registered at Truro was  $8^{\circ}$  on January 15th, 1867.

**Aqueous Vapour.** As will be seen in the table of substances composing the air there is always a quantity of water vapour present. The proportion is never constant, but varies with the temperature; the warmer the air the more water vapour

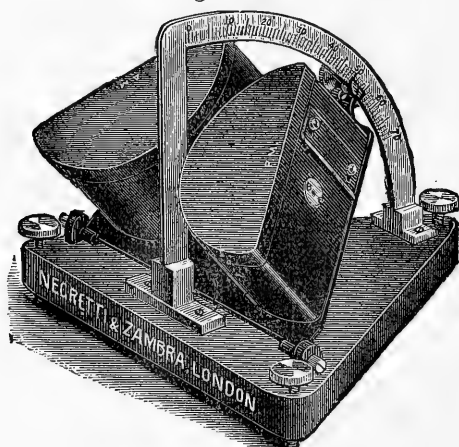


WET & DRY BULB HYGROMETER.

will it hold. For measuring this quantity of moisture, an instrument known as the *Hygrometer* (Greek *hugros*, moist; *metron*, a measure) is used. It consists of two ordinary mercurial thermometers, as nearly as possible identical, placed on a stand, the one marked dry, the other wet. The bulb of the wet thermometer is covered with thin muslin, round the neck of which are conducting threads of lamp cotton passing into a small attached vessel of water, placed at such a distance as to allow a length of thread of about 3 inches. These threads draw up the

water by capillary attraction, thus keeping the bulb moist, which causes the thermometer to indicate a temperature lower than the dry bulb in proportion to the rate of evaporation; whilst the dry bulb shows the temperature of the air. The more rapid the evaporation the greater is the difference of temperature shown by the two thermometers. From this difference can be calculated by means of tables the amount of vapour in a certain volume of air.

**Sunshine** (Diagram 3). For many years the amount of sunshine was only roughly estimated at this observatory, but latterly it has been accurately determined by a Jordan Photographic Recorder, presented by Mr. John Davies Enys, F.G.S. This instrument, which is placed on the roof of the Institution where it has the full range of the sun at all seasons of



JORDAN PHOTOGRAPHIC SUNSHINE RECORDER.

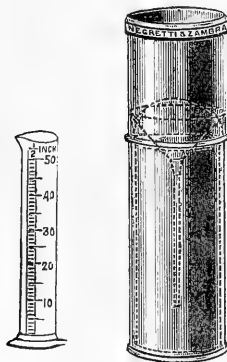
the year, consists of two semi-cylindrical dark chambers, in which are placed sheets of Cyanotype paper, one for the morning and the other for the afternoon, ruled with vertical lines indicating the hours and minutes of the day. The rays of sunshine, which are admitted by a small aperture placed in the centre of the rectangular side of each chamber, act chemically on the paper, and travelling over it by reason of the earth's rotation, cause a blue line to be left. The papers after being fixed by immersing in water are dried and the trace of sunshine



measured. Another instrument often used is that known as the Campbell-Stokes Recorder.\* The rays of the sun are received on a sphere of glass, 4-ins. in diameter, and concentrated on a card placed in a groove at the back, the surface of which becomes charred, and so gives a record of the duration of bright sunshine.

The month during which most sunshine is recorded in Truro is May, the average being 253·8 hours. December is the least sunniest, the average being only 49·1 hours. The greatest duration of sunshine in one month was 320 hours registered during the month of May, 1896. The year of greatest sunshine was 1899, with 1893·8 hours.

**Rainfall** (diagram 4). It is important that the amount of rain falling at different places should be ascertained. The instrument used for collecting the rain is called the Rain Guage. It consists of a metal funnel, usually five inches in diameter, placed over a metal cylinder which contains a glass receiving vessel into which the neck of the funnel is inserted. The



RAIN GAUGE.

measurement is effected by pouring the contents into a measure graduated to represent tenths and hundredths of an inch, and reading off the division to which the water rises. One inch of rain on a square yard gives 4·67 gallons, or 47·74 pounds; on an acre it corresponds to 22,662 gallons or 100·99 tons. December is the wettest month in the year, the mean rainfall for that month in Truro being 4·835 inches. The highest rainfall for

\* In use at the Falmouth Observatory.

any one month was 10.59 inches, which fell during the month of December, 1876. Within the Truro Union there are 85,260 acres of land, which means that, provided the rain was evenly distributed, there fell over this district during that month 91,184,214 tons of water. The highest rainfall for any one day was 3.0 inches, or 25,815,222 tons, on October 4th, 1880. The mean annual rainfall for Truro is 40.5 inches.

**Clouds** are perhaps the most beautiful of all aerial phenomena, their color and form ever changing in great variety. As already mentioned, invisible aqueous vapour is diffused throughout the air. If from any cause, such as the sudden variation in the direction of the wind, the atmosphere is cooled below its capacity for holding this vapour, aqueous deposition occurs, with the result that we have clouds formed. There are various kinds of clouds, the chief or primary forms being :

*Cirrus*, white delicate feathery clouds, existing only at great heights. Supposed to consist of ice particles.

*Nimbus*, a dark uniform grey cloud without shape, from which rain falls.

*Cumulus*, a thick white cloud of which the upper part is dome-shaped, the base being usually horizontal ; often occurs in groups.

*Stratus*, occurs in horizontal sheets.

The proportion of sky covered with cloud is estimated, the scale adopted being 0 to 10 ; 0 represents a cloudless sky, and 10 a sky completely covered.

**Snow, Sleet, and Hail.** If the temperature of a cloud should fall at any time to 32° F or lower, the tiny water particles are frozen into crystals of ice, and instead of rain we get snow. Sleet is a mixture of melting snow and rain. Hail consists of small rounded masses of ice which fall in showers. These are collected in the rain guage, melted, and measured as rain.

**Ozone**, discovered by Schönbein in 1840, is a concentrated form of oxygen. It occurs in small traces in the atmosphere, and is sometimes made the subject of observation. The usual method consists in exposing to the atmosphere strips of paper previously dipped in an emulsion of starch, to which a small

quantity of Potassium Iodide has been added. The Ozone liberates the Iodine from the Potassium Iodide, and being in the presence of starch the paper becomes blue. There are, however, other substances often present in the atmosphere which produce the same effect. The estimation is therefore not reliable. It is not now included by the Royal Meteorological Society in their scheme of observations.

**Wind.** The direction of the wind has been determined by vanes and its force estimated on a scale from 0 to 6, from calm to violent storm. The latter, though somewhat inaccurate, is the method adopted at a large number of stations and, with experience, yields useful results. For the accurate measurement of the velocity with which wind travels a form of Anemometer (Greek *anemos*, wind; *metron*, a measure), known as Dr. Robinson's Anemometer, is used at a number of stations. This instrument consists essentially of four hemispherical cups, carried by four arms attached to a vertical shaft, which is caused to rotate by the action of the wind. The cups travel at a rate equal to one third that of the wind, and the rotary motion is conveyed by a brass rod to a drum driven by a clock, on which is placed a prepared paper, and on which the wind velocity in miles per hour is automatically traced. On examination of the tables it will be seen that the prevailing winds are from the north-west and south-west.

In addition to the foregoing, observations are made on such phenomena as Thunderstorms, Lunar and Solar Halos, Fogs, etc., but space will not permit of their being dealt with in the accompanying summaries.

At various stations in Cornwall observations have been made during the last century and half. The MS of the late Dr. Borlase, of Ludgvan, deals with the period from 1754 to 1772. At Trewarthenick observations were made by Mr. Gregor from 1765 to 1782. Notes now in the possession of this Institution 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.

In conclusion, I wish to acknowledge my indebtedness to Messrs. Negretti & Zambra, Scientific Instrument Makers, 38, Holborn Viaduct, E.C., for kindly placing at my disposal the blocks for the accompanying illustrations.

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#### ERRATA.

MARCH TABLE. Mean Minimum Pressure for 51 years, for "29.986" read "28.986."

NOVEMBER TABLE. Greatest Rainfall in 24 hours, for "3.00 in. (1880)" read "1.78 in. (1898)."

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

**JANUARY.**

| 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. | Maximum. | Minimum. | Absolute Maximum. | Absolute Minimum. | Mean of Bulb of Dry. | Mean of Wet Bulb. | Mean Dew Point. | PROPORTIONATE DIRECTION. |     |           |      |      |     | RAINFALL. |       |      |      | WEATHER. |      |      |      |      |      |      |      |     |  |
|                               | 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. |  |
| 1882                          | 30.359                       | 30.937                     | 29.400                     | 0.263                         | 30.072                    | 50.3                      | 41.2                      | 56       | 25       | 46.3              | 44.2              | 41.6                 | 0                 | 22              | 20                       | 20  | 20        | 10   | 13   | 0   | 6         | 2.69  | 0.84 | 13   | 82       | 11   | 8.2  |      |      |      |      |      |     |  |
| 1883                          | 29.854                       | 30.437                     | 29.080                     | 0.262                         | 29.588                    | 51.0                      | 40.5                      | 56       | 28       | 46.6              | 44.3              | 41.5                 | 0                 | 17              | 17                       | 4   | 24        | 21   | 8    | 0   | 2         | 3.86  | 0.64 | 19   | 73       | 20   | 7.5  |      |      |      |      |      |     |  |
| 1884                          | 30.136                       | 30.637                     | 29.243                     | 0.283                         | 29.849                    | 51.8                      | 43.4                      | 56       | 34       | 48.1              | 46.0              | 43.5                 | 0                 | 9               | 5                        | 6   | 35        | 19   | 18   | 0   | 1         | 3.81  | 0.73 | 18   | 80       | 13   | 8.2  |      |      |      |      |      |     |  |
| 1885                          | 29.844                       | 30.409                     | 28.814                     | 0.231                         | 29.609                    | 47.3                      | 38.0                      | 54       | 24       | 42.4              | 40.6              | 38.2                 | 0                 | 12              | 20                       | 7   | 25        | 0    | 15   | 3   | 11        | 3.12  | 0.58 | 16   | 76       | 17   | 7.9  |      |      |      |      |      |     |  |
| 1886                          | 29.736                       | 30.293                     | 29.143                     | 0.211                         | 29.511                    | 46.0                      | 35.0                      | 54       | 20       | 40.9              | 38.8              | 35.9                 | 0                 | 12              | 1                        | 22  | 8         | 25   | 16   | 21  | 5.45      | 0.90  | 21   | 68   | 25       | 7.2  |      |      |      |      |      |      |     |  |
| 1887                          | 29.958                       | 30.708                     | 28.859                     | 0.232                         | 29.752                    | 45.0                      | 37.0                      | 55       | 24       | 43.1              | 41.0              | 38.4                 | 0                 | 3               | 16                       | 8   | 20        | 6    | 23   | 8   | 14        | 2.53  | 0.46 | 14   | 76       | 17   | 8.4  |      |      |      |      |      |     |  |
| 1888                          | 30.194                       | 30.630                     | 29.291                     | 0.245                         | 29.952                    | 48.0                      | 37.8                      | 55       | 18       | 43.6              | 41.5              | 39.9                 | 0                 | 8               | 21                       | 13  | 10        | 8    | 11   | 8   | 14        | 2.96  | 0.62 | 15   | 74       | 19   | 7.8  |      |      |      |      |      |     |  |
| 1889                          | 30.184                       | 30.680                     | 29.478                     | 0.209                         | 29.972                    | 50.1                      | 36.0                      | 56       | 23       | 44.7              | 40.4              | 35.3                 | 0                 | 4               | 2                        | 24  | 8         | 14   | 18   | 20  | 2.71      | 0.68  | 14   | 65   | 28       | 5.3  |      |      |      |      |      |      |     |  |
| 1890                          | 29.940                       | 30.490                     | 29.170                     | 0.272                         | 29.662                    | 52.4                      | 40.9                      | 58       | 20       | 50.0              | 46.1              | 42.1                 | 0                 | 5               | 3                        | 5   | 54        | 12   | 1    | 14  | 9         | 3.40  | 1.01 | 15   | 74       | 19   | 5.2  |      |      |      |      |      |     |  |
| 1891                          | 30.197                       | 30.738                     | 29.653                     | 0.219                         | 29.974                    | 46.5                      | 33.6                      | 55       | 15       | 44.1              | 40.3              | 35.6                 | 0                 | 3               | 0                        | 2   | 18        | 11   | 9    | 20  | 12        | 3.62  | 0.74 | 22   | 63       | 30   | 6.0  |      |      |      |      |      |     |  |
| 1892                          | 29.929                       | 30.533                     | 29.151                     | 0.202                         | 29.726                    | 46.1                      | 34.0                      | 52       | 19       | 43.1              | 39.2              | 34.2                 | 0                 | 8               | 3                        | 2   | 18        | 5    | 19   | 24  | 7         | 2.27  | 0.74 | 22   | 63       | 30   | 6.0  |      |      |      |      |      |     |  |
| 1893                          | 30.039                       | 30.606                     | 29.466                     | 0.236                         | 29.861                    | 46.4                      | 35.7                      | 53       | 15       | 42.2              | 40.5              | 37.5                 | 0                 | 1               | 8                        | 5   | 23        | 5    | 16   | 11  | 23        | 3.27  | 0.58 | 24   | 75       | 26   | 6.8  |      |      |      |      |      |     |  |
| 1894                          | 29.845                       | 30.441                     | 29.446                     | 0.225                         | 29.620                    | 46.7                      | 36.6                      | 55       | 10       | 42.5              | 40.7              | 37.5                 | 0                 | 1               | 6                        | 6   | 33        | 7    | 14   | 2   | 9         | 4.78  | 0.68 | 24   | 75       | 28   | 5.7  |      |      |      |      |      |     |  |
| 1895                          | 29.712                       | 30.441                     | 28.741                     | 0.182                         | 29.539                    | 43.3                      | 34.0                      | 53       | 16       | 37.9              | 35.9              | 32.2                 | 0                 | 1               | 10                       | 7   | 2         | 0    | 18   | 14  | 14        | 6.47  | 1.18 | 26   | 70       | 23   | 5.0  |      |      |      |      |      |     |  |
| 1896                          | 30.342                       | 30.903                     | 29.626                     | 0.244                         | 30.098                    | 48.7                      | 38.8                      | 57       | 26       | 44.6              | 42.7              | 39.6                 | 0                 | 8               | 3                        | 4   | 12        | 6    | 15   | 2   | 20        | 1.13  | 0.23 | 14   | 80       | 13   | 6.2  |      |      |      |      |      |     |  |
| 1897                          | 29.871                       | 30.529                     | 29.250                     | 0.199                         | 29.672                    | 44.0                      | 34.3                      | 52       | 24       | 33.9              | 37.9              | 34.4                 | 0                 | 4               | 8                        | 2   | 3         | 2    | 16   | 12  | 18        | 4.36  | 0.85 | 20   | 83       | 10   | 5.5  |      |      |      |      |      |     |  |
| 1898                          | 30.307                       | 30.627                     | 29.270                     | 0.283                         | 30.024                    | 51.9                      | 42.5                      | 58       | 31       | 48.1              | 46.1              | 43.5                 | 0                 | 2               | 16                       | 4   | 25        | 1    | 6    | 1   | 0         | 1.08  | 0.41 | 8    | 87       | 6    | 7.4  |      |      |      |      |      |     |  |
| 1899                          | 29.829                       | 30.595                     | 29.130                     | 0.243                         | 29.586                    | 49.9                      | 39.7                      | 56       | 28       | 45.3              | 43.1              | 39.6                 | 0                 | 6               | 8                        | 7   | 26        | 9    | 6    | 3   | 10        | 6.55  | 1.16 | 22   | 66       | 27   | 6.6  |      |      |      |      |      |     |  |
| 1900                          | 29.977                       | 30.518                     | 29.280                     | 0.254                         | 29.723                    | 49.2                      | 40.7                      | 54       | 29       | 45.4              | 43.5              | 40.7                 | 0                 | 2               | 4                        | 5   | 14        | 9    | 25   | 8   | 2         | 6.33  | 1.47 | 27   | 67       | 26   | 6.4  |      |      |      |      |      |     |  |
| Means 19 Years                | 30.016                       | 30.588                     | 29.236                     | 0.236                         | 29.725                    | 48.13                     | 37.87                     | 55       | 22       | 43.88             | 41.72             | 38.01                | 0                 | 5.7             | 9.1                      | 5.1 | 21.7      | 7.7  | 14.2 | 8.6 | 10.9      | 3.810 | 0.76 | 18.7 | 72.3     | 20.6 | 6.7  | 57.5 | 20.6 | 6.7  | 57.5 | 20.6 | 6.7 |  |
| Means 51 Years, 1850 to 1900. | 29.957                       | 30.529                     | 29.148                     | 0.244                         | 29.689                    | 48.22                     | 38.01                     | 56       | 23       | 43.85             | 41.83             | 38.67                | 0                 | 6.4             | 8.8                      | 6.5 | 19.4      | 10.2 | 12.4 | 9.4 | 10.7      | 4.467 | 0.88 | 19.6 | 73.9     | 19.3 | 7.07 | 73.9 | 19.3 | 7.07 |      |      |     |  |

\* 6 years only.

Extremes for 51 years. Maximum Pressure observed 30.937 in. (1883). Minimum Pressure observed 23.611 in. (1854).

Maximum Temperature observed 56° (1898). Minimum Temperature observed 8° (1867).

Greatest Rainfall in 24 hours 2.02 in. (1867).

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

FEBRUARY.

| 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.         |                                     | SUN.                    |  |
|                             | in.                          | in.    | in.                        | in.   | in.                        | in.   | in.                           | in. | in.                       | in.   | °                         | °     | °                         | °   | °                 | °    | °                 | °     | °                 | °   | °               | °    | S. E.                    | S.        | S. W. | W.   | N. W. | N.       | N. E.           | in. | in.                        | Dry. | Wet.                               | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |  |
| 1882                        | 30.225                       | 30.870 | 29.108                     | 0.263 | 29.959                     | 52.0  | 40.3                          | 57  | 26                        | 46.9  | 44.7                      | 41.6  | 12                        | 20  | 6                 | 11   | 11                | 20    | 2                 | 2   | 3.17            | 0.78 | 15                       | 8.2       | 11    | 8.2  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1883                        | 30.052                       | 30.837 | 28.740                     | 0.262 | 29.787                     | 52.0  | 38.5                          | 56  | 27                        | 46.1  | 44.1                      | 41.5  | 17                        | 11  | 5                 | 33   | 14                | 19    | 0                 | 0   | 6.79            | 1.20 | 13                       | 60        | 24    | 7.2  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1884                        | 29.865                       | 30.553 | 29.174                     | 0.254 | 29.608                     | 50.8  | 39.9                          | 55  | 26                        | 45.7  | 43.5                      | 40.7  | 17                        | 10  | 12                | 28   | 7                 | 7     | 3                 | 3   | 5.35            | 0.57 | 21                       | 67        | 20    | 8.1  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1885                        | 29.672                       | 30.170 | 28.987                     | 0.264 | 29.909                     | 51.8  | 41.1                          | 55  | 25                        | 47.1  | 44.7                      | 41.7  | 2                         | 1   | 12                | 39   | 18                | 4     | 3                 | 10  | 5.11            | 1.20 | 21                       | 59        | 25    | 7.2  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1886                        | 30.116                       | 30.673 | 29.438                     | 0.204 | 29.909                     | 45.5  | 34.6                          | 51  | 24                        | 40.6  | 38.3                      | 35.0  | 25                        | 13  | 3                 | 5    | 6                 | 9     | 7                 | 16  | 2.40            | 0.82 | 13                       | 71        | 13    | 7.8  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1887                        | 30.237                       | 30.647 | 29.760                     | 0.199 | 30.035                     | 49.0  | 37.0                          | 56  | 29                        | 42.8  | 39.1                      | 34.4  | 21                        | 0   | 3                 | 19   | 1                 | 20    | 5                 | 15  | 0.77            | 0.30 | 8                        | 73        | 11    | 6.3  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1888                        | 30.026                       | 30.398 | 29.551                     | 0.203 | 29.825                     | 44.5  | 33.1                          | 54  | 19                        | 40.0  | 37.7                      | 34.0  | 11                        | 0   | 2                 | 1    | 4                 | 17    | 23                | 28  | 0.85            | 0.24 | 9                        | 80        | 7     | 7.0  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1889                        | 30.019                       | 30.716 | 29.593                     | 0.207 | 29.867                     | 51.2  | 33.5                          | 57  | 21                        | 44.5  | 39.9                      | 34.7  | 4                         | 3   | 1                 | 7    | 4                 | 31    | 16                | 17  | 2.83            | 0.40 | 19                       | 49        | 35    | 5.3  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1890                        | 30.105                       | 30.573 | 29.588                     | 0.207 | 29.901                     | 49.7  | 35.7                          | 60  | 23                        | 44.7  | 40.2                      | 34.8  | 4                         | 8   | 9                 | 19   | 0                 | 6     | 15                | 23  | 1.84            | 0.50 | 12                       | 74        | 10    | 5.4  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1891                        | 30.421                       | 30.726 | 29.820                     | 0.216 | 30.220                     | 54.3  | 34.9                          | 65  | 24                        | 48.2  | 42.5                      | 36.3  | 2                         | 25  | 20                | 6    | 5                 | 4     | 22                | 0   | 0.22            | 0.10 | 5                        | 83        | 1     | 4.0  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1892                        | 29.751                       | 30.454 | 29.111                     | 0.235 | 29.211                     | 50.4  | 38.5                          | 57  | 21                        | 47.1  | 42.4                      | 37.1  | 5                         | 1   | 2                 | 21   | 1                 | 23    | 23                | 8   | 4.43            | 0.93 | 18                       | 34        | 24    | 6.3  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1893                        | 29.733                       | 30.318 | 29.028                     | 0.279 | 29.454                     | 51.1  | 40.1                          | 56  | 28                        | 46.6  | 44.9                      | 41.7  | 2                         | 4   | 5                 | 45   | 9                 | 9     | 7                 | 3   | 4.85            | 0.83 | 25                       | 38        | 26    | 6.7  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1894                        | 30.093                       | 30.494 | 29.468                     | 0.254 | 29.839                     | 50.5  | 39.8                          | 56  | 24                        | 45.7  | 43.5                      | 40.7  | 5                         | 2   | 5                 | 38   | 8                 | 8     | 6                 | 1   | 2.38            | 0.33 | 16                       | 79        | 11    | 4.8  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1895                        | 30.011                       | 30.401 | 29.354                     | 0.145 | 29.866                     | 39.7  | 33.9                          | 55  | 19                        | 34.9  | 31.9                      | 26.8  | 38                        | 8   | 0                 | 0    | 2                 | 3     | 4                 | 20  | 0.10            | 0.02 | 3                        | 83        | 1     | 4.8  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1896                        | 30.285                       | 30.620 | 29.514                     | 0.253 | 30.032                     | 51.4  | 38.8                          | 59  | 25                        | 45.7  | 43.5                      | 40.7  | 15                        | 18  | 4                 | 8    | 0                 | 19    | 1                 | 3   | 0.66            | 0.23 | 9                        | 84        | 3     | 5.2  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1897                        | 30.106                       | 30.708 | 29.230                     | 0.275 | 29.831                     | 51.6  | 43.7                          | 56  | 28                        | 47.9  | 46.4                      | 42.8  | 3                         | 5   | 2                 | 26   | 20                | 10    | 2                 | 3   | 4.83            | 1.37 | 19                       | 54        | 30    | 7.6  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1898                        | 30.036                       | 30.440 | 29.003                     | 0.238 | 29.798                     | 50.9  | 40.0                          | 58  | 24                        | 46.9  | 42.7                      | 39.1  | 0                         | 2   | 0                 | 17   | 9                 | 30    | 12                | 1   | 1.62            | 0.21 | 23                       | 67        | 17    | 5.7  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1899                        | 29.805                       | 30.690 | 29.016                     | 0.254 | 29.551                     | 52.3  | 39.5                          | 58  | 24                        | 45.3  | 43.8                      | 40.7  | 14                        | 14  | 9                 | 13   | 1                 | 2     | 1                 | 2   | 5.75            | 1.56 | 15                       | 71        | 13    | 5.4  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| 1900                        | 29.575                       | 30.080 | 28.520                     | 0.226 | 29.349                     | 48.2  | 34.8                          | 57  | 20                        | 41.6  | 39.7                      | 37.7  | 2                         | 2   | 11                | 10   | 4                 | 7     | 1                 | 18  | 6.91            | 1.63 | 19                       | 70        | 14    | 5.4  |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| Means Years.                | 30.007                       | 30.547 | 29.260                     | 0.233 | 29.757                     | 49.83 | 37.77                         | 57  | 24                        | 44.64 | 41.76                     | 38.00 | 9.5                       | 7.7 | 5.8               | 18.2 | 6.5               | 13.1  | 8.0               | 9.1 | 3.203           | 0.69 | 15.1                     | 68.3      | 15.5  | 6.23 | 31.78 | 22.3     | 2.8             |     |                            |      |                                    |                     |                                 |                                     |                         |  |
| Means 51 Yrs. 1850 to 1900. | 29.980                       | 30.518 | 29.252                     | 0.243 | 29.731                     | 49.64 | 38.22                         | 56  | 25                        | 44.97 | 42.36                     | 39.00 | 8.0                       | 7.5 | 5.4               | 16.5 | 10.3              | 12.3  | 9.5               | 8.6 | 3.315           | 0.71 | 16.7                     | 68.5      | 16.0  | 6.72 |       |          |                 |     |                            |      |                                    |                     |                                 |                                     |                         |  |

\* 6 years only.

Extremes  
for 51 years.

Maximum Pressure observed 30.870 in. (1882).  
Minimum Pressure observed 28.520 in. (1900).

Maximum Temperature observed 64° (1869).  
Minimum Temperature observed 10° (1856).

Greatest Rainfall in 24 hours 1.63 in. (1900).

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

MARCH.

| 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 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. | Wet. | Dry.     | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |  |  |
| 1882                    | 30.088                       | 30.677                     | 29.050                     | 0.273                         | 29.808                    | 56.0                      | 40.8                      | 62                  | 29                | 49.1              | 46.1              | 42.6            | 2    | 0    | 5     | 25   | 18  | 29   | 10   | 4    | in.             | 1.22                       | 0.22                               | 16   | 80       | 13                  | 6.1                             |                                     |                         |  |  |
| 1883                    | 29.963                       | 30.650                     | 29.300                     | 0.200                         | 29.756                    | 47.7                      | 32.1                      | 57                  | 21                | 41.1              | 38.3              | 34.6            | 14   | 0    | 3     | 4    | 9   | 26   | 16   | 21   | in.             | 2.56                       | 0.66                               | 13   | 82       | 11                  | 5.5                             |                                     |                         |  |  |
| 1884                    | 29.914                       | 30.327                     | 29.237                     | 0.247                         | 29.660                    | 53.4                      | 40.0                      | 61                  | 30                | 47.3              | 44.4              | 40.0            | 9    | 13   | 12    | 36   | 2   | 12   | 0    | 10   | in.             | 3.76                       | 0.92                               | 17   | 80       | 13                  | 7.0                             |                                     |                         |  |  |
| 1885                    | 30.099                       | 30.560                     | 29.330                     | 0.225                         | 29.867                    | 51.6                      | 36.7                      | 57                  | 27                | 44.4              | 41.3              | 37.5            | 19   | 4    | 7     | 11   | 6   | 19   | 11   | 16   | in.             | 1.57                       | 0.31                               | 13   | 85       | 8                   | 6.3                             |                                     |                         |  |  |
| 1886                    | 29.935                       | 30.339                     | 29.139                     | 0.226                         | 29.702                    | 48.4                      | 38.0                      | 60                  | 20                | 43.3              | 40.8              | 37.7            | 24   | 18   | 6     | 14   | 8   | 6    | 3    | 16   | in.             | 3.80                       | 0.51                               | 17   | 73       | 20                  | 7.3                             |                                     |                         |  |  |
| 1887                    | 30.111                       | 30.643                     | 29.488                     | 0.206                         | 29.898                    | 50.0                      | 32.4                      | 62                  | 22                | 42.1              | 39.0              | 35.3            | 15   | 11   | 0     | 6    | 6   | 22   | 13   | 20   | in.             | 2.00                       | 0.64                               | 7    | 89       | 4                   | 5.7                             |                                     |                         |  |  |
| 1888                    | 29.650                       | 30.286                     | 29.066                     | 0.219                         | 29.424                    | 48.0                      | 35.3                      | 55                  | 25                | 43.2              | 40.0              | 36.6            | 2    | 2    | 0     | 26   | 13  | 11   | 15   | 24   | in.             | 4.70                       | 0.95                               | 19   | 76       | 17                  | 7.8                             |                                     |                         |  |  |
| 1889                    | 30.009                       | 30.326                     | 29.036                     | 0.219                         | 29.782                    | 52.6                      | 35.7                      | 63                  | 20                | 46.8              | 41.9              | 36.3            | 3    | 4    | 1     | 21   | 3   | 19   | 23   | 9    | in.             | 4.74                       | 0.83                               | 19   | 69       | 24                  | 4.9                             |                                     |                         |  |  |
| 1890                    | 29.888                       | 30.451                     | 29.180                     | 0.237                         | 29.659                    | 52.3                      | 38.2                      | 63                  | 19                | 49.4              | 44.1              | 38.2            | 2    | 3    | 4     | 25   | 9   | 20   | 12   | 5    | in.             | 1.87                       | 0.68                               | 17   | 74       | 19                  | 5.6                             |                                     |                         |  |  |
| 1891                    | 29.855                       | 30.540                     | 29.176                     | 0.210                         | 29.559                    | 50.2                      | 36.0                      | 63                  | 23                | 45.6              | 40.9              | 35.3            | 23   | 2    | 9     | 10   | 20  | 12   | 5    | 12   | in.             | 3.90                       | 1.00                               | 15   | 69       | 24                  | 6.5                             |                                     |                         |  |  |
| 1892                    | 30.028                       | 30.557                     | 29.326                     | 0.186                         | 29.833                    | 47.4                      | 33.5                      | 58                  | 22                | 45.2              | 39.3              | 32.3            | 25   | 23   | 4     | 7    | 0   | 0    | 15   | 17   | in.             | 1.07                       | 0.53                               | 9    | 86       | 7                   | 4.2                             |                                     |                         |  |  |
| 1893                    | 30.161                       | 30.464                     | 29.713                     | 0.239                         | 29.862                    | 57.8                      | 38.2                      | 66                  | 27                | 52.0              | 48.4              | 43.9            | 25   | 11   | 0     | 14   | 1   | 16   | 7    | 3    | in.             | 0.17                       | 0.06                               | 8    | 90       | 3                   | 3.6                             |                                     |                         |  |  |
| 1894                    | 29.966                       | 30.426                     | 29.300                     | 0.253                         | 29.713                    | 55.6                      | 37.0                      | 66                  | 29                | 47.5              | 44.1              | 40.6            | 22   | 7    | 1     | 17   | 13  | 12   | 4    | 3    | in.             | 1.84                       | 0.60                               | 11   | 83       | 10                  | 3.2                             |                                     |                         |  |  |
| 1895                    | 29.765                       | 30.403                     | 29.010                     | 0.244                         | 29.521                    | 52.2                      | 38.0                      | 66                  | 28                | 45.5              | 42.7              | 39.6            | 0    | 5    | 7     | 22   | 7   | 29   | 10   | 4    | in.             | 2.86                       | 0.62                               | 16   | 82       | 11                  | 4.5                             |                                     |                         |  |  |
| 1896                    | 29.875                       | 30.283                     | 28.947                     | 0.285                         | 29.590                    | 53.9                      | 42.5                      | 61                  | 29                | 49.5              | 46.6              | 43.8            | 0    | 4    | 2     | 25   | 20  | 19   | 3    | 2    | in.             | 2.96                       | 0.50                               | 23   | 76       | 17                  | 5.9                             |                                     |                         |  |  |
| 1897                    | 29.704                       | 30.150                     | 28.950                     | 0.264                         | 29.440                    | 52.8                      | 42.0                      | 59                  | 34                | 47.7              | 44.8              | 41.7            | 1    | 10   | 9     | 31   | 13  | 16   | 2    | 0    | in.             | 4.76                       | 0.88                               | 21   | 72       | 21                  | 8.0                             |                                     |                         |  |  |
| 1898                    | 29.923                       | 30.273                     | 29.018                     | 0.209                         | 29.714                    | 51.0                      | 35.0                      | 62                  | 25                | 44.0              | 40.3              | 35.7            | 0    | 1    | 0     | 5    | 10  | 12   | 2    | 2    | in.             | 1.82                       | 0.55                               | 15   | 85       | 8                   | 4.8                             |                                     |                         |  |  |
| 1899                    | 30.100                       | 30.753                     | 29.498                     | 0.243                         | 29.857                    | 54.3                      | 36.4                      | 66                  | 22                | 45.9              | 42.7              | 39.6            | 10   | 3    | 2     | 13   | 6   | 9    | 12   | 4    | in.             | 1.32                       | 0.27                               | 12   | 84       | 6                   | 4.0                             |                                     |                         |  |  |
| 1900                    | 30.026                       | 30.744                     | 29.018                     | 0.197                         | 29.829                    | 47.6                      | 35.6                      | 57                  | 25                | 42.3              | 39.1              | 34.2            | 7    | 7    | 2     | 0    | 1   | 16   | 15   | 16   | in.             | 3.34                       | 1.10                               | 16   | 86       | 7                   | 6.0                             |                                     |                         |  |  |
| Means for 51 Years.     | 29.950                       | 30.476                     | 29.199                     | 0.233                         | 29.709                    | 51.88                     | 37.02                     | 61                  | 25                | 45.88             | 42.35             | 38.18           | 10.6 | 6.7  | 3.8   | 16.4 | 8.6 | 16.3 | 10.1 | 10.3 | in.             | 2.62                       | 0.62                               | 14.9 | 80.1     | 12.7                | 5.5                             |                                     |                         |  |  |
| Means for 1850 to 1900. | 29.968                       | 30.496                     | 29.986                     | 0.243                         | 29.721                    | 51.44                     | 38.16                     | 59                  | 26                | 46.07             | 42.89             | 39.17           | 9.6  | 8.5  | 4.6   | 12.6 | 9.7 | 15.9 | 13.8 | 9.8  | in.             | 2.833                      | 0.66                               | 15.8 | 79.3     | 13.5                | 6.1                             |                                     |                         |  |  |

\* 6 years only.

Extremes Maximum Pressure observed 30.768 in. (1850).

Minimum Pressure observed 28.706 in. (1851).

Maximum Temperature observed 68° (1858).

Minimum Temperature observed 19° (1890).

Greatest Rainfall in 24 hours 1.31 in. (1867).

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 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 Wet Bulb. | Mean of Dry 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. |       | SUN. |          |      |      |                     |                                 |                        |
|                         |                              |                            |                            |                               |                           |                           |                           |                   |                   |                   |                   |                 | E.                       | S. E. | S.  | S. W. |                 |                            |                                    | W.                      | N. W. | N.   | N. E.    | Dry. | Wet. | Average Cloudiness. | Total hours of bright sunshine. | No. of days sun shone. |
| 1882                    | 29.766                       | 30.294                     | 29.133                     | 0.277                         | 29.485                    | 57.8                      | 42.7                      | 63                | 30                | 51.1              | 48.2              | 43.0            | 7                        | 16    | 10  | 18    | 6               | 19                         | 6                                  | 5.98                    | 0.81  | 22   | 72       | 18   | 6.2  | 174.4               | 27.3                            | 5.7                    |
| 1883                    | 29.991                       | 30.596                     | 29.110                     | 0.283                         | 29.734                    | 56.5                      | 37.3                      | 65                | 28                | 49.3              | 45.6              | 40.6            | 23                       | 11    | 9   | 13    | 11              | 12                         | 4                                  | 1.66                    | 0.52  | 12   | 85       | 5    | 5.4  | 177.6               | 27.3                            | 5.7                    |
| 1884                    | 29.807                       | 30.103                     | 29.110                     | 0.246                         | 29.557                    | 55.7                      | 38.8                      | 62                | 27                | 48.5              | 44.9              | 39.9            | 12                       | 17    | 15  | 12    | 2               | 3                          | 21                                 | 1.66                    | 0.92  | 8    | 85       | 5    | 6.2  | 177.6               | 27.3                            | 5.7                    |
| 1885                    | 29.793                       | 30.326                     | 29.110                     | 0.244                         | 29.545                    | 55.2                      | 37.9                      | 69                | 28                | 48.2              | 44.7              | 39.7            | 10                       | 10    | 10  | 13    | 5               | 15                         | 14                                 | 3.51                    | 0.68  | 15   | 80       | 10   | 5.4  | 177.6               | 27.3                            | 5.7                    |
| 1886                    | 29.929                       | 30.428                     | 29.348                     | 0.247                         | 29.678                    | 56.1                      | 41.0                      | 69                | 30                | 49.8              | 45.6              | 40.0            | 19                       | 8     | 8   | 13    | 8               | 16                         | 5                                  | 2.45                    | 0.43  | 16   | 78       | 12   | 6.8  | 177.6               | 27.3                            | 5.7                    |
| 1887                    | 30.026                       | 30.676                     | 29.320                     | 0.218                         | 29.804                    | 54.9                      | 35.2                      | 64                | 25                | 47.5              | 42.7              | 36.7            | 9                        | 8     | 2   | 10    | 14              | 16                         | 13                                 | 0.86                    | 0.28  | 8    | 88       | 2    | 5.1  | 177.6               | 27.3                            | 5.7                    |
| 1888                    | 29.908                       | 30.248                     | 29.513                     | 0.260                         | 29.947                    | 53.0                      | 39.5                      | 59                | 27                | 47.2              | 44.6              | 40.9            | 6                        | 9     | 2   | 9     | 14              | 17                         | 11                                 | 1.63                    | 0.35  | 11   | 83       | 7    | 7.0  | 177.6               | 27.3                            | 5.7                    |
| 1889                    | 29.739                       | 30.224                     | 29.124                     | 0.243                         | 29.467                    | 56.5                      | 37.7                      | 65                | 29                | 51.5              | 46.5              | 39.4            | 1                        | 9     | 1   | 21    | 6               | 17                         | 23                                 | 2.17                    | 0.39  | 20   | 68       | 22   | 5.0  | 177.6               | 27.3                            | 5.7                    |
| 1890                    | 29.803                       | 30.203                     | 29.243                     | 0.244                         | 29.625                    | 58.1                      | 40.6                      | 64                | 31                | 51.6              | 46.4              | 41.1            | 4                        | 16    | 6   | 13    | 6               | 17                         | 23                                 | 2.48                    | 0.42  | 13   | 72       | 18   | 5.1  | 177.6               | 27.3                            | 5.7                    |
| 1891                    | 29.932                       | 30.393                     | 29.450                     | 0.261                         | 29.672                    | 56.4                      | 39.4                      | 64                | 31                | 51.6              | 46.4              | 41.1            | 4                        | 16    | 6   | 13    | 6               | 17                         | 23                                 | 2.48                    | 0.42  | 13   | 72       | 18   | 5.1  | 177.6               | 27.3                            | 5.7                    |
| 1892                    | 30.022                       | 30.468                     | 29.661                     | 0.257                         | 29.765                    | 59.9                      | 38.2                      | 72                | 24                | 53.8              | 46.9              | 43.3            | 16                       | 22    | 2   | 5     | 10              | 6                          | 7                                  | 1.36                    | 0.46  | 11   | 80       | 10   | 4.2  | 177.6               | 27.3                            | 5.7                    |
| 1893                    | 30.112                       | 30.353                     | 29.803                     | 0.315                         | 29.797                    | 65.9                      | 60.8                      | 71                | 42                | 56.2              | 51.4              | 46.3            | 3                        | 27    | 12  | 12    | 7               | 5                          | 10                                 | 3.88                    | 0.70  | 18   | 77       | 13   | 4.0  | 177.6               | 27.3                            | 5.7                    |
| 1894                    | 29.810                       | 30.198                     | 29.342                     | 0.298                         | 29.512                    | 53.6                      | 42.5                      | 67                | 30                | 51.9              | 48.5              | 44.9            | 8                        | 8     | 4   | 23    | 3               | 14                         | 12                                 | 0.71                    | 0.31  | 14   | 81       | 9    | 5.1  | 177.6               | 27.3                            | 5.7                    |
| 1895                    | 29.889                       | 30.423                     | 29.308                     | 0.263                         | 29.626                    | 55.8                      | 42.3                      | 65                | 34                | 51.8              | 47.7              | 41.8            | 3                        | 0     | 0   | 16    | 3               | 33                         | 20                                 | 2.32                    | 0.78  | 14   | 83       | 7    | 4.5  | 177.6               | 27.3                            | 5.7                    |
| 1896                    | 30.221                       | 30.384                     | 29.795                     | 0.265                         | 29.956                    | 57.6                      | 44.3                      | 65                | 30                | 48.8              | 45.7              | 40.6            | 10                       | 16    | 8   | 12    | 6               | 12                         | 4                                  | 5.25                    | 0.86  | 25   | 66       | 24   | 6.3  | 177.6               | 27.3                            | 5.7                    |
| 1897                    | 29.867                       | 30.291                     | 29.680                     | 0.253                         | 29.614                    | 53.8                      | 42.3                      | 68                | 30                | 48.8              | 45.7              | 40.6            | 10                       | 16    | 8   | 12    | 6               | 12                         | 4                                  | 2.10                    | 0.68  | 15   | 81       | 9    | 4.1  | 177.6               | 27.3                            | 5.7                    |
| 1898                    | 29.893                       | 30.214                     | 29.184                     | 0.258                         | 29.635                    | 53.1                      | 40.2                      | 65                | 27                | 51.0              | 46.8              | 41.1            | 0                        | 17    | 2   | 23    | 3               | 12                         | 5                                  | 2.10                    | 0.68  | 15   | 81       | 9    | 4.1  | 177.6               | 27.3                            | 5.7                    |
| 1899                    | 29.869                       | 30.340                     | 28.963                     | 0.275                         | 29.594                    | 56.1                      | 42.1                      | 64                | 28                | 50.6              | 47.1              | 42.8            | 0                        | 7     | 6   | 13    | 21              | 15                         | 4                                  | 2.59                    | 0.51  | 19   | 73       | 17   | 5.7  | 177.6               | 27.3                            | 5.7                    |
| 1900                    | 30.039                       | 30.523                     | 29.387                     | 0.254                         | 29.785                    | 56.5                      | 41.5                      | 70                | 30                | 50.8              | 47.1              | 40.7            | 7                        | 7     | 4   | 13    | 14              | 18                         | 9                                  | 2.00                    | 0.48  | 13   | 78       | 12   | 5.0  | 177.6               | 27.3                            | 5.7                    |
| Means for 51 Years.     | 29.916                       | 30.351                     | 29.310                     | 0.259                         | 29.673                    | 56.97                     | 41.27                     | 65                | 29                | 50.65             | 46.42             | 41.25           | 8.4                      | 13.1  | 6.0 | 13.5  | 7.4             | 14.2                       | 10.5                               | 2.462                   | 0.55  | 14.3 | 78.8     | 11.6 | 5.3  | 174.4               | 27.3                            | 5.7                    |
| Means for 1882 to 1900. | 29.935                       | 30.372                     | 29.307                     | 0.263                         | 29.671                    | 56.99                     | 41.94                     | 65                | 29                | 50.92             | 46.90             | 42.33           | 9.9                      | 11.0  | 7.2 | 11.4  | 9.5             | 13.1                       | 12.6                               | 2.543                   | 0.58  | 13.9 | 77.6     | 12.3 | 5.8  | 174.4               | 27.3                            | 5.7                    |

\* 6 years only.

Extremes for 51 years.

Maximum Pressure observed 30.676 in. (1887).  
Minimum Pressure observed 28.852 in. (1868).

Maximum Temperature observed 79° (1865).  
Minimum Temperature observed 22° (1855).

Greatest Rainfall in 24 hours 1.42 in. (1878).



Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

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 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.         |                                     | WEATHER.                |  | SUK. |
|                             | in.                          | in.    | in.                        | in.   | in.                        | in.   | in.                           | in. | in.                       | °     | °                         | °     | °                         | °    | °                 | °     | °                 | °    | °                 | °    | °               | E.        | S.E.                     | S.   | S.W. | W.       | N.W. | N. | N.E.            | in. | in.                        | Dry. | Wet.                               | Average. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |  |      |
| 1882                        | 30.027                       | 30.468 | 29.403                     | 0.319 | 29.705                     | 63.3  | 45.3                          | 73  | 35                        | 56.4  | 51.8                      | 46.7  | 20                        | 15   | 7                 | 21    | 1                 | 22   | 0                 | 7    | 1.84            | 0.32      | 11                       | 84   | 9    | 5.5      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1883                        | 29.978                       | 30.374 | 29.492                     | 0.303 | 29.672                     | 60.7  | 43.0                          | 78  | 28                        | 54.3  | 50.1                      | 45.3  | 7                         | 6    | 16                | 15    | 17                | 14   | 10                | 8    | 1.86            | 0.38      | 12                       | 80   | 13   | 6.8      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1884                        | 30.030                       | 30.425 | 29.520                     | 0.299 | 29.728                     | 62.8  | 45.6                          | 76  | 32                        | 55.1  | 50.3                      | 45.0  | 17                        | 7    | 12                | 22    | 8                 | 23   | 0                 | 2    | 3.03            | 0.18      | 9                        | 89   | 4    | 5.7      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1885                        | 29.857                       | 30.234 | 29.336                     | 0.235 | 29.599                     | 57.4  | 43.0                          | 62  | 32                        | 51.0  | 46.3                      | 40.8  | 6                         | 1    | 4                 | 33    | 14                | 22   | 11                | 2    | 2.90            | 0.82      | 18                       | 80   | 13   | 6.8      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1886                        | 29.897                       | 30.438 | 29.180                     | 0.322 | 29.572                     | 62.7  | 45.0                          | 71  | 32                        | 54.6  | 50.0                      | 46.9  | 21                        | 2    | 8                 | 19    | 11                | 11   | 6                 | 5    | 2.90            | 0.58      | 16                       | 85   | 8    | 6.6      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1887                        | 30.057                       | 30.488 | 29.528                     | 0.286 | 29.768                     | 59.9  | 43.8                          | 66  | 34                        | 53.3  | 49.5                      | 43.8  | 3                         | 9    | 6                 | 2     | 5                 | 22   | 29                | 17   | 1.29            | 0.34      | 10                       | 87   | 6    | 6.9      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1888                        | 30.045                       | 30.438 | 29.434                     | 0.323 | 29.724                     | 63.0  | 44.4                          | 74  | 32                        | 57.0  | 51.5                      | 46.8  | 5                         | 26   | 10                | 10    | 16                | 10   | 6                 | 10   | 1.61            | 0.44      | 8                        | 84   | 9    | 5.5      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1889                        | 29.803                       | 30.070 | 29.474                     | 0.329 | 29.548                     | 63.6  | 47.0                          | 76  | 38                        | 57.8  | 52.4                      | 44.3  | 0                         | 5    | 5                 | 30    | 6                 | 19   | 17                | 10   | 3.61            | 0.90      | 18                       | 68   | 25   | 4.9      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1890                        | 29.796                       | 30.207 | 29.393                     | 0.311 | 29.481                     | 63.0  | 47.6                          | 77  | 30                        | 58.9  | 52.0                      | 45.8  | 9                         | 13   | 11                | 33    | 3                 | 5    | 12                | 7    | 5.06            | 0.82      | 22                       | 62   | 31   | 5.9      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1891                        | 29.770                       | 30.264 | 29.343                     | 0.281 | 29.495                     | 61.6  | 42.8                          | 73  | 30                        | 56.1  | 49.3                      | 43.0  | 0                         | 0    | 12                | 21    | 6                 | 27   | 23                | 3    | 2.26            | 0.57      | 18                       | 77   | 16   | 5.8      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1892                        | 30.009                       | 30.337 | 29.691                     | 0.306 | 29.699                     | 63.0  | 45.0                          | 75  | 29                        | 58.2  | 51.2                      | 45.0  | 8                         | 13   | 10                | 9     | 3                 | 12   | 10                | 5    | 0.70            | 0.35      | 10                       | 84   | 9    | 4.8      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1893                        | 30.025                       | 30.306 | 29.481                     | 0.366 | 29.659                     | 66.2  | 48.0                          | 74  | 39                        | 58.0  | 54.2                      | 50.4  | 8                         | 13   | 10                | 9     | 3                 | 12   | 10                | 5    | 2.46            | 0.55      | 18                       | 76   | 17   | 4.3      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1894                        | 29.963                       | 30.361 | 29.638                     | 0.266 | 29.697                     | 58.4  | 44.0                          | 72  | 34                        | 52.0  | 47.7                      | 41.9  | 3                         | 5    | 2                 | 15    | 11                | 23   | 15                | 9    | 0.24            | 0.15      | 4                        | 92   | 1    | 2.6      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1895                        | 30.084                       | 30.601 | 29.650                     | 0.288 | 29.796                     | 65.6  | 43.2                          | 75  | 32                        | 56.5  | 51.0                      | 44.1  | 6                         | 17   | 6                 | 0     | 0                 | 23   | 18                | 4    | 2.24            | 0.15      | 4                        | 92   | 1    | 2.6      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1896                        | 30.222                       | 30.464 | 29.971                     | 0.295 | 29.927                     | 67.0  | 44.4                          | 79  | 31                        | 59.1  | 52.1                      | 44.4  | 8                         | 7    | 0                 | 1     | 19                | 26   | 14                | 0    | 0.04            | 0.02      | 3                        | 93   | 0    | 1.8      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1897                        | 29.916                       | 30.364 | 29.224                     | 0.266 | 29.650                     | 61.3  | 43.7                          | 76  | 33                        | 54.5  | 49.0                      | 41.9  | 1                         | 12   | 5                 | 13    | 9                 | 19   | 12                | 4    | 1.38            | 0.23      | 11                       | 87   | 6    | 3.7      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1898                        | 29.850                       | 30.351 | 29.228                     | 0.302 | 29.548                     | 59.4  | 46.3                          | 71  | 36                        | 53.6  | 49.7                      | 45.2  | 6                         | 9    | 3                 | 12    | 20                | 9    | 11                | 3.97 | 0.68            | 17        | 74                       | 19   | 5.9  |          |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1899                        | 29.999                       | 30.494 | 29.298                     | 0.287 | 29.712                     | 61.3  | 43.0                          | 72  | 34                        | 54.4  | 49.7                      | 43.9  | 10                        | 6    | 8                 | 17    | 3                 | 11   | 5                 | 4    | 1.32            | 0.46      | 11                       | 84   | 9    | 4.4      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| 1900                        | 29.985                       | 30.391 | 29.451                     | 0.298 | 29.687                     | 60.3  | 43.5                          | 72  | 33                        | 54.0  | 49.5                      | 44.9  | 5                         | 10   | 14                | 13    | 8                 | 15   | 5                 | 8    | 2.12            | 0.70      | 11                       | 84   | 9    | 4.4      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| Means 51 Yrs. 1850 to 1900. | 29.963                       | 30.372 | 29.459                     | 0.300 | 29.662                     | 62.13 | 44.66                         | 73  | 33                        | 55.51 | 50.38                     | 44.74 | 7.3                       | 10.0 | 8.0               | 15.3  | 7.3               | 17.3 | 12.2              | 7.2  | 2.004           | 0.48      | 12.42                    | 82.0 | 10.9 | 5.0      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |
| Means 51 Yrs. 1850 to 1900. | 29.973                       | 30.373 | 29.462                     | 0.296 | 29.675                     | 61.32 | 44.85                         | 72  | 33                        | 55.22 | 50.64                     | 45.14 | 9.0                       | 9.8  | 8.0               | 12.3  | 9.0               | 14.2 | 15.5              | 6.5  | 2.278           | 0.52      | 12.85                    | 82.6 | 10.2 | 5.7      |      |    |                 |     |                            |      |                                    |          |                                 |                                     |                         |  |      |

\* 6 years only.

Extremes for 51 years. Maximum Pressure observed 30.679 in. (1881). Minimum Pressure observed 29.117 in. (1869).

Maximum Temperature observed 84° (1864). Minimum Temperature observed 28° (1868).

Greatest Rainfall in 24 hours 1.20 in. (1869).

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*Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 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 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. | Average. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |  |          |  |  |  |
| 1882                          | 29.958                       | 30.247                    | 29.600                    | 0.351                         | 29.606                    | 68.1                      | 50.4                      | 70                | 41                | 57.7              | 53.7              | 49.2            | 5                   | 4    | 12  | 21   | 14   | 32   | 2     | 0    | 3.59            | 0.79                       | 18                                 | 81   | 9    | 6.9      |                                 |                                     |                         |  |          |  |  |  |
| 1883                          | 29.965                       | 30.451                    | 29.717                    | 0.370                         | 29.594                    | 66.5                      | 49.5                      | 78                | 40                | 59.0              | 55.0              | 50.7            | 17                  | 4    | 9   | 20   | 10   | 30   | 0     | 0    | 2.82            | 0.84                       | 16                                 | 74   | 16   | 6.6      |                                 |                                     |                         |  |          |  |  |  |
| 1884                          | 30.088                       | 30.351                    | 29.563                    | 0.358                         | 29.729                    | 67.4                      | 49.9                      | 75                | 43                | 59.2              | 54.6              | 49.8            | 7                   | 4    | 8   | 8    | 9    | 50   | 11    | 2    | 1.68            | 0.33                       | 10                                 | 80   | 10   | 5.9      |                                 |                                     |                         |  |          |  |  |  |
| 1885                          | 30.051                       | 30.391                    | 29.711                    | 0.366                         | 29.684                    | 66.8                      | 50.4                      | 79                | 42                | 59.8              | 55.2              | 50.4            | 7                   | 12   | 16  | 12   | 5    | 16   | 13    | 3    | 2.26            | 1.32                       | 8                                  | 76   | 14   | 6.0      |                                 |                                     |                         |  |          |  |  |  |
| 1886                          | 30.034                       | 30.240                    | 29.785                    | 0.357                         | 29.676                    | 67.1                      | 50.0                      | 80                | 43                | 59.9              | 54.9              | 49.7            | 5                   | 4    | 12  | 5    | 6    | 38   | 17    | 3    | 0.80            | 0.48                       | 6                                  | 84   | 6    | 5.9      |                                 |                                     |                         |  |          |  |  |  |
| 1887                          | 30.204                       | 30.451                    | 29.720                    | 0.364                         | 29.839                    | 73.6                      | 49.3                      | 86                | 40                | 64.6              | 57.5              | 50.2            | 23                  | 16   | 22  | 5    | 14   | 16   | 7     | 7    | 0.05            | 0.05                       | 1                                  | 89   | 1    | 3.5      |                                 |                                     |                         |  |          |  |  |  |
| 1888                          | 29.914                       | 30.210                    | 29.537                    | 0.387                         | 29.531                    | 66.0                      | 50.1                      | 74                | 37                | 60.6              | 55.9              | 51.8            | 4                   | 16   | 22  | 5    | 9    | 13   | 8     | 6    | 3.36            | 0.70                       | 15                                 | 80   | 10   | 7.5      |                                 |                                     |                         |  |          |  |  |  |
| 1889                          | 30.241                       | 30.386                    | 29.654                    | 0.381                         | 29.630                    | 70.6                      | 50.9                      | 80                | 45                | 64.2              | 57.1              | 51.3            | 10                  | 13   | 8   | 14   | 4    | 13   | 8     | 20   | 0.92            | 0.50                       | 10                                 | 82   | 8    | 3.9      |                                 |                                     |                         |  |          |  |  |  |
| 1890                          | 30.019                       | 30.406                    | 29.324                    | 0.365                         | 29.654                    | 66.5                      | 51.6                      | 74                | 34                | 62.3              | 55.8              | 50.1            | 4                   | 7    | 32  | 24   | 5    | 11   | 6     | 4    | 4.17            | 1.04                       | 20                                 | 65   | 25   | 6.4      |                                 |                                     |                         |  |          |  |  |  |
| 1891                          | 29.989                       | 30.441                    | 29.660                    | 0.403                         | 29.582                    | 69.1                      | 51.6                      | 82                | 39                | 65.1              | 55.6              | 49.9            | 2                   | 3    | 4   | 25   | 12   | 22   | 5     | 14   | 1.83            | 0.80                       | 11                                 | 79   | 11   | 3.7      |                                 |                                     |                         |  |          |  |  |  |
| 1892                          | 30.021                       | 30.356                    | 29.689                    | 0.366                         | 29.657                    | 67.5                      | 48.9                      | 78                | 39                | 62.3              | 58.0              | 53.8            | 9                   | 10   | 0   | 12   | 13   | 6    | 1     | 2    | 0.97            | 0.30                       | 6                                  | 85   | 5    | 3.7      |                                 |                                     |                         |  |          |  |  |  |
| 1893                          | 29.998                       | 30.376                    | 29.529                    | 0.415                         | 29.637                    | 65.0                      | 50.9                      | 80                | 41                | 58.9              | 55.2              | 51.4            | 9                   | 10   | 4   | 13   | 10   | 23   | 5     | 2    | 1.67            | 0.47                       | 13                                 | 79   | 11   | 5.4      |                                 |                                     |                         |  |          |  |  |  |
| 1894                          | 30.016                       | 30.261                    | 29.600                    | 0.379                         | 29.678                    | 70.3                      | 50.1                      | 82                | 36                | 62.5              | 56.2              | 49.5            | 1                   | 14   | 1   | 13   | 3    | 24   | 9     | 7    | 1.25            | 0.44                       | 9                                  | 82   | 8    | 2.9      | 296.6                           | 30                                  | 9.8                     |  |          |  |  |  |
| 1895                          | 30.072                       | 30.453                    | 29.593                    | 0.354                         | 29.718                    | 70.3                      | 50.1                      | 84                | 42                | 63.2              | 57.6              | 50.6            | 6                   | 3    | 17  | 8    | 12   | 6    | 23    | 4    | 1.31            | 0.32                       | 10                                 | 87   | 3    | 3.8      | 245.0                           | 30                                  | 8.1                     |  |          |  |  |  |
| 1896                          | 29.942                       | 30.338                    | 29.436                    | 0.369                         | 29.673                    | 69.3                      | 51.7                      | 84                | 42                | 61.7              | 54.7              | 52.3            | 3                   | 17   | 8   | 12   | 7    | 17   | 7     | 1    | 1.90            | 0.55                       | 8                                  | 84   | 6    | 4.3      | 239.3                           | 29                                  | 7.9                     |  |          |  |  |  |
| 1897                          | 30.025                       | 30.286                    | 29.601                    | 0.393                         | 29.632                    | 68.5                      | 52.9                      | 79                | 44                | 59.9              | 54.7              | 49.3            | 4                   | 21   | 3   | 8    | 15   | 14   | 22    | 5    | 1.54            | 0.63                       | 10                                 | 87   | 3    | 4.7      | 246.0                           | 30                                  | 8.2                     |  |          |  |  |  |
| 1898                          | 30.011                       | 30.274                    | 29.456                    | 0.382                         | 29.659                    | 66.5                      | 50.8                      | 77                | 38                | 62.4              | 58.0              | 51.7            | 7                   | 18   | 0   | 5    | 4    | 20   | 4     | 3    | 1.26            | 0.63                       | 6                                  | 85   | 5    | 3.4      | 202.3                           | 30                                  | 8.7                     |  |          |  |  |  |
| 1899                          | 30.034                       | 30.376                    | 29.156                    | 0.384                         | 29.650                    | 72.4                      | 51.0                      | 84                | 42                | 64.0              | 58.0              | 51.7            | 0                   | 9    | 15  | 24   | 6    | 10   | 5     | 1    | 3.63            | 1.05                       | 17                                 | 75   | 15   | 6.5      | 173.8                           | 29                                  | 5.7                     |  |          |  |  |  |
| 1900                          | 29.957                       | 30.271                    | 29.671                    | 0.389                         | 29.568                    | 65.5                      | 51.4                      | 75                | 42                | 59.8              | 55.8              | 52.1            | 0                   | 9    | 15  | 24   | 6    | 10   | 5     | 1    |                 |                            |                                    |      |      |          |                                 |                                     |                         |  |          |  |  |  |
| Means 19 Years.               | 30.028                       | 30.345                    | 29.579                    | 0.373                         | 29.647                    | 68.07                     | 50.59                     | 79                | 40                | 62.00             | 56.11             | 50.87           | 5.8                 | 8.9  | 9.0 | 13.7 | 8.1  | 22.2 | 8.0   | 4.8  | 1.993           | 0.65                       | 10.9                               | 80.6 | 9.3  | 5.0      | 243.8                           | 29.6                                | 8.0                     |  |          |  |  |  |
| Means 51 Years, 1850 to 1900. | 30.025                       | 30.348                    | 29.465                    | 0.378                         | 29.644                    | 66.88                     | 50.89                     | 78                | 40                | 60.97             | 56.03             | 50.99           | 5.2                 | 7.8  | 9.4 | 12.2 | 10.3 | 19.3 | 15.2  | 3.7  | 2.249           | 0.60                       | 12.4                               | 80.2 | 9.7  | 5.7      |                                 |                                     |                         |  |          |  |  |  |

\* 6 years only.

Extremes  
for 51 years.  
Maximum Pressure observed 30.629 in. (1867).  
Minimum Pressure observed 29.039 in. (1862).

Maximum Temperature observed 92° (1893).  
Minimum Temperature observed 35° (1871).

Greatest Rainfall in 24 hours 1.92 in. (1877).

Monthly Results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

JULY.

| 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 Maxima. | Absolute Minima. | 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. | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |    |           |  |  |  |          |  |  |  |
| 1882                          | 29.882                       | 30.454                     | 29.331                     | 0.397                         | 29.483                    | 67.2                      | 53.0                      | 73               | 42               | 60.6              | 52.6                | 0               | 0   | 4    | 44  | 15   | 30   | 0    | 0    | 4.15  | 0.83            | 19                         | 81                                 | 12   | 6.8  | 81                  | 12                              | 6.8                                 | 19                      | 81 |           |  |  |  |          |  |  |  |
| 1883                          | 29.898                       | 30.289                     | 29.491                     | 0.393                         | 29.503                    | 66.5                      | 53.2                      | 71               | 48               | 59.5              | 55.9                | 0               | 3   | 16   | 21  | 14   | 37   | 2    | 0    | 2.78  | 0.42            | 18                         | 82                                 | 11   | 7.1  | 82                  | 11                              | 7.1                                 | 18                      | 82 |           |  |  |  |          |  |  |  |
| 1884                          | 29.956                       | 30.229                     | 29.586                     | 0.427                         | 29.527                    | 69.3                      | 54.1                      | 80               | 43               | 62.5              | 58.5                | 0               | 8   | 17   | 31  | 18   | 18   | 1    | 0    | 3.15  | 0.56            | 16                         | 86                                 | 11   | 7.0  | 86                  | 11                              | 7.0                                 | 16                      | 86 |           |  |  |  |          |  |  |  |
| 1885                          | 30.190                       | 30.343                     | 29.889                     | 0.422                         | 29.766                    | 71.6                      | 50.8                      | 80               | 38               | 63.2              | 58.7                | 53.1            | 13  | 8    | 16  | 20   | 22   | 5    | 4    | 0.40  | 0.20            | 7                          | 86                                 | 6    | 5.3  | 86                  | 6                               | 5.3                                 | 7                       | 86 |           |  |  |  |          |  |  |  |
| 1886                          | 29.930                       | 30.319                     | 29.408                     | 0.404                         | 29.524                    | 70.6                      | 54.1                      | 85               | 43               | 63.3              | 58.1                | 53.1            | 4   | 6    | 7   | 24   | 10   | 32   | 9    | 3.86  | 0.55            | 15                         | 85                                 | 8    | 6.4  | 85                  | 8                               | 6.4                                 | 15                      | 85 |           |  |  |  |          |  |  |  |
| 1887                          | 30.064                       | 30.336                     | 29.510                     | 0.459                         | 29.603                    | 73.8                      | 54.3                      | 80               | 42               | 67.5              | 61.8                | 56.6            | 0   | 7    | 16  | 32   | 7    | 12   | 6    | 1.24  | 0.44            | 10                         | 87                                 | 6    | 5.6  | 87                  | 6                               | 5.6                                 | 10                      | 87 |           |  |  |  |          |  |  |  |
| 1888                          | 29.804                       | 30.207                     | 29.477                     | 0.408                         | 29.388                    | 65.3                      | 52.0                      | 72               | 43               | 61.6              | 56.7                | 51.9            | 1   | 5    | 20  | 15   | 24   | 22   | 13   | 6.45  | 1.30            | 21                         | 67                                 | 26   | 7.9  | 67                  | 26                              | 7.9                                 | 21                      | 67 |           |  |  |  |          |  |  |  |
| 1889                          | 29.935                       | 30.403                     | 29.623                     | 0.388                         | 29.513                    | 69.7                      | 52.6                      | 82               | 43               | 64.6              | 57.6                | 51.9            | 0   | 5    | 8   | 20   | 8    | 18   | 6    | 3.32  | 0.78            | 17                         | 74                                 | 19   | 5.3  | 74                  | 19                              | 5.3                                 | 17                      | 74 |           |  |  |  |          |  |  |  |
| 1890                          | 29.922                       | 30.284                     | 29.527                     | 0.402                         | 29.521                    | 65.6                      | 52.5                      | 71               | 42               | 63.4              | 57.7                | 52.8            | 0   | 2    | 17  | 12   | 6    | 34   | 6    | 1.62  | 0.34            | 17                         | 84                                 | 9    | 5.3  | 84                  | 9                               | 5.3                                 | 17                      | 84 |           |  |  |  |          |  |  |  |
| 1891                          | 29.957                       | 30.193                     | 29.756                     | 0.388                         | 29.566                    | 68.6                      | 52.7                      | 79               | 40               | 65.3              | 57.8                | 51.8            | 15  | 0    | 10  | 19   | 11   | 37   | 4    | 3.67  | 0.92            | 19                         | 64                                 | 29   | 6.7  | 64                  | 29                              | 6.7                                 | 19                      | 64 |           |  |  |  |          |  |  |  |
| 1892                          | 30.003                       | 30.271                     | 29.503                     | 0.412                         | 29.504                    | 70.3                      | 52.0                      | 80               | 42               | 67.0              | 59.6                | 53.6            | 4   | 14   | 8   | 21   | 8    | 10   | 14   | 1.76  | 0.66            | 14                         | 79                                 | 14   | 5.0  | 79                  | 14                              | 5.0                                 | 14                      | 79 |           |  |  |  |          |  |  |  |
| 1893                          | 29.912                       | 30.248                     | 29.488                     | 0.447                         | 29.465                    | 70.0                      | 56.8                      | 80               | 46               | 63.7              | 59.6                | 55.9            | 1   | 5    | 10  | 5    | 12   | 28   | 11   | 4.92  | 0.88            | 11                         | 82                                 | 11   | 5.4  | 82                  | 11                              | 5.4                                 | 11                      | 82 |           |  |  |  |          |  |  |  |
| 1894                          | 29.888                       | 30.238                     | 29.416                     | 0.396                         | 29.492                    | 66.0                      | 53.8                      | 75               | 43               | 60.7              | 56.8                | 52.5            | 6   | 14   | 8   | 14   | 13   | 22   | 2    | 2.92  | 0.50            | 14                         | 79                                 | 14   | 5.8  | 79                  | 14                              | 5.8                                 | 14                      | 79 |           |  |  |  |          |  |  |  |
| 1895                          | 29.902                       | 30.293                     | 29.349                     | 0.380                         | 29.522                    | 67.3                      | 54.5                      | 77               | 45               | 62.0              | 57.1                | 51.4            | 0   | 6    | 4   | 26   | 9    | 29   | 9    | 2.20  | 0.31            | 10                         | 86                                 | 4    | 4.9  | 86                  | 4                               | 4.9                                 | 10                      | 86 |           |  |  |  |          |  |  |  |
| 1896                          | 30.041                       | 30.296                     | 29.610                     | 0.439                         | 29.602                    | 70.8                      | 54.5                      | 80               | 44               | 63.8              | 59.2                | 55.4            | 0   | 0    | 4   | 8    | 23   | 6    | 15   | 2.20  | 0.31            | 10                         | 86                                 | 4    | 4.9  | 86                  | 4                               | 4.9                                 | 10                      | 86 |           |  |  |  |          |  |  |  |
| 1897                          | 30.022                       | 30.330                     | 29.536                     | 0.427                         | 29.595                    | 71.9                      | 56.2                      | 82               | 37               | 64.9              | 59.3                | 54.6            | 0   | 7    | 5   | 17   | 18   | 6    | 5    | 2.05  | 0.14            | 5                          | 88                                 | 5    | 4.3  | 88                  | 5                               | 4.3                                 | 5                       | 88 |           |  |  |  |          |  |  |  |
| 1898                          | 30.138                       | 30.380                     | 29.736                     | 0.419                         | 29.719                    | 71.4                      | 53.6                      | 79               | 40               | 64.5              | 59.1                | 54.1            | 0   | 7    | 2   | 5    | 7    | 31   | 11   | 0.45  | 0.14            | 5                          | 88                                 | 5    | 4.3  | 88                  | 5                               | 4.3                                 | 5                       | 88 |           |  |  |  |          |  |  |  |
| 1899                          | 30.097                       | 30.369                     | 29.666                     | 0.443                         | 29.654                    | 74.5                      | 56.0                      | 83               | 48               | 65.7              | 60.3                | 55.6            | 4   | 3    | 12  | 3    | 14   | 25   | 2    | 0.54  | 0.31            | 6                          | 86                                 | 7    | 4.8  | 86                  | 7                               | 4.8                                 | 6                       | 86 |           |  |  |  |          |  |  |  |
| 1900                          | 30.041                       | 30.358                     | 29.671                     | 0.415                         | 29.626                    | 72.6                      | 54.9                      | 86               | 41               | 65.4              | 60.0                | 53.8            | 2   | 13   | 5   | 16   | 13   | 24   | 0    | 0.64  | 0.22            | 10                         | 90                                 | 3    | 4.7  | 90                  | 3                               | 4.7                                 | 10                      | 90 |           |  |  |  |          |  |  |  |
| Means 19 Years.               | 29.978                       | 30.308                     | 29.556                     | 0.414                         | 29.561                    | 69.63                     | 53.76                     | 79               | 42               | 63.64             | 58.44               | 53.69           | 3.0 | 5.9  | 7.7 | 18.2 | 12.9 | 21.7 | 10.7 | 2.585 | 0.65            | 14                         | 81.2                               | 11.7 | 5.6  | 235.4               | 30                              | 7.6                                 | 235.4                   | 30 | 7.6       |  |  |  |          |  |  |  |
| Means 31 Years, 1850 to 1900. | 29.999                       | 30.318                     | 29.571                     | 0.423                         | 29.574                    | 69.61                     | 54.11                     | 79               | 43               | 63.60             | 58.78               | 54.26           | 4.3 | 5.9  | 7.7 | 14.5 | 14.8 | 20.1 | 15.0 | 2.598 | 0.69            | 13.4                       | 80.6                               | 10.3 | 6.0  | 248.6               | 31                              | 8.0                                 | 248.6                   | 31 | 8.0       |  |  |  |          |  |  |  |

\* 6 years only.

Extremes for 61 years. Maximum Pressure observed 30.464 in. (1876). Minimum Pressure observed 29.191 in. (1861).

Maximum Temperature observed 86° (1900). Minimum Temperature observed 37° (1897).

Greatest Rainfall in 24 hours 1.46 in. (1860).

**AUGUST.**

| Years                       | PRESSURE OF ATMOSPHERE. |                            |                            |                               |               |                           | TEMPERATURE OF AIR.       |                   |                   |                   |                   |                 | WIND. |          |       |      |       |      | RAINFALL. |                 |                            |                                    | WEATHER. |      |                     |                                 |                                     |                         |  |
|-----------------------------|-------------------------|----------------------------|----------------------------|-------------------------------|---------------|---------------------------|---------------------------|-------------------|-------------------|-------------------|-------------------|-----------------|-------|----------|-------|------|-------|------|-----------|-----------------|----------------------------|------------------------------------|----------|------|---------------------|---------------------------------|-------------------------------------|-------------------------|--|
|                             | Mean Atmospheric.       | 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. | S. E. | S. S. W. | 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. | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |  |
| 1882                        | 29.985                  | 30.391                     | 29.301                     | 0.413                         | 29.568        | 68.7                      | 54.4                      | 78                | 47                | 61.9              | 57.8              | 53.7            | 5     | 6        | 19    | 21   | 34    | 3    | 0         | 2.60            | 1.11                       | 13                                 | 83       | 10   | 6.7                 |                                 |                                     |                         |  |
| 1883                        | 30.059                  | 30.311                     | 29.071                     | 0.410                         | 29.645        | 69.7                      | 52.8                      | 77                | 40                | 61.7              | 57.6              | 53.5            | 6     | 2        | 22    | 22   | 25    | 4    | 0         | 1.11            | 0.30                       | 11                                 | 84       | 9    | 6.3                 |                                 |                                     |                         |  |
| 1884                        | 30.018                  | 30.260                     | 29.651                     | 0.425                         | 29.589        | 73.4                      | 53.4                      | 82                | 42                | 65.0              | 59.6              | 54.5            | 13    | 11       | 10    | 18   | 8     | 2    | 4         | 1.64            | 0.72                       | 9                                  | 87       | 6    | 5.1                 |                                 |                                     |                         |  |
| 1885                        | 29.959                  | 30.289                     | 29.621                     | 0.393                         | 29.562        | 69.8                      | 48.4                      | 78                | 40                | 61.7              | 57.0              | 52.3            | 20    | 8        | 7     | 15   | 5     | 16   | 15        | 1.74            | 1.06                       | 11                                 | 85       | 8    | 5.5                 |                                 |                                     |                         |  |
| 1886                        | 30.069                  | 30.319                     | 29.436                     | 0.434                         | 29.571        | 70.0                      | 54.0                      | 77                | 43                | 62.7              | 58.9              | 55.1            | 1     | 1        | 10    | 22   | 10    | 34   | 2         | 1.74            | 0.40                       | 9                                  | 84       | 9    | 7.0                 |                                 |                                     |                         |  |
| 1887                        | 29.999                  | 30.346                     | 29.566                     | 0.422                         | 29.573        | 72.0                      | 49.8                      | 81                | 40                | 64.6              | 59.5              | 54.3            | 6     | 4        | 29    | 5    | 6     | 30   | 8         | 1.55            | 0.37                       | 7                                  | 88       | 5    | 6.1                 |                                 |                                     |                         |  |
| 1888                        | 30.030                  | 30.324                     | 29.241                     | 0.417                         | 29.582        | 67.5                      | 52.1                      | 76                | 41                | 62.4              | 58.2              | 53.5            | 2     | 4        | 17    | 24   | 10    | 10   | 5         | 2.92            | 0.82                       | 12                                 | 86       | 7    | 7.1                 |                                 |                                     |                         |  |
| 1889                        | 29.913                  | 30.294                     | 29.361                     | 0.386                         | 29.563        | 67.8                      | 51.9                      | 80                | 41                | 64.4              | 57.4              | 51.5            | 1     | 4        | 4     | 20   | 21    | 26   | 10        | 2.92            | 0.45                       | 22                                 | 69       | 24   | 5.4                 |                                 |                                     |                         |  |
| 1890                        | 29.931                  | 30.256                     | 29.507                     | 0.398                         | 29.532        | 68.8                      | 51.8                      | 75                | 37                | 64.6              | 58.0              | 52.3            | 6     | 3        | 3     | 18   | 7     | 13   | 19        | 3.79            | 0.92                       | 17                                 | 76       | 17   | 6.5                 |                                 |                                     |                         |  |
| 1891                        | 29.828                  | 30.139                     | 29.424                     | 0.406                         | 29.415        | 65.3                      | 52.0                      | 74                | 37                | 63.3              | 57.7              | 53.0            | 0     | 4        | 4     | 42   | 12    | 10   | 4         | 6.48            | 1.48                       | 25                                 | 67       | 26   | 6.5                 |                                 |                                     |                         |  |
| 1892                        | 29.873                  | 30.220                     | 29.439                     | 0.436                         | 29.460        | 69.8                      | 53.8                      | 78                | 39                | 65.6              | 59.8              | 55.2            | 1     | 2        | 1     | 43   | 2     | 8    | 10        | 4.40            | 1.90                       | 16                                 | 73       | 20   | 4.7                 |                                 |                                     |                         |  |
| 1893                        | 30.019                  | 30.266                     | 29.720                     | 0.447                         | 29.572        | 72.7                      | 56.0                      | 83                | 43                | 65.4              | 60.9              | 55.9            | 4     | 9        | 11    | 17   | 11    | 8    | 11        | 3.37            | 0.63                       | 10                                 | 88       | 5    | 4.9                 |                                 |                                     |                         |  |
| 1894                        | 29.962                  | 30.233                     | 29.603                     | 0.424                         | 29.538        | 66.7                      | 54.1                      | 81                | 44                | 60.6              | 57.1              | 54.4            | 3     | 2        | 3     | 9    | 28    | 21   | 8         | 3.00            | 0.60                       | 16                                 | 81       | 12   | 5.0                 |                                 |                                     |                         |  |
| 1895                        | 29.909                  | 30.301                     | 29.419                     | 0.407                         | 29.502        | 67.4                      | 54.5                      | 75                | 40                | 61.9              | 57.8              | 53.3            | 2     | 11       | 9     | 28   | 15    | 11   | 0         | 2.26            | 0.42                       | 17                                 | 82       | 11   | 4.5                 |                                 |                                     |                         |  |
| 1896                        | 30.073                  | 30.346                     | 29.799                     | 0.380                         | 29.693        | 67.5                      | 52.5                      | 79                | 45                | 61.2              | 56.5              | 51.4            | 0     | 0        | 6     | 6    | 47    | 17   | 6         | 1.99            | 0.43                       | 15                                 | 86       | 7    | 4.2                 |                                 |                                     |                         |  |
| 1897                        | 29.821                  | 30.140                     | 29.489                     | 0.410                         | 29.411        | 69.0                      | 55.2                      | 82                | 43                | 63.1              | 58.3              | 53.5            | 1     | 15       | 11    | 30   | 12    | 10   | 1         | 5.01            | 0.87                       | 26                                 | 77       | 16   | 4.7                 |                                 |                                     |                         |  |
| 1898                        | 30.011                  | 30.293                     | 29.681                     | 0.416                         | 29.595        | 71.4                      | 55.5                      | 81                | 42                | 64.3              | 59.0              | 53.9            | 2     | 6        | 8     | 19   | 5     | 16   | 8         | 2.34            | 1.08                       | 12                                 | 82       | 11   | 5.1                 |                                 |                                     |                         |  |
| 1899                        | 30.046                  | 30.324                     | 29.788                     | 0.434                         | 29.612        | 76.3                      | 56.3                      | 83                | 48                | 68.6              | 62.0              | 55.1            | 22    | 14       | 4     | 13   | 1     | 5    | 1         | 1.39            | 0.41                       | 10                                 | 91       | 2    | 2.3                 |                                 |                                     |                         |  |
| 1900                        | 29.983                  | 30.410                     | 29.378                     | 0.396                         | 29.587        | 70.1                      | 51.3                      | 83                | 43                | 62.9              | 57.7              | 52.5            | 1     | 0        | 6     | 15   | 17    | 19   | 1         | 2.62            | 0.50                       | 14                                 | 84       | 9    | 3.6                 |                                 |                                     |                         |  |
| Means 19 Years.             | 29.969                  | 30.287                     | 29.531                     | 0.413                         | 29.556        | 69.67                     | 53.14                     | 79                | 41                | 63.46             | 58.46             | 53.62           | 5.0   | 5.5      | 8.1   | 19.8 | 12.2  | 20.0 | 7.3       | 2.752           | 0.73                       | 14.3                               | 81.7     | 11.2 | 5.3                 |                                 |                                     |                         |  |
| Means 51 Yrs. 1850 to 1900. | 29.981                  | 30.323                     | 29.517                     | 0.425                         | 29.556        | 69.63                     | 53.81                     | 80                | 42                | 63.41             | 58.55             | 54.40           | 5.9   | 5.8      | 8.4   | 16.1 | 13.4  | 18.9 | 12.8      | 2.917           | 0.72                       | 14.4                               | 81.8     | 10.9 | 5.8                 |                                 |                                     |                         |  |

\* 6 years only.

Extremes for 51 years. Maximum Pressure observed 30.617 in. (1853). Minimum Pressure observed 28.942 in. (1852).

Maximum Temperature observed 89° (1856). Minimum Temperature observed 38° (1864).

Greatest Rainfall in 24 hours 1.90 in. (1892).

Means 19 Years. 29.969 30.287 29.531 0.413 29.556 69.67 53.14 79 41 63.46 58.46 53.62 5.0 5.5 8.1 19.8 12.2 20.0 7.3 2.752 0.73 14.3 81.7 11.2 5.3 223.2 30.6 7.13 \* \* \* \* \*  
 Means 51 Yrs. 1850 to 1900. 29.981 30.323 29.517 0.425 29.556 69.63 53.81 80 42 63.41 58.55 54.40 5.9 5.8 8.4 16.1 13.4 18.9 12.8 4.3 2.917 0.72 14.4 81.8 10.9 5.8 \* \* \* \* \*

Monthly results of Meteorological Observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

SEPTEMBER.

| Years               | PRESSURE OF ATMOSPHERE.      |        |                  |       | TEMPERATURE OF AIR.       |       |                           |    | WIND.             |       |                   |     |                   |     | RAINFALL.         |      |                 |      | WEATHER.                 |       |      |      |      |      |                 |       |                            |       |                                    |      |                         |                                 |                        |                         |     |
|---------------------|------------------------------|--------|------------------|-------|---------------------------|-------|---------------------------|----|-------------------|-------|-------------------|-----|-------------------|-----|-------------------|------|-----------------|------|--------------------------|-------|------|------|------|------|-----------------|-------|----------------------------|-------|------------------------------------|------|-------------------------|---------------------------------|------------------------|-------------------------|-----|
|                     | Mean Pressure of Atmosphere. |        | Mean 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 on which rain fell. |      | AT TIME OF OBSERVATION. |                                 | SUN.                   |                         |     |
|                     | in.                          |        | in.              |       | °                         |       | °                         |    | °                 | °     | °                 | °   | °                 | °   | °                 | °    | °               | °    | E.                       | S.E.  | S.   | S.W. | W.   | N.W. | N.              | N.E.  | in.                        |       | Dry.                               | Wet. | Average Cloudiness.     | Total hours of bright sunshine. | No. of days sun shone. | Average daily sunshine. |     |
| 1882                | 29.920                       | 30.383 | 29.291           | 0.360 | 63.8                      | 47.8  | 72                        | 35 | 57.3              | 53.5  | 49.9              | 11  | 3                 | 8   | 13                | 10   | 29              | 10   | 10                       | 10    | 10   | 10   | 10   | 10   | 6               | 4.52  | 1.18                       | 15    | 15                                 | 75   | 15                      | 6.9                             | 208.5                  | 28                      | 6.9 |
| 1883                | 29.845                       | 30.240 | 28.550           | 0.396 | 64.6                      | 52.0  | 71                        | 44 | 58.6              | 55.5  | 52.5              | 5   | 13                | 12  | 20                | 14   | 24              | 2    | 2                        | 12    | 20   | 14   | 24   | 2    | 0               | 5.73  | 1.40                       | 18    | 13                                 | 71   | 19                      | 7.0                             | 137.6                  | 28                      | 4.5 |
| 1884                | 29.910                       | 30.346 | 29.434           | 0.415 | 68.8                      | 52.0  | 80                        | 37 | 61.3              | 57.4  | 53.8              | 13  | 9                 | 8   | 21                | 14   | 17              | 1    | 7                        | 8     | 21   | 14   | 17   | 1    | 7               | 1.89  | 0.48                       | 13    | 83                                 | 7    | 5.8                     | 151.4                           | 25                     | 5.0                     |     |
| 1885                | 29.910                       | 30.305 | 29.504           | 0.389 | 64.0                      | 48.9  | 70                        | 30 | 58.0              | 55.0  | 52.1              | 18  | 2                 | 3   | 43                | 13   | 17              | 12   | 0                        | 2     | 3    | 43   | 13   | 17   | 12              | 0     | 6.58                       | 1.06  | 25                                 | 70   | 20                      | 6.6                             | 211.0                  | 29                      | 7.0 |
| 1886                | 29.986                       | 30.319 | 29.514           | 0.404 | 66.7                      | 51.5  | 80                        | 42 | 60.0              | 56.5  | 53.1              | 18  | 2                 | 12  | 31                | 2    | 15              | 0    | 10                       | 2     | 12   | 31   | 2    | 15   | 0               | 3.49  | 0.80                       | 13    | 84                                 | 6    | 7.0                     | 163.1                           | 30                     | 5.4                     |     |
| 1887                | 29.942                       | 30.483 | 29.330           | 0.343 | 63.0                      | 48.0  | 67                        | 34 | 58.3              | 53.7  | 48.6              | 4   | 0                 | 2   | 19                | 15   | 19              | 14   | 17                       | 6     | 11   | 6    | 9    | 21   | 5               | 1.26  | 0.42                       | 8     | 88                                 | 8    | 5.9                     | 208.5                           | 28                     | 6.9                     |     |
| 1888                | 30.164                       | 30.455 | 29.847           | 0.396 | 65.6                      | 49.7  | 78                        | 36 | 60.2              | 55.8  | 52.5              | 29  | 3                 | 6   | 11                | 6    | 9               | 14   | 17                       | 6     | 11   | 6    | 9    | 21   | 5               | 1.17  | 0.50                       | 12    | 74                                 | 16   | 5.0                     | 137.6                           | 28                     | 4.5                     |     |
| 1889                | 30.052                       | 30.361 | 29.588           | 0.382 | 67.3                      | 49.7  | 78                        | 35 | 61.9              | 56.0  | 50.9              | 7   | 20                | 13  | 7                 | 5    | 19              | 7    | 11                       | 11    | 29   | 6    | 13   | 12   | 4               | 2.63  | 1.25                       | 10    | 77                                 | 13   | 5.6                     | 151.4                           | 25                     | 5.0                     |     |
| 1890                | 30.122                       | 30.474 | 29.401           | 0.415 | 68.3                      | 50.3  | 75                        | 36 | 63.8              | 58.3  | 53.7              | 9   | 9                 | 7   | 20                | 6    | 13              | 12   | 4                        | 12    | 20   | 6    | 13   | 12   | 4               | 3.03  | 0.49                       | 16    | 71                                 | 19   | 5.5                     | 163.1                           | 30                     | 5.4                     |     |
| 1891                | 30.006                       | 30.331 | 29.591           | 0.414 | 67.2                      | 51.2  | 83                        | 41 | 63.1              | 58.1  | 53.5              | 9   | 19                | 7   | 20                | 6    | 13              | 12   | 4                        | 12    | 20   | 6    | 13   | 12   | 4               | 2.50  | 0.69                       | 16    | 76                                 | 17   | 5.1                     | 163.1                           | 30                     | 5.4                     |     |
| 1892                | 30.009                       | 30.340 | 29.514           | 0.376 | 64.7                      | 49.7  | 70                        | 30 | 53.9              | 54.1  | 50.9              | 0   | 0                 | 3   | 50                | 5    | 18              | 4    | 10                       | 3     | 50   | 5    | 18   | 4    | 10              | 1.90  | 0.63                       | 16    | 76                                 | 17   | 5.1                     | 208.5                           | 28                     | 6.9                     |     |
| 1893                | 29.890                       | 30.307 | 29.345           | 0.355 | 65.9                      | 50.3  | 76                        | 38 | 59.0              | 54.7  | 49.5              | 16  | 4                 | 4   | 11                | 17   | 20              | 12   | 5                        | 2     | 11   | 17   | 20   | 12   | 5               | 2.23  | 1.11                       | 13    | 86                                 | 4    | 3.6                     | 151.4                           | 25                     | 5.0                     |     |
| 1894                | 30.109                       | 30.474 | 29.580           | 0.352 | 65.2                      | 46.5  | 73                        | 33 | 57.3              | 53.8  | 49.3              | 14  | 9                 | 2   | 1                 | 3    | 5               | 26   | 9                        | 2     | 1    | 3    | 5    | 26   | 9               | 2     | 4.19                       | 0.10  | 4                                  | 89   | 1                       | 2.8                             | 137.6                  | 28                      | 4.5 |
| 1895                | 30.120                       | 30.551 | 29.778           | 0.427 | 73.2                      | 50.6  | 83                        | 38 | 63.7              | 59.2  | 54.6              | 14  | 21                | 5   | 3                 | 6    | 7               | 1    | 4                        | 0     | 3    | 23   | 13   | 26   | 4               | 4.78  | 1.33                       | 23    | 74                                 | 16   | 5.1                     | 151.4                           | 25                     | 5.0                     |     |
| 1896                | 29.777                       | 30.495 | 29.199           | 0.391 | 63.9                      | 52.3  | 71                        | 42 | 58.6              | 55.5  | 52.1              | 3   | 5                 | 10  | 5                 | 10   | 7               | 25   | 2                        | 2     | 4    | 09   | 0.84 | 18   | 73              | 17    | 5.1                        | 151.4 | 25                                 | 5.0  | 163.1                   | 30                              | 5.4                    |                         |     |
| 1897                | 30.024                       | 30.508 | 29.570           | 0.375 | 63.0                      | 48.8  | 73                        | 38 | 57.3              | 53.9  | 51.1              | 3   | 5                 | 5   | 10                | 7    | 25              | 2    | 2                        | 2     | 4    | 09   | 0.84 | 18   | 73              | 17    | 5.1                        | 151.4 | 25                                 | 5.0  | 163.1                   | 30                              | 5.4                    |                         |     |
| 1898                | 30.071                       | 30.414 | 29.603           | 0.400 | 67.1                      | 51.8  | 81                        | 38 | 62.9              | 57.8  | 52.8              | 10  | 18                | 3   | 13                | 4    | 14              | 0    | 2                        | 2     | 3    | 13   | 4    | 14   | 0               | 3.50  | 1.25                       | 17    | 82                                 | 8    | 4.7                     | 163.1                           | 30                     | 5.4                     |     |
| 1899                | 29.916                       | 30.260 | 29.401           | 0.379 | 68.6                      | 53.2  | 82                        | 43 | 61.3              | 56.6  | 51.4              | 0   | 4                 | 5   | 16                | 19   | 27              | 3    | 0                        | 3     | 5    | 16   | 19   | 27   | 3               | 0     | 3.50                       | 1.25  | 17                                 | 82   | 8                       | 4.7                             | 163.1                  | 30                      | 5.4 |
| 1900                | 30.154                       | 30.527 | 29.607           | 0.393 | 68.6                      | 49.7  | 76                        | 33 | 60.0              | 56.0  | 52.3              | 12  | 5                 | 5   | 16                | 3    | 22              | 2    | 5                        | 5     | 16   | 3    | 22   | 2    | 5               | 1.99  | 0.85                       | 12    | 78                                 | 12   | 3.8                     | 168.1                           | 28                     | 5.6                     |     |
| Means for 51 Years. | 30.001                       | 30.398 | 29.455           | 0.387 | 66.41                     | 50.18 | 75                        | 37 | 60.07             | 55.86 | 51.82             | 8.6 | 8.2               | 5.9 | 18.8              | 8.7  | 17.4            | 7.4  | 5.7                      | 2.973 | 0.82 | 14.0 | 78.1 | 12.0 | 5.3             | 173.2 | 28.0                       | 5.7   | 173.2                              | 28.0 | 5.7                     | 168.1                           | 28                     | 5.6                     |     |
| Means for 51 Years. | 29.987                       | 30.403 | 29.411           | 0.390 | 66.12                     | 50.52 | 74                        | 37 | 59.91             | 56.05 | 52.07             | 8.6 | 9.1               | 6.2 | 14.8              | 12.3 | 15.8            | 10.9 | 4.7                      | 3.296 | 0.86 | 15.3 | 78.0 | 11.4 | 5.8             | 168.1 | 28                         | 5.6   | 168.1                              | 28   | 5.6                     | 163.1                           | 30                     | 5.4                     |     |

\* 6 years only.

Extremes for 51 years. Maximum Pressure observed 30.562 in. (1851). Minimum Pressure observed 28.550 in. (1883).

Maximum Temperature observed 83° (1895). Minimum Temperature observed 30° (1885).

Greatest Rainfall in 24 hours 1.67 in. (1871).

Monthly Results of Meteorological Observations made at *Truro* for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

OCTOBER.

| Years                             | PRESSURE OF ATMOSPHERE.      |                            |                            |                               |                           |                           |                           |                   |                   | TEMPERATURE OF AIR. |                   |                 |     |      |     |      | PROPORIONATE DIRECTION. |      |      |       |                 |                            |                                    |      | 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. | 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.      | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |     |  |
| 1882                              | 29.819                       | 30.533                     | 29.280                     | 0.358                         | 29.475                    | 59.3                      | 44.9                      | 65                | 30                | 53.4                | 51.0              | 48.2            | 8   | 2    | 25  | 15   | 18                      | 7    | 11   | 6.04  | 1.28            | 28                         | 73                                 | 20   | 7.1       |                     |                                 | 27                                  | 3.1                     |     |  |
| 1883                              | 29.959                       | 30.503                     | 29.363                     | 0.333                         | 29.620                    | 58.8                      | 47.5                      | 65                | 31                | 53.8                | 51.0              | 47.8            | 13  | 3    | 12  | 17   | 22                      | 2    | 7    | 3.67  | 0.75            | 16                         | 76                                 | 17   | 7.5       |                     |                                 | 26                                  | 3.5                     |     |  |
| 1884                              | 30.129                       | 30.633                     | 29.321                     | 0.322                         | 29.801                    | 58.9                      | 45.8                      | 65                | 32                | 53.1                | 50.2              | 46.9            | 10  | 2    | 9   | 16   | 48                      | 1    | 4    | 2.39  | 0.45            | 18                         | 77                                 | 16   | 7.0       |                     |                                 | 22                                  | 3.0                     |     |  |
| 1885                              | 29.802                       | 30.140                     | 29.063                     | 0.288                         | 29.508                    | 55.0                      | 43.6                      | 61                | 35                | 50.2                | 47.4              | 44.0            | 6   | 4    | 4   | 16   | 9                       | 29   | 14   | 8.82  | 0.86            | 27                         | 62                                 | 31   | 7.6       |                     |                                 | 22                                  | 3.4                     |     |  |
| 1886                              | 29.759                       | 30.303                     | 29.843                     | 0.353                         | 29.400                    | 60.0                      | 49.0                      | 68                | 32                | 54.8                | 52.3              | 49.4            | 15  | 14   | 7   | 7    | 15                      | 5    | 13   | 6.26  | 0.84            | 25                         | 76                                 | 17   | 7.9       |                     |                                 | 27                                  | 3.7                     |     |  |
| 1887                              | 30.127                       | 30.568                     | 29.560                     | 0.257                         | 29.864                    | 56.4                      | 39.0                      | 67                | 33                | 50.1                | 46.0              | 41.0            | 10  | 7    | 12  | 14   | 2                       | 25   | 8    | 4.45  | 1.88            | 12                         | 86                                 | 7    | 7.1       |                     |                                 | 21                                  | 3.0                     |     |  |
| 1888                              | 30.039                       | 30.348                     | 29.270                     | 0.313                         | 29.732                    | 58.9                      | 43.6                      | 69                | 30                | 54.5                | 50.0              | 46.3            | 13  | 8    | 5   | 12   | 4                       | 27   | 21   | 3.04  | 0.67            | 16                         | 59                                 | 34   | 5.5       |                     |                                 | 26                                  | 3.6                     |     |  |
| 1889                              | 29.687                       | 30.150                     | 29.173                     | 0.263                         | 29.438                    | 57.7                      | 41.8                      | 65                | 29                | 53.1                | 47.1              | 41.2            | 0   | 9    | 11  | 12   | 3                       | 21   | 19   | 5.42  | 1.36            | 26                         | 59                                 | 34   | 5.5       |                     |                                 | 22                                  | 3.0                     |     |  |
| 1890                              | 30.149                       | 30.501                     | 29.631                     | 0.349                         | 29.809                    | 63.7                      | 46.2                      | 71                | 34                | 58.2                | 53.0              | 48.2            | 7   | 4    | 3   | 47   | 5                       | 5    | 6    | 9.35  | 1.93            | 25                         | 60                                 | 33   | 6.4       |                     |                                 | 22                                  | 3.0                     |     |  |
| 1891                              | 29.660                       | 30.338                     | 29.100                     | 0.359                         | 29.340                    | 59.0                      | 43.6                      | 66                | 35                | 56.2                | 51.5              | 47.0            | 14  | 4    | 3   | 47   | 5                       | 5    | 6    | 8.55  | 1.93            | 25                         | 60                                 | 33   | 6.4       |                     |                                 | 22                                  | 3.0                     |     |  |
| 1892                              | 29.748                       | 30.340                     | 29.320                     | 0.272                         | 29.476                    | 55.5                      | 37.8                      | 61                | 27                | 51.3                | 46.8              | 42.1            | 2   | 2    | 17  | 2    | 15                      | 14   | 10   | 5.70  | 0.90            | 22                         | 67                                 | 26   | 5.5       |                     |                                 | 27                                  | 3.1                     |     |  |
| 1893                              | 29.929                       | 30.456                     | 29.256                     | 0.335                         | 29.594                    | 59.7                      | 45.3                      | 66                | 30                | 52.9                | 50.3              | 48.0            | 2   | 0    | 11  | 22   | 12                      | 15   | 14   | 3.73  | 0.90            | 22                         | 67                                 | 27   | 5.5       |                     |                                 | 26                                  | 3.0                     |     |  |
| 1894                              | 29.880                       | 30.446                     | 29.062                     | 0.323                         | 29.557                    | 60.3                      | 44.1                      | 70                | 31                | 53.2                | 50.4              | 47.0            | 8   | 4    | 10  | 17   | 7                       | 0    | 8    | 4.67  | 0.9             | 13                         | 82                                 | 11   | 5.0       |                     |                                 | 21                                  | 3.0                     |     |  |
| 1895                              | 29.857                       | 30.411                     | 29.135                     | 0.276                         | 29.561                    | 56.2                      | 42.7                      | 72                | 28                | 50.5                | 47.5              | 42.8            | 10  | 3    | 4   | 11   | 11                      | 28   | 4    | 6.69  | 1.16            | 22                         | 76                                 | 23   | 4.9       |                     |                                 | 27                                  | 3.1                     |     |  |
| 1896                              | 29.754                       | 30.474                     | 29.167                     | 0.253                         | 29.501                    | 54.4                      | 40.1                      | 62                | 26                | 48.3                | 45.2              | 40.6            | 0   | 3    | 4   | 13   | 16                      | 20   | 4    | 7.09  | 0.70            | 27                         | 76                                 | 17   | 5.0       |                     |                                 | 27                                  | 3.1                     |     |  |
| 1897                              | 30.106                       | 30.490                     | 29.238                     | 0.336                         | 29.770                    | 59.8                      | 48.1                      | 67                | 34                | 54.9                | 52.4              | 48.1            | 6   | 2    | 9   | 8    | 8                       | 4    | 4    | 4.36  | 0.70            | 27                         | 76                                 | 17   | 5.0       |                     |                                 | 27                                  | 3.1                     |     |  |
| 1898                              | 29.780                       | 30.301                     | 28.681                     | 0.362                         | 29.418                    | 61.4                      | 48.6                      | 72                | 38                | 55.8                | 53.1              | 50.1            | 20  | 5    | 6   | 6    | 8                       | 4    | 3    | 1.78  | 0.81            | 13                         | 83                                 | 20   | 6.3       |                     |                                 | 22                                  | 3.0                     |     |  |
| 1899                              | 30.027                       | 30.335                     | 29.011                     | 0.336                         | 29.691                    | 61.6                      | 46.7                      | 68                | 28                | 55.0                | 52.0              | 48.1            | 2   | 5    | 5   | 6    | 15                      | 0    | 4    | 3.55  | 0.83            | 12                         | 82                                 | 11   | 4.9       |                     |                                 | 134                                 | 25                      | 4.3 |  |
| 1900                              | 30.026                       | 30.668                     | 29.470                     | 0.323                         | 29.703                    | 60.2                      | 46.2                      | 67                | 31                | 54.3                | 51.1              | 47.0            | 0   | 7    | 4   | 32   | 5                       | 23   | 7    | 2.93  | 0.57            | 20                         | 73                                 | 20   | 6.0       |                     |                                 | 117                                 | 28                      | 3.7 |  |
| Means for 61 Years.               | 29.906                       | 30.417                     | 29.260                     | 0.315                         | 29.593                    | 58.77                     | 44.45                     | 66                | 30                | 53.34               | 49.91             | 45.98           | 7.4 | 8.0  | 5.6 | 16.2 | 8.0                     | 19.3 | 8.9  | 4.807 | 0.99            | 19.8                       | 73.9                               | 19.0 | 6.2       |                     |                                 | 109.3                               | 25.6                    | 3.5 |  |
| Means for 51 Years. 1850 to 1900. | 29.901                       | 30.412                     | 29.211                     | 0.328                         | 29.574                    | 59.12                     | 46.05                     | 66                | 32                | 53.63               | 50.73             | 47.36           | 8.0 | 9.0  | 7.4 | 14.1 | 10.0                    | 17.1 | 11.1 | 4.815 | 1.03            | 19.7                       | 76.8                               | 16.2 | 6.6       |                     |                                 | 107.5                               | 26.6                    | 3.7 |  |

\* 6 years only.

Extremes for 61 years. Maximum Pressure observed 30.668 in. (1900). Minimum Pressure observed 28.681 in. (1895).

Maximum Temperature observed 75° (1869). Minimum Temperature observed 23° (1887).

Greatest Rainfall in 24 hours 8.00 in. (1880).

**NOVEMBER.**

| 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 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. | AT TIME OF OBSERVATION. |      |      | SUN.                |                                 |                                     |                         |      |      |
|                        | in.                          | in.    | in.                       | in.   | in.                       | in.   | in.                           | in.                       | °                         | °                         | °                   | °                 | °             | °                 | S. E.           | S.                       | S. W. | W.   | N. W.           | N.   | N. E.                      | in.                                | in.                     | Dry. | Wet. | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |      |      |
| 1882                   | 29.789                       | 30.210 | 29.326                    | 0.275 | 29.510                    | 52.0  | 42.3                          | 59                        | 29                        | 48.2                      | 45.8                | 42.8              | 2             | 4                 | 0               | 27                       | 17    | 30   | 5               | 5    | 6.57                       | 0.67                               | 71                      | 22   | 7.7  | 77                  | 54.3                            | 17                                  | 1.7                     |      |      |
| 1883                   | 29.852                       | 30.300 | 28.994                    | 0.280 | 29.568                    | 54.2  | 41.9                          | 58                        | 26                        | 46.2                      | 43.3                | 43.3              | 10            | 4                 | 6               | 26                       | 12    | 28   | 0               | 4    | 6.15                       | 0.86                               | 67                      | 23   | 7.0  | 70                  | 72.4                            | 24                                  | 2.4                     |      |      |
| 1884                   | 30.146                       | 30.543 | 29.713                    | 0.270 | 29.872                    | 52.0  | 40.2                          | 61                        | 28                        | 47.4                      | 45.2                | 42.3              | 13            | 9                 | 3               | 17                       | 5     | 29   | 0               | 14   | 2.58                       | 0.46                               | 74                      | 16   | 7.6  | 76                  | 58.0                            | 21                                  | 2.1                     |      |      |
| 1885                   | 29.850                       | 30.290 | 29.178                    | 0.295 | 29.551                    | 53.0  | 44.8                          | 58                        | 31                        | 49.5                      | 47.3                | 44.6              | 23            | 16                | 6               | 20                       | 5     | 13   | 1               | 6    | 4.86                       | 0.90                               | 68                      | 22   | 8.2  | 82                  | 74.2                            | 23                                  | 2.4                     |      |      |
| 1886                   | 29.921                       | 30.670 | 29.183                    | 0.279 | 29.638                    | 53.1  | 42.1                          | 59                        | 30                        | 48.4                      | 46.1                | 43.2              | 7             | 7                 | 3               | 17                       | 12    | 11   | 17              | 10   | 4.44                       | 0.63                               | 70                      | 20   | 7.5  | 75                  | 69.0                            | 19                                  | 2.3                     |      |      |
| 1887                   | 29.676                       | 30.259 | 28.770                    | 0.228 | 29.444                    | 50.7  | 38.0                          | 56                        | 28                        | 45.8                      | 42.3                | 37.9              | 4             | 14                | 1               | 29                       | 9     | 27   | 0               | 3    | 8.89                       | 1.17                               | 27                      | 41   | 5.8  | 58                  | 73.1                            | 20                                  | 2.0                     |      |      |
| 1888                   | 29.728                       | 30.346 | 29.178                    | 0.276 | 29.456                    | 55.0  | 42.4                          | 63                        | 33                        | 51.4                      | 47.0                | 42.5              | 4             | 0                 | 17              | 1                        | 29    | 0    | 15              | 3    | 3.42                       | 0.80                               | 63                      | 27   | 6.9  | 69                  | 74.2                            | 23                                  | 2.4                     |      |      |
| 1889                   | 30.212                       | 30.544 | 29.683                    | 0.277 | 29.931                    | 54.6  | 44.8                          | 60                        | 32                        | 52.1                      | 47.3                | 42.4              | 0             | 17                | 4               | 30                       | 5     | 24   | 15              | 11   | 4.35                       | 0.67                               | 25                      | 56   | 3.4  | 34                  | 6.6                             | 6.6                                 | 6.6                     |      |      |
| 1890                   | 29.927                       | 30.564 | 29.320                    | 0.271 | 29.315                    | 55.4  | 41.3                          | 60                        | 22                        | 50.0                      | 45.9                | 41.3              | 0             | 0                 | 4               | 30                       | 6     | 10   | 14              | 8    | 5.03                       | 1.19                               | 20                      | 64   | 2.6  | 26                  | 6.4                             | 6.4                                 | 6.4                     |      |      |
| 1891                   | 29.826                       | 30.570 | 29.027                    | 0.242 | 29.579                    | 51.7  | 39.3                          | 58                        | 26                        | 48.2                      | 43.8                | 38.9              | 12            | 4                 | 0               | 31                       | 6     | 10   | 14              | 8    | 5.03                       | 1.19                               | 20                      | 64   | 2.6  | 26                  | 6.4                             | 6.4                                 | 6.4                     |      |      |
| 1892                   | 29.978                       | 30.496 | 29.561                    | 0.306 | 29.671                    | 55.8  | 41.1                          | 60                        | 30                        | 49.9                      | 47.7                | 45.3              | 0             | 3                 | 5               | 35                       | 3     | 5    | 3               | 35   | 3.11                       | 0.76                               | 19                      | 66   | 2.4  | 5.8                 | 5.8                             | 5.8                                 | 5.8                     | 5.8  |      |
| 1893                   | 30.026                       | 30.466 | 29.249                    | 0.254 | 29.772                    | 50.7  | 40.4                          | 60                        | 27                        | 45.8                      | 43.2                | 40.7              | 4             | 5                 | 0               | 9                        | 12    | 7    | 20              | 25   | 3.27                       | 0.67                               | 16                      | 68   | 2.0  | 5.9                 | 5.9                             | 5.9                                 | 5.9                     | 5.9  |      |
| 1894                   | 29.931                       | 30.493 | 28.843                    | 0.297 | 29.634                    | 53.9  | 42.6                          | 61                        | 32                        | 49.2                      | 47.3                | 44.8              | 3             | 3                 | 13              | 2.4                      | 8     | 9    | 1               | 10   | 6.37                       | 1.13                               | 24                      | 70   | 5.2  | 5.2                 | 5.2                             | 5.2                                 | 5.2                     | 5.2  |      |
| 1895                   | 29.813                       | 30.368 | 29.090                    | 0.309 | 29.504                    | 55.0  | 42.8                          | 61                        | 28                        | 50.6                      | 48.5                | 45.9              | 3             | 17                | 5               | 29                       | 8     | 6    | 1               | 10   | 6.37                       | 1.13                               | 24                      | 70   | 5.2  | 5.2                 | 5.2                             | 5.2                                 | 5.2                     | 5.2  |      |
| 1896                   | 30.128                       | 30.580 | 29.383                    | 0.225 | 29.903                    | 48.9  | 33.7                          | 53                        | 23                        | 43.1                      | 40.7                | 37.5              | 4             | 7                 | 2               | 6                        | 5     | 12   | 13              | 7    | 4.00                       | 1.21                               | 14                      | 84   | 6    | 4.3                 | 4.3                             | 4.3                                 | 4.3                     | 4.3  | 4.3  |
| 1897                   | 30.138                       | 30.478 | 29.478                    | 0.297 | 29.841                    | 54.6  | 44.6                          | 65                        | 31                        | 50.5                      | 48.3                | 44.8              | 12            | 14                | 3               | 12                       | 0     | 3    | 8               | 12   | 4.81                       | 1.78                               | 21                      | 73   | 1.7  | 5.7                 | 5.7                             | 5.7                                 | 5.7                     | 5.7  |      |
| 1898                   | 29.798                       | 30.304 | 28.628                    | 0.294 | 29.504                    | 54.6  | 41.7                          | 64                        | 32                        | 49.3                      | 47.2                | 44.5              | 5             | 12                | 0               | 9                        | 8     | 1    | 6               | 12   | 4.81                       | 1.78                               | 21                      | 73   | 1.7  | 5.7                 | 5.7                             | 5.7                                 | 5.7                     | 5.7  |      |
| 1899                   | 30.177                       | 30.630 | 29.378                    | 0.286 | 29.991                    | 56.0  | 43.6                          | 62                        | 32                        | 50.6                      | 48.2                | 43.8              | 8             | 7                 | 16              | 4                        | 8     | 2    | 0               | 0    | 3.12                       | 1.06                               | 11                      | 79   | 1.1  | 6.5                 | 6.5                             | 6.5                                 | 6.5                     | 6.5  |      |
| 1900                   | 29.757                       | 30.414 | 29.034                    | 0.275 | 29.482                    | 53.3  | 40.1                          | 61                        | 25                        | 47.7                      | 45.5                | 42.8              | 0             | 3                 | 9               | 17                       | 11    | 16   | 4               | 8    | 6.80                       | 0.94                               | 27                      | 26   | 2.4  | 6.3                 | 6.3                             | 6.3                                 | 6.3                     | 6.3  | 6.3  |
| Means of 19 Years.     | 29.930                       | 30.458 | 29.208                    | 0.276 | 29.640                    | 53.38 | 41.48                         | 59                        | 28                        | 48.74                     | 45.97               | 42.59             | 5.8           | 7.7               | 4.4             | 20.7                     | 7.5   | 14.2 | 5.7             | 12.6 | 4.779                      | 0.98                               | 20.2                    | 66.3 | 21.7 | 6.44                | 6.44                            | 6.44                                | 6.44                    | 6.44 | 6.44 |
| Means of 1882 to 1900. | 29.937                       | 30.475 | 29.204                    | 0.275 | 29.658                    | 52.89 | 41.13                         | 59                        | 28                        | 48.00                     | 45.97               | 42.26             | 7.6           | 8.0               | 4.8             | 16.1                     | 8.7   | 13.9 | 15.0            | 11.4 | 4.52                       | 0.95                               | 20.8                    | 71.2 | 20.0 | 6.7                 | 6.7                             | 6.7                                 | 6.7                     | 6.7  | 6.7  |

\* 6 years only.

Extremes  
for 51 years. Maximum Pressure observed 30.676 in. (1857).  
Minimum Pressure observed 28.628 in. (1898).

Maximum Temperature observed 64° (1898).  
Minimum Temperature observed 20° (1854).

Greatest Rainfall in 24 hours 3.00 in. (1880).

Monthly Results of Meteorological observations made at Truro for the Royal Institution of Cornwall, from 1882 to 1900 inclusive.

DECEMBER.

| Years                       | PRESSURE OF ATMOSPHERE.      |                           |                           |                               | TEMPERATURE OF AIR.       |                           |                           |                   |                   |                   | WIND.             |                   |                 |      |      |      | RAINFALL. |      |      |      | AT TIME OF OBSERVATION. |                 |                            | 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. | Maximum Absolute. | Minimum Absolute. | Mean of Wet Bulb. | 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. | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average daily sunshine. |   |   |   |
| 1882                        | 29.675                       | 30.003                    | 29.169                    | 0.260                         | 29.412                    | 49.5                      | 39.7                      | 56                | 22                | 44.9              | 43.5              | 41.3              | 5               | 17   | 7    | 27   | 5         | 14   | 16   | 2    | 2                       | 6.73            | 0.74                       | 28                                 | 53   | 40   | 8.1                 | —                               | —                                   | —                       | — | — |   |
| 1883                        | 30.246                       | 30.659                    | 29.779                    | 0.254                         | 29.989                    | 49.8                      | 40.2                      | 55                | 26                | 45.0              | 43.2              | 40.7              | 12              | 9    | 5    | 8    | 17        | 29   | 8    | 5    | 1                       | 1.74            | 0.31                       | 18                                 | 82   | 11   | 7.8                 | —                               | —                                   | —                       | — | — |   |
| 1884                        | 29.923                       | 30.273                    | 29.383                    | 0.244                         | 29.676                    | 49.0                      | 39.1                      | 56                | 29                | 45.3              | 43.9              | 39.7              | 3               | 3    | 0    | 23   | 16        | 21   | 6    | 2    | 1                       | 3.97            | 0.53                       | 20                                 | 79   | 14   | 7.5                 | —                               | —                                   | —                       | — | — |   |
| 1885                        | 30.182                       | 30.613                    | 29.427                    | 0.233                         | 29.846                    | 48.9                      | 37.6                      | 56                | 20                | 43.3              | 41.3              | 38.5              | 7               | 13   | 5    | 21   | 4         | 18   | 2    | 21   | 2                       | 2.17            | 0.10                       | 14                                 | 99   | 14   | 7.2                 | —                               | —                                   | —                       | — | — |   |
| 1886                        | 29.739                       | 30.517                    | 28.576                    | 0.222                         | 29.514                    | 49.0                      | 35.0                      | 55                | 14                | 41.9              | 40.1              | 37.2              | 3               | 2    | 2    | 19   | 8         | 38   | 2    | 19   | 7                       | 4.00            | 0.65                       | 19                                 | 67   | 26   | 6.9                 | —                               | —                                   | —                       | — | — |   |
| 1887                        | 29.866                       | 30.460                    | 29.300                    | 0.218                         | 29.645                    | 48.8                      | 37.0                      | 56                | 19                | 45.5              | 41.4              | 36.8              | 5               | 4    | 4    | 23   | 10        | 4    | 4    | 5    | 12                      | 4.68            | 0.72                       | 19                                 | 66   | 27   | 4.2                 | —                               | —                                   | —                       | — | — |   |
| 1888                        | 29.905                       | 30.430                    | 29.157                    | 0.260                         | 29.673                    | 52.7                      | 38.0                      | 59                | 23                | 48.5              | 44.7              | 40.5              | 0               | 10   | 5    | 51   | 0         | 10   | 5    | 14   | 28                      | 4.16            | 0.82                       | 18                                 | 66   | 27   | 6.2                 | —                               | —                                   | —                       | — | — |   |
| 1889                        | 30.168                       | 30.547                    | 29.516                    | 0.213                         | 29.952                    | 50.3                      | 35.7                      | 56                | 22                | 46.1              | 41.2              | 35.4              | 0               | 9    | 5    | 35   | 2         | 10   | 6    | 10   | 18                      | 5.07            | 1.08                       | 21                                 | 62   | 31   | 7.3                 | —                               | —                                   | —                       | — | — |   |
| 1890                        | 29.960                       | 30.293                    | 29.635                    | 0.181                         | 29.774                    | 45.6                      | 32.7                      | 51                | 22                | 42.9              | 37.9              | 31.7              | 3               | 12   | 6    | 52   | 13        | 2    | 3    | 0    | 5                       | 2.22            | 0.67                       | 25                                 | 60   | 33   | 6.2                 | —                               | —                                   | —                       | — | — |   |
| 1891                        | 29.993                       | 30.588                    | 29.408                    | 0.259                         | 29.972                    | 51.3                      | 39.9                      | 57                | 27                | 49.8              | 45.4              | 40.7              | 0               | 11   | 1    | 32   | 1         | 13   | 3    | 29   | 2                       | 5.22            | 0.37                       | 19                                 | 65   | 28   | 5.9                 | —                               | —                                   | —                       | — | — |   |
| 1892                        | 29.996                       | 30.448                    | 29.600                    | 0.235                         | 29.761                    | 48.8                      | 37.6                      | 59                | 20                | 43.5              | 41.0              | 37.9              | 0               | 4    | 11   | 32   | 1         | 13   | 3    | 29   | 2                       | 5.06            | 0.95                       | 19                                 | 77   | 16   | 5.5                 | —                               | —                                   | —                       | — | — |   |
| 1893                        | 29.991                       | 30.658                    | 29.900                    | 0.243                         | 29.748                    | 50.2                      | 38.3                      | 57                | 21                | 44.5              | 42.4              | 39.6              | 4               | 5    | 8    | 13   | 9         | 21   | 11   | 1    | 1                       | 3.71            | 0.50                       | 21                                 | 73   | 20   | 5.8                 | —                               | —                                   | —                       | — | — |   |
| 1894                        | 30.070                       | 30.744                    | 29.630                    | 0.275                         | 29.995                    | 50.5                      | 41.9                      | 56                | 28                | 47.0              | 45.0              | 42.8              | 8               | 11   | 0    | 13   | 19        | 0    | 10   | 8    | 10                      | 8.88            | 1.65                       | 29                                 | 54   | 39   | 6.8                 | —                               | —                                   | —                       | — | — |   |
| 1895                        | 29.792                       | 30.276                    | 29.100                    | 0.253                         | 29.539                    | 49.0                      | 40.1                      | 56                | 24                | 46.0              | 44.2              | 40.7              | 8               | 17   | 8    | 14   | 7         | 22   | 4    | 0    | 9                       | 9.78            | 1.71                       | 27                                 | 61   | 31   | 6.3                 | —                               | —                                   | —                       | — | — |   |
| 1896                        | 29.753                       | 30.460                    | 28.570                    | 0.244                         | 29.509                    | 48.6                      | 37.8                      | 53                | 25                | 44.3              | 43.7              | 39.6              | 11              | 19   | 12   | 19   | 5         | 6    | 6    | 2    | 7                       | 7.14            | 1.36                       | 19                                 | 76   | 17   | 5.7                 | —                               | —                                   | —                       | — | — |   |
| 1897                        | 29.980                       | 30.480                    | 29.168                    | 0.264                         | 29.616                    | 51.7                      | 41.9                      | 58                | 29                | 46.9              | 44.3              | 41.7              | 6               | 7    | 4    | 2    | 26        | 10   | 2    | 0    | 5                       | 5.02            | 1.08                       | 22                                 | 71   | 22   | 6.6                 | —                               | —                                   | —                       | — | — |   |
| 1898                        | 30.098                       | 30.543                    | 29.104                    | 0.293                         | 29.805                    | 52.8                      | 44.1                      | 58                | 30                | 49.0              | 47.0              | 44.4              | 6               | 24   | 10   | 14   | 0         | 1    | 2    | 3    | 3                       | 3.96            | 0.45                       | 22                                 | 73   | 20   | 6.2                 | —                               | —                                   | —                       | — | — |   |
| 1899                        | 29.847                       | 30.460                    | 28.330                    | 0.225                         | 29.622                    | 48.6                      | 37.8                      | 57                | 29                | 44.4              | 42.2              | 37.5              | 6               | 7    | 4    | 10   | 14        | 0    | 1    | 2    | 1                       | 6.84            | 1.17                       | 26                                 | 67   | 26   | 7.3                 | —                               | —                                   | —                       | — | — |   |
| 1900                        | 29.952                       | 30.560                    | 29.166                    | 0.297                         | 29.655                    | 52.3                      | 42.2                      | 57                | 30                | 49.3              | 47.4              | 44.8              | 1               | 5    | 7    | 42   | 15        | 12   | 0    | 1    | 1                       | 6.84            | 1.17                       | 26                                 | 67   | 26   | 7.3                 | —                               | —                                   | —                       | — | — |   |
| Means 10 Yrs.               | 29.949                       | 30.474                    | 29.211                    | 0.246                         | 29.721                    | 49.86                     | 38.76                     | 56                | 22                | 45.68             | 43.09             | 39.55             | 3.5             | 10.1 | 5.8  | 24.5 | 10.1      | 14.7 | 5.7  | 10.3 | 10.85                   | 1.40            | 0.84                       | 21.6                               | 70.1 | 23.9 | 6.5                 | —                               | —                                   | —                       | — | — | — |
| Means 51 Yrs. 1850 to 1900. | 29.966                       | 30.486                    | 29.193                    | 0.247                         | 29.726                    | 49.75                     | 38.96                     | 56                | 23                | 45.28             | 43.05             | 40.19             | 4.3             | 8.1  | 5.5  | 19.5 | 12.0      | 14.1 | 10.7 | 9.9  | 4.835                   | 0.84            | 20.4                       | 72.0                               | 20.7 | 6.7  | —                   | —                               | —                                   | —                       | — | — | — |

\* 6 years only.

Extremes  
for 51 years.  
Maximum Pressure observed 30.756 in. (1879).  
Minimum Pressure observed 28.330 in. (1899).

Maximum Temperature observed 69° (1866).  
Minimum Temperature observed 9° (1859).

Greatest Rainfall in 24 hours 1.71 in. (1896).



Summary of preceding Tables showing the Average Yearly and Monthly Results of the Observations recorded from 1850 to 1900.

| Months. | 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 of Dry Bulb.   | Mean Dew Point. | E.  | S.E. | S.  | S.W. | W.   | N.W. | N.   | N.E. | Total in Month. | in.  | in.  | Number of days on which rain fell. | Dry. | Average Cloudiness. | Total hours of bright sunshine. | No. of days on which the sun shone. | Average day sunshine. |  |          |  |  |  |
| Jan.    | 29.957                       | 30.937                     | 28.611                     | 0.244                         | 29.689                    | 48.22                     | 38.01                     | 58                | 8                 | 43.85             | 41.83               | 38.67           | 6.4 | 8.8  | 6.5 | 19.4 | 10.2 | 12.4 | 9.4  | 10.7 | 4.467           | 2.02 | 19.6 | 73.9                               | 19.3 | 7.0                 | 57.5                            | 20.6                                | 1.8                   |  |          |  |  |  |
| Feb.    | 29.980                       | 30.870                     | 28.520                     | 0.243                         | 29.731                    | 49.64                     | 38.22                     | 64                | 10                | 44.97             | 42.36               | 39.00           | 8.0 | 7.5  | 5.4 | 16.5 | 10.3 | 12.3 | 9.5  | 8.6  | 3.315           | 1.63 | 16.7 | 68.5                               | 16.0 | 6.7                 | 81.7                            | 22.3                                | 2.8                   |  |          |  |  |  |
| Mar.    | 29.968                       | 30.768                     | 28.706                     | 0.243                         | 29.721                    | 51.44                     | 38.16                     | 68                | 19                | 46.07             | 42.89               | 39.17           | 9.6 | 8.5  | 4.6 | 12.6 | 9.7  | 15.9 | 13.8 | 9.8  | 2.833           | 1.31 | 15.8 | 79.3                               | 13.5 | 6.1                 | 146.7                           | 27.5                                | 4.7                   |  |          |  |  |  |
| Apr.    | 29.985                       | 30.676                     | 28.852                     | 0.263                         | 29.671                    | 56.99                     | 41.94                     | 79                | 22                | 50.92             | 46.90               | 42.83           | 9.9 | 11.0 | 7.2 | 11.4 | 9.5  | 13.1 | 12.6 | 7.8  | 2.543           | 1.42 | 13.9 | 77.6                               | 12.3 | 5.8                 | 174.4                           | 27.3                                | 5.7                   |  |          |  |  |  |
| May     | 29.973                       | 30.679                     | 29.117                     | 0.296                         | 29.675                    | 61.32                     | 44.85                     | 84                | 28                | 55.22             | 50.64               | 45.14           | 9.0 | 9.8  | 8.0 | 12.3 | 9.0  | 14.2 | 15.5 | 6.5  | 2.278           | 1.20 | 12.8 | 82.6                               | 10.2 | 5.7                 | 253.8                           | 29.6                                | 8.1                   |  |          |  |  |  |
| June    | 30.025                       | 30.623                     | 29.039                     | 0.378                         | 29.644                    | 66.88                     | 50.89                     | 92                | 35                | 60.97             | 56.03               | 50.99           | 5.2 | 7.8  | 9.4 | 12.2 | 10.3 | 19.3 | 15.2 | 3.7  | 2.249           | 1.92 | 12.4 | 80.2                               | 9.7  | 5.7                 | 243.8                           | 29.6                                | 8.0                   |  |          |  |  |  |
| July    | 29.999                       | 30.464                     | 29.191                     | 0.423                         | 29.574                    | 69.61                     | 54.11                     | 86                | 37                | 63.60             | 58.78               | 54.26           | 4.3 | 5.9  | 7.7 | 14.5 | 14.8 | 20.1 | 15.0 | 3.2  | 2.598           | 1.46 | 13.4 | 80.6                               | 10.3 | 6.0                 | 235.4                           | 30.0                                | 7.6                   |  |          |  |  |  |
| Aug.    | 29.981                       | 30.617                     | 28.942                     | 0.425                         | 29.556                    | 69.68                     | 53.81                     | 89                | 36                | 63.41             | 58.85               | 54.40           | 5.9 | 5.8  | 8.4 | 16.1 | 13.4 | 18.9 | 12.8 | 4.3  | 2.917           | 1.90 | 14.4 | 81.8                               | 10.9 | 5.8                 | 223.2                           | 30.6                                | 7.1                   |  |          |  |  |  |
| Sep.    | 29.987                       | 30.562                     | 28.550                     | 0.390                         | 29.597                    | 66.12                     | 50.52                     | 83                | 30                | 59.91             | 56.05               | 52.07           | 8.6 | 9.1  | 6.2 | 14.8 | 12.3 | 15.8 | 10.9 | 4.7  | 3.296           | 1.67 | 15.3 | 78.0                               | 11.4 | 5.8                 | 173.2                           | 28.0                                | 5.7                   |  |          |  |  |  |
| Oct.    | 29.901                       | 30.668                     | 28.681                     | 0.328                         | 29.574                    | 59.12                     | 46.05                     | 75                | 23                | 53.83             | 50.73               | 47.30           | 8.0 | 9.0  | 7.4 | 14.1 | 10.0 | 17.1 | 11.1 | 8.3  | 4.815           | 3.00 | 19.7 | 76.8                               | 16.2 | 6.6                 | 109.3                           | 25.6                                | 3.5                   |  |          |  |  |  |
| Nov.    | 29.937                       | 30.676                     | 28.628                     | 0.275                         | 29.658                    | 52.89                     | 41.13                     | 64                | 20                | 48.00             | 45.97               | 42.26           | 7.6 | 8.0  | 4.8 | 16.1 | 8.7  | 13.9 | 15.0 | 11.4 | 4.520           | 1.78 | 20.8 | 71.2                               | 20.0 | 6.7                 | 66.8                            | 20.6                                | 2.1                   |  |          |  |  |  |
| Dec.    | 29.966                       | 30.756                     | 28.330                     | 0.247                         | 29.726                    | 49.75                     | 38.96                     | 62                | 9                 | 45.28             | 43.05               | 40.19           | 4.3 | 8.1  | 5.5 | 19.5 | 12.0 | 14.1 | 10.7 | 9.9  | 4.835           | 1.71 | 20.4 | 72.0                               | 20.7 | 6.7                 | 49.1                            | 18.0                                | 1.5                   |  |          |  |  |  |
| Yearly  | 29.967                       | 30.691                     | 28.763                     | 0.312                         | 29.651                    | 55.47                     | 44.72                     | 75                | 23                | 53.00             | 49.50               | 45.48           | 7.2 | 8.2  | 6.7 | 14.9 | 10.8 | 15.5 | 12.6 | 7.4  | 3.387           | 1.75 | 16.2 | 76.8                               | 14.2 | 6.2                 | 151.2                           | 25.8                                | 4.8                   |  |          |  |  |  |

Extremes Maximum Pressure observed 30.937 in. (Jan., 1882). Minimum Pressure observed 28.330 in. (Dec., 1899).  
 Maximum Temperature observed 92° (June, 1893). Minimum Temperature observed 8° (Jan., 1867).  
 Greatest Rainfall in 24 hours 3.00 in. (Oct., 1880).

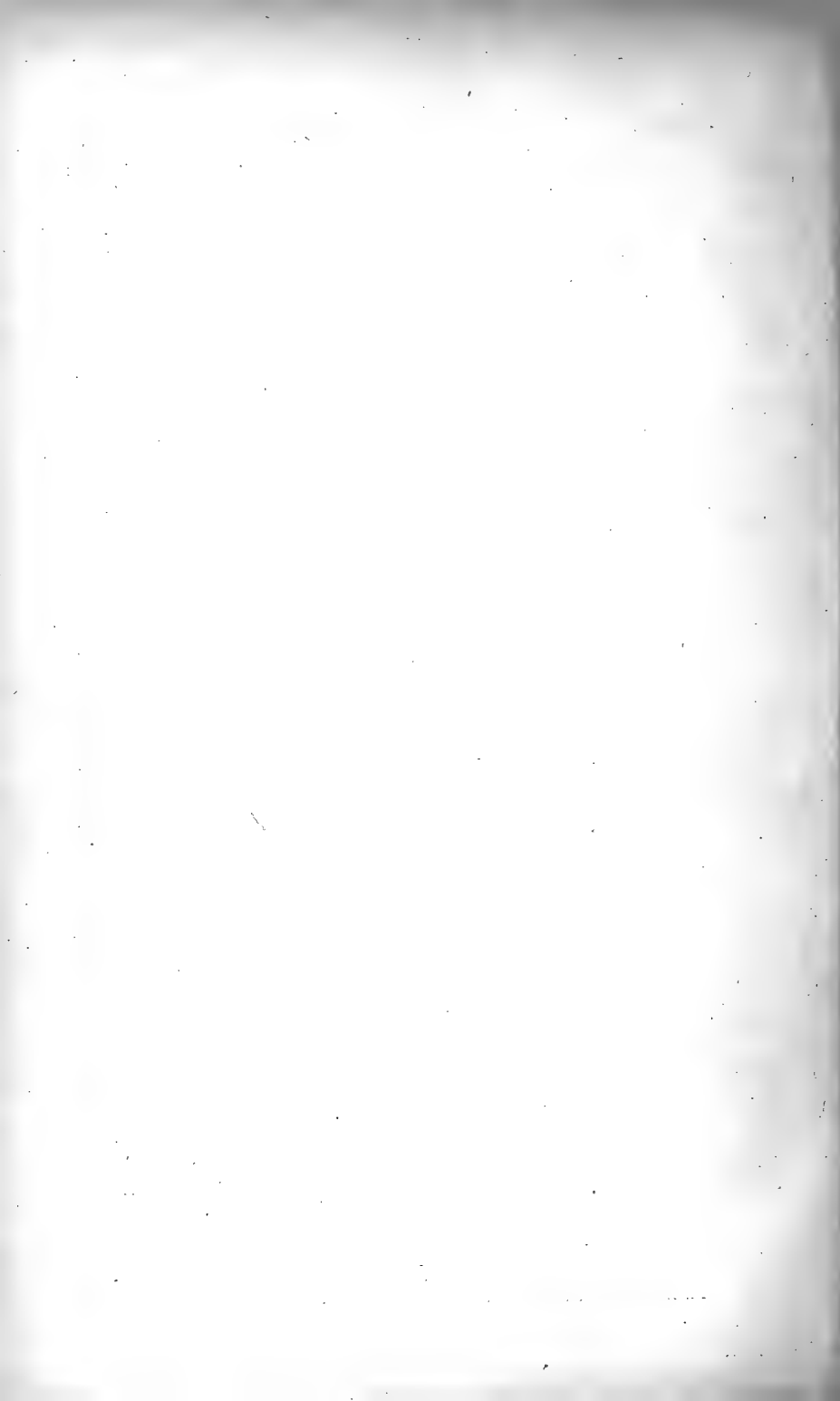


Diagram showing (1) the MEAN PRESSURE, (2) the MEAN MAXIMUM, and (3) MINIMUM PRESSURE, with (4) ABSOLUTE MAXIMUM, and (5) MINIMUM PRESSURE, of the ATMOSPHERE, for each Month in the 51 Years 1850 to 1900 inclusive, at the Royal Institution of Cornwall, Truro.

Diagram 1.

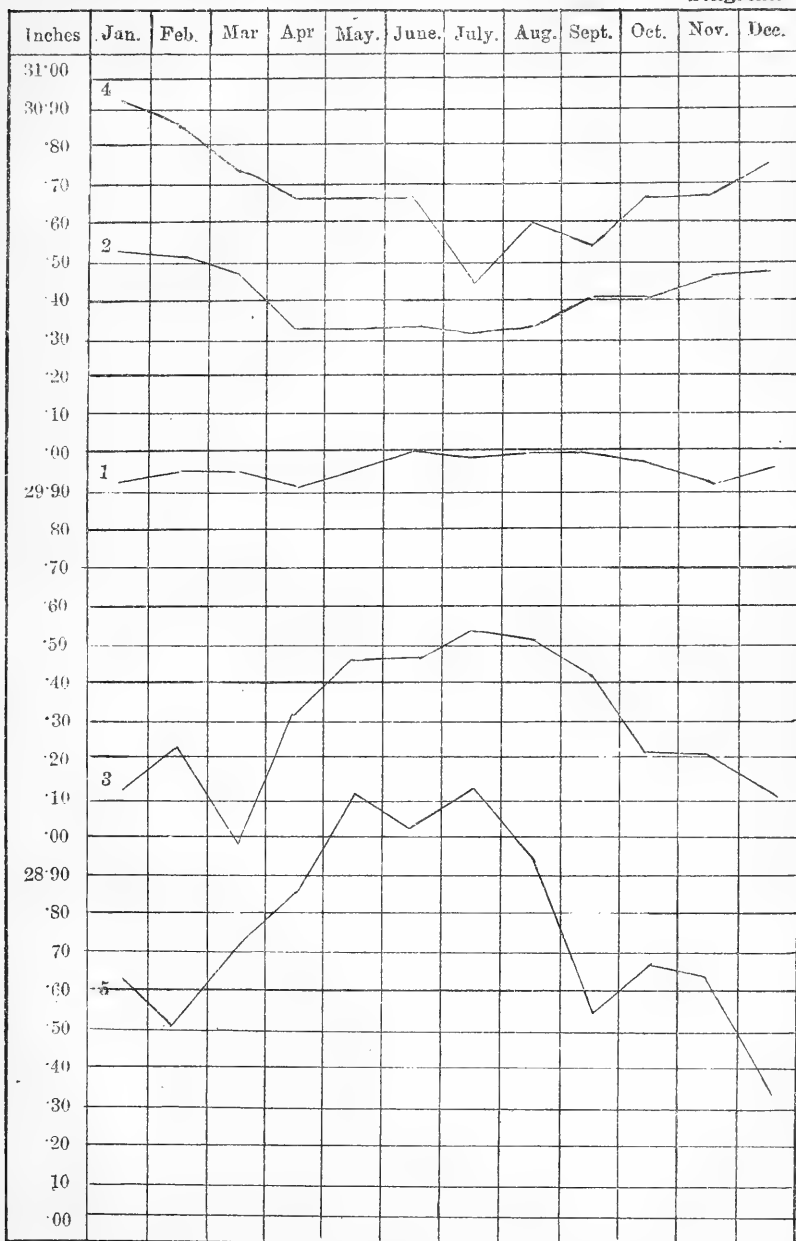
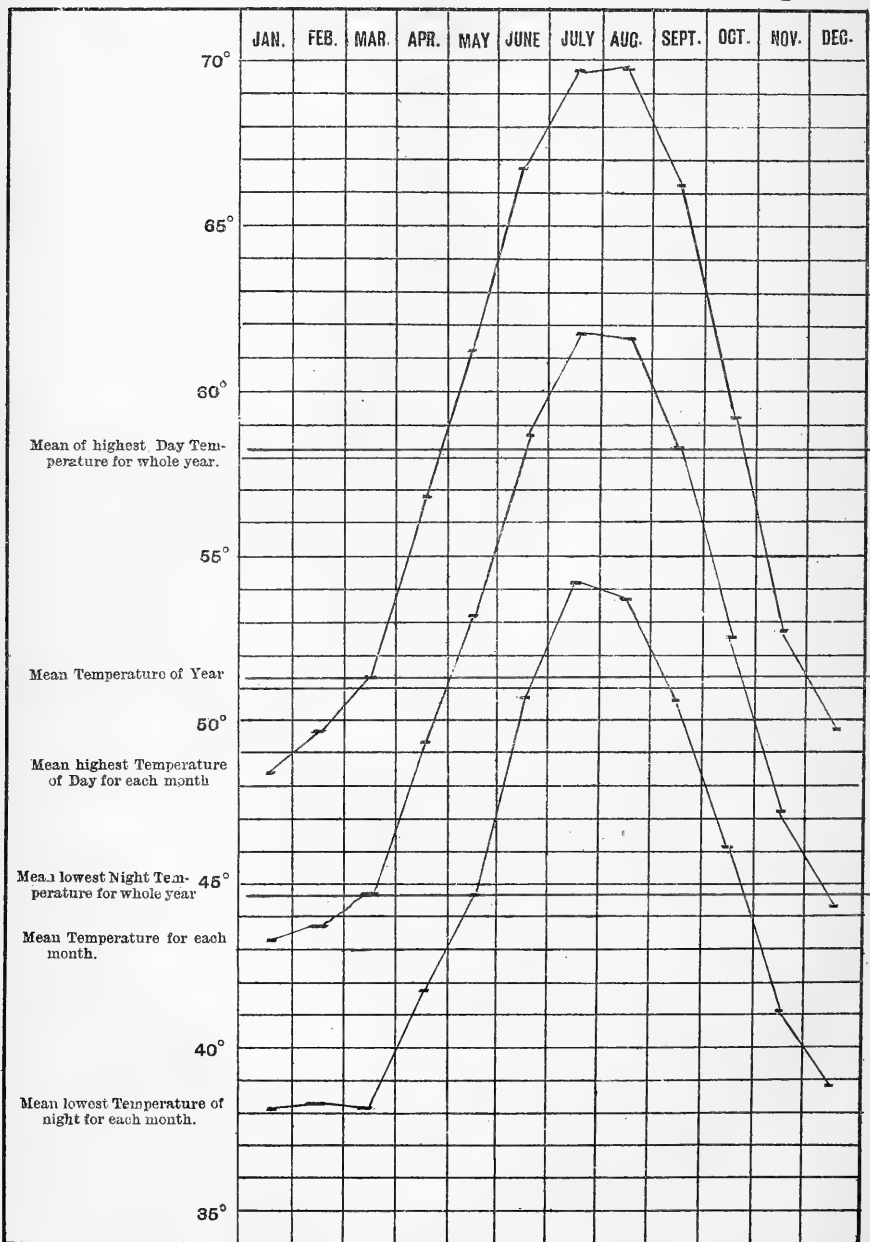






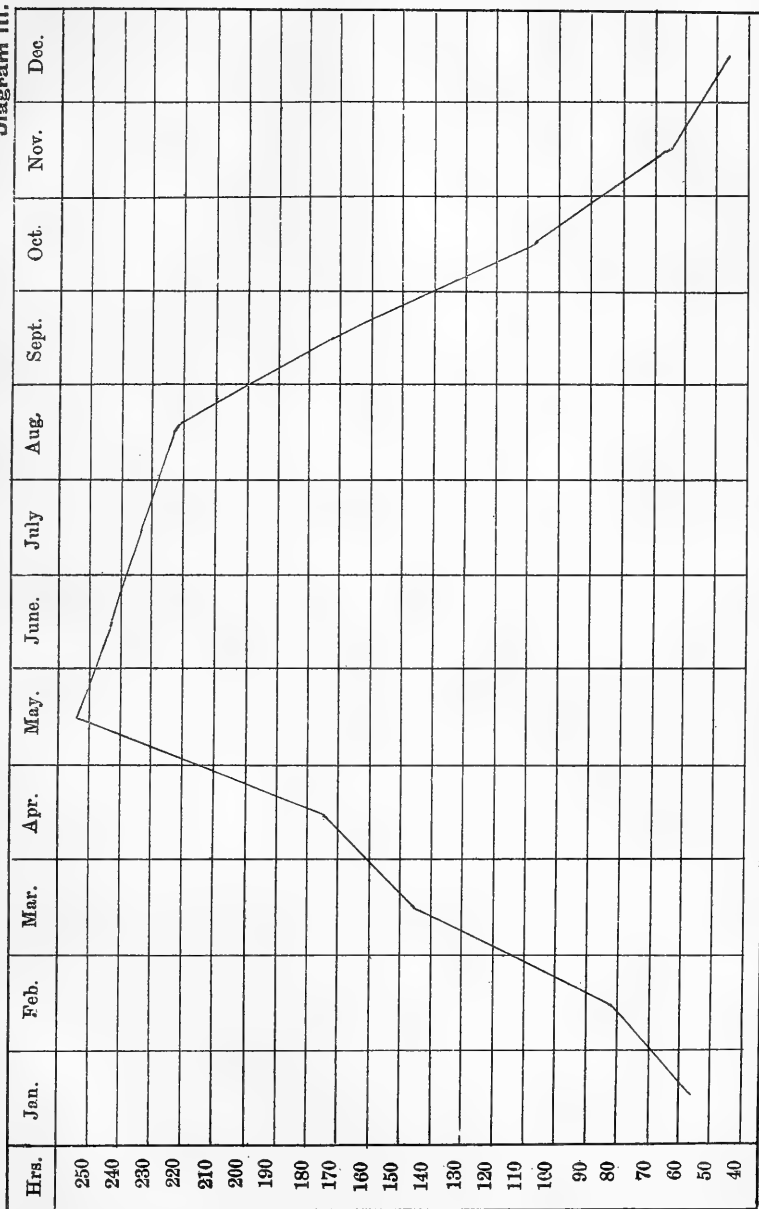
Diagram showing the MEAN HIGHEST DAY TEMPERATURE, the MEAN LOWEST NIGHT TEMPERATURE, and the MEAN TEMPERATURE, for the Year; together with the same for each Month in the 51 years, 1850 to 1900 inclusive, at the ROYAL INSTITUTION OF CORNWALL, Truro.

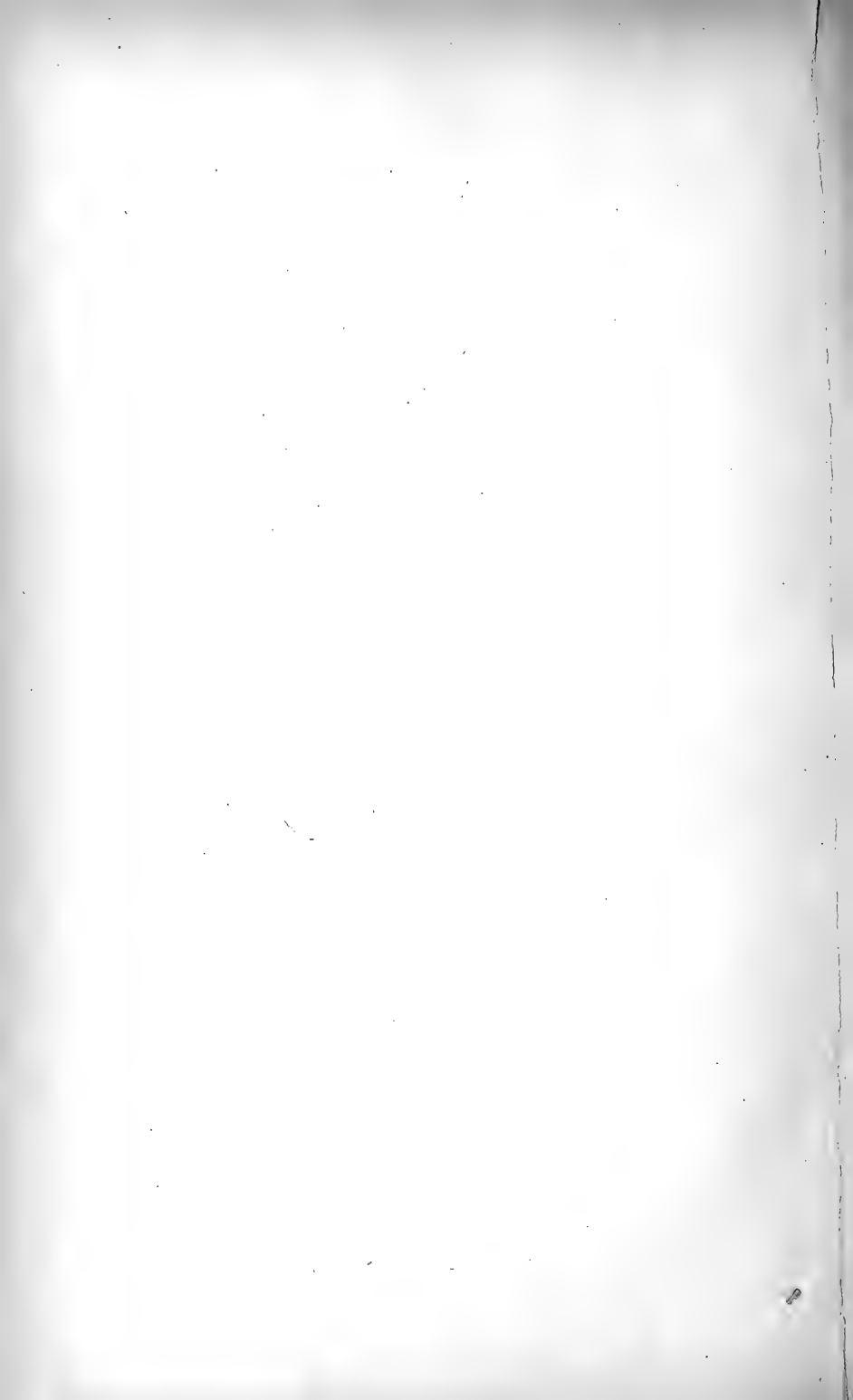
Diagram II.



# MEAN MONTHLY AMOUNT OF SUNSHINE IN HOURS, for 6 Years, 1895 to 1900.

Diagram III.

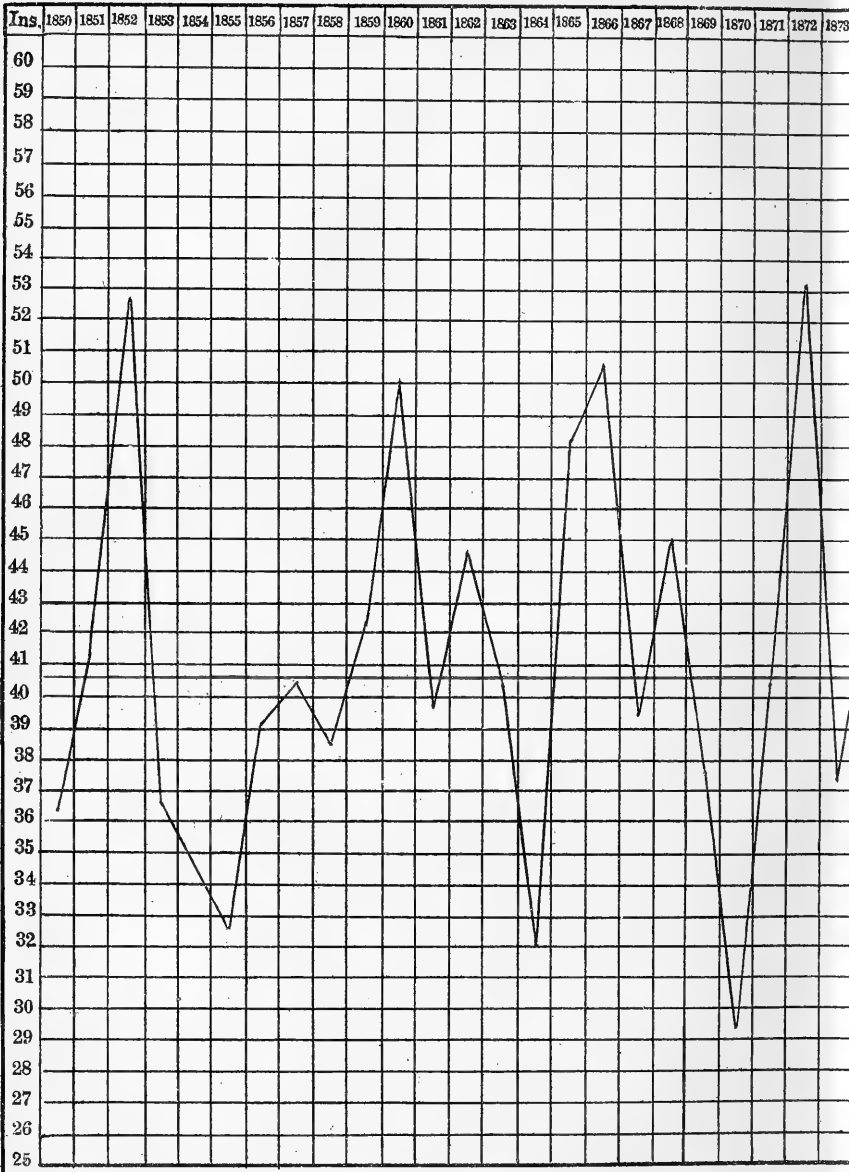






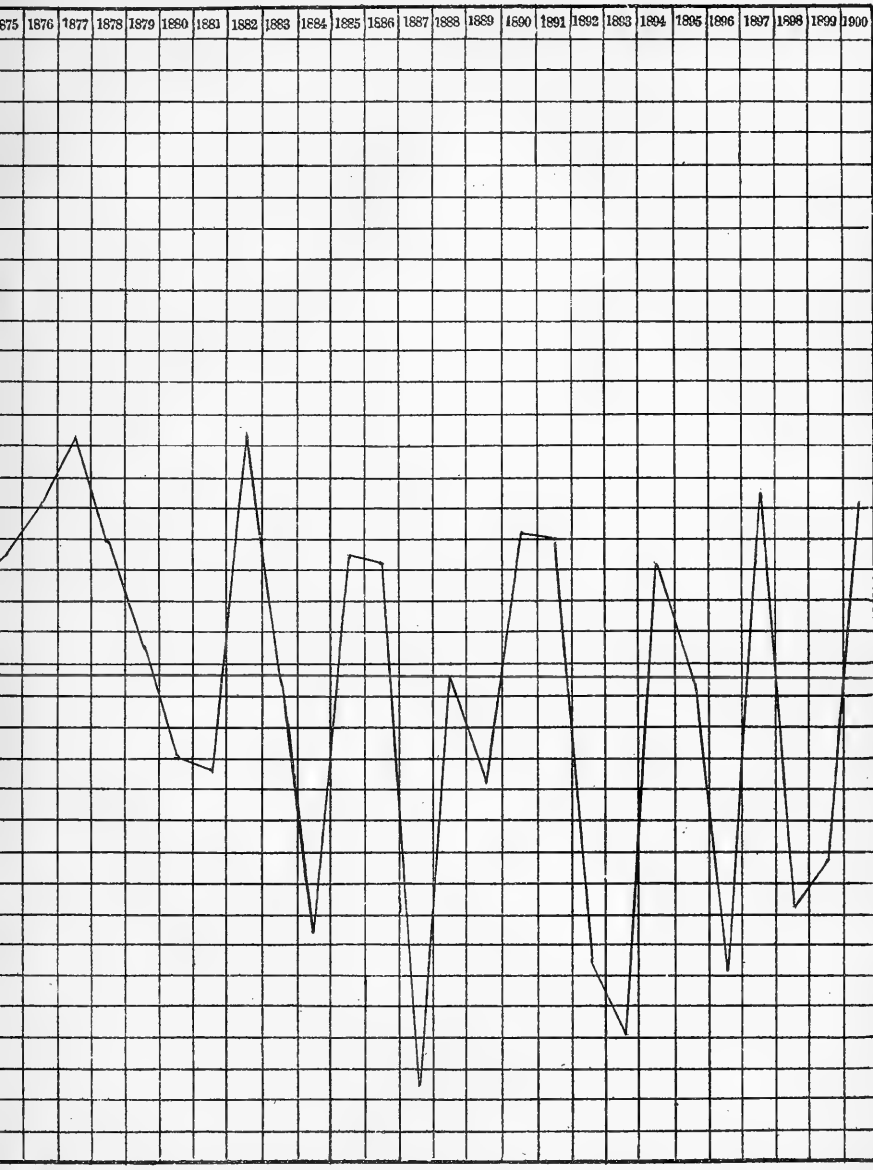


# ANNUAL RAINFALL FOR 51 YEARS, 1850



# 900, at the ROYAL INSTITUTION, TRURO

Diagram IV.



Mean.  
40.5 in.

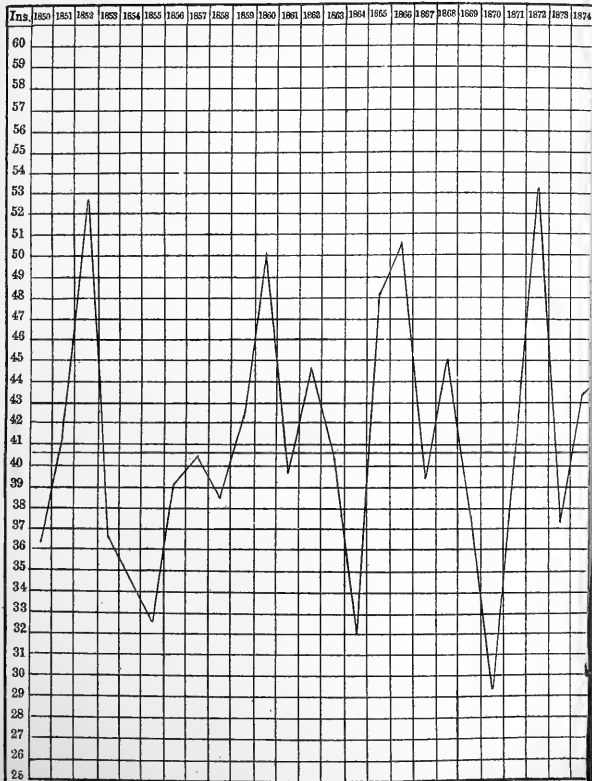


ANNUAL RAINFALL FOR 51 YEARS, 1850 to

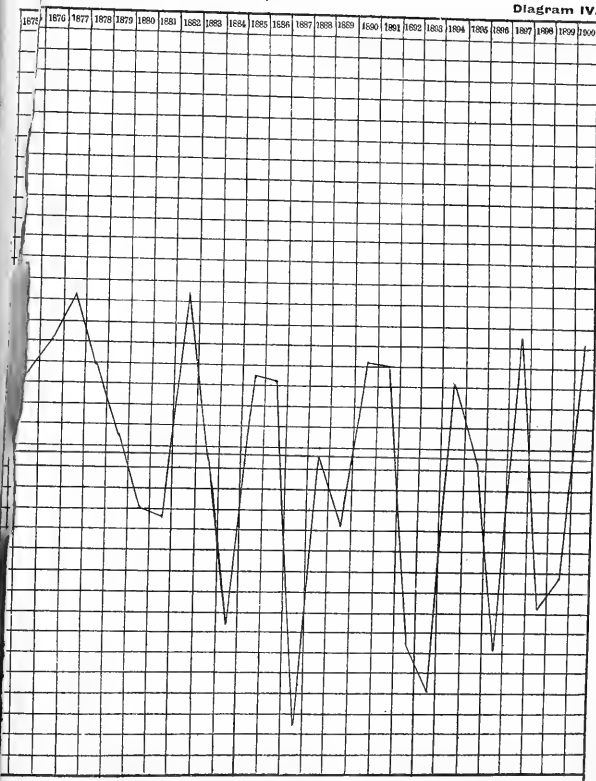
1900, at the ROYAL INSTITUTION, TRURO

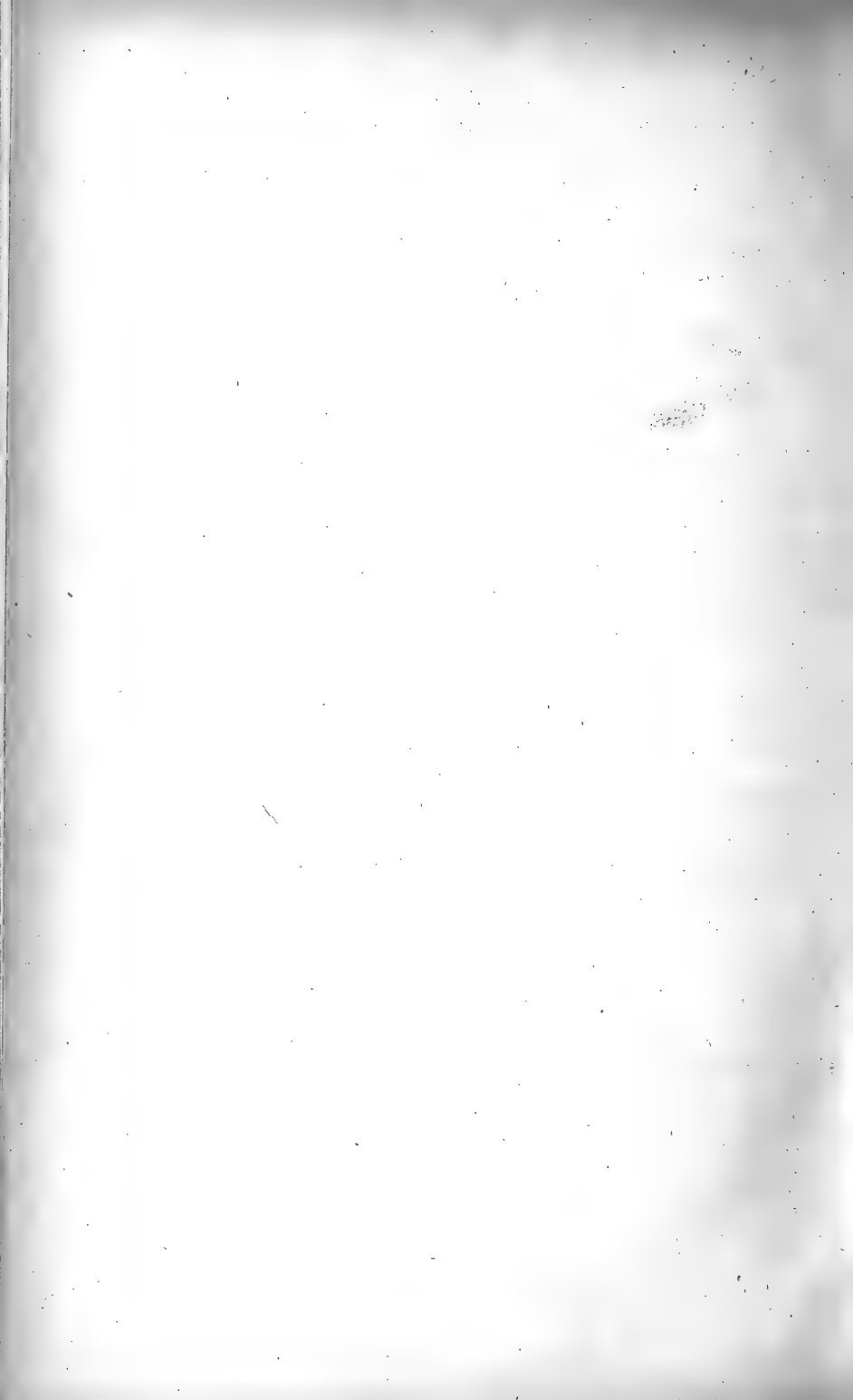
Diagram IV.

Mean  
40.5 in.



Mean  
40.5 in.





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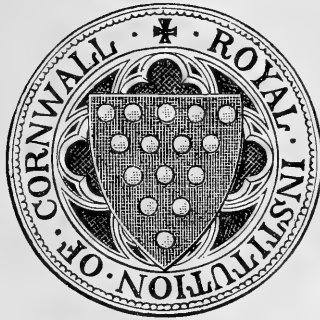


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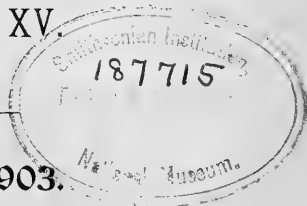
# JOURNAL

OF THE

# Royal Institution of Cornwall.



VOLUME XV.



Part 2.—1903.

TRURO :

OSCAR BLACKFORD (Late Lake & Lake), PRINCES STREET.

1903.

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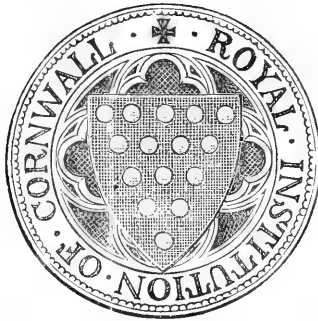
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## Royal Institution of Cornwall.

—◆—  
 SPRING MEETING, 1902.  
 —◆—

This Meeting was held at the rooms of the Institution on Tuesday, 27th May, 1902, Sir Robert Harvey, the President, in the chair. There were also present Sir E. Durning-Lawrence, Bart., M.P., Sir George Smith, Archdeacon Cornish, Professor Clark, Dr. Richard Pearce, the Mayor of Truro (Mr. J. James), Dr. Rateliff Gaylard, Captain Henderson, Canons A. P. Moor, R. Flint, A. B. Donaldson, and J. H. Moore ; the Revs. T. Taylor, and D. G. Whitley ; Messrs. T. C. Peter, H. M. Whitley, S. Trevail, J. D. Enys, F.G.S., J. Borlase, W. J. Clyma, C. E. Tregoning, J. C. Daubuz, F. A. Cozens, W. A. Rollason, T. L. Dorrington, A. Blenkinsop, T. Clark, R. Dobell, C. Weisbarth, P. Jennings, J. Rogers, J. Barrett, F. H. Davey, H. James, T. Worth, E. H. Davison, E. L. Carlyon, W. N. Gill, H. Barrett, R. M. Hill, J. P. Paull, F. J. Whitgreve, H. A. Doubleday, W. N. Carne, Major Parkyn, F.G.S., and the Rev. W. Iago (Hon. Secretaries), and Mr. G. Penrose (Curator and Librarian), Lady Smith, Mesdames James, Dixon, Borlase, Share, Paul, Furniss, Rollason, Rose, Rogers, Pears and Southey, Misses Tomn, James, Dixon, Share, Snell, L. Paull, Henderson, Reynolds, Peet, Bevan, Rogers, Burrell and Cragoe.

The Minutes of the previous meeting were read and confirmed.

Letters of apology were read from the following:—the Bishop of Truro, Revs. Chancellor Worlledge, S. Baring-Gould and T. M. Comyns, Messrs. Howard Fox, R. Fox, R. M. Glencross, James Osborne and E. W. Rashleigh.

The Librarian then read the list of gifts to the Museum and Library.

The President, having explained that circumstances had prevented his preparing a formal address, proceeded to say:—

I am sure you will be all pleased to learn that the Royal Institution of Cornwall, now in the 84th year of its existence, is still full of activity and carrying out with renewed energy the work designed for it by its early founders. The Society is fortunate in possessing a series of portraits of those gentlemen who have filled the presidential chair, from the foundation of the Society in 1818 to the present time. Amongst them are many distinguished and well-known gentlemen in science, literature and art. We had as our first president Lord Exmouth whose portrait, as here seen, represents him in command of the fleet off Algiers in 1816. He was succeeded by Sir Charles Lemon, William Mansell Tweedy, Dr. Barham, Dr. Jago, Edwin Dunkin, and many other distinguished Cornish worthies.

The Society is fortunate in having secured as vice-patron H.R.H. the Prince of Wales, who has also graciously consented to continue the annual grant of £20 to the funds of the Institution. The Council report with much regret the loss by death of Mr. R. Lean, an old and valued member. The number of subscribers is well maintained, the losses by death and removal being fully compensated by the addition of new members.

The Museum is still an object of great attraction, being visited yearly by increased numbers. Many valuable additions have been again made to its collections. Mr. C. E. Cardew of Insein, Lower Burmah, a member of an old and distinguished Cornish family, and one who has always shown great interest in our Society, has sent us an interesting series of prehistoric stone implements collected by him in different parts of India. A collection of valuable butterflies and moths has been presented by Mr. J. D. Enys, one of the most generous and munificent donors to the Museum and Library. It includes many rare species and was formed chiefly in New Zealand. Impressions of seals of several Cornish boroughs have also been obtained and sent us through the instrumentality of Mr. Enys. To Mr. W. Williams of Western Australia, we are indebted for a collection of gold ores from the Nil Desperandum Mine, at Menzies, in the North Coolgardie Goldfield. The specimens which were previously on exhibition at the Glasgow International Exhibition will greatly strengthen the gold section of our valuable mineral collections. Interesting specimens of Cornish mineral pseudomorphs have

come from Dr. Richard Pearce who has for a long time been so closely connected with this Institution. It is our good fortune to have Dr. Pearce with us to-day. To all those who have been for a long time connected with the Institution, Dr. Pearce's name is a household word. His gifts have not only been numerous but valuable, and for the series of beautiful photographs which are exhibited on the walls of this institution we are indebted to him. He was one of the early professors of the first mining school established in Cornwall which was so successfully carried on for many years under the auspices of this Institution.

The collections have continued to grow to such an extent that the space previously available has proved entirely inadequate for their proper exhibition. The Council has for a long time thought that some steps should, if possible, be taken to provide more accommodation. We have, adjoining, a room which, previous to the erection of the Technical Schools, was used by students of classes held in connection with this Institution as a chemical laboratory. This, it was thought, with certain alterations, would make an admirable room for exhibition purposes. After careful consideration the work has been taken in hand. In order to provide for the better lighting of the room two additional windows have been opened. Another matter which had to be considered was the approach to this room which was formerly through a dimly-lit room used for storage purposes. The walls of this room have been taken down, thereby affording a better approach to the different sections of the museum. It is hoped that these structural alterations will be complete within the coming month, after which arrangements have been made for laying a mosaic floor in the hall and corridor. The alterations, with which a number of persons have already expressed themselves highly pleased, will permit of a thorough and systematic re-arrangement and increased development of our collections, and this, I am glad to say, is receiving the serious consideration of the Council and the Curator. We want to have our collections arranged and described to suit modern requirements, so arranged that they may be understood by the casual observer and of the greatest service to the student. In order that this may be done arrangements have been made to go carefully through all the collections, weeding out dilapidated specimens, placing unnecessary duplicates in labelled drawers

which will be fixed underneath the existing cases, and to re-lay-out the collections intended for exhibition, attaching special explanatory labels printed on the premises, to each specimen. It will be necessary to provide a number of new and expensive cases especially for the new room which it is intended to devote to Archæology, a subject in which I am glad to be able to say we are the fortunate possessors of many unique and valuable objects. It is my pleasure to announce that Dr. Richard Pearce has kindly offered to give a handsome case for some of the objects, especially to include the unique block of tin dredged up in Falmouth Harbour, which is probably one of the most valuable objects in the Museum. The increased accommodation will afford the opportunity so long desired for properly arranging and displaying the very valuable collection of minerals so generously presented by Mr. J. C. Williams, and the fine collection of birds given by Mrs. Chamberlin, of Trenewth, Mylor.

The Henwood gold medal will be again awarded this year, and it will be the duty of the Council to assemble shortly to consider the papers that are eligible to compete for it.

Papers were contributed on "The Jewels, Ornaments, Vestments, etc., belonging to the Priory of St. Michael's Mount," by Mr. H. M. Whitley; on "The Painting of St. Christopher in St. Keverne Church" by Mr. P. M. Johnston; "Temples and Ancient Remains in the North-West Provinces (Himalayan) of India," by Mr. F. J. Stephens; on "Blocks of Tin found in Fowey Harbour," by Mr. H. C. Rogers, of St. Austell; on "The Human Remains found at Harlyn," by Dr. John Beddoe, F.R.S.; "The Expansion of Truro," by Mr. Peter Jennings, of St. Day; and on "The Builders and Antiquity of our Cornish Dolmens," by the Rev. D. G. Whitley.

Mr. Peter, after reading the notes on the painting of St. Christopher, stated that this unique painting needed considerable attention to preserve it.

On the motion of Mr. Thurstan Peter, seconded by Mr. J. C. Daubuz, it was resolved "That Canon Diggins, Vicar of St. Keverne, be invited by this Institution to allow the white plaster remaining on panels of the St. Christopher painting in that Church



to be removed, and the painting itself preserved, and that the Council be asked to offer their services for the purpose."

Dr. Beddoe was unanimously and enthusiastically elected an honorary member of the Institution.

At the conclusion of the papers, Prof. Clark gave an address on "Cornish Ants, Bees, and Wasps," and asked for many more observers all over the county in this branch of natural history. A large number are at present working with a view to obtaining a representative Cornish collection. At present there are 214 known species in Cornwall, compared with 166 in Devon. This valuable address is not printed here, Prof. Clark having incorporated his remarks with his Cornish Natural History Notes published in this number of the Journal.

Mr. Doubleday, editor of the forthcoming "Victorian History of the Counties of England," in response to an inquiry as to the progress being made with that great work, said that arrangements were being made for early attention being given to the volumes on Cornwall.

Mr. J. D. Enys asked all who could do so to supply the Council with particulars of the ancient stained and painted glass of the county.

On the motion of the Ven. Archdeacon Cornish, seconded by Capt. Henderson, thanks were accorded the authors of papers; and a similar compliment was paid to the president on the motion of Sir Edwin Durning-Lawrence, seconded by Sir George Smith. In moving the proposition Sir Edwin took occasion to comment on Sir Robert Harvey's generosity in having offered to bear the cost of restoring the portrait of Anthony Payne, Sir Bevil Grenvill's gigantic retainer, a beautiful painting by Sir Godfrey Kneller, which Sir Robert had presented to the Museum some years before

## THE ANNUAL EXCURSION, 29th JULY, 1902.

The Excursion opened up what was to many of the members an almost unknown district. Amongst those present were:—Prof. and Mrs. Clark, Mr. and Miss Maud, Rev. D. G. Whitley, Messrs. J. H. Collins, F.G.S., J. D. Enys, F.G.S., Dr. Pearce, F.G.S., Capt. Bryant, Messrs. H. Barrett, T. Clark, W. J. Clyma, R. M. Glencross, H. James, A. Williams; Major Parkyn, F.G.S. and Rev. W. Iago, B.A. (the two Honorary Secretaries). Mr. G. Penrose (Curator), Mr. Sach and other Press representatives. Much regret was expressed at the absence of the President, Sir Robert Harvey.

The party left Truro at 10 a.m., some members joining *en route*, the morning giving promise of the beautiful day which was to follow; they drove by way of Pencalenick and Woodcock Corner (so called, as papers at Heligan tell us, after a leading stage-coach-horse, which here met a tragic death), through Tre-sillian and Ladock to Indian Queen's, where the first halt was called,—midway between Truro and Bodmin. At Queen's the "Pit" was inspected, used occasionally for out-door services, tea-treats, &c. It is an amphitheatre with turfed seats and was constructed in modern times from a discarded excavation or shaft of the Fat-work mine. The old sign-board of the inn—(well known for very many years, but now no longer an inn)—was found removed from its position, and lying in what is at present styled "Dean's Refreshment House." The figure of her Indian Majesty, promenading, has been hidden by modern painted lettering, but part of this has been scraped away so that a portion of the foreign queen's countenance and a palm-tree top can be dimly discerned. The old sign, damaged as it is, is highly prized by its owner.

Across the Goss Moors, formerly much frequented by tin-streamers and where now the waters are extensively used in the working of the china-clay of the district, Castle-an-dinas was reached. When all had alighted, the hilly slopes of the ancient fortress were ascended, and as the two great concentric circles of

ramparts were entered, with their earth-platforms and ditches, the thought occurred to many of what a vast host it would take even in these days to defend earth-works of such enormous extent. The innermost central space, which forms the flat apex, on the hill-top, alone measures from 1600 to 1700 feet across. The strong-hold was doubtless used as a place of refuge for the people and their cattle. From its circular form it is regarded as probably British.

In the vicinity of a smaller round camp, at Woon on the Goss-Moor, some beautifully chipped leaf-shaped arrow-heads of flint were ploughed up a few years ago, and at another such camp, at Tregear in St. Kew, the Rev. S. Baring-Gould recently found spindle-whorls and pottery—in one piece of the latter a metal rivet.

It is not known whether any relics have been found at Castle-an-Dinas. In the middle portion of the castle are two barrows, probably sepulchral tumuli, each about equidistant from the centre and from the inner rampart. There is also a depression in the ground near one of the mounds, containing rain-water and probably excavated for that purpose, for the supply of the garrison and cattle.

The next place visited was Roche. While lunch was being prepared at the Rock Hotel the church and its surroundings were examined.

The massive granite cross, in the grave-yard, attracted attention; standing in a great slab which forms its base, somewhat sunk in the ground. The four holes cut to separate the cross-limbs, at the upper part of the stone, do not pierce it. The cross has a central boss, and incised ornamentation, all very rudely executed; on one side, or edge, of the shaft, a sword is represented.\* This ponderous cross is one of the roughest in the county as regards execution. Within the church modern restoration was very apparent; the arcading new, but the old font remaining. The latter is of the Norman-transition period, and very similar to the one at Bodmin, but not so large. It has a circular bowl, square above, supported by large central shaft and four smaller pillars, all with carved bases, and winged angels'

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\*Well shewn in Langdon's "Old Cornish Crosses," p. 344.

heads as capitals at the four corners. Foliage and interlaced work, &c., appearing on the bowl. A rector of the church many years ago entirely spoilt the interior of the church by causing the pillars and arches to be removed, and a flat ceiling introduced. This caused the building to resemble a modern town-hall. The present rector, Canon Thornton, has had new pillars and arches constructed, and he pointed out, on the day of the visit, an interesting piece of carved stopping near the base of one of the piers, part of the ancient work. He also called attention to the modern oak lectern, of eagle-form, which was excellently carved by the son of a farmer in the parish, named William Robins, who had never received any instruction in the art.

Luncheon followed, and then all wended their way, with the Rector, to the Rock, the most famous of the group, rearing its hoary head above the waste of moorland. It is surmounted by a hermit's cell and chapel, which, thanks to Viscount Falmouth, are being preserved and, by means of iron ladders, made accessible without risk of life and limb, or continued damage to the ruins. Some portions of the hermitage, &c., are cut out of the solid rock, and in the walling and some parts of its facings the ancient lime-cement is the admiration of all who witness its adhesive qualities and extreme hardness. Lyson's (*Magna Brit.*) figures the tracery which in his time remained in the east window. It was of the Decorated period.

The rock itself consists of a white sparry quartz mixed with black schorl, and is known as trap-rock. It is of volcanic origin. The Rev. W. Iago, who had previously explained some of the points of interest visited earlier in the day, here gave some particulars relating to this remarkable spot,—the wild legends of Tregagle, and the historical allusions to Roche Manor, the church, and the old chapelries, their dedications, &c. Great confusion, he said, prevailed in the old records and in the writings of those who, in modern times, have endeavoured to reconcile varying statements. This had arisen, partly, from the mixing of the terms descriptive of the Rock, and of others referring independently to the name of a mediæval saint, St. Roche.

The Rock gave name to the locality, and its Cornish equivalent Carrick entered into the territorial allusions, and into the

names of those called after the place of their habitation, thus Tregarrick and de la Roche, &c., had occurred in such connection. Lysons had stated that Roche church existed long before St. Roche lived, (whose date was about 1327), and that it was dedicated to a saint named Gomonda; others have given the saint's name as Gunnett, Comand, or Conan; and according to Lysons the chapel on the Rock was St. Michael's. Another chapel stood at Holywell near Tremoderet. The legend of St. Roche of Montpellier connects him with suffering from the plague and being fed with bread by a dog, and a wall-painting in a church at Launceston represents this episode. From that legend probably another very like it was derived, by confusion of names; for Hals mixes it up with the dedication here as connected with the other saint mentioned, and with a hermit who dwelt on the Rock. Hals wrote thus:—"The last tradition of the Hermitage chapel is, that a person with a grievous leprosy was placed, or fixed himself, therein, where he lived till his death to avoid infecting others. He was daily attended [with food, &c.] by his daughter Gunett or Gundred:" and her well in Roche parish "is," he says, "to this day shown."

Tonkin has alluded to St. Roche and the plague; and Mr. Baring-Gould has briefly referred to the dedications here, as may be seen in his list.

Before quitting the group of Roche Rocks, a resident of the place kindly presented the members of the party with photographs of the Hermitage and Chapel, &c., and acted as guide to the very small hole which, altho' only a few inches in diameter and depth, has long excited much notice. It is in a low rock, and not much above the ground. Carew has alluded to it as a Cornish wonder, as it had been stated that water in it "did tide-wise ebbe and flow!" He asked "Have we fooles with lyers met?—fame saies it, be it so."

The return journey was by the Goss Moors, where quantities of tin, and some smelted blocks, and tinnerns' ancient oak shovels have been discovered.

St. Denis, standing on a lofty isolated hill, was next reached; dry-walling and enclosed pathways are characteristic of the stony region, and the church is situate within an ancient fortification or

“Dinas” on the top of the hill. Its dedication to “St. Denis” may have been in consequence. Within the building the modern renovator was again found to have been at work, and the interior may be described as “brand new.” The tower arch has its side-shafts capped with an angel on the south, and an Archbishop “St. Denis” on the north. The ancient font was seen lying in a corner close by, having been replaced by a modern one. There is an ancient cross near the church-entrance on the south.

Hals wrote as follows of this place:—

“The church is erected on a bleak elevation, and is surrounded by a direful strag of rocks, visible above ground, of various and tremendous shapes & sizes, affording pasture for little else beside sheep, rabbits, hares, goats, & horses. Upon these stones in the year 1664, at night, rained, for about an acre of ground of them, a shower of blood\* which fell down in drops of the breadth of a shilling sterling; which blood remained visible on the stones for many years after, & on such as were carried thence & kept dry, the drops of blood were visible of a crimson color, twenty years after,—four or five drops upon some stones; some of which I have seen. After this shower of blood, broke out the plague of London whereof great numbers of people died; the Dutch & French Wars; and the burning of the city of London.”

A hasty glance was next taken at the church’s exterior, with its unique two-staged tower and stump pinnacles, the newel being circular, a somewhat rare feature in tower architecture. Walking to the verge of the grave-yard on the northern side and mounting the extraordinarily cumbersome dry wall (part of the old fortification perhaps), the undulating country and sweep of moorland scenery were viewed, and all were charmed with the prospect.

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\* The alleged fall of *drops of blood, as rain, 1664*, at St. Denis, has just had a parallel which explains it. In February, 1903, red, orange, or yellow rain fell on many of the high parts of Cornwall. A previous occurrence was noticed not long before. The deposit was examined and analysed, and was found to contain particles of silica of a crimson, and of a yellow hue, together with organic and other substances. They were considered terrestrial, not stellar, in origin; and it has been surmised that as the wind was very tempestuous and from the south and south-west, the particles may have been from a sandstorm in the Sahara Desert. —W. IAGO, B.A.

The conveyances then proceeded to St. Stephen's, past the china-clay pits, where it is computed some 200,000 tons of china-clay and china-stone are raised every year. Practically the whole output of this commodity in this country comes from an area extending for about four miles here. Evening was creeping on. The route was through St. Stephen's village. Passing along the tortuous roads, an occasional glimpse of the river Fal, in its upper sources, trickling towards the sea, was obtained. The Uranium Mine was also pointed out by Mr. J. H. Collins, practically the only one in this country worked for that mineral. Gold has been found amongst the tin, and precious stones (according to some writers) in the district visited.

On reaching Grampond Road a high tea was enjoyed at James's Commercial Hotel. The closing stage of the day's excursion was completed, and all appeared thoroughly pleased with the outing. Thanks were expressed for the care which the secretaries Major Parkyn and Rev. W. Iago had bestowed on whatever was needed, and to the latter and Mr. Enys and other friends who had helped to throw light on many matters of interest.

## Royal Institution of Cornwall.

84th ANNUAL MEETING, 1902.

The Annual Meeting of the Royal Institution of Cornwall was held at the Museum on Tuesday afternoon, the president (Sir Robert Harvey) in the chair. There were also present Archdeacon Cornish, Canons Donaldson, A. P. Moor and J. H. Moore; the Revs. Sabine Baring-Gould, D. Gath Whitley, H. Edwardes, H. H. Mills and Philip Carlyon; Capt. Henderson (Mayor of Truro), Prof. J. Clark, Dr. Ratcliff-Gaylard; Messrs. J. D. Enys, F.G.S., T. C. Peter, Robert Fox, R. Vallentin, J. Osborne, F.G.S., S. Jones, H. E. Davison, Howard Fox, F.G.S., T. L. Dorrington, W. J. Clyma, J. Rogers, H. James, Silvanus Trevail, F. Cozens, G. Dixon, W. G. N. Earthy, E. L. Carlyon, T. V. Keam (of Keam's Cañon), T. Worth, Capt. Morrish, H. Barrett and W. A. Rollason, Rev. W. Iago, B.A. and Major Parkyn, F.G.S. (Hon. Secretaries), Mr. Geo. Penrose (Curator and Librarian), Mesdames Share, Clark, Rogers, Plunket, Buck, Paull, G. Dixon, Rollason, and Tomm; Misses Cornish, L. Paull, Tomm, Share, Henderson, Rogers, Muriel Peter, Plunket, James, Burrell, Lake, Hedley, Dixon and others.

The minutes of the last meeting having been read and confirmed, letters of apology were read from the Earl of Mount Edgcumbe, the Bishop of Truro, Rev. Chancellor Worlledge, S. Rundle and Dr. Richard Pearce.

The Rev. W. Iago (Hon. Sec.) then presented the following report of the Council.

### 84th ANNUAL REPORT OF THE COUNCIL.

It affords the Council of the Royal Institution of Cornwall great pleasure, in presenting their 84th Annual Report, to be able to announce that the strength of membership and state of the finances of the Society have never been so good before, whilst great progress has also been made in the structural improvement



of the buildings, as well as in the augmentation of the contents. Referring to the list of subscribers:—eighteen new members have been elected and only three have retired. But the committee desire to express their regret at the loss of four valued members by death, namely, Messrs. Michael Henry Williams of Pencalenick, Richard Lean of Truro, Henry Williams of Butte, Montana, U.S.A., and Nevell Edmond Norway, M.R.C.S., L.R.C.P., of Newquay, and formerly of Wadebridge.

Mr. M. H. Williams was for many years a member of the Society and his family has always taken great interest in its welfare.

Mr. R. Lean was an old and valued member and his loss is greatly regretted.

Mr. Henry Williams was a native of Truro, and one of the pupils of the Mining School carried on under the auspices of this Institution in the early fifties of the last century. After going through the mining course here, he proceeded to Germany, where he went through a further course of study. On his return to this country he received an appointment in Swansea, which he held for many years; after which he moved to Butte, Montana, and became associated with Dr. Richard Pearce.

Mr. Norway had been a regular attendant at the meetings of the Society; and had often, in its discussions, contributed interesting information. His death occurred very suddenly, in the midst of his medical activity, and seems to have been caused by his devotion to a case of illness which had fatal malarial surroundings.

With regard to the improvement in the Society's buildings, —obstructions have been removed, greater space for approach to the Museum, and extended accommodation for valuable specimens, have been provided. Mosaic flooring in the entrance hall and passages has been laid and a new staircase has been erected.

Great progress has been made in the re-arrangement of the Museum by our Curator, Mr. Penrose, during the past year. A massive case fitted with drawers underneath, for storage purposes, has been placed in the Mineral Room. The work of re-arranging the various collections is being proceeded with as quickly as possible. A large room for archæological purposes has been made

available, and it is hoped that during the coming year it will be possible to obtain the necessary exhibition cases. Re-arrangements will now be possible in the various departments of the Museum, by which the usefulness of all the collections will be greatly enhanced.

The Museum has continued to attract many students and other visitors. In consequence of its being closed during the months of May, June, and July, to allow of the structural alterations being made, the number of admissions for the whole year did not quite come up to the average, but, taking into consideration the actual period during which it was open, there was a considerable increase.

|                     |    |    |       |
|---------------------|----|----|-------|
| Admitted free       | .. | .. | 2,133 |
| Members and friends | .. | .. | 578   |
| Admitted by payment | .. | .. | 223   |

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Total .. 2,934

The additions to the Museum during the past year have been of an exceptional character. The President, at the Spring Meeting, referred to the valuable gifts made by Mr. J. D. Enys, Mr. C. E. Cardew of Insein, Lower Burmah, Mr. Henry Williams of Western Australia and Dr. Richard Pearce. Many other gifts have also been made, the following being specially worthy of notice.

Mr. Upfield Green has forwarded a valuable series of fossils collected by him in Cornwall, together with a number from Germany intended for comparison.

From Mr. Gerrans, of Tregony, we have received a number of interesting relics of the late South African war. Mr. Gerrans was present at Mafeking during the whole of the siege and made the collection specially for the Museum. A hundred-pounder shell fired by the Boers, from the Long-Tom gun, into Mafeking has been presented jointly by Mr. Gerrans and Colonel Vyvyan of Treloarwarren, who was also present throughout the siege.

The great collection of minerals at Menabilly, formed by the late Mr. Philip Rashleigh, and regarded as by far the best in Cornwall, has been secured for this Institution through one of its most generous former Presidents, Mr. J. D. Enys, F.G.S., who

always has the interests of the institution at heart; our Society has contributed £500 towards the purchase, Mr. Enys making himself responsible for the remainder of the cost which is much more considerable. It is hoped that some others will share with him the cost of his act of unselfishness.

The treasured portraits in oil belonging to the Institution having been found to be in need of attention Mr. W. A. Rollason, the head master of the Art department of the Central Technical Schools for Cornwall, has been entrusted with the work of cleaning and restoring them. Great caution is being exercised in the treatment of the pictures so that not the slightest injury shall be done to them, as original works of art. One of the paintings is the work of the famous Sir Godfrey Kneller. On one occasion it is said to have been sold by its possessor for several hundred pounds; and eventually it was purchased for this institution through the liberality of the President, Sir Robert Harvey, who is likewise defraying the cost of the necessary reparation now being bestowed upon it.

Three years having elapsed since the bestowal of the Henwood triennial gold medal, the Council (having been duly convened for the purpose) met to make another award. They have adjudged the medal to the Rev. Sabine Baring-Gould, M.A., a former president, for his comprehensive literary contribution to our Journal in which he has treated of the Ancient Cornish Ecclesiastical Dedications. His work is of very great interest, and no one is better qualified for dealing with so intricate a subject.

The Council at the same time desire to express their high appreciation of the services which Mr. F. Hamilton Davey, as a contributor to the Journal, has rendered with respect to the botany of Cornwall. They are glad to find that he is about to issue a volume as the result of his study and investigations in that important and very interesting branch of science.

The special committee consisting of Messrs. J. D. Enys, Thurstan C. Peter and H. Michell Whitley, which did such good work in connection with the list of mural paintings in Cornish churches, has been re-elected for the purpose of preparing a list of ancient painted and stained glass found in Cornwall.

The following are nominated by the Council to hold office during the coming year. The President has one more year to serve.

President :

Sir ROBERT HARVEY.

Vice-Presidents :

|                              |                            |
|------------------------------|----------------------------|
| Rev. W. IAGO, B.A.           | Rev. S. BARING-GOULD, M.A. |
| Mr. JOHN D. ENYS, F.G.S.     | Sir J. LANGDON BONYTHON.   |
| The Rt. Hon. L. H. COURTNEY. | Mr. J. C. WILLIAMS.        |

Treasurer :

Mr. A. P. NIX.

Secretaries :

MAJOR PARKYN, F.G.S. and Rev. W. IAGO, B.A.

Other Members of the Council.

|                               |                                 |
|-------------------------------|---------------------------------|
| Ven. Archdeacon CORNISH, M.A. | Chancellor PAUL, M.A.           |
| Mr. HOWARD FOX, F.G.S.        | Mr. THURSTAN C. PETER,          |
| Mr. HAMILTON JAMES.           | Rev. S. RUNDLE, M.A.            |
| Rev. D. G. WHITLEY.           | Mr. JAMES OSBORNE, F.G.S.       |
| Rev. CANON MOOR, M.A.         | Professor J. CLARK, D.Sc., M.A. |

Corresponding Secretary for East Cornwall :

Rev. W. IAGO, B.A.

Joint Editors of the Journal :

Mr. THURSTAN C. PETER and MAJOR PARKYN, F.G.S.

Librarian and Curator of Museum.

Mr. GEORGE PENROSE.

Mr. Silvanus Trevail, in moving the adoption of the report, said the gratitude of the Institution was due to Mr. Enys for having secured the collection of minerals. Mr. Enys had done a most patriotic act in securing them for the county. He was afraid that the £500 granted by the Institution would rather impoverish its funds and encroach upon its capital, but it was a matter of satisfaction that the collection did not go out of the county. He suggested the advisability of the museum being thrown open free. Not long ago he endeavoured to secure some works of art for the Institution, and the only reason he was unsuccessful was that there was a fee charged for admission. If he could have made a promise that no entrance fee would be charged there would have been placed in the Museum a collection worth some thousands of pounds. The chance might occur again, and he knew of something in the wind now, of very great importance, that might come into the Museum eventually, and he



*O. B. Peter, del.*

**ST ROCHE**

(Mural Painting in ST THOMAS CHURCH, LAUNCESTON)



put before them as a practical suggestion the making of the Museum free, within certain hours of the day, at any rate, especially as the revenue from admissions was only about £5, which was not worth considering alongside the advantage of throwing the collection open.

Mr. T. L. Dorrington seconded, and the report was adopted.

Mr. Penrose, the Curator, then read the list of additions to the Museum and library.

Professor Clark proposed a vote of thanks to Mr. Enys for the great boon he had bestowed on the Institution and the whole county by securing the Rashleigh collection of minerals. The collection, quite unique as far as Cornwall was concerned, was without doubt one of the finest provincial collections of minerals in the kingdom. As an educational centre Truro was rising into some little prominence. The Institution had already a very excellent collection of minerals, and now, through the earnest endeavour and prompt action of Mr. Enys, they were in possession of a collection second to none in the county, and, so far as he was aware, second to none in the provinces (applause.)

The Mayor of Truro, in seconding the vote of thanks, said that all Mr. Enys' waking thoughts and dreams were alike about the Institution. He hoped it might be possible to raise a fund to purchase the collection, and to relieve Mr. Enys of the financial burden he had so generously and pluckily undertaken.

The President said Mr. Enys had, with his usual modesty, attempted to keep from the public his share in this transaction. The collection cost £1,200, and Mr. Enys drew a cheque for that amount. The Council had since voted £500, and it was incumbent on the members of the Institution to attempt to relieve Mr. Enys from the heavy outlay of £700 which, at present, he was bearing (applause). Acknowledging a hearty vote, Mr. Enys said he managed to secure the collection only just in time. Some years since the collection was valued at £3,000, but he learned from Mr. J. Rashleigh that £1,200 would secure the collection if it were to be preserved for Cornwall. Three-quarters of the collection was made by Mr. Philip Rashleigh, who died in 1811, and it contained specimens of great value which could not be

obtained again in Cornwall. The collection had been magnificently preserved, and, which was very important, the labels were in perfect condition. It had given him great pleasure to do what he had been able to do (applause).

The President said his next duty, which was indeed a very pleasing one, was to present to the Rev. Sabine Baring-Gould the fifth Henwood gold medal awarded to him by the Council. They had to thank Mr. Baring-Gould for placing on record, from materials inaccessible to the general public, the lives and traditions of the old Cornish saints, thus enabling the public to obtain information which would, without the assistance of such a learned gentleman as Mr. Baring-Gould, have been entirely out of their reach (applause).

Mr. Baring-Gould said that day would be a proud and happy one for the rest of his life, because of the presentation of this memorial of the little work he had done for the county. The history of Cornish saints was one of peculiar interest, because it was only through them that they were able to obtain any idea of the early history of the county. If it were not for such scanty records as remain, for instance, of the names of the Irish saints in the Lizard district and in Penwith, they would know nothing at all about the great Irish settlement which had taken place there. Then, again, in the north-east of Cornwall, but for the names of saints there, and also for inscribed stones and oghams, they would know nothing at all of the settlement from Brecknock, of the Irish family, which had taken possession there. The records of the past were very, very scanty, and, with regard to the saints, there were detailed narratives of the lives of a certain number of them only. These few were written down very late, and they had to be sifted and compared one with the other before the real facts were arrived at. At the same time, there were a good number of pitfalls and traps into which one might fall in considering their history. He could not say that he had been altogether free from such himself. Of late a discovery had been made which would very materially assist them, and that was the manuscript collection made by Nicholas Roscarrock at the end of the sixteenth century, and committed to writing about 1610. It was known to old Hals, because he referred to Nicholas Roscarrock having a Cornish life of St. Columba, and this Roscarrock



was a great friend of Camden, the antiquary. What had become of his collection nobody knew until about two or three years ago, when it turned up at a sale and was bought for the University library at Cambridge. It was a huge volume, in which Nicholas Roscarrock had written down all the names of the British saints he could find. He (Mr. Baring-Gould) had spent eighteen months in Brittany picking up the traditions and records. The Breton antiquaries had worked entirely on the material they had there at hand, just as the work in Wales and Ireland and Cornwall had been independent of Brittany. The saints came from Wales, halted in Cornwall (a sort of half-way house) and went on to Brittany. It was very much the same with the Irish saints. What was needed was the fusing together of the traditions found in Wales, Ireland, Cornwall and Brittany, and then they would be likely to get as complete a record as possible of the lives of those men who founded so many churches in this land (applause).

The following papers were read at this meeting:—the Rev. D. G. Whitley on “Footprints of vanished races in Cornwall;” by the Rev. Chancellor Edmonds, of Exeter, on “The Episcopal Registers of the Diocese;” and by Mr. Rupert Vallentin on “The Falkland Islands, revisited.” This paper was illustrated by lantern slides of great beauty and interest, and was of much value scientifically. It is not, however, sufficiently “local” to justify its being printed in the journal. A paper by Mr. Arthur P. Jenkin, of Redruth, on “Library Co-operation,” contained some practical suggestions for extending the use of rare and expensive works in our public libraries, and was referred to the Council for consideration.

Mr. Robert Fox proposed a vote of thanks to the contributors of papers and the donors to the library and museum. He remembered the time when they attended the meetings of the Institution as a sort of duty, and listened to papers more or less erudite, but not often very amusing, but that afternoon they had been favoured with perfect gems (applause.) One of the donors, Mr. Enys, had done a thing which was worthy of him and his name (applause), and he (Mr. Fox) suggested that a brass tablet should be provided, recording the name of the Cornishman who for love of his county allowed the collection to remain therein,

and the name of the gentleman whose noble and patriotic act secured them (hear, hear.)

Canon Donaldson, in seconding, said the Institution was like a small University, so many and varied were the branches of knowledge it afforded.

The proposition was unanimously adopted.

On the motion of Dr. Ratcliff-Gaylard and Mr. G. Dixon, a vote of thanks was accorded to the officers of the Institution.

Archdeacon Cornish moved a vote of thanks to the President for the ability with which he had presided over the proceedings.

Canon Moor, in seconding, said it was not only by word and deed that Sir Robert Harvey assisted the Institution, but he had given them very substantial help in deed.

The President, in response to the evident wish of the meeting, promised to contribute a paper to the next meeting of the Institution.

#### GIFTS TO THE MUSEUM.

|   |        |   |
|---|--------|---|
| Skull of a Central American Indian from an Indian grave in Colombia, S. America | ... .. | } Mr. Francis Chown, M.B.                                       |
| Fine Old China Bowl   | ... .. | { Bequeathed by late Miss Williams of Tretthewey, Ruanlanihorne |
| Collection of Gold Ores from W. Australia                                       | ... .. | Mr. H. Williams.  |
| Collection of 132 Prehistoric Stone Implements from India                       | ... .. | } Mr. C. E. Cardew, Insein, Lower Burmah.                       |
| Impressions of seals of Falmouth and Penryn                                     | .. ..  | } Mr. J. D. Eays.   |
| Collection of New Zealand and other Lepidoptera                                 | .. ..  |   |
| Specimen of Enysite   | ... .. |   |
| Rock with Pholas borings  | ... .. | Mr. W. Juleff.  |
| Octopus vulgaris, caught in Truro river   | ... .. | Prof. Clark.  |
| Specimen of Crystallized Cassiterite  | ... .. | Rev. S. Rundle.   |
| Fossils from the St. Erth beds  | ... .. | Mr. C. P. S. Henderson  |
| Eggs of Ring Ousel  | ... .. | Rev. A. H. Malan.   |
| Truro Coronation Medal in bronze  | ... .. | Mr. E. Aver.  |
| Series of Cornish and German fossils  | ... .. | Mr. Upfield Green.  |
| Collection of relics from the Mafeking siege                                    | ... .. | Mr. J. Gerrans.   |
| Hundred pounder shell fired by the Boers from their Long Tom gun in Mafeking    | ... .. | } Col. Vyvyan and Mr. J. Gerrans.                               |
| Collection of African Butterflies   | ... .. |   |

|   |     |   |     |                   |     |     |                   |
|---|-----|---|-----|-------------------|-----|-----|-------------------|
| Impression of Seal of East Looe                 | ... | ...   | ... | Mr. R. A. Peter.  |     |     |                   |
| Do. Do. West Looe                               | ... | ...   | ... | Mr. J. B. Hooper. |     |     |                   |
| Cornish Mineral Pseudomorphs, also specimens of | }   | Stalactites of Limonite, and a fine specimen of | }   | Dr. R. Pearce.    |     |     |                   |
| Crystallized Wolfram                            |     |   |     |                   | ... | ... | ...               |
| Auriferous Copper Ores from British Columbia... |     |   |     |                   | ... | ... | Mr. J. C. Daubuz. |

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GIFTS TO THE LIBRARY.

|  |     |          |     |     |                      |                  |
|--|-----|----------|-----|-----|----------------------|------------------|
| British Association Report, 1901                       | ... | ...      | ... | ... | Mr. J. D. Enys.      |                  |
| Monastic Seals of the 13th Century                     | ... | ...      | ... | ... | Mr. T. C. Peter,     |                  |
| Journal of the Royal Geographical Society              | ... | ...      | ... | ... | Canon Moor.          |                  |
| The Cornish in South West Wisconsin                    | ... | ...      | ... | ... | Sir Richard Tangye.  |                  |
| Cussan's Handbook of Heraldry                          | ... | ...      | ... | ... | Mr. R. M. Glencross. |                  |
| Postes Britannic Researches                            | ... | ...      | ... | ... | Prof. Clark.         |                  |
| Tentative List of the Flowering Plants, Ferns, etc. of | }   | Cornwall | ... | ... | }                    | Mr. F. H. Davey. |
|  |     |          |     |     |                      |                  |

BALANCE SHEET OF ACCOUNTS.

Dr. Arthur P. Dix, Esq., in account with the Royal Institution of Cornwall. Cr.

| 1901.                    |                 | 1902.                  |                 |
|--------------------------|-----------------|------------------------|-----------------|
|                          | £ s. d.         |                        | £ s. d.         |
| To Balance               | ... .. 32 12 6  | By Curator             | ... .. 75 0 0   |
| " Subscriptions          | ... .. 161 16 0 | " Repairs              | ... .. 6 11 6   |
| " H.R.H. Prince of Wales | ... .. 20 0 0   | " Books, Printing, &c. | ... .. 19 0 10  |
| " Excursion, 1901        | ... .. 11 1 0   | " Fuel and Gas         | ... .. 17 8 10  |
| " Do. 1902               | ... .. 6 7 6    | " Rates and Taxes      | ... .. 2 8 9    |
| " Visitors               | ... .. 6 2 0    | " Excursion, 1901      | ... .. 8 15 7   |
| " Journals               | ... .. 1 2 0    | " Do. 1902             | ... .. 10 6 6   |
|                          |                 | " Insurance            | ... .. 4 14 0   |
|                          |                 | " Caretaker            | ... .. 5 0 0    |
|                          |                 | " Sundries             | ... .. 18 1 10  |
|                          |                 | " Journal              | ... .. 67 8 11  |
|                          |                 | Balance                | ... .. 4 4 3    |
|                          |                 |                        | <u>£239 1 0</u> |
| Balance                  | ... .. £4 4 3   |                        |                 |

COMPARISON OF RAINFALL IN THE NEIGHBOURHOOD.

| 1902.         | J. C. DAUBUZ, Esq.,<br>Killiflow. |       |                            |                                     | W. J. LEAN, Esq.,<br>Truro Water Works. |       |                            |                                     | H. TRESAWNA, Esq.,<br>Lamellyn, Probus. |       |                            |                                     | GEO. PENROSE,<br>Royal Institution of Cornwall. |       |                            |                                     |
|---------------|-----------------------------------|-------|----------------------------|-------------------------------------|---|-------|----------------------------|-------------------------------------|---|-------|----------------------------|-------------------------------------|---|-------|----------------------------|-------------------------------------|
|               | Total depth. in 24 hours.         |       | Greatest fall in 24 hours. |                                     | Total depth. in 24 hours.               |       | Greatest fall in 24 hours. |                                     | Total depth. in 24 hours.               |       | Greatest fall in 24 hours. |                                     | Total depth. in 24 hours.                       |       | Greatest fall in 24 hours. |                                     |
|               | Inches                            | Depth | Date                       | No. of days on which 'or more fell. | Inches                                  | Depth | Date                       | No. of days on which 'or more fell. | Inches                                  | Depth | Date                       | No. of days on which 'or more fell. | Inches  | Depth | Date                       | No. of days on which 'or more fell. |
| January ...   | 2.59                              | .63   | 1                          | 14                                  | 2.46                                    | .93   | 26                         | 13                                  | 2.60                                    | .73   | 1                          | 13                                  | 2.41  | .60   | 1                          | 15                                  |
| February ...  | 2.33                              | .62   | 26                         | 14                                  | 2.58                                    | 1.06  | 23                         | 11                                  | 2.25                                    | .52   | 26                         | 10                                  | 2.47  | .63   | 22                         | 14                                  |
| March ...     | 2.96                              | .50   | 26                         | 18                                  | 2.80                                    | .59   | 26                         | 18                                  | 2.75                                    | .62   | 26                         | 16                                  | 2.83  | .56   | 26                         | 23                                  |
| April ...     | 2.40                              | 1.03  | 21                         | 10                                  | 2.85                                    | 1.20  | 21                         | 11                                  | 2.31                                    | 1.05  | 21                         | 9                                   | 2.56  | 1.13  | 21                         | 13                                  |
| May ...       | 1.75                              | .29   | 17                         | 18                                  | 1.81                                    | .39   | 18                         | 16                                  | 1.99                                    | .44   | 17                         | 13                                  | 1.77  | .26   | 17                         | 15                                  |
| June ...      | 3.24                              | .63   | 12                         | 18                                  | 3.63                                    | .73   | 12                         | 17                                  | 3.66                                    | .78   | 12                         | 18                                  | 3.24  | .65   | 12                         | 18                                  |
| July ...      | 2.81                              | 1.40  | 24                         | 9                                   | 2.74                                    | 1.29  | 25                         | 10                                  | 2.35                                    | 1.11  | 26                         | 5                                   | 3.17  | 1.28  | 25                         | 9                                   |
| August ...    | 1.59                              | .46   | 5                          | 14                                  | 1.83                                    | .56   | 5                          | 18                                  | 1.65                                    | .48   | 5                          | 10                                  | 1.65  | .48   | 5                          | 17                                  |
| September ... | 3.05                              | 1.16  | 22                         | 14                                  | 4.09                                    | 1.07  | 22                         | 16                                  | 3.15                                    | .70   | 23                         | 12                                  | 3.97  | 1.06  | 22                         | 15                                  |
| October ...   | 3.31                              | .78   | 9                          | 21                                  | 3.06                                    | .62   | 9                          | 19                                  | 2.91                                    | .66   | 9                          | 18                                  | 3.09  | .98   | 9                          | 18                                  |
| November ...  | 5.85                              | .76   | 30                         | 20                                  | 6.17                                    | .81   | 27                         | 15                                  | 5.42                                    | .85   | 27                         | 17                                  | 5.86  | .81   | 27                         | 17                                  |
| December ...  | 3.43                              | .51   | 28                         | 19                                  | 3.17                                    | .68   | 1                          | 16                                  | 3.30                                    | .85   | 1                          | 16                                  | 3.08  | .70   | 1                          | 16                                  |
| TOTAL ...     | 35.31                             |       |                            | 189                                 | 37.19                                   |       |                            | 180                                 | 30.34                                   |       |                            | 157                                 | 36.10   |       |                            | 190                                 |

# SUMMARY OF METEOROLOGICAL OBSERVATIONS AT TREWIRGIE, REDRUTH.

Latitude 50° 13' 44" N.

BY ARTHUR P. JENKIN, Esq.

Longitude 5° 13' 48" W.

| 1902.     | MASON'S HYGROMETER. |                   |                   |                      |                 |                    |          | THERMOMETER ABSOLUTE. |          |      |        |                         |                         |                               | RAINFALL.           |              |                       | CLOUD.                     |       | WIND.                 |                         |    | REMARKS. |    |    |                    |  |          |  |
|-----------|---------------------|-------------------|-------------------|----------------------|-----------------|--------------------|----------|-----------------------|----------|------|--------|-------------------------|-------------------------|-------------------------------|---------------------|--------------|-----------------------|----------------------------|-------|-----------------------|-------------------------|----|----------|----|----|--------------------|--|----------|--|
|           | Month.              | Mean of Dry Bulb. | Mean of Wet Bulb. | Wet Ther. below dry. | Mean Dew Point. | Relative humidity. | Maximum. | Day.                  | Minimum. | Day. | Range. | Mean of all the Maxima. | Mean of all the Minima. | Approximate mean temperature. | Monthly mean range. | Total depth. | Number of rainy days. | Greatest fall in 24 hours. | Date. | Mean amount at 9 a.m. | Relative Proportion of. | N. |          | S. | W. |                    |  |          |  |
|           |                     |                   |                   |                      |                 |                    |          |                       |          |      |        |                         |                         |                               |                     |              |                       |                            |       |                       |                         |    |          |    |    | Relative humidity. | Day.   | Minimum. | Day.   |
| January   | 43·4                | 41·8              | 1·6               | 39·9                 | 87              | 51·4               | 1 30·0   | 15 21·4               | 46·6     | 39·9 | 43·2   | 6·7                     | 2·44                    | 16                            | ·56                 | 1            | 8·3                   | 25 25                      | 25 49 |                       |                         |    |          |    |    |                    | Gales, 1, 25. Fog, 2, 3, 22, 23. Hall, 4, 24, 25, 28 (very large stones), Snow, 14, 30. Thunder, 25. Hoar Frost, 14, 17, 31. Fog, 24, 25. Snow, 2, 3, 8, 9. Hall, 7, 8, 27. Hoar Frost, 6, 8, 11, 12, 13, 15. Thunder, 1, 9, 7, 8, 9, 10, 11. Gale, 24, 26. Fog, 1, 2, 4, 6, 7, 8, 9, 10, 11, 16, 27, 28, 29, 30, 31. Hall, 20, 22. Sun Philar, 6. |          |  |
| February  | 38·2                | 36·6              | 1·6               | 34·4                 | 86              | 53·2               | 24 25·1  | 10 28·1               | 42·7     | 33·6 | 38·1   | 9·1                     | 2·68                    | 13                            | ·64                 | 26           | 6·8                   | 23 41                      | 39 9  |                       |                         |    |          |    |    |                    |  |          |  |
| March     | 45·8                | 44·6              | 1·2               | 43·3                 | 91              | 56·1               | 6 33·4   | 7 22·7                | 49·7     | 41·2 | 45·4   | 8·5                     | 3·06                    | 25                            | ·50                 | 26           | 7·4                   | 23 23                      | 43 65 |                       |                         |    |          |    |    |                    |  |          |  |
| April     | 47·1                | 44·4              | 2·7               | 41·4                 | 80              | 56·8               | 24 33·0  | 11 23·8               | 52·2     | 40·1 | 46·1   | 12·1                    | 2·91                    | 12                            | 1·26                | 21           | 6·6                   | 27 27                      | 41 25 |                       |                         |    |          |    |    |                    |  |          | Fog, 1, 4. Hall, 2. Hoar Frost, 12, 13, 28.  |
| May       | 49·6                | 46·9              | 2·7               | 44·0                 | 81              | 60·5               | 27 35·4  | 10 25·1               | 53·3     | 42·6 | 47·9   | 10·7                    | 1·80                    | 19                            | ·23                 | 14           | 7·5                   | 55 12                      | 3 54  |                       |                         |    |          |    |    |                    |  |          | Fog, 16, 22, 23, 24, 26. Hall, 3, 5, 7, 8, 17, 18.                                     |
| June      | 55·6                | 53·1              | 2·5               | 50·7                 | 84              | 72·2               | 28 42·0  | 11 30·2               | 59·9     | 49·6 | 54·7   | 10·3                    | 3·72                    | 21                            | 1·19                | 12           | 7·7                   | 20 32                      | 28 40 |                       |                         |    |          |    |    |                    |  |          | Fog, 4, 22, 24. Hall, 14. Remarkable Sunset Glow, 27.                                  |
| July      | 59·7                | 56·6              | 3·1               | 53·9                 | 81              | 74·7               | 14 44·0  | 12 30·7               | 64·4     | 51·7 | 58·0   | 12·7                    | 3·06                    | 13                            | 1 68                | 25           | 7·0                   | 53 17                      | 13 37 |                       |                         |    |          |    |    |                    |  |          | Fog, 4, 5, 6, 7, 9. Gale, 25. Humidity 14th-23 per cent.                               |
| August    | 61·7                | 58·1              | 3·6               | 55·0                 | 79              | 69·4               | 28 47·0  | 9 22·4                | 65·1     | 53·1 | 59·1   | 12·0                    | 1·87                    | 19                            | ·43                 | 5            | 5·7                   | 34 31                      | 8 51  |                       |                         |    |          |    |    |                    |  |          | Fog, 14, 15, 23. Lightning, 30.  |
| September | 59·2                | 56·1              | 3·1               | 53·3                 | 81              | 68·0               | 1 41·0   | 29 27·0               | 62·8     | 50·9 | 56·8   | 11·9                    | 3·51                    | 16                            | ·92                 | 22           | 5·7                   | 31 36                      | 24 22 |                       |                         |    |          |    |    |                    |  |          | Fog, 22, 27.   |
| October   | 52·8                | 50·7              | 2·1               | 48·6                 | 86              | 59·2               | 1 37·0   | 5 22·2                | 56·1     | 46·6 | 51·3   | 9·5                     | 4·16                    | 24                            | 1 19                | 9            | 7·2                   | 25 32                      | 20 47 |                       |                         |    |          |    |    |                    |  |          | Fog, 13, 22, 23, 28. Gale, 15. Thunder, 9. Sunset Glow, 26. Humidity, 1st-57 per cent. |
| November  | 47·8                | 46·4              | 1·4               | 44·9                 | 89              | 57·6               | 5 29·0   | 19 28·6               | 51·6     | 43·2 | 47·4   | 8·4                     | 6·66                    | 20                            | ·89                 | 27           | 6·7                   | 21 45                      | 37 17 |                       |                         |    |          |    |    |                    |  |          | Fog, 1, 14. Snow, 19. Hall, 22.  |
| December  | 43·2                | 41·8              | 1·4               | 40·0                 | 88              | 54·1               | 16 27·4  | 6 26·7                | 46·4     | 39·1 | 42·7   | 7·3                     | 3·85                    | 18                            | ·83                 | 1            | 8·4                   | 35 18                      | 32 39 |                       |                         |    |          |    |    |                    |  |          | Fog, 22. Snow, 10, 30. Hall, 23, 29, 30, 31. Hoar Frost, 5, 23, 31. Lightning, 1, 28.  |
| Means     | 50·3                | 48·1              | 2·2               | 45·8                 | 85              | 61·1               | 35·4     | 25·7                  | 54·2     | 44·3 | 49·2   | 9·9                     | 39·72                   | 216                           | *                   |              | 7·1                   | 31 28                      | 24 38 |                       |                         |    |          |    |    |                    |  |          |  |

Totals\*

Readings taken at 9 a.m. local time. All instruments with Kew Certificates, and where applicable are placed in a Stevenson Screen. Height above sea levelled from Ordnance Bench Mark 388 feet. Wind is calculated as follows: N = 4 N., N.W. = 2 N., W. = 4 W., W.S.W. = 2 S.W., S. = 2 S., S.W. = 4 W., W. = 4 W., W.S.W. = 2 S.W., S. = 2 S., S.W. = 4 W.

Summary of Meteorological Observations at Truro, in Lat. 50° 17' N., Long. 5° 4' W., for the year 1902, from Registers kept at the Royal Institution of Cornwall, by the Curator, Mr. Geo. Penrose.

TABLE No. 1.

| 1902.     | MONTHLY MEANS OF THE BAROMETER. Cistern 43 feet above mean sea level. |        |                        |                                    |                             |                       |                           |                                      |      |                                      |      |                              | Days between which 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 observed. | Day. | Corrected absolute minimum observed. | Day. | Extreme range for the month. |                                 | Mean diurnal range. | Greatest range from 9 a.m. to 9 p.m. | Day. | Greatest range in any 24 consecutive hours. |
|           | 9 a.m.  | 3 p.m. |                        |                                    |                             |                       |                           |                                      |      |                                      |      |                              |                                 |                     |                                      |      |   |
| Month.    | ins.  | ins.   | ins.                   | ins.                               | ins.                        | ins.                  | ins.                      | ins.                                 | ins. | ins.                                 | ins. | ins.                         | ins.                            | ins.                | ins.                                 | ins. |   |
| January   | 30.241  | 30.240 | 30.250                 | .004                               | 30.239                      | .243                  | 30.000                    | 30.903                               | 15   | 29.300                               | 28   | 1.603                        | .142                            | .47                 | 28                                   | .71  | 23 & 24                                     |
| February  | 29.840  | 29.808 | 29.813                 | .003                               | 29.817                      | .208                  | 29.612                    | 30.449                               | 1    | 29.140                               | 26   | 1.309                        | .091                            | .25                 | 16                                   | .45  | 5 & 6                                       |
| March     | 29.923  | 29.903 | 29.917                 | .007                               | 29.907                      | .275                  | 29.639                    | 30.348                               | 17   | 29.306                               | 21   | 1.042                        | .091                            | .25                 | 14                                   | .51  | 19 & 20                                     |
| April     | 29.942  | 29.944 | 29.960                 | .004                               | 29.944                      | .253                  | 29.695                    | 30.320                               | 7    | 29.394                               | 22   | 0.926                        | .098                            | .32                 | 21                                   | .60  | 21 & 22                                     |
| May       | 30.070  | 30.063 | 30.076                 | .003                               | 30.066                      | .275                  | 29.794                    | 30.580                               | 25   | 29.470                               | 17   | 1.110                        | .083                            | .43                 | 6                                    | .39  | 27 & 28                                     |
| June      | 29.905  | 30.252 | 29.932                 | .001                               | 30.028                      | .361                  | 29.668                    | 30.267                               | 24   | 29.410                               | 12   | 0.857                        | .086                            | .20                 | 20                                   | .34  | 1 & 2                                       |
| July      | 30.095  | 30.098 | 30.102                 | .002                               | 30.096                      | .407                  | 29.691                    | 30.301                               | 3    | 29.381                               | 26   | 0.920                        | .082                            | .28                 | 19                                   | .47  | 25 & 26                                     |
| August    | 29.961  | 29.965 | 29.969                 | .004                               | 29.961                      | .424                  | 29.540                    | 30.289                               | 9    | 29.680                               | 18   | 0.609                        | .061                            | .27                 | 8                                    | .30  | 15 & 16                                     |
| September | 30.069  | 30.061 | 30.068                 | .004                               | 30.062                      | .406                  | 29.660                    | 30.480                               | 26   | 29.456                               | 2    | 1.024                        | .089                            | .25                 | 3                                    | .41  | 1 & 2                                       |
| October   | 30.022  | 30.028 | 30.038                 | .006                               | 30.023                      | .335                  | 29.694                    | 30.591                               | 24   | 29.234                               | 10   | 1.357                        | .107                            | .52                 | 15                                   | .55  | 11 & 12                                     |
| November  | 29.808  | 29.799 | 29.820                 | .004                               | 29.805                      | .289                  | 29.523                    | 30.313                               | 14   | 28.798                               | 25   | 1.515                        | .134                            | .47                 | 25                                   | .87  | 23 & 24                                     |
| December  | 30.121  | 30.116 | 30.102                 | .003                               | 30.110                      | .243                  | 29.870                    | 30.566                               | 23   | 29.087                               | 29   | 1.479                        | .096                            | .37                 | 28                                   | .57  | 27 & 28                                     |
| Means     | 29.999  | 29.939 | 29.995                 | .004                               | 30.004                      | .309                  | 29.698                    | 30.450                               |      | 29.304                               |      | 1.146                        | .096                            | .34                 |                                      | .51  |   |

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 (+0.108), height above sea (43 feet), and temperature, have been applied.

TABLE No 2.

| 1902.     | MONTHLY MEANS OF THE THERMOMETER |           |           |           |           |           |                                    |                        |                   |  |                            |                       |                 |                            |                         |                         |                        |                           |                    |                   |          |      |          |      |        |
|-----------|----------------------------------|-----------|-----------|-----------|-----------|-----------|------------------------------------|------------------------|-------------------|--|----------------------------|-----------------------|-----------------|----------------------------|-------------------------|-------------------------|------------------------|---------------------------|--------------------|-------------------|----------|------|----------|------|--------|
|           | MASON'S HYGROMETER.              |           |           |           |           |           | SELF REGISTERING.                  |                        |                   |  |                            |                       | ABSOLUTE.       |                            |                         |                         |                        |                           |                    |                   |          |      |          |      |        |
|           | 9 a.m.                           |           | 3 p.m.    |           | 9 p.m.    |           | Mean of diurnal range.             | T're 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. |
|           | Dry Bulb.                        | Wet Bulb. | Dry Bulb. | Wet Bulb. | Dry Bulb. | Wet Bulb. | Mean correction for diurnal range. | T're mean of Dry Bulb. | Mean of Wet Bulb. | Mean correction for diurnal range. <td>Mean temp. of evaporation.</td> <td>Wet Therm. below dry.</td> <td>Mean dew point.</td> <td>Dew point below Dry Therm.</td> <td>Mean of all the Maxima.</td> <td>Mean of all the Minima.</td> <td>Approximate mean temp.</td> <td>Correction for the month.</td> <td>Adopted mean temp.</td> <td>Daily mean range.</td> <td>Maximum.</td> <td>Day.</td> <td>Minimum.</td> <td>Day.</td> <td>Range.</td> | 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   | 0<br>44.4                        | 0<br>42.4 | 0<br>46.5 | 0<br>43.9 | 0<br>43.9 | 0<br>42.3 | 0<br>0.4                           | 0<br>44.5              | 0<br>42.9         | 0<br>0.3   | 0<br>42.6                  | 0<br>1.9              | 0<br>39.6       | 0<br>4.9                   | 0<br>48.5               | 0<br>40.4               | 0<br>44.4              | 0<br>0.1                  | 0<br>44.3          | 8.0               | 54       | 10   | 24       | 15   | 30     |
| February  | 0<br>38.3                        | 0<br>36.7 | 0<br>43.0 | 0<br>40.3 | 0<br>37.4 | 0<br>36.1 | 0<br>0.7                           | 0<br>38.8              | 0<br>37.7         | 0<br>0.5   | 0<br>37.2                  | 0<br>1.6              | 0<br>35.6       | 0<br>3.2                   | 0<br>45.5               | 0<br>32.6               | 0<br>39.0              | 0<br>0.1                  | 0<br>38.9          | 12.9              | 55       | 24   | 20       | 14   | 35     |
| March     | 0<br>47.8                        | 0<br>46.0 | 0<br>50.5 | 0<br>47.8 | 0<br>45.8 | 0<br>44.4 | 0<br>1.0                           | 0<br>47.0              | 0<br>46.0         | 0<br>0.6   | 0<br>45.4                  | 0<br>1.6              | 0<br>42.8       | 0<br>4.2                   | 0<br>53.6               | 0<br>41.3               | 0<br>47.4              | 0<br>0.2                  | 0<br>47.2          | 12.2              | 60       | 6    | 26       | 6    | 34     |
| April     | 0<br>50.0                        | 0<br>46.1 | 0<br>52.6 | 0<br>48.1 | 0<br>45.3 | 0<br>44.0 | 0<br>1.6                           | 0<br>47.7              | 0<br>46.0         | 0<br>1.3   | 0<br>44.7                  | 0<br>3.0              | 0<br>40.6       | 0<br>7.1                   | 0<br>56.1               | 0<br>39.6               | 0<br>47.8              | 0<br>0.1                  | 0<br>47.7          | 16.4              | 62       | 16   | 27       | 13   | 35     |
| May       | 0<br>52.9                        | 0<br>49.6 | 0<br>54.1 | 0<br>50.0 | 0<br>47.3 | 0<br>45.8 | 0<br>2.3                           | 0<br>49.1              | 0<br>48.4         | 0<br>1.4   | 0<br>47.0                  | 0<br>2.1              | 0<br>42.8       | 0<br>6.3                   | 0<br>58.2               | 0<br>43.2               | 0<br>50.7              | 0<br>0.8                  | 0<br>49.9          | 14.9              | 70       | 26   | 31       | 11   | 39     |
| June      | 0<br>58.2                        | 0<br>54.8 | 0<br>59.5 | 0<br>55.9 | 0<br>54.3 | 0<br>53.0 | 0<br>2.9                           | 0<br>54.6              | 0<br>54.5         | 0<br>1.7   | 0<br>52.8                  | 0<br>1.8              | 0<br>50.0       | 0<br>4.6                   | 0<br>63.6               | 0<br>51.7               | 0<br>57.6              | 0<br>0.3                  | 0<br>57.3          | 11.8              | 80       | 27   | 42       | 10   | 38     |
| July      | 0<br>62.9                        | 0<br>58.9 | 0<br>64.8 | 0<br>59.8 | 0<br>55.9 | 0<br>54.7 | 0<br>2.1                           | 0<br>59.1              | 0<br>57.8         | 0<br>1.2   | 0<br>56.6                  | 0<br>2.5              | 0<br>53.3       | 0<br>5.8                   | 0<br>69.3               | 0<br>51.9               | 0<br>60.6              | 0<br>0.3                  | 0<br>60.3          | 17.7              | 81       | 14   | 39       | 12   | 42     |
| August    | 0<br>63.7                        | 0<br>60.0 | 0<br>65.7 | 0<br>60.9 | 0<br>57.3 | 0<br>56.1 | 0<br>2.0                           | 0<br>60.2              | 0<br>59.0         | 0<br>1.2   | 0<br>57.8                  | 0<br>2.4              | 0<br>54.4       | 0<br>5.8                   | 0<br>68.9               | 0<br>49.7               | 0<br>59.3              | 0<br>0.3                  | 0<br>59.0          | 15.9              | 77       | 29   | 41       | 27   | 36     |
| September | 0<br>60.0                        | 0<br>57.1 | 0<br>62.6 | 0<br>58.0 | 0<br>54.1 | 0<br>53.0 | 0<br>1.7                           | 0<br>57.2              | 0<br>56.7         | 0<br>0.9   | 0<br>55.8                  | 0<br>1.4              | 0<br>53.2       | 0<br>4.0                   | 0<br>66.3               | 0<br>49.7               | 0<br>57.8              | 0<br>0.2                  | 0<br>57.6          | 16.6              | 74       | 28   | 36       | 18   | 38     |
| October   | 0<br>53.8                        | 0<br>51.7 | 0<br>56.0 | 0<br>52.9 | 0<br>50.1 | 0<br>49.1 | 0<br>0.8                           | 0<br>52.5              | 0<br>51.2         | 0<br>0.6   | 0<br>50.6                  | 0<br>1.9              | 0<br>48.0       | 0<br>4.5                   | 0<br>59.3               | 0<br>46.5               | 0<br>52.9              | 0<br>0.4                  | 0<br>52.5          | 12.7              | 64       | 23   | 33       | 5    | 31     |
| November  | 0<br>48.9                        | 0<br>47.6 | 0<br>51.3 | 0<br>49.1 | 0<br>46.6 | 0<br>45.5 | 0<br>0.6                           | 0<br>48.3              | 0<br>47.4         | 0<br>0.5   | 0<br>46.9                  | 0<br>1.4              | 0<br>43.8       | 0<br>4.5                   | 0<br>54.0               | 0<br>43.0               | 0<br>48.5              | 0<br>0.1                  | 0<br>48.4          | 11.0              | 59       | 5    | 31       | 19   | 28     |
| December  | 0<br>44.7                        | 0<br>43.0 | 0<br>45.9 | 0<br>44.0 | 0<br>43.5 | 0<br>42.3 | 0<br>0.2                           | 0<br>44.5              | 0<br>43.1         | 0<br>0.3   | 0<br>42.8                  | 0<br>1.7              | 0<br>39.6       | 0<br>4.9                   | 0<br>47.8               | 0<br>40.6               | 0<br>44.2              | 0<br>0.2                  | 0<br>44.0          | 7.2               | 56       | 17   | 29       | 5    | 27     |
| Means     | 0<br>52.1                        | 0<br>49.4 | 0<br>54.3 | 0<br>50.9 | 0<br>48.5 | 0<br>47.2 | 0<br>1.3                           | 0<br>50.3              | 0<br>49.2         | 0<br>0.9   | 0<br>48.3                  | 0<br>2.0              | 0<br>45.3       | 0<br>4.9                   | 0<br>57.6               | 0<br>44.2               | 0<br>50.8              | 0<br>0.3                  | 0<br>50.6          | 13.1              | 66       |      | 31       |      | 34     |

The Thermometers are placed on the leaded 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.

| 1902.       |      | WINDS. |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                |        |        |       |      |     |      |     |     |  |  |
|-------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|-------|------|-----|------|-----|-----|--|--|
|             |      | E.     |        |        | S.E.   |        |        | S.     |        |        | S.W.   |        |        | W.     |        |        | N.W.   |        |        | N.     |        |        | N.E.   |        |        | AVERAGE FORCE. |        |        |       |      |     |      |     |     |  |  |
| Month.      |      | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m. | 3 p.m. | 9 p.m. | 9 a.m.         | 3 p.m. | 9 p.m. | Mean. |      |     |      |     |     |  |  |
| January     | 1    | 3      | 1      | 0      | 2      | 2      | 0      | 3      | 4      | 4      | 9      | 10     | 7      | 2      | 2      | 0      | 2      | 1      | 1      | 1      | 2      | 1      | 1      | 1      | 2      | 1              | 1      | 1      | 1     | 1.2  | 1.1 | 0.9  | 1.1 |     |  |  |
| February    | 1    | 2      | 1      | 4      | 2      | 6      | 4      | 1      | 1      | 0      | 1      | 2      | 0      | 7      | 6      | 3      | 4      | 6      | 5      | 1      | 0      | 1      | 1      | 1      | 1      | 1              | 1      | 1      | 1     | 1.0  | 1.1 | 0.8  | 1.0 |     |  |  |
| March ...   | 1    | 2      | 1      | 1      | 2      | 1      | 1      | 2      | 0      | 8      | 10     | 8      | 8      | 0      | 2      | 0      | 0      | 0      | 1      | 1      | 3      | 1      | 4      | 1      | 1      | 1              | 1      | 1      | 1     | 1.3  | 1.4 | 1.1  | 1.3 |     |  |  |
| April ...   | 3    | 3      | 0      | 2      | 3      | 2      | 2      | 3      | 3      | 2      | 3      | 1      | 4      | 4      | 2      | 0      | 5      | 6      | 5      | 6      | 4      | 5      | 6      | 4      | 2      | 2              | 2      | 2      | 1.5   | 1.3  | 0.8 | 1.2  |     |     |  |  |
| May ...     | 0    | 0      | 0      | 0      | 0      | 0      | 0      | 1      | 0      | 5      | 5      | 6      | 8      | 8      | 6      | 3      | 1      | 0      | 0      | 1      | 5      | 1      | 6      | 3      | 1      | 0              | 0      | 1      | 1.5   | 1.6  | 0.6 | 1.3  |     |     |  |  |
| June .....  | 5    | 5      | 4      | 5      | 3      | 3      | 4      | 2      | 2      | 2      | 3      | 3      | 4      | 1      | 2      | 1      | 2      | 2      | 2      | 2      | 7      | 6      | 4      | 1      | 2      | 2              | 2      | 1.4    | 1.4   | 1.0  | 1.3 |      |     |     |  |  |
| July .....  | 1    | 2      | 0      | 3      | 1      | 1      | 0      | 2      | 2      | 6      | 8      | 5      | 6      | 3      | 4      | 2      | 0      | 0      | 0      | 12     | 11     | 6      | 3      | 4      | 2      | 0              | 0      | 1      | 1.0   | 1.0  | 0.4 | 0.8  |     |     |  |  |
| August ...  | 2    | 1      | 0      | 3      | 4      | 2      | 3      | 2      | 4      | 2      | 2      | 3      | 4      | 1      | 0      | 1      | 0      | 0      | 1      | 13     | 14     | 4      | 1      | 0      | 1      | 0              | 0      | 1      | 1.0   | 1.0  | 0.5 | 0.9  |     |     |  |  |
| September   | 2    | 3      | 0      | 8      | 9      | 3      | 3      | 1      | 4      | 1      | 4      | 4      | 3      | 2      | 3      | 0      | 2      | 2      | 2      | 4      | 4      | 3      | 2      | 3      | 0      | 2              | 1      | 1      | 1.0   | 1.2  | 0.5 | 0.9  |     |     |  |  |
| October ... | 2    | 1      | 1      | 1      | 2      | 1      | 2      | 3      | 1      | 3      | 4      | 1      | 4      | 1      | 1      | 2      | 3      | 4      | 1      | 8      | 12     | 4      | 3      | 2      | 0      | 4              | 5      | 3      | 1.0   | 1.0  | 0.5 | 0.8  |     |     |  |  |
| November    | 3    | 3      | 3      | 10     | 7      | 5      | 2      | 5      | 3      | 4      | 4      | 3      | 0      | 1      | 1      | 1      | 1      | 1      | 1      | 2      | 3      | 0      | 1      | 1      | 1      | 2              | 4      | 2      | 1.0   | 1.2  | 0.8 | 1.0  |     |     |  |  |
| December    | 1    | 1      | 0      | 1      | 1      | 0      | 3      | 3      | 1      | 7      | 7      | 2      | 4      | 4      | 5      | 3      | 5      | 5      | 7      | 6      | 5      | 4      | 4      | 5      | 3      | 5              | 7      | 1      | 1.2   | 1.1  | 1.0 | 1.1  |     |     |  |  |
| Total ...   | 22   | 26     | 11     | 46     | 43     | 24     | 26     | 26     | 26     | 40     | 50     | 37     | 88     | 98     | 52     | 36     | 35     | 14     | 27     | 31     | 27     | 14     | 2      | 2      | 2      | 2              | 2      | 2      | 14.2  | 14.4 | 8.9 | 12.7 |     |     |  |  |
| Means ...   | 19.6 |        |        | 37.6   |        |        | 26.0   |        |        | 31.3   |        |        | 42.3   |        |        | 79.3   |        |        | 28.3   |        |        | 28.3   |        |        | 1.1    |                |        | 1.2    |       |      | 0.7 |      |     | 1.0 |  |  |

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

TABLE No. 4.

| 1902.     | WEATHER.            |        |        |       |                     |                            |       |        |                                 |                                     |                         |      | REMARKS. |        |      |      |      |      |  |
|-----------|---------------------|--------|--------|-------|---------------------|----------------------------|-------|--------|---------------------------------|-------------------------------------|-------------------------|------|----------|--------|------|------|------|------|--|
|           | AVERAGE CLOUDINESS. |        |        |       | RAINFALL.           |                            |       |        | No. of days on which rain fell. | No. of days on which the sun shone. | Average Daily sunshine. | Dry. |          | Wet.   |      |      |      |      |  |
|           | 9 a.m.              | 3 p.m. | 9 p.m. | Mean. | Rainfall in inches. | Greatest fall in 24 hours. |       | Depth. |                                 |                                     |                         |      |          |        |      |      |      |      |  |
|           |                     |        |        |       |                     | ins.                       | Date. |        |                                 |                                     |                         |      |          |        |      |      |      |      |  |
| Month.    | 9 a.m.              | 3 p.m. | 9 p.m. | Mean. | ins.                | ins.                       | Date. | ins.   | gms.                            | gms.                                | gms.                    | gms. | gms.     | gms.   | gms. | gms. | gms. | gms. |  |
| January   | 7-2                 | 5      | 6-7    | 7-1   | 2-41                | 15                         | 60    | 1      | 2-8                             | 0-5                                 | 84                      | 214  | 533-3    | 46-4   | 15   | 1-5  | 77   | 16   | Gale 1. Fog 7, 15, 18, 19, 23. Frost, 15, 16, 17, Gale 31. Hail 3, 9, 23, 28.  |
| February  | 5-9                 | 6-3    | 5-2    | 5-8   | 2-47                | 14                         | 63    | 22     | 2-4                             | 0-3                                 | 91                      | 208  | 540-0    | 85-2   | 17   | 3-0  | 73   | 11   | Gale 1. Frost 1, 21, 3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18. Snow 2, 3, 9, 10. Hail, 8, 27. Fog 5, 7, 10, 11, 12, 13, 14, 18, 21. Lunar Halo, 15, 16, 17. |
| March     | 7-2                 | 6-8    | 6-7    | 6-9   | 2-83                | 23                         | 56    | 26     | 3-2                             | 0-5                                 | 86                      | 275  | 529-9    | 115-4  | 20   | 3-7  | 74   | 19   | Fog, 2, 4, 7. Lunar Halo, 19. Hail, 29, 22. Gale, 20, 21, 24, 26.  |
| April     | 6-2                 | 4-7    | 4-6    | 5-1   | 2-56                | 13                         | 1-13  | 21     | 2-9                             | 0-8                                 | 79                      | 253  | 530-0    | 197-8  | 25   | 6-6  | 80   | 10   | Remarkable rain, 21.   |
| May       | 6-9                 | 5-4    | 3-9    | 5-4   | 1-77                | 15                         | 26    | 17     | 3-4                             | 0-6                                 | 86                      | 298  | 527-7    | 225-1  | 30   | 7-2  | 85   | 8    | Hail, 11, 13, 17. Lunar Halo, 21.  |
| June      | 7-3                 | 7-2    | 7-2    | 7-2   | 3-24                | 18                         | 65    | 12     | 4-1                             | 0-6                                 | 86                      | 360  | 522-1    | 171-6  | 24   | 5-7  | 70   | 20   |  |
| July      | 6-5                 | 4-4    | 4-9    | 5-2   | 3-17                | 9                          | 1-28  | 25     | 4-6                             | 1-0                                 | 82                      | 407  | 516-8    | 276-8  | 29   | 8-9  | 83   | 10   | Remarkable Rain, 19, 25.   |
| August    | 5-8                 | 6-6    | 6-1    | 6-1   | 1-65                | 17                         | 48    | 5      | 4-7                             | 1-1                                 | 82                      | 423  | 515-7    | 197-8  | 29   | 6-3  | 82   | 11   | Lightning, 29.   |
| September | 4-2                 | 5-2    | 3-2    | 4-2   | 3-97                | 15                         | 1-06  | 22     | 4-5                             | 0-7                                 | 87                      | 405  | 518-8    | 193-6  | 29   | 6-4  | 77   | 13   | Fog, 23, 23, 25, 27, 28.   |
| October   | 7-0                 | 7-9    | 4-7    | 6-5   | 3-09                | 18                         | 98    | 9      | 3-8                             | 0-6                                 | 86                      | 335  | 524-4    | 105-2  | 25   | 3-4  | 78   | 15   | Fog, 6, 7, 18, 19, 23, 24, 25, 27, 28. Remarkable Lightning, 3.  |
| November  | 6-2                 | 7-4    | 6-7    | 6-7   | 5-86                | 17                         | 81    | 27     | 3-3                             | 0-5                                 | 86                      | 285  | 528-8    | 69-4   | 23   | 2-3  | 74   | 16   | Fog, 1, 2, 3, 23, 23, 27, 30.  |
| December  | 7-9                 | 7-3    | 8-7    | 7-9   | 3-08                | 16                         | 70    | 1      | 2-8                             | 0-5                                 | 84                      | 244  | 533-3    | 41-0   | 15   | 1-3  | 68   | 25   | Fog, 12, 22, 24, 31. Snow, 10. Hail, 25, 29, 30. Lightning, 28.  |
| Means     | 6-5                 | 6-4    | 5-7    | 6-1   | 36-10               | 190*                       |       |        | 3-5                             | 0-6                                 | 84                      | 311  | 501-7    | 1725-3 | 281* | 4-7  | 76   | 14   |  |

\* Totals.

Cloudiness is estimated by dividing the sky into ten parts, and noting how many of these are obscured. The sunshine is taken by a Jordan's Photographic Sunshine Recorder, presented by J. D. Enys, Esq., F. G. S. The rain gauge is placed on the flat roof of the Royal Institution, at about 40 feet from the ground.

## FOOTPRINTS OF VANISHED RACES IN CORNWALL.

By Rev. D. GATH WHITLEY.

The passing away of a race, forms a subject for the serious consideration, not only of the politician, but also of the scientist and the philanthropist. That a community of individuals united by common physical characteristics, and by similar social and moral customs, should slowly decay and ultimately perish, is an event which cannot be contemplated without sorrow. It is, however, an event of frequent occurrence. We have seen, not long ago, the extinction of the strange race of the Tasmanians, the last member of whom, an old woman, died in 1877.<sup>1</sup> The present century will certainly witness the passing away of the Polynesians, for this interesting race has for a long time been diminishing in numbers. It has ever been so; the world is full of the memorials of departed races. The mound-builders of the eastern part of the basin of the Mississippi, who covered the whole of that region with their earthworks, tumuli, and fortifications;<sup>2</sup> the Cliff-dwellers of Arizona, whose strange stone houses appear in the crags and crevices of the precipices;<sup>3</sup> and the constructors of the cyclopean edifices of Polynesia, the stones of which were frequently brought from distant islands,<sup>4</sup> have all utterly disappeared. So also has it been in Cornwall, for, in prehistoric times, many races dwelt in Western Britain, and then darkly passed away. To rescue their records from obscurity; to picture their manners, habits and customs; to assign to them their proper place in the history of our western Peninsula, is the task undertaken by the youthful science of prehistoric archæology.

1. A most valuable account of the Tasmanians may be read in *Hommes Fossiles et Hommes Sauvages*, by M. de Quatrefages, pp 292-400.

2. The Marquis de Nadaillac gives a most exhaustive account of the Mound Builders in his fine work entitled *Prehistoric America*, chaps. III, IV.

3. *Ibid.* Chap. V.

4. The best description of these strange ruins that I have read, is that given by Mr. J. H. Lamprey, in the *Report of the Congress of Prehistoric Archaeology* (Norwich) 1868.

The materials at our disposal for carrying out this investigation, are scanty. I do not mean that Cornwall is poor in prehistoric relics; far from it, it is very rich indeed. Our barrows, camps, stone monuments, ancient graves, and Roman remains, form a most extensive collection of antiquities. But most of these belong to *later times* than those which I am about to consider, for they are generally included in the Celtic era, and belong to the Ages of Bronze and Iron. I am concerned only with *vanished* races, and the Celts are amongst us now, and exhibit no tendency to disappear. I am only investigating the people of Cornwall in the Stone Age, for these are the true prehistoric races. Thus, many of our antiquities must be eliminated from the discussion. There remain—Geology, with its included relics; Folklore, with its legends and traditions; Custom, which cannot be traced to any existing European source; Archæology in its most ancient treasures. And, in addition, scattered up and down in ancient history, there are obscure hints and statements which must all be collected, arranged and woven together with the materials furnished by the other sciences.

Although the Glacial Period prevailed in many parts of Great Britain with great intensity, it is extremely doubtful if Cornwall was glaciated during the great Ice Age.<sup>5</sup> I know that the opposite opinion has been maintained by many talented observers. It has been held,<sup>6</sup> that during the Glacial Period central Devon was covered with a snow-cap, a portion of which melted every summer. The opinion, also, has been expressed, that at the same time the central ridge of Cornwall was buried beneath great snow-fields, from which glaciers descended to our northern and southern shores.<sup>7</sup> The great blocks of quartz on our Cornish commons have also been thought to have been carried thither by moving ice,<sup>8</sup> and the "Head of Rubble" in our cliffs has been considered to have been formed by torrents of muddy water pouring over them during the summer melting of sheets of snow.<sup>9</sup> The

5. Professor J. A. Geikie in his map of the extent of glaciated area during the Glacial Period, which he gives in his able work, entitled *Prehistoric Europe*, shows that the glaciated area of Great Britain did not come as far south as Cornwall.

6. By Mr. R. N. Worth, *Trans. Devon Assoc.*, 1881.

7. See Ussher's *Post Tertiary Geology of Cornwall*, p. 49.

8. By Mr. C. W. Peach, *Trans. Royal Geol. Soc. of Cornwall*, vol., IX, p. 103.

9. *Post Tertiary Geology of Cornwall*, by Mr. W. A. E. Ussher, pp 42-43. Sir Joseph Prestwich entirely dissents from Mr. Ussher's view as to the formation of the Head, and considers it to be a diluvial formation.

transportation of the large boulders in the Head, the patches of isolated gravel, and the rounded outlines of our long and low ridges, have all been looked upon as indications that, during the Glacial Period, large masses of moving ice passed over many portions of Cornwall.<sup>10</sup> I cannot, however, hold this opinion, as the evidence seems insufficient to establish it. The absence of all *undoubted* glacial indications, such as boulder-clay, glacial smoothings and striæ, and genuine morainic deposits, all combine to cast a heavy weight into the scale against the glaciation of Cornwall. It is interesting to note that M. J. A. De Luc, in his account of his travels in Cornwall in 1806, states that the Cornish hills were, in his time, in many places, covered with great blocks of quartz, which were fast being removed by the spread of cultivation.<sup>11</sup> If this were the case a century ago, how much more numerous must have been the quartz-boulders in Cornwall in earlier ages? Quartz blocks are still found on our commons, the largest that I have seen<sup>12</sup> being more than 6 feet long, by 4 feet broad, and 2 feet thick. The rounded forms of our hills do not suggest ice action to me, but rather denudation by water, acting either by an atmospheric, marine, or diluvial agency; and, with reference to the outlines of our Cornish scenery, I do not hesitate to place myself on the side of the "champions of water," as opposed to the "champions of ice."<sup>13</sup>

Nevertheless, the chill of the great winter certainly made itself felt in Cornwall, by making our climate much colder. Proof of this may be found in the granite boulder on the shores of Barnstaple bay,<sup>14</sup> which was clearly carried thither by ice, and by

10. For further notices of glacial action in Cornwall, see the following papers, by Mr. N. Whitley:—"Evidence of Glacial action in Cornwall and Devon," *Trans. Royal Geol. Soc. of Cor.*, vol. X, pp. 132-143. Also "Glacial deposits in Cornwall," *Trans. Roy. Geol. Soc. of Cornwall*, vol. IX, p. 109 (1875). Also, "The Raised Beaches in Falmouth Bay and on Plymouth Hoe," *Jour. of the Roy. Institution of Cornwall*, vol. IX (1888-1889), pp. 415-424.

11. *Geological Travels*, vol. iii, pp. 298, 304, 305, 363, 366.

12. This was near Grampond. Many of the finest blocks of quartz on the commons near Balduh have been lately removed to beautify the Victoria Park at Truro. Others are now used as gateposts in the parish.

13. I borrow these phrases from Sir Henry Howorth's able work—*The Glacial Nightmare and the Flood*, in which the views of extreme glacialists are ably controverted.

14. *Transactions of the Devonshire Association*, vol. vi, 1873 (Paper by Mr. W. Pengeley on this boulder), pp. 211-223.

the occurrence of a semi-arctic vegetation in the drift beds at Bovey Heathfield, characterised by the presence of the dwarf birch and the dwarf willow.<sup>15</sup> There is a remarkable region in North America which has been called—"The Driftless Region of Wisconsin," which helps us to understand the condition of Cornwall during the Glacial Period. This region, which is more than 200 miles long, contains neither glacial markings, nor erratic boulders, nor glacial deposits; and the fissures in its limestone rocks are full of the bones of mastodons, elephants, buffaloes, and wolves. All around this driftless region the rocks are covered with the usual glacial markings and glacial deposits. The American geologists believe, that during the Glacial Period, this driftless region formed a great island, which was surrounded by vast sheets of moving ice.<sup>16</sup> Southern Alaska to-day, beneath Mount St. Elias, is traversed by great glaciers, and supports extensive ice-sheets. But it has a vigorous vegetation, and contains many open spaces, which may help us to picture the condition of Cornwall during the great Ice Age.<sup>17</sup>

The Glacial Period passed away, and a milder climate succeeded in every part of Great Britain. Dense forests—which on the mountains were chiefly formed of dark pines, and on the lowlands by our present vegetation—covered hill and dale. The rivers of southern Britain were then far larger than they are now, and, swollen by the melting of the snows and by a heavy rainfall, rolled in enormous volume through the valleys. Animal life was wonderfully abundant. Of the carnivora; lions, tigers,<sup>18</sup> bears, hyænas and leopards were the leading members. Herbivorous mammalia were still more numerous. Elephants, of three different species,<sup>19</sup> traversed the woods, and marched in great herds

15. *Ibid.* Address by Mr. W. Pengelley to the Association, vol. ii, pp. 24, 25. Mr. Pengelley is doubtful as to the source from which the boulder in Barnstaple was derived, nor does he decide if it were carried by land, river, sea, or ice.

16. For a description of the Driftless Region of Wisconsin, see *The Ice Age in North America*, by G. F. Wright, pp. 120, 194. Also *Man and the Glacial Period*, by G. F. Wright, p. 101. Also, *The Great Ice Age*, by Prof. J. A. Geikie, p. 464. Prof. Geikie quotes at length from Professor Winchell.

17. These glacial regions of Alaska are admirably described by Professor G. F. Wright in his two most interesting works, *The Ice Age in North America*, and *Man and the Glacial Period*.

18. That is, the *Machairodus*, or sabre-toothed tiger, the remains of which have been found in Kent's cavern.

19. *Elephas Meridionalis*. *Elephas Antiquus*. *Elephas Primigenius*. (Mammoth.)

across the grassy glades. Rhinoceroses roamed through the thickets. Hippopotamuses swam and plunged in the rivers; and countless herds of buffaloes, deer, and wild horses scoured the plains. Along with these there flourished, in great numbers, northern animals, such as the reindeer, musk-ox, glutton, and lemming, which all lived side by side with the hippopotamus.

It is in this post-glacial period, that man first appears in Great Britain,<sup>20</sup> having left his implements in the river-gravels and in the caves of North Wales, Derbyshire,<sup>21</sup> and Devonshire. So far as man is concerned, this era is called the Palæolithic Period, because, during its entire duration, man is supposed to have used only roughly chipped flint and other stone weapons, and to have been quite ignorant of the art of grinding or polishing his stone implements. This supposition, however, seems now to be breaking down. So many beautifully polished bone-pins and harpoons have been found amongst the relics of Palæolithic man in the caverns of France, England, Belgium and Switzerland, that it is most improbable that Palæolithic man who could polish his *bone* implements so perfectly, should be unable to polish his *stone* weapons in a similar manner.<sup>22</sup> A polished stone hatchet was, some time ago, found in Palæolithic gravel at Maldon,<sup>23</sup> and similar implements of polished stone have been discovered, associated with the remains of Palæolithic animals, in the caves of Rolland, Rancogne, and Mouthiers, in the department of Charente in Central France.<sup>24</sup> Clearly, then, we ought not hastily to declare that man did not polish his stone implements and weapons during the Palæolithic Period.

Did Palæolithic man live in Cornwall? I believe that he did, but I am not acquainted with any *direct* evidence of his presence here. It is difficult to estimate the value of the numer-

20. I am unable to accept the theories which state that man is Inter-Glacial, or Pre-Glacial in Great Britain.

21. Caves of Cresswell Crags. These are described by Professor W. Boyd Dawkins in *Early Man in Britain*, pp. 175, 187.

22. An examination of the figures of these bone implements, as portrayed in the beautiful plates of *Reliquiæ Aquitanicæ*, will bring home to everyone the full force of this argument.

23. *The Ancient Stone Implements of Great Britain*, by Sir John Evans. (second edition) p. 136.

24. *Memoirs sur Les Restes d'Industrie appartenant aux temps primordiaux, dans le Département de la Charente*, by A. T. Rochebrune, pp. 42, 47, 49.

ous fragments of flint which are scattered over the surface, or buried in the subsoil of our county, for their age is doubtful, and their origin is uncertain. Still, the questions raised by these shattered flints are interesting and important. Carew, writing 300 years ago,<sup>25</sup> does not mention flints in Cornwall. Dr. Borlase, in 1758, refers to the opinion that no flint existed in Cornwall,<sup>26</sup> and declares that this is incorrect, and he further states that flints were found on Marazion beach, and inland at a place near Ludgvan.<sup>27</sup> These Ludgvan flints, he says, were found at a depth of three feet beneath the surface, and ranged in size from a bean to a man's fist. De Luc mentions no flints, though he describes at length the flints on the Haldons in Devon, and on the Blackdown Hills in Somerset.<sup>28</sup> Dr. Boase, also, who travelled more than 1,200 miles *on foot* over Cornwall in order to elucidate its geology, never mentions any flints, although he particularly describes the surface deposits.<sup>29</sup> Sir Henry De la Beche refers to the flints in the Cornish Raised Beaches,<sup>30</sup> and is somewhat at a loss to explain their origin. Since his day, the flints of Cornwall have attracted much attention, because of their being closely connected with the question of the antiquity of man. Flakes and fragments of flint have been found in great numbers all over Cornwall, both on the coast-line and far inland. They occur on our cliffs, in our cultivated districts, and on our moorlands. They are scattered over the surfaces of our commons, and often have to be cleared away—like the quartz blocks—when the land is reclaimed. They lie on the surface of the ground, but are often also buried at a foot or more in the subsoil.

Sir John Maclean tells us that in the parish of St. Minver the flints are buried so deep in the subsoil, that they are beyond the reach of the plough.<sup>31</sup> The country people in Cornwall often call them "strike-a-lights," or say that they are gun-flints only.

25. *Survey of Cornwall*, 1602.

26. *Natural History of Cornwall*, p. 281.

27. *Ibid.* p. 106.

28. *Geological Travels*, vol. iii, pp. 20, 21, 398. It is curious that De Luc visited Stepper Point at Padstow, where flints are so abundant, and yet does not mention that he saw any flints there. All he seems to have wished to do was to upset the Huttonian Theory.

29. *Transactions of the Royal Cornwall Geological Society*, vol. iv, p. 166-475.

30. *Report on the Geology of Cornwall, Devon, and West Somerset*, p. 429.

31. *History of Trigg Minor*, vol. iii, p. 4.



It should also be carefully noted, that many of these flints are by no means small. Is is a common thing in the parishes of Kea, Baldhu and Mithian to find flints six inches long, and some found in the subsoil and the surface of Penstrase Moors were actually a foot in length.<sup>32</sup> Cornwall in prehistoric days contained in itself flint enough for man to make his weapons from, so that we need not imagine an extensive trade from the Blackdown hills in Somersetshire to Cornwall, to provide the raw material for the weapons used here in early times.

The "Head of Rubble," also, which covers our Cornish Raised Beaches, and which is often found in other positions, frequently contains many flints, which are in the forms of pebbles, nuclei, and flakes.<sup>33</sup> Sir Joseph Prestwich has expressed his opinion<sup>34</sup> that the Head is the place where, most probably, the weapons of Paleolithic man will be discovered, and flint weapons have actually been found in the Head, at Brighton, and Sanguatte.<sup>35</sup> The Raised Beaches also contain shattered flints.

It is also important to remember that flints, by no means of small size, have been found in the stream-tin deposits of Cornwall. Whatever differences of opinion may exist as to the manner in which the stanniferous beds were formed, most geologists agree in assigning them to the Paleolithic period. Both Professor J. A. Geikie<sup>36</sup> and Mr. W. E. Ussher<sup>37</sup> declare that they are of this age, and Sir Joseph Prestwich<sup>38</sup> maintains that our stream-tin deposits belong to the closing portion of the Paleolithic period. The characteristics and distribution of these detrital tin beds have been described by Mr. W. J. Henwood in his usual masterly manner,<sup>39</sup> and the valuable account given of them by Mr.

32. In clearing the surface of a croft which had been taken in from the moors in the neighbourhood of Mithian, so many flints, many of them 6 inches long, were found on the surface of the ground, that the croft was named "Flint-field."

33. Ussher's *Post Tertiary Geology of Cornwall*, pp. 11, 18, 19.

34. *Quarterly Journal of the Geological Society*, vol. xlviii, 1892, p. 338.

35. *On certain phenomena belonging to the close of the last geological period.* By Sir Joseph Prestwich, p. 25.

36. *Prehistoric Europe*, pp. 238, 442.

37. *Post Tertiary Geology of Cornwall*, pp. 44, 45, 50.

38. *Quarterly Journal of the Geological Society*, vol. xlviii, 1892, pp. 303, 316, 317.

39. *Journal of the Royal Institution of Cornwall*, vol. iv, 1873; and *Transactions of the Royal Geological Society of Cornwall*, vol. iv, pp. 57, 69. See also Mr. Carne's account of the tin-beds in the same volume.

J. H. Collins,<sup>40</sup> will be read by all students with great interest and profit. Now, in the stream-tin deposits at Red-moor in the parish of Lanlivery, flints of considerable size have been discovered.<sup>41</sup> These might have been formed by Palæolithic man, and perhaps were left by him lying on the ground, so that they were taken up and carried along by the rush of tumultuous waters which deposited our stream-tin beds, and finally left buried deep in the detrital tin deposits. It is to be hoped, that all who in the future find flints in Cornwall, will carefully observe four things connected with these fragments. *First*, their geographical situation. *Secondly*, their geological position,—whether they lie in the Head, Raised Beaches, or inland. If inland, it will be necessary to note whether they lie on the surface or at some depth, and by what stones they are surrounded. *Thirdly*, their size, for this is most important. *Fourthly*, their form, which must be compared with others.

But the presence of Palæolithic man in Cornwall may also be inferred from the discovery of his remains and relics in Devonshire. In 1887, in a fissure at Cattedown at Plymouth, the bones and skulls of fifteen human beings of both sexes were found, side by side with the remains of the lion, hyæna, and rhinoceros.<sup>42</sup> As some of these human remains lay at the *lowest* level in the fissure, and as they were in the same chemical condition as the bones of the extinct mammalia, with which they were confusedly intermingled, the Palæolithic age of these human skulls and bones seems to be fully established. In Kent's cave, also, human relics, such as pins and harpoons of bone, have been found in the cave-earth and black-band, along with the bones of the same Palæolithic mammalia.<sup>43</sup> These discoveries, as well as others,

40. *Journal of the Royal Institution of Cornwall*, vol. xii, 1893-5, pp. 64-75. Mr. Collins considers these beds to be of Post-Tertiary age.

41. *Journal of the Royal Institution of Cornwall*, vol. iv, 1873, p. 215.

42. The able reasoning of Mr. R. N. Worth, in his most valuable account of this discovery in *Transactions of the Devonshire Association* for 1887, proves the Palæolithic age of these human bones. I am indebted to the kindness of Mr. Robert Burnard for further information on this matter. I visited the fissure shortly after its discovery. The remains are now in the museum of the Plymouth Institution. Mr. Worth also described these remains in the *Transactions of the Royal Geological Society of Cornwall*, 1887.

43. These bone harpoons and pins are described and figured by Sir John Evans in *Ancient Stone Implements* (2nd edition) pp. 505, 506.

clearly prove that Palæolithic man lived in Devonshire. If man lived in the adjoining county in the Palæolithic age, it can hardly be doubted that he visited Cornwall, for the Tamar, although then doubtless larger, would in its upper course present no obstacle. I believe, then, that we are justified in concluding that Palæolithic man lived in Cornwall, and that he hunted the mammoth and the rhinoceros, in the valleys and amidst the woods of our county.

I know that no remains of these great beasts have been discovered in Cornwall, but I believe that their bones were found here in prehistoric days. My reason for this is the prevalence of stories about the giants, which form so prominent a feature in the folk-lore of Cornwall. Who were the giants? The notion that they were the spirits of the Druids who rejected Christianity may be dismissed. Mr. J. H. Matthews maintains<sup>44</sup> that they represent a Pre-Celtic and Turanian race, who were driven by the Celts into the woods and fastnesses. This does not seem probable, as the Celts would be taller than the Turanians who inhabited Cornwall before the Celtic invasion. It has been proved to demonstration that many of the bones which were formerly said to have belonged to giants in different countries in Europe, are simply the remains of the mammoth and the rhinoceros.<sup>45</sup> In France and in Germany this has been constantly proved by anatomists. In Spain, the bones which were said to have belonged to the giant St. Christopher, have been shown to be those of an elephant. In Westphalia, M. Dupont says<sup>46</sup> that in some churches the bones of giants were exhibited which, when examined by anatomists, were found to be those of whales. Similar stories come from Russia. When, during mining operations in the Ural mountains, the bones of the mammoth were discovered, the natives objected to their removal, and said to the Russians—"Take from us our gold and our silver if you will, but leave us

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44. *A History of St. Ives, Lelant, Towednack, and Zennor*, p. 380.

45. Notices of these finds of giants' bones having been proved to be those of the great mammalia may be found in Cuvier's *Les Ossements Fossiles*. Sir Henry Howorth also describes them at great length in *The Mammoth and the Flood*, pp. 13-27.

46. *L'Homme pendant Les Ages de la Pierre*, p. 208. Dupont himself thinks that most of the giants' bones belong to the mammoth.

the bones of our great ancestors"! Torrens tells us,<sup>47</sup> that in the Himalayas the bones of fossil elephants are considered to be those of giants, and Mr. Darwin found similar stories current in South America.<sup>48</sup> But we may come much nearer home. We all know the story of the prehistoric wrestling match on Plymouth Hoe, in which Corinaeus overthrew the giant Gogmagog,<sup>49</sup> and we are also aware that in the fissures and in the alluvial deposits on the Hoe the bones of elephants and rhinoceroses have frequently been discovered.<sup>50</sup> The stories about dragons have a similar origin. At Klagenfurth, in Carinthia, the head of a dragon was preserved, which Professor Unger found to be that of a rhinoceros.<sup>51</sup> The Manchoo dragon in China also originated from the numerous bones of the mammoth, which were found in Mongolia and Manchuria. Dragon stories occur in the West of England, and are not unknown in Cornwall, while traditions relate the conflicts which occurred between the tanners and the dragons in the valleys of Dartmoor.<sup>52</sup> All this leads me to conclude that in prehistoric days many of the bones of the elephant, rhinoceros and hippopotamus were found in Cornwall, by the rude primitive inhabitants, and were by them considered to have belonged to a race of gigantic human beings.

How long Pakeolithic man lived in Western Britain is uncertain, but his end was tragic. He was overwhelmed by one of those great catastrophes, which occur even now, as we have lately seen in the Krakatoa eruption, and more recently in the disasters in St. Vincent and Martinique. In bygone ages these convulsions were more frequent, and were of a more tremendous character. At the end of the Pakeolithic age the land sank, and tumultuous waters swept over western Europe, by which Pakeolithic man was fairly drowned out, and the great mammalia associated with him were destroyed. The proofs of this cataclysm, so far as the West

47. *Travels in Kashmir and Ladakh*, pp. 85, 86.

48. *Voyage of the Beagle*, chap. viii.

49. This tradition is admirably analysed by Mr. R. N. Worth in *Transactions of the Devon Association*, 1880.

50. See also R. N. Worth's paper on the deposit of Plymouth Hoe, in the *Transactions of the Devon Association* for 1875.

51. *Figuier's World before the Deluge*, pp. 316, 317.

52. *Prehistoric Devon. An Address to the Plymouth Institution, 1881*, by R. N. Worth, p. 38.

of England is concerned, are found in the *sudden* and *complete* disappearance of the great Palæolithic mammalia;<sup>53</sup> in the limestone fissures at Plymouth filled with bones; in the head of angular rubble, which lies over our raised beaches; and in our Cornish deposits of stream-tin. As long ago as 1823, Dr. Buckland stated that the detrital tin deposits of Devon and Cornwall were of diluvial origin.<sup>54</sup> A few years later, Mr. Joseph Carne maintained that the stream tin beds were formed by a great flood, which had never been repeated.<sup>55</sup> Sir Henry De la Beche held that the stream-tin deposits owed their origin to a great deluge, which destroyed the lion, elephant, hyæna and rhinoceros, and filled the limestone fissures at Plymouth with their bones.<sup>56</sup> This view is also advanced by Sir Henry Howorth.<sup>57</sup> Sir Joseph Prestwich has gone much further. He has maintained<sup>58</sup> that our Cornish stream-tin beds, the head of rubble, and the ossiferous fissures, were all formed at one time by a great deluge and submergence, which produced what he calls "The Rubble Drift." With this view, I entirely agree. It may be, also, that those aberrant deposits in Cornwall which so perplex geologists, such as the gravels of Crousa Downs and Polcrebo near Crowan,<sup>59</sup> as well as the sands and clays of St. Agnes' Beacon, are all the work of the same diluvial catastrophe.<sup>60</sup> So perished Palæolithic man, overwhelmed by the surging waters of a vast inundation.

The curtain falls over Cornwall at the close of the Palæolithic age, and when it rises again all is new, and we seem to be

53. I allude particularly to the lion, hyæna, leopard, elephant, rhinoceros and hippopotamus.

54. *Reliquiæ Diluvianæ*, pp. 218, 219.

55. *Journal of the Royal Geological Society of Cornwall*, vol. iv, pp. 55, 56, iii. Mr. Carne's papers should be read by all who wish to gain a good idea of the question.

56. *Report on the Geology of Cornwall, Devon, and West Somerset*, pp. 400, 412, 416.

57. *Geological Magazine*, vol. ix, 1882, p. 510.

58. *Quarterly Journal of the Royal Geological Society*, vol. xlviii, 1892, pp. 316, 317, 342. Even so great a champion of uniformity in geology as Dr. J. A. Geikie is compelled to admit that the closing scene of the Quarternary era, which includes the Palæolithic period, was one of "torrential rivers and vast inundations."—*Pre-historic Europe*, p. 543.

59. For a description of the Polcrebo gravels, see the paper by Mr. William Tyack in *The Transactions of the Royal Geological Society of Cornwall*, vol. ix, p. 177.

60. Sir Joseph Prestwich considers that the beds of sand and clay on St. Agnes' Beacon, are a part of the Rubble Drift, and were deposited during a submergence at the end of the Palæolithic age.—*Quarterly Geological Journal*, 1892, p. 316.

in another world. The flora is the same as before, but the fauna has completely altered. The great beasts are gone for ever, and in their place there appears the meagre wild fauna which characterised Europe at the dawn of the historic era. In early Neolithic times, Cornwall extended much further sea-wards than it does now. This is proved by the submarine forests which exist all round our southern coasts, from Rame to the Land's End, and on our northern shores from the Land's End to Hartland. These forests are known to be later than the end of the Palæolithic period, because we sometimes find them—as at Porlock<sup>61</sup>—growing on the head of rubble, and also because the bones of the great Palæolithic mammalia are not found in them. They extend far out to sea, at least 100 feet below low water mark. In Neolithic days they must have formed densely wooded tracts through which our rivers sluggishly found their way to the sea, between banks of reeds, hazels and willows. Inland, the slopes of our hills were covered with dense forests, consisting of oaks, elms, birch and hazel, whilst many of the valleys were wild lonely morasses. Where the Tregoss Moors and Trewartha Marsh now spread their green expanses, there stretched then great deep lakes, fringed by thickets of reeds and overhung by wooded hills. Beneath our granite tors as they rose in silent grandeur there extended great open spaces above the woodlands, carpeted with verdant grass. There flourished, in tangled profusion, fox-glove, brier and harebell. There grew wide rolling seas of ferns, interspersed with patches of golden gorse and purple heather.

Compared with the great number of wild beasts that inhabited Western Britain during the Palæolithic period, the fauna of Cornwall in the Neolithic age seems poor and meagre. The great Irish elk—which was not a real elk, but a genuine deer—was then king of our Cornish woodlands. The maned bison or Aurochs, and the gigantic wild-bull or Urus, roamed through the glades and the thickets. Strange also it is to learn that the reindeer was at that time an inhabitant both of Cornwall and Devon, some of its skulls and antlers found in Cornwall being now in the museum of the Royal Institution of Cornwall at Truro.<sup>62</sup> Herds

61. *Quarterly Journal of the Geological Society*, vol. xlviii, 1892, p. 286.

62. A pair of horns of the red deer found at Pentuan are also in the museum at Truro.

of red-deer also abounded, their bones being found in the valley alluvia, and in the submarine forests.<sup>63</sup> Foxes, martens, polecats, badgers and otters were numerous, and packs of wolves sweeping through the forests after nightfall, made the woods resound with their dismal howlings. The contrast between this fauna and that of the Palæolithic age which immediately preceded it, is remarkable. The Palæolithic fauna, with a few exceptions,<sup>64</sup> was essentially an *African* fauna, its leading animals being the lion, hyæna, elephant, rhinoceros, and hippopotamus. The Neolithic fauna is entirely a *European* fauna, and almost exactly like that which lives in Europe to-day, two or three members only<sup>65</sup> having disappeared. This great contrast is owing to the diluvial catastrophe which occurred at the end of the Palæolithic age, and brought about an extraordinary change in the fauna of the whole of Europe and America.

Sir John Evans has said<sup>66</sup> that owing to climatical changes, failure of food, and other causes, the occupation of Western Europe by man ceased with the close of the Palæolithic age, and it was only after a long period that men again entered it, having immigrated from a distant part of the world. Dr. J. A. Geikie, also, has declared<sup>67</sup> that in the early Neolithic age, all Western Europe was uninhabited by man. With this view I entirely agree. The convulsions and aqueous débâcles, which closed the Palæolithic age, left vast tracts of Northern Europe empty and desolate, and it was a long time before these regions could be re-peopled, by men and beasts, from other parts of the world which had escaped devastation.

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63. The bones of the reindeer, red-deer, bison, and wild bull have all been found in the Neolithic beds at Carnon and Pentuan. See Mr. R. Q. Couch's paper in *Transactions of the Royal Geological Society of Cornwall*, vol. vii, pp. 265, 266. For the bones of the reindeer which were found in the submarine forest in Barnstaple bay, see *Report of the Norwich Congress on Prehistoric Archaeology*, for 1868, p. 89. There is also a local tradition that the wood used in the construction of the church at Braunton was drawn to the churchyard by reindeer. See *Student*, vol. iv, p. 343; also *Transactions of the Devonshire Association*, vol. ii, p. 163 [1867]. Mr. J. M. Hall is the author of these statements.

64. Such as the musk-ox, glutton and lemming.

65. Such as the Irish elk, urus.

66. *Address to the British Association at Toronto*, 1897, p. 15.

67. *Prehistoric Europe*, p. 554.

The absence of long-barrows (which are thought to be entirely Neolithic sepulchres) from Cornwall, has led to the adoption of the strange idea, that Cornwall was uninhabited all through the Neolithic age!<sup>68</sup> This notion needs no discussion. The numerous polished stone weapons, such as hatchets, scrapers, hammers, battle-axes, and arrow-heads found in Cornwall, prove that our county was well peopled during the Neolithic period. But who were these primitive inhabitants of Cornwall? Long-barrows are characteristic of the Neolithic age, and from their complete absence from Cornwall, it has been concluded that the Cornish Neolithic inhabitants were quite different from those who dwelt in other parts of Britain during the Neolithic era, and were direct descendants of Palæolithic man. I cannot accept this theory. Palæolithic man was chiefly distinguished from Neolithic man by the special character and particular beauty of his bone implements, and by his artistic ability. His bone harpoons and engravings are found in Kent's cavern,<sup>69</sup> and in the caves of Cresswell Crags,<sup>70</sup> but *not one* of these particular bone harpoons or engravings has ever been found amongst the relics of Neolithic man in Cornwall. This proves that between the two races of men there was no connection whatever.

I believe that the first human beings who entered Cornwall in the Neolithic period belonged to a race of dwarfs or pigmies, and were veritable "little people." The study of dwarf races is a new branch of anthropology, and it has wonderfully developed during the last twenty years. Ancient classical authors<sup>71</sup> mention pigmies living in remote parts of Asia and Africa, and the conflicts of the latter with the cranes are described in amusing language. These stories were for long thought to be childish inventions, but recent discoveries have proved that they were perfectly correct. When the Dutch occupied South Africa, they met with the dwarf Bushmen, who are the smallest pigmies in the world. The Spaniards also had become acquainted with the

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68. *Journal of the Anthropological Institute*, vol. ix, 1880, p. 147.

69. *Ancient Stone Implements of Great Britain*, by Sir John Evans, pp. 505, 506.

70. *Early Man in Britain*, by Professor W. Boyd Dawkins, pp. 184, 185.

71. Such as Herodotus, Pliny, Ctesias and Aristotle. M. de Quatrefages has shown that pigmy races have been found in those very regions of Asia and Africa in which they were located by these writers. See *Les Pygmées*, p. 27.



Aëtas and Mamanouas, dwarf races of the Phillipine Islands,<sup>72</sup> and Europeans before long discovered the dwarfs in the Andaman Islands, who are known as the Mincopies. In Africa, new dwarf tribes were constantly being found, such as the Sokos by Dr. Krapf, and the Obangos by M. Du Chaillu. Sweinfurth, in 1879, discovered the strange pigmies the Akkas, in the heart of Central Africa.<sup>73</sup> Since then, many writers such as Sir H. M. Stanley and Sir Harry Johnston, have described the pigmies and dwarfs of the Congo Forest and of the Uganda Protectorate. It is now held by many anthropologists, that a number of dwarf races formed the earliest human inhabitants of Central Africa. Mr. R. G. Haliburton<sup>74</sup> has traced these pigmy races into Morocco and Spain. Long ago, Jacob Grimm concluded from the traditions of elves, gnomes, and trolls, current in Germany, that dwarf races inhabited Central Europe in prehistoric times, and Professor Nillson has come to the same conclusion concerning Scandinavia.<sup>75</sup> Ten years ago Dr. Nüesch found the bones of pigmies in a Neolithic deposit near Schaffhausen,<sup>76</sup> who were smaller than the dwarfs of the Andamans. Professors Sergi, Thilenius and Köllmann, are at present examining the remains of racial dwarfs of the Neolithic Period, in Germany, and the last named anthropologist declares that he has found the bones of pigmies in a cave called La Grotte des Fées, in the department of Seine-et-Marne, in France. So it is also as far as Switzerland is concerned, and Professor Wyss supposes that the traditionary dwarfs of the Alps were pigmies, who were forced to take refuge in the mountains by their taller neighbours.

In England we have similar legends of fairies, goblins, and "little people," which are now explained in the same way, by many of our leading anthropologists. Professor E. B. Tylor<sup>77</sup> holds that these stories had their origin in a primitive race of pigmies. Mr. David Mac Ritchie has written much on the sub-

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72. These dwarfs have been well described by M. Montano, in *Voyage aux Philippines* pp. 64—73, and by M. de Quatrefages in *Les Pygmées*, chaps. ii, iii. and in *Hommes Fossiles et Hommes Sauvages*, pp. 170—194.

73. *The Heart of Africa*, vol. ii, pp. 122, 146.

74. *Dwarf Survivals and Traditions as to Pygmy Races*, pp. 1—5.

75. *The Primitive Inhabitants of Scandinavia*, pp. 207, 210.

76. *Scottish Geographical Magazine*, Sept., 1897, p. 472

77. *Primitive Culture*, vol. i, pp. 283, 385.

ject,<sup>78</sup> and has shown that the "Picts Houses" of Scotland, and fairy legends of the north, may be traced to a race of prehistoric dwarfs. That able Celtic scholar, Professor Rhys, has, lately, in a valuable work,<sup>79</sup> set forth the view that a dwarf race inhabited Britain previous to the Celtic invasion, and these views have met with general acceptance.

I would apply these conclusions to Cornwall. We have our legends of Piskies, Fairies and "Little People." As these stories are now understood in Europe to refer to a real race of prehistoric dwarfs, so I believe we may understand them with reference to Cornwall. I believe, then, that our piskies and fairies were genuine Cornish dwarfs belonging to a real race of diminutive human beings. As to the fairies, they had a similar origin. They were not the dethroned gods of the heathen Celts,<sup>80</sup> nor were they the spirits of unbaptized children, or of Druids who had rejected Christianity,<sup>81</sup> but they were originally dwarfs and pigmies similar to the piskies. This also will explain the tradition existing among the French peasantry, that the fairies were mortal,<sup>82</sup> and the stories that long ago they were actually killed in Wales! Cornwall, then, was in the early days of the Neolithic age, inhabited by a race of pigmies, like the bushmen of South Africa, and whom, for convenience, I shall call the "Piskey-Dwarfs."

The diminutive flint arrow-heads, found all over Western Europe, furnish another proof of the existence of these pigmies. These little arrow-heads occur in France, some only half-an-inch long being figured by M. de Mortillet.<sup>83</sup> They have been found in a kitchen-midden at Hastings,<sup>84</sup> they abound in Ireland,<sup>85</sup> and the Rev. Reginald Gatty has found large numbers of them in Yorkshire.<sup>86</sup> They are found also in Germany and in Poland. In

78. In his valuable works *The Testimony of Tradition and Fians, Fairies, and Picts*.

79. *Celtic Folklore*.

80. Elton's *Origins of English History*, p. 213.

81. Matthews' *History of St Ives, Lelant, Towednack, and Zennor*, p. 382.

82. *La France Préhistorique*, by M. E. Cartailhac, p. 163.

83. *Formation de la Nation Française*, p. 250.

84. *Journal of the Anthropological Institute*, November, 1895. Sir John Evans has figured some of the minute arrow-heads.

85. *Transactions of the Royal Society of Antiquaries of Ireland*, 1895, pp. 41-63.

86. *Ancient Stone Implements of Great Britain*, by Sir John Evans, p. 325.

all these regions they are truly of Neolithic age. In Cornwall, also, we have many of them, and those found by Mr Thurstan Peter, in his excavations on Carn Brea, may be seen in the museum of this Institution.<sup>87</sup> These tiny flint arrow-heads must have been fitted to a very small shaft, and must have been shot from a diminutive bow, by a dwarf archer. The Akkas, a race of dwarfs in Central Africa, now use diminutive bows and arrows.<sup>88</sup> Now it is singular, that tradition says that these flint arrow-heads were the darts shot at the cattle during the night by the fairies, hence they are often called "Elf Arrows."<sup>89</sup> In Ireland they are also known as the arrows of the fairies and elves, magical properties are assigned to them, and the cattle are said to have been wounded by them.<sup>90</sup> The simple interpretation of these traditions is, that the Neolithic pigmies in Britain made night attacks on the cattle of their stronger neighbours, as is the habit of the Bushmen of South Africa.

The little piskey dwarfs were the first inhabitants of Britain in the Neolithic age, just as the Bushmen and the Aëtas are acknowledged to have been the earliest inhabitants of South Africa and of the Philippines. The Neolithic pigmies entered Britain from the south, probably at the time, when, as Dr. J. A. Geikie has shown,<sup>91</sup> Britain was joined to Europe. The dwarfs spread through Britain, and entered Cornwall. They wandered through our forests and along our shores. They hunted the elk and the deer in our woods, and perhaps like the Bushmen, danced and sang at night to the light of the moon. They found the land silent and empty, and wandered, danced, and hunted alone. In a *real* sense there were in Cornwall in those bygone days—

"Fairies, goblins, gnomes, and elves,  
Sporting in the woods and dells."

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87. See also Mr. Thurstan Peter's pictures in his paper in *The Journal of the Royal Institution of Cornwall*, vol. xiii. 1895, pp. 92—103.

88. *Les Pygmées* by M. de Quatrefages. p. 265. The Bushmen also use very small arrows.

89. *Ancient Stone Implements of Great Britain*, p. 366.

90. *Catalogue of Antiquities in the Museum of the Royal Irish Academy*, by Sir William Wilde, p. 19.

91. *Prehistoric Europe*, pp. 521, 568. Had there been other and stronger tribes in Britain then the dwarfs would not have dared to enter the land. Hence they were the *first* of the Neolithic tribes.

The next race that appeared in Cornwall, the *third* in order of time, was that of the Dolmen Builders.<sup>92</sup> The strange men who raised the most important of our rude stone monuments were a sea-faring and maritime people. They came into Europe from the south, having planted stations along the southern shores of the Mediterranean, where they raised dolmens, and then passed on towards the west. They were ignorant of metals, and belonged to the Turanian family of mankind, and were possessed of a culture and a mechanical genius, which, for so early a time as the Neolithic age, were truly surprising. Having made large settlements in France,<sup>93</sup> and also in Ireland,<sup>94</sup> they, in due time, reached Cornwall, entering our county probably from Brittany or from Ireland. Their culture and their migrations by sea are curiously evidenced by some of the oldest carvings on the Dolmens. Occasionally we find on these monuments carvings cut on the *lower face* of the capstone at the exact point of its contact with the uprights. These must, therefore, have been executed by the builders of the Dolmen before the cap-stone was placed in its horizontal position.<sup>95</sup> Many of these carvings consist of semi-circular lines, which probably represent the waves of the sea. This supposition is rendered more probable from the fact that Dr. Barth found amongst the ruins in Tripoli the same curved lines, which must have been waves, as they supported a boat.<sup>96</sup> It is interesting to notice that Barth considers that these carvings were the work of the Berber race, and some archæologists consider that it was this race that raised the Dolmens. Other carvings on the Dolmens represent oval and ornamental shields, which are, according to M. de Mortillet,<sup>97</sup> the first representations of coats-of-arms. On these shields, also, serpents are

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92. For a masterly description of the Dolmens in Europe, Asia, &c, the student is referred to the great work of Mr. W. C. Borlase, entitled the *Dolmens of Ireland*, which is a monument of profound learning and of patient labour.

93. There are, according to M. de Mortillet, 3410 dolmens in France. *Le Pré-historique, Antiquité de l'Homme*, pp. 591, 592.

94. Mr. W. C. Borlase states, that there are altogether 898 dolmens in Ireland—*The Dolmens of Ireland*, vol. ii, p. 418.

95. These are on the Dolmens of Gavr Innis, and Loch Mariukar in Brittany, and are figured by M. Mortillet—*Formation de la Nation Française* pp. 167, 163. Also by M. Cartailhac in his *La France Préhistorique*, p. 238.

96. *Travels in Northern and Central Africa*, chap iv, p. 49.

97. *Formation de la Nation Française*, p. 171.

carved, which prove that the carvers came from the East. It is also likely that these forms indicate that the carvers were serpent worshippers, in which case they show their Turanian origin, as Mr. J. Fergusson has proved<sup>98</sup> that the worship of serpents has been a special characteristic of Turanian races. In Cornwall we have none of these strange carvings on our Dolmens. The Rev. W. Iago, however, calls attention to singular markings on our rocks and stone monuments,<sup>99</sup> which if further examined might lead to very interesting results.

I believe that the Dolmen Builders, during their sojourn in Cornwall, which the fewness of their monuments proves to have been of short duration, were friendly towards the little piskey-dwarfs. The evidence of this attitude is found in the existence of so many piskey legends in Cornwall. Had the Dolmen Builders exterminated the dwarfs, then, as the former left our shores, no traditions of these pigmies could have come down to us, for the next human invaders would have found Cornwall absolutely without inhabitants. Moreover, the shortness of the stay of the Dolmen Builders in Cornwall is another proof that they could not have exterminated the dwarfs, as this would have taken an immensely long period, during which the Dolmen Builders would have covered the *whole* of Cornwall with a multitude of rude stone monuments. Sweinfurth tells us<sup>100</sup> that the little pigmies of Central Africa, known as the Akkas, are well treated by their taller neighbours the Monbuttoos, because of their dexterity in hunting. So I believe it was in Cornwall. The dwarfs of our county were not molested by the builders of the Dolmens, but friendly relations existed between the two races. These pacific intercourses, however, did not last long. The Dolmen Builders, from some unknown reason, left Cornwall, probably returning to Brittany or to Ireland. They left no relics behind them except their megalithic monuments, and once more the diminutive piskey-dwarfs were the sole human inhabitants of Cornwall.

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98. *Tree and Serpent Worship*, p. 73.

99. *Journal of the Royal Institution of Cornwall*, vol. x, 1890-91, pp. 188, 189.

100. *The Heart of Africa*, vol. ii, pp. 144, 145. Many of the tribes of Pigmies on the verge of the Congo Forest, are also well treated by their taller and stronger neighbours.

The last race that entered Cornwall in the Neolithic age, the *fourth* in order of time, was the most important of all, and has left behind it more relics than any other. This race is known as the Ivernian, or, as many prefer to call it, the Iberian. It has in Britain left so many remains and relics, that its representatives may be called the Neolithic men *par excellence*. The proof of its presence consists in the collection and arrangement of a multitude of facts and details, which we must now consider.

Numerous facts combine to show that the Celts were not the first inhabitants of Britain, and that on their arrival on our shores they found at *least* one other race of non-Aryan stock in possession of most of the country.

Scattered over Western and Northern Britain there are linguistic peculiarities, religious ideas, social customs, and physical characteristics, which cannot be traced to any Aryan source.<sup>101</sup> Many of these are found in Cornwall. The custom called Borough English, by which, in the absence of a will, land descends to the youngest son, and which is known in Cornwall, is admitted both by Lord Avebury<sup>102</sup> and Mr. Elton<sup>103</sup> to mark a non-Celtic race. The traces of serpent worship amongst us are not of Aryan but of Turanian origin,<sup>104</sup> and so are the indications of animal worship.<sup>105</sup> The numerous flint arrow-heads also are not of Celtic origin, for the bow does not seem to have been a Celtic weapon at the time when the Celts invaded Britain. The Celts are supposed to have introduced bronze into Britain, and their weapons were chiefly swords, spears, and battle-axes. Sir John Evans draws attention<sup>106</sup> to the almost total absence of bronze arrow-heads in England, and in ancient Irish Celtic history the bow is rarely mentioned,<sup>107</sup> although Sir William Wilde figures a few bronze Irish arrow-heads.<sup>108</sup> It is curious, also, that in France, where the Celts were so numerous and powerful, there is no mention of the bow in historical writings, previous to the reign of Charlemagne in the 8th century.<sup>109</sup> Now in Cornwall we have

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101. A summary of these is given in Mr. Charles Elton's *Origins of English History*, 1st edit., pp. 183—222.

102. *The Scenery of England*, p. 470.

103. *Origins of English History*, pp. 217, 218.

104. *Fergusson's Tree and Serpent Worship*, pp. 40, 73.

105. *Celtic Britain*, by Professor John Rhys, p. 260.

106. *The Ancient Bronze Implements of Great Britain*, p. 217.

arrow-heads of flint and quartzite, of various forms. Some are leaf-shaped, some lozenge-shaped, and some barbed and stemmed. All these varieties were found by Mr. Thurstan Peter on Carn Brea,<sup>110</sup> and a fine flint arrow-head, stemmed and barbed, has lately been found near Dozmare Pool.<sup>111</sup> From the extraordinary superstitions which the Celts connected with these arrow-heads, it is plain that they never used any of them.<sup>113</sup>

The researches of Busk, Thurnam, Huxley and Boyd Dawkins,<sup>113</sup> in this country have shown that—omitting the pigmies—one special race was spread all over Great Britain during the latter part of the Neolithic age. The men of this race were of short stature, averaging 5-ft. 5-in. in height, and often less. They were characterised by low foreheads, aquiline noses, and long (dolichocephalic) heads. It was their special custom in burial to place the corpse in a contracted position, the body being laid on one side, the hands placed before the face, and the knees drawn up to the chin. These short Neolithic men have been identified<sup>114</sup> with the Silures, who inhabited portions of Southern Wales at the time of the Roman occupation of Britain, and who are described by Tacitus in the following words—“The dark complexion of the Silures, their usually curly hair, and the fact that Spain is the opposite shore to them, are evidence that Iberians of a former date crossed over and occupied those parts.”<sup>115</sup> A similar short and dark race lived at the same time in Ireland, particularly in the districts west of the Shannon, and its members were called by the Celts, “the dusky children of the night,” and “night people,” from their swarthy colour, and

107. *Irish Names and Places*, by Dr. Joyce, vol. ii, p. 174, quoted by Rev. G. Buick in *Transactions of the Royal Society of Antiquaries of Ireland*, 1895, pp. 41-63.

108. *Catalogue of the Antiquities in the Museum of the Royal Irish Academy*, p. 303

109. *Encyclopedia Britannica*. Article—“Bow.”

110. *Journal of the Royal Institution of Cornwall*, vol. xiii, 1895, pp. 92-103.

111. I am indebted to the kindness of the Rev. H. G. O. Kendall, of St. Mary Magdalene's, Launceston, who found this arrow-head, for this information.

112. A summary of these superstitions is given by Sir John Evans in his *Ancient Stone Implements of Great Britain*, pp. 363-367.

113. *Early Man in Britain*, pp. 309-310.

114. This has been admirably done by Professor W. Boyd Dawkins in *Cave Hunting*, pp. 220-230, and *Early Man in Britain*, pp. 310-330. See also Dr. Garson's lecture on *Early British Races*, delivered before the Royal Institution in 1894.

115. *Agricola*, cap. xi. The words of Tacitus are—“Colorati vultus et torti plerumque crines.”

dark hair.<sup>116</sup> Remnants also of a short, dark-haired and swarthy people may even now be found in the Highlands of Western Scotland.<sup>117</sup>

This short dark race has been called Iberian, and the term has secured general acceptance. Professor Rhys, however,<sup>118</sup> proposes to call the race Ivernian, as by this name the non-Celtic inhabitants of Ireland were known, and he gives good reasons for supposing that the same name was applied to these non-Celtic people in England and Scotland. I shall, therefore, follow him, and call these people Ivernians, but the term is the exact equivalent of Iberians. This race was widely distributed. In Ireland its members were called by the Celts by the name of Fir Bolg, that is—"Men of the Bag." Mr. McLean has shown<sup>119</sup> that in Scotland, Islay was once in the possession of the Fir Bolgs, who have been identified by Mr. Skene,<sup>120</sup> with the Dumnonii of England and Scotland, and also with the Silures, who were the well known representatives of the Ivernian race.

Whence came this Ivernian race? It is most probable from the east. It is true that M. Broca brings them into Europe from the south by way of Africa. It is, however, more likely that they came from Central or Northern Asia, as the carvings on the rocks in Scotland<sup>121</sup> represent serpents and perhaps tigers, whilst the Mongolian superstitions associated with the race support this conclusion. Mr. W. C. Borlase,<sup>122</sup> thinks that the Iberian race on reaching western Europe divided in two parts, one of which going northwards entered Britain, whilst the other spread to the south, and peopled France and Spain, a remnant still existing in the Basques. Professor W. Boyd Dawkins also considers<sup>123</sup> that the

116. Elton's *Origins of English History*, p. 140 [note].

117. See a most valuable paper by Mr. Hector Mc Lean in the *Journal of the Anthropological Institute*, vol. vii, 1878. Mr. W. C. Borlase also draws attention to the distribution of this ancient dark race in Scotland and Ireland in his *Dolmens of Ireland*, vol. iii, pp. 1029-1034.

118. *Celtic Britain*, pp. 262, 263.

119. *Journal of the Anthropological Institute*, vol. vii, 1878.

120. *Celtic Scotland*, vol. i.

121. *Report of the Norwich Congress of Archaeology*, 1868, pp. 34, 35.

122. *The Dolmens of Ireland*, vol. ii, p. 610. Mr. Borlase also describes the spread of this race in his *Age of the Saints*, pp. xiv, xv.

123. *Early Men in Britain*, p. 323. The Ligures are also considered by Professor Dawkins, to belong to the same Iberian race.



Etruscans were, in later times, the most civilized portion of the Ivernian race.

We have now to trace this Ivernian race into Cornwall. Mr. Elton,<sup>124</sup> following Mr. Skene, thinks that the tin-workers of the Scilly Islands, who traded to Spain, were of Ivernian race, and the name Scilly is considered by some to be a variation of the word Silures. Professor Rhys has shown<sup>125</sup> that traces of the Ivernians are found in Cornwall, although he shows that these indications are but slight. The Rev. S. Baring-Gould speaks<sup>126</sup> of the "Dusky Ivernians," as having preceded the Gaelic Celts in Cornwall, and he is inclined to place *two* dusky races of Neolithic Turanians before the arrival of the Celts,<sup>127</sup> apparently considering the Dolmen Builders to be—as I think—a *separate* Neolithic race. Mr. W. C. Borlase<sup>128</sup> mentions the occurrence of the dark type in Cornwall, and compares it with the similar dark type anciently existing in Ireland and Scotland. Dr. John Beddoe has declared<sup>129</sup> that there are Mongolian elements in the population of Cornwall, and he gives illustrations of the occurrence of the Iberian race in different parts of Cornwall. We meet here and there, in the western part of our county, with swarthy faces and dark black hair, which may belong to descendants of the ancient Ivernian people.

We have found in Cornwall separate skulls in our alluvial deposits and forest beds, and for which a great antiquity has been claimed, but it is very difficult to ascertain their precise age. I do not think that the Carnon skull which was found in the stream-works of that valley, has an antiquity beyond the Celtic period. A skeleton was found in these stream-works on the tin ground, and a figure of it has been given by Mr. W. J. Henwood,<sup>130</sup> but I do not think that it can claim a great antiquity, although it was found at a depth of 22 feet in the alluvium.

124. *Origins of English History*, p. 158.

125. In the map contained in his work, *Celtic Britain*. Although using the name Ivernian, Professor Rhys fully accepts the Iberian theory.

126. *Journal of the Royal Institution of Cornwall*, 1898, and *Ibid*, vol. xiii, 1898: 358, 359.

127. *Ibid*, p. 378.

128. *Memoirs of the Anthropological Society*, vol. ii. 1865-6, pp. 351, 355.

129. *The Age of the Saints*, by Mr. W. C. Borlase, pp. xvi., xvii.

130. *Journal of the Royal Institution of Cornwall*, vol. iv 1873, p. 106.

The skull found at Carnon is also separately figured by Mr. Henwood.<sup>131</sup> These relics were deep below the surface in the alluvium (or "overburden") above the tin ground, and were associated with the bones of deer and wild oxen. Mr. R. Q. Couch pronounced the Pentuan skulls to be unlike any now existing,<sup>132</sup> and they are certainly not ordinary Neolithic type. Mr. R. N. Worth has claimed a high antiquity for the Carnon remains,<sup>133</sup> but as a metal crucifix was found in the same deposit at a depth of 40 feet beneath the surface, it does not seem safe to give to the Carnon skeleton a high antiquity. Human skulls were also found under 40 feet of sand and mud, in the overburden of one of the stream works at Pentuan,<sup>134</sup> along with the bones of deer and oxen; but, here again, the age of the human remains is extremely doubtful.<sup>135</sup> Another remarkable Cornish skull, for which a great antiquity is claimed, is that which is called the Sennen skull, and which is figured and described by Mr. Borlase,<sup>136</sup> and also by Mr. Carter Blake;<sup>137</sup> Professor Busk also<sup>138</sup> has noticed it. This skull is very long (dolichocephalic) and is of a true Neolithic type. It is said to have been found at Sennen, in a peat-bog or forest, 30 feet below the sea level, but nothing more seems to be known about it. The skulls found recently at Harlyn are certainly of Neolithic age, being truly dolichocephalic, and also slightly prognathous, which latter characteristic unites them to a certain Neolithic type of skull found at Borreby in Denmark.<sup>139</sup> Dr. Beddoe, who has described the Harlyn skulls,<sup>140</sup> has drawn attention to the solitary well dolichocephalic

131. *Ibid.* In the same article, p. 208. They are also noticed by him in *Transactions of the Royal Geological Society of Cornwall*, vol. iv, p. 58.

132. *Transactions of the Royal Geological Society of Cornwall*, vol. vii, p. 235

133. In his paper on *The Antiquity of Mining in the West of England*, published in the *Journal of the Plymouth Institution*, 1874, vol. v, p. 140.

134. *Transactions of the Royal Geological Society of Cornwall*, vol. iv, p. 36, and Sir Henry De la Beche's *Report on the Geology of Cornwall, Devon, and West Somerset*, p. 402.

135. No details seem to have been published about these Pentewan skulls. Mr. J. W. Colenso actually thought they might have belonged to Africans or Asiatics!

136. *The Dolmens of Ireland*, vol. iii, p. 944.

137. *The Geologist*, vol. v, p. 211.

138. *Natural History Review*, vol. i [1861] p. 174. I know of very few details concerning this skull.

139. Figured by M. Fraipont in his *Les Cavernes et leurs Habitants*.

140. *Journal of the Royal Institution of Cornwall*, vol. xv, 1902, pp. 161-179.

developed brachycephalic skull found amongst them. A fragment of a long (dolichocephalic) skull was found in a limestone quarry at Plymouth some time ago,<sup>141</sup> but nothing special seems to be known about it. Mr. W. C. Borlase in speaking of the Sennen skull,<sup>142</sup> says that it and the Borris skull (from Ireland) are the earliest British representatives of the dolicho-platicephalic<sup>142a</sup> type. Professor Busk also<sup>143</sup> compares the Sennen skull with a long skull found in the cave of Cefn at St. Asaph.

The position of the skeleton, in the contracted or doubled-up posture within the stone cist, is such a characteristic of the Neolithic age, that Lord Avebury says concerning it—"There can be no doubt that in the Neolithic stone age it was usual to bury the corpse in a sitting or contracted posture; and, indeed, it appears probable, although far from being satisfactorily established, that in Western Europe this attitude generally indicates an interment of the Stone age: while those cases in which the skeleton was extended may be referred, with little hesitation, to the age of iron."<sup>144</sup> Professor Boyd Dawkins,<sup>145</sup> is equally emphatic in declaring that the contracted burial was the rule in the Neolithic period, and it is, according to M. Cartailhac,<sup>146</sup> the usual position of the body in Neolithic graves in western and southern France. It is a form of burial peculiarly characteristic of the Turanian race, and exists to-day amongst the Bashkir Tartars, the Eskimo, and the natives of Laos and Annam. The burial in the contracted position, so characteristic of the Ivernians in the Neolithic age, is found in Cornwall. Mr. Borlase describes<sup>147</sup> an interesting case from Trevalga Head near Newquay, where the corpse lay in a contracted position in a stone cist, within

141. *The Geologist*, vol. v, p. 212. It is much to be regretted that more details of the fragments of skulls found at Plymouth in the limestone fissures, have not been preserved. The Cattedown skulls have shown how important these remains may be.

142. *The Dolmens of Ireland*, vol. iii, p. 944.

142a. Broad-shaped skull.

143. *Journal of the Ethnological Society*, Jan. 1871. Professor Boyd Dawkins describes the Cefn Cave, and reproduces Professor Busk's statements in *Cave Hunting*, pp. 159-187.

144. *Prehistoric Times*, 6th edition, 1900, p. 148.

145. *Early Man in Britain*, p. 287. Sir John Evans suggests that the corpse was placed in this attitude as if in sleep. *Ancient Stone Implements of Great Britain*, 2nd edition, 1897, p. 149.

146. *La France Préhistorique*, p. 271. M. Cartailhac agrees with Sir John Evans as to the origin of this posture. In France, however, skeletons in other positions of Neolithic age have been found.

147. *Nania Cornubia*, pp. 80-90.

a barrow. It is true that the barrow may have been raised by the Celts, but the Ivernians continued to exist in Celtic times, and perhaps they buried their warrior in a Celtic barrow, to secure his remains from desecration by the Celts. Even in Christian times in France, Christians were sometimes buried in ancient barrows, and the practise was only stopped by the exertions of the bishops and the clergy. At Sheviock, also, near St. Germans, another case of contracted burial was discovered.<sup>148</sup> The skeleton lay in a cist of four stones, with a top cover. It lay on its side, in the contracted Neolithic position, and a small earthenware cup was by its side, as is found in the burials of the same age in the north of England.<sup>149</sup> Another case of contracted burial in Cornwall is doubtfully reported at Lesnewth. Mr. Borlase has also drawn attention to the fact<sup>150</sup> that many of our Cornish cists, which are now empty, are too small to have received a corpse unless it was bent up, and M. Cartailhac has pointed out the same fact with regard to many empty cists in France and Switzerland.<sup>151</sup> The Harlyn burials, also, which have been so fully and so admirably described in this journal by the Rev. W. Iago,<sup>152</sup> present another instance of this form of burial. In this pre-historic graveyard, most of the skeletons lay in the contracted position, showing that (although later burials are found here), the *oldest* burials are of Neolithic date, and belong to the Ivernians. On the coast of Brittany, Neolithic graves buried in the sand, with stone cists, like those at Harlyn, have been discovered. Other graveyards like that at Harlyn, exist in Cornwall, and at any time they may be unearthed by agricultural or building operations.

From the foregoing facts—and others might be brought forward—I conclude that men of the Ivernian race lived in Cornwall in the Neolithic Age, and we may picture their physical and social characteristics, from what we have discovered of them, in other parts of Great Britain.

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<sup>148</sup> *Journal of the Royal Institution of Cornwall*, vol. vii, 1881-1883, p. 136. The account is given by Mr. C. Spence Bate, and there is also a drawing of the position of the corpse, which well shows the contracted posture in which the body was buried.

<sup>149</sup> Sir John Evans gives cases of a drinking cup or food pot being found with contracted skeletons in cists, in *Ancient Stone Implements of Great Britain*, pp. 148-149.

<sup>150</sup> *Nænia Cornubiæ*, p. 78.

<sup>151</sup> *La France Préhistorique*, p. 230.

<sup>152</sup> *Journal of the Royal Institution of Cornwall*, vol. xiv, 1901, pp. 325-328.

The Ivernians were short, being on an average less than 5-ft. 5-in. in height. They had black hair, straight noses, black eyes, and dark brown skins. The present Basques represent, according to Professor Boyd Dawkins,<sup>154</sup> the old Ivernian race, and the crania of the ancient Silures, the Ivernians of South Wales, are singularly like the Basque skulls.<sup>155</sup> This short, dark race, existed in the Highlands of Western Scotland,<sup>156</sup> and in the Hebrides, the Fir Bolgs of Islay having been identified by Mr. Skene,<sup>157</sup> with the Dumnonii of England and Scotland, and with the Silures. In Ireland one of the names of the short dark Ivernians was Fir-Bolg, that is "Men of the Bag." This has very correctly been explained by Mr. Hector McLean,<sup>158</sup> to mean—"Men of the Quiver," from their custom of carrying their arrows in a skin bag or pouch, while the Celts, who gave this name to them, did not use the bow, but were armed with spears and swords. A Fir Bolg warrior of Ireland is thus described by an ancient writer: he is "A griffin of the race of Conn, the Hundred fighter;" he is called the Lion of Birra, and the Hawk of the Shannon: "a large man of slender body, with a skin like the blossom of apple-trees, brown eyebrows, black curling hair, long fingers, and a cheek like the cherries."<sup>159</sup> As this description is rather poetical and figurative, we will picture the Ivernian warrior in sober prose. He is a short but muscular man, with a swarthy brown complexion, dark eyes, and coal-black hair. He is clad in roughly woven cloth, over which hang pouches of the skins of small animals. His head is decked with feathers and shell pendants, and the teeth of wild animals are hung by a string round his neck. In his right hand he carries a spear with a flint point, his battle-axe of polished flint is stuck in his girdle, his bow is in his left hand, and a skin bag, containing his arrows, hangs over his shoulders. His face is strangely

154. *Early Man in Britain*, pp. 314, 315.

155. *Memoirs of the Anthropological Society*, vol. ii., 1865-66, p. 356 [note.] See also Mr. W. C. Borlase's *Age of The Saints*, pp. xv.-xvii, for further characteristics of the Ivernian type and its Spanish connection; that is, with the Basques of the North Eastern parts of Spain.

156. *The Races of Britain*, by Dr. Beddoe, pp. 26, 258.

157. *Celtic Scotland*, vol. i.

158. *Journal of the Anthropological Institute*, vol. vii., 1878, p. 78.

159. Elton's *Origins of English History*, p. 140. [note.] Mr. Elton quotes from Fitzgerald and O'Flaherty.

tattooed, and similar markings, representing birds and animals, appear on his arms and legs. His dark eye is quick and restless, and he advances with an agile and graceful step, like a panther preparing for a spring. Such was the ancient Cornish Ivernian, the fiercest fighter of the Neolithic Age.<sup>160</sup> The great chiefs were probably mounted, as the horse was domesticated by them, and it has even been supposed that their dogs accompanied them to battle.

The Ivernians were farmers and agriculturists. They had domestic animals, such as the pig, horse, ox, and dog,<sup>161</sup> and the bones found so plentifully at Harlyn, probably belong to these animals. They also tilled the ground, and the mealing-stones or hand-mills, found in Cornwall,<sup>162</sup> may probably have been used in Ivernian times. The stone spindle-whorls, called in Cornwall "Piskey Grinding-Stones,"<sup>163</sup> may also belong to the same period. It is singular, that in Ireland, as Sir William Wilde informs us,<sup>164</sup> they are called "Fairy Mills," which shows that, at all events, their use *began* amongst a primitive under-sized race. A caution, however, is necessary, as these implements, although *originating* amongst a vanished and dwarfish race, may have been used down to comparatively recent times, as has been shown by Sir Arthur Mitchell.<sup>165</sup> The hut circles on our moors have been thought to be relics of the Neolithic Period, and often the work of the Ivernians.<sup>167</sup> Others, again, have referred them to the ancient Tinnerns, and it is very likely that, in many places, the Tinnerns built and inhabited them. But *all* cannot be thus accounted for. On our Cornish moors groups of hut-circles often occur on the *tops* of the hills, and on the *northern* slopes of the watershed, far away

160. See the description given of the Niam Niam warrior by Sweinturth, in his *Heart of Africa*, vol. ii., pp 28, 32, for a parallel to the agility and ferocity of the Ivernian.

161. A full list of these domestic animals is given by M. de Mortillet in *Le Préhistorique, Antiquité de l'Homme*, pp. 570-577.

162. Mr. C Spence Bate describes the bones of these animals, found in Kitchen-Midden, at Harlyn *Transactions of the Devonshire Association*, vol i., 1867.

163. *Nannia Cornubia*, p. 221. *Archæologia Cambrensis*, vol. iii., p. 356 A full account of the general nature of these implements is given by Sir John Evans in *Ancient Stone Implements of Great Britain*, pp. 250-256.

164. *Ancient Stone Implements of Great Britain*, p. 437.

165. *Catalogue of the Antiquities in the Museum of the Royal Irish Academy*, p. 116.

166. In his valuable work—*The Past in the Present*.

167. *Early Man in Britain*, by Professor Boyd Dawkins, p. 266.

from any deposits of Stream-Tin. These must be relics of a pastoral people, whose cattle ranged the summits of the hills, whilst the circles stood on the wooded slopes and eminences. The rectangular stone buildings at Smallacombe, near Trewartha Marsh,<sup>169</sup> are evidently of a later date. Wooden causeways found in the bed of streams, and leading across them have been ascribed to this period.<sup>170</sup> One was found at Pentuan,<sup>171</sup> and another crossed the bed of the Looe river; but their age is uncertain. The "Giants Graves" in the Scilly Isles,<sup>172</sup> and the lowest cists in the tumulus at Chapel Carn Brea, in St. Just, described and explored by Mr. Borlase,<sup>173</sup> are also, probably, Ivernian sepulchres.

Druidism was the religion of many of the Ivernians, and was borrowed from them, in later times, by some of the Gaelic Celts. Of course, much that the classical authors wrote of the Druids must be rejected;<sup>174</sup> but we need not deny the existence of Druidism altogether. The characteristics of Druidism are Turanian, and both Professor Rhys<sup>175</sup> and Mr. Elton,<sup>176</sup> consider that it was the religion of the Ivernians, which was spread, according to Professor Rhys,<sup>177</sup> over Western Europe from the Baltic to Gibraltar. The Druids, with whom St. Columba contended in the country of the Pictish King Brude,<sup>178</sup> also, were clearly Ivernian, for this northern part of Scotland was, at that time, an Ivernian region. The Druids were the mystical priests of the Ivernians, and resembled the Shamans of the Siberians,<sup>179</sup>

169. A long account of the Smallacombe ruins is given by the Rev. S. Baring-Gould in the *Journal of the Royal Institution of Cornwall*, vol. xi., 1891-3, p. 57.

Mr. W. C. Borlase, also, has several times described the Chysauster huts. *Age of the Saints*, p. 52, which are of the same type.

170. *Prehistoric Europe*, by Dr. J. A. Geikie, p. 424.

171. *Transactions of the Royal Geological Society of Cornwall*, vol. iv., p. 37.

172. *The Scilly Isles*, by Dr. Borlase, p. 17.

173. *The Age of the Saints*, pp., v.-xxvii.

174. As has been shown by Mr. Worth in *Transactions of the Devon Association*, vol. xii., pp., 228-242. [1880].

175. *Celtic Britain*, pp. 68, 69.

176. *Origins of English History*, p. 266.

177. *Celtic Britain*, p. 72.

178. *Ireland and the Celtic Church*, by Prof. G. F. Stokes, pp., 123-4.

179. Erman's *Travels in Siberia*, vol. ii., pp. 45, 301, 306. Also *the Russians on the Amur*, by E. G. Ravenstein, pp. 364, 384, 392. And, *Tent life in Siberia*, by G. Kennan, pp. 210-213.

and the "Great Medicine Men" of the North American Indians.<sup>180</sup> In order to increase the awe in which they were held, the Druids, doubtless, celebrated their mystic rites among the cairns and dolmens raised by a still older race.<sup>181</sup>

Cannibalism, as an occasional custom, existed among the Ivernians. According to Strabo<sup>182</sup> it prevailed amongst the Irish, and St. Jerome,<sup>183</sup> writing in the 4th Century, A.D., tells us that it was practised by the Attecotti of Northern Britain. These Attecotti were apparently not Celts, and have been identified by Professor Rhys<sup>184</sup> with the Ivernians, which identification has been accepted by Mr. Borlase. Proofs of cannibalism have been found by Messrs. Thurnam, Green, and Rolleston, in the long-barrows, which are supposed to be Neolithic and Ivernian monuments. Mr. Borlase thinks it probable<sup>185</sup> that human sacrifices and cannibalism prevailed in Britain in the Neolithic Age.

The Ivernians spread through Britain, and even pushed their way as far west as the Scilly Islands, for Professor Rhys thinks<sup>186</sup> that the island of Silura, mentioned by Solinus, shows that the Scilly Islands bore a name cognate with that of the Silures.

A cruel war of extermination was waged by the Ivernians against the Piskey-Dwarfs, who were driven to the darkest fastnesses, just as in the present day the Kaffirs hunt down the wretched Bushmen in South Africa, and the Dyaks, of Borneo, destroy the Semang dwarfs. Mr. Borlase says—"It is curious to notice that in one dialect of the Basque (Guipuscoan) *piska* means "little." In others, namely, Biscayan, Libourdin, and

180. The Rev. S Baring-Gould makes a similar comparison. *Journal of the Royal Institution of Cornwall*, vol. xiv., 1900, p. 31. He also thinks that Druidism originated among the ancient Ivernians. *Ibid*, vol. xiv., 1900, p. 30. And he shows how the Christian teacher in Britain succeeded to the place of the Druid.

181. So thought Mr. Borlase. *Transactions of the Penzance Natural History Society*, 1880-1881, p. 27.

182. *Geography*, book, iv., chap. v., pp. 298-299.

183. Hier., *Opera*, vol. ii., p. 335.

184. *Celtic Britain*, pp. 230, 272.

185. *The Dolmens of Ireland*, vol. ii., p. 476. Mr. Borlase has also expressed the opinion that Druidism, with its wild necromancy, had a Finno-Ugric origin.—*Age of the Saints*, p. 104.

186. *Celtic Britain*, p. 302.



that of Bas Navarre, the same word takes the form of *Puska* and *puchka*; thus *piska pich-ka*, or *puchkha-bat* means a little man or a dwarf.<sup>187</sup> The Ivernians and ancient Basques are supposed to have been of the same race; so this explanation of the word "Piskey" is interesting. In Ireland the same conflict occurred, tradition declaring that the Milesians (Ivernians) expelled the Fairy race (dwarfs) from the Emerald Isle.<sup>188</sup> So it was in Scotland, where the Dwarfs in legend, were called Duergars or Drows.<sup>189</sup> Like all existing Pigmy races, the Cornish Dwarfs were hunters alone, and on being driven to the woods and morasses, found their means of subsistence decreasing, so that they were compelled to make nightly forays on the herds of cattle kept by the Ivernians, as already mentioned, shooting at them with their little stone-tipped arrows; from which nightly raids probably arose the tradition that the little flint-arrow heads in Scotland were the darts shot at the cattle by the fairies.<sup>190</sup> The Pigmies also dug hollows underground and in banks, and dwelt there, originating the stories that the fairies lived underground and within the hills. Chased into the darkest recesses of the forests, the Dwarfs seldom appeared, and their diminutive forms, seen in the dusk flitting amongst the trees, gave rise to the tales of Satyrs in Europe, and of the similar tradition of the Ourisks, or demons of the woods, held by the Gaelic Celts of Scotland.<sup>191</sup> From these causes a semi-supernatural character was attached to the Pigmies in Britain, as they became fewer, and were more rarely seen.

This conflict of extermination was proceeding when the Gaelic Celts, the vanguard of the great Aryan or Indo-European race, entered Britain. With the entry of the Celts into Britain a new era begins, for the Celts introduced bronze into our country. The date of the arrival of the Celts in Britain is quite uncertain. About B.C. 330, the geographer Pytheas voyaged

187 *The Dolmens of Ireland*, vol. iii., p. 913.

188. *Elton's Origins of English History*, p. 139.

189. *Demonology and Witchcraft*, by Sir Walter Scott, pp. 122-123. Also *Fians, Fairies and Picts*, by Mr. David MacRitchie, p. x. (Introduction).

190. *Ancient Stone Implements of Great Britain*, by Sir John Evans, pp. 365, 366.

191. *Scott's Demonology and Witchcraft*, p. 113.

from Massilia to Northern Europe.<sup>192</sup> He sailed up the English Channel and landed in Kent, where he found the Celtic farmers busy harvesting, so that the Aryan invasion of Britain had occurred long before.<sup>193</sup>

Between the Celts and Ivernians a long and bitter conflict raged. The Celts were armed with bronze swords and shields, and against these terrible weapons, the stone-pointed spears and arrows of the Ivernians were of but little avail. Still, they faced the invader stoutly, and the struggle went on in various parts of Britain for considerably more than a thousand years. A second wave of Celtic invasion, the Brythonic, followed the Gaelic entry, and this Brythonic invasion is placed by the Rev. S. Baring-Gould,<sup>194</sup> about the sixth century before Christ. The Roman conquest of Britain found the Celts and Ivernians still in conflict, and the latter were still so strong, that they occupied, as isolated peoples, Southern Wales and Northern Scotland. But in Cornwall the Celts were now the dominant race.

As the Ivernians were driven by the Celts to the wilder parts of Britain, and to the forest recesses and mountain fastnesses, they were frequently compelled to construct underground dwellings and subterranean hiding places, just as a Scandinavian tradition says that "The dwarfs could not bear daylight, but during the day hid in their holes."<sup>195</sup> In Scotland these underground dwellings are called "Picts Houses," and have been most ably described by Mr. MacRitchie,<sup>196</sup> in many valuable writings. The "Picts Houses" are double-walled, roofed with stones, and completely covered with a grassy mound, while a long, narrow passage, like a stone drain, leads from the entrance to the central

192. The good account of the voyage of Pytheas is given in Elton's *Origins of English History*, chaps. i. and ii. Also in Lord Avebury's *Prehistoric Times*, pp. 60-64.

193. There were three great waves of Celtic Invasion. *First*, the Gaelic or Goidelic. *Secondly*, the Brythonic. *Thirdly*, the invasion by the Gaulish King of Soissons, fifty years before Julius Cæsar's attack. Cæsar, *De Bell. Gall.*, ii, chap. 4.

194. *Journal of the Royal Institution of Cornwall*, vol. xiii., 1898, p. 358.

195. *The Land of the Midnight Sun*, by M. duChaillu, vol. ii., pp. 421, 422.

196. *The Testimony of Tradition and Fians, Fairies, and Picts. The Homes of the Picts, etc.* To which valuable works I acknowledge my indebtedness. I am also much indebted to Mr. MacRitchie for his kindness in furnishing me with the results of his personal observations.

chamber.<sup>197</sup> As a further evidence of the Mongolian character of the Ivernians, it may be said that the central underground area of these dwellings has smaller chambers opening into it, exactly as we find in the semi-underground habitations, which are now constructed by the wild Koraks of Eastern Siberia.<sup>198</sup> The traditions of Northern Scotland declare that these "Picts Houses" were constructed by a race of dwarfs.<sup>199</sup> Other rude buildings above ground, but linked together, are found in the Hebrides,<sup>200</sup> where they are also called "Picts Houses." The circular ruined stone towers in the Orkneys and Shetlands, called "Brochs" or "Burghs," are also said to have been built by dwarfs.<sup>201</sup> They resemble, in a remarkable manner, the ancient ruined stone towers in Sardinia, called Nurraghis, and they have also a wonderful resemblance to the "Picts Houses." Evidently they were built by the same race.

Now, in Cornwall, we have some of these strange underground dwellings. They exist at Pendeen, Bolleit, Boscaswell, and at Chapel Euny, and they have been well described by Mr. Blight,<sup>202</sup> Mr. Edmonds,<sup>203</sup> and Mr. Borlase,<sup>205</sup> and they have been declared by Mr. Blight and Mr. Borlase to strikingly resemble the Picts' Houses of Northern Scotland. They were underground places of refuge, in which the Ivernians hid from their Celtic enemies. Mr. Borlase says, that as iron weapons and Roman pottery were found in the underground dwellings at

197. See *Memoirs of the Anthropological Society*, vol. ii., 1865-66, pp. 226-231, for accounts of the Picts Houses, by Mr. Anderson. And *Ibid*, pp. 216-225, for Mr. George Petrie's descriptions of them.

198. *Tent Life in Siberia*, by G. Kennan, pp. 173-176.

199. "The Homes of the Picts," by David MacRitchie, in the *Reliquary and Illustrated Archaeologist*, April, 1901.

200. See also Mr. MacRitchie's *Fians, Fairies, and Picts*, pp. 46-52.

201. *Ibid*, p. 75. The Brochs are also described in *Memoirs of the Anthropological Society*, vol. ii., 1865-6, pp. 216-221. Lord Avebury gives a good photograph of the Burgh [Broch] of Mousa in the Shetlands in *Prehistoric Times*, p. 50. Readers of Sir Walter Scott's *Pirate* will remember that the dwelling of Norna was in a ruined Burgh on a promontory.

202. Capt. Oliver describes these Nurraghis in *Transactions of the Anthropological Institute*, vol. iv., 1875, p. 95. He says that they exactly resemble the Scotch Burghs.

203. *Journal of the Royal Institution of Cornwall*, 1864, p. 6.

204. *The Land's End District*, pp. 51, 52. He refers to the dwellings at Bosporthennis.

205. *Proceedings of the Society of Antiquaries*, 1868, p. 151. See Mr. Borlase also in *Transactions of Penzance Natural History Society*, vol. I., 1880-4, p. 31.

Chapel Euny, these retreats were inhabited in the days of the Roman Conquest. This is, doubtless, true, for the Ivernians had not been entirely subdued during the Roman occupation of Britain, as the struggle of the Silures with Romans demonstrates.<sup>206</sup> The Chysauster huts are probably of a later date.<sup>207</sup>

The Roman conquest did not influence the main body of the Ivernians, who dwelt in Northern Scotland<sup>208</sup> (Pict-land), Western Ireland and Cornwall. The Romans had stations in Cornwall, and visited our County, but did not subdue it, and their camps and stations in Cornwall have been most admirably described by the Rev. W. Iago.<sup>209</sup> In A.D. 410 the Romans left Britain, and the struggle between Celt and Ivernian continued. Probably they, at times, united to face the Saxons, since at the battle of Barbury Hill, in A.D. 556,<sup>210</sup> the Britons employed archers, who were most likely Ivernians. Christianity entered Cornwall in the 4th or 5th century after Christ, and must have made converts both amongst Celts and Ivernians, and Mr. Borlase has said that some of the persecutors of the Cornish Saints may have been Ivernian chieftains.

Notwithstanding their underground hiding-places, the extermination of the Ivernians by the Celts proceeded. Many also were enslaved, and these swarthy Ivernian slaves were afterwards known in tradition, especially in Scotland, as "Brownies," from their dark colour.<sup>212</sup> They were the household spirits, which were called by different names in different countries.<sup>213</sup> In Cornwall we have our traditions of the Brownies,<sup>214</sup> who have been vaguely classed among the "Little

206. The word Silures has been immortalised by Sir Roderick Murchison in his great work—*The Silurian System*.

207. There is a good photograph of the Chysauster huts in *Social England*, p. 97 (Cassell & Co.)

208. The Caledonians, who were defeated by Agricola, are thought to have all been Gaelic Celts.

209. *Journal of the Royal Institution of Cornwall*, vol. x., 1890-1, pp. 185-262.

210. Henry of Huntingdon, II, 22.

211. *Age of the Saints*, p. 86. Mr. Borlase also refers to our Cornish Beehive Huts, and declares that they are of early Christian date, from their resemblance to those in Ireland.

212. *Demonology and Witchcraft*, pp. 182, 352, 353.

213. In Germany they were called Kobbolds; in Mauxland, Phynnodderes; in England, Robin Goodfellow; in Yorkshire, Boggarts.

214. *Popular Romances and Traditions of the West of England*, by Robert Hunt, vol. i., p. 65. The Lubbar-Fiend was another name for this household spirit, whose work is described by Milton in *L'Allegro*.

People." Similar little people, of dark colour, were said by tradition to live in caves in Western Europe,<sup>215</sup> where they worked metals, and this is, perhaps, a vague recollection of the time when the Ivernians gave up stone weapons, and forged metals in secret for fear of their Celtic persecutors. A similar tradition of Elfin-arrows being made in caverns was known in Scotland.<sup>216</sup> The Saxon conquest of Cornwall, by Athelstan, in A.D. 926, doubtless brought about a great change. The genuine dwarfs had long been extinct, and the short Ivernians were fast becoming destroyed or assimilated with their masters.

The Ivernian language lasted, according to Professor Rhys,<sup>217</sup> in Northern Scotland until the 11th century, and in Ireland it was still spoken a few centuries before. It was spoken in Cornwall in the days of Ptolomey, A.D. 150, and probably for many centuries after.<sup>218</sup> According to the Rev. S. Baring-Gould, the Ivernians occupied Connaught in the 5th century after<sup>219</sup> Christ, and for a long time the bulk of the population in South Wales remained Ivernian.

The date when the Ivernians lost the last shadow of independent existence is quite unknown. They were absorbed into the Celtic and Saxon stocks, and, as it were, submerged. Traces of their existence, as a lower racial stratum, may even now be seen in the swarthy complexion and black hair, which are common in the northern and western parts of Great Britain. In the Highlands of Scotland and in the Hebrides, short, dark folk, with black hair and black eyes, may still be seen. Mr. J. F. Campbell describes his meeting with one of these in the following words:—"Behind the fire sat a girl with one of those strange foreign faces, which are occasionally to be seen in the Western Isles—a face which reminded me of the Nineveh sculptures, and of faces seen in St. Sebastian. Her hair was as black as night, and her clear, dark eyes, glittered through the peat smoke. Her complexion was dark, and her features so unlike those that

215. *Les Cavernes et leurs Habitants*, by J. Fraipont, pp. 319-329; also *L'Homme pendant Les Ages de la Pierre*, by E. Dupont, pp. 241, 245. M. Fraipont identifies these dwarfs with the Brownies.

216. *Demonology and Witchcraft*. p. 162.

217. *Celtic Britain*, p. 270.

218. *Ibid.* p. 214.

219. *Journal of the Royal Institution of Cornwall*, vol. xiv., pp. 17, 18.

sat about her, that I asked if she were a native of the island, and learned that she was a Highland girl."<sup>220</sup> Here, evidently, was a representative of the old Ivernian race. In Western Ireland, beyond the Shannon, the same short, dark type, prevails. It is found also in South Wales, where the darkest people are the inhabitants of the Rhonddha Valley.<sup>221</sup> These now dwell in the land of the ancient Silures, who were Ivernians. Cornwall, also, shows this dark tint, which is so often ascribed to the intermixture of Spanish blood. According to Dr. Beddoe,<sup>222</sup> the Cornish are the darkest people in England proper. Dark complexions, black hair, and even Mongolian oblique eyes, being frequently observed. Mr. Borlase also states<sup>223</sup> that this dark type is found in the fishing villages of Mount's Bay. In Ireland, also, oblique eyes are from time to time observed.

Thus we have found that in Cornwall we have traces of at least *four* vanished races. *First*, the Palæolithic men, who were swept away by a great diluvial catastrophe; *secondly*, the dwarfs or pigmies, whom, for convenience, I have called the "Piskey-Dwarfs;" *thirdly*, the Dolmen-Builders, who mysteriously departed from our shores; *fourthly*, the Ivernians or Iberians, who were partly assimilated into the Celtic race. All these tribes lived in the Neolithic or Later Stone Age, and, with the exception of the Ivernians in the *later* stages of their history, were unacquainted with the use of metals.<sup>224</sup>

Cornwall, in prehistoric times, presented a complicated battle-field, in which, not only tribe fought with tribe, but race strove with race. Wave after wave of population surged into it, and the weaker were submerged and destroyed. Race followed race across the dim and hazy field, and strangers were doomed in their turn to yield to other strangers who possessed better weapons, and a higher social organisation. So for ages the struggle went on. Till the all-conquering Saxon broke the power of both Celt and Ivernian, and Cornwall's isolated existence came to an end, being lost in the glories of a united England.

220. *Popular Tales of the West Highlands*, vol. iii., p. 144.

221. *Social England*, p. i.

222. *The Races of Britain*, pp. 26, 278.

223. *Age of the Saints*, pp. xvi., xvii.

224. Mr. Hector McLean says that there were three or four pre-Celtic races in Scotland. *Journal of the Anthropological Institute*, vol. vii., 1878, p. 78.

PREBENDARY HINGESTON-RANDOLPH'S REGISTERS OF  
THE BISHOPS OF EXETER, FROM WALTER BRONES-  
COMBE, 1257-1280, TO EDMUND STAFFORD, 1395-1419.

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There is some fear that in the hurrying days in which our lot is cast, we may fail to do justice to the less crowded but not uneventful times of our predecessors. A word or two of commendation and recommendation of the labours of Prebendary Hingeston-Randolph will fall upon sympathetic ears in an assembly of Cornishmen. I desire to affirm that nowhere is there so vivid a view, so many-sided a view, from a point of observation so commanding and so revealing, of the life of Cornwall from the thirteenth to the fifteenth century, as in the seven-fold series of Episcopal Registers which attest the diligence, the scholarship, and the public spirit of their venerable editor, Prebendary Hingeston-Randolph. It is in some degree less necessary than it was to call attention to the value as foundations for a sound knowledge of English Church history of the Episcopal Registers, for Mr. Capes in his very interesting contribution to the series of volumes on the History of the English Church, of which the Dean of Winchester is joint editor, has already done so. It is true, indeed, that his volume covers the fourteenth and fifteenth centuries only, and that he merely mentions these Registers in a footnote (p. 242) as amongst his authorities, but his picture of the mediæval Bishop and his officials is largely based upon these Exeter Registers, and it is one of the most vivid and illuminating descriptions that we have at all.

Of these documents the old diocese of Exeter possesses a long and precious series, and it has the good fortune to contain a scholar who has made seven volumes of them available for study and reference. The series of Registers of the Bishops of Exeter from Bronescombe to Stafford, which for many years Prebendary Hingeston-Randolph has been publishing, do not seem as yet to have met with a recognition as full and appreciative as their great value warrants. They are not, indeed, everybody's books, but it is hardly too much to say that no trustworthy history of the centuries with which they are concerned can be written

without their aid. The thirteenth and the fourteenth centuries, one "precoicious" and the other "disappointing," are full of local and national importance, nor is the fifteenth devoid of abiding interest. The thirteenth century saw Cornwall clothing herself in "a white robe of churches;" the fourteenth saw the triumphant completion of the noble Cathedral which has grown old in the garb with which the genius of that century invested it; the fifteenth century saw a wave of religious feeling sweep over the diocese that seemed to touch every manor house in the west. The evidence of the truth of these statements abounds in this series of documents.

Mr. Capes gives a striking description of the contrast between the engagements of a modern and mediæval Bishop. "Of the ministries that fill up the time and exhaust the energies of a modern Prelate there are few traces in the career of his mediæval predecessor." No, Brewer was years in the Holy Land, joint leader of a Crusade; Stafford was a great state officer; Stapeldon was the King's Lord Treasurer. Fox was never at work, as far as is known, in the diocese at all. Bishops with titles from distant places, places known to us through Marco Polo, went up and down doing odd jobs, while their chiefs were in London or at some great Council, or on important business as ambassadors. Ordinations are held per Henricum Ennachdunensem, and Henricum Ardakenensem, and William Solubriensem. Mr. Capes refers to the Bishop of Soltania, and Soltania is very near to Balaklava.

But these Registers reveal, below and behind all the strange conflicts, personal and parochial, with which the Bishop's officials are called upon to deal, the existence of deep religious feeling, deeper and more personal by far than we have been accustomed to think characterised the times which preceded the Wars of the Roses, and led on to the reconstitution of the externals of religious life in the days of Henry, Edward, and Elizabeth. It may truthfully be said that there is hardly a religious movement that stirred the minds of Cornishmen that does not find illustration and record in the pages of the volumes. And in one respect the illustrations are surprising. Again and again the names connected with parishes and places familiar to our ears as household words were names of note in the same places six and



seven hundred years ago. A Basset, of Tehidy, applies for a licence for a private chapel in his manor house, and a Trevelyan is found presenting a clerk to the living of Perran Uthnoe. There are Boneythons at Bonython, and Helygans at Helygan; there are Kendalls in Treworgy, and Trelawnys in Trelawny. Sometimes in the same parish there occurs the name of the Lord of the Manor applying for a license for the Manor House, and a "Domicellus" of the same name asks to have the same advantage in his home. *Domicellus* is a very common title in Stafford's Register, and appears to mean the eldest son of the Lord of the Manor living in his own house.

More than half a millennium has passed since these things were done, and still the same names are familiar in the same places. It is worth while to notice that the Registers often preserve for us the memory of an office which has passed away. For instance, the Rector of Illogan complains to the Bishop that having appointed Thomas Tresculard, clerk, to the office of "aquebajalus," certain persons named in the document of complaint had removed the said Thomas from his benefice, and had intruded another person into the same. There is not much help to be had from the dictionaries even of Mediæval Latin as to what an *aquebajulus* was. It would seem that his duties were parochial, but not necessarily ecclesiastical. I give three illustrations of the use of this word. The first is from the will of Joan, widow of Robert Dyrwyn of Crediton. She leaves . . . to each of the Vicars 8<sup>d</sup>, to each Annuellar 6<sup>d</sup>, . . . to each *Aquebajulus* in the Church 2<sup>d</sup>. This was in 1391. Now, in 1334, Grandisson had reorganized this Collegiate Church of Crediton, and in his statute he gives place and office to *Clericis aquebajulis*, in the Divine Office of the Choir, while the Parish Church is rebuilding: "donec Parochialis Ecclesia antiqua ibidem re-edificetur." Their duties cannot be adequately conceived of by simply supposing them to be bearers of holy water. They are clerks, they are qualified to take part in the Divine Office of the Choir, and when the part of the building which was the Parish Church should be completed, then the Aquebajuli would resume their duties, whatever they were. It seems likely that they were guardians of the fabric, workmen, and bearers at funerals, and so if they were kindly men they

were remembered in the wills of people who had the advantage of their office and service. Grandisson himself amongst his almost endless legacies gave to every aquebajulus in Exeter sixpence.

But one moral seems written everywhere in the pages of these dry Registers, and that is that history does not give up her message nor reveal her meaning to the merely curious, or the cynical, or the hunter-up of abuses. The abuses indeed to which these Registers bear witness are legion, and they are quite terrible. Even Rural Deans, the most modest of dignitaries, were a terror not always to evil doers. Archdeacons and others, in an ascending climax, ditto. "Pestilent apparitors" swooped down upon the clergy, and lived upon them until paid to go away. Men hardly in holy orders at all, Sub-Deacons at most, were instituted to Rectories, and then allowed by the Bishop to go to Oxford or to Paris for a year to study. Dr. Montague James, in a chapter of the new Cambridge History projected by Lord Acton, has been shewing how, long before the actual Renaissance, signs were abroad that the new leaning was coming, and it is an encouraging thought that, even if an imperfect conscience in such matters suffered the Church to endure boy Rectors, it was an abuse only, it was not indifference or godlessness. The young man is sent to where he can grow wiser, and in many cases he does so. It would be comforting to set these two facts, a reviving life in the universities, and a movement of young divines thitherward, in relation one to the other. But justice will not be done to Prebendary Hingeston-Randolph unless those three volumes which cover the Episcopate of Grandisson are read with care. Evidently their editor feels the spell of that wonderful man's greatness, and delights to call attention to the illustrations of it afforded by almost every page of the Bishop's Register. He, at least, was no absentee, he is always in his diocese. His early years are crowded with various labours in things great and small. His letters are as racy as Sydney Smith's, and as penetrating as St. Paul's. His shrewdness is seen in his refusal to recognize the genuineness of a miracle performed at his own Cathedral Church. His letters on that occasion might have been at the bottom of Shakespeare's "Miracle" of St. Alban's, in the second part of

King Henry VI. The Duke of Gloucester is Grandisson *redivivus*.

But there are greater services still which the Prebendary has rendered to the better understanding of those times. The scene in the Church of St. Buryan, on a July day, 1336, when with a great retinue Grandisson brought back to "obedience," the long-estranged parishioners, is, for the variety of its interest, legal, theological, ethnological and personal, unique even in these records. We know from this account the very text of the Bishop's sermon, the language in which it was preached, the name of the Vicar of St. Just who interpreted the Bishop's sermon to his Cornish listeners in their own tongue. With what interest the whole is invested! Nothing is altered in the scenery. Still there is the same blood in the people's veins. Still there are Penroses, and Vyvyans, and Boscawens in the West Country. But it requires an effort of the imagination to picture a great Medieval Bishop with a splendid retinue, pausing in his progress, to look across in the light of July sunshine upon the beautiful range of coast line that forms the eastern side of Mount's Bay and stretches from St. Michael's Mount to the Lizard.

There are, I believe, four waves of emotion which pass over the Cornish mind to which these volumes bear witness, and they overpass in impressiveness all the abuses and shameful things which disfigured the Church life of the centuries of which these volumes are an outline. Waves of emotion, I call them, but this emotion runs out into acts and deeds. The first is that borne witness to by the Register of Bishop Walter Bronescombe (p. xii). It touched the parish and made the Church the focus of its life. "Between September, 1259, and the end of 1268, the Bishop dedicated eighty-eight churches. Of these dedications forty occurred in a single year." Listen to a few of them, and realise that it was six centuries and a half ago:

A.D. 1259.

On the 24th of September; 1259, the Lord Bishop dedicated the Church of St. Breoke.

On the 26th of September . . the Church of St. Newlyn.

On the 27th of September (it was Sunday) the Church of Kynwen.

On the 28th of September the Chapel of St. Mary of Trueru.

On the 29th of September, the Church of the Friars Preachers of Trueru.

(Is there not a St. Dominic-street in Truro?).

Then the good Bishop goes on to do the same thing, October 3rd, at St. Anthony-in-Roseland.

On October 5th the Chapel, St. Michael de Karheys.

On the 8th, Lamorran.

On the 9th, St. Austol.

On the 11th, St. Mary, at Looe.

On the 13th, Shevioke.

On the 14th, Antony.

On the 15th, Ramme.

On the 16th, Pileton.

On the 17th, St. Mellion.

On the 18th, Botus-Fleming.

On the 20th, St. Dominick.

On the 22nd, North Petherwin.

On the 23rd, St. Clether.

On the 24th he is lost to Cornwall; he is swallowed up in Devonshire, where, as far as the inferior Devonshire nature allows, he appears to be doing in less emotional regions the same thing.

There are two or three other striking movements to which these volumes bear witness. The simultaneous petitions of hundreds of landowners in the early years of the fifteenth century, to which Bishop Stafford's Register bears witness, for a license to have service under their own roofs, and under the roof of whatever manor Houses they may happen to possess—"two hundred and fifty in twenty years." It is an under-statement of the case, perhaps by nearly one half. This wave touched the home life, and lifted it to a higher level. These are the days of Henry IV. and Henry V., of Lollardy, in its two forms—praiseworthy and reprehensible. It is the time of the needless burning of Wycliffe's bones, and the reforming struggle of the Council of Constance. When shall we be able to read in a clear

light the history of these times? Not until justice has been done to the materials that lie ready for the historical prophet who can believe that the Spirit of Truth can make these dry bones live. The highest praise is due to Prebendary Hingeston-Randolph for the diligence, the perseverance, the determination, and the care with which, sustained by his own conviction of their value, he has made these records available to students of Cornish and Devonshire Church life.

Of the last of these great movements before the Reformation these Registers do not tell the tale. If the series should lengthen only a little it will bring the record down to the great Perpendicular time, when suddenly, at the same moment, the Parish Churches of the land are in the hands of the builder for enlargement, for the doubling of their area, for the adding of an aisle north or south, for erection of those triumphs of artistic skill, the beautiful rood screens, which gave to village life an inspiration, and to the widened village Church a new evidence that there were still worthy objects on which to spend gifts worthy of them. It is passing strange to discover in these apparently dry pages the very form and pressure of the times they deal with. "Defects" of birth bear witness to a low code of morals. "Dispensations" bear witness to a compassion that prevails over them. Quarrels abound; bloodshed is common even in Churches. But there are reconciliations too, and the tendency is ever in the direction of healing and restoration. It is a comforting record in spite of all, though sometimes the comfort seems long in coming. There is a song popular in Devonshire, coming down from these middle ages; it is called Widecombe Fair, and it illustrates the pathos which a string of names, ending with Uncle Tom Copley, can bear witness to when judiciously repeated. That same Widecombe has another string of names—for there a batch of Devonians—and with them Sampson Trewen, Thomas Deynsell, John Caru, John Hunte, Thomas Webbe, and William Hogg, all of Cornwall—were handed over by the Bishop to the secular arm, on the third of June, 1413. Prebendary Hingeston-Randolph's pages are full of things like these. It will be time well spent by those who have love for the past and leisure to devote to it to work these rich mines; there is a wealth of knowledge in them, even for "streamers."

## THE EXPANSION OF TRURO.

BY P. JENNINGS.

Mr. Jennings having stated that Falmouth Harbour and its tributary rivers were undoubtedly known to the Romans, proceeded to discuss the respective claims of Tregony and Truro to have been the seat of Roman power in Cornwall, and decided the question in favour of Tregony, the name of which, he considered, meant "the town on the Cenion." At the time of the Norman Conquest, and for about half a century later, Truro consisted merely of a few peasants' huts scattered among the wooded hills, or nestling in the marshy valleys; but later a small Norman castle was erected on what is still known as "Castle Hill." On passing into the hands of Richard de Lucy, the town increased in size, and houses were built from the castle down the hill towards the river, forming St. Pancras Street or Pydar Street. This street may therefore claim to be the first and original street of Truro. De Lucy fostered its development, and encouraged the inhabitants by granting them privileges which invested them with legal dignity, and with the right of internal government. These privileges were granted before A.D. 1140, as in that year the possession of the town and castle was transferred to Reginald Fitz Roy, Earl of Cornwall. It is, therefore, probable that Truro rose into importance about A.D. 1100.

Reginald confirmed the inhabitants in their privileges, and it was perhaps owing to his powerful protection that both castle and town survived the reign of terror in the days of Stephen. In the more peaceful times which succeeded, it was seen that Truro possessed more enduring advantages than those which it derived from proximity to the castle. Its position at the head of a tidal river, with easy access to the harbour, and its connection with the great southern road which stretched from Torpoint to Penzance, endowed it with facilities for the transport of merchandise by sea and land, superior to those of any other town in the west; hence it rose from the position of a mere dependent on the castle to that of a thriving little commercial community. About this time, too, the river on which Tregony stands began to be silted up, and thus the only rival Truro had need to fear, began to fall into decay.

At first, the area now included in the parish of St. Mary formed part of the parish of Kenwyn, and the town lay along the river Kenwyn; but as it grew, and houses were built nearer the Allen, it was thought advisable to form the area between the rivers into a separate parish; this was done, and in A.D. 1259 the parish church, dedicated to St. Mary, was erected.\* Doubtless a few houses already stood near the site on which the church was built; but naturally the existence of the church would result in the erection of more houses in the neighbourhood, and so the High Cross, St. Mary's Street, King Street, and various offshoots from them would be built.

It is probable that these building operations were also encouraged by the development of the mining industry, which was now established on a more business-like basis. Truro had long enjoyed the distinction of being a coinage town, and in a Stannary Roll of 1305-6 we find that at one of the coinages in Truro in that year, 26,796 lbs. of tin were stamped, the value of which was £53 12s. 1½d., and the names of thirty-eight persons are given in connection with the industry.

It was during this period that Truro was first represented in Parliament; Henry Bailly and Robert Maynard having been summoned to meet in the Parliament of 1295. These circumstances seem to indicate that in the thirteenth century Truro rapidly advanced in importance, and the rate of progress was maintained, until in 1339—only eighty years after the building of the church—we find that next to Bodmin it was the largest town in the county, the third place being taken by Lostwithiel.

This period of prosperity was followed by one of adversity; the town suffered greatly at the hands of pirates, and from the

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\* The words of Bronescombe's Register are "Anno eodem (1259), die Dominica in Vigilia Sancti Michaelis, dedicavit *Cupellam* Sancte Marie de Trueru." The day before, the Bishop dedicated "*Ecclesiam* de Keynwen juxta Trueru." and on the day following he dedicated "*Ecclesiam* Fratrum Predicatorum de Trueru." There is nothing in the record about a "parish church" in Truro. In 1279 (9 Jan.) Sir Nicholas de Castello, Chaplain, was instituted "ad *Ecclesiam* sive *Cupellam* Sancte Marie de Triueru." In the Taxacio of Pope Nicholas IV (1291) "*ecclesia* de Trueru" is taxed. In Stapeldon's and Grandisson's Registers it is frequently spoken of as "*ecclesia*," but sometimes neither as church nor chapel as when 6 November, 1328, "Dominus dedicavit Majus Altare de Truru." The first occasion on which we have found it called a "Parish Church" is in the *Inquisicio Nonarum* of 1340, "*parochia* *ecclesia* de Trueru.—*Ed.*"

ravages of the plague ; so much so, indeed, that the inhabitants petitioned Richard II. to reduce their rent payable to the crown from £12 1s. 10d. to £2 10s. 0d. ; many houses were allowed to "fall down, decay, and remain void and desolate grounds," and the people seriously thought of forsaking the town and of establishing themselves elsewhere. This project, however, was found to be impracticable, and was consequently abandoned.

The eastern and western entrances to the town were growing points. The approaches from the east were ultimately four in number ; the most primitive, in all probability, being Moresk ford at the bottom of Trezonian Street (Good-wives' Lane) on the London Road. This ford was generally passable at low water, but not after heavy rains. The second in point of time was, perhaps, the paved ford, the remains of which were discovered when the foundations of the Public Rooms were laid in 1869 ; search was then made for its eastern end, and it was discovered under the timber wharf about one hundred yards above Boscawen Bridge. The road with which it was connected ran to Tregony, and descended to Malpas by a steep worn track, the remains of which are still extant. In consequence of the existence of this passage, and of the increase of shipping, the town branched off in this direction, and a small quay was built.

The growth of Truro and the development of its trade, made it necessary to provide an approach from London better than that afforded by Moresk ford, and a bridge was thrown across the river a short distance farther down. This bridge, still known as the "Old Bridge," was not far from the church, and in due time, bridge and church were connected by a short street. Communication being now so easy across the river, several houses were built on the St. Clement's side in continuation of Old Bridge Street, and also others which formed the beginning of St. Clement's Street. No record has been preserved which shews when this bridge was built, but, if our theory is correct, it must have existed before the year 1390, for in a deed of this date, mention is made of "Stret Clemens." The bridge is shown in a chart of the south coast of Cornwall, published in the reign of Henry VIII., and both it and the West Bridge are noted in Norden's map of 1584, and in that of Boazio, dated 1597.



In the year 1543-4, the number of houses in Truro was about 170, and the number of ratepayers was 131; allowing six persons for every house, the inhabitants belonging to the more well-to-do classes would number about 780; add to these 220, to include those exempt because of poverty, and it appears that the population of the town was about 1,000. It is interesting to note that at the same period the number of ratepayers in Tregony was only 77—not two-thirds of the number in Truro.

The fourth eastern entrance was at a short distance farther down the river than the Old Bridge, at a place called “the Steppings;” this also was a ford, which, as traffic increased, gradually superseded the other fords, and became second in importance to the Old Bridge. The existence of this passage stimulated building operations in its neighbourhood, with the result that Bodmin Street was formed on the one side of the river, and another, known as Coinage-hall Street, on the other. This street led from what are now East Bridge Street and Duke Street, past St. Mary’s and Quay Streets, to the Coinage Hall. Owing to the “incommodious and unsafe condition” of this ford, another bridge, the “East Bridge,” “longer and grander than the other,” was built at the close of the eighteenth century, the royal assent to which was given 28 May, 1773.

Another growing point was at the single western approach. Until about the beginning of the nineteenth century, the only road to Falmouth and West Cornwall was by narrow streets to the West Bridge, which occupied a site near the present Victoria Square; turning the sharp corner at the bottom of Calenick Street it led up the steep Infirmary Hill. From its very important position, we think Calenick Street may fairly claim to be the oldest street in the town with the exception of Pydar Street. It would be necessary to have direct communication between the eastern and western entrances for pack horses, coaches, etc., passing through the town. This would result in the building of Powder Street (Boscawen Street), and would form an additional reason for the existence of the houses already mentioned, stretching from the Coinage Hall to the Steppings on the one hand, and to Calenick Street on the other.

In the beginning of the seventeenth century the corporation disfigured the town by erecting a Market House, Town Hall, and other buildings in the middle of Boscawen Street. The more northern of the two streets thus formed was really a continuation of Coinage Hall Street, and may have been called by the same name; the other retained the name of Powder Street.

The existence of the Friary attracted houses in that direction, and led to the building of Kenwyn Street, which, although much shorter than at present, was an important thoroughfare. Leland (1533-1550) expressly mentions both it and St. Clement's Street, and notes that each of them had its own church, in addition to the "parochie church."

For a considerable period prior to A.D. 1754 the growth of the town seems to have been arrested. After this date, however, a more enterprising spirit prevailed, and, urged onward by the ever-increasing necessities of the community, and the facilities the government offered for the repair of the highways, the corporation and others commenced a series of improvements and extensions, which completely changed the aspect of Truro.

The first of these referred to the approaches to the town. In a petition to the House of Commons, dated 16 January, 1754, it was stated that the roads radiating from the Borough of Truro "are become very ruinous, and many places thereof are so narrow that carriages cannot pass each other, and many parts, especially in the winter and rainy seasons are so deep and foundrous, that wheel carriages, horses laden, and even travellers, pass in great danger." The Government accordingly gave permission for widening and repairing the following roads:—those leading S.W. to Penryn; N. to Shortlane's End; W. to Redruth; E. to Lostwithiel; N.E. to St. Columb; and a sixth to Tretheage Bridge.

This important work suggested another great undertaking, the planning of Lemon Street, so called from Sir William Lemon, who was at that time one of the most prominent men connected with the town. The design provided for the erection of a noble street of handsome houses, with broad foot-paths and carriage way, which should exceed in grandeur everything of its kind in the county. The old King's Head Inn, which occupied the site on which the Poor Clare's Nunnery is said to have formerly

stood, was demolished, in order to connect the new street with Boscawen Street. Lemon Bridge, at first an extremely narrow bridge, was built, and the erection of the various streets branching from Lemon Street followed in due course.

A third series of improvements resulted from a petition to the House of Commons, in which the petitioners complained that "the streets of the borough are in a ruinous state, that various encroachments are made into them, and nuisances are suffered to remain therein." The Royal Assent was accordingly given, on 7 May, 1790, to a Bill "for paving, cleansing, lighting, and widening the streets, lanes, and passages, for removing and preventing encroachments, nuisances, and annoyances, and for regulating the porters and drivers of carts within the Borough of Truro and part of the adjoining parishes." This led to the partial demolition of the Middle Row in Boscawen Street, but, owing to the deplorable financial condition of the Corporation, the old Market House was repaired and allowed to remain, "the consideration of building a new one being postponed to a further day."\* Many projections and porches which disfigured Boscawen Street were removed, and the houses on the south side, which formerly fronted the river, were re-built with their fronts facing north.

Polwhele, writing about this time, remarks—"Truro is so changed from what it was (70 years ago) that it no more resembles its former self, in the general aspect of the streets, or the appearance (I might almost say) of any particular building, than it resembles St. Austel or Lestwithiel."

The limits of this paper compel us to omit all reference to the extensions and improvements undertaken during the nineteenth century.

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\* A new Market House was opened 20 Dec., 1809, and in 1810 the last remnants of the Middle Row were removed.

AN INVENTORY OF THE JEWELS, ORNAMENTS, VESTMENTS,  
&c., BELONGING TO THE PRIORY OF  
ST. MICHAEL'S MOUNT, CORNWALL.

By H. MICHELL WHITLEY, *Hon. Mem.*

This interesting Inventory is written on two sheets of parchment, is preserved in the Public Record Office, and known as Q.R. Church Goods No. <sup>10</sup>/<sub>59</sub>

There is no original heading or title to the document; but the internal evidence is conclusive that it relates to St. Michael's Mount, Cornwall, and in my opinion it dates from the early part of the 16th century, with a later addition.

The Inventory is the most complete of any yet discovered relating to the Priories or Churches of the County, and is of great value to all interested in its Ecclesiastical history.

JUELLYS<sup>1</sup>

|         |  |                                       |
|---------|--|---------------------------------------|
| Fyrst a | pyx <sup>2</sup> of sylver wherin the Blyssed sacrament<br>is wayng .. .. .  | iiij <sup>unces</sup> q <sup>r</sup>  |
| Item    | the canapye over the sacrament, of sylver and<br>parcell gylt w <sup>t</sup> a crowne of sylver weyng                                      | viiij <sup>unces</sup> q <sup>r</sup> |
| Item    | a monstrance <sup>3</sup> of sylver & gylt w <sup>t</sup> a berall in<br>the meddes to bere the sacrament in per-<br>cession weyng .. .. . | ix <sup>unces</sup> q <sup>r</sup>    |
| Item    | a nother monstrance of sylver & gylt y <sup>t</sup> came<br>frome my lady <sup>4</sup> weyng .. .. .                                       | xxiiij <sup>unces</sup>               |

1. In old inventories this means anything precious, made of valuable materials, or richly adorned.

2. A vessel of precious metal, often in the form of a dove, here of silver, for the reservation of the Host: it was generally suspended over the high altar by a cord or wire with a canopy over it, and a lamp burnt continually day and night before it.

3. A receptacle usually made of crystal or some other transparent material<sup>7</sup> through which the wafer could be seen, and which was mounted on a stand as an ornamental receptacle in which to place the Host to exhibit it to the people in order to receive their adoration, and for use during what was called the Benediction with the Blessed Sacrament (*North's Chronicle of the Church of St. Martin, Leicester*, p. 65.) It was also used for carrying the Sacrament in procession to the sick, as stated in this inventory.

4. "My lady" is, doubtless, the Abbess of the Convent of SS. Mary and Bridget, Syon, Middlesex, to whom the Priory was granted by Henry vth.

|      |  |   |
|------|--|---|
| Item | an Image of Seynt Michell of sylver & gylt weyng .. .. .   | x <sup>unces</sup>  |
| Item | ij Bonnetts for Seynt Michell the one of tynsell saten the fore parte Brawderid w <sup>t</sup> gold & perle the other of Blewe velvet frynged w <sup>t</sup> gold sett w <sup>t</sup> gold smyth worke of sylver & gylt the goldsmyth worke weyng .. | iiij <sup>unces</sup> q <sup>r</sup>                          |
| Item | ij cottes for Seynt Michell the one of cloth of gold the other of perpull velvet enbrawdered with Ihus <sup>5</sup>  |   |
| Item | a cheyne of gold weyng .. .. .   | iiij <sup>unces</sup> q <sup>r</sup>                          |
| Item | a flower lyke a rose of gold of venys sett w <sup>t</sup> perle and stone and a lytell bell of sylver and gylt weyng .. .. .   | di <sup>unces</sup> di q <sup>r</sup>                         |
| Item | a bawderyk of sylver and gylt for Senyt Michell weyng .. .. .  | iiij <sup>unces</sup>   |
| Item | a crosse of sylver and gylt w <sup>t</sup> Mary & John <sup>6</sup> weyng .. .. .  | lxij <sup>unces</sup>   |
| Item | a fote to the same of copper and gylt.   |   |
| Item | a part of the holy crosse enclosed in sylver doble gylt weyng .. .. .  | xij <sup>unces</sup> q <sup>r</sup>                           |
| Item | a nother parte of the holy crosse enclosed in sylver doble gylt weyng w <sup>t</sup> a bereall <sup>7</sup> ..   | ij <sup>unces</sup> q <sup>r</sup><br>& xx <sup>dweight</sup> |
| Item | a pax <sup>8</sup> of sylver & gylt enamylyd weyng ..  | x <sup>unces</sup> q <sup>r</sup>                             |

5. The coats, bonnets, &c., were for dressing up the image of St. Michael at the great festivals.

6. This was the Cross for the High Altar, furnished with a foot, so that it could be used as the best processional Cross of the Church. The Sunday procession took a regular course for the purpose of censing the altars, commencing at the high altar it passed out into the North Aisle, around the procession path at the east end of the Church by the South Aisle into the Cloister, and around the buildings, entering the Church again at the west cloister door. A "station" was then made before the Rood, and the procession then passed once more into the choir. There was another processional cross of copper.

7. A fine glass like crystal inserted in a box or monstrance through which the relics or Host could be seen.

8. A small tablet of precious metal or ivory, often inlaid with gold, with a representation of the passion; it was used for the kiss of peace before the Host was received. It was first kissed by the priest and then handed around and kissed by the laity.

|      |  |   |
|------|--|---|
| Item | a payre of Crewetts of sylver <sup>9</sup> weyng   | .. vij <sup>unoes</sup> iij <sup>qr</sup>   |
| Item | vij Chalesses whereof iij is gylt and iij parcel<br>gylt <sup>10</sup> weyng together  | .. .. . cxv <sup>unces</sup>  |
| Item | one senar <sup>11</sup> of sylver weyng  | .. .. . xiiij <sup>unces</sup>  |
| Item | a shipe <sup>12</sup> of sylver for frankensence & a lytell<br>spone of sylver weyng   | .. .. . viij <sup>unces</sup> j <sup>qr</sup>   |
| Item | a box of tymber gylt w <sup>t</sup> dyvers reliques<br>[of] Martyrs and Sayntts.   |   |
| Item | a cloth of purpell velvet w <sup>t</sup> an image of Seynt<br>Brygett embrawdered & xlix <sup>s</sup> ij <sup>d</sup> of Money<br>a pon it & a shyp of sylver.   |   |
| Item | ij clotheis hangyng besyde seynt Michell w <sup>t</sup><br>a Image of seynt Michell & xliij <sup>s</sup> vj <sup>d</sup> in<br>money apon it and v shippis of sylver<br>xliij ryngs of sylver a plate of sylver w <sup>t</sup><br>a womans image apon and a image of<br>sylver knelyng & dyvers other smale<br>images and tokyns of sylver a pon it. | <i>[In margin]</i><br>Item iij gold<br>ryngs, thre<br>of them with<br>stones and<br>the fourth...<br>another of<br>a wyrie of<br>sylver, oone<br>legge of gold. |
| Item | apou the same a ryale iij noblys & ij ducates<br>of gold a reyng of gold valued at iij<br>noblys a legge of gold valued at x <sup>s</sup> a<br>litell image of seynt Michell of gold<br>valued at lj <sup>s</sup> viij <sup>d</sup>  |   |
| Item | a letell cloth w <sup>t</sup> the crucefixion & iij <sup>s</sup> ix <sup>d</sup> of<br>money and vj rynges of sylver & a . . . . .<br>of sylver.   |   |
| Item | a payre of Beddes of amber banded w <sup>t</sup> jasper<br>valued at <sup>13</sup> .. .. .   | xx <sup>d</sup>   |
| Item | a Monstrance of sylver gylt w <sup>t</sup> reliques that<br>came frome my lady weyng   | .. .. . xxiiij <sup>unces</sup>   |

9. The vessels for containing the wine and water preparatory to their mixture in the chalice.

10. Gilt inside or partly gilt.

11. A censer or thurible.

12. The ship was a vessel of silver, in the form of a boat, to hold the frankensence required for the censers; it was provided with a spoon to take out the frankensence and place it on the glowing charcoal in them.

13. The objects mentioned in the inventory are the offerings at the images of St. Michael and St. Bridget.

- Item a sward & j payer of sporis<sup>14</sup> of copper and gylt that was kyng henry of Wyndesour.
- Item ij payre of lattyn<sup>15</sup> candillstykes for an auter.
- Item ij Branched candillstykes w<sup>t</sup> the leightts.<sup>16</sup>
- Item the Jaw bone of seynt Appolyen<sup>17</sup> shrined in sylver and gilt weyng . . . . . x<sup>unces</sup>
- Item a byble wryten, with a claspe of sylver, a prymer of percheiment wryten Item two portous wryten with a claspe of sylver Item . . . . . wryten in percheiment.

## ORNAMENTS FOR THE CHURCH.

- Fyrst vij corporas cases w<sup>t</sup> the corporas<sup>18</sup> whereof iij of cloth of gold j of Blake velvet oone of Rede velvet one of blake satyn & a nother of redd satten all Brawdered.
- Item iiij payre of curteyns whereof ij payre of sylk and ij payre of lyne cloth<sup>19</sup>
- Item iiij frounts for the high auter whereof one of Redde velvet enbrawdered w<sup>t</sup> cloudes and Syckylls, one of whit satten frynged w<sup>t</sup> whit damaske j of red sercenett<sup>20</sup> embrawdered w<sup>t</sup> cloudes and Ihue xpus & j nother of blew cloth of bawdkyn<sup>21</sup> and j cloth for the border of the same.
- Item vj cowps<sup>22</sup> whereof oone of creyne clothe of gold w<sup>t</sup> a claspe sylver and gylt j of blew Damaske embrawdered w<sup>t</sup> floures of gold j nother of Blew cloth of bawdkyn

14. Spurs, possibly the sword and spurs belonged to King Henry Vth, who gave the priory to the Convent of Syon.

15. An alloy of copper and zinc.

16. These probably stood in the quire before the high altar.

17. Probably Saint Apolin, Bp. and Mtyr.

18. The Corporas was a fine white linnen cloth or rich silk on which the sacred elements were consecrated; it was provided with a case, richly embroidered, and stiffened with cardboard.

19. The side curtains, called "riddells," which hung from swivel rods on each side of the Altars to enclose them.

20. A silk stuff first made by the Saracens.

21. A rich silk stuff, woven with gold, on which figures were often embroidered, so called from Bagdad, where it was originally made.

22. The Cope, a processional vestment, was semi-circular, with an orfrey along the straight edge, fastened with a morse or brooch at the throat; it was the richest of all vestments, and was worn not only at processions, but at vespers, benedictions, &c.

- w<sup>t</sup> orferers<sup>23</sup> embrowdered ij of whit cloth of bawdkyn lynyd w<sup>t</sup> candasron j of whit lyne cloth w<sup>t</sup> orferers of changeable<sup>24</sup> sercenet for lent and ij tunakles<sup>25</sup> for lent of ye same sewt.
- Item a frount for lent for the heigh autour of whit cloth<sup>25a</sup> w<sup>t</sup> a crosse of changeable sercenet.
- Item ij pewter basyns<sup>25b</sup> w<sup>t</sup> iiij crewits pewter and a lattyn sencer.
- Item x payre of vestmentts whereof one of Blew Velvet embrowdered w<sup>t</sup> floures and ij tenacles to the same an nother of murray<sup>26</sup> velvet j of whit satten one of red cloth of bawdkyn j of red Damaske j of gren sattyn j of blew Damaske j of grene cloth of bawdkyn j of bawdkyn for every day and one payer of whit Damaske the orferous of Redd Serceynett.
- Item iiij frounts for the by awters whereof ij of sercynet w<sup>t</sup> clowds and the other paynted.
- Item ij chists for the Cowps and vestments.
- Item iiij masboks whereof ij be prynted and the other be written.
- Item in o<sup>r</sup> lady chappell ij frountts ij of whit bawdkyn the on panyd<sup>27</sup> with tawne velvet the other panyd w<sup>t</sup> blew bawdkyn and j paynted.<sup>27a</sup>
- Item ij payre of vestments whereof oon of whit Damask ye orfferers of red Damask on of grene Chamblet<sup>28</sup> & a nother of Bawdkyn.
- Item a masboke written in perchement ij payre of orgayns ij coffers ye on for vestments the other w<sup>t</sup> sertyn books

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23. Orfreys, embroidered borders of rich material, often worked with gold, silver and jewels, sewed on to the different vestments.

24. Shot.

25. Close linen robes, with narrow sleeves, worn by the deacon and sub-deacon.

25a. White, as a Lenten Colour, was according to the Kalendar of Lincoln.

25b. The two pewter basins and the wiping towels were for the washing of the priests' hands at mass.

26. Sad coloured.

27. Arranged in panes or stripes.

27a. Painted hangings were much cheaper than woven work.

28. Chamlett, a cloth made of silk and wool.



of the moncks use a percessione crose of copper & a baner paynted to ye same a crose staff of tymber gylted & a baner of sylke to ye same.<sup>29</sup>

Item Books in the quere a legger<sup>30</sup> a antefiner<sup>31</sup> & a portes<sup>32</sup> written & notyd in perchement ij servys books in perchement written oon of storys y<sup>e</sup> other of festes a leggent in prynt a manuell<sup>33</sup> in prynt a glosed sawter<sup>34</sup> of perchement written and notyd ij do leggens writtyn in perchement ij sawters written in perchement vj percessioners<sup>35</sup> whereof iiij is written in perchement and ij in prynt ij ymners<sup>36</sup> of perchement writtyn xvj books of .. .. . & a legendawre.

Item xij albys of lyne cloth xvij awter clothis xij playne & iiij dyaper vj wpyng Towells ij clothis of rede velvet w<sup>t</sup> sules of gold for ye sepulcre iiij Chapletts ij of cloth of golde & the other too of blew velvet and w<sup>t</sup> an other of sylver & all Brawdred with perle.

ABILLEMENTS OF WARE.

Fyrst iiij Bowis of Ewe and xij shiff of arrowis iiij salletts ij brest plats a payre of splents ij payre of Brest platts of Curasse ij pott gennys of Brasse w<sup>t</sup> viij chamberons ij do slyngs w<sup>t</sup> iiij chambro ij seroyntyns & ij hagebusthis ij hand gones & a ferkyn of gonne powder iiij Bylls & ij old polle axis of Iron.

[ENDORSED ON THE BACK IN A LATER HANDWRITING.]

Item a payre of corall bedes gawded<sup>37</sup> w<sup>t</sup> ij sett of sylver weying w<sup>t</sup> ij ryngs & a payre of slyppers of sylver .. .. . ij di<sup>nces</sup>

29. Probably the staff for the cross at the altar when used for solemn processions.

30. *Legenda*: a book containing the lections for Matins, from Holy Scripture for the first Nocturn, from the lives of the Saints for the second Nocturn, and a homily from the Fathers on the gospel of the day for the third Nocturn.

31. The Antiphonale contained the Antiphons for vespers.

32. A breviary.

33. The *Manuall* contained the offices for baptism, extreme unction, marriage, burial and various benedictions.

34. A psalter.

35. A book containing the litanies used in processions.

36. Hymnals.

37. Gawdies, orbs, or knots on the beads to distinguish the Pater Nosters.

- Item . A payre of Corall bedes gawded w<sup>t</sup> iij sett of sylver waying unce di.
- Item iij corporas w<sup>t</sup> the cases too grene oone w<sup>t</sup> ihus & the other xpūs embrowdered w<sup>t</sup> gold the iij<sup>de</sup> blew Damaske embrowdered w<sup>t</sup> a crowned ihus.
- Item v vestements<sup>38</sup> w<sup>t</sup> all their apparell oone of them of Blew worsted the orferons of Rede Bawdekyn j of old cloth of gold of lome<sup>39</sup> work the orferons of cloth of gold j of Murrey velwett embrowdered w<sup>t</sup> pawannes the apherons of cloth of tyssue j of old cloth of Bawdkyn of blewe & redde the offetores of grene & rede j of whit Brawned<sup>40</sup> Sylk the offerons of cloth of Bawdekyn.
- Item Dyverse peces for the sepulcre<sup>41</sup> whereof oone peynted of the resurrexon and orferaes embrowdered w<sup>t</sup> Imagere j other frontelett of cremyson velvet w<sup>t</sup> flowers of gold too auterclothes of Rede sersenet the oone w<sup>t</sup> a frowntelett all embrowdered w<sup>t</sup> clouds.
- Item A fronnt of whit saten and grene velvet paned w<sup>t</sup> fryug of the same & iij Roses embrowdered.
- Item A cope of purple velvet embrowdered w<sup>t</sup> pawnses the orferons of blewe cloth of tyssue.
- Item A pere of cremyson velvet w<sup>t</sup> orfryngs of sylk for the sepulcre.
- Item iiij sylk towells to bere the patens at masse tyme too of grene, oone of crame colour & the other of wrought work.

38. Vestments mean a complete set for the priest, deacon, and sub-deacon.

39. Loom.

40. Wrought with figures resembling branches.

41. Either a permanent representation in stone or a temporary one of wood of the sepulchre in which the body of our Saviour was laid after his crucifixion. The crucifix and the Host were deposited in it on Good Friday, and covered with a veil. A light called the sepulchre light was burnt before it, and it was watched from the time of its erection until Easter morning, when the Crucifix and the Host were replaced on the altar with much ceremony.

"Item for whachyng of the schepulker iij<sup>d</sup>

Item for bred and drynke for them that wachyde i<sup>d</sup> ob "

H. M. Whitley—*Churchwardens Accounts St. Andrewes, Lewes, Sussex Arch. Coll.* xlv, 41.

- Item ij pawles for herses<sup>42</sup> oone of Bawdekyn w<sup>t</sup> lyans of gold  
the other of Blewe sey<sup>43</sup> w<sup>t</sup> crosses of lynen cloth for  
the same.
- Item A coverlett to hang behynd the sepulchre of verder<sup>44</sup>
- Item A vayle for lent<sup>45</sup> of rede canvas paynted.
- Item v paynted cloths to hang afore seynts in lent<sup>46</sup>
- Item A soan<sup>47</sup> cloth of Blew Sylk w<sup>t</sup> the trynytie of the oone  
syde and our lady Seynts Bryget & Katryn of Swath  
of the other syde.
- Item Too whit sylk clothes for the funt<sup>48</sup> the one Damask & the  
other Bawdekyn.
- Item vj Autereloches ij dyaper and iiij playne cloth.
- Item vij course clothes to cover auters.
- Item viij wyppyng towells.
- Item A payre of bedes of sylver w<sup>t</sup> vij bedes of Rede corall  
all weying v unces.
- Item A payre of coral bedes gawded w<sup>t</sup> iij sett of sylver &  
dyverse stones of the hangyng by closed in sylver all  
weying v unces q<sup>rt</sup>
- Item A grene corse<sup>49</sup> barred w<sup>t</sup> sylver all weying vi unces q<sup>f</sup>

42. An iron frame set over the bier upon which the pall was placed.

43. Serge made of wool.

44. Probably a kind of green baize used for hangings.

45. The lenten curtain hung between the choir and the nave. It remained hanging between the altar and the people during the whole of the mass, until the gospel was read, when it was pulled aside and the altar remained unveiled until the "orate fratres" had been said. It would seem that this veil was withdrawn during the whole day on festivals of the double class. The lenten veil was commonly of a violet colour. The ground was sometimes white and richly ornamented with red crosses. Rock, *Church of our Fathers*, *iiij*, 221-225.

46. These cloths were to cover the images during the penitential season.

47. ? loam=loom.

48. Cloths used to cover the consecrated water in the fonts, which was commonly allowed to remain there for long periods.

49. A corpse cloth.

## THE RASHLEIGH COLLECTION OF MINERALS.

By JOHN DAVIES ENYS, F.G.S.

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Having heard that some time ago Mr. Jonathan Rashleigh, of Menabilly, had offered to sell his collection of minerals to the Royal Institution of Cornwall, but that for want of funds the Institution was unable to purchase, I wrote enquiring whether it was still for sale, and if so the amount required for same. Mr. E. W. Rashleigh replied that the collection had been valued at £3,000, but that his father would, with a view to keeping it in the county, offer it to the Institution for £1,200.

I then wrote to several friends to know if they would help me to purchase the minerals and, after receiving some favourable replies, I asked Dr. Richard Pearce and Messrs. Howard Fox, James Osborne and Geo. Penrose to go with me to Menabilly to see the collection. Mr. Fox and Mr. Penrose were able to go and together we examined a large number of the minerals.

The collection, which is estimated to contain more than 25,000 specimens, was made chiefly by Mr. Philip Rashleigh, of Menabilly, Cornwall, on whose death, in 1811, it was valued at £4,000.<sup>(1)</sup> The specimens are in an excellent state of preservation and many of them are figured in his works on "British Minerals," published in 1797 and 1802. They are well labelled, and many are accompanied with full particulars as to their chemical composition, obtained by analysis. There are two good catalogues.

It is impossible at present to give a detailed account of the collection, but this will be done when it has been arranged in the Museum. Many of the minerals were acquired at considerable expense, others were given by such men as Sir Joseph Banks, J. Wedgwood, &c.

Gold is represented by many very rich and beautiful specimens. The nugget weighing nearly two ounces, taken from the old tin stream works at Carnon, will interest all Cornishmen.

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1. Mr. Rashleigh, whose portrait we give, was born 28th Dec., 1729. He was F.R.S.; F.S.A.; and M.P. for Fowey at eight different times. For list of his published works, see *Bibliotheca Cornubiensis*.

Several of the specimens of this metal, especially those in a crystallized state, are very valuable. A large mass of Electrum, a natural alloy of gold and silver, is marked as having cost £30.

Silver ores are very plentiful, both in the native state and in combination with other elements. The fine suite of Ruby silver ores deserves special attention.

Copper is well represented in the collection. In its native state and in the form known as Cuprite there are excellent examples. The large series of beautiful specimens of the very rare minerals Chalcophyllite, Liroconite, Libethenite, Clinoclase and Olivenite, from the Gwennap district, are almost unique. Malachite in polished slabs and unusually fine Cornish forms of crystallized Erubescite, Copper Pyrites, Copper Glance and Bournonite may also be seen.

Iron ores are brought together from all parts of the world, even the Pacific Islands. The crystals of Hæmatite from Elba are well defined; also those of Chalybite from Huel Maudlin, near Lostwithiel. A rare mineral from the Gwennap district, of which there are fine examples, is that of Pharmacosiderite or cube ore. Vivianite from Huel Jane, and Chalcosiderite from the Caradon mines, also call for special notice.

The principal lead ore in the collection is Galena. The specimens from Cumberland are very beautiful, being, in a number of cases, associated with Blende, Calcite and Quartz. Pyromorphite in lovely shades of green, Crocoisite of hyacinth-red and Cerussite, the white carbonate of lead, give to the group a most charming appearance.

The old tin mines of Cornwall had a great reputation for producing magnificent crystals of Cassiterite (tin-stone.) In the collection are to be found some of the finest ever raised, the crystals being very large and the majority of them of a most brilliant lustre. The varieties known as Wood-tin, Toad's-eye tin and Stream-tin are well represented.

The ores of Antimony and Zinc, and the rarer metals Uranium, Bismuth, Cobalt, Platinum, Tellurium, etc. are shown in considerable numbers.

Amongst the non-metallic minerals may be found fine examples of Graphite, Native Sulphur in large crystals, Calcite

in numerous forms and colours, several large specimens illustrating parallel twinning; Fluorspar in large cubes of white, green, purple, amethyst, and other colours; an extensive series of Quartz and its varieties, many of the large crystals having double terminations; Asbestos in many interesting forms; Beryl, Topaz, Garnet, Ruby, Opal, and other gems; fine polished slabs of Labradorite, Amazonite, Lapis Lazuli, Fluorspar and other ornamental stones.

The late Mr. William Rashleigh removed a number of duplicate specimens from the collection some years ago, presenting them to his son Mr. Jonathan Rashleigh. These are now in London. The precious stones have also been removed.

There are eight separate cabinets and about thirty feet of wall cases with drawers underneath. They are in good condition, some being of mahogany and the others of oak.

I felt that if the collection was lost to Cornwall it could never be replaced, as the mines from which the Cornish specimens had come were abandoned long ago. Having considered the matter carefully and with the promises of help I undertook to accept the offer, advancing the £1,200. I paid the amount to Mr. Jonathan Rashleigh and obtained his receipt for the same which I have handed to our Secretary.

At a meeting held on the 9th December the Council granted the sum of £500 from the Institution funds towards the purchase, thus reducing my advance to £700.

On November 28th, I started to pack the minerals for removal to Truro. Mr. Penrose went up with me to arrange about the more delicate specimens. With the exception of his assistance for two days I packed the whole of them single-handed. The first load was conveyed to Truro by Messrs. Criddle and Smith on December 24th. I was present when the van reached Truro, and found everything in good order. Some of the boxes were unpacked on December 27th, and all the specimens were found to be undamaged, even those about which I doubted, when packing, whether they would ever be seen again in even fair condition.

Three vans were afterwards necessary to convey the remaining portion and the cabinets to Truro, the last reaching there on

February 25th, 1903. The task of packing was a big one, occupying my time for more than thirty days, but it is satisfactory to know that, notwithstanding the delicate nature of a large number of the specimens, they have all been brought down safely. Mr. Rashleigh gave me all the assistance he could, and placed his carpenter at my disposal. Fortunately the mineral room was at the back of the house, which enabled the men to pass the cases through the window direct into the van outside, thus rendering the loading an easy matter.

I have to thank Mr. Penrose for his assistance in the preparation of this note. Indeed, had he not declined to allow it, his name would have appeared with mine at the head of this paper.

## OBSERVATIONS ON THE PLANKTON OF LOOE POOL.

BY RUPERT VALLENTIN.

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The Loe, or Looe Pool, the largest lake in the west of England, is situated in the north-eastern extremity of Mount's Bay. It is about a mile and a quarter in length, and varies in breadth from 500 to 4000 feet; the approximate surface being about 163 acres. It is separated from the sea by a bar composed of sand and small stones about 600 yards in diameter. This lake is fed by several small streams which drain the surrounding country; the largest of these being the Cober, which rises in the hilly district of Wendron. After winding at the foot of the town of Helston, this stream flows along the Looe valley, and finally empties itself into the upper portion of this pool. Besides draining that portion of the country through which it flows, the Cober also receives the sewage from the town of Helston; and during the summer, and especially if there has been an absence of rain for some weeks, the odour arising from it is by no means pleasant. In spite of this drawback, trout seem to thrive in it; and I have seen these fish rise at a natural fly when the water was quite turbid owing to the presence of suspended organic matter.

During exceptionally heavy gales of wind from the south-west and south, the sea has been known to make a breach in this sand-bar, and a large quantity of salt water has thus been added to the fresh water in the pool.

These and other peculiarities connected with this body of water seemed to make it an ideal lake wherein to study the changes of the floating fauna.

Early in the spring of 1900 Mr. J. D. Enys asked for, and obtained, permission from the owner, Captain Rogers, R.A., for me to tow-net in the pool. I must here record my thanks to Mr. Enys for much assistance and advice in connection with these investigations; and also to the courteous owner for placing at my disposal a boat whenever I required one, as well as for permission



to store in an outhouse near the pool the usual paraphernalia necessary for biological investigation.

Although there does not appear to be any record of the Looe Pool having ever been used for purposes of navigation, yet there is no doubt that, speaking geologically, it was once a natural indentation of the coast, into which the tide flowed twice daily; and that an estuary extended up the Looe valley as far as the rising ground on which the town of Helston now stands. There are several similar estuaries along the shores of Devon and Cornwall at the present day. Now, as we have seen, the lower portion of this estuary is converted into a fresh-water lake; while a picturesque stream, fringed with rushes, meanders slowly along the centre of the Looe valley, and ends in a marshy delta at the north-eastern extremity of the pool.

Until quite recently, and especially after a heavy rainfall, the amount of water in the pool and valley occasionally increased to such a degree as to inundate the houses in the lower part of Helston. On these occasions a quaint ceremony would take place. The occupants of the houses that were inundated would proceed in a body to the residence of the owner of the pool and present him with a leathern purse containing three half-pence. The owner, on receiving this present, would give the deputation permission to cut a channel through the bar, and allow the pent-up waters to escape. The out-flow of water through this newly-cut channel, once commenced, soon became a rushing torrent; and the sea in Mount's Bay for some miles distant from land would become discoloured. This channel would remain open and allow the entrance of sea-water into the pool twice daily for a long or short period according to the direction and force of the wind. A fresh gale from any point of the compass between south and west would soon close this passage; but while the wind blew from any other quarter it would remain open. Now, the amount of water in the pool is regulated by sluices; a large adit, to allow the escape of surplus water being located in the south-western corner.

Early in the year 1837 a very accurate survey of the pool was made under the auspices of the distinguished engineer J. M. Rendel, with the view of making a harbour in Mount's Bay;

which, besides forming a refuge for ships in distress, would also make an admirable port of call, and facilitate the transit of tin and copper from the numerous mines in the immediate neighbourhood. This was of course long before the railway had crossed the Tamar.

In the Appendix to his Report, note C, Mr. Rendel estimates the amount of water percolating through the bar of sand from the pool to the sea to be 7,000,000 cubic feet of water every twenty-four hours.

His next note, D, gives the results of the borings made in the bar of sand. Without burdening this paper with long extracts from this report it will answer my purpose to state that at a depth of 51 feet, or  $18\frac{1}{2}$  feet under low-water level, the deepest bore made, no rock was touched.

The sides of the main portion of the lake are steep and densely wooded, the trees in many instances extending to the water's edge. As most of these trees have deciduous leaves, the amount of leaf-mould added to the lake during each autumn must be very great. Besides this, a vast quantity of rubbish has been washed into the valley, and thence into the pool since the commencement of the last century from the numerous mines in the Wendron district; but these are now all closed. Should the mining industry ever revive, there seems to be no doubt that at least the upper portion of the pool would soon become silted up.

The foreshores, with the exception of the southern end, are strewn with stones of various sizes, detached rocks being present along the eastern and western sides; but in no instance do they extend beyond a few yards from land. If they do, they are covered with a layer of the finest soft mud, of a light chocolate colour. I have on many occasions made a microscopic examination of this deposit taken at various depths, and have been astonished to find it almost destitute of animal and vegetable life.

Aquatic vegetation is not abundant in the Pool. The following is a list of plants taken from the Rev. C. A. Johns' work, the only book I have been able to find which gives a complete list of plants found in and adjacent to this lake:—

*Polygonum amphibium*, *Potamogeton perfoliatus*, *P. pusillus*, and *Elatine hexandra*. To these may be added *Nitella hyalina*, a plant new to Britain. This addition to the fauna of the United Kingdom was discovered in Penrose Creek during August, 1898, by the Rev. G. R. Bullock-Webster. A large bed of rushes occupies the delta at the junction of the river with the pool. Isolated specimens of the same plant are scattered along the shores of the lake at irregular intervals. A small clump of reeds is to be found in Penrose Creek; and, close by, a large bed of water-lilies, recently introduced, appears to be in a flourishing condition.

Contrary to my expectations, no species of Rotifera belonging to the sedentary orders of Flosculariadae and Melicertadae have been found living on any of the aquatic plants; although several species of free-swimming forms are recorded in my lists.

That the water in the pool is not pure is clearly shown by the absence of the sessile-eyed crustacean *Gammarus pulex*. It has long been known to zoologists that the normal habitat of this species is in pure-water lakes, where it affords excellent food for trout, and that when transferred to impure water it quickly dies.

An interesting little fresh-water mollusk, *Ancula cristata*, is fairly abundant, adhering to the under-surfaces of the large flat stones which fringe the lake along its western edge. Speaking generally, I have not found the littoral fauna to be at all rich in any portion of the lake; indeed it is very scarce.

Perhaps the most striking incident observed during the period over which these observations extend was the sudden decline in the plankton towards the end of 1899. On examining a series of gatherings made on the 30th of November, the quantity of the floating fauna was, considering the time of year, above the average; this being in a great measure due to the mildness of the season. About a month later, viz. on the 29th of December, on working the tow-net in the usual manner, few living forms could be found in the tin receiver at the end of the tow-net after each haul. I believe this sudden decrease in the plankton to be due to the heavy rain-fall which washed the free-swimming forms into the sea. Several ponds in my neighbourhood during this time were found to contain plenty of free swimming life, although

they were all full of water, and in some instances, overflowing. I find it recorded in my note-book that on the 29th of December the river Cober was in full flood; and that pools of standing water abounded in the Looe valley. Indeed, about this time, the whole country was saturated with water, and in some places small springs could be seen even issuing from the roads.

During this visit, viz. on the 29th of December, on approaching the sluice situated in the south-west corner of the lake in a boat, an appreciable current setting towards this overflow could be detected, the distant roar of the water rushing through the adit being plainly audible above the sound of the waves breaking on the beach beyond the sand-bar. I had no means of ascertaining the quantity of water flowing through this adit, but the amount must have been far above the average. I also observed during this visit that some small sticks which I placed on the water between Rogers' Point and the bar of sand were quickly drawn into the current setting towards the adit, and were soon swept into the sea. This scarceness of the floating fauna continued to be very apparent till the following May; when, owing to the absence of any heavy rain-fall during April and an excess of sunshine, a slow but steady increase was observed.

It will be noticed that these tables only record the monthly changes in the floating fauna of the Looe Pool for one year. I had hoped to have published a series of similar tables for at least three consecutive years, but, as an interval of nine months must elapse before these studies can be resumed, I have considered it preferable to publish all I have on hand now, rather than postpone it, perhaps indefinitely.

The work of examining the large amount of material collected during the first six visits to the pool was very great, but I feel fairly confident that I have missed few, if any, specimens.

The identification of the species of Copepoda belonging to the genus *Cyclops* has tried my patience greatly; the immature forms being the most difficult to discriminate. If I have erred, I have done so in the right direction; I have not introduced any new species.

I have drawn up the results of each visit, together with some meteorological notes, in a tabular form, as being the most con-

venient for reference. To this I have appended a list of the various species mentioned.

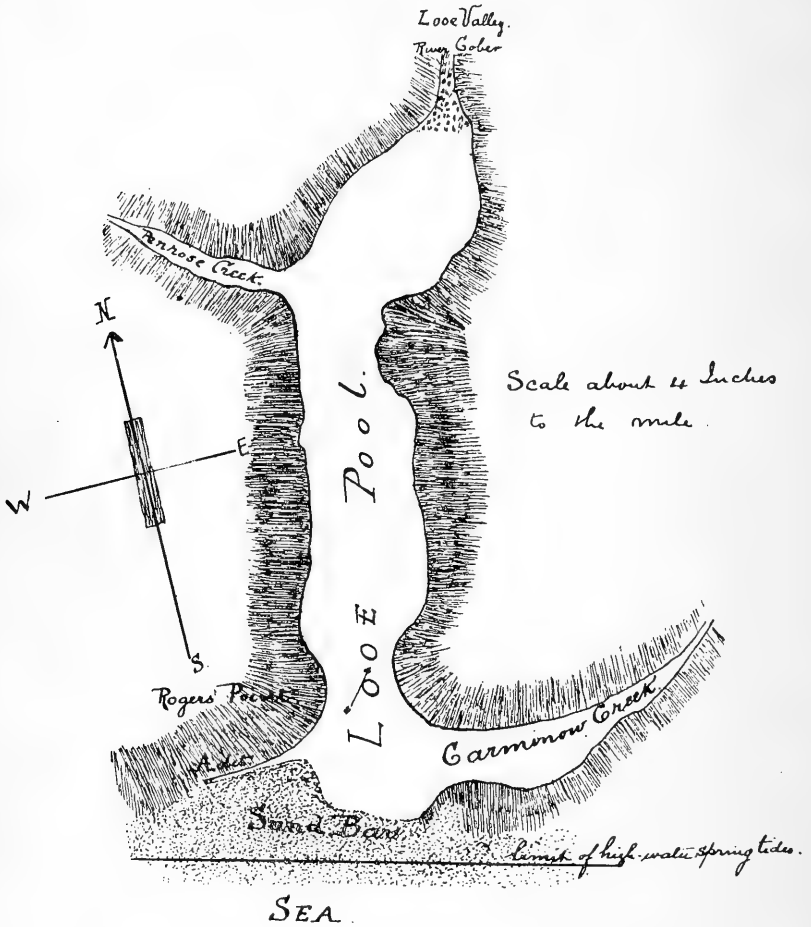
#### METHODS OF COLLECTING.

All the samples of tow-net gatherings recorded in this paper were made from rowing-boats. After two preliminary visits, I decided on the following plan of work. The visits to this lake were to be made once a month. On each occasion three gatherings were always to be made—one on the surface, another just clear of the bottom, and a third mid-way between these two. The surface gathering was always made well to leeward, the object being to secure all the surface forms blown thither by the wind. The mid-water and bottom gatherings were invariably made in the same place, the deepest spot in the pool, which I have indicated in the accompanying plan by two asterisks.

The tow-nets were made of silk bolting-cloth. The mouth of each net was twelve inches in diameter. No special contrivance was used to exclude specimens from being captured during the passage of the net to and from the surface. The net and the tin receiver at the end were always well raised between two successive hauls.

The greater part of each gathering was preserved on the spot with Formalin. About a third of each gathering was taken home untouched for further microscopical examination, and in a living condition.

The temperatures were all taken with a deep-sea thermometer made by Messrs. Negretti and Zambra, mounted in a Scottish frame.



THE OUTLINE SKETCH OF THE LOOE POOL

(From Mr. Rendel's Report.)

TABLE CONTAINING THE NAMES OF THE DIFFERENT SPECIES OF  
INFUSORIA, ROTIFERA, CRUSTACEA, AND INSECT LARVÆ  
OBSERVED IN THE LOOE POOL.

|                        |                            |                             |            |
|------------------------|----------------------------|-----------------------------|------------|
| <i>Infusoria</i> ..    |                            | <i>Peridinium tabulatum</i> | Ehrenberg. |
| <i>Rotifera</i> ..     |                            | <i>Asplanchna priodonta</i> | Gosse.     |
|                        |                            | <i>Synchaeta pectinata</i>  | Ehrenberg. |
|                        |                            | <i>S. tremula.</i>          | do.        |
|                        |                            | <i>Triarthra mystacina</i>  | do.        |
|                        |                            | <i>Anuræa aculeata</i>      | do.        |
|                        |                            | <i>A. cochlearis.</i>       | Gosse.     |
| <i>Crustacea</i> ..    | Eucopepoda.                | <i>Cyclops signatus</i>     | Koch.      |
|                        |                            | <i>Cyclops strenuus</i>     | Fischer.   |
|                        |                            | <i>C. Thomasi</i>           | Forbes.    |
|                        |                            | <i>C. insignis</i>          | Claus.     |
|                        |                            | <i>C. affinis</i>           | Sars.      |
|                        |                            | <i>C. serratulus</i>        | Fischer.   |
|                        | Phyllopoda                 | <i>Bosmina longirostris</i> | Müller.    |
|                        |                            | <i>Daphnia longispina</i>   | Leydig.    |
|                        |                            | <i>D. pulex</i>             | Straus.    |
|                        |                            | <i>D. reticulata</i>        | Desmaret.  |
|                        |                            | <i>Sida brachyura</i>       | Leydig.    |
|                        |                            | <i>Alona ovata</i>          | Baird.     |
|                        |                            | <i>A. reticulata</i>        | do.        |
|                        |                            | <i>Chydorus sphericus</i>   | Müller.    |
|                        | Ostrocoda.                 | <i>Cypris minuta</i>        | Baird.     |
|                        |                            | <i>C. tristriata</i>        | do.        |
|                        | Sessile-eyed<br>Crustacean | <i>Asellus aquaticus</i>    | Olivier.   |
| <i>Insect larvæ</i> .. |                            | <i>Corethra plumicornis</i> |            |
|                        |                            | <i>Chrynomys</i> sp. ?      |            |

| Date and Weather.  | Temperature.                   | Takings.   | REMARKS.   |
|--|--------------------------------|--|--|
| 1899.<br>29th June.<br><br>Wind S. W.,<br>squally, sky<br>overcast,<br>dull. | Surface 65°F                   | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .<br><br><i>Phyllopoda</i> . <i>Daphnia reticulata</i> . | Both sexes fairly numerous. Only a few females with ova attached.<br><br>Fairly numerous. A few females with a single egg in the brood-pouch, and a very few carrying embryos were also noticed.         |
| Variations in<br>the tempera-<br>ture of the<br>water.                       | Midwater<br>65°F<br>(11½ feet) | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .  | Adult specimens scarce. A few recently hatched specimens of the same species also present.   |
|  |                                | <i>Phyllopoda</i> . <i>Daphnia reticulata</i> .  | Abundant. Those with ova and embryos in the brood-pouch were in the same stages of development as those recorded in the surface gathering.   |
|  |                                | <i>D. longispina</i> .   | Not quite so numerous as in the surface gathering. The male specimens of this species very scarce at this depth.   |
|  |                                | <i>D. pulex</i> .  | Three specimens detected in this gathering.  |
|  |                                | <i>D. longispina</i> .   | Very numerous. Only a very few of these had ova in an early segmenting stage in the brood-pouch. Not more than twelve specimens were each carrying an ephippium.   |
|  | Bottom<br>63.6°F<br>(23 feet). | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .  | Both sexes abundant. No females with egg-sacs attached.  |
|  |                                | <i>Phyllopoda</i> . <i>Daphnia reticulata</i> .  | Not very numerous.   |
|  |                                | <i>D. pulex</i> .  | Six female specimens present.  |
|  |                                | <i>D. longispina</i> .   | Exceptionally abundant. The majority of these had one or more ova in an early stage of development in the brood-pouch.<br><br>No male specimens of <i>Phyllopod</i> detected in any of these gatherings. |
| 27th July.<br><br>Wind E.,<br>squally, un-<br>settled.                       | Surface 73°F                   | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .<br><br><i>C. Thomasi</i> .                             | Females abundant, males scarce. A few of the females of this species had egg-sacs attached.<br><br>Only a few females present.   |
|  |                                | <i>Phyllopoda</i> . <i>Daphnia reticulata</i> .  | Adult females fairly numerous. Young specimens scarce.   |
|  |                                | <i>D. longispina</i> .   | Adult females scarce. Young specimens abundant.  |



| Date and weather.                               | Temperature.   | Takings.  | REMARKS.  |
|---|--|---|---|
| Variations in the temper- of the water.         | Mid-water<br>73°F.<br>(11½ feet).                          | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .   | Females not very numerous. About a dozen with egg-sacs attached. No male specimen present.                                      |
|   |  | C. <i>signatus</i> .  | Scarce. A few females carrying egg-sacs. No male specimens present.   |
|   |  | <i>Phyllopoda</i> . <i>Daphnia reticulata</i> .   | Scarce.   |
|   |  | D. <i>longispina</i> .  | Not abundant. Those present were mostly immature specimens. A few specimens with ephippia.                                      |
|   |  | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> }<br>C. <i>signatus</i> }   | Bottom<br>70.9° F.<br>(23 feet).  |
|   | <i>Phyllopoda</i> . <i>Daphnia reticulata</i> .            | Adult specimens fairly abundant.  |   |
|   | D. <i>longispina</i> .                                     | Very scarce. Not more than a dozen specimens present.   |   |
|   | D. <i>pulex</i> .  | Two specimens only detected in this gathering.<br>No male specimens of <i>Phyllopod</i> present in any of the gatherings. |   |
|   | <i>Insect larvæ</i> . <i>Corethra plumicornis</i> .        | A number of larvæ in an early stage of development captured at this depth.  |   |
|   | 29th August.<br>Fine.<br>Sky almost<br>cloudless.<br>Calm. | Surface 65°F  | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .   |
| C. <i>signatus</i> .                            |  |   | Fairly numerous. No male specimens of either species present.   |
| <i>Phyllopoda</i> . <i>Daphnia reticulata</i> . |  |   | In abundance. Many of them with ephippia; several with ova in brood pouch.  |
|   |  | <i>Bosmina longirostris</i>   | One specimen.<br>A few Pupa skins of <i>Corethra plumicornis</i> .  |
| Variations in the temper- of the water.         | Mid-water<br>65°F.<br>(11½ feet).                          | <i>Eucopepoda</i> . <i>Cyclops strenuus</i> .   | Not very numerous. Several females with egg-sacs attached. No male specimens present.   |
|   |  | <i>Phyllopoda</i> . <i>Daphnia reticulata</i> .   | Fairly abundant. Several specimens with ova in an early stage of development in the brood-pouch; also a very few with ephippia. |
|   |  | D. <i>longispina</i> .  | Abundant. Only a very few of these had ova in the brood-pouch. Young specimens of the same species abundant.                    |
|   |  | <i>Sida brachyura</i> .   | A few of both sexes present.  |

| Date and weather.  | Temperature.                            | Takings.  | REMARKS.  |
|--|---|---|---|
| 20th Sept.<br>Fine. Sky<br>cloudless.<br>Wind N.W.<br>light. | Bottom<br>64°F.<br>(23 feet).           | <i>Eucopepoda</i> . Cyclops strenuus.   | A fair number of both sexes present. A few of the females with egg-sacs attached.   |
|  |   | <i>Phyllopoda</i> . Daphnia reticulata.   | Not very numerous. Only one specimen carrying an ephippium.   |
|  |   | D. longispina.  | Scarce. Most of those present mature females. The remainder recently hatched specimens of the same sex. One specimen with an ephippium. |
|  |   | Sida brachyura.   | Most abundant. Both sexes present in almost equal numbers, A few of the females had one or two ova in the brood-pouch.                  |
|  |   | <i>Insect larvæ</i> . Corethra plumicornis.   | Two larvæ of this species present. One in an early stage of development, the other late.  |
|  | Surface 65°F                            | <i>Rotifera</i> . Asplanchna priodonta.   | A very few females present.   |
|  |   | <i>Eucopepoda</i> . Cyclops strenuus.   | Not many present. Males more numerous than females.   |
|  |   | <i>Phyllopoda</i> . Daphnia reticulata.   | Very abundant. A few females had a single egg in an early stage of development in the brood-pouch.                                      |
|  |   | D. longispina.  | Scarce. No young specimens present.   |
|  |   | Sida brachyura.   | A very few present. No male specimens detected.   |
| Mid-water<br>64°F.<br>(11½ feet).                            | <i>Ostracoda</i> . Cypris tristriata.   | One specimen.   |   |
|  | <i>Rotifera</i> . Asplanchna priodonta. | Not many present.   |   |
|  | <i>Eucopepoda</i> . Cyclops strenuus.   | Both sexes abundant. Not many females carrying the paired egg-sacs.                             |   |
|  | <i>Phyllopoda</i> . Daphnia reticulata. | Abundant.   |   |
|  | D. longispina.                          | Not many adult specimens present.   |   |
|  | D. pulex.                               | Only two observed.  |   |
|  | Sida brachyura.                         | Fairly numerous. Both sexes present. Most of the females with a single ovum in the brood-pouch. |   |
| Bottom 63°F<br>(23 feet).                                    | <i>Rotifera</i> . Asplanchna priodonta. | A fair number of females of this species present.   |   |

| Date and Weather.                                     | Temperature.   | Takings.  | REMARKS.   |   |
|---|--|---|--|---|
| 24th October.<br>Cloudy, dull.<br>Wind N.<br>squally. | Surface<br>54.9°F.   | <i>Eucopoda</i> . <i>Cyclops strenuus</i> .   | Fairly abundant. Both sexes present. Females about three times more numerous than the males.   |   |
|   |  | <i>Phyllopo</i> da. <i>Daphnia reticulata</i> .   | Exceptionally abundant at this depth. Many females with ova in the brood-pouch, and a very few with ephippia.  |   |
|   |  |   |  |   |
|   |  |   | D. longispina. Very scarce. Those present were mostly immature females.  |   |
|   |  | <i>Ostracoda</i> . <i>Cypris minuta</i> .   | A very few present.  |   |
|   |  | <i>Rotifera</i> . <i>Asplanchna priodonta</i> .   | A very few present.  |   |
|   |  | <i>Eucopepo</i> da. <i>Cyclops serratulus</i> .   | Abundant. Both sexes present. A few females with egg-sacs attached.  |   |
|   |  |   | C. insignis }<br>C. affinis }  | A few of both sexes present. Most of the females were carrying ova.   |
|   |  | <i>Phyllopo</i> da. <i>Daphnia reticulata</i> .   | Scarce. Newly hatched specimens fairly common. A very few of the adult females were carrying ephippia; and a few of these winter eggs free were also noticed |   |
|   |  |   | D. longispina.   | Only a few adult females, and a very few recently hatched specimens present.  |
|   | Alona ovata.   | Not more than four specimens detected in this gathering.  |  |   |
| <i>Insect larvæ</i> . <i>Chironomys</i> sp?           | Three larvæ observed.  |   |  |   |
| <i>Rotifera</i> . <i>Asplanchna priodonta</i> .       | Fairly numerous.   |   |  |   |
| <i>Eucopepo</i> da. <i>Cyclops serratulus</i> .       | Females scarce. A very few with egg-sacs attached. Males not numerous. |   |  |   |
|   | C. insignis.   | Only a few of both sexes present.   |  |   |
| <i>Phyllopo</i> da. <i>Daphnia seticulata</i> .       | Not very numerous. Most of the females with ephippia.                  |   |  |   |
|   | D. longispina.   | Scarce. A few of these had one or more ova in brood-pouch in an early stage of development. A very few recently hatched specimens of the same species also noticed. |  |   |
|   | <i>Sida brachyura</i> .  | About an equal number of both sexes present. Most of the females of this species were carrying ova, and a very few had advanced embryos in the brood-pouch.         |  |   |
| <i>Ostracoda</i> . <i>Cypris minuta</i> .             | One specimen present.  |   |  |   |
| Variations in the temperature of the water.           | Mid-water<br>54.6°F<br>(11½ feet).                                     | <i>Eucopepo</i> da. <i>Cyclops serratulus</i> .   | Females scarce. A very few with egg-sacs attached. Males not numerous.   |   |
|   |  |   | C. insignis.   | Only a few of both sexes present.   |
|   |  | <i>Phyllopo</i> da. <i>Daphnia seticulata</i> .   | Not very numerous. Most of the females with ephippia.  |   |
|   |  |   | D. longispina.   | Scarce. A few of these had one or more ova in brood-pouch in an early stage of development. A very few recently hatched specimens of the same species also noticed. |
|   |  | <i>Sida brachyura</i> .   | About an equal number of both sexes present. Most of the females of this species were carrying ova, and a very few had advanced embryos in the brood-pouch.  |   |
|   |  | <i>Ostracoda</i> . <i>Cypris minuta</i> .   | One specimen present.  |   |
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| Date and Weather.  | Temperature.                        | Takings.   | REMARKS.   |
|--|-------------------------------------|--|--|
|  | Bottom 54°F<br>(23 feet).           | <i>Rotifera.</i> <i>Asplanchna priodonta.</i><br><i>Eucopepoda.</i> <i>Cyclops serratulus.</i><br><br><i>C. insignis.</i><br><i>Phyllopora.</i> <i>Daphnia reticulata.</i><br><br><i>D. longispina</i><br><br><i>Sida brachyura.</i> | Quite abundant.<br>A few specimens of both sexes present. Most of the females were carrying the paired egg-sacs<br>A very few present.<br>Exceptionally numerous. Most of these had ehippia present.<br>Very scarce. A very few of these had ova in the brood-pouch in an advanced stage of development.<br>Not very plentiful. Both sexes present. A very females with segmenting ova in brood-pouch. A very few recently hatched young also present.                               |
| 30th Nov.<br><br>Wind W.<br>light.<br>Sky almost<br>cloudless. | Surface<br>45.6°F.                  | <i>Eucopepoda.</i> <i>Cyclops Thomasi.</i><br><br><i>C. insignis.</i><br><br><i>Phyllopora.</i> <i>Daphnia reticulata.</i><br><br><i>D. longispina.</i><br><br><i>Sida brachyura.</i>  | Only a few present.<br>Not very numerous. A very few males present. A few of the females with egg-sacs attached.<br>Scarce. The majority of these had one or more embryos in the brood-pouch in an advanced stage of development. Young specimens of the same species fairly numerous. No males present.<br>Adult females very numerous. The majority of these had one or more embryos in the brood-pouch in an advanced stage of development.<br>Only a few male specimens present. |
| Variations in<br>the temper-<br>ature of the<br>water.         | Mid-water<br>45.3°F.<br>(11½ feet). | <i>Rotifera.</i> <i>Asplanchna priodonta.</i><br><i>Eucopepoda.</i> <i>Cyclops Thomasi.</i><br><br><i>C. insignis.</i><br><br><i>Phyllopora.</i> <i>Daphnia reticulata.</i><br><br><i>Sida brachyura.</i>                            | Very numerous.<br>Scarce.<br>Not very plentiful. Females far more abundant than the males. Only two females noticed with egg-sacs attached.<br>Abundant. Many of the females with twelve developing embryos in the brood pouch. Only two specimens with ehippia. No males present.<br>Only a few females present.  |

| Date and Weather.  | Temperature.                        | Takings.   | REMARKS.  |
|--|-------------------------------------|--|---|
|  | Bottom 45°F.<br>(23 feet)           | <i>Rotifera.</i> <i>Asplanchna priodonta.</i><br><br><i>Eucoepoda.</i> <i>Cyclops signatus.</i><br><br><i>Phyllopoda.</i> <i>Daphnia reticulata.</i><br><br><i>D. longispina.</i><br><br><i>Sida brachyura.</i><br><br><i>Alona ovata.</i> | A fair number of females present. Several of these had a single embryo in an advanced stage of development in the uterus.<br><br>Scarce. A very few females had egg-sacs attached. Both sexes present in about equal numbers.<br><br>Fairly numerous. Many females with ova in the brood-pouch. No males present.<br><br>Not quite so abundant as in mid-water townet. Many of the females with advanced embryos in the brood-pouch.<br><br>Very scarce indeed. Only young specimens present.<br><br>A single specimen detected in this gathering, with an embryo in an advanced stage of development in the brood-pouch. |
| 29th Dec.<br><br>Wind S. W.<br>very light.<br>Sky overcast,<br>misty rain. | Surface 48°F                        | <i>Eucoepoda.</i> <i>Cyclops insignis.</i><br><br><i>Phyllopoda.</i> <i>Daphnia longispina.</i><br><br><i>D. reticulata.</i><br><br><i>Alona ovata.</i>  | A very few of both sexes present.<br><br>Not very numerous. The majority of those present were young females, only a very few adults of the same species being seen.<br><br>Scarce. Two specimens in this were carrying ephippia.<br><br>Not many present.  |
| Variations in<br>the temper-<br>ature of the<br>water.                     | Mid-water<br>47.6°F.<br>(11½ feet). | <i>Eucoepoda.</i> <i>Cyclops insignis.</i><br><br><i>Phyllopoda.</i> <i>Daphnia longispina.</i><br><br><i>D. reticulata.</i><br><br><i>Alona ovata</i><br><i>A. reticulata</i><br><i>Chydorus sphericus</i> }                              | About the same quantity as in the surface gathering.<br><br>Scarce. Most of the females were carrying ova in the brood-pouch in an advanced stage of development. A very few young specimens of the same species also present.<br><br>Very scarce. Only females present.<br><br>A very few specimens of each of these present.  |
|  | Bottom 47°F<br>(23 feet).           | <i>Eucoepoda.</i> <i>Cyclops insignis.</i><br><br><i>Phyllopoda.</i> <i>Daphnia longispina</i>   | Very scarce indeed.<br><br>Not numerous. All these were adult female specimens, and the majority had about six ova in an early stage of segmentation in the brood-pouch.  |

| Date and Weather.   | Temperature.                                  | Takings.   | REMARKS.  |  |
|---|---|--|---|--|
| 1901.<br>30th January<br>Sky overcast,<br>sleet showers<br>Wind N. to<br>N.W.<br><br>Variations in<br>the temper-<br>ature of the<br>water. | Surface<br>42·9° F.                           | <i>D. reticulata.</i>  | Not more than six present. One of these was detected carrying an ephippium.   |  |
|   |   | <i>Alona ovata.</i>  | A very few adult females present.   |  |
|   |   | <i>Dipterous Larva</i> } <i>Chironomys</i> sp. ?   | One specimen present.   |  |
|   |   | <i>Eucopepoda.</i> <i>Cyclops insignis.</i>  | Not many present. No male specimens.  |  |
|   | Mid-water<br>43° F.<br>(11½ feet).            | <i>Phyllopoda.</i> <i>Daphnia longispina</i>   | Fairly numerous. Females only present.  |  |
|   |   | <i>Alona reticulata.</i>   | Very scarce indeed.   |  |
|   |   | <i>Eucopepoda.</i> <i>Cyclops insignis.</i>  | Only a few females present.   |  |
|   |   | <i>Phyllopoda.</i> <i>Daphnia longispina</i>   | Fairly abundant. The majority of the females present had one or more ova in the brood-pouch in an early stage of development. Young specimens of the same species scarce. |  |
|   |   | Bottom<br>43·9° F.<br>(23 feet).   | <i>Eucopepoda.</i> <i>Cyclops insignis.</i>   | Only four females present.                                   |
|   |   |  | <i>Phyllopoda.</i> <i>Daphnia longispina</i>  | Same in number, condition and sex as in mid-water gathering. |
| 28th Feb.<br>Wind N.W.<br>moderate.<br>Sky almost<br>cloudless.<br><br>Variations in<br>the temper-<br>ature of the<br>water.               | Surface<br>42·9° F.                           | <i>Alona ovata.</i>  | A few females present.  |  |
|   |   | <i>A. reticulata.</i>  | Scarce.   |  |
|   |   | <i>Chydorus sphericus</i>  | Not many present.   |  |
|   |   | <i>Infusoria.</i> <i>Peridinium tabulatum.</i>   | A few present.  |  |
|   | Mid-water<br>45·3° F.<br>(11½ feet)           | <i>Rotifera.</i> <i>Synchaeta pectinata</i>  | Abundant, but not so numerous as in the bottom townet.  |  |
|   |   | <i>Eucopepoda.</i> <i>Cyclops insignis.</i>  | A very few of both sexes present.   |  |
|   |   | <i>Phyllopoda.</i> <i>Daphnia longispina</i>   | A very few adult females present.   |  |
|   |   | <i>Insect Larvæ.</i> <i>Chironomys</i> sp. ?   | 2 specimens present.  |  |
|   |   | <i>Infusoria.</i> <i>Peridinium tabulatum.</i>   | Scarce.   |  |
|   |   | <i>Rotifera.</i> <i>Synchaeta pectinata</i>  | Not very numerous.  |  |
| Bottom<br>45·3° F.<br>(23 feet).  | <i>Eucopepoda.</i> <i>Cyclops insignis.</i>   | A few females present.   |   |  |
|   | <i>Phyllopoda.</i> <i>Daphnia longispina.</i> | More abundant than in bottom townet, but not plentiful. Only adult specimens present, and most of these had eight or more segmenting ova in the brood-pouch. |   |  |
|   | <i>Chydorus sphericus.</i>                    | A few present.   |   |  |

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| Date and Weather.   | Temperature.   | Takings.  | REMARKS.   |  |
|---|--|---|--|--|
| 26th March.<br><br>Wind N. squally.<br>Rain & sleet at times. | Bottom 45°F (23 feet).                               | <i>Infusoria.</i> Peridinium tabulatum.<br><i>Rotifera.</i> Synchaeta pectinata | Abundant.<br>Most numerous at this depth. A few specimens had two, and a few three, ova attached to the posterior extremity of the body. |  |
|   |  | Triarthra mystacina.  | A few specimens present.   |  |
|   |  | <i>Eucopepoda.</i> Cyclops insignis.  | A very few of both sexes present.  |  |
|   |  | <i>Phyllopoda.</i> Daphnia longispina.  | Scarce. All the adult females carrying ova in the brood-pouch. Immature forms of the same species more numerous than the adult ones.     |  |
|   |  | <i>Rotifera.</i> Synchaeta tremula.   | About a dozen specimens present.   |  |
|   |  | <i>Eucopepoda.</i> Cyclops strenuus.  | Only a few present.  |  |
|   |  | <i>Phyllopoda.</i> Daphnia longispina.  | Very scarce. Young specimens of the same species fairly abundant.  |  |
|   |  |   | D. pulex.  | A very few young females.  |
|   |  |   | Chydorus sphericus   | Fairly abundant.   |
|   |  |   | <i>Insect Larvæ.</i> Chironomys sp. ?  | Four specimens present.  |
| Variations in the temperature of the water.                   | Mid-water 42.6°F. (11½ feet).                        | <i>Sessile-eyed Crustacea</i> } Asellus aquaticus.                              | One specimen.  |  |
|   |  | <i>Infusoria.</i> Peridinium tabulatum.   | Cobalt blue in colour, scarce.   |  |
|   |  | <i>Rotifera.</i> Triarthra mystacina  | With ova attached, not abundant.   |  |
|   |  |   | Synchaeta tremula.   | Fairly numerous.   |
|   |  | <i>Eucopepoda.</i> Cyclops serratus.  | Only a very few present.   |  |
|   |  | <i>Phyllopoda.</i> Daphnia longispina.  | Four females present. All of these had embryos in brood-pouch  |  |
|   |  |   | Chydorus sphericus.  | Plentiful. A few with ova in the brood-pouch.  |
|   |  | Bottom 43°F (23 feet).  | <i>Rotifera.</i> Anuræa aculeata.  | Abundant; many specimens carrying ova.<br>All other specimens as in mid-water gathering. |
|   | 24th April.<br><br>Wind round with the sun.<br>Fine. | Surface 56.6°F.   | <i>Eucopepoda.</i> Cyclops insignis.   | Scarce, about a dozen male specimens present.  |
|   |  |   | C. Thomasi.  | One specimen only.   |
|   |  | <i>Phyllopoda.</i> Daphnia longispina   | Not abundant. A few of the females with ova in brood-pouch.  |  |
|   |  | Chydorus sphericus  | Fairly numerous. Many with ova in the brood-pouch..  |  |

| Date and Weather.                           | Temperature.                              | Takings.   | REMARKS.   |
|---|---|--|--|
| Variations in the temperature of the water. | Mid-water<br>55.6°F.<br>(11½ feet).       | <i>Eucopepoda</i> . Cyclops insignis.<br><i>Phyllopoda</i> . Daphnia longispina  | Scarce.<br>More numerous than in surface-net.  |
|   | Bottom<br>54.3°F.<br>(23 feet).           | <i>Eucopepoda</i> . Cyclops insignis.<br><i>Phyllopoda</i> . Daphnia longispina. | Only a few present.<br>Not abundant.<br>Most abundant at this depth. Many of the females carrying ova in an early stage of development in the brood-pouch.   |
| 24th May.<br>Wind N.E.<br>Sky clear.        | Surface<br>63.9°F.                        | <i>Eucopepoda</i> . Cyclops insignis.  | Fairly numerous, many females with egg-sacs attached. Only one or two male specimens present   |
|   |   | <i>Phyllopoda</i> . Daphnia longispina.  | A few females present. About two dozen of these were carrying ephippia.  |
|   |   | D. reticulata.   | A fair number present.   |
|   |   | Sida brachyura.  | Very scarce, about a dozen specimens present.  |
|   |   | <i>Ostracoda</i> . Cypris minuta.  | Three specimens present.   |
|   |   | <i>Insect Larvæ</i> . Chironomys sp. ?   | A single specimen.   |
|   |   | <i>Rotifera</i> . Asplanchna Brightwelli.  | Not more than a dozen specimens present.   |
| Variations in the temperature of the water. | Mid-water<br>62.6°F.<br>(11½ feet).       | <i>Eucopepoda</i> . Cyclops insignis.<br><i>Phyllopoda</i> . Daphnia longispina. | Scarce. A few of both sexes present.<br>Abundant, all stages of development present. Only a very few of the adult females had ova in the brood-pouch; most of the remaining specimens had advanced embryos in that receptacle. |
|   | D. reticulata.                            | More numerous than in either surface or bottom townets. No males present.        |  |
|   | Sida brachyura.                           | Only a few immature females present.   |  |
|   | <i>Rotifera</i> . Asplanchna Brightwelli. | Fairly plentiful.  |  |
|   | Bottom (23 feet)                          | <i>Eucopepoda</i> . Cyclops insignis.  | Abundant. Most of the females had egg-sacs attached. Male specimens scarce.  |
|   |   | <i>Phyllopoda</i> . Daphnia longispina.  | Very plentiful. The majority of these were in the same condition as those captured in the mid-water townet. A very few with ephippia.  |
|   |   | D. pulex.  | Two specimens present.   |
| D. reticulata.                              | Scarce. No males present.                 |  |  |
| <i>Ostracoda</i> . Cypris minuta.           | Six specimens present.                    |  |  |



BLOCKS OF TIN FOUND IN FOWEY HARBOUR.

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The following notes on some tin-blocks found in Fowey Harbour in the year 1898 are of interest. They were found at a spot just N.E. of the new quay at Bodinnick, about 8 feet below the bed of the river. It is possible that they were dropped there in process of shipping.

*Blocks of Tin taken from Fowey Harbour.*

In 1898 samples of tin were received by my firm, Williams, Harvey & Co., from the Fowey Harbour Board, with a request that we would offer a price for five blocks. We found the quality to be excellent and our offer was accepted.

I carefully and minutely inspected each block, thinking I might obtain some clue to their age, but with the exception of one, on which there was a very superficial double cross, which might have been the private mark of the maker, there was no indication of a manufacturer's name, or mark, or of the coinage stamp, which should have been found if the tin had been passed through the Coinage Hall, as was required by law as far back as the days of Leland's Itinerary, and down to the last century.

My inference therefore is that these blocks belong either to a time previous to the institution of the Coinage law, or else that they had surreptitiously been taken to Fowey to be shipped in contravention to the existing law.

Possibly there may be some ground for the first inference, from the fact that the sides and bottoms of the blocks show all the signs of having been cast in a rough-hewn granite mould, such as the ancients were known to use before the adoption of cast iron moulds.

The custom during the Coinage days was to make the blocks of almost uniform weight, about 6 to the ton; but in this case the weights were irregular as were also the thicknesses, the length being 23 inches and the width 11 inches; the weights of the several blocks were as follows:—328 lbs., 256 lbs., 322 lbs., 317 lbs., 368 lbs.; total 1591 lbs.; or 14-cwt. 0-grs. 23-lbs.

I have kept one of these blocks as a curiosity and have had it photographed.

The notches discernible in the centre at the top and at the right hand corner shew where the samples were cut from. This cutting has defaced the original lines.

It will be noticed that there is the usual hole provided for conveniently lifting the block, although in this case it goes through the block from front to back, instead of no more than half the distance, as is customary now. The position of the hole, too, indicates that there was no care to have it equi-distant from the sides, as would be the case now. It is in fact a *very* rough casting, and in all probability belongs to the 14th or 15th century if not earlier. The quality of the metal is such as Carew describes as one of the two qualities presented for coinage in his days, the other quality being harder and marked by the letter H to show its inferiority.

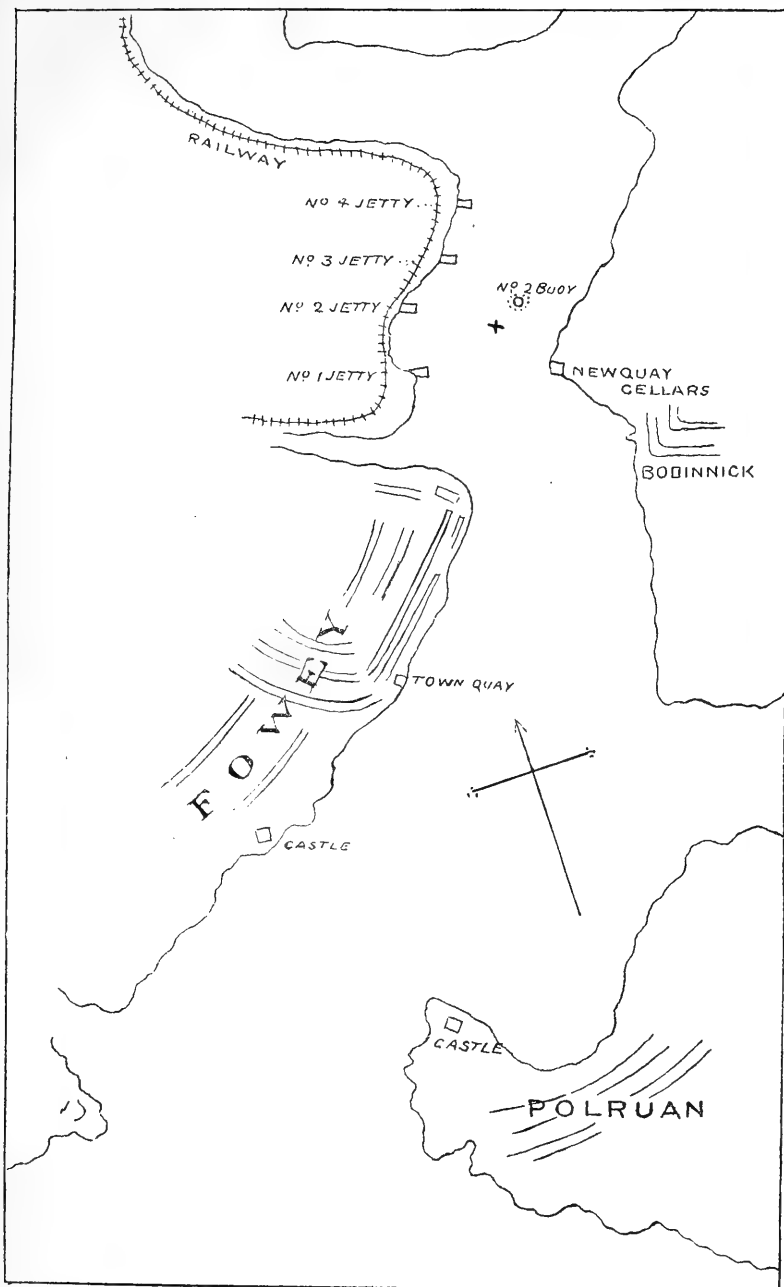
GILBERT B. PEARCE.

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Leland, alluded to above, was appointed antiquary to King Henry VIII, about 1532, and died in 1552, between which dates he probably wrote his "Itinerary," but it was not published until 1710.

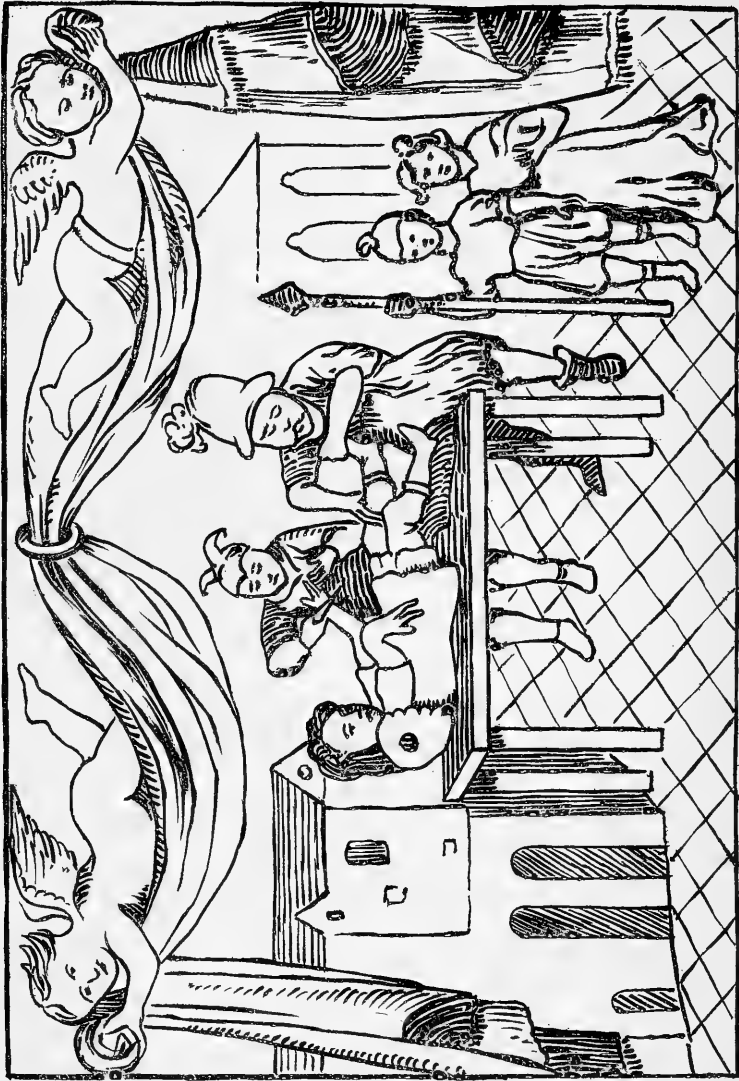
In the reign of Edward I (*i.e.* from 1272 to 1307), in order to secure the payment of duty on tin, it was agreed that all tin should be brought to certain places appointed for that purpose, to be weighed and stamped, or, as it is usually termed, "coined"; and that no tin should be sold until this stamp had been affixed. However, that this was not the first origin of the coinage, as some have supposed, is evident from Pat. 4 Henry III, 1, where, in addition to the order that the tin should be "coined" as stated above, it also provides that the "cuneum" or "stamp" which was inscribed with the name of his father King John should be changed and his own name substituted.

H. C. ROGERS.









*(Mural Painting at Locmitar).*

**MARTYRDOM OF ST. MELIOR.**

A CATALOGUE OF SAINTS CONNECTED WITH CORNWALL,  
WITH AN EPITOME OF THEIR LIVES, AND LIST OF  
CHURCHES AND CHAPELS DEDICATED TO THEM.

By The Rev. S. BARING-GOULD, M.A.

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PART V. *Mc—Mor.*

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S. MEDAN, Monk, Confessor.

Medan, Croidan, and Dagan were disciples of St. Petrock. Medan probably remained at Bodmin, for his body reposed there.

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S. MELANIUS, Bishop, Confessor.

Mullion is given in the Episcopal Registers as dedicated to S. Melanius. It is near Cury, dedicated to S. Corentine, and to Gunwaloe, the patron of which is S. Winwaloe. It belongs to the little group in the Lizard district which would seem to have been colonised by the refugees from Brittany, when this latter was devastated by the Northmen, and they fled to England, where Athelstan found temporary homes for them.

The feast day at Mullion is November 6, which is the day of S. Melanius, Bishop of Rennes. S. Mellion also is held to have the same dedication, and may possibly have a similar origin. The refugees, as we know, carried away with them the relics of their saints. As the Chronicle of Nantes says, after 907, "Counts, Viscounts, Mactierns, all, in fact, panic stricken fled and dispersed. . . . and there remained in Brittany only the poor who tilled the land."

S. Melanius was brought up at the court of the Breton Duke Hoel I, at Rennes. He persuaded several of the youths who were with him to renounce the world and become monks. On the death of Amandus the Bishop, in 511, Melanius was elected as his successor in the see of Rennes. He was present the same year at a council held at Orleans.

Rennes was a see distinct from those which were of British origin, and belonged to the Franco-Gallic Church. Melanius became councillor to Clovis, and was an active man in his diocese in bringing the people to conformity to Christianity, for he found them to be pagans at heart. He did something among the Veneti to advance the gospel, for he discovered that they were not even nominally Christian.

He died in 530.

His day in the Roman, Gallican and Breton Calendars is November 6. He has, however, a commemoration also on January 6. His life by a contemporary is in the *Acta Sanctorum* for January 6. He is also spoken of by Gregory of Tours.

S. Melanius should be represented in Episcopal habits, with a boat, as he died during a visitation of his diocese, and his body was placed in a boat on the Vilaine, and drawn up stream to the city of Rennes.

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#### S. MELOR, Martyr.

Melor was the son of Melian or Meliau, King of Cornu-Gallia or Armorican Cornwall, and of Aurelia, his wife.

According to the pedigree of the Princes of Cornouailles, Ian-Reith, a noble Briton, migrated to Armorica, and established himself in Cornu-Gallia. He was succeeded by his son Daniel, and Daniel by his son Budic. Budic would seem to have had three sons, though the life of S. Melor mentions only two; and these were Budic, who fled to South Wales, as the principality was usurped by one Grallo Flain, who appears in the Cartularies of Landevenec and of Quimper to have succeeded him; and Meliau, the second son, had to content himself with Leon. The third son, Rivold, was left out in the cold. That Meliau had Leon would appear from his name being there attached to Guimiliau and Lampaul-Guimiliau near the Ellorn. But he must also have exercised authority about the Yaudet, the river of Lannion, for his name lingers on there also. Meliau's father, Budic, died about 530; and Meliau reigned seven years in Leon, where the seasons were good and his subjects contented. Not



so, however, his brother Rivalo or Rivold. He had kept quiet, and Meliau did not suspect him of ambitious designs. But Rivold invited Meliau to a conference, and whilst conversing with him, treacherously stabbed him, and Meliau is accounted a saint and martyr. Meliau fell about 537. His son, Melor, was sent for by his uncle, Rivold, who would have put him to death but for the intervention of some of the chiefs. He, therefore, contented himself with cutting off his right hand and left foot, so as to incapacitate him for becoming a pretender to the throne, as according to Celtic customary law, no one with a bodily defect was eligible.

The affection of the attendants for the young prince led them to get a silver hand and a brazen foot fitted to the stumps, and at once Divine power was manifested, in that the boy was able to use these metal members as though they were flesh and bone. For precaution, the child was sent to Quimper, and placed in the Monastery of S. Corentine. Now it fell out one day that Melor and other boys were nutting in a wood, and his comrades made their little pile of hazelnuts, and brought them to Melor, who at once took them with his silver hand. Moreover, when he returned home, to the amazement of the good folk in the street, they saw his silver hand passed through the grating of the door, as he cast away the nutshells he had broken to get at the kernels. One day he was playing with a toy catapult, and shot his bolt which came down on a stone and penetrated it. When he withdrew the bolt a spring gushed forth, and this spring is shewn to this day at Meillars, near Pont-Croix in Finistère. The tidings of these wonders having reached Rivold, he sent for Cerialtan, the foster-father of Melor, and promised him that if he would make away with the lad, he would give him as much land as he could see from the top of Mont Coc. Cerialtan's greed was excited, and he confided the proposal to his wife. She was horror-struck, and resolved on saving the boy. Whilst her husband was away she fled with Melor and took refuge with the wife of Conmor at Beuzit, as she was a daughter of Budic, and aunt of Melor. Conmor is known in history, he was Count of Pou Caer in Brittany. At a later period, 555, he was killed, having usurped the sovereignty over Domnonia. He had a quarrel with Gildas. Rivold was incensed, and he urged Cerialtan

to entice the boy away and cut off his head. Cerialtan accordingly went to Beuzit, and took with him his son, Justan, who had been a playfellow of Melor, and to whom he was attached. The treacherous foster-father persuaded the prince to come with him, and he so threatened his wife that the woman was unable further to protect the boy. Cerialtan placed Justan with Melor in one bed, and during the night stole to it and cut off the prince's head. As he and Justan were leaving the castle, by climbing over the wall, carrying the head, Justan lost his footing, fell, and was killed. Cerialtan, however, pushed on till he reached a place called Kerlean (Caerleon), at a little distance from Carhaix, where, exhausted, and parched with thirst, he laid down the head and exclaimed, "Confounded be I! I have lost my son, and am now myself perishing for water." Thereupon the dead head replied—"Cerialtan, drive your walking-stick into the soil, and you will obtain water." Much astonished, the murderer complied; thereupon a copious spring burst forth, and more than that, the rod took root, threw out branches, and in time became a great tree. On reaching the residence of Rivold, Cerialtan delivered up the head, whereupon the prince bade the man receive the reward of his crime. He first blinded him, and then sent him to the top of Mont Coc to lay claim to as much territory as he could see.

Such is the legend as given by Dom F. B. Plaine in the *Analecta Bollandiana* (T. V. 1886), from a fragmentary life written after 849, in the National Library at Paris.

The same occurs in Grandisson's *Legendarium*, in the Dean and Chapter Library at Exeter, with slight variations. It begins: "*Sanctus Melorus, Meliani Cornubiæ regis filius, cum esset septem annorum, orbatus est Patre. Genetrix autem illius erat de Devonia regione, Hawrilla nomine, ex Rivoldi Comitis stemmate qui a transmarinis partibus quondam advenerat.*"

The whole story is fabulous, though probably based on fact. That fact is that Melor was mutilated by Rivold, and then by his orders put to death. The silver hand and brazen foot are mythological adjuncts.

There are various versions of the story. In one, Melor, forwarned by the wife of Cerialtan, runs away and is pursued.

In the church of Lanmeur, in Finistère, is a crypt, in which it is supposed that the martyred prince was buried, but his relics are not there now. In this crypt are a Holy Well and a statue of the Saint.

The date of death would be about 544.

The dedications to him in Cornwall are:—

Mylor, where it is supposed that he was killed. The feast day, however, points rather to the father Melyan, or Meliau, than to the son.

Linkinhorne (Lan-Tiern) is also dedicated to him. Here there is a fine Holy Well.

Thornecombe church in Dorset is dedicated to S. Melor.

His body was held to be preserved at Amesbury, where he had a chapel.

The feast of S. Melor in Grandisson's Calendar is October 1.

This is also the day in the Sarum Breviary, and in a Norwich Martyrology of the 15th century. Wilson arbitrarily gave January 3, and was followed by the Bollandists. In Cressy's Church History of Brittany, he is entered on August 28, which was also the day of the Feast at Mylor till changed to October 25.

In art, Melor should be represented with a silver right hand and a brazen left foot, and a branch of hazel-nuts should be in his silver hand.

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#### S. MENEFRIDA OR MINVER, Virgin, Abbess.

Menefreda is the Latin form of the name. She is reckoned among the daughters of Brychan. Actually she was his granddaughter, if she was, as I suppose, the Mwynen of the Welsh pedigrees, daughter of Brynach, by Corth, daughter of Brychan.

Minver is probably Mwyn-vawr, in contradistinction to Mwyn-bach. I shall shew that there is reason to hold that S. Meryn was dedicated to the same saint, in which case Minver would be the greater, and Meryn lesser, Mwynen. Mwynen of the Welsh I take to be the Monynna of the Irish (*see* Morwenna).

According to the Bodmin Antiphony, S. Minver's day is November 24.

Nicolas Roscarrock in his MS. "Lives of the Saints," now in the University Library, Cambridge, written about 1610, says:—"The church is a half a mile distant from the place where she was said to live, and at a place called Tredresick, where in my time I remember there stode a chappell also dedicated to her, being less than two miles from the place where her sister, S. Endelient, lived, and there is also a well of her name where it is saide the Ghostlye adversarie coming to molest her, as she was combing her head by the said well, she flinging the combe at him enforced him to fly, who left a note behinde him in a place called at this daye Topalundy, where on the Topp of a rounde high Hill, there is a strange deepe Hoale (as men there have by tradition) there made by the devils in avoyding S. Menfre." He gives as her day November 23.

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S. MERIADOC, Bishop, Confessor.

Meriadoc was born in Armorica about 626, and was ordained by Hingweten, Bishop of Vannes, whom he succeeded in that see. The date cannot be fixed with accuracy, but this is known that Meriadoc's successor, Gobrian, died in 725, and we cannot be far wrong in placing the occupation of the see of Vannes by Meriadoc as being between 690 and 710.

His life is singularly devoid of incident, and yet, curiously enough, it was selected for one of the Cornish Miracle plays that have been preserved.

The church of Camborne is dedicated to him.

His cult must have been introduced by the refugees from Brittany in the 10th century.

His feast is on June 11.

In Brittany several churches are dedicated to him; one at Stival, near Pontivy, where his bell is called *le bonnet de Saint Meriadoc*. It is rung over the head of a deaf person, under the supposition that it will cure him. Here are paintings in the chancel representing his story, and outside the village is his Holy Well.

## S. MERRYIN, Virgin, Abbess.

In the Episcopal Registers (Bronescombe, 1259, 1274; Grandisson, 1328, 1333, 1338, 1339, 1351, 1362; Stafford, 1395, 1398) this Saint appears as S<sup>ta</sup> Marina.

A Saint of this name also appears in the Roman Calendar; she was a Bithynian damsel, who went into a monastery of men, dressed as a male, and remained in it as a monk till she was charged with having become the father of a child. This led to explanations and her character was cleared. The story was vastly popular, as it had a smack of comicality about it, and she was given two commemorations, on June 18 and December 4.

The Feast of S. Merryn is on July 7 or the Sunday nearest, and this agrees with neither of the commemorations of S. Marina. It does, however, approximate to that of S. Morwenna, which is on July 6.

Merryn is apparently a corruption of Morwen, and Marina is a Latin version of the name.

(See S. Morwenna).

She is not to be confounded with S. Merrin ap Seithenin, whose day is January 6.

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 S. MERWENNA, Virgin, Abbess.

Patroness of Marhamchurch, a reputed daughter of Brychan. The same as Morwenna, Minver, and Merryn.

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 S. MEVAN, Abbot, Confessor.

The Life of S. Mevan has been published in the third volume of the *Analecta Bollandiana* (1884). It is by a writer of the time of Charles Martel (720-750), and S. Mevan died about 607, so that we may say that the biographer wrote about a century after the death of this hero.

Mevan or Mewan, also called Conaid, was born in Gwent. His father was Gerascen (Geraint) of Ergyng or Archenfield, and seems to have married a sister of S. Samson. She is spoken of in the Life of S. Samson in very uncomplimentary terms, as

detested by the Saint for her vicious life. This, however, means no more than that she was disinclined to embrace the monastic life, and chose to be married instead.

The education of S. Mevan was entrusted to S. Samson, and when the latter resolved on going to Armorica, he threw in his lot with his uncle. They were together in Cornwall, and whilst Samson was at Golant, Mevan founded churches at Mevagissey and S. Mewan, and Austell, his devoted friend, planted his llan between those of Samson and his companion and guide. His favourite retreat would seem to have been where is now the Holy Well and Chapel of Menacuddle, *i.e.* the Cuddigle (cell or retreat) of Mevan.

When Samson arrived in Brittany, he placed Mevan as Abbot at Lanmeur, and employed him in political missions, to provoke an insurrection against Connor, the usurping prince of Domnonia, in favour of Judual, the hereditary prince, who was sheltering at the court of Childebert. On one of the these expeditions, across the forest of Brecilien, Mevan came on a clearing that had been made by a British settler, named Cadfan, who having no children, proposed to Mevan to settle at a suitable distance, found a *lann*, and he undertook, on his side, to make over his *plou* on his death so that all the land and its colonists, over which and whom he had jurisdiction, should pass under the authority of an ecclesiastical chief. To this Mevan consented, and thus originated the Abbey of S. Meen in Montfort.

Judual recovered his crown in 555 with the assistance of S. Samson, and, on his death in 580, was succeeded by his son Juthael (Hoel III), who died in 605; when the third son of Juthael, named Hoeloc (Alan II), usurped the throne, being of a masterful character, and Judicael, the eldest son, to save his throat, became a monk at S. Meen. Mevan encountered trouble with the usurper. Hoeloc threw one of his own servants into a dungeon with the intent of starving him to death. Mevan interceded with the prince but in vain; however, by the connivance of the gaoler, the poor wretch was enabled to escape, and he took sanctuary with S. Mevan. Hoeloc was highly incensed and went to the monastery and demanded his servant. When Mevan refused to surrender him, he violated the sanctuary

and carried the man away. As, however, the horse soon after stumbled, and threw the prince, who broke his thigh, in a panic, supposing that this was a "judgment" on him for breaking sanctuary, he released the prisoner, and made his peace with the abbot.

The story is told—a sufficiently hacknied one—of Mevan having delivered the neighbourhood of a dragon that lived in a cave by the river Loyre. He passed his stole round the beast and led it to the bank of the river, into which he precipitated it.

This is the legendary form given to a simple fact; that he dragged an image to which idolatrous honour was paid, to the water's edge, and cast it in.

The story of the death of the Saint, and of his words to S. Austell, has already been told. (*See* S. Austell).

He died in 617.

His feast is on June 21, but at Mevagissey on June 29. At S. Meen, the Translation was on January 18. A Dol Calendar of 1519 gives as his day May 27. At S. Mewan the feast is five weeks before Christmas.

In art, he should be represented as an Abbot with a dragon at his side, held in leash by his stole.

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#### S. MEUBRED OR MYBARD, Hermit, Martyr.

According to William of Worcester, Mybard was son of a King of Ireland, and was also named Colrog. He settled at Cardinham as a hermit, where he was murdered. His companions were Mannach or Mancus and Wyllow. In the Cartulary of Landevenec, in Brittany, he occurs as Sanctus Morbretus, who made over his settlement at Lanrivoare to S. Winwaloe, and the date of the forged deed is March 31, 955. Either he was contemporary with Winwaloe, and the date is wrong, or else he was a different person who gave his land to the abbey at this later period.

In the diocese of Quimper, at Ploumodiern, is a hamlet with chapel, called Loc-Mybrit, and the saint is said, by tradition, to have for a while led an eremitical life there, but this is the Mybard who was a disciple of S. Winwaloe.

Meubred is represented in one of the windows of S. Neot wearing a brass cap or yellow cap on his head, in his left hand a short staff, in his right he carries his head. The inscription is "Sancte Maberde ora pro nobis."

His feast at Cardinham is on the Thursday before Pentecost.

The name occurs on an inscribed stone at Mobratt, "CLOTUAI MOBRATTI."

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### S. MICHAEL, Archangel.

The first supposed apparition of S. Michael was on Monte Gargano, in or about 492.

In or about 710, according to William of Worcester, a second apparition took place on the Tumba in Cornwall. This Tumba was also called the Hore rock in the wood; "et fuerunt tam boscus quam prata et terra arabilis inter dictum montem et insulas Syllye, et fuerunt 140 ecclesiæ parochiales inter istum montem et Syllly submersæ. . . . predictus locus spacissima primo claudebatur sylva, et oceano miliaribus distans sex, aptissimam prebens latebram ferarum, in quo loco olim comperimus monachos domino servientes." *Hore* is *hîr*, the high rock.

He says that the feast of the apparition on S. Michael's Mount was celebrated on October 16. Nicholas Roscarrock says on 29 September, "Dedication of S. Michael's Mount in Cornwall." This, however, is a reduplication of the pretended apparition on Mont Saint Michael in Normandy, which took place, according to the legend, when Aubert was Bishop of Avranches, who was consecrated in 708. And October 16 is observed in the Gallican church in commemoration of this reputed apparition.

It may confidently be asserted that no churches were dedicated to the Archangel in Britain before the beginning of the 8th century. In the *Brut y Tywysogion* it is stated that between 710 and 720, "a church of Llanfihangel was consecrated;" and in the *Brut y Saeson* it is said, "in 717 was consecrated a church of Michael." This was so new an event as to demand recognition by the annalist. The motive cause for an outburst of devotion to the Archangel was the rumour that spread throughout Britain and Gaul, of the apparition on the Monte



Tumba. From that date it became customary to dedicate churches on heights to S. Michael.

William of Worcester gives as chapels and churches so dedicated one on Rowtor, that at Roche, one on Brentor, the afore-mentioned S. Michael's Mount and Trewen, which he describes at "5 miliaria ultra Lancelton super altum montem," which is by no means an accurate description.

To these may be added S. Michael's Penkivel, and S. Michael's Carhayes, and Michaelstow.

In the Cotton Collection of MSS. in the British Museum (Julius A. VII., 17) is an account of the Apparition of S. Michael "in Monte Tumba," written by John Tailour, Chancellor of Exeter Cathedral, 1489.

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S. MORAN, Bishop, Confessor.

The parish church of Lamorran (Llan-Moran) is dedicated to this saint. The district is one of irregular settlements.

Moran is a contraction of Moderan. Moderan was a native of Brittany, and was ordained by the Bishop of Rennes. His father, having gone to our island, fell in love with a beautiful girl there, and meditated deserting his wife and family and marrying her. But his son, Moderan, appeared to him in dream and reproached him. Partly on this account, mainly because his right feeling and good sense prevailed, he meekly returned to his wife and bairns and home.

Afterwards the king, Alan Lawhir, or Longhand, sent for him to give some account of himself for staying away so long. The man with great frankness explained how he had been fascinated by a handsome girl, and then, with an eye to his son's advancement, declared that he was only prevailed upon to go back to his duties, by the reproaches of Moderan who appeared to him in dream. Alan believed him, or pretended to do so, and ever after treated Moderan with respect. Eventually the saint was chosen bishop of Rennes about 703. Thenceforth Amelo, Count of Rennes, was a thorn in his side, vexing the church with his exactions, and Moderan, wearied out and disgusted, resolved on absenting himself from his see for a while, on the plea of a pilgrimage to Rome. It may be, it probably was the

case, that there was a good deal of personal antagonism between him and Amelo, and for the sake of the peace of the church, it was well that they should be parted.

When crossing Monte Bardone, one of the heights of the Apennines near Parma, Moderan registered a vow that, should he reach Rome in safety, he would spend the rest of his days in this charming spot. As the major portion of his journey and most of the perils were passed, it is pretty clear that he had made up his mind to remain there, and only desired an excuse for making it a matter of conscience so to do.

On his way back from Rome, having duly accomplished his pilgrimage to the holy sites, he found that his legs refused to move into the plain below the mountains, and only when he communicated to his companions his intention to remain there, did they recover flexibility.

However, conscience spoke and upbraided him with this cowardly desertion of his flock; so he returned to Rennes, but only to again feel distaste at the burden of the episcopal office, and to surrender to Aunscard the pastoral charge of Rennes. After which, he hurried back to Monte Bardone.

Flodoard gives another version of the story. He says that Moderan had left behind him by inadvertence a bundle of relics which he had slung on a branch of a tree on Monte Bardone, and he professed that his scrupulous conscience would not allow him to leave them in such neglect, wherefore he returned in quest of them.

Liutprand, king of the Lombards, gave him land on which to build. Moderan died about the year 730. He resigned his diocese in 718 or 720.

Probably he was a man of feeble character, and must not be judged harshly, if he deserted his duties, as old age advanced, and he felt his incapacity to cope with the difficulties of his situation.

The explanation of finding on the Fal a peculiarly uninteresting local saint of Brittany is due to a migration of Bretons. This has already been referred to under the heads of Corentine and Meriadoc, but may be here entered upon with greater fulness.

Rennes was not included in Brittany till after the conquests of Nominoe in 846-50. The border land was at that time ravaged remorselessly by Franks and Bretons in turn, and it is quite probable that a good many of the inhabitants of the marches then abandoned their homes, and crossed into Britain, taking with them the relics of their Saints. But the great exodus was later, and was due to the ravages of the Danes and Northmen. They "burnt the towns, the castles, the churches, the monasteries, the houses, ravaged the country, devastated Brittany through its length and breadth, till they had reduced the whole land to a solitude, to one vast desert. Then it was that the bodies of the Saints were conveyed out of the land."\*

Another chronicler says: "As the pirates by the permission of the Almighty, devastated the whole of Brittany and reduced it to servitude, the inhabitants, overwhelmed by the invaders, abandoned their homes and found places of refuge in other lands, but carried away with them the precious relics of the Saints."†

On this occasion, in 919, Nantes fell into the hands of the Northmen. Robert, Duke of France, attempted vainly to expel them, but in 921, says Flodoard, "he abandoned to them the Brittany they had desolated as well as the country of Nantes."

It was in 919, according to the Chronicle of Nantes, that Matuedoi, Count of Poher fled to Athelstan, King of England, with a crowd of Bretons (*cum ingenti multitudine Britonum*), and with his own son Alan, whom he had had of the daughter of Alan the Great, and who later on was called Barbetorte. Previously the King Athelstan had stood godfather to this son, and was warmly attached to him."‡

Athelstan was not king till 924, so that the title given to him is anticipatory. Athelstan, at the same time that he took these fugitives under his protection, received large consignments of relics which he distributed among churches in England; amongst others, Exeter was gratified with a large number, the list of which is preserved.

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\* Vet. Coll. MSS. de rebus Britannicæ, in De la Borderie, Hist. de la Bretagne T. II., p. 356. See also: Dom Plaine, Les invasions des Normands, Paris, 1899.

† De la Borderie, p. 357.

‡ Chron. Namnetense, ed. Merlet, p. 82.

Where Athelstan placed these refugees we are not told, some probably in the north, for when some years later they returned to their own land, they brought with them the cult of certain East Anglian, Kent, and Yorkshire Saints.

In 926 Athelstan defeated Howel, the King of Cornwall, and after that went through the peninsula to the Land's End, and even to Scilly. It is probable that he then planted colonies of Breton refugees in Cornwall, as men attached to, and dependent on, himself, in the midst of a resentful defeated population.

There exists a letter from Agnan, archbishop, and Rudbod, provost of Dol, about this time, to Athelstan (924) complaining that they were living away from Dol, and entreating him to provide for them. §

In 931 the Bretons rose in revolt. They had been abandoned by their clergy and their nobles. On S. Michael's day, 935, they massacred their Norman masters. John, Abbot of Landevenec, then living at Montreuil, headed the rising. Alan Barbetorte returned from England with a body of men supplied to him by Athelstan. In 936 he was at Dol, and after a series of engagements drove the Northmen to Plourivo, north-east of S. Brieuç, surrounded and exterminated them.

Flodoard says, "in the year 937, after long exile from Brittany, the Bretons returned to their homes. . . . and recovered possession of their lands." In 939 the Normans were finally expelled from Rennes.

Consequently the fugitives were out of their own land only about twenty years. That all returned is improbable. They had received grants of lands, and had built churches, and contracted marriages in Britain. It is due to this settlement that the cult of such saints as S. Moran, S. Corentine, and S. Meriadoc, took root in Cornwall, and that the cult of S. Augustine of Canterbury, S. Mellitus of London, and S. John of Beverley, were introduced into Brittany on the return of the fugitives.

The day of S. Moran or Moderan in the Rennes Breviary of 1627, and at Berzetto in Parma, where his body is still preserved, is October 22. In the Calendar of the Abbey of S. Melanias

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§ Migne, *Patriol. Lat.* Tom. 179, col. 1105-6.

at Rennes, on May 16, and again on June 21. In an old Treguier Calendar that belonged to S. Yves, on May 15.

Moderan is commonly called Moran in Brittany.

Nicholas Roscarrock says that the Feast at Lamoran is the Tuesday before All Saints.

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#### S. MORVETHA, Virgin.

The church or chapel of Morvah is a dependency on Madron. We should therefore suppose it to be an Irish foundation. The chapel was licensed as that of S<sup>ta</sup> Morwetha by Bishop Stafford, April 17, 1409.

The Saint cannot be identified.

Morvah in Welsh signifies a low tract of land by the sea grown over with coarse grass, but this hardly describes the aspect and lie of Morvah parish.

There are remains of an ancient well and chapel at Tregaminion, and there is a chapel-well near the beach of Chancarn.

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#### S. MORWENNA, Virgin, Abbess.

According to the Lists given by William of Worcester and Leland, Morwenna was a daughter of Brychan and a sister of S. Nectan. Actually, they would seem to have been grandchildren. The name Morwen has many forms. It has assumed that of Modwenna, but both are the same as the Irish Monynna, who appears in Welsh as Mwynen, daughter of Brynach the Irishman, who married Brychan's daughter, Corth. This Mwynen's brother, Berwyn or Gerwyn, settled in Cornwall, where he was killed, and was accounted a Martyr.

Great confusion has arisen between three Saints of similar names. A writer of the name of Concubran, apparently of the 11th century, has fused all three into one, regardless of the difference of periods in which they lived and of places in which they laboured.

There is, however, a more trustworthy life, in the Salamanca Codex of Lives of Irish Saints, but even that is a fusion of two quite independent lives, nearly, but not quite, contemporary, and belonging to different parts of Ireland.

It is advisable, before proceeding, to distinguish the saints, a thing that happily can be done without great difficulty. We will begin with the latest.

1. S. Modwenna of Whitby. She was an Irish abbess, called in her own country, Monynna. She was visited by Alfrid, son of Oswy, who in 670 fled to Ireland, and, as Bede tells us, remained there some time. Afterwards, Modwenna crossed into Northumbria, and Alfrid, who was now king, placed her over the Monastery of Whitby, that had been founded by S. Hilda, in 658. She had charge of Alfrid's sister Elfleda, but soon left and returned to Ireland. She died about 695.

2. Modwenna, of Burton-on-Trent, was the instructress of S. Edith of Polesworth, sister of Athelstan, and great-aunt of S. Edith of Wilton. The author of the Life of Modwenna has confounded Alfrid of Northumberland with Alfred the Great, and Elfleda with Edith, Alfred's grand-daughter, and of S. Osyth, grand-daughter of Penda. This Modwenna died early in the 10th century.

3. Monynna, daughter of Mochta, of the diocese of Armagh, received the veil from S. Patrick, and laboured in the North of Ireland. Her principal foundation was Fochard, near Dundalk. She can not have lived beyond 520.

4. Monynna, disciple of S. Ibar, can not have been the same as the preceding; her sphere was in the South of Ireland, and she lived somewhat later than the former.

Monynna is really not a personal name, it is Mo-nin, my dear Nun, a term of endearment applied to many holy abbesses.

We have to entirely reject all that relates to 1 and 2, and to disentangle the narrative of the several parts that belong to 3 and 4.

According to the "Vita," Monynna associated with herself eight virgins and a widow who joined her along with her little son Lugaid by name, who afterwards became a bishop. She placed herself under the direction of Bishop Ibar, of Begeri in Wexford Harbour.

Hearing of the virtues of S. Bridget, Monynna visited her, and placed herself with this saint for a while, and was constituted portress of the establishment at Kildare. Then she returned

again to Ibar, who commended to her charge a girl of whom he had formed a high opinion. Monynna, however, with a woman's eye, saw through her at once, and said to the bishop, "I have a shrewd notion that this young woman and I will never agree, and that in the end one of us will have to go." And, in fact, after some years this girl headed a faction in the convent against Monynna, that led to the expulsion of the abbess with fifty of her nuns who claved to her.

When thus turned out of her own house, Monynna went back to S. Bridget. As Bridget died in 525, this took place at the beginning of the 6th century. Thus this Monynna was beginning her monastic education when the other Monynna of the North of Ireland was drawing to the end of her days.

An odd characteristic story is given in the Life by Galfredus of Burton, taken from some Irish Life that came into his hands relative to Monynna of Leinster. Some bishops were on their way to visit her when they were waylaid by a band of freebooters and robbed and murdered. The chief of the robbers was one Glunsealach. Monynna heard of this, and went with her nuns to recover the bodies, and encountering the robbers, she reprimanded their captain with such severity that he was frightened. That night he had a dream. He thought he saw Heaven opened, and that Monynna pointed out to him a throne set in a flowering meadow, and told him that it might be his if he repented. Next day Glunsealach and his nephew, Alfin, went to Monynna, and begged to be instructed in the way of God. She accordingly took them both into her nunnery for instruction—rather a risky proceeding one would have thought (*litteras discentes et cum virginibus cohabitantes*).

Now the story of this conversion and of the throne in heaven reached the ears of S. Coemgen, or Kevin, of Glendalough, perverted by some spiteful people into this form:—"that Monynna has promised to Glunsealach to take from Coemgen the throne ordained for him in Heaven and give it to her convert." Coemgen was furious. "What is the good," he exclaimed, "of my seven years in the desert, my vigils and prayers, my eating nettles and mallows, wild fruit, the bark of trees and roots, if my mansion in the skies is to be taken from me and given to a

wretched outlaw?" He armed his monks and retainers and marched to where Monynna's convent was, with intent to burn it down, drive the nuns away, and kill Glunsealach. Monynna heard that they were approaching, and went with her nuns to meet the irate saint. He was with difficulty pacified, but only when she had promised to surrender to him the highway-man and his nephew, that he might have the credit of finishing them off as saints. Then she conducted Coemgen to a tank she had made for tepid water from a spring, and said: "There, strip, and in with you, and wash off your nasty temper."\*

One night, when the sisters had risen to mattins, and were about to commence the psalms, Monynna stopped them. "Know," said she, "that our prayers hover about in the roof and can not rise through it. That is due to one of you having committed a fault." In fact it had been whispered in her ear that one of the nuns had adopted a luxury without asking permission. After a long silence one of them rose, a widow, and said:—"It is I who am to blame. I suffer from cold feet, and a gentleman of my acquaintance, to whom I had mentioned the matter, gave me a pair of woollen stockings (*sotulares*), and I am wearing them without having spoken of them to the abbess." Monynna ordered her, there and then, to strip them off, and gave them to Brig, a nun, to throw into the river. After which, the prayers were able to get away and soar upward.

Now the story of Glunsealach certainly belongs to Monynna of Leinster, for S. Coemgen lived at no great distance off, at Glendalough, and, moreover, he died in 610 or 619, a century after the Monynna of Fochard, which is in Louth.

Glunsealach and Alfin finished their religious education under Coemgen, and the former became a bishop. Both are numbered with the saints, and are commemorated on June 3, on the same day as the peppery Coemgen, their master.

Whether the Brig or Brignait, who was the faithful pupil of Monynna, be the Breaca of Cornwall, we cannot say, but probably she was not, as the Life of S. Monynna says that she

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\* "In hoc balneo fecit Modwenna.....intrare episcopum, dicens ad eum: 'sicut in hoc balneo lavarum extrinsecus a sordibus corporis, sic te deus omnipotens emundet intrinsecus a maculis cordis.'"



became blind, and founded a monastery at no great distance from that of her mistress.

The story now becomes entangled with that of Modwenna and the other Monynna, and in the Salamanca Life to the same saint are attributed foundations at Fochard in Louth and Killeevy in Armagh. The occasion of the revolt in the monastery was apparently the too great strictness of Monynna's rule, for we are told that, whilst she was lavish to strangers and beggars, she half-starved the sisters, and S. Ibar was forced to interfere.

Probably owing to the troubles she had with her nuns, and to the confusion into which her affairs had fallen through mismanagement, she resolved on obtaining a rule from Britain, and she sent Brig to Rosina or Ty Gwyn, to obtain one from S. Mancen or Mawgan, who was then head. This can hardly have been later than 530. She had long ago lost S. Ibar, who died early in her career, in 500 or 503. Brig remained sometime in Menevia, and returned at last with the desired rule.

The story goes that Brig saw two white swans fly from the cell in which Monynna was engaged in prayer, and fondly supposed that these were angels who had visited her.

The Salamanca Life says that in her last moments Monynna was ministered to by S. Ibar, whom it calls Herbeus, but this of course is impossible, unless it were fabled that her old guide and friend appeared to her in spirit.

We now come to the question whether she be the same as the Mwynen, daughter of the Irishman Brynach. It is possible. The Brychan family had many connexions with precisely that part of Ireland where she lived. Mogaroc, reputed son of Brychan, was Abbot of Delgany in Wicklow, Conon or Cynog was for a while also in Wicklow, Mobeoc, another, in Wexford, Cairbre in the same county, so also was another Elloc, and a daughter, Cairine, also in Wexford. This points to a very close connexion between the Brychan family with the south-east of Ireland, and this same family occupied north-east Cornwall.

As we have seen, when Monynna desired a rule, she sent into Wales for it. Considering the connexion, it is probable that the Brychan colony in Cornwall would endeavour to obtain a woman of their own family to organize the religious schools

for them in Cornwall, and who more suitable than Monynna? Of direct evidence there is none. At the best we have but a presumption. Mwynen is the Welsh equivalent for Monynn, and both are mere names of affection.

The foundations in Cornwall, not necessarily made by Monynna herself, but by her disciples, and affiliated to her head house, and under her rule, would be Morwenstow, Marhamchurch, S. Minver, and Merryn.

The day of S. Morwenna is July 6. This is the day in the Irish Calendars of Monynna and Stievequillion, County Down. Another of the name on June 3. Whytford gives July 5 and September 9. The feast at S. Merryn is on July 7. That at Marhamchurch is on August 12. At Morwenstow the feast is on June 24, as both the church and Holy Well were withdrawn from S. Morwenna and placed under the patronage of S. John the Baptist. The feast of S. Minver is on November 24, according to William of Worcester.

At Morwenstow church is a fresco representing the Saint as a nun with one hand raised in benediction, and the other holding something, indistinguishable, in her hand, to her breast.

In art, Morwenna might well be represented as an Irish abbess in white with a swan at her side.

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### ADDENDA ET CORRIGENDA.

And see p. 238.

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- Page* 156 and 159, Virginstow is in Devonshire, but is included here as part of the Diocese of Truro. The incumbent is a rector.
- „ 165, headline, for “of,” *read* “on.”
- „ 157, line 5, strike out “Those within brackets are in ruins.”
- „ 145, line 15, strike out the paragraph from “Colouring” to line 17 inclusive, and substitute :
- LAUNCESTON, ST. MARY MAGDALENE’S. “At the restoration of 1852, colouring was found on a portion of a Norman pillar and capital. It consisted of chequered panelling, composed of Corinthian columns and architraves, with Gothic finials, &c., dating from *circa* 1550, painted over the rich flowing outlines of the original decoration. This has now been all destroyed.”
- The remainder of the paragraph refers to St. Mary Magdalene’s Church.
- „ 238, and November Table following. Greatest Rainfall in 24 hours, for “3·00 in. (1880),” *read* “2·35 in. (1894).”
- „ 248, line 6 from bottom, for “newel,” *read* “newel staircase.”
- „ 250, line 2 of first par., after the words Tuesday afternoon, read, December 9th.
- „ 303, after title of paper, add “By the Rev. Chancellor Edmonds.”
- „ 311, penultimate line of note, for “parochia,” *read* “parochialis.”



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| No. 4. | 1899, Oct. 5.  | Nov. 21.   | Mr. Rupert Vallentin.         | Ichthyology. |
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The terms of the Award are fully set forth in the Will of the donor, WILLIAM JORY HENWOOD, F.R.S., the eminent geologist and writer on Metalliferous deposits, who for two years was President of the Institution, and died in 1875 leaving certain bequests to its funds. The following is an abstract from his will :— . . . . . "To the President, Vice-presidents, Treasurer, Secretaries, and Council of the Royal Institution of Cornwall

and to their successors for the time being, I give the sum of [&c.,] the interest thereon to accumulate to provide Dies, and in the third year next after the purchase of the said Dies, and in every successive third year, to purchase one Gold Medal of the value of Ten Guineas at the least to be struck from the said Dies. And I further direct that the said Triennial Gold Medal shall be awarded to the person who shall, in the opinion of the said Officers and Council, for the time being, or of the majority of them present at a Meeting convened for the purpose, have contributed the best treatise or paper on the

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|--|---|--------------|
| GEOLOGY,<br>MINERALOGY,<br>MINING OPERATIONS,<br>BOTANY,<br>ORNITHOLOGY,<br>ICHTHYOLOGY,<br>CONCHOLOGY, OR<br>ANTIQUITIES. | } | OF CORNWALL. |
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but on no other subject whatsoever) published in any Journal. Proceedings or Transactions of the said Institution during the three years next preceding the date of such award.

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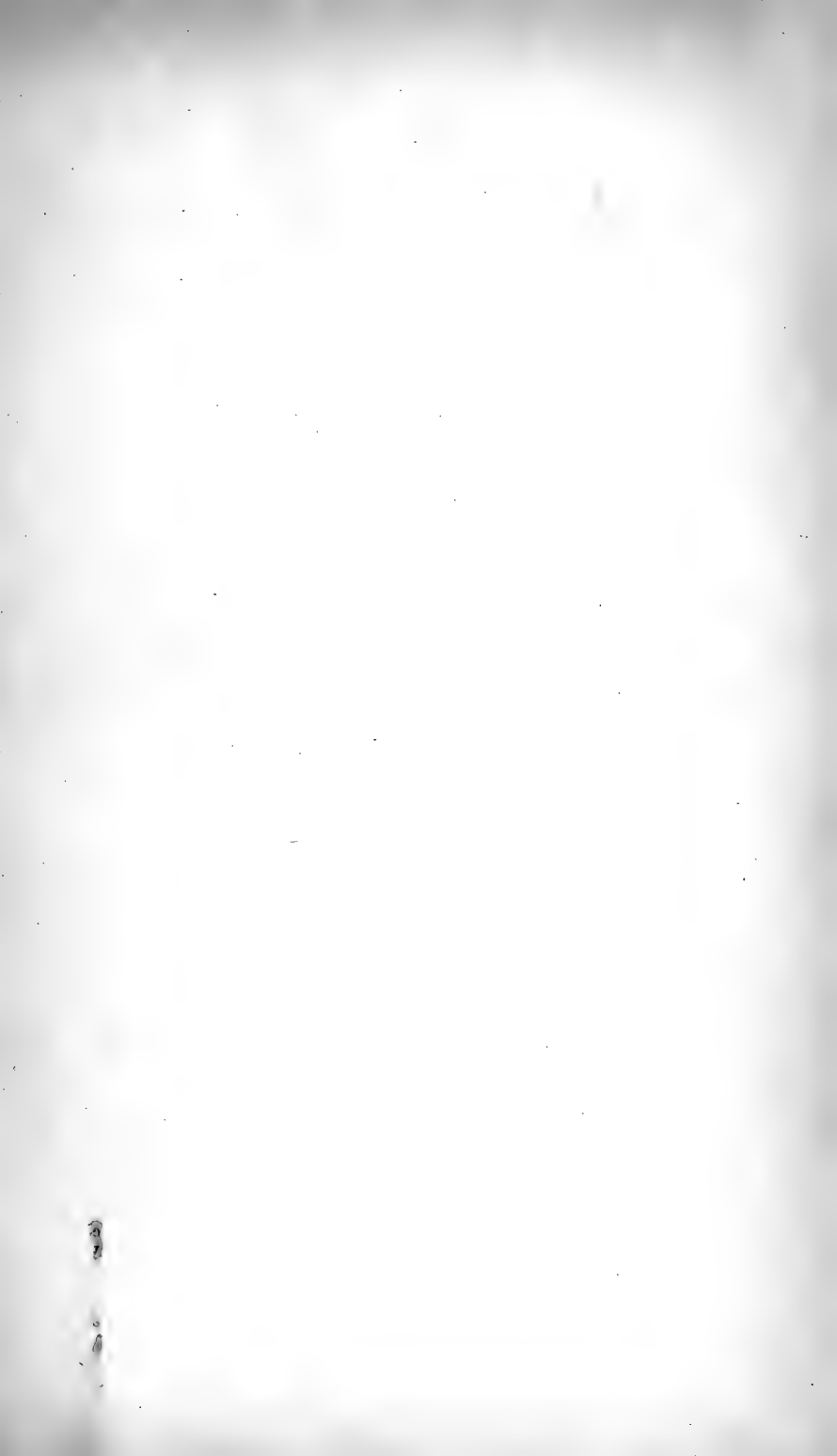
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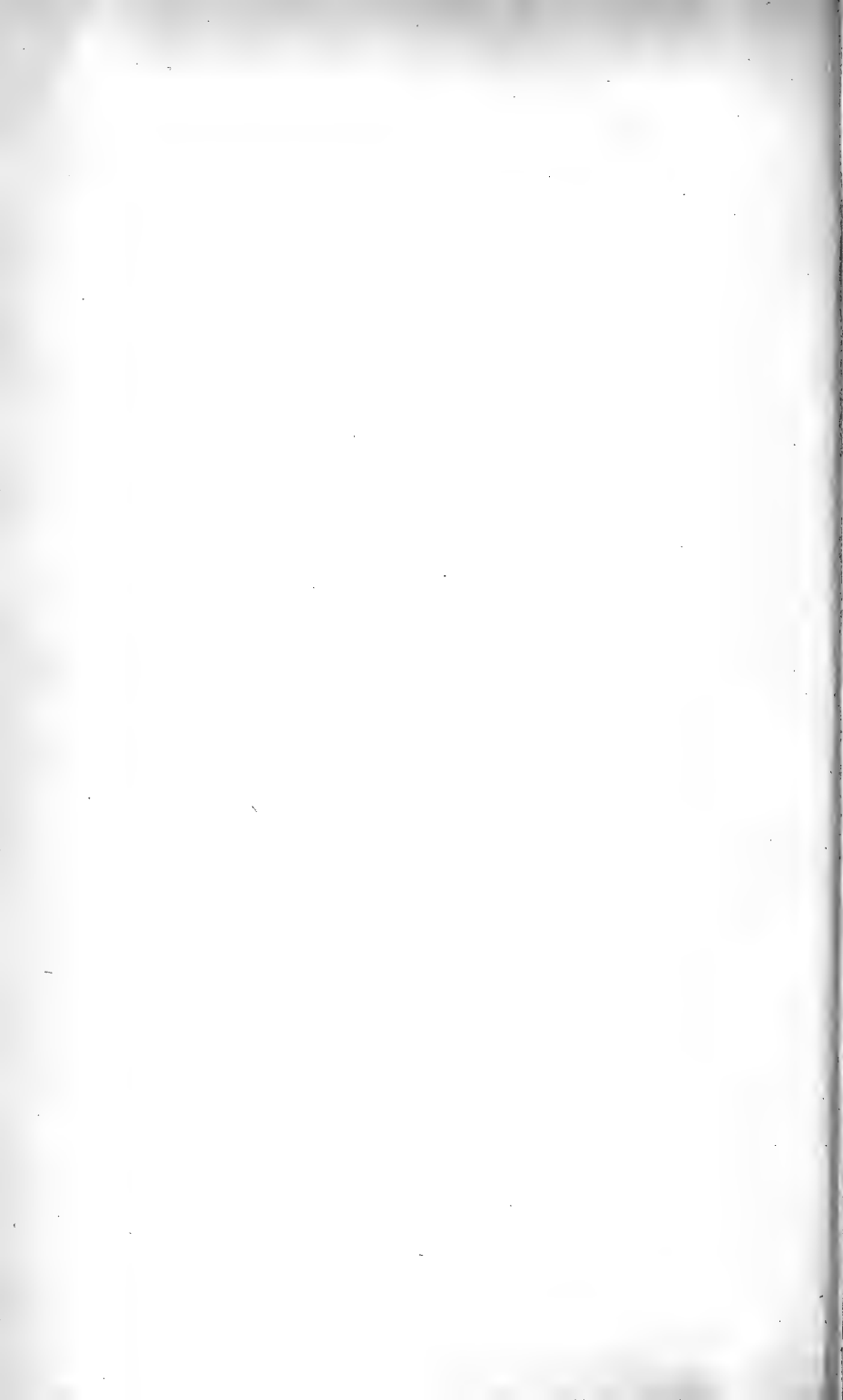
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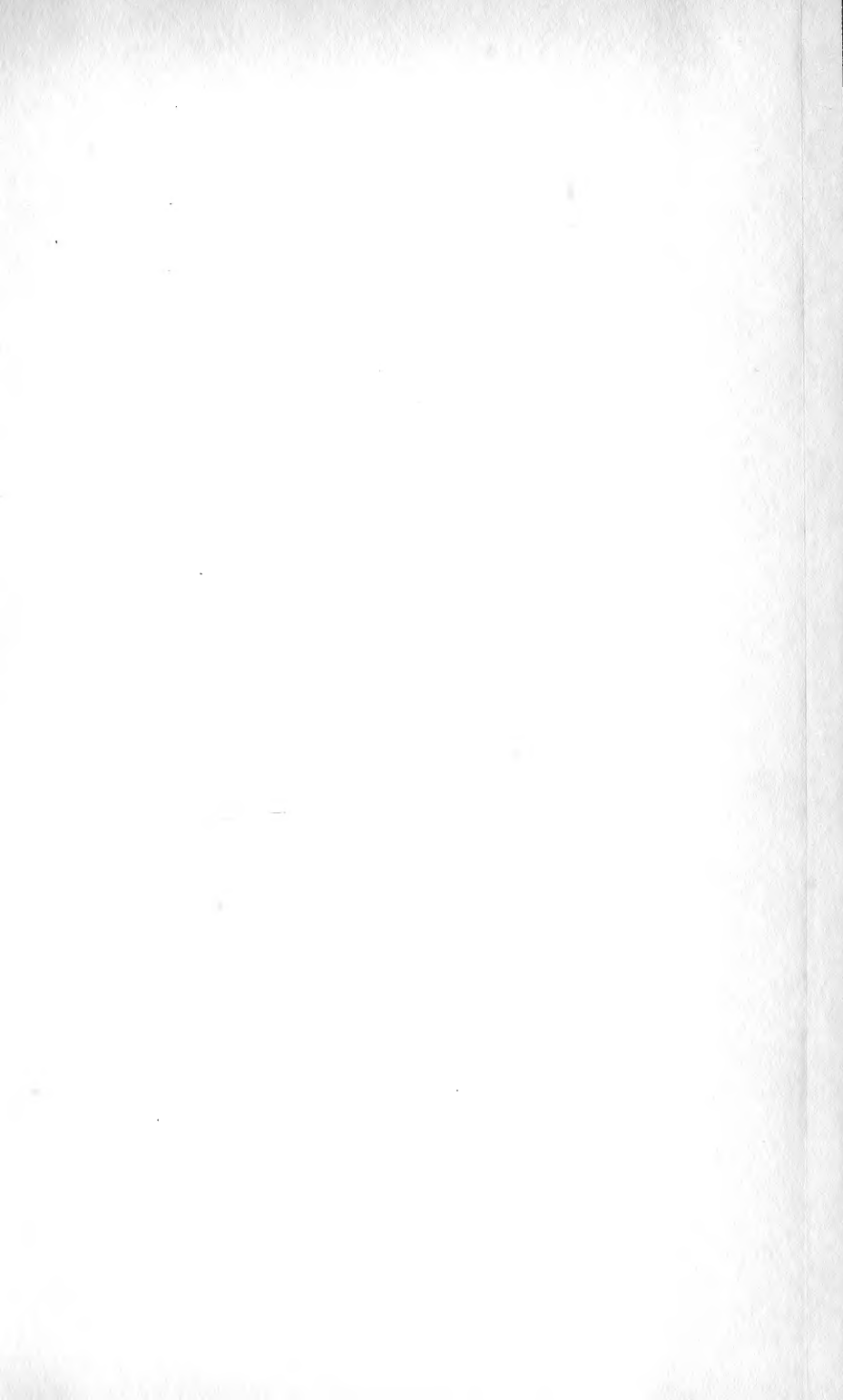
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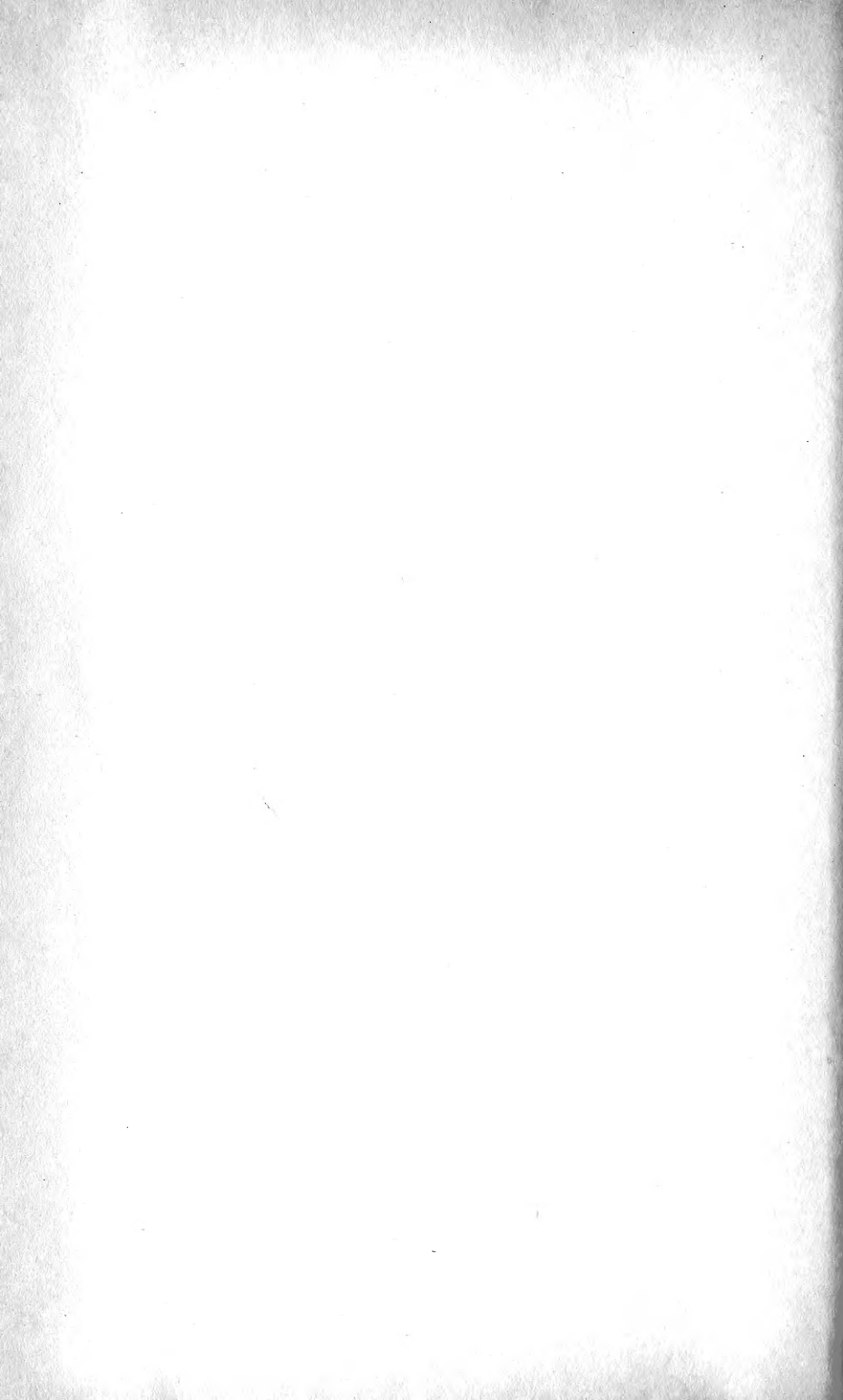
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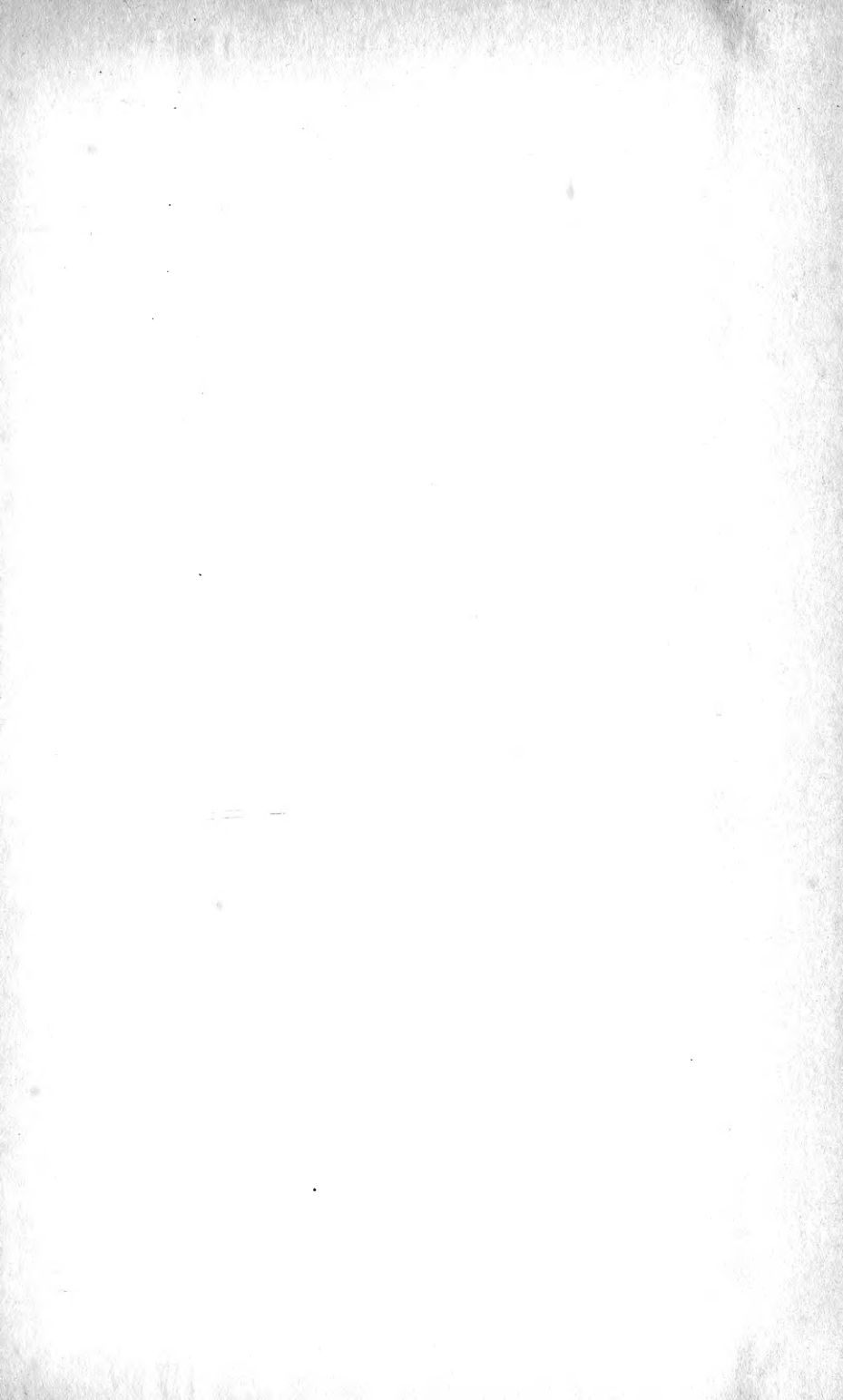












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