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OF THE

PERTHSHIRE SOCIETY OF NATURAL SCIENCE.

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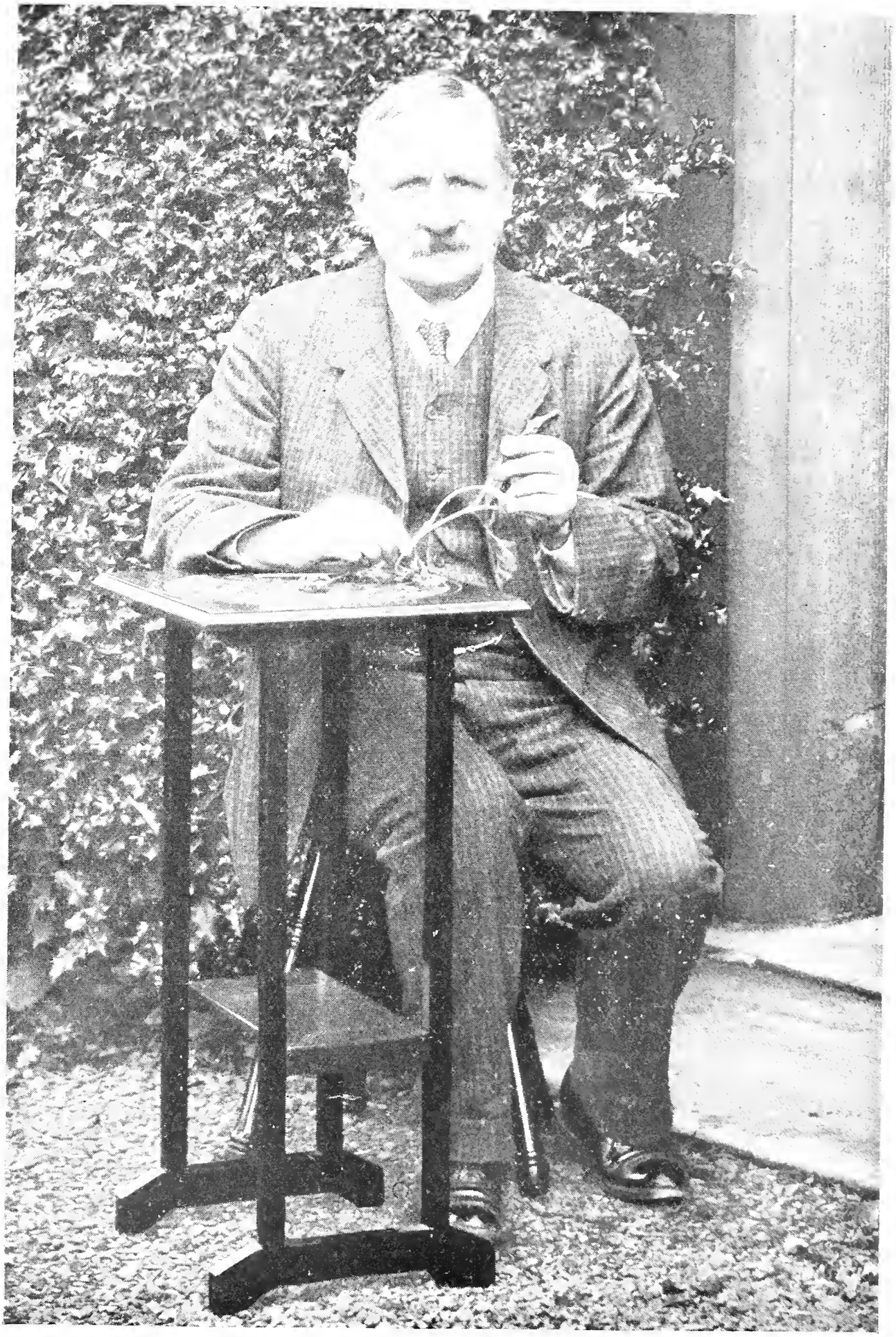


ROBERT DOW, F.E.I.S.

1852-1913.

PROCEEDINGS

OF THE

PERTHSHIRE SOCIETY OF NATURAL SCIENCE.

WINTER SESSION, 1913-14.

13th November, 1913.

W. Barclay, President, in the Chair.

A series of notes on "A Ring Ouzel" and other subjects, by Mr. Chas. M'Intosh, was read by Mr. Rodger. (See *Transactions*, Vol. VI., Part I., p. 1).

The President delivered the following opening address, with Report on the Summer Excursions of 1913. The address was illustrated by a number of lantern slides taken by various members.

Ladies and Gentlemen,—Since last we met death has removed three names from our list of Members. Mr. Jas. Kinnaird, Birnam, was a Member for over fourteen years. He was not, I believe, a working naturalist, but was friendly to the Society and its aims. Mr. Robert Ewing was connected with the Society for upwards of twenty years. His other avocations left him no time for Natural History, but he gave us his support, as he did to all societies which tended to the well-being or enlightenment of mankind. In him Perth has lost a most useful citizen, and an earnest worker in many ways for the benefit of old and young who were in need of help.

To some of us, and to myself especially, the death of Mr. Robert Dow is so recent, and occurred with such bewildering suddenness, that we hardly yet realize that we shall never again meet him on this earth. To see him bright and cheery, and apparently in comparatively good health on one day, and before the half of the next had gone past to be told that his life had departed caused a shock which was hard to bear.

Mr. Dow had reached the middle of his 62nd year, having been born in Perth in April, 1852. After serving his apprenticeship as P.T. in Kinnoull Parish School, and passing through the Training

College, he spent some years as teacher in Bankfoot, and in 1878 came to Perth to act as headmaster of Stewart's Free School. In the end of 1890 he was appointed to Longforgan Public School, and continued there until his retirement, caused by a break-down in his health, in the autumn of 1912. He joined the Perthshire Society of Natural Science as far back as 1882, but it was not till the beginning of 1886 that he took up seriously, and with the enthusiasm that marked his character, the study of field botany. During the next four years he was a constant attender at our excursions, and, besides the regular excursions, he made during the holidays numerous private excursions, sometimes alone, but oftener in company with Dr. White, Mr. Meldrum, and myself. Those were the pleasant days when interest and curiosity were quickened and kept alive by often meeting in with plants which were new to us, and when we had the genial doctor as instructor and guide. Much good work was done in these rambles, much new information regarding the flora of the County was obtained, and the results are embodied in Dr. White's "Flora of Perthshire." After Mr. Dow's removal to Longforgan he was not able to attend our excursions so frequently as before, but he did not cease to be an active worker, and made a minute study of the flora of the Carse, communicating his discoveries to the Society at its meetings. He devoted also a good deal of attention to geology, and in subsequent years to one or two branches of archæology, notably to sculptured crosses and round towers. On several occasions he lectured to the Society on these subjects. As a lecturer he had a lively and interesting style, a little diffuse perhaps, but always attractive and never dull. To the last, however, botany was his favourite pursuit, and for some years before his death he made a special study of the Coniferae, and had attained to a very intimate knowledge of that difficult group. It was this study of the Coniferae that led him to interest himself in the career of Douglas, the discoverer of so many new species, and to this we owe the masterly sketch of the life and labours of that explorer which he contributed to our *Transactions*. No doubt his devotion to the study of nature brought its own reward. It was to him an unfailing source of pure pleasure, to which he could turn at all times for refreshment, and which helped him to bear with manly fortitude the sorrows and bereavements that all of us meet with in life, some of which in his case, were specially severe, and hard to bear. In him the Society has lost a most useful member, and we, his more intimate associates, a most lovable companion and friend.

It is only fitting that, in such a Society as ours, some notice should be taken of the passing away of such a distinguished naturalist as Alfred Russel Wallace. He had lived so long beyond the allotted span that his death cannot be called premature or unexpected, and his work as a naturalist was practically finished nearly a quarter of a century ago. When 26 years old, in 1848, along with Mr. Bates, he set off for South America to explore the Amazon and its tributaries, and to observe and study the flora and

fauna of that prolific region. Four years of incessant labour were spent in this work, and the results were graphically related in his delightful book, "Travels on the Amazon and Rio Negro." In 1854 he set out for the Malay Archipelago, and spent eight years in the investigation of the various islands, their origin, and their natural productions of plants and animals. The great result of the labour of those years was his discovery of the theory of "Natural Selection," or, as he called it, "The survival of the fittest," a discovery which Darwin had made many years before but had only communicated to one or two of his friends. It is well known that the views of both, practically identical, but arrived at independently of each other, were both given to the public by Darwin himself at the same meeting of the Linnaean Society, and it is equally well known that no ill-feeling was excited on the part of either of the two discoverers, but that they continued friends through life. Quite a number of important works were afterwards published by Wallace, based on his researches in Malaysia, of which perhaps the first place may be given to "The Geographical Distribution of Animals." On a variety of other subjects, Spiritualism, Land Nationalisation, and kindred subjects, he has published books setting forth very advanced views, and in later years these subjects have chiefly occupied his attention. He enjoyed up to his very last days a wonderful vigour of mind; a work from his pen on the "Revolt of Democracy" appearing only a few weeks before his death. But his fame with posterity will no doubt depend chiefly on his work as a naturalist, and that work entitles him to be placed in the very first rank, and gives him a place perhaps next to Darwin himself.

Before passing on to the Excursions, a few words may be said as to the character of the summer of the present year. We all know that it was, on the whole, characterised by dryness and warmth. Compared with 1911, to which it bears some similarity, it was not nearly so hot, but very nearly as dry on the whole, and considerably drier during the months of July and August. For the six months extending from May to October, the temperature at Perth was on the average just a little more than one degree colder than in 1911, but for the months of July and August the average temperature of this year was about 2 degrees less than in 1911. That is a very considerable difference. With regard to the amount of rain at Perth, we had in the same six months five more rainy days this year, and about 6 inches more rain than in 1911, but in July and August fourteen fewer rainy days and more than 2 inches of a rainfall less than in 1911.

Of course, the amount of water in the river does not depend on the amount of rainfall at Perth, but we may take it that this year at least the months of July and August were proportionally as dry all over the County. The result was that, on the 19th August of this year, the level of the river at Perth Bridge was six inches lower than the lowest record for 1911, which was on the 19th October of that year. It may be said also that the river this year

continued longer at a very low level than in that year, the drought this year lasting from the end of June till well on into September, with scarcely a break.*

With regard to the ripening of fruits, the walnuts have reached a fair size of kernel and have ripened, but in the Spanish Chestnut, which did well in 1911, the kernels are not nearly half the normal size. Apparently the chestnut requires a greater amount of summer heat than the walnut. On the oaks this year the acorns are exceedingly few, none at all on many large trees, and beech nuts also seem very scarce indeed. This is strikingly different from what was the case in 1911, but in the case of the oak and beech the difference must be the result of some other cause than the difference in summer temperature. The fine weather in October continuing up till last Saturday, when we had 7 degrees of ground frost, caused many plants, both cultivated and wild, to bloom on to an unusually late period of the year.

On Monday, 12th May (Victoria Day), a party of Members went by train to Meigle, under the leadership of Mr. Winter, to whom I am indebted for the substance of the following. From thence they drove on along the Forfar road. A halt was first made at Eassie to inspect the ruins of the Old Church. It is of pre-Reformation period, but not marked by any very special features. A very fine sculptured cross beside it was much admired. Setting off again the entrance to Glamis Castle was reached, and the party, having alighted, walked through the beautiful grounds to view the stately pile. Whether or not Macbeth ever resided at Glamis, it is certain that no part of the present building was in existence in his time, for the oldest part is not earlier than the fifteenth century, while the greater part is of various later dates. In the end of the seventeenth century the second Earl Patrick built the west wing, and put a new roof on the east one, besides raising the central tower and making many other alterations. A fine sundial still standing in the grounds was also constructed for him. It would have been interesting to have seen the inside of the Castle, which contains many fine paintings, chiefly portraits, and many relics of former times, but permission to enter had not been asked. Proceeding to the Manse, the party were met and welcomed by the Rev. Mr. Stirton, a native of the Fair City, who received the party with much kindness. Under his guidance they inspected the fine Celtic cross in the Manse garden, the finest of three such memorials which exist in the Parish. In the Churchyard also he directed attention to many very old tombstones, notably one called the "Low Memorial" dating from 1607, curiously carved and lettered. Another was the tomb of James Cathro, who acted as steward to Graham of Claverhouse. The latter had his residence in Glen Ogilvie, and possessed an estate there, and it is said that his rents were brought to him at Killiecrankie by this Cathro. Two fine old Communion cups of beaten silver, and dating from 1678, were also

*For these figures I am indebted to Mr. Rodger, our curator, and to Mr. M'Laren, of the Burgh Surveyor's Office.

exhibited, as well as the "Poores' Box," a stout chest of panelled oak, black with age and bearing the date 1688. Under the guidance of Mr. Stirton also, the party visited the Well of St. Fergus, by the side of the Glamis Burn. St. Fergus was the patron Saint of Glamis, and is said to have lived in a cave on the banks of the burn, and to have drunk from this well. Whoever drinks of its water, wishing at the same for some desired object, will assuredly obtain what he desires. Having spent a long time in the company of Mr. Stirton, they at length tore themselves away and proceeded on their way. The journey for part of the way led through the pretty Ogilvie Den, passing the quaint little hamlet of Charleston, and thence on to Tealing, where, leaving the Dundee road, the journey was continued to Auchterhouse. Both Tealing and Auchterhouse are deserving of a visit of some duration, but time had gone past so quickly and so pleasantly at Glamis that the party had to hurry on to Meigle. After tea, a short visit was paid to the fine collection of sculptured stones in the old Schoolhouse, of which a description was given on a former occasion. Delightful weather favoured the party during the whole day.

On 31st May, the excursion was to the romantic district of Balquhidder, under the guidance of the Rev. Mr. Knight. On reaching the village the party at once turned up the Kirktown Glen by the bank of the burn, which flows at first through deep and rocky banks, and forms both here and above many picturesque cascades. After a journey of about a mile we struck up the hillside, and, after a very stiff climb, reached at a height of about 2000 feet the curious trenches formerly described to the Society by our guide, and which it was the chief object of the day to visit. There is no need to give any renewed account of them here. It can only be said that we were unable even to guess at when they were dug or for what purpose. If they were military works, which to me appears very doubtful indeed, then it may be said with confidence that there is nothing like them anywhere else in Scotland. After sheltering from a heavy shower, the only break of any consequence in what was on the whole a fine day, we returned to Kirktown, and after tea in the house of the farmer, who kindly accompanied us during the day, paid a short visit to the Church and to Rob Roy's grave, and then walked back to Balquhidder Station.

On 21st June the course projected was a walk from Ballinluig along the banks of the Tay to Dunkeld, with Mr. Rodger as leader. I was unable to be present, and am indebted to Mr. Rodger for the following account:—"The party left Perth by the 9.20 train. On reaching Ballinluig the sky was dull and looked threatening, but no rain fell, and by the time Guay was reached the sun was shining brightly. We at once took to the river-side, and followed the bank of the river as far as Guay Station. The vegetation all along the route was very luxuriant. Among the stones by the river side the Sea Campion (*Silene maritima*) was found in great profusion, its little white flowers adding quite a picturesque touch to the landscape. The following plants were also noted on the

way :—Alpine Lady's Mantle (*Alchemilla alpina*), Kidney Vetch (*Anthyllis vulneraria*), Milk Vetch (*Astragalus hypoglottis*), Milk-wort (*Polygala vulgaris*) in many beautiful shades of colour, blue, pink, and white; and Alpine Knot-grass (*Polygonum viviparum*), In a field were found huge masses of the birds' foot trefoil (*Ornithopus perpusillus*), well marked by its small pink-streaked flowers and the characteristic seed pods to which it owes its name. The moon-wort, which has been found here formerly, was looked for, but was not seen. The great beds of the blue lupine growing on the islands in the river were much admired. At Guay the river side was left, and the journey continued on the main road past Dowally and its standing stones. A pleasant halt was made at the beautiful Polney Loch. One plant of *Anchusa sempervirens* was got on a slope not far from Dunkeld. Tea at the Dunkeld Institute, after the delightful walk of nearly ten miles, was much appreciated by the members.

On the Perth Midsummer holiday, the 5th July, took place the usual mountain excursion, with Mr. Meldrum as leader. The party was fairly numerous which alighted at Dalwhinnie on that fine July morning, and the Members at once noted the unusual quantity of snow which still lay in the corries of the mountains around. Here we were met by two keepers, Messrs. M'Gregor and M'Donald, the representatives of the two proprietors who had kindly granted us permission to pass over their ground, and to visit the mountain. Conducted by the keepers, we walked for a long distance over peaty moor, thickly covered with heather, and at length reached the base of Carn-na-Main, and began the climb to its summit. Though the hill is over 3000 feet, the ascent was comparatively easy. On arriving at the summit a fine view of the panorama of mountains all around rewarded our exertions, though the view was a good deal limited on account of the dullness which had crept over the day. Crossing the boundary line between Inverness-shire and Perthshire, which passes close to the summit, we held the usual meeting of the Mountain Club in our own county. Four new members, two ladies and two gentlemen, were initiated. After this the descent began. The flora was even poorer than we had anticipated. Very few hill plants were seen. *Azalea procumbers*, *Cornus suecica*, and the *Saxifrages S. hypnoides*, *S. stellaris* and *S. azoides* were seen, but in no great quantity. The hard rock, not easily weathering down into soil, of which these mountains are composed, is not very favourable for Alpine plants. Some ptarmigan were observed near the summit, and a dotterel was watched for some time trotting over some stony ground. A good many patches of snow were passed, and one deep corrie was completely filled for a long distance down the hill. The weather was cool and very favourable for climbing, but on the whole somewhat dull.

On 12th July we had a half-day excursion to Blindwells Loch. A good many Members turned out, and alighting at Luncarty Station walked to the river side and crossed at Waulkmill Ferry.

We then set off by Colen to reach Blindwells. The name seemed appropriate, for, our appointed leader being absent, no one knew the right way, and it was only by dint of much "speirin'" that we at length reached the Loch. It scarcely, however, deserves the name of loch, for in this dry summer it had more of the appearance of a marsh. Amongst the dense vegetation of the usual marsh plants we found one or two worth of mention. *Carex filiformis*, *Sagina nodosa*, *Epilobium palustre*, and the usual profusion of such plants as *Potentilla Comarum* and *Menyanthes trifoliata*, the latter of course past flowering at this date. What was little better than a toilsome scramble through a wood, which had been in great part laid low by the gales of last year, brought us to the road near Cambusmichael, and then a delightful walk to Burnmouth Ferry, at which we crossed, ended at Stanley, whence we took train for Perth.

The excursion of 26th July was also a half-day one, and also well attended. The motor 'bus took us to Almondbank, where we were met by Colonel Smythe, who took us first to see his garden. Here we found much to interest us. A splendid collection of fine varieties of roses was chiefly admired, but there were also a great many herbaceous plants which claimed our attention. Close by a magnificent tree of the Spruce family (*Picea grandis*) was worthy of special remark. Leaving the garden, the Colonel conducted us through the wood. On the way we noticed a portion of bare ground thickly matted over with the creeping stems of the Club-moss (*Lycopodium clavatum*), with numerous spore bearing spikes rising erect from the mass. We passed also on the ground, prostrated by the storm, a fine oak, over whose head more than two centuries must have rolled before it met its violent death. Coming close to the river, we spent a short time examining some rocks on which several interesting plants were growing, but none of them were new. In a haugh by the river side the Colonel directed our attention to a large beech tree. This must be one of the very biggest in the County, about 120 feet in height, with a massive trunk and a glorious spread of branches. Taking leave of the Colonel, with many thanks for his kindness, we crossed the Bridge of Dalcrue, noting the massive basalt dyke which projects from the bank in front of the bridge, and on which the latter must be partly founded. Thence we walked down the bank of the river past Cromwell Park back to Almondbank. Several good plants formerly observed on this part were not seen on this occasion.

On 2nd August a small party visited Blair Atholl, and climbed the Hill of Tulloch. Our object was to try to find a plant, *Gentiana amarella*, once found in the neighbourhood, but which had never been got except on that occasion. We climbed the hill, but looked in vain for our plant. The hill was very dry owing to the season, and it was somewhat strange to find many marsh sedges and other water-loving plants growing in quite dry soil. The beautiful *Parnassia palustris* was just coming into flower, but nothing else worth mention was seen. The day was bright and pleasant, how-

ever, and the view of Blair Atholl, the meeting of the Garry and the Tilt, with the mighty mass of Ben-y-Gloe in the distance formed a charming picture.

On the August holiday, the 25th of the month, we had, as usual, a driving excursion. The party comprised about twenty Members, with Dr. Sturrock acting as a most efficient leader. We set off from Perth, and drove by Bridge of Earn to Glenfarg. Turning off at the Bein Inn we went over the hill to Edentown. Here we crossed the Eden, intending to make a short halt and pay a visit to some curious rocks at the base of the West Lomond of which we had heard mention, but we found the distance too great and time too short, and therefore continued on our journey. Passing through the long and rather crooked main street of Strathmiglo we proceeded to Falkland. Apparently the drought here had not been quite so pronounced as in the district around Perth. At Falkland we stayed for some time, paying a visit to the restored Palace, so interesting from its connection with many Scottish kings, and specially interesting as the scene of the death of the unhappy Duke of Rothesay, so pathetically described in the "Fair Maid of Perth." It was here also that James the Fifth, on his dying bed, when told of the birth of a daughter, exclaimed "It came with a lass and it will go with a lass." After a short walk through the town, which still maintains to a great extent its old-world look, we drove on to Auchtermuchty, and stayed there a while for tea. A pleasant drive by Newburgh and Abernethy brought us back to Perth, and brought a most enjoyable excursion to an end.

The usual Fungus excursion, which winds up the season, took place on the 11th Oct., a date later than usual on account of the drought, which did not quite give way till near the end of September. By the kind permission of Captain Black we were enabled to explore the grounds of Balgowan, the leader as usual being Mr. Menzies. A visit was first paid to the garden, under the guidance of the gardener. Even at this late date there was a considerable display of bloom, though some begonias showed the effects of a previous night's frost. We then walked through the grounds, intending to visit the pinetum at Keilour. The day was pleasant but dull, except for short intervals. Fungi were not at all abundant, but still specimens of a good many species were gathered. Much devastation had been wrought amongst the trees by recent storms. Amongst others a splendid specimen of *Abies Menziesii* was lying on the ground. Some specimens of the umbrella pine were not in a very thriving condition. The threatening character of the weather caused us to turn back without reaching Keilour, and to make the best of our way to the Railway Station.

All of the excursions planned for the summer were carried out, and on the whole the attendance was fully up to the average of former seasons. Apart from these, work has been carried on by the working members of the Society, and by others more or less connected with it. Mr. Menzies, at a future meeting, will give us

an account of the work done in the study of the Smaller Fungi, chiefly of the *discomycetes*. Mr. Bates will give us a further paper on what has been done in the Geology of the County. One or two interesting botanical discoveries may be mentioned. Mr. D. A. Haggart, formerly of Killin, but who has now taken up his residence at Coshieville, was fortunate in discovering in the den of the Keltney Burn specimens of the rare narrow-leaved Solomon's seal (*Polygonatum verticillatum*). This has hitherto been known only from a very few localities in East and North-east Perthshire, the furthest west being on the right bank of the Tay between Dunkeld and Dalguise. Its discovery at Keltney Burn takes it well into the district of Breadalbane. Mr. Haggart has kindly sent specimens for the Museum Herbarium. From the same gentleman also we have received specimens of some plants, *Draba inflata* from Ben Lawers, *Pyrola media* from near Aberfeldy, and *P. secunda* from the Keltney Burn, of which there were in the Herbarium scarcely any specimens from Breadalbane. One of our young members, Mr. Matthews, Duncrub, sent to Mr. Bennett, of Croydon, a number of pond weeds from the White Moss, and amongst these Mr. Bennett found one species new to Scotland, *P. trichoides*. Mr. Bennett, who is one of our corresponding members, has sent to us a full note of this discovery, which will be read at a future meeting, and will be published in next year's *Proceedings*.

Another exceedingly rare plant, *Scheuchzeria palustris*, was formerly to be found in Methven Bog, and only in one or two other places in Britain. About forty years ago additional water was let into the bog to make it more suitable as a breeding place for gulls, which now frequent it in thousands. The result was to kill out this plant with some others of less rarity, so that it has not been got there since 1875 or 1877. This was greatly regretted, as the bog was the only known locality for the plant in Scotland, and I am not sure that it has not also disappeared from the one or two localities in which it occurred in England. But some two or three years ago it was discovered by Mr. Scarth in Argyllshire, and this year Mr. A. H. Evans, of Cambridge, was greatly delighted by finding it in his native county of Perthshire. He has been good enough to promise us a specimen for the Herbarium Collection.

At an excursion of the Junior Section to Methven Loch on the 6th of September several of the Seniors were present. On the edge of the Loch the late Mr. Dow picked up a plant of the Composite family, *Bidens cernua*. Only one other specimen could be found. This plant and a kindred species are not uncommon in the West of Scotland (I have gathered both in plenty in Ayrshire), but can only be considered as sporadic in most of the places in which it has occurred in Perthshire. This discovery was interesting because it was no doubt an example of the spreading of plants by birds. Some wading bird had brought a seed or two sticking on its muddy feet from some loch, probably in the West, and alighting on the side of Methven Loch, the mud which had become dry during the

flight of the bird had fallen to the ground with its complement of seed, and Mr. Dow's discovery was the result.

11th December, 1913.

W. BARCLAY, President, in the Chair.

The President referred to the large number of plants he had seen in flower during November and December, and promised to prepare a list for insertion in the *Transactions*. (See *Transactions*, Vol. VI., Part I., p. 5).

Mr. R. Dunlop, of Dunfermline, gave an interesting paper on "Some Recent Investigations on the Fish Beds of Dura Den." These investigations were carried out by the British Association under Mr. Dunlop's supervision, and an interesting series of fossil fishes was found. The paper was illustrated by lantern slides.

8th January, 1914.

W. BARCLAY, President, in the Chair.

The following papers were read :—

"Timber Growing : the Question of Profit," by Frank Scott.

"Potamogeton trichoides, Chum. et Schlect., as a probable Perthshire Species," by A. Bennett, F.L.S. (See *Transactions*, Vol. VI., Part I., p. 6).

22nd January, 1914.

Dr. Lyell gave a special lecture on "The Evolution of Man in the Great Ice Age." (See *Transactions*, Vol. VI., Part I., p. 7).

12th February, 1914.

W. BARCLAY, President, in the Chair.

The following resolutions were moved by the President and unanimously agreed to :—

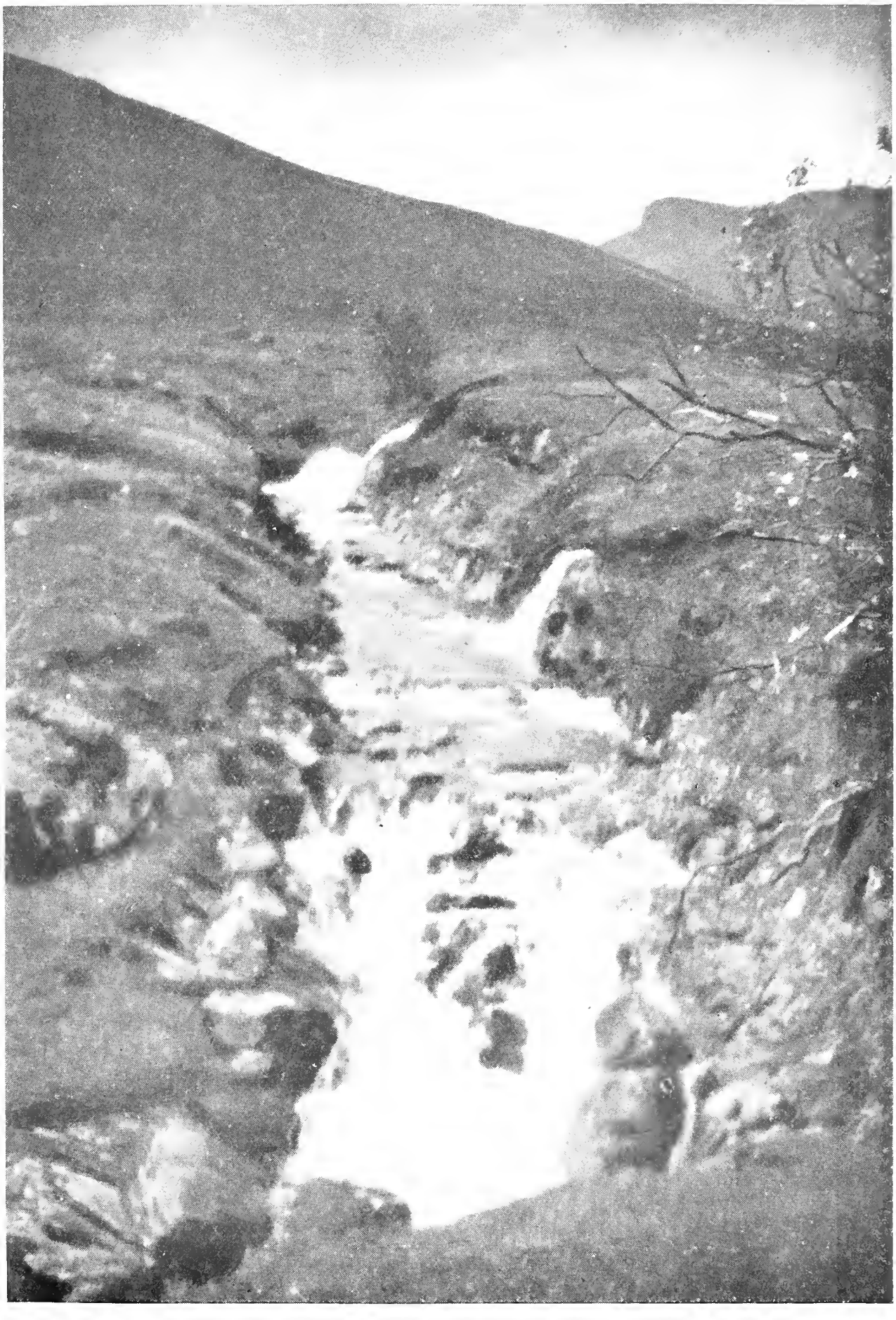
"That the Members of the Perthshire Society of Natural Science desire to record their deep regret at the death of Col. Campbell, formerly Governor of the General Prison. A member of the Society for 30 years, he took a deep interest in

[Photo by A. M. Rodger.

Plate I.—Sundial, Glamis.

[Photo by A. M. Rodger.

Plate II.—Celtic Cross, Glamis.



[Photo by J. Winter.

Plate III.—Kirkton Glen, Balquhidder.

its welfare, regularly attended its excursions, contributed several valuable papers to its *Transactions*, and did what he could to assist in its work. They feel that they have lost not only a valuable member, but a genial and large-hearted man, ever ready to forward in any way whatever tended to the welfare of the community. They also desire to express their deep sympathy with the bereaved widow and family."

"That the Secretary be instructed to forward a copy of this Minute to Mrs. Campbell."

The following papers were read :—

"New Perthshire Fungi," by J. Menzies. See *Transactions*, Vol. VI., Part I., p. 19).

"Further Notes on Highland Rocks," by George F. Bates, B.A., B.Sc. (See *Transactions*, Vol. VI., Part I., p. 22).

27th February, 1914.

A Special Lecture, entitled "A Hedgebank in June," was given by Dr. James Clark, M.A., Kilmarnock.

FORTY-SEVENTH ANNUAL MEETING.

12th March, 1914.

W. Barclay, President, in the Chair.

The following office-bearers, proposed at the previous meeting, were duly elected :—

President—W. Barclay.
Vice-Presidents—D. Campbell; Dr. Robertson, Errol; W. Ellison; D. Sutherland.
Secretary—S. T. Ellison.
Treasurer—James Winter.
Librarian—James Coates.
Editor—George F. Bates, B.A., B.Sc.
Councillors—J. P. Rattray; D. J. Wilson; Dr. Lyell; Rev. G. A. F. Knight, M.A., F.R.S.E.; R. Morison Pullar; Henry Coates.

The following Reports were read and adopted :—

REPORT OF COUNCIL.

The Council, in submitting to the Members their 47th Annual Report, are pleased to say the work of the Society continues to be carried on satisfactorily, and though our membership still shows a

slight decline, this is hardly to be wondered at when we think of the increased number of societies and associations of the present day.

During the past year six monthly meetings have beeen held, 6 papers being read in addition to the 2 usual addresses by the President. The attendance at these meetings was well maintained, the average being 35. The greatest number was 50 at the meeting on 8th January, 1914, and the lowest 20 at the last monthly meeting on 12th February, 1914. During the year 4 ordinary, 1 corresponding, 1 associate, and 1 associate member were added to the roll, making a total membership of 2 honorary, 13 corresponding, 8 associates, 6 associate members, and 286 ordinary members, or 315 in all.

In addition to the monthly meetings, the Council again this year arranged a series of three special lectures. Two of these have already taken place. On 22nd January, Dr. Lyell gave a lecture on "The Evolution of Man in the Great Ice Age," and on 27th February Dr. James Clark, of Kilmarnock, gave a lecture on "A Hedgebank in June."

During the summer, excursions were arranged and carried out, at which there were fair atendances.

The Council wish again to thank those proprietors and tenants of shootings who gave permission for some of these excursions being carried out.

The Council regret to again have to record the loss by death of several members, and especially must reference be made to the recent death of Colonel Campbell, who had been an ordinary member from 1884 until last year, when, on going to reside in the South, he was elected as a corresponding member.

The Council desire to put on record their regret at losing at this time the services of Mr. A. W. Brown as treasurer. Mr. Brown was appointed to this office in 1900, and has served the Society faithfully and efficiently for 14 years, and the Council thank him for his services, and regret he has found it necessary to resign. Mr. James Winter has kindly undertaken these onerous duties, and the Council thank him for consenting so readily to take up the work.

The Children's Essay Competition was on "Six Fruits," and 84 essays have been sent in—22 by children of 12 years of age and under, 48 of 13 years, and 14 of 14 years and over. The essays are being examined, and it is expected the prizes will be given out on Saturday, 28th March. The subject for this year's essay has been fixed for "Perthshire Amphibians and Reptiles."

The use of the Lecture Room has again been granted to various societies during the year.

REPORT OF TREASURER.

(*See Balance-Sheet*, p. lxi.).

REPORT OF LIBRARIAN.

The Librarian's report is, of necessity, formal and brief.

It is to be regretted that the Library is not more taken advantage of by the Members than it is. From the well-stocked shelves no more than 184 books have been borrowed, and these have been distributed over 38 readers.

The works added during the year have all been carefully selected by a Special Committe so as to combine interest and utility both for the specialist and for the general reader. If any Member of the Society, and in particular any youthful student, should desire information in working up any special branch, the Curator would at all times be willing to direct him or her to the most useful works bearing upon the subject.

During the year 13 works have been added to the Reference, and 11 to the Lending Library, and in addition, the *Proceedings*, *Transactions*, and other serials which have been bound, will account for another 32 volumes.

The President then delivered the following Annual Address :—

Dr. Erasmus Darwin, Poet and Pioneer.

Dr. Erasmus Darwin, grandfather of the great discoverer of "The Theory of Natural Selection," enjoyed in his own time high rank and great popularity both as a poet and a writer on medico-physiology. But his works soon sank into almost complete neglect, and would doubtless by this time have been entirely forgotten had it not been that the work of the younger Darwin caused attention to be directed to those who had previously, with more or less clearness, conceived and expressed the doctrine of Evolution, and it was found that of these pioneers Erasmus Darwin had been, if not the earliest, at least one of the very first. Moreover, suggestions at least, and sometimes more than suggestions, of many of the lines of inquiry afterwards followed out so brilliantly by Charles Darwin, are to be found in the works of his grandfather, so that it has been said with truth by Dr. Krause, "Almost every single work of the younger Darwin may be parallelled by at least a chapter in the works of his ancestor." And doubtless Charles Darwin received from his grandfather not only hints and ideas, which to some extent guided him in his researches, but inherited also from him that love of nature, and that keen insight into her workings which, aided by long and patient labour, made him the foremost naturalist of his time.

Dr. Erasmus Darwin was born in the year 1731, at Elston Hall, in Nottinghamshire. He was educated at Lichfield School until, at the age of 19, he was sent to the University of Cambridge. In 1754 he went to Edinburgh to study medicine, and spent there two sessions, returning to Cambridge in the interval between them to take his degree of Bachelor of Medicine. In the autumn of 1756 he began practice as a physician in Nottingham, but with so little success that after a few months he removed to Lichfield, where, in

a comparatively short time, he gained a high reputation for skill, and built up a large and profitable practice. In 1781 he removed to Derby, and there or in its neighbourhood spent the rest of his life. He died in 1802 in the 71st year of his age. He was twice married, and had by his first wife three sons, and by the second four sons and three daughters.

Such is the bare outline of a long and busy life, during which he not only fulfilled with eminent success the duties of a large practice, but found time to gather by reading a vast store of knowledge, to add to it by his own observations and experiments, to bring to bear upon the whole the powers of a keen and penetrating intellect, and of a strong scientific imagination, and to embody the results in the numerous works which came from his pen. The range of subjects in which he took an interest was wonderfully wide. His profession, of course, implied the study of the physiology and anatomy of the human body. His favourite pursuit was botany, and for the better study of this he laid out at Lichfield a botanical garden of eight acres. The kindred science of zoology claimed a large share of his attention, and he had also made himself acquainted with the crude geology of his time. He took a great interest also in chemistry, and was well acquainted with the discoveries made by Lavoisier, Cavendish, Priestly, and others, who were then laying the foundation on which the vast fabric, modern chemical science, was to be reared. In electricity and magnetism, meteorology so far as then known, he took a deep interest, whilst mechanical inventions were also included in those subjects which received his attention and furnished matter for his writings.

His principal works were "The Loves of the Plants," published in 1789, followed shortly after by "The Economy of Vegetation," the two forming what he called "The Botanic Garden"; the "Phytologia or Philosophy of Agriculture," published in 1800, and the "Temple of Nature" in 1803, after its author's death. These were all didactic poems, and were accompanied by copious philosophical explanatory notes. Of his prose works the most important was "Zoonomia, or the Laws of Organic Life," which appeared in 1794, and is in the main a treatise on diseases, their causes, their nature, and their cure. It is in this that he sets forth most clearly and fully his theory of evolution, and the considerations that led him to its conception.

Looking, he says, to the great changes which animals undergo after their birth, as the butterfly from the caterpillar, the frog from the tadpole, the man from the boy, and the woman from the girl; secondly, to the great changes wrought upon various animals by artificial or accidental cultivation, as in the artificial production of the various breeds of horses, dogs, cattle, pigeons, and rabbits, or by seasonal causes as in hares and ptarmigan; thirdly, looking to the changes which the embryos of animals undergo before their nativity, a series of changes from the simple to the complex; fourthly, looking to the great similarity of structure in all warm-

blooded animals, as quadrupeds, birds, amphibians, as well as mankind, one is led to conclude that they have all alike been produced from a similar living filament, which in its advance to maturity has acquired hands and fingers, as in mankind. In others it has acquired cloven hoofs, and whole hoofs in others. In birds it has put forth wings instead of arms. All this is seen in the transmutations of the tadpole, which acquires legs and lungs when he wants them, and loses his tail when it is no longer of service to him.

Moreover, animals in their lives undergo perpetual transformations, and many of these acquired forms or propensities are transmitted to their posterity. The great wants which have changed the forms of many animals in their desire to gratify them, are lust, hunger, security..

Lust, the desire to obtain exclusive possession of the females, has given weapons to many animals, as the tusks of the boar, the branched antlers of stags, the spurs of cocks and quails. "It is certain that these weapons are not provided for defence against other adversaries, because the females of these species are without this armour. The final cause of this contest amongst the males seems to be that the strongest and most active animal should propagate the species, which should thence become improved."

The need for procuring food has diversified the forms of all species of animals. The nose of the swine becomes hard for the purpose of turning up the soil to procure roots and insects. That of the elephant has become a long trunk to reach the branches of trees, and to enable him to take up water without bending his knees. Beasts of prey have acquired strong jaws or talons. Some birds have acquired harder beaks to crack nuts, as the parrot. Others for the softer seeds of plants or the buds of trees, as the finches. Some, like woodcocks, have acquired long beaks to penetrate the moister soil in search of insects; others, like the duck, broad ones to filter the water of lakes and to retain aquatic insects. "All which seem to have been gradually produced during many generations by the perpetual endeavour of the creatures to supply the want of food, and to have been delivered to their posterity with constant improvement of them for the purpose required."

The need for security for escaping other animals more powerful than themselves seems also to have much diversified the forms and colours of animals. Hence some have acquired wings instead of legs, others great length of fin or of membrane, as the flying fish and the bat; others great swiftness of foot, as the hare; and others hard or armed shells, as the tortoise and the sea urchins (*echinus marinus*). On the other hand, swiftness of wing has been acquired by hawks and swallows to pursue their prey, and a proboscis of admirable structure has been acquired by the bee, the moth, and the humming bird to plunder the nectaries of flowers.

Considering all these things, he goes on to say, would it be too bold to imagine that in the great length of time since the earth

began to exist, perhaps millions of ages before the commencement of the history of mankind, would it be too bold to imagine that all warm-blooded animals have arisen from one living filament which The Great First Cause endued with animality, with the power of acquiring new parts, attended with new propensities, directed by irritations, sensations, volitions and associations; and thus possessing the faculty of continuing to improve by its own inherent activity, and of delivering down those improvements by generation to its posterity, world without end.

He next treats of fishes, and though these differ so much from the warm-blooded animals, he concludes from the cases of the whale, the seal, and especially the frog, that both classes have had the same origin. Insects, however, would appear to have proceeded from a different living filament, and the same might be said of the vegetable kingdom.

Finally, however, he concludes, "Shall we say, then, that the vegetable living filament was originally different from that of each tribe of animals above described? And that the productive living filament of each of those tribes was different originally from the other? Or, as the earth and ocean were probably peopled with vegetable productions long before the existence of animals; and many families of these animals long before other families of them, shall we conjecture that one and the same kind of living filament is and has been the cause of all organic life?"

The theory thus put forth that the world was evolved rather than created, "that it was produced from very small beginnings, increasing by the activity of its inherent principles rather than by a sudden evolution of the whole by the Almighty fiat," seems to have at the time attracted but little attention and to have gained no disciples. It was sneered at and parodied by Canning in the Anti-Jacobin, and was speedily forgotten. Men's minds were at that time quite unprepared for such a conception, and they simply passed it by. Moreover, it was not accompanied by any attempt at explaining how one species could be transformed into another. That was reserved to be the great achievement of the younger Darwin in his theory of Natural Selection, the successive accumulation of small but beneficial variations by hereditary transmission.

With regard to subsidiary questions, which were afterwards fully investigated and their significance pointed out by Charles Darwin, and which, in germ at least, are to be found in the works of Erasmus, we may mention the following :—

The struggle for existence, the constant warfare which prevails amongst animals and plants, greatly impressed Dr. Darwin, though he failed to find any satisfactory reason for its existence.

> "The wolf, escorted by his milk-white dam,
> Unknown to mercy, tears the guiltless lamb;
> The towering eagle darting from above,
> Unfeeling rends the inoffensive dove;
> The lamb and dove on living nature feed,
> Crop the young herb, or crush the embryon seed.

Nor spares the loud owl in her dusky flight,
Smit with sweet notes, the minstrel of the night;
Nor spares, enamoured of his radiant form,
The hungry nightingale the glowing worm;
Who with bright lamp alarms the midnight hour,
Climbs the green stem, and slays the sleeping flower.

* * * * *

Herb, shrub, and tree with strong emotion rise
For light and air, and battle in the skies;
Whose roots, diverging with opposing toil,
Contend below for moisture and for soil.
Air, earth, and ocean to astonished day
One scene of blood, one mighty tomb display!
From hunger's arms the shafts of death are hurled,
And one great slaughter-house the warring world!"

The note appended to this is a good example at once of his strength and his weakness, of his wonderful anticipation of scientific discovery, and also of the fanciful conjectures in which he delighted. He says, "As the digested food of vegetables consists principally of sugar, and from this is produced again their mucilage, starch and oil, and since animals are sustained by these vegetable productions, it would seem that the sugar-making process carried on in vegetable vessels was the great source of life to all organized beings. And that, if our improved chemistry should ever discover the art of making sugar from fossil or aerial matter without the assistance of vegetation, food for animals would then become as plentiful as water, and they might live upon the earth without preying upon each other, as thick as blades of grass, with no restraint to their numbers but the want of local room."

Again, to a considerable extent he anticipated his grandson's doctrine of sexual selection, as in the passage quoted from "Zoonomia," in which he shows that many animals have acquired organs to enable them to fight the better for the possession of the females.

He teaches, rightly enough, that plants, like animals, are furnished with means of protection against their enemies, as the thorns of the hawthorn, the prickles of the rose, or the stings of nettles. Others, like the catchfly, with sticky material, barring to small insects all approach to the honey in the flowers. The odours of some flowers, being deleterious to certain insects, serve the same end. But he knew nothing of cross-fertilisation, did not conceive that plants, whilst guarding themselves from certain insects, could display bright colours, put forth attractive odours, and lay up honey for the purpose of attracting other insects, those which would be serviceable to the plant.

He misunderstood also the purpose of the sticky glands of the Sundew, and the leaf traps of Dionaea. These he thought also to be protective devices. We all know the splendid work of the younger Darwin on these insectivorous plants.

To the movements of plants also he paid particular attention, as the closing of the leaves in the sensitive plant, the whirling of the leaves in the *Hedysarum gyrans* (the moving plant of India),

the bending of the stamens in the Barberry and other plants. In noticing the opening and closing of petals or leaves during the so-called sleep of plants, he thinks that these movements may justly be ascribed to a voluntary power; for, without the faculty of volition, sleep would not be "necessary to them."

Plants which climb also, whether by tendrils or by twining, had attracted his notice. Why some twining plants should turn from right to left and others in the opposite direction had not been investigated, and he offers no attempt at any solution of the problem.

In the "Economy of Vegetation" he purposed to deliver the physiology of plants and the operation of the elements, as far as they may be supposed to affect the growth of vegetables. In the first three cantos, however, he treats of a wide range of subjects, the origin of the world, the forces of nature, and the principal scientific discoveries and inventions of his time. Science was then in its infancy, though rapid growth had begun. Deficient knowledge led him, of course, into continual errors, but did not prevent him from daring and fantastic plans and speculations. Take this as an example. "After the accumulation of plains and mountains on the calcareous rocks or granite which had been previously raised by volcanic fires, a second set of volcanic fires were produced by the fermentation of this new mass, which, after the salts or acids and iron had been washed away in part by elutriation, dissipated the sulphurous parts which were insoluble in water; whence argillaceous and siliceous earths were left in some places; in others bitumen became sublimed to the upper part of the stratum, producing coals of various degrees of purity."

This is explained in another note in "The Temple of Nature," where he says, "It seems clearly to appear that the nucleus of the globe beneath the ocean (primeval) consisted of granite; that on this the great beds of limestone were formed from the shells of marine animals during the innumerable primeval ages of the world; and that whatever strata lie on these beds of limestone, or on the granite, where the limestone does not cover it, were formed after the elevation of islands and continents above the surface of the sea by the recrements (remains) of vegetables and of terrestrial animals."

This is thus expressed in the poem.

"Hear, O ye sons of Time! your final doom,
And read the characters that mark your tomb:
The marble mountain and the sparry steep,
Were built by myriad nations of the deep,
Age after age who formed their spiral shells,
Their sea-fan gardens and their coral cells;
Till central fires with unextinguished sway
Raised the primeval islands into day:
The sand-filled strata stretched from pole to pole:
Unmeasured beds of clay, and marl, and coal,
Black ore of manganese, the zinky stone
And dusky steel on his magnetic throne
In deep morass, or eminence superb,
Rose from the wrecks of animal and herb."

Again in another place he says, correctly enough, "We cannot doubt that the northern ice is the principal source of the coldness of our winters, and that it is brought hither by the regions of air flowing from the north, and which take an apparent easterly direction by their coming to a part of the earth which moves faster than the latitude they come from. Hence the increase of the ice in the polar regions, by increasing the cold of our climate, adds at the same time to the bulk of the glaciers of Italy and Switzerland." What does he infer from this? "If the nations who inhabit this hemisphere of the globe, instead of destroying their seamen and wasting their wealth in unnecessary wars, could be induced to navigate these immense masses of ice into the more southern seas, two great advantages would result to mankind, the tropic countries would be much cooled by their solution, and our winters in this latitude would be rendered much milder for perhaps a century or two till the masses of ice became again enormous."

In the poem he calls upon the nymphs to perform this stupendous work.

"There in her azure coif and starry stole,
Gray twilight sits and rules the slumbering pole;
Bends the pale moonbeams round the sparkling coast,
And strews with livid hands eternal frost.
There, Nymphs, alight, array your dazzling powers
With sudden march alarm the torpid hours;
On ice-built isles expand a thousand sails,
Hinge the strong helms, and catch the frozen gales.
The winged rocks to feverish climates guide
Where fainting Zephyrs pant upon the tide;
Pass where with palmy plumes Canary smiles,
And in her silver girdle binds her isles.
Onward, where Niger's dusky naiad laves
A thousand kingdoms with prolific waves,
While swarthy nations crowd the sultry coast,
Drink the fresh breeze and hail the floating frost,
Nymphs! veiled in mist the melting treasures steer
And cool with arctic snows the tropic year."

In a subsequent passage he says, "The suddenness of the change of wind from N.E. to S.W. seems to show that it depends on some minute chemical cause, which, if it was discovered, might probably, like other chemical causes, be governed by human agency. If this could be accomplished, it would be the most happy discovery that ever has happened in these northern latitudes, since in this country the N.E. winds bring frost, and the S.W. winds are attended with warmth and moisture: if the inferior currents of air could be kept perpetually from the S.W., the vegetation of this country would be doubled, the number of its inhabitants would be increased, and their lives prolonged; as great abundance of the aged and infirm of mankind, as well as many birds and animals, are destroyed by severe continued frosts in this climate." There is much virtue in an "if."

In dealing with the inventions of his time he is often much happier. "Dr. Priestly's discovery of the production of pure air (oxygen) from such a variety of substances will probably soon be applied to the improvement of the diving-bell."

"Led by the sage, Lo! Britain's sons shall guide
Huge sea-balloons beneath the tossing tide;
The diving castles, roofed with spheric glass,
Ribbed with strong oak, and barr'd with bolts of brass,
Buoy'd with pure air shall endless tracks pursue,
And Priestly's hand the vital flood renew;
Then shall Britannia rule the wealthy realms,
Which ocean's wide insatiate wave o'erwhelms;
Confine in netted bowers his scaly flocks,
Part his blue plains, and people all his rocks."

Again, in a passage which has been often quoted as a partly fulfilled prophesy, but which may now be said to be completely fulfilled:

"Soon shall thy arm, unconquered steam! afar
Drag the slow barge, or drive the rapid car;
Or on wide-waving wings expanded bear
The flying chariot through the fields of air.
Fair crews triumphant, leaning from above
Shall wave their fluttering kerchiefs as they move;
Or warrior bands alarm the gaping crowd,
And armies shrink beneath the shadowy cloud."

In a note he says, "As the specific levity of air is too great for the support of great burdens by balloons, there seems no probable method of flying conveniently but by the power of steam or some other explosive material, which another half-century may probably discover."

It is not very difficult to account for the neglect which so quickly overtook the works of Erasmus Darwin after their author's death. "Zoonomia" was in the main a treatise embodying the medical science, possibly the best medical science of its day, but the advance of knowledge soon rendered it obsolete. The same may be said with regard to the subject matter of the poems, though this applies less to "The Loves of the Plants" than to the others. But by this time didactic poems, in which verse was used as the vehicle for teaching philosophical or scientific truths, were becoming, or rather had become, thoroughly distasteful. Moreover, people had become weary of their style; the ornate dictation, the polished couplets were felt to be monotonous, and readers gladly hailed the advent of the new schools which were arising, and which were marked by a simpler style, and dealt with subjects which appealed to human feelings, to the heart rather than to the understanding. Cowper and Burns had heralded a new poetic era, soon followed by Coleridge and Southey and Wordsworth, and by the stirring romantic lays of Scott and Byron. Even the masters of the didactic school, Dryden and Pope, lost much of their popularity,

and indeed have never regained the pre-eminent position which they once held. In the poems of Erasmus Darwin there glows not poetic fire warm enough to keep alive the inert mass of crude and obsolete science which forms their main theme. Not that there do not occur lines here and there of fine description, or even of true poetry, but they are as it were lost in the mediocre mass. It is seldom that you can find a whole passage which is not disfigured by grandiloquence or by something that jars upon the ear or the mind. In "The Loves of the Plants" it is not so much that the matter of it is obsolete—that is far from being the case, but the subject is such that even a very much greater poet must have failed to make of it a great poem. Its faults were very clearly hit off by Canning in the parody which he called "The Loves of the Triangles," though it must be said that Darwin incurred the wrath of the critic not so much because he was a bad poet as because he was a freethinker, and worse still, a favourer of the Revolution in France and of Reform in Britain. But "The Loves of the Plants" lent itself too easily to Canning's mockery.

"Sweet blooms Genista in the myrtle shade,
And ten fond brothers woo the haughty maid.
Two knights before thy fragrant altar bend,
Adored Melissa, and two squires attend.
Maedia's soft chains five suppliant beaux confess,
And hand in hand the laughing belle address;
Alike to all she bows with wanton air,
Rolls her dark eye, and waves her golden hair." *

Another passage which contains some good lines—

"As yon gay clouds which canopy the skies,
Change their thin forms and lose their lucid dyes;
So the soft bloom of beauty's vernal charms
Fades in our eyes and withers in our arms,
Bright as the silvery plume or pearly shell,
The snow white rose or lily's virgin bell,
The fair Helleborus attractive shone,
Warm'd every sage and every shepherd won.
Round the gay sisters press the enamoured bands,
And seek with soft solicitude their hands.
Erewhile how changed: in dim suffusion lies
The glance divine that lightened in their eyes;
Cold are those lips, where smiles seductive hung
And the weak accents linger on their tongue;
Each roseate feature fades to livid green—
Disgust with face averted shuts the scene." †

* Genista is the Dyer's Broom; Melissa, Balm; Maedia, the American Cowslip. The ten brothers are the ten stamens, and the haughty maid the pistil. In the sexual system of Linnaeus the stamens were considered the male organs and the pistils the female.

† Helleborus niger, the Christmas rose, has a large beautiful white flower adorned with a circle of tubular two-lipped nectaries. After impregnation, the flower undergoes a remarkable change, the nectaries drop off, but the white corolla remains, and gradually becomes quite green. (Darwin's note.)

There is far too much of this in the poem, but let me quote a more pleasing passage.

"With blushes bright as morn, fair Orchis stands
And lulls her infant in her fondling hands;
Soft plays affection round her bosom's throne
And guards his life, forgetful of her own.
So wings the wounded deer her headlong flight,
Pierced by some ambushed archer of the night,
Shoots to the woodlands with her bounding fawn,
And droops of blood bedew the unconscious lawn;
There, hid in shades, she shuns the cheerful day,
Hangs o'er her young and weeps her life away." *

He is fond of these analogies, which help to diversify his themes. Sometimes they are rather far-fetched, but in many cases very happily conceived and well described. The digitalis, for example, supplying a cure for the disease of mankind, suggests the following fine passage :—

"And now, philanthropy, thy rays divine
Dart round the globe from Zembla to the Line;
O'er each dark prison plays the cheering light,
Like northern lustres o'er the vault of night.
From realm to realm, with cross or crescent crowned
Where'er mankind and misery are found,
O'er burning sands, deep waves, or wilds of snow
Thy Howard, journeying seeks the house of woe
Down many a winding step to dungeons dank,
Where anguish wails aloud and fetters clank;
To caves bestrewed with many a mouldering bone,
And cells, whose echoes only learn to groan;
Where no kind bars a whispering friend disclose,
No sunbeam enters and no zephyr blows,
He treads, inemulous of fame or wealth,
Profuse of toil and prodigal of health."

We find the labours of Howard, in his efforts to improve the dens of disease and schools of crime which in those days were called prisons, referred to with sympathy and praise in many other passages of the poems. Slavery and the slave trade also he denounces in vigorous terms, and calls upon the British Parliament to put an end to the unholy traffic on Africa's coast, where theft and murder take the garb of trade, warning the Senators that "He, who allows oppression, shares the crime."

Finally, as a favourable specimen of the poetic style of Erasmus, I shall quote one more passage :—

"Roll on, ye stars, exult in youthful prime,
Mark, with bright curves, the printless steps of time;
Near and more near your beamy cars approach,
And lessening orbs on lessening orbs encroach.
Flowers of the sky, ye too to age must yield,
Frail as your silken sisters of the field;
Star after star from Heaven's high arch shall rush,
Suns sink on suns, and systems systems crush,

* The Orchis morio in the circumstance of the parent root shrivelling up as the young one increases, is not only analagous to other tuberous or knobby roots, but also to some bulbous roots, as the tulip. (Darwin's note.)

Headlong, extinct, to one vast centre fall,
And death, and night, and chaos, mingle all:
Till o'er the wreck, emerging from the storm,
Immortal Nature lifts her changeful form,
Mounts from her funeral pyre on wings of flame,
And soars and shines, another and the same."

It is not at all likely that the works of Erasmus Darwin will ever again become popular. The same causes, which in the main caused the long neglect into which they have fallen, will continue to act in the future as in the past. Inquirers into the history of the "Theory of Evolution" may search out the passages in which this is contained or referred to.

Those also who are studying the progress which most of the sciences had made in the latter half of the nineteenth century will find ample material in these various works. They will find there also the workings of a powerful and original mind upon the very insufficient materials of knowledge which were then available, striving to penetrate more deeply into causes and effects, and to search out the hidden links which bind together the various branches of human knowledge. They will find often keen insight and a prolific fancy which sees manifold analogies amongst natural objects, a fancy which often leads into extravagant theories, but which also at times very happily anticipates future discoveries. And the best apology for these often extravagant speculations may be found in the words of their author when he says, "Extravagant theories in those parts of philosophy where our knowledge is yet imperfect, are not without their use; as they encourage the execution of laborious experiments, or the investigation of ingenious deductions, to confirm or refute them."

9th April, 1914.

W. Barclay, President, in the Chair.

The following resolutions, proposed by Mr. W. Ellison and seconded by Mr. Bates, were carried unanimously:—

"That the Perthshire Society of Natural Science desire to protest strongly against the proposal to take the water of Lochs Voil and Doine into the Glasgow supply, as this would destroy the beauty of the Braes of Balquhidder, one of the loveliest vales in Scotland."

"That a copy of this resolution be forwarded to the Members of Parliament for the City and County, and to the Secretary for Scotland."

The following paper was read:—

"The Segregation of Barley Hybrids," by T. Anderson, M.A., B.Sc., of the Board of Agriculture. The paper was illustrated by a series of lantern slides.

SUMMER SESSION, 1914.

The following excursions were arranged :—

1. Monday, 1st June (Victoria Day)—Drive from Crieff by Comrie up Glen Artney and return by South Side of Earn to Crieff.
2. Saturday, 13th June—Loch Voil.
3. Saturday, 27th June—Loch Lindores.
4. Saturday, 4th July—Ben Lawers.
5. Saturday, 18th July (Half-day)—Kinfauns.
6. Saturday, 1st August (Half-day)—Huntingtower Castle and Almondbank.
7. Monday, 24th August—Charabanc from Aberfeldy to Kinloch Rannoch.
8. September—Fungus Excursion.

PHOTOGRAPHIC SECTION.

During the Winter Session of 1913-1914, four meetings of the Photographic Section were held. At three of these meetings interesting lectures, illustrated by lantern slides, were given, the lecturers and subjects being as follows :—

3rd Dec., 1913—Mr. A. W. Brown, "A Trip to America."

4th Feb., 1914—Mr. R. M. Pullar, "Provence and the Pyrenees."

2nd April, 1914—Major Mercer, "A Trip up the Nile."

On the 11th March, 1914, the Secretary, Mr. W. B. M'Callum, gave a demonstration on the Paget Method of Colour Photography.

The average attendance was very satisfactory.

In January, 1914, an Exhibition of Photographs by Members and others was held in the Museum Lecture Hall. The exhibits, though not quite so numerous as in the previous exhibition, were of a fairly high average standard. On the opening night there was an exhibition of Members' Lantern Slides.

In July, the Photographic Convention of the United Kingdom visited Perth for the second time. A highly successful series of meetings, excursions, etc., took place, and the visit should help to stimulate the interest of our own members in their work.

LIST OF DONATIONS TO THE LIBRARY.

Session 1913-14.

I.—Gifts from Institutions.

Belfast, Annual Report and Proceedings, Belfast Naturalists' Field Club, Vol. vi., Part 6.

Bern, Verhandlungen der Schweizerischen Naturforschenden Gesellschaft. Band 1, 2, 1912.

Brisbane, The Queensland Naturalist, Vol. i., No. 11.

Brooklyn, The Museum News, Vol. viii.

Chicago, Field Museum of Natural History, Annual Report, 1912; New Trilobites, Iowa.

Cincinnati, Bibliographical Contributions, Nos. 9, 10, 11, 12.
Mycological Notes, No. 38.
Synopsis of the Genus Cladoderris.

Colchester, Report of the Museum and Muniment Committee.

Dumfries, The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society, 1912-13.

Edinburgh, Transactions of the Royal Society of Edinburgh, Vol. xlviii., Parts 3, 4; Vol. xlix., Parts 1, 2.
Proceedings of the Royal Society of Edinburgh, Vol. xxxiii., Part 1.
Proceedings of the Royal Physical Society, Vol. xix., Nos. 2, 3, 4.
Thirty-First Annual Report of the Fishery Board for Scotland, 1912; Scientific Investigations, Nos. 1, 2, 3.
Notes from the Royal Botanic Garden, Edinburgh, Nos. 35, 36.
Transactions and Proceedings of the Botanical Society of Edinburgh, Vol. xxvi., Parts 1, 2.
Transactions of the Royal Scottish Arboricultural Society, Vol. xxvii., Part 2; Vol. xxviii., Part 1.

Essex Naturalist, Vol. xvii., Parts 4-9.

Glasgow, The Glasgow Naturalist, Vols. iv., v., vi., No. 1.

Halifax, The Proceedings and Transactions of the Nova Scotian Institute of Science, Vol. xii., Part 4.

Kilmarnock, Annals of the Glenfield Ramblers' Society, 1910-13.

London, Catalogue of the Chaetopoda in the British Museum (Arenicolidæ).
Catalogue of the Lepidoptera Phalaenae in the British Museum.
Catalogue of British Eggs, Vol. v.
Catalogue of the Mammals of Western Europe.
Catalogue of Indian Big Game.
Catalogue of the Marine Reptiles of the Oxford Clay, Part II.
Catalogue of the Ungulates, Vol. i.
Catalogue of the British Species of Pisidium.
Catalogue of Moths, Vol. xii., Plates.
Catalogue of the South Nigerian Plants.
Special Guide, No. 6—Flight Exhibition.
The House-fly as a Danger to Health.
Revision of the Ichneumonidæ, Part II.
Quarterly Journal of the Geological Society, 1913.

Report of the British Association, Dundee Meeting, 1912.
Board of Agriculture and Fisheries Leaflets, Nos. 79, 197, 220, 228, 263, 264, 265, 266, 267, 268, 269, 270, 271, 274, 275, 277, 278, 281.
Bibliography of the Tunicata; British Parasitic Copepoda, Vols. i., ii.
Proceedings of the South London Entomological and Natural History Society, 1912-13.

Mexico, Parergones del Instituto Geologico de Mexico, Tomo iv., No. 1; Boletin, Nos. 29, 30.

Michigan, 14th Annual Report of the Michigan Academy of Science, 1912.

New York, Memoirs of the American Museum of Natural History, Vol. i., Part 4; Bulletin, Vol. xxxi.; 44th Annual Report.

Northampton, Journal of the Northants Natural History Society and Field Club, Nos. 129 to 132.

Norwich, Report of the Castle Museum Committee, 1912; Report and Proceedings of the Norwich Museum Association, 1911-12.

Nottingham, 60th and 61st Annual Reports and Transactions of the Nottingham Naturalists' Society—The Society.

Ottawa, Memoirs, Nos. 23, 29E, 35, 37—Department of Mines.

Oxford, Ashmolean Natural History Society, Proceedings and Report, 1912.

Perth, Health Report for the City of Perth, 1912.
Twenty-Second Annual Report by the County and Chief District Sanitary Inspector, 1912.
Sandeman Public Library, 14th Annual Report.
Annual Report of the Perthshire Natural History Museum, 1912—The Curator.

Philadelphia, Proceedings of the Academy of Natural Science, Vols. lxiv., Part 3; lxv., Parts 1, 2—The Academy.

Pittsburgh, 16th Annual Report, 1913—The Carnegie Museum.

Queensland Naturalist, Vol. i., No. 2.

St. Louis, Mo., Missouri Botanical Garden, 23rd Report, 1912.

Stirling, Natural History and Archæological Society, Transactions, 1912-13.

Sydney, Records of the Australian Museum, Vol. viii., Part 4; Vol. ix., Nos. 3 and 4; Vol. x., Nos. 1, 2, 3, 4, 5, 6, 7.

Torquay, Journal of the Torquay Natural History Society, Vol. i., No. 5.

Washington, Annual Report of the National Museum, 1912.
Annual Report: Smithsonian Institution, 1912.
Thirty-first Annual Report: Geological Survey, 1912.
Bulletins 471, 501, 502, 503, 510, 513-515, 518-530, 532-535, 537.
Water Supply Papers, 259, 281, 283, 284, 289, 290-294, 296, 298, 300, 301, 304, 305, 307, 308, 310, 311, 313-318.
Professional Papers, 71, 77-80, 85A.
Monograph, 51.
Mineral Resources of the U.S., Parts 1, 2, 1911.

York, Annual Report of the Council of the Yorkshire Philosophical Society for 1912.

II.—Gifts from Persons.

Campbell, Col. John, The Scottish Geographical Magazine, Jan. to June, 1913.

Ellison, S. T., The Entomologist, 1913; Photography, 1913.

Coates, H., British Rainfall, 1912; Symons' Meteorological Magazine, 1913; The Journal of Conchology, 1913.

Janet, Dr. Charles, Constitution morphologique de la bouche de l'insecte; Le sporophyte et le gametophyte du végétal; Le soma et le germen de l'insecte; Organes sensitifs de la mandibule de l'abeille (Apis mellifera); Le Volvox.

Meek, Prof. A., Dove Marine Laboratory Report, 1913.

Murray, The Hon. G. Graham, Nature, 1913.

Pullar, H. S., Astronomy; Stargazing; Half-hours with the Telescope; More Worlds than One; Flowers of the Sky; The Moon; Evolution and Man's Place in Nature; Curious Episodes in Scottish History; Game Birds and Shooting Sketches.

Smith, Dr. W. G., Grasslands in Britain.

RESULTS OF CHILDREN'S ESSAY COMPETITION, 1913.

Subject—"Six Fruits."

First Division, 14 years and upwards (14 Essays).

1. Ena Wright.
2. Barbara Bow.
3. Jessie Caw.

Certificates—Isabella Menzies.
Annie Reoch.
William Davidson.
Helen P. Fleming.

Second Division, 13 years (48 Essays).

1. Mary Thomson.
2. Isabella M'Intyre.
3. Ann Aikman.
4. Jessie M'Laren.
5. Isabella Donaldson.
6. Helen Beveridge.
7. Jessie Carstairs.
8. Lottie Dunn.

Certificates—Molly Frame.
Jeanie Hunter.
May Clark.
Walter Scott.
George Miller.
Joseph M'Donald.
May M'Laren.
Davina Guild.

THIRD DIVISION, 12 years (21 Essays).

1. Euphemia Morris.
2. Edith Bobbie.
3. May Mackay.
4. Kate Goodall.
5. Maggie Bell.

Certificates—Amy Christie.
Mary Hood.
May Low.
Gordon M'Coll.
Jeanie Richardson.

FOURTH DIVISION, below 12 years (1 Essay).

Evelyn Leggat (Special Prize).

MEDAL :—Mary Thomson.

ADDITIONS TO ROLL OF MEMBERSHIP.

SESSION 1913-14.

ASSOCIATE.

Haggart, D. A., Coshieville, Aberfeldy ..... 11th December, 1913

ORDINARY MEMBERS.

Brown, Dr. R. Dods, Murray House, Perth ..... 12th March, 1914
Gardiner, James, Corrievechter, Taymount Road ..... 9th April, 1914
Morton, Gavin, Balure, Needless Road ..... 9th April, 1914
Scott, Alexander, Beulah, Jeanfield ..... 24th May, 1914
Wells, J., Burnbrae, Scone ..... 9th April, 1914
Winter, Mrs. J., Rosemount Place ..... 9th April, 1914

ASSOCIATE MEMBERS.

Martin, Alexander, 20 St. Peter's Place, High Street ..... 11th Dec., 1913
Todd, George, 69 North Methven Street ..... 12th March, 1914

ABSTRACT OF ACCOUNTS for Year ending 28th February, 1914.

INCOME.

Balance at close of last Account	£26	4	7
Subscriptions	73	13	0
Interest on Bank Account	0	13	5
	£100	11	0

EXPENDITURE.

Heating, Lighting, and Use of Rooms				£20	0	0
Fire Insurance				0	16	3
Printing, Stationery, etc.				12	13	4
Books, Magazines, etc.				13	3	5
Janitor				5	4	0
Subscriptions to other Societies				2	3	6
Repairs and Furnishings				0	13	10
Postages and Petty Outlays				10	13	2
				£65	7	6
Balance in Bank	£33	12	10			
Balance in Treasurer's hands ...	1	10	8			
				35	3	6
				£100	11	0

PERTH, 12th March, 1914.—Examined, compared with the vouchers, and found correct.

(Signed) J. MORISON,)
(,,) GEORGE F. BATES,) *Auditors.*

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1913.

MONTH.	BARO-METER	AIR TEMPERATURE.									HYGROMETER.			RAIN.					WIND DIRECTION.									REMARKS.
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Mean of		Mean of A and B.	Difference from Average.	Absolute Maximum. and Minimum.				Ground Frost, 32° and under.	Mean at 9 a.m. and 9 p.m.			Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.			Number of Observations at 9 a.m. and 9 p.m.									
		Maximum. (A).	Minimum. (B).			Maximum.	Day of Month.	Minimum.	Day of Month.		Dry Bulb.	Wet Bulb.	Humidity.								N	N E	E	S E	S	S W	W	N W	Calm or Variable.	
	Inches.	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches.	In.	Date.										
JAN.	29·660	40 6	32·0	36·3	—0·8	53	7, 8	15	26	19	36·2	34·6	86	18	+3	5·04	+2·52	1·25	11	6	8	11	13	5	6	6	2	6	Snow, 11, 12, 13, 18, 22, 23, 28, 31; Wettest since 1877.
FEB.	30·054	45·0	33·0	39·0	+1·7	51	3, 26	27	20	16	37·4	35 6	85	13	..	0·95	—1·20	·20	7	11	2	7	2	5	15	1	3	10	Snow, 6; Spate, 4.
MAR.	29·605	47·8	34·6	41·2	+1·3	56	30	25	18	16	39·5	37·1	81	22	+8	5·04	+2·67	·85	28	4	3	6	6	5	22	12	3	1	Snow, 6, 14, 15, 16; Spate, 10; Wettest for 58 years.
APR.	29·787	54·1	36·2	45·2	+0·8	65	24	27	5	12	43·4	40·6	79	15	+4	2·22	+0·40	·47	29	4	9	8	10	7	13	5	4	0	Snow, 11, 12; Hail, 16, 17, 18; Gale, 26.
MAY	29·852	58·2	42·5	50·3	+0·5	71	30	33	2	1	49·1	46·0	79	14	+1	2·75	+0·60	·94	6	1	3	22	5	5	11	13	1	1	Squally, 17, 18; Thunder and Lightning, 21,30; Floods,7,9.
JUNE	29·960	65·8	47·7	56·8	+1·2	77	16	38	13	..	55 4	51·3	75	15	+4	2·02	+0·06	·59	24	0	5	6	8	2	22	8	7	2	Thunder, 4; Squally, 7, 8, 9; Thunder and Lightning, 24.
JULY	30·052	69·4	50·4	59·9	+1·6	78	2	38	7	..	57·7	53·4	74	4	—10·5	0·70	—2·24	·34	6	7	3	9	7	1	11	7	15	2	Driest since 1885; Tay very low.
AUG.	30·021	69·0	48·1	58·6	+1·4	80	2	37	18,20	..	57·5	53·4	75	9	—7	0·83	—2·66	·29	21	6	11	5	11	1	9	3	14	2	Thunder, 30; Driest for 58 years.
SEP.	29·997	61·8	46 6	54·2	+1·0	70	28	35	2, 3	..	53·0	50 8	85	10	—3	1·84	—0·39	·54	16	5	14	16	0	1	14	5	1	4	Thunder and Lightning, 14.
OCT.	29·797	56·8	43·2	50 0	+3·8	65	17,19	30	10,23 24	5	48·8	46·4	83	19	+3	1·53	—1·43	·22	27	3	12	9	7	10	8	6	4	3	Thunder and Lightning, 28, 29.
NOV.	29·626	50·5	33·9	44·7	+3·6	55	25,27	26	8	7	43·8	41·6	83	17	+2	2·27	—0·54	·28	2	5	1	6	3	8	23	10	1	3	Squally, 3, 18-20; Gale, 17, 25.
DEC.	29 904	44·8	32·8	38·8	+1·1	56	8, 9	13	31	16	38·0	35·8	81	10	—7	1·22	—1·81	·59	3	8	4	0	2	0	22	13	9	3	Squally, 25; Snow, 26, 27.
YEAR	**29·859**	..	..	**47·9**	**+1·5**	**80**	..	**13**	..	**92**	..	..	**80·5**	**166**	**—2·5**	**26·41**	**—4·02**	**1·25**		**60**	**75**	**105**	**74**	**50**	**176**	**89**	**64**	**37**	
Highest	**30·604**	19 xii.																											
Lowest	**28·363**	19 iii.																											

Averages are for the period 1883-1912—30 years.

Height of Station above Sea Level = 80 feet.

ALEX. M. RODGER, Curator, Museum, Perth.

BAROMETER.

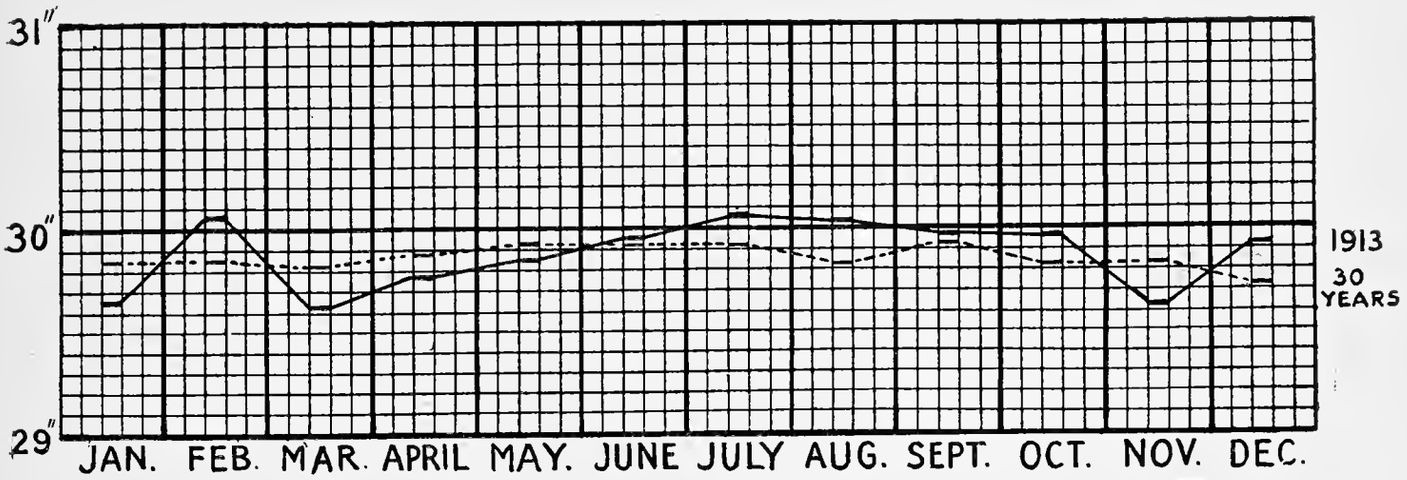


Plate 4.

Mean Monthly Reading at Perth, 1913———
Average of Monthly Readings, 1883-1912.....

RAINFALL.

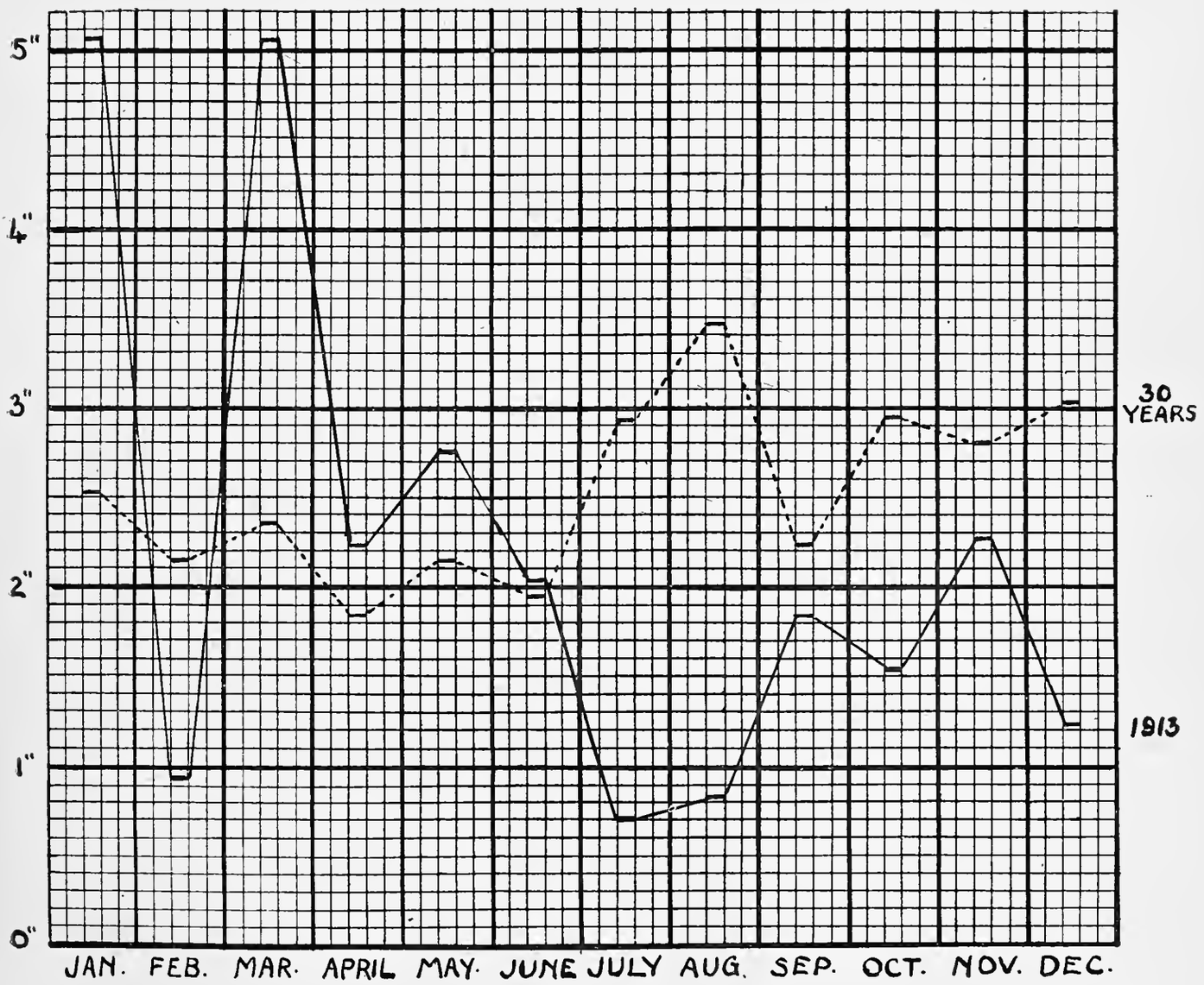


Plate 5.

Monthly Rainfall at Perth, 1913———
Average ,, ,, 1883-1912.....

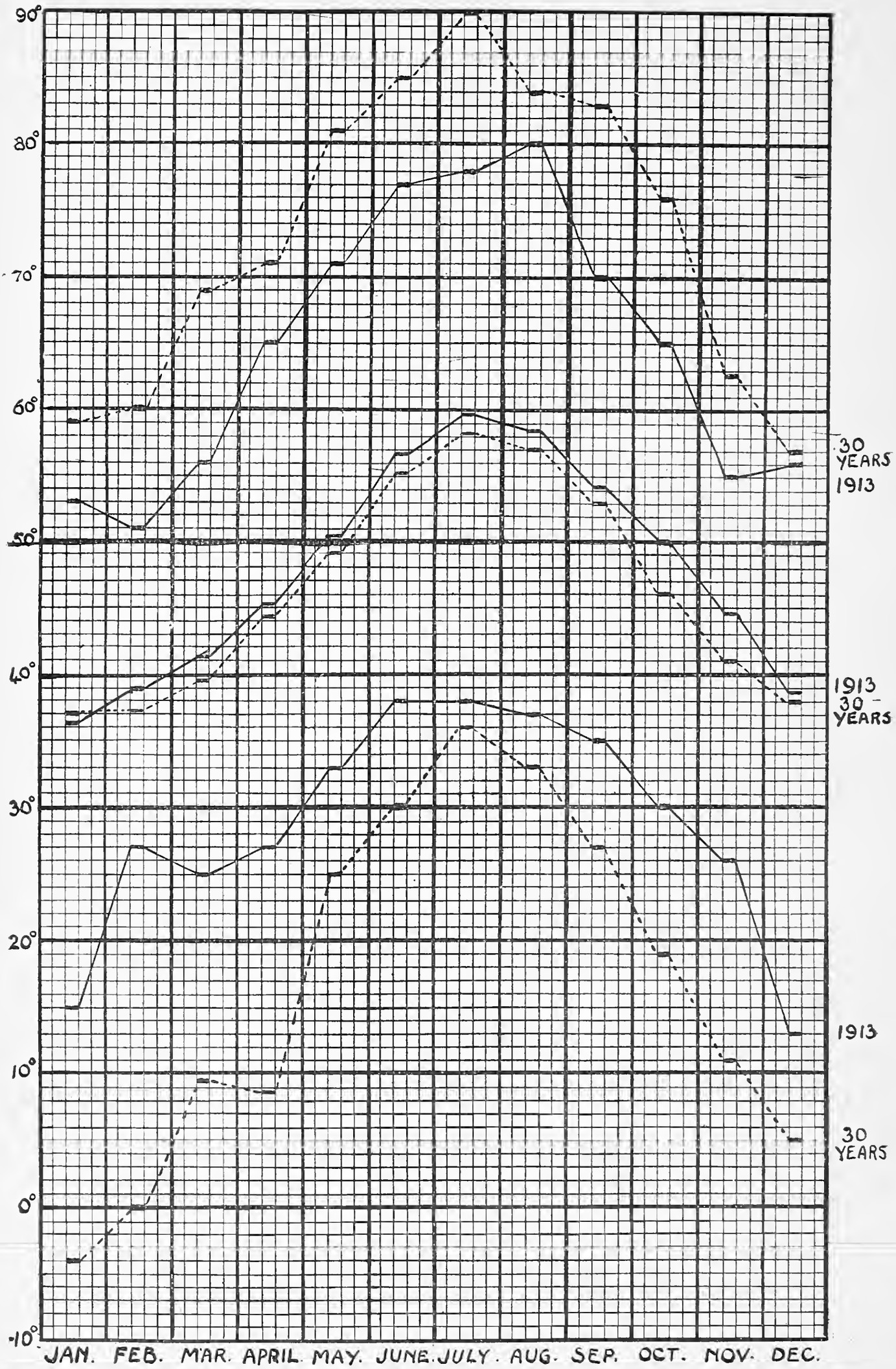


Plate 6.

Maximum, Minimum, and Mean Monthly Temperature, 1913———
Maximum, Minimum, and Average Mean Monthly Temperature at Perth, 1883-1912.....

WINTER SESSION, 1914-1915.

12th November, 1914.

W. Barclay, President, in the Chair.

The following resolution, proposed by Mr. Barclay and seconded by Mr. Menzies, was carried unanimously :—

"That the Members of the Perthshire Society of Natural Science desire to record how greatly they regret the sudden and premature death of Mr. Alex. M. Rodger, and how highly they appreciate the valuable services which he rendered to the Society during his life-time. For almost 20 years he filled the post of Curator to the Museum, and by his scientific skill, his energy, and devotion to duty raised it to the very highest rank among institutions of the kind. Even when he ceased to be a paid servant of the Society he was continually doing it good service. At all times his genial courtesy, kindliness, and willingness to oblige endeared him to all, and make us feel that we have lost not only an energetic fellow-worker but a friend."

"That we record also our very deep sympathy with Mrs. Rodger in the sad bereavement which so suddenly has befallen her."

"That the Secretary be instructed to send an excerpt from this Minute to Mrs. Rodger."

Thereafter the President delivered his opening address, as follows :—

Ladies and Gentlemen,—Since we met here last April the face of the world has changed. Instead of being at peace with all men we are now engaged in the greatest and bloodiest war recorded in history. The most powerful nations of Europe are marshalled against one another in deadly strife. Our minds are almost wholly occupied with the war and its fluctuations. We shudder at the barbarity which has ravaged the cities of Belgium and treated with savage cruelty its peaceful inhabitants. We thrill with pride at the valour and hardihood of our soldiers, and delight to hear every tale of their doings. To turn our thoughts for an hour from strife and bloodshed, from deeds of savagery and deeds of highest bravery, is not easy, but if we can manage it, it will be a relief and a solace to turn for a short time to our wonted peaceful pursuits, and to the affairs of our Society.

We have as usual suffered loss by death. All of us must have learned with regret of the death of Mrs. Newlands, of Craigend

Manse, and have felt the deepest sympathy for those who have lost "the valued mother and the faithful wife."

Mr. David Smart was a good friend of the Society, of which he had been a member for 36 years. Mr. John Thomas, at the date of his death, was exceeded in length of membership by only two gentlemen whose names are still on our roll.

Both Mr. Smart and Mr. Thomas had reached an age considerably beyond the allotted span, and had finished their life-work, a work in each case honourable to themselves and of the highest usefulness to the community of the City and County of Perth.

Not at the end, but in the middle of his life-work, was Mr. Rodger called away. In the strength of life, the full vigour of manhood, and in the midst of plans for future usefulness, short was the warning given by the dread enemy; a few hours' illness snatched him from us. By his death we feel that we have lost not merely the capable official, but the friend, one endeared to us by his amiability and his readiness at all times to give whatever help lay in his power.

Alex. M. Rodger was a native of Dundee, and was born there in the year 1869. After completing his education at the primary school he became apprentice to the trade of plumber, and the manual dexterity which he thus acquired was of much use to him in after life. At the age of seventeen he was engaged by Professor D'Arcy Thomson to assist in the work of the Museum of the Dundee University College, and remained there for a period of eight years. During this time he was thoroughly trained in Museum work, in the care and choice and preparation of specimens. He also attended the classes in Biology and Chemistry, and thus, in addition to his practical training, acquired considerable acquaintance with several departments of Biological science. During these years also he made two voyages to the Arctic Seas in the Dundee whalers, the *Endeavour* and the *Active*. Captain Robertson, the commander of the *Active*, attended his funeral as a mark of friendship and respect, and spoke of him to me in the highest terms, declaring that no better comrade could be desired for a six months' voyage. From these trips he brought back valuable specimens for the Museum in Dundee College, obtained an intimate knowledge of many of the Arctic Fauna, and acquired a liking for the literature of Arctic Expeditions which continued with him through life.

When in 1894 the Museum of the Perthshire Society of Natural Science was extended and enlarged, chiefly by the exertions of Mr. Henry Coates, it soon became evident that it would be absolutely necessary to appoint a salaried Curator, who should arrange the collections and take charge of the Museum. The death of Dr. Buchanan White in December of the same year made this step even more urgent. In the result Mr. Rodger was chosen, and entered upon his duties in February 1895. The general plan of the Museum had, of course, been long before laid down, and

in the carrying it out much indispensable help was given by Colonel Drummond Hay and other experts in various departments, but the great bulk of the work of placing and arranging the specimens lay upon the shoulders of the new Curator. From the first he put all his heart into the work, and soon showed that he was the right man in the right place by the skill and energy with which he brought order out of chaos. Even at the formal opening by Sir William Flower in the autumn of the same year in which the work had been begun, the Museum was already in such a condition as to call forth unqualified praise from the many good judges who were present at the opening ceremony. And during all the subsequent years of his life his energy never flagged, his zeal never cooled, yea, rather it increased in warmth.

In 1897 he obtained leave from the Society to accompany as assistant Professor D'Arcy Thompson, who had been commissioned by the British Government to visit the Pribyloff Islands in order to investigate and report upon the state of the fur-seal fishery as carried on in the Behring Sea in the neighbourhood of that group. In passing through America, Mr. Rodger took advantage of the opportunity to visit some of the Museums of the United States. On a subsequent occasion a trip to Berlin allowed him the chance of inspecting the Museums of that town, as well as those of Hamburg and Copenhagen. Taking advantage of every opportunity, he became moreover acquainted with most of the principal Museums of Britain.

His object, of course, was to acquire a knowledge of the best methods of preserving, arranging, and displaying the specimens, and to introduce improvements into his own Museum, for it was the very pride of his heart to make his Museum the very model of its kind. He spared no exertion to fill up blanks in the Perthshire Collections, and to obtain new and rare specimens from all parts of the world for the Index Museum. His continual care and endeavour was in all ways to make the Museum more attractive and more useful. For this purpose he renewed the labels often so as to render them fuller, more legible, and more instructive, and alongside the specimens he placed maps, diagrams, and photographs.

It was with the purpose also of attracting visitors, and especially the young, that he instituted and organised the summer exhibitions of wild flowers, which proved so interesting to many people, and in the early part of each year exhibited the hatching of salmon or trout eggs, or kept frog spawn on view till the tadpole was turning into the frog.

To interest the young in the study of Nature was also one of his chief desires. It was for this that he took so much trouble in carrying on the Annual Essay Competition for school children, which of course had the double virtue of interesting teachers as well as pupils. The institution and management of the Junior Section of the Society afforded him also another and a better means

of interesting the young, and this branch of work was becoming more and more useful and successful as the years went on. Of course his own persuasiveness and kindly manner had a good deal to do with its success.

As time went on he was constantly extending his knowledge into fresh departments of Natural Science, so that, though not perhaps to be called an expert in more than one or two branches of Zoology, he had a working acquaintance with quite a number. In Geology he had made good progress, and for many years he took considerable interest in Meteorology. His daily observations of the weather, transmitted to the Meteorological Society, were highly valued. They were of much interest also to many of the people of Perth, and have proved of service on more than one occasion. The full tables which he contributed to our *Proceedings* will prove invaluable to future observers.

Shortly before his death he had been entrusted by the Town Council with the task of putting in order the collections in the Antiquarian Museum, which have been handed over to the Municipality. In this he had scarcely made a beginning, but was forming plans for carrying out the work when death overtook him.

Apart from Museum work he was a most useful member of the Society. The practical work of managing the Library fell to him. He saw to the preparation of the rooms for our meetings, the setting up and working of the lantern, and a multitude of details which tended much to our comfort and to the success of our gatherings.

If he heard of anyone in the City or County who took an interest in any branch of Natural Science, he tried in some way or other, directly or indirectly, to induce them to become members of our Society and to contribute to our *Transactions*, and thus in many cases obtained valuable papers relating to Perthshire Natural History.

All who came in contact with him were struck by the fact that his whole heart was in his work. To him it was not a task but a delight. His cheery, frank, and amiable manner was pleasing to all, and endeared him to friends. His evenness of temper was remarkable. You never heard him speak ill of anyone. His readiness to oblige, and to put himself to trouble for the sake of others, was unfailing. And behind all was a kindly and tender heart.

To us his loss is severe, and we shall miss him greatly. Our sympathy must go out to one whose loss is greater still, greater perhaps than we can imagine. To her, no doubt, time will bring, as it brings to all bereaved ones, calm and consolation, but though the pangs of regret may be softened, for her the brightness of life will be forever dimmed.

Before giving a brief account of the Summer Excursions, a few words on the character of the season may not be out of place. Taking the six months from April to September, 1914 bears a strong resemblance to 1913. The mean temperature for that period

is very nearly the same, that of 1914 being slightly higher. For the same period the rainfall of 1914 is considerably less than in the previous year. If we take the three summer months, June, July, and August, the mean temperature was practically the same in both years, and for the same period the amount of rain which fell was nearly the same in both. On the whole, then, we may conclude that 1914 was, like its predecessor, warmer than the average and much drier. Neither of these reached the high temperature of 1911. Walnuts have filled and ripened during the last two years, but Spanish Chestnuts in both have failed to reach maturity. The Oaks have borne a fair crop of acorns, but neither in quantity nor in size have they reached the standard of 1911. The Beech has, I think, not been prolific this year. Hips and Haws were a full crop, and I think that the crop of Bramble-Berries has also been above the average. The Rowan trees also bore an enormous load of "berries red and bright," and it was noticeable in this district, as in several others, that the birds spared them this year much longer than usual. It seems to me that at this season last year there were a good many more wild flowers in bloom than at present.

The first excursion took place as usual on Victoria Day, which happened this year on the first day of June. Journeying by rail to Crieff, we drove to Comrie, and thence towards Glenartney. A halt was made at Dalginross to inspect and photograph the stones by the wayside, probably all that remain of an ancient Circle. One is nearly upright, but the others are lying on the ground. Of these one is remarkable for the numerous cup-marks on its surface. These emblems of ancient art have given rise to numerous conjectures, some very wild indeed, but no well-founded explanation of their meaning has yet been discovered. Resuming our way, we soon entered the romantic Glen. The road ran high up the right bank of the Ruchil, of which for several miles only occasional glimpses could be got owing to the thick covering of trees which clothe its banks at this part. It was noted that this year the Oaks, which were in full leaf, had preceded the Ashes by a longer interval than usual, for the latter were still bare. We ascended the Glen for about five miles till we reached the school. The road does not go far beyond this point. It then becomes a rough track which goes over the hills to Callender. Turning, we came back for some distance and then descended, at least some of us did, the steep bank to Spout-a-Cleib, a rock-fall on the Ruchil. Here we found a number of workmen engaged in forming a salmon ladder, and certainly not improving the scenery. The Geology of this part is interesting, but as a full account of it was given on a former visit in 1894,* I need not repeat it here. After resting an hour or two we set off on the return journey. The day had beeen fine, though dull, and the intervals of sunshine were brief. We took the road which goes to Blairinroar Toll, and thence leads by Mill of Fortune to Strowan, a new way for most of us. Having plenty of time,

* See Vol. II., p. xxxii., Proceedings of the Society.

we made a halt at the old mill, prettily situated by the side of a little stream, and gathered globe flowers and orchids. We did not meet in with any plants worthy of special notice. The drive thence by Strowan and the right bank of the Earn to Crieff was very enjoyable, and tea at the end of it formed a pleasant conclusion to a pleasant excursion.

On the 13th June the excursion was to Balquidder and Loch Voil. Although we had visited this district more than once in recent years, this additional visit was suggested at the time when it was supposed, in view of the Glasgow Water Bill, that this might be the last opportunity of seeing the fine landscape before it was disfigured by a hideous embankment, and before the sinuous bays and curves should disappear. Happily before the excursion actually took place the fear of this had passed away, at least for a time. A small party, however, enjoyed a fine day at the romantic hamlet and by the shores of the loch. Bright sunshine lit up the valley, delighting the eye and cheering the heart. The rich clusters of the hawthorn, the first opening blooms of the wild rose, spring flowers of many kinds and varied hues, called forth interest and pleasure as we roved along. Some beds of orchids of all shades between white and pink, and more specially a glorious bed of globe-flowers called forth our admiration and made us wish that we could photograph them in colour. A fine plant of *Œnanthe crocata*, the water drop-wort, seemed strangely out of place by the side of a little rill which trickled down the hill-side high above the loch. A picturesque touch was added to the scene by the numerous gipsies whom we met, men, women, and children, and indeed there seemed to be a gathering of the clan somewhere in the neighbourhood.

On 27th June a party of members journeyed to Newburgh under the leadership of Mr. Wm. Ellison. They first visited the remains of the ancient Abbey of Lindores. Very little is left, but enough to show that in former days the buildings were extensive and fine. On the ground within several plants were noted, of which mention may be made of *Malva rotundifolia* and *Scrophularia vernalis*, whilst on the walls *Geranium lucidum* and *Parietaria officinalis* were seen in some quantity. The latter is not, I think, found in Perthshire, though common in old ruins in many parts of Scotland. Leaving the Abbey, the party proceeded to Loch Lindores, noting in fields on the way some scattered plants of *Dianthus deltoides*, the pretty maiden pink. On the shores of the loch many plants were found, of which *Stellaria palustris*, a very scarce plant in Perthshire, was the most notable. In the loch were some beds of *Typha angustifolia*, the slender reed mace, of which specimens were obtained with some difficulty. On the way back a visit was paid to the old Church of Abdie, and when Newburgh was reached a short time was spent in the Laing Library and Museum.

The Mountain Excursion, which as usual took place on the Mid-summer Holiday, July 4, was to the classic Ben Lawers, Perth-

shire's highest summit. We went from Perth by motor-bus in the hope that by this method of transit it would be possible to find sufficient time to examine pretty thoroughly at least one of the corries of the mountain. In this hope we were disappointed, but the excursion gave to a great many of our members the opportunity of viewing some of the finest scenery of Perthshire. The day was pleasant but on the whole rather dull. Going by Crieff we ascended the beautiful valley of the Earn, passed along the north shore of the loch amidst shady woods, with occasional glimpses of Ben Voirlich and Stuick-a-Chron, then on through gloomy Glen Ogle and down upon Killin and the shore of Loch Tay. We climbed the hill by following the course of the burn of Tombreck, leading us into the West Corrie. We missed very much our usual Mountain leader, Mr. Meldrum, and sympathised with him in the bereavement that caused his absence. Although of course many fine Alpine plants were got, our time was too short to reach the ledges where many of the rarer plants have their abode. The beautiful Alpine forget-me-not was seen in many places, but the display was poor compared with what I have seen on former occasions. It was too early for the gentian and indeed for several of the rarer Alpines. The top was reached in the teeth of a violent wind. Sheltered behind the Cairn, however, we held the usual meeting of the Mountain Club and initiated several new members. On leaving the summit a big wreath of snow proved irresistible to several of the younger members. To it they went, and for a short time became boys again, and enjoyed the luxury of a snowball fight in the middle of summer. After tea at Lawers Hotel, where we rejoined those of our party whose strength or whose courage did not permit them to climb the hill, we set off for home. The evening drive down the valley of the Tay by Kenmore, Aberfeldy and Dunkeld was very enjoyable, and all reached Perth delighted with the long day's trip.

Saturday, the 1st August, had been fixed upon for a half-day excursion to Huntingtower Castle and Almondbank, and a large party duly turned up, and went to Huntingtower by the motor-bus. Here they were met by Major Mercer, the leader, who conducted them through the old stronghold of the Ruthven or Gowrie family, pointing out the chief features of the building. Of these a fine painted ceiling had been discovered during the recent repairs, and was greatly admired. The story of the famous Raid of Ruthven was, of course, duly recalled, and the old legend of the Maiden's Leap graphically narrated. After heartily thanking the Major for his kindness, the members decided, as the weather had become wet, to return to Perth without going further.

These were all the excursions which were carried out. One which had been set down for the 1st July had to be abandoned owing to the wet weather. The others did not take place because by this time the war had broken out, and members were not in the mood to go afield.

It would not do to pass over without notice the visit of the Photographic Convention to Perth, which lasted from the 6th to the 11th of July. This was the second visit of the Convention to the Fair City, the previous one having occurred in 1903, when Sir Robert Pullar presided over its functions. On this occasion the number of visitors was much fewer, but still formed a very respectable gathering. They were again favoured with fine weather, and had every reason to be satisfied with their reception. The Lord Provost and Magistrates, although absorbed at the time in preparing for the King's visit to the city the same week, gave them a civic reception, and for their benefit held a conversazione in the City Hall on the evening of their arrival. Mr. Albert Pullar most generously paid all the expenses of a special train conveying them to Birnam and Killiecrankie, besides most hospitably entertaining them to luncheon at Birnam and tea in the famous Pass. A brilliant garden party at Cleeve was given for their benefit by Mr. Norie Miller, and a visit to Dupplin Castle, where they were most kindly received and entertained by Sir John Dewar, gave them an opportunity of admiring the beautiful grounds of the castle, and seeing on the return journey the fine landscape of Lower Strathearn .

Before concluding I should like to give a short account of a private excursion made by Mr. Bates and myself a few weeks ago. We went to Birnam to meet that veteran naturalist, Mr. Chas. M'Intosh, who was anxious to show us specimens of a supposed hybrid between our common European larch and the Japanese species. The supposed hybrid was first noticed in the nurseries of Athole by the late head forester, Mr. Keir, and its cultivation has been continued by his son and successor. The latter was unfortunately not at home on the day of our visit, but we found an excellent substitute in his foreman, Mr. M'Intyre, to whom we were introduced by Mr. M'Intosh. We first visited some well-grown specimens of the Japanese larch, and obtained from these cones for comparison. The points of distinction between the common and the Jananese larch are not very great, and the two species are certainly closely allied. In the Japanese larch the twigs are reddish-brown in colour, whilst in the common larch they are ash-grey. The cones of the Japanese are rather shorter and thicker in proportion, and their scales have their points bent back. The leaves are of a darker and duller green, and the tree is more compact in form. We next visited a belt of wood where some specimens of the supposed hybrid were found, and from which we also obtained cones. These seemed to be much liker those of the common larch, the scales not having their points reflexed. The colour of the twigs was, however, like those of the Japanese. Proceeding to the nurseries, we saw beds of all three forms side by side, some one year old, others two. The most striking difference at this stage was the superior growth of the hybrid beds. It was this that first caught the attention of the late Mr. Keir. The colour of the twigs in the hybrid beds was variable, sometimes more or

[Photo by R. M. Pullar.

Plate VII.—Sput à Chleibh, Glenartney.

[Photo by R. M. Pullar.

Plate VIII.—Cup-marked Stone, near Comrie.

[Photo by A. M. Rodger.

Plate IX.—Loch Voil, Balquhidder.

[Photo by W. Barclay.

Plate X.—The M'Laren Tomb-stone, Balquhidder.

less deep reddish-brown, sometimes ash-grey. Inquiry at Mr. M'Intyre revealed the fact also that the first cones from which this form sprang were taken about eighteen years ago from Japanese larches growing in the immediate neighbourhood of European larches, so that opportunity was thus afforded for hybridization. On leaving the nurseries we proceeded to the hillside above Birnam Glen. Here in a large plantation of the common larch, a belt of the hybrid, planted at the same time as the others, some five years ago, was easily distinguishable from its superior height, the trees of which it was composed being more than half as high again as those around them. We thanked Mr. M'Intyre for his kind guidance and for the information which he freely gave us. Neither Mr. Bates nor I are able to give an opinion of any value, but at least we can say that if this is not a hybrid, it is, at least, a pretty distinctive form or race which deserves, and indeed is receiving, further study from those who are experts in forestry, and are able to form a correct judgment in the matter.

10th December, 1914.

W. Barclay, President, in the Chair.

The following paper was read :—

"The Evolution of Plant Life on a Haughland," by Henry Coates, F.R.S.E. (See *Transactions*, Vol. VI., Part II., p. 33.)

14th January, 1915.

W. Barclay, President, in the Chair.

Mr. Coates read the following notes :—

"On the Occurrence of the Longicorn Beetle, *Acanthocinus œdilis*, L., at Pitlochry."

On 9th September, 1914, Miss Elaine Stuart, of Sunnybrae House, Pitlochry, sent to the late Mr. Rodger at the Museum a

specimen of this rare beetle, which she had found on the window-sill of her bedroom. It is a female, and is in good condition. Even amongst the Longicornia, or long-horned beetles, this insect stands out conspicuous for the length of its antennae, which, in the male, are four times, and, in the female, twice as long as the body. It is extremely local, and has always been regarded as one of the characteristic rarities of the Rannoch district, where it was taken by the late Dr. Buchanan White, but I had not heard of its occurrence in the Pitlochry district before. It is generally found on pine and fir logs. It is also known by the name of *Astynomus œdilis*, L.

"On a Flock of the Little Auk (*Mergulus alle*, L.) in Perthshire, in December, 1914."

This little bird, whose home is in the Arctic Ocean, only visits our shores at rare intervals, when it is driven from its usual haunts by exceptional gales, usually from the North-East. Such a gale occurred on Wednesday, 9th December, 1914, lasting for a couple of days. On Saturday, 12th December, a live specimen of the Little Auk was picked up near the Edinburgh Road, just outside of Perth, and was brought to the Museum, where it was liberated, and swam away down the Tay. On Sunday, 13th, a specimen was picked up dead in a field at Brickhall, near Bridge of Earn. On Monday, 14th, a specimen was picked up dead at Friarton by Mr. George Todd, Secretary of the Junior Section. Mr. Todd has kindly presented this specimen to the Museum. On Tuesday, 15th, two specimens were picked up dead at Friarton by Mr. W. D. Fairweather, Gamekeeper. Lastly, on Thursday, 17th, one specimen was picked up dead at the Woody Island. These were all the specimens that were brought to the Museum, but in addition a number were taken to Mr. P. D. Malloch to be stuffed, including several from different parts of Perthshire, such as Orchil, near Braco, Almondbank, Errol, Alyth, Bridge of Earn, Aberfeldy and Pitlochry.

It is just twenty years since the last Little Auk season, namely the winter of 1894-95, when a succession of Northerly gales drove large numbers on our shores, and even far inland. Many were picked up dead in the last week of December, 1894, and the first two weeks of January, 1895, including specimens found at Perth, Crieff, Callander, Loch Tay, Loch Earn, and Strathmore. (See *Annals* of Scottish Natural History, 1895, p. 97.) There was also a visitation during the severe winter of 1878-79, when they were found alive among the ice above Kinfauns.

Thereafter Dr. Lyell read a paper on "The X-Rays and their Application," which was followed by a practical demonstration and exhibition of lantern slides.

29th January, 1915.

W. Barclay, President, in the Chair.

A Special Meeting of the Society was held on this date, and a lecture was given by P. MacGregor Chalmers, Esq., I.A., on "Iona." The lecture was illustrated by a fine series of slides.

11th February, 1915.

W. Barclay, President, in the Chair.

The President read the following notice of the late Mordecai Cubitt Cooke, the eminent mycologist, who took a prominent part in the first meeting of the Cryptogamic Society of Scotland, held in Perth in 1875 :—

It is desirable that some notice should appear in our *Proceedings* of the death of Mordecai Cubitt Cooke, the distinguished mycologist, who passed away in a ripe old age towards the end of last year. He was a native of Hornby, in Norfolk, and was born there in 1825. His career was a very diversified one. First a draper's apprentice, then a copying clerk, next for ten years a schoolmaster, he afterwards found more congenial occupation in botanical work for some time in cataloguing and arranging the Indian exhibits, and latterly as an official of the National Establishment at Kew. He early had his attention turned to the study of Fungi, and as years went on this became his chief object in life. For some years he acted as Editor of "Science Gossip," a useful periodical, now unfortunately extinct. For twenty years he edited "Grevillea," a monthly paper devoted to Fungi, and which did not long survive after it lost his guidance. He often accompanied the excursions of local Societies in search of Fungi, and his extensive knowledge was on such occasions always at the service of his companions. He was a friend and correspondent of the late Dr. Buchanan White, and helped and encouraged him during the years which the Doctor devoted to the Fungi of Perthshire. At the great meeting of the Scottish Cryptogamic Society, held in Perth in September, 1875, Dr. Cooke was present at the excursions and meetings, naming and describing several new species which were then discovered. His writings were numerous, and embraced Lichens and Hepaticae as well as Fungi. Amongst the most valuable of his works are: "A Plain and Easy Account of British Fungi," "Easy Guide to the Hepaticae," "Fungi Britannica Exsiccati," the valuable "Handbook of British Fungi," "Mycographia" and "Illustra-

tions of British Fungi," embracing about 1200 coloured plates, a work unique of its kind in English.

Mr. James Menzies read the following note on the occurrence of *Coprinus Comatus*, Fries, in a cellar in Perth :—

Since our last meeting Mr. George Brady reported the occurrence of a fungoid growth in the cellar of his premises at High Street. Along with Mr. Barclay and Mr. Coates I called to see this. The fungus was found to be a fairly common species, *Coprinus Comatus*, Fr., which usually occurs on rich soil in gardens and rubbish heaps. The genus *Coprinus* is well distinguished by the deliquescing or melting of the gills, when mature, into an inky fluid. In this particular instance the plants differed a good deal in habit from those found under more natural conditions, where it is gregarious, but not cæspitose. Here the plants arose in groups of three or five, from a stout fleshy base, and all growing together like a clump of rhubarb, the individual plants being a good deal larger than usual. The cellar floor is an earthen one, and appeared perfectly dry, and what was more puzzling, the fungus occurred within two feet of a large stove built against the wall. The stove, which is in daily use, gives out so strong a heat that after the melting of the gills the pileus dried up, and remained as a withered parchment-like tissue on the stem. The cellar floor had not been disturbed, and nothing of the kind had been seen there before. The question arises : how did the Fungus come here? We believe it may be answered in this way. The soil is a great store-house of these mycelial forms of Fungi which are capable of remaining long dormant, awaiting suitable conditions for starting into growth, and reproducing their characteristic fructifications. In this instance the humid conditions of the winter started the mycelium of the fungus into growth outside the building, and the warmth of the earth in the vicinity of the stove proved the attraction and furnished the stimulus for its luxuriant growth in the cellar.

The President submitted a paper entitled, " Botanical Notes : Appin, Fortingall, Schiehallion, and Ben Lawers," by D. A. Haggart, Coshieville. It was decided that this paper should be taken as read, and printed in the *Transactions*. (See *Transactions*, Vol. VI., Part II., p. 44.)

The following paper was read :—

" The Natural Regeneration of Woods," by Frank Scott. (See *Transactions*, Vol. VI., Part II., p. 56.)

FORTY-EIGHTH ANNUAL MEETING.

11th March, 1915.

W. Barclay, President, in the Chair.

Mr. H. Coates read the following note on the late Dr. James Geikie :—

The late Professor James Geikie, who was born in Edinburgh in 1839, and was educated at the High School and University there, joined the Geological Survey in 1861, and was appointed District Surveyor in 1869. After surveying in the Scottish Coal Fields, and in the Southern Uplands, he came to Perth about 1877 to undertake the survey of the Perthshire District. This work he carried on until 1882, when he was appointed to the Chair of Geology and Mineralogy in Edinburgh University, which had been vacated by his brother, Sir Archibald. During these five years he was an active member of our Society, occupying the Presidential Chair from August, 1879, when he succeeded the late Sir Thomas Moncreiffe, on the death of the latter, until March, 1882. During that period he contributed several valuable papers and addresses to our *Proceedings*, embracing such subjects as "The Glaciation of the Outer and Inner Hebrides," "Climate and Geographical Changes in Post Glacial Times," "The Geology of Kinnoull Hill," etc. He also gave popular lectures on Geology, and conducted geological excursions in the neighbourhood.

He took a very warm interest in our Museum, the original building of which was opened during his tenure of office, and, along with the late Dr. Buchanan White and Col. Drummond Hay, did much to carry the scheme to a successful issue. Several of his addresses were on the subject of Museum arrangement.

By our older members, however, James Geikie will be best remembered for his warm-hearted, genial nature, for his fund of humour, and for his willingness at all times to place his stores of learning at the disposal of his fellow-workers.

Mr. Coates then proposed the following resolution, which was carried unanimously :—

"That the Members of the Perthshire Society of Natural Science desire to record their deep regret at the death of Professor James Geikie, LL.D., F.R.S., who, during the thirty-eight years of his connection with the Society, first as President, and latterly as Honorary Member, always evinced a warm interest in its affairs, and, in particular, did much to popularise the Museum in the early days of its existence."

"They also instruct the Secretary to send a copy of this Minute to Mrs. Geikie, with an expression of their sympathy with her and her family."

The Office-Bearers for the ensuing year were then elected as follows :—

President—Mr. Wm. Barclay.
Vice-Presidents—Messrs. W. Ellison; D. Sutherland, M.A.; J. P. Rattray; D. J. Wilson.
Secretary—Mr. S. T. Ellison.
Treasurer—Mr. Jas. Winter.
Librarian—Mr. Jas. Coates.
Editor—Mr. George F. Bates, B.A., B.Sc.
Councillors—Dr. Lyell; Messrs. R. Morison Pullar; Thos. M'Laren; Clacher; Ritchie; W. Wylie.
Curator—Mr. H. Coates, F.R.S.E.

The following Reports were read and adopted :—

REPORT OF COUNCIL.

The Council have pleasure in submitting to the Members their Forty-Eighth Annual Report, giving an account of the past year's work, which is of a gratifying nature.

During the year six Monthly Meetings were held, at which five papers were read, as well as the two Annual Addresses of the President.

The average attendance has been very good, being 42.5. The greatest number at one meeting was 76, on the 14th January, 1915, and the lowest 28, on the 9th April, 1914. During the year there has been added to the roll 1 Associate, 1 Corresponding, and 20 Ordinary Members, bringing the total membership up to 324, which shows an advance of 9 over last year.

In addition to the usual Monthly Meetings, the Council again this year arranged two Popular Lectures, one of which took place on 29th January, when Mr. P. MacGregor Chalmers, of Glasgow, gave an interesting lecture on "Iona." The second lecture is to take place on the 19th inst., when Miss M. J. Newbigin, D.Sc., of Edinburgh, is to lecture on "Glaciers and their Work."

During the summer eight Excursions were arranged, and six were carried out, some being very well attended. Owing to the war the last two were abandoned.

Death has again thinned our ranks considerably. Though some of those who have been taken away were not often seen at our meetings or excursions, they supported the Society by continuing their membership for a long term of years.

A great and sudden loss befel the Society by the death of our late Curator, Mr. Rodger, who was ever ready to do anything to promote the welfare of the Society or to help its Members in any way. We have also to mourn the loss during the year of the following :—

Mr. John Thomas, who joined in 1870;
Mr. David Smart, ,, ,, 1878;
Miss Dickson, ,, ,, 1882;
Col. M'Ewen, ,, ,, 1909;

and just within the past week we have heard of the loss of our only Honorary Member and a late President of the Society, Dr. James Geikie.

The Children's Essay Competition was on "Perthshire Amphibians and Reptiles," and 52 were sent in by 31 boys and 21 girls—29 from two Town schools and 23 from one Country school. The essays have been examined by several gentlemen, and the prizes adjudicated, and these will be distributed to the successful competitors on Saturday, 13th inst. The subject for this year's competition is "Four Perthshire Trees," and the essays are to be sent in by the end of July.

Various societies of an educational nature have again had the use of the Lecture Room for meetings free of charge.

REPORT OF LIBRARIAN.

New works added to Library :—

Reference Department, ...	4
Lending Department, ...	10
Total, ...	14

Total number of works in Library at 1st March, 1915 :—

Reference Department, ...	614
Lending Department, ...	782
Total, ...	1396

Books, Reports, Periodicals, and series of Pamphlets presented to the Library during the session—125.

[N.B.—A large proportion of these are from the U.S. and Canadian Geological Surveys, the American Museums, etc.]

Volumes of *Proceedings* and Periodicals bound—29.
Number of Members who have borrowed books—36.
Number of books borrowed—134.
Number of Societies with which we exchange *Transactions* and *Proceedings*—35.

Institutions to which we present *Transactions* and *Proceedings*—4.

The most important work added to the Library is a set of the one-inch Ordnance Survey Maps of Perthshire, bound in one volume. This has been placed in the Reference Department.

Shelving has been erected in the Dark Room to accommodate the large collection of American and Canadian publications now included in our Catalogue. This has provided much needed relief on the shelves of the Library proper.

REPORT OF EDITOR.

During the year now closing two parts of *Transactions* and *Proceedings* have been published and issued to Members and to those Institutions and Societies who exchange publications with the Perthshire Society of Natural Science. The first of the two parts completes Volume V., and I have to acknowledge valuable assistance in the indexing of the volume received from Mr. Barclay.

While there are no strikingly new features in either part, both parts will, I think, be found to contain matter which is of more than local interest and value.

REPORT OF TREASURER.

(*See Balance-Sheet*, p. xcvi.).

The President submitted the following communication by Mr. A. Bennett, F.L.S., Croydon :—

Notes on "Additions to the List of Perthshire Plants since the Publication of Dr. White's Flora." (*Proceedings*, P.S.N.S., Vol. V., Part IV.)

Ranunculus Baudotii, Godr., was recorded for Perth V.C. 89, in "Journal of Botany," 1884, p. 270.

Mr. Pugsley, in his Monograph of *Fumaria*, "Supplement Journal of Botany," January, 1912, et seq., has *Fumaria Borœi*, Jordan, 87, W. Perth, Clackmannan (Herb. Bickham), and considers the records for 88 and 89 in Supplement to "Topographical Botany" as correct.

Cerastium alpinum, Linn. Not yet decided as to status of forms, etc. Mr. Druce's conclusions will, I think, hardly be accepted *in toto* by Dr. Moss.

Sagina. Ben Lawers. There is a very full and able paper by Dr. Lindman in the "Botaniska Notiser," 1913, p. 267. He refers it to *S. procumbens* × *saginoides*, but thinks that it may perhaps prove to be a distinct species?

Alchemilla vulgaris, Linn. *v. acutidens*, Buser. There is much doubt whether this is correct. (Mr. Salmon's able paper in "Journal of Botany" for November, 1914, seems now to have settled the question. He makes our Scottish forms of var. *acutidens* to be *A. acutidens*, Buser, var. *alpestriformis*, Salmon, and gives localities in 88 as the places where it has been found in Perthshire. W. B.)

Under *Utricularia ochroleuca*, Harm., 88, Perth mid, Lawers at 3200 feet, Ewing. This is going to be the commoner plant by far in Scotland and North England than *intermedia*. In Norfolk, where *intermedia* is plentiful, we cannot find *ochroleuca*.

Page clxii. *Alisma natans*, L., error for *A. Plantago* L. I know of only one record for *A. natans*, L., in Scotland. Evidently a slip.

I have been surprised that *Deschampsia discolor R. & S.* = *D. setacea*, Richter, has not been found in Perthshire on your wet mountains.

Carex helvola, Blytt. I am not certain, but I suspect there has been some error, or mixing with the Ben Lawers plant. The Lochnagar one given by Mr. Linton is a beautiful plant, far more robust than the Lawers; still, the first specimen Mr. Druce sent me from Ben Lawers is certainly Blytt's plant.

In his account of the British Willows—Monograph of the British Willows, E. F. Linton, 1913—Mr. Linton names some specimens that do not seem to be in the Flora.

P. 23. *S. aurita* × *purpurea* = *S. dichroa*, Doll. "Perthshire (Herb. B. White)."

P. 24. "*S. aurita* × *cinerea* × *purpurea*. Scholz in Sch. Fl. Silesia (1899). Riverside near Perth where *S. aurita*, *S. purpurea*, and × *S. sordida*, Kern, grow together."

S. lapponum × *phylicifolia*. Gillot, in "Revue de Botanique," 517, 1890 = *S. Gilloti Camus. Mon.* 365. "Found on rocks two miles north of Ben Lawers, Perthshire," p. 37.

"Herb. White, No. 415, 442, as *S. strepida*," p. 42. Nos. 415 and 442 given as *S. strepida* in "Herb. White," are considered by Mr. Linton to be *S. aurita* × *cinerea* × *Andersoniana* = *S. Waldsterniana*, Forbes, not of Willd., near Perth," p. 42.

Also he considers No. 188 of Herb. White named *S. Wardiana* by Dr. White to be "*S. aurita* × *cinerea* × *phylicifolia*," p. 42.

Other records from Mr. Linton's Monograph are:—*S. aurita* × *Lapponum* = *S. Laestadiana*, Hartm., p. pte. Mid and E. Perth. p. 43.

"*S. aurita* × *Myrsinites* × *Andersoniana*. Glen Lyon Valley, near Fortingal, Perthshire." p. 44.

"*S. caprea* × *Lapponum* = *S. Laestadiana*, Hartm. By Lochy Burn, Glen Shee, E. Perth." p. 50.

It should be noted that Linton uses the name *S. Andersoniana*, Lin., instead of *S. nigricans*, Sm.

S. Andersoniana × *arbuscula*. On Ben Lawers, rocks above Lochan na Larige; low down on Meall nan Tarmachan.

"*S. Andersoniana* × *arbuscula* × *phylicifolia*. Meall Taurnie, Sgiath Chrom and Meall nan Tarmachan—found by P. Ewing." p. 64.

"*S. Andersoniana* × *myrsinites* × *phylicifolia*. Meall Ghaordie, Perth." p. 66.

"*S. phylicifolia* × *repens* = *S. Schradenaina*, Willd. Glen Shee, Perth." p. 71.

"*S. herbacea* × *repens*, *S. cernua*, Linton. Lochy Burn. Glen Shee, Perthshire. E. S. Marshall." p. 84.

"*S. herbacea* × *reticulata*. Meall Ghaordie, Perth." p. 85.

It is difficult to follow out these hybrids in Linton's work; there is not sufficient difference of type to hold up the names, hence it is easy to pass some over.

Perhaps you have seen his work? Well, if so, you can test my notes, etc.

Willows are getting "unwieldy and out of hand"—but what about Mrs. Gregory's Violet Monograph? If all *genera* "go on" in this way, our Floras will be "double thick" soon!

The President intimated that the subject of his Annual Address was "Notes on Roses," and in view of the technical nature of the address proposed that it should be taken as read, and printed in the usual way, while he actually delivered a lecture, illustrated by lantern slides, on "Perth at the End of the Eighteenth Century."

Notes on Roses.

ROSA MOLLIS, Sm.

When Sir J. Smith in 1812 first separated *R. mollis* from *R. villosa*, Lin., he tells us * that the latter, as he then understood it, was the apple rose of our gardens. It is plain that at that period he knew nothing as a wild plant of what we now call *R. pomifera*, Herm., and we can also gather from his description that his acquaintance even with *R. mollis*, Sm., was very limited. In 1824 he had not acquired any further knowledge of *R. pomifera*, Herm., as a wild plant, for he hopes that "some future botanist will ascertain the native country of *R. pomifera*." † In the flora also he substitutes the name of *R. villosa*, Lin., for what he had in 1812 called *R. mollis*, Sm. His reason for doing so is his belief that Linnæus had included in his *R. villosa* both *R. pomifera*, Herm., and *R. mollis*, Sm., and that as Hermann had in 1762 separated his species from the *R. villosa*, Lin., the latter name would remain for what Smith had called *R. mollis*.

I do not know if Smith ever had the opportunity of seeing his *R. mollis* growing in a state of Nature. He does not say so, and from his remarks I think his knowledge of it was derived from specimens sent to him and probably from plants cultivated in the garden. Borrer, from his account of it in Hooker's "British Flora" (2nd ed.), had evidently made acquaintance with it in Scotland and the North of England, and describes it well. He gives no indication, however, of any knowledge of *R. pomifera*, Herm., except as a cultivated plant. It does not appear, therefore, that either Smith or Borrer were in a position to give an opinion of any value as to whether or not *R. pomifera*, Herm., and *R. mollis*, Sm., are really specifically distinct. Baker was thoroughly well acquainted with *R. mollis*, Sm., in a state of Nature, and with *R. pomifera*, Herm., as the apple rose of our gardens, and from dried specimens with many of its so-called varieties as they are found in Switzerland. In some respects his information was defective. He gives it as a native of Scandinavia, Belgium, and the North of Germany. It is not native in Scandinavia or Belgium, but has been found only in the subspontaneous state, just as in

* English Flora, p. 379.
† English Flora, p. 382.

Britain. It is, I think, a doubtful native of North Germany, though Crépin admits it in "Tableau analytique des roses Européennes."

Mr. Baker appears to consider the type *R. pomifera*, Herm., probably as represented by the cultivated form, as a species distinct from *R. mollis*, Sm., but strangely considers what may be called its two chief representative forms, *R. recondita*, Pug., and *R. Greñierii*, Déség., to be indistinguishable from Smith's plant. But *R. recondita*, Pug., is certainly nothing but a more glandular form of *R. pomifera*, Herm., not even a distinct variety. Christ tells us that *R. pomifera*, Herm., *R. Gaudini*, Pug., and *R. recondita*, Pug., considered as three distinct species by Déséglése on account of difference in glandular development, vary completely in this respect, even on the same specimen, and that he has seen undoubted *R. pomifera* with many subfoliar glands. *R. Grenierri*, again, is a form with smaller leaves, not parallel-sided, and with smaller fruit, more mollis like in fact. But Christ informs us* that transitionary forms connect it with the type, from which it cannot be separated except as a variety. It would, appear, therefore, that in Mr. Baker's opinion *R. pomifera*, as represented in Switzerland, cannot be considered as a species distinct from *R. mollis*, Sm. This, as is well known, was also the conclusion which Crépin firmly maintained. The Swiss botanists, headed by Dr. Christ, completely misunderstood Smith's plant, identifying it with *R. omissa*, Déség,† and with one or two small-leaved varieties of *R. pomifera*. Crépin pointed out this error, and succeeded, as far as regards *R. omissa*, in convincing them of their mistake.‡ But since then it would appear that they have been trying to identify *R. mollis* with certain small-leaved and small-fruited variations of *R. pomifera*, Herm., and have still to grasp the fact that *R. mollis*, Sm., is quite as large fruited as *R. pomifera* and its varieties, and that it occurs quite frequently with leaflets which are by no means small. Even Keller, their latest writer on the genus, shows clearly by his description of *R. mollis* and by his remarks upon it, that he has but a hazy notion of what it really is. He speaks of it as standing midway between *R. pomifera microphylla* and *R. omissa*. But in reality, taking into account the whole series of its variations and those of *R. pomifera*, the one is just as far from *R. omissa* as the other.

It is curious that Crépin, although he refused to acknowledge the *Pomiferæ microphyllæ* of the Central Alps as being true *R. mollis*, Sm., yet allowed that certain forms of the Jura were identical with Smith's plant. I have only seen one specimen, in which the leaflets are of medium size, and no doubt if I met with a similar specimen in Scotland I should certainly set it down as a variation of *R. mollis*, Sm. But I should just as certainly say the same of many of the *Pomiferæ microphyllæ*. On the other hand, there are

* Rosen der Schweiz, p. 84.

† Rosen der Schweiz, p. 78.

‡ Bulletin de la Société de botanique de Belgique. Tome xxix., deuxième partie, p. 60.

certain Scottish variations of *R. mollis* which, if occurring in Switzerland, would by Swiss botanists be unhesitatingly recognised as variations of *R. pomifera*, Herm. The truth is that the characters relied on to make separate species of *R. pomifera* and *R. mollis* are so variable that they are hardly sufficient to differentiate varieties, far less species. The large, parallel-sided leaflets of typical *pomifera* run down into forms which may be medium or small, and may be more or less parallel-sided or quite as rounded as those of *R. mollis*. Then with regard to spiny fruit. In *pomifera* this also runs down into a series of forms varying from densely spiny to almost if not quite smooth. On the other hand, in *R. mollis*, Sm., forms occur with fruit nearly as spiny as in typical *pomifera*. Similarly with colour and villosity. Keller says that the sepals of *R. mollis*, Sm., are usually short, whilst those of *pomifera* are long. On the whole, from what I have seen, the sepals of *R. pomifera* do appear longer and slenderer than is usual in *R. mollis*, the latter character being as well marked as the former, but the difference is not so pronounced, and there are so many exceptions that it does not appear safe to take this as a test in the case of individual specimens.

The two so-called species should be re-united under the original name of *R. villosa*, Lin. Whether this can be divided into varieties based on subordinate characters not too variable remains to be seen. As regards our British forms at anyrate, that has not yet been done. Wood's *caerulea* seems to be best characterised by the shape of the fruit, broader than deep, and that may form a tolerably convenient mark to differentiate a certain number of variations. Nearly smooth peduncles and fruit often occur in this variety, but it is very variable in this respect. Mr. Baker says the leaves are greyer than usual, but this is not so in my experience. On the contrary, they are generally of a well-marked glaucous (bluish) colour, justifying Wood's name of *caerulea*. Neither this colour, however, nor the smoothness of peduncles and fruit, is confined to this variety.

What Christ says of Déséglése's species of *R. pomifera*, based on the degree of glandulosity, applies also to our *R. mollis*, and if var. *rubiginosa*, Lej., is to be maintained it should be reserved for forms which are densely glandular on the under surface of the leaflets, and in which also the upper surface is more or less glandular. But under which name are you to rank forms which have the fruit of var. *cærulea* and the glandular development of var. *rubiginosa*, Lej.? By picking out individual plants which differ in size and shape of leaflets, size, shape, and quantity of prickles, degree of hairiness or of glandular development, size and shape of fruit, you could easily make a dozen of varieties or micro-species which would look distinct on paper, but which would break down whenever you tried to determine by their aid any number of specimens either in the field or in the Herbarium. Hundreds of species have been manufactured in this way, and indeed are still being manufactured. Attempting to find most of these in Nature is one of the

barrenest and most depressing tasks to which any one can set himself. To my mind it is one of the chief merits of Baker's monograph that it takes so little notice of the numerous so-called species which had been and were being manufactured by Puget, Déséglése, and others of the same school, and that his species at least and most of his varieties can be found in Nature. The same remark applies to the *Rosen der Schweiz* of Dr. Christ.

Crépin claimed to have discovered a new character by which *R. villosa*. Lin. (*R. pomifera*, Herm., and *R. mollis*, Sm.,), could, at least on the living bush, be distinguished from all forms of *R. tomentosa* (including *R. omissa*), viz., by the form of the middle and upper stipules of the flowering branches, which in the *villosæ* are more dilated and have their points turned inwards so as to be falciform, whereas in the *tomentosæ* the points are shorter, triangular, and with points divergent. Dr. Christ does not mention falciform points in his description of *R. pomifera*, but describes the stipules of *R. omissa* as broad, with divergent points. Keller credits *R. pomifera* with falciform points, but in one variety (*resinosa*) describes them as divergent. Those of *R. mollis* he says are more or less falciform. In looking over the series of about forty specimens of *R. pomifera* and its variations which I have from Switzerland, I find that in a good many, possibly the majority, the stipules, or at least several of them, are much dilated and with falciform points quite well marked in most cases, less so in others. In a number of the remaining specimens it is not possible to judge, but in some at least the falciform character is certainly not there. With regard to *R. mollis*, Sm., I have paid considerable attention to this character both on the living bush and on dried specimens. I find that the stipules are often, perhaps generally, dilated, and that instances of falciform points are not at all rare, seldom more than one or two below the same flower, but neither character seems to be quite so common or so well marked as in many of the large-leaved *pomiferæ*. My conclusion is that the falciform shape of the stipules, though perhaps a good enough distinguishing mark where it occurs, or in dried specimens where it can be seen, is not so generally useful, at least in *R. mollis*, as Crépin seemed to think. Dilation of the stipules is much more common, the points seem generally to be longer and sharper, and this mark is often of use, but it must be used with caution, as there are very many exceptions, and more especially as dilated stipules certainly occur in some of the *tomentosæ*, though their points are never, I believe, falciform, and are certainly often shorter than in *R. mollis* and triangular. But there are instances to be found in *R. mollis*, Sm., where the stipules are little or not at all dilated, and where the points are divergent and short. In no one specimen that I have seen are they uniform in respect of the direction of the points. Crépin's test, therefore, as regards *R. mollis*, Sm., is not always applicable even in living specimens, is often not available in the Herbarium, and must at all times be applied with the greatest caution and after considerable experience.

R. INVOLUTA, Sm.

Some clumps of this hybrid, pointed out to me by Mr and Mrs. Corstorphine, and which occur in Elliot Den, near Arbroath, are worthy of notice. There were four of them, situated at such a distance from each other that no one could have been derived from the other by underground runners. The first, third and fourth were closely allied, without being identical. The second was very different from the others. Number one, situated near the top of a high, somewhat steep bank which bounded the narrow dell in which the burn ran, formed a clump many feet in length and breadth, and about six feet in height. The main prickles, not very long, are subulate from longish bases. These run down into acicles, as is usual in the hybrid. The leaflets vary in shape from almost rotund to broadly oblong, elliptical, or oval, rounded at both ends. They are simply serrate, except that on the lower leaves many teeth have a toothlet or a gland or two, but this seems to vary on different branches. The upper surface is thinly hairy, the under densely so with long hairs, and subfoliar glands, except on the midrib, are hardly to be found. The petioles are densely hairy and glandular. The peduncles, which vary considerably in length, are also densely covered with unequal pricklets, often glandular, and these also closely cover the fruits. The main sepals have usually a pair of two of slender pinnæ, and are densely glandular on the back. Many of the leaves were deeply stained with purple. Number three, situated about a mile further up, and in shade, was similar on the whole. On the old barren stems some of the prickles had a canina form which made me think of *R. hibernica*, but as a whole they were similar to those of No. 1. The leaflets, on the average somewhat smaller, were more inclined to ovate, and with a short, acute point. They were more uniformly simply serrate, and much less hairier on the under side than those of No. 1. The fruit, too, was quite ovoid. In other respects I could see no difference.

No. 4, still further away and in deeper shade, closely resembled No. 3. Its main prickles were longer, some reaching half an inch, and rather more slender, but substantially the two might be said to be as identical as any two bushes could be.

No. 2, situated at some distance from No. 1, at the base of the same high bank, was considerably different from the others. It was of lower stature, with its main prickles long, slender from a narrow base. Its leaflets were much smaller, roundish, or more commonly roundish ovate with a short point; the teeth copiously glandular serrate, the upper surface glabrescent, the under thinly hairy, and with numerous glands. The sepals were perhaps rather better furnished with pinnæ, but the difference was not decided. The peduncles and fruit did not differ from the other three.

All four appear to me to be hybrids of *spinossissima* with a member of *R. tomentosa*, Sm., probably of the *omissa* group, as are the great majority of our Scottish *tomentosæ*. In the serration, the subfoliar glands, the curvature of the prickles, and partly in the

shape and number of the leaflets, the appearance of pinnæ on the sepals, No. 2 shows the influence of the *tomentosa* form, whilst in the shape of the fruit, the prickles running down into acicles, the occasional appearance of nine leaflets, and the sepals with so few and slender pinnæ, it shows approach to *R. spinossissima.* The acicles on peduncles and fruit might come from either. In the other three the points that differ were that the greater size of the bushes, and of the leaves, speaks of *R. tomentosa*, whilst the serration is that of *R. spinossissima.* In all four the great majority of the fruits drop off at an early stage, and those which remain on and swell contain but few achenes. Judging of the direction and permanence of the sepals and even the ultimate shape of the fruit from abortive or from any but the best fully-grown fruits, if such can be found, which is not always the case, will very often cause serious mistakes.

R. GLAUCA VILL. AND *R. CORIIFOLIA*, Fr.

The Subcristatæ of Baker's Monograph, the second series of forms considered by him as varieties of *R. canina*, Lin., are now considered as being sufficiently distinct from the first series to form two separate species or sub-species, viz., *R. glauca Vill.* and *R. coriifolia*, Fr. His first series also is usually divided into two parallel sub-species, *R. canina*, Lin., and *R. dumetorum*, Thuill. *R. canina*, Lin., and *R. glauca Vill.*, are distinguished from the other two by having the leaflets glabrous, whereas in the other two they are more or less hairy. Much could be said in favour of Baker's point of view, but the other is certainly more convenient for classication. Dr. Christ considered *R. glauca* and *R. coriifolia* as mountain or boreal forms derived from the other two, which are forms of the plain and of more southerly distribution. This opinion is now generally accepted.

R. glauca Vill. is very wide spread and abundant in Scotland, and embraces a very great number of variations. These have been divided into six groups according as the leaves are simply or doubly serrate, without or with subfoliar glands and with smooth or hispid peduncles. The first, which has the leaves simply serrate, the peduncles smooth, and the leaves without subfoliar glands, formed the type of Villars. It is not nearly so common with us as the third group, which differs in having the teeth double, Baker's var. *subcristata.* The forms with hispid peduncles are not common, and those with subfoliar glands are rare, and the glands are seldom numerous. In all the forms the sepals, which in the best characterised plants become sub-erect and crown the ripe fruit, vary a good deal in this respect. In many they rise very little above the disk and hardly crown the ripe fruit, falling just as it ripens. The same thing is true of the sepals of *R. coriifolia.*

In this latter also the type, with simple serration, no subfoliar glands and smooth peduncles, is less common than the third group, which differs in having the teeth double or composite, Baker's var.

Watsoni. The opposite seems to be the case in Switzerland, where according to Christ such forms are rare, and an examination of the localities in Keller's Monograph confirms this. The 2nd and 4th groups, differing respectively from the 1st and 2nd by having the peduncles hispid, though not to be called common, are not so rare as the corresponding groups of *R. glauca*. The 3rd and 4th groups, *Watsoni*, Baker, and *caesia*, Sm., pass gradually into the 5th and 6th, *Lintoni*, Scheutz, and *Bakeri*, Dés., that is to say, the subfoliar glands are often so few, except on the midrib, that they are very difficult to detect, and seem hardly worth considering. But such forms pass gradually into forms with more numerous glands until you find them very dense indeed. Similarly with the peduncles. In some you find by careful examination one or two peduncles with a few glands, the others quite smooth. Such forms pass gradually into others in which you find the peduncles more or less densely hispid. Both *Lintoni*, Scheutz, and *Bakeri*, Déség. of the Monograph, considered as aggregates, are very widespread and abundant in Scotland. The fruit varies in shape from globular to globular ovoid, and broadly oblong; and from globular, somewhat narrowed below, to turbinate and long pyriform. It is by no means uniform in this respect, and you can often find several shapes on one bush. These two groups are very rare in Switzerland, but occur more plentifully in the Tyrol, where they pass into still more glandular forms, which have been made into a separate species, *Rhaetica*, *Gremli* (*R. caryophyllacea*, *Christ pro parte*). In Scandinavia also, *R. coriifolia* with subfoliar glands is very rare indeed.

R. glauca and *R. coriifolia* are very closely allied, and indeed these are forms in which the hairs are so few that the distinction seems almost to break down. This, once at least, led me into a notable mistake. I gathered specimens from a bush just above the Buckie Braes, and sent them to the Watson Bot. Exchange Club for distribution under the name of *R. Bakeri*, Déség., and the number 15. But I was afterwards considerably surprised to see in Major Wolley-Dod's List of British Roses the following remark :— "One of these (specimens), No. 15, which I passed in Wats. Exch. Club. Rept., 1908, has glabrous leaflets, and therefore is a *glauca*, and not a *coriifolia* form."

This I could not understand, as it seemed strange that both Major Wolley-Dod and myself could have made such a mistake. The specimen I had kept was only a scrap, and close examination showed that it was nearly glabrous, though there were some hairs at the insertion of the leaflets, and one or two leaflets had scattered hairs on the midribs and veins. I knew the bush, however, and at a convenient time a close examination *in situ* gave me the key to the puzzle. There were two different bushes so entangled and so similar in appearance that it was with considerable difficulty that I brought myself to believe that all the branches did not proceed from the same root. On one set the leaves were almost glabrous, but not quite. On the petioles and at the insertion of the leaflets were in many if not all cases scattered hairs, sometimes only one

or two indeed, and a good many leaflets had scattered hairs on the midribs and veins. On the other set the petioles were generally much hairier, and the midribs and all the veins were more or less hairy. The first set might well be considered to belong to *R. glauca*, and the other to *R. coriifolia*. I afterwards collected specimens on 4th October after the sepals had fallen and the fruits were more than fully ripe. The difference between them could still be traced, but was much less marked, and indeed specimens might be taken from the *coriifolia*, which by removing a few of the leaves could hardly be distinguished from those of the other set. Most certainly the two plants were closely allied. I have gathered other plants with subfoliar glands, on which the hairs were so few, little more than traces, that they might well be considered as belonging to *R. glauca Vill.* Of course in my parcel to the Exchange Club I must have sent specimens from both, which explains why the Major passed them on one occasion and not on the other.

On a specimen similar to this *coriifolia* bush, but with more subfoliar glands, Crépin wrote, determining it as a form of *R. glauca* :—" In this form the petioles are somewhat pubescent all round, but they become glabrous with age. The midrib is likewise somewhat pubescent, but it also becomes glabrous with age. This thin pubescence shows the tendency of the form to approach *R. coriifolia.*" I have gathered specimens from the same bush and from similar ones at all stages, even in very late fruit, but have never been able to satisfy myself that the leaflets generally become really glabrous. Many of them do, but others show still a good many hairs, not always confined to the midribs. Fewer traces of hairs are left on the petioles, but on the whole I prefer to class such plants with *R. coriifolia*, Fr., as one would certainly do who saw them in the earlier stages. In the other, *glauca*, form mentioned above, the hairs are always very few, and generally the leaflets become quite glabrous except traces at their insertion on the petiole.

19th March, 1915.

W. Barclay, President, in the Chair.

A Special Meeting of the Society was held on this date, and a lecture entitled " Glaciers and their Work," was delivered by Miss Marion I. Newbigin, D.Sc.

8th April, 1915.

W. Barclay, President, in the Chair.

Mr. H. Coates read the following Note :—

"On the First Occurrence of Tengmalm's Owl (*Nyctalæ tengmalmi*, Gmelin) in Perthshire."

In February of this year a specimen of this very rare and interesting little visitant was taken in the Craighall Woods, near Blairgowrie, by Mr. John Leighton, gamekeeper, and has been presented to our Museum through the interest of Mr. R. Crockart, Blairgowrie. It is a male, in adult plumage. This is the first time Tengmalm's Owl has been seen in Perthshire, and there are only five authentic previous records for Scotland, namely, December, 1860, Cramond Island, R. Gray; 3rd February, 1886, near Peterhead, G. Sim; November, 1901, Shetland, Royal Scottish Museum; 4th January, 1908, Shetland, Erik Hamilton; and 23rd January, 1912, north end of Unst, Shetland, Miss Rintoul.

Tengmalm's Owl is a Northern species, inhabiting Scandinavia, Lapland, Finland, and the North of Russia. It is also found in the northern regions of America. It migrates south in the beginning of winter, returning to its breeding haunts in the far North in early spring. The present specimen was probably on its return journey when it wandered to our shores. It lives in the pine forests, which extend to the northern limits of arboreal vegetation.

The following paper was read :—

"Pollen," by George F. Bates, B.A., B.Sc. (See *Transactions*, Vol. VI., Part II., page 62.)

SUMMER SESSION, 1915.

The following excursions were arranged :—

1. Monday, 24th May (Victoria Day)—Dupplin Loch and Castle.
2. Saturday, 5th June—Craigrossie.
3. Saturday, 19th June—Taymount.
4. Saturday, 3rd July—Falls of Fender and Loch Moraig.
5. Saturday, 17th July—Left Bank of Tay from Cambusmichael to Scone Policies.
6. Saturday, 7th August—Upper Reaches of River Farg and Kirkcaldy Burgh Water Supply.
7. Monday, 23rd August—Buchanty.
8. September—Fungus Excursion.

PHOTOGRAPHIC SECTION.

The following Syllabus was arranged :—

25th November, 1914—Salon Slides.

16th December, 1914—"Holland." (Illustrated with Lantern Slides.) A. W. Brown.

20th January, 1915—"A Trip to Canada." (Illustrated with Lantern Slides.) Thomas Harley.

17th February, 1915—"Lumière's Colour Photography." (Illustrated with Lantern Slides.) W. Ellison.

17th March, 1915—"Microscopic Photography." (Illustrated with Lantern Slides.) G. F. Bates, B.A., B.Sc.

Owing to a misunderstanding the Salon slides did not arrive in time for the meeting. The other items on the Syllabus were duly carried through. The attendance at the meetings was very satisfactory, and much interest was shown. It should be noted that the meetings of the Photographic Section are open to all members of the Society, and even those who are not photographers will generally find the meetings of interest.

LIST OF DONATIONS TO THE LIBRARY.

Session 1914-15.

I.—Publications acquired by Exchange with other Societies.

American Museum of Natural History. Bulletin, Vol. xxxii.
Memoirs, Vol. i., Part 5.
45th Annual Report.
Antiquaries of Scotland, Society of. Proceedings, Vols. xlvii., xlviii.
Arboricultural Society, Royal Scottish. Transactions, Vol. xxviii., Part 2; Vol. xxix., Part 1.
Ashmolean Natural History Society of Oxfordshire. Proceedings and Report for 1913.
Australian Museum, Sydney. Records, Vol. x., Nos. 8, 9, 10.
Memoir iv., Scientific Results of the Expedition of H.M.C.S. *Thetis*.
Belfast Naturalists' Field Club. Annual Report and Proceedings, Vol. vii., Part 1.
Botanical Society of Edinburgh. Transactions and Proceedings, Vol. xxvi., Part 3.
British Association. Report of Birmingham Meeting, 1913.
Buchan Club. Transactions, Vol. x., Parts 3, 3A, 4.
Buteshire Natural History Society. Transactions, Vols. vi., vii.
Carnegie Museum, Pittsburg, U.S. 17th Annual Report, 1914.
Founder's Day, 1914.
Dove Marine Laboratory, Cullercoats, Northumberland. Report for 1914.
Dumfriesshire and Galloway Natural History and Antiquarian Society. Transactions and Proceedings, 3rd Series, Vol. ii.
Edinburgh, Royal Society of. Transactions, Vol. xlix., Parts 3, 4; Vol. l., Part 1.
Proceedings, Vol. xxxiii., Part 4; Vol. xxxiv., Parts 1, 2.
Essex Field Club. The Essex Naturalist, Vol. xvii., Parts 10-12.
Geological Society. Quarterly Journal, Vol. lxx., Part 1. Nos. 277, 278.
Geological Literature, 1912.
Glasgow, Natural History Society of. The Glasgow Naturalist, Vol. vi., Nos. 3, 4.
Kilmarnock Glenfield Ramblers' Society. Annals, No. 7.
Lloyd Library, Cincinnati, U.S. Bibliographical Contributions, Vol. ii., Nos. 1-3.
Marine Biological Association of the West of Scotland. Annual Report, 1913.
Meteorological Society, Scottish. Journal, Vol. xvi., 3rd Series, No. xxxi.
New York Zoological Society. Zoologica, Vol. i., Nos. 12-18.
Northants Natural History Society and Field Club. Journal, Vol. xvii.
Northumberland, Durham and Newcastle-upon-Tyne Natural History Society. Report.
Philadelphia Academy of Natural Science. Proceedings, Vol. lxv., Part 3; Vol. lxvi., Part 2.
Royal Physical Society. Proceedings, Vol. xix., No. 5.
Sandeman Public Library, Perth. Catalogue of Lending Library, 1914.
Smithsonian Institution, Washington. Report of the United States National Museum, 1913.
South London Entomological and Natural History Society. Proceedings, 1913-14.
Stirling Natural History and Archæological Society. Transactions, 1913-14.
Torquay Natural History Society. Journal, Vol. i., No. 6.
Vale of Derwent Naturalists' Field Club. Transactions, Vol. i., Part 2.
Western Australian Museum and Art Gallery, Perth, West Australia. Record, Vol. i., Part 3.

Yorkshire Philosophical Society. Annual Report, 1913.
The following Societies have not yet sent their Publications for 1913-14 :—
Dunfermline Naturalists' Society.
Hull Scientific and Field Naturalists' Club.
Nottingham Naturalists' Society.
Royal Scottish Geographical Society.

II.—Gifts from Institutions.

Agriculture and Fisheries, Board of. Leaflets, Nos. 285, 288, 290.
Special Leaflets, Nos. 9, 10, 13, 19, 20, 22, 23.
Botanic Gardens, Edinburgh, Royal. Notes, No. xxxvii.
British Museum. Catalogue of Ungulate Mammals, Vol. ii.
Revision of the Ichneumonidæ, Part 3.
Catalogue of Lepidoptera Phalænæ, Vol. xiii.
Monograph of the Genus Sabicea.
Catalogue of the Cretaceous Flora, Part 1.
British Mycological Society. Transactions, Vol. iv., Part 2.
Brooklyn Institute of Arts and Sciences. Report for the year 1913.
Children's Museum News, Vol. ii., No. 5.
Canada, Department of Mines, Geological Survey.
Memoirs, Nos. 19, 20E, 22, 23, 29E, 32, 39, 40, 41, 43, 44, 47, 52, 54.
Museum Bulletins, Nos. 2, 3, 4, 5, 7, 8.
Prospector's Handbook, No. 1.
Guide Books, Nos. 1, 2, 4, 8, 9, 10.
Summary Reports of the Geological Survey of Canada for 1912 and 1913.
Field Museum of Natural History, Cincinnati, U.S. Publications, Nos. 172, 173.
Fishery Board for Scotland. Scientific Investigations, 1913, Nos. 1, 2.
Scientific Investigations, 1914, Nos. 1, 2.
Salmon Fisheries, 1913, Nos. 1, 2, 3.
Salmon Fisheries, 1914, Nos. 1, 2.
32nd Annual Report.
Louisiana State Museum, New Orleans, U.S. 4th Biennial Report.
Missouri Botanical Garden, St. Louis, Mo., U.S. Annals, Vol. i., Nos. 1-4; Vol. ii., Nos. 1, 2.
Michigan Academy of Science. 15th Annual Report, 1913.
Mexico, Parergones del Instituto Geologico de. Tome iv., Nos. 2, 10.
National Museum of Wales. Seventh Annual Report, 1914.
New South Wales, Royal Zoological Society of. The Australian Zoologist, Vol. i., Part 1.
Ohio, U.S., Geological Survey of. Bulletin No. 16, Peat Deposits of Ohio.
Queensland Naturalist, Vol. I., No. 12.
United States, Department of the Interior, Geological Survey.
Bulletins Nos. 531, 536, 538, 539, 540, 542, 543, 545, 546, 547, 549, 551, 552, 553, 554, 555, 556, 557, 558, 564, 571, 575, 577, 578, 580 A B C D E F G H I K, 581 A C, 583, 584, 585, 599.
Professional Papers, Nos. 76, 85B, 85C, 85D, 85E, 86, 90 A B C D E.
Mineral Resources, 1912. 2 Vols. Part 1, Metals; Part 2, Non-metals.
Do 1913. Part 1, Nos. 1-11, 14, 16; Part 2, Nos. 1-28.
Water-Supply Papers, Nos. 295, 302, 303, 309, 319, 320, 321, 322, 323, 324, 325, 333, 334, 336, 337, 340B, 346, 363.
34th Annual Report.

III.—Gifts from Persons.

Coates, H., The Journal of Conchology, 1914; Symon's Meteorological Magazine, 1914; British Rainfall, 1914; The Collector's Manual of British Land and Freshwater Shells, by Lionel E. Adams, 1896; A Popular History of British Lichens, by Dr. Lauder Lindsay, 1851; The Story of our Museum, by Rev. H. Housman, 1881.

Ellison, S. T., The Entomologist, 1914; Photography, 1914.
Kidston, R., LL.D., F.R.S., Fifty-two Works relating to Geology, Zoology, Botany, Photography and Microscopy.
Murray, Hon. Gladys Graham, Nature, 1914; A Birdlover's Year, by the Donor, 1915.
Salmon, C. E., Alchemilla acutidens, Buser; Reprinted from the Journal of Botany, by the Donor, 1915.
Webb, W. L., Biography of T. J. J. See, by the Donor, 1914.

RESULT OF CHILDREN'S ESSAY COMPETITION, 1914.

Subject :—"Perthshire Amphibians and Reptiles."

First Division, 14 years and upwards (17 Essays).

1. Emily Jane Humphreys.
2. Hugh M'Diarmid.
3. Maggie G. Grey.
4. Mary Mackay.
5. John Rattray.

Certificates—Robina Johnston.
Robert Peebles.
Robert M'Farlane.
May M'Intosh Wilson.
Fred. M'Kechnie.

Second Division, 13 years (17 Essays).

1. Alex. C. Cameron.
2. Gordon M'Coll.
3. William Dickie.
4. Christina Taylor M'Master.
   Alex. Cooper.
   Alex. Robertson.

Certificates—William Young.
Mary Lindsay.
Maggie C. R. Anderson.
Alex. Harrower.

Third Division, 12 years (9 Essays).

1. Annie Keir Robertson.
2. Mary Nettleship.
   William Mackay.

Certificates—Emma Anderson.
Cathie Ross.
Annie Ross.

Fourth Division, 11 years and under (9 Essays).

1. James Mulholland.
2. May M'Gregor.
   Robert Elliot.

Certificates—William Robertson.
Margaret M'Kenzie.
William Forbes.

The Prizes were presented on Saturday, 13th March, 1915, by Ex-Dean of Guild Wotherspoon.

ADDITIONS TO ROLL OF MEMBERSHIP.

Session 1914-15.

CORRESPONDING MEMBER.

Kennedy, James, 19 Polwarth Gardens, Hyndland, Glasgow ... 10th Dec., 1915

ASSOCIATE.

Rodger, Mrs. A. M., Laurel Bank, Pitcullen ..... 11th Mar., 1915

ORDINARY MEMBERS.

Asher, Wm., Sanitary Inspector, Perth ..... 11th Feb., 1915
Currie, John, M.A., Sharp's Institution ..... 10th Dec., 1914
Dixon, A. Gregor, Easter Moncrieff, Bridge of Earn ..... 10th Dec., 1914
Donald, James A., Highdrumbrig Cottage, Dupplin ..... 1st June, 1915
Fenton, James, 26 High Street ..... 14th Jan., 1915
Ferguson, Robt. W., Mafeking Villa, Jeanfield ..... 11th Mar., 1915
Folkharde, Miss H., Whitelaw, Cherrybank ..... 8th April, 1915
Gorrie, David, 43 King Street ..... 14th Jan., 1915
Grant, Sinclair, M.A., Perth Academy ..... 10th Dec., 1914
Gray, Melville, Bowerswell ..... 10th Dec., 1914
Harley, Thomas, 29 High Street ..... 11th Mar., 1915
Ingilby, Mrs. John, Boatlands ..... 21st May, 1915
Leslie, James, Strone, Brompton Terrace ..... 10th Dec., 1914
Monteith, Mrs. Basil, Boatlands ..... 21st May, 1915
Mitchell, Hugh, Solicitor, Pitlochry ..... 8th June, 1915
Munro, Wm., 21 York Place ..... 14th Jan., 1915
Macaulay, R. F., 2 Barossa Place ..... 10th Dec., 1914
MacLean, Miss M. G., Ideal Studios, Scott Street ..... 10th Dec., 1914
M'Leod, John, Caledonian Road School ..... 11th Mar., 1915
M'Queen, Thomas, Albany Place, Friar Street ..... 11th Mar., 1915
Robertson, John, 9 Abbot Street, Craigie ..... 23rd May, 1915
Simpson, J. J., Estate Offices, Dupplin ..... 14th Jan., 1915
Smith, James, Clunie Villa, Isla Road ..... 20th June, 1915
Smith, Mrs. James, do. ..... 20th June, 1915
Thom, A., Auburn Cottage, Feus Road ..... 11th Mar., 1915
Thomson, A. Gibbons, Rosemount, Tullylumb Terrace ..... 10th Dec., 1914
Tomlinson, Miss, Boatlands ..... 12th June, 1915
Valentine, George P., Glendalough, Needless Road ..... 10th Dec., 1914
Waldron, Major P. J., East Haugh, Pitlochry ..... 7th July, 1915
Wilson, Andrew R., 20 Newrow ..... 8th April, 1915
Wilson, Duncan K., M.A., B.Sc., Perth Academy ..... 10th Dec., 1914
Wotherspoon, A. W., 25 St. John Street ..... 11th Mar., 1915

ASSOCIATE MEMBER.

Bissett, John, Hillyland Crescent ..... 8th April, 1915

ABSTRACT OF ACCOUNTS for the Year ending 18th February, 1915.

INCOME.

Balance at close of last Account	£35	3	6
Subscriptions	77	11	0
Interest on Bank Account	0	15	10
Miscellaneous Receipts	2	15	10
From Funds of East of Scotland Union	6	17	8
	£123	3	10

EXPENDITURE.

Heating, Lighting and Use of Rooms			£20	0 0
Fire Insurance			0	16 3
Printing, Stationery, etc.			52	9 3
Books, Magazines, etc.			15	18 7
Janitor			5	4 0
Subscriptions to other Societies			1	1 0
Postages and Petty Outlays			13	17 6
			109	6 7
Balance in Bank	£7	19 2		
Balance in Treasurer's Hands	5	18 1		
			13	17 3
			£123	3 10

PERTH, 11th March, 1915.—Examined, compared with Vouchers, and found correct.

(Signed) J. MORISON,
(,,) GEORGE F. BATES, } *Auditors.*

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1914.

MONTH.	BARO-MET'R	AIR TEMPERATURE.									HYGRO-METER.			RAIN.					SUNSHINE.		WIND DIRECTION.									REMARKS.
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Mean of		Mean of A and B.	Difference from Average.	Absolute Maximum. and Minimum.				Ground Frost, 30° and under.	Mean at 9 a.m. and 9 p.m.			Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.		Total Amount.	Daily Average.	Number of Observations at 9 a.m. and 9 p.m.								Calm or Variable.	
		Maximum. (A).	Minimum (B).			Maximum.	Day of Month.	Minimum.	Day of Month.		Dry Bulb.	Wet Bulb.	Humidity.					In.	Date.			N	N E	E	S E	S	S W	W	N W		
	Inches.	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches.			Hours.	Hrs.									
JAN.	30·010	43·0	33·7	38·4	+1·1	55	25	19	1	13	37·4	35·5	84	14	..	2·07	−0·12	·48	8	22·5	·73	4	7	12	3	4	21	4	6	1	Snow on 1st and 6th; S. Gale on 24th.
FEB.	29·423	48·4	37·1	42·8	+4·6	55	2, 3	25	19,25	9	41·5	39·3	83	21	+8	3·62	+1·04	·56	22	43·6	1·56	3	6	9	3	10	15	5	3	2	
MAR.	29·462	48·1	33·9	41·0	+1·2	58	30,31	20	9	13	38·5	36·2	82	23	+9	3·89	+1·55	·81	20	116·9	3·77	6	5	7	3	3	11	12	13	2	
APR.	29·938	59·9	37·2	48·6	+3·4	75	21	29	15	6	46·5	43·6	80	10	−1·5	0·80	−1·32	·25	9	213·8	7·13	1	2	4	6	2	19	20	3	3	Lunar halo on 5th.
MAY	30·016	59·3	41·7	50·5	+0·9	72	17	31	10	4	49·5	46·2	77	15	+2	1·56	−0·64	·36	7	157·8	5·09	2	10	8	3	3	16	13	3	4	Grampians covered with Snow on 1st.
JUNE	30·031	68·8	47·0	57·9	+2·0	83	17	35	7	..	57·1	53·0	75	9	−1·5	0·37	−1·74	·12	20	214·9	7·16	2	7	12	5	4	19	9	1	1	Tay very low on 17th; Brilliant Sunset on 30th.
JULY	29·810	68·7	50·9	59·8	+1·2	83	21	40	29	..	58·4	55·5	82	11	−3·5	2·83	−0·19	·86	1	136·8	4·41	1	3	21	7	2	9	13	4	2	Almost no Rain during later half.
AUG.	29·931	67 0	48·9	58·0	+0·4	81	14	43	13,17	..	56·8	54·5	85	17	+1	2·05	−1 26	·73	2	148·4	4·79	1	3	18	3	11	20	2	..	4	Eclipse of Sun visible.
SEP.	29·971	61·8	45 6	53·7	+0·4	74	2	28	22	3	52·4	50 0	84	8	−5 5	0·63	−2·20	·22	17	131·2	4·37	2	4	11	2	5	11	19	1	5	Long spell of bright Weather.
OCT.	30·003	56·8	41·2	49·0	+2·6	66	9	30	15,19	5	47·3	45·7	89	14	−1·5	2·38	−0·72	·45	31	91·8	2·96	1	13	9	10	2	4	8	4	11	
NOV.	29·742	47·8	36·3	42·1	+1·2	58	8, 9	22	17,18	12	41·5	40·0	88	21	+6	4·12	+1·22	·87	2	47·1	1 57	5	13	4	4	1	16	7	8	2	Southerly Gale and Flooding, 2nd; Easterly Gales, 11th, 12th, 13th; Rain storm, 13th.
DEC.	29·404	42·1	30·4	36·3	−1·6	52	2	16	25	20	36·0	34·5	87	19	+1	7·38	+4·22	1·59	13	27·0	·87	6	3	8	3	0	16	11	15	..	
YEAR	**29·812**	**56·0**	**40·3**	**48·2**	**+1·7**	..	..	..	..	**85**	..	..	**83**	**182**	**+12·5**	**31·70**	**+1·34**	..		**1351·8**	**3·70**	**34**	**76**	**123**	**52**	**47**	**177**	**123**	**61**	**37**	
Highest	**30·703**	12 i.						**16**	25 xii.	**20**				23	Mar.	**7·38**	Dec.	**1·59** 13 xii.		214·9 June.	7·16 June						**177**				
Lowest	**28·493**	22 ii.				**83**	17 vi. 21 vii.							8	Sept.	**0·37**	June			22·5 Jan.	·73 Jan.	**34**									

Averages are for the period 1883-1912—30 years.

Height of Station above Sea Level = 85 feet.

Position—56° 23′ N. Lat., 3° 25′ W. Long

HENRY COATES, F.R.S.E., Curator, Museum, Perth.

BAROMETER.

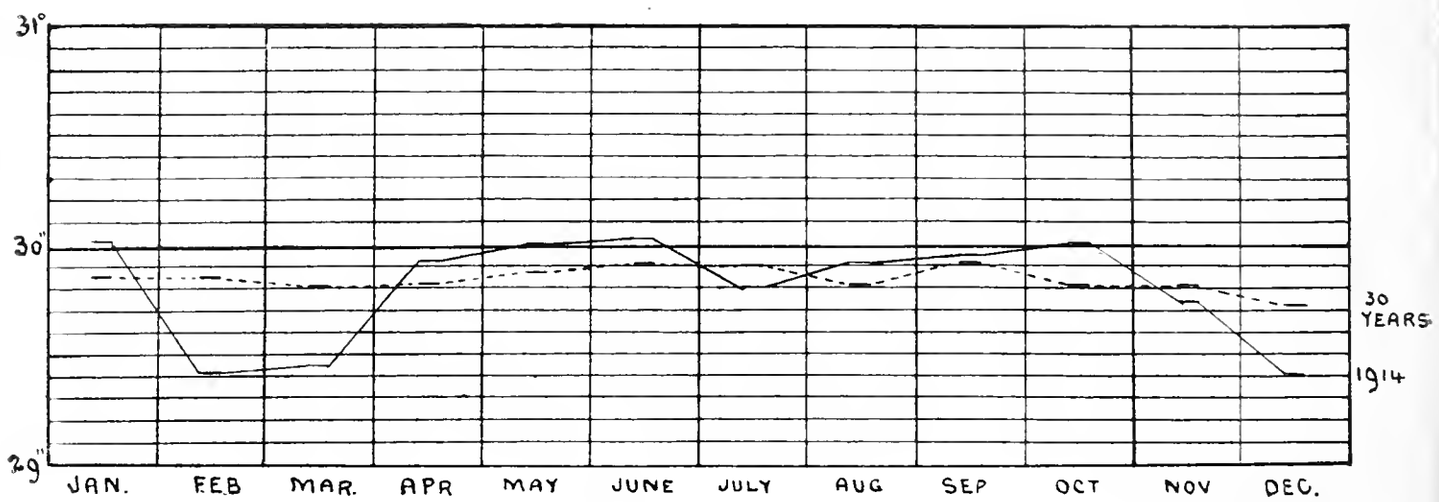


Plate XI.

Mean Monthly Reading at Perth, 1914———

Average of Monthly Readings, 1883-1912.....

RAINFALL.

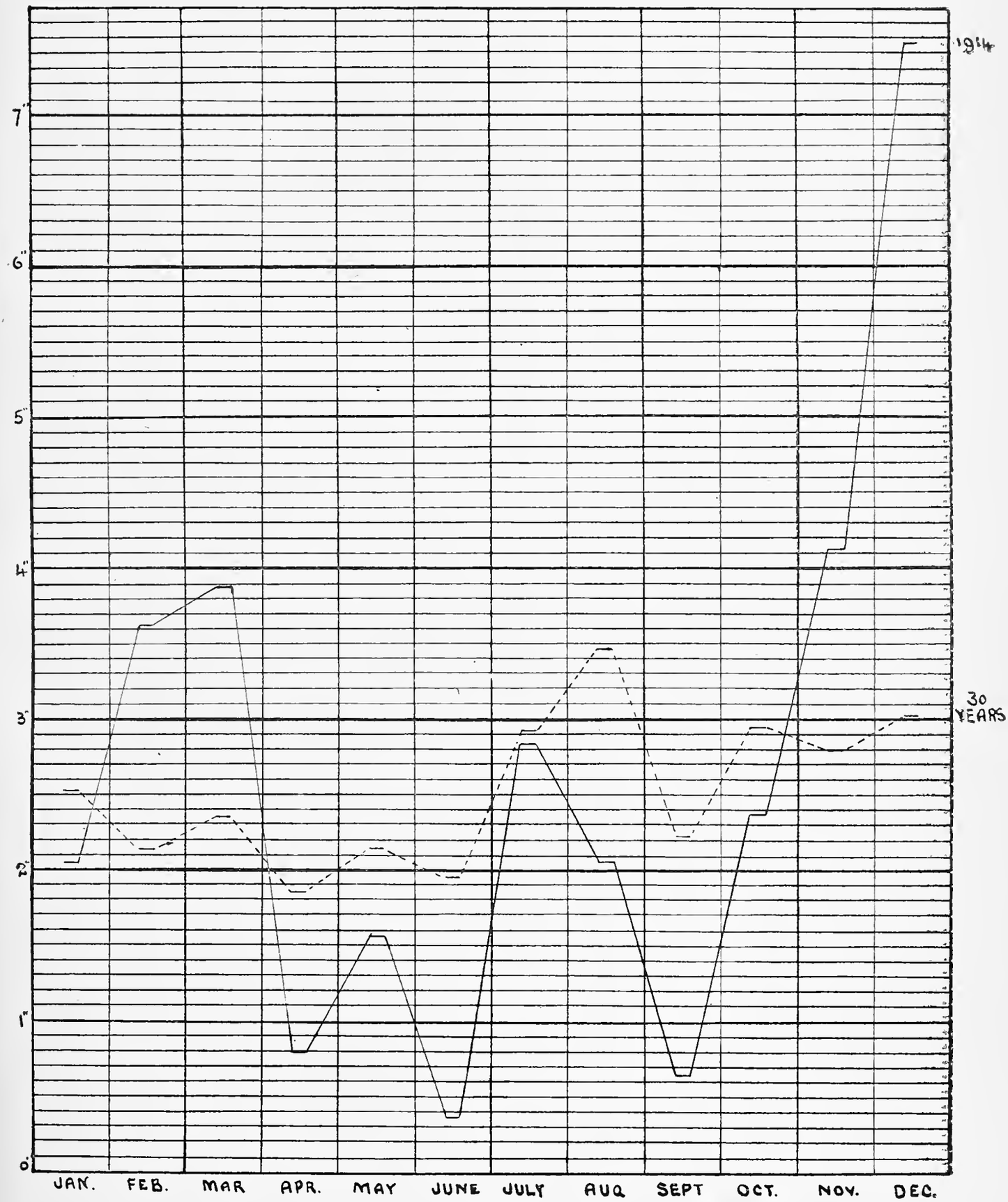


Plate XII.

Monthly Rainfall at Perth, 1914———

Average ,, ,, 1883-1912.....

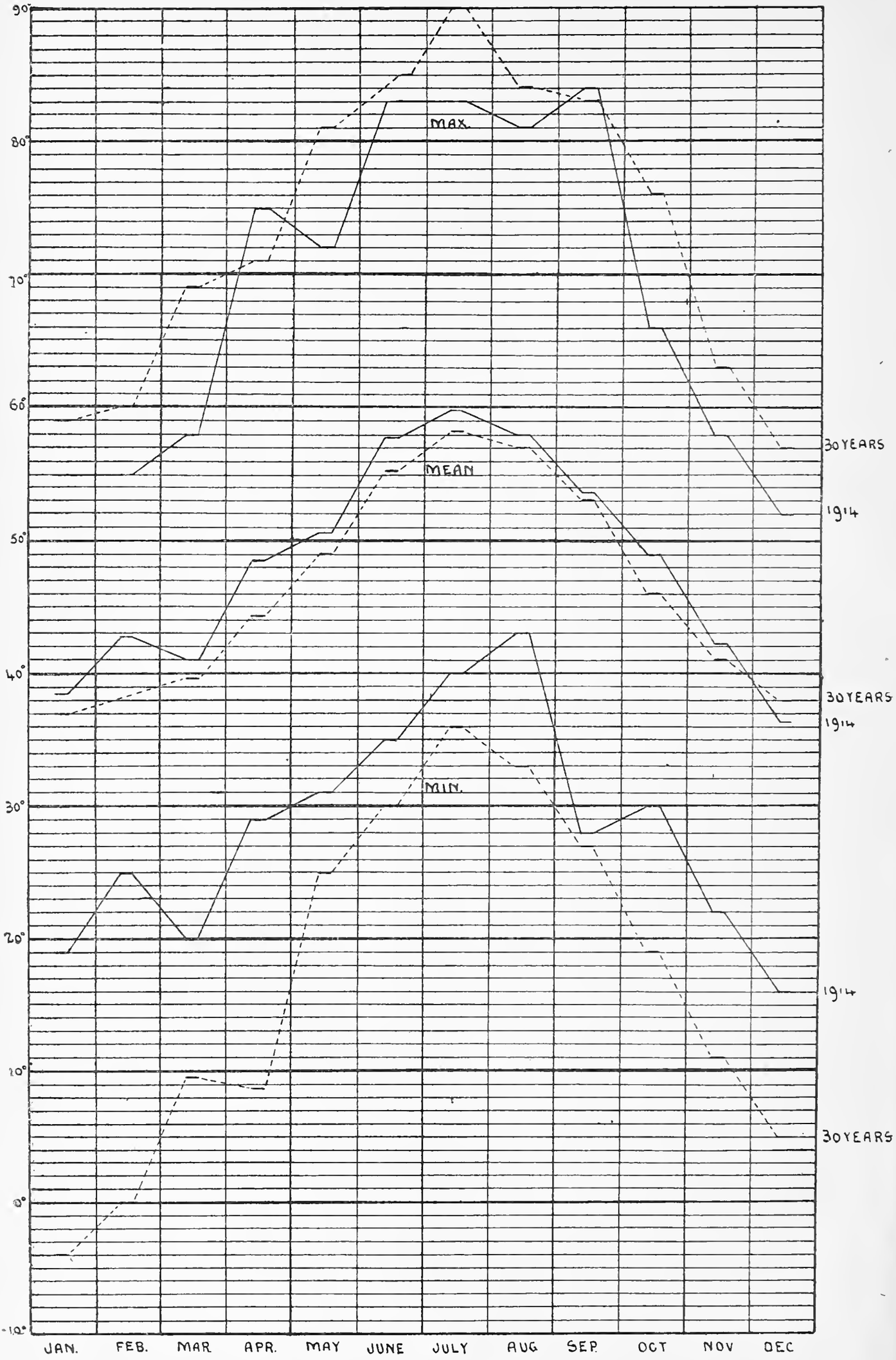


Plate XIII.

Maximum, Minimum, and Mean Monthly Temperature at Perth, 1914———
Maximum, Minimum, and Average Mean Monthly Temperature at Perth, 1883-1912.....

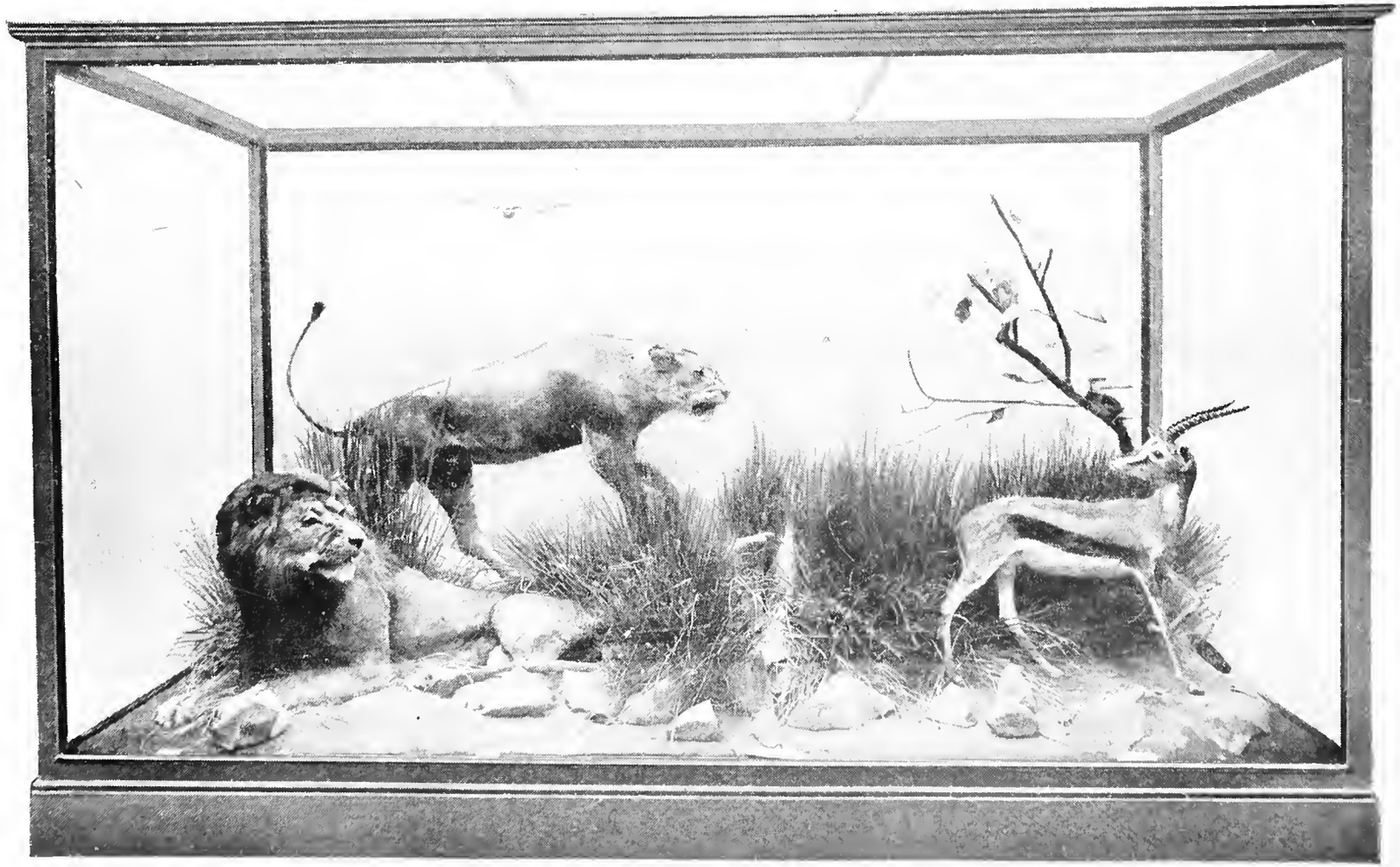


Plate XIV.—East African Regional Case in the Index Museum.

Presented by Major H. S. Pullar.

WINTER SESSION, 1915-1916.

11th November, 1915.

W. Barclay, President, in the Chair.

Mr. H. Coates read the following notes :—

"On Freshwater Mollusca taken at the Dupplin Excursion."

The following species of Mollusca were taken in the Loch. The Swan Mussel, *Anodonta cygnæa*, L. This mussel is common in England, but very local in Scotland, especially so far north. It was first observed in the River Earn by the late W. Herd, in 1869, by Dr. Buchanan White, in Scone Curling Pond, in 1870, and in Dupplin Loch, by Rev. F. Smith, in 1873. The oblong freshwater limpet, *Acroloxus lacustris*, L., is another very local species. It was taken in the same locality by Dr. White, in 1870. It clings to the stems of water reeds. Four species of Whorl Shells were got—*Planorbis albus*, Müll., *P. crista*, L., *P. contortus*, L., and *P. fontanus* (Lightfoot). Of these, *P. crista* and *P. fontanus* are decidedly rare and local. The first of these has a beautiful crested shell. The last species got was the minute bivalve, *Pisidium nitidum*, Jenyns, which is also a local species.

"On the Occurrence of a Pearl in *Littorina litorea*, Linné."

In July, 1915, Mr. Alex. C. Smith of Claremont, Kinnoull, was staying at Westhaven, Carnoustie, where he collected some specimens of the Common Periwinkle, *Littorina litorea*, L. On examining these, he found under the mantle of one of them what appears to be a genuine pearl. It is 2 mm. in diameter, of a pale horn colour, almost spherical, and slightly translucent. It is somewhat similar to the small brown "Seed Pearls" frequently found in the Tay Pearl Mussel, *Unio margaritifer*, L. So far as I have been able to ascertain, this is only the second time that a pearl has been found in this species, or, indeed, in any British marine univalve. The only other instance is recorded in Jeffrey's British Conchology, Vol. III., p. 373.

"On the Wood Wasp, *Sirex gigas*, L."

The specimen of this insect, and of the wood bored by it, now exhibited, were found by some workmen engaged on a contract near Crieff, under Mr. H. J. Bell, C.E., and were presented to the Museum by the latter on 23rd August, 1915. The insect is a female, and measures 2 inches from tip to tip of wing and $1\frac{3}{4}$ inch from the front of the head to the extremity of the ovipositor.

Only two species of Wood-Wasp are known to occur in Britain, *S. gigas* and *S. juvencus*. Neither of them is common, but the latter is decidedly the rarer of the two. They are more frequently observed than formerly, however, being brought to this country in considerable numbers in timber imported from Norway and Sweden. They are not really wasps, but belong to a different sub-order, the Sessiliventres, which have neither the slender waist nor the sting of the true wasps. They are vegetable feeders.

The female is provided with a formidable-looking ovipositor, which is frequently mistaken for a sting. This, combined with the large size and wasp-like appearance of the insect, makes it generally dreaded, although in reality it is perfectly harmless, except as regards the damage it does to timber. With this ovipositor it lays its eggs in holes which it has bored in timber, generally the felled or dying trunks of pine trees. When the larvæ are hatched out, they bore their way through the wood in all directions, making a complicated system of tunnels, and only come to the surface of the log when they are ready to emerge as perfect insects. In this way a large amount of valuable timber may be destroyed without much apparent damage on the surface.

Mr. Coates, as Delegate of the Society to the Corresponding Societies' Committee of the British Association, submitted the following Report :—

The Conference was held under the Presidency of Sir T. H. Holland, K.C.I.E., F.R.S., who appeared at the meetings in khaki, having got leave of absence from his military duties for the occasions.

Two meetings were held, on Wednesday and Friday, 8th and 10th September, respectively. The first meeting was occupied with the President's Address, the subject of which was "The Classification of Scientific Societies." He dwelt on the necessity of more complete organisation of Scientific Societies, especially as regards their publications. In order to avoid the necessity which students are at present under of searching through the publications of a large number of scattered Societies, he suggested that all papers containing the results of original research should be published by the Royal Society only. The proposal met with a good deal of criticism from the delegates present, many of whom felt that if it were carried out it would tend to lessen the interest of members of Local Societies in their work.

On the second day the subjects of discussion were "Local Museums," introduced by Mr. W. E. Hoyle, M.A., D.Sc., and Mr. J. Ramsbottom, M.A. In the discussion on Local Museums it appeared that the ideal to be aimed at was pretty much that which we have carried out in our Museum. The question of the retention of Type Specimens in Local Museums was discussed, but opinion was not unanimous on the question. In regard to Colour

Standards, it was referred to a Committee to ascertain whether a standard scheme could be drawn up.

The President then delivered his Opening Address, dealing principally with the life and work of Henri Fabre, and with the Summer Excursions of 1915.

Ladies and Gentlemen,—So far as I can ascertain only one member has, since last we met, been removed from our roll by death. Ex-Bailie Hamilton was not an active member of our Society, the claims of business were too exacting to allow time for the study of Natural History, but he lent us his support and countenance. In him the town has lost an intelligent and enterprising citizen and a useful member of the community. But I think that on this occasion we might take the opportunity of expressing our sympathy with those of our number who have relatives engaged in the present cruel and destructive war, those who live in daily dread of learning the loss of a son or a brother, and to whom even a victorious fight may bring mourning and desolation. We can all feel how hard it is when a son, an only son, has been taken away, no doubt fighting manfully for his country and in the cause of freedom of humanity, but even so the blow is hard to bear, and to all such stricken hearts we extend our deepest sympathy.

About a month ago there passed away, full of years and honours, an illustrious Frenchman, perhaps the greatest entomologist of the nineteenth century. Henri Fabre was born near Avignon in the south-east of France in the year 1823. His father was somewhat of a rolling stone which gathers no moss, so that the boy's upbringing was by no means in the lap of luxury and his education somewhat irregular. In his nineteenth year, however, he passed the examination of the Normal School of Avignon and became a teacher at the magnificent salary of 700 francs (£29). After some time he was appointed teacher of physics at Ajaccio, in Corsica, at a salary of 1700 francs (£72). He had taken a wife in 1884, and it was a hard struggle to maintain wife and a family on his slender income. In 1851 his health broke down and he returned to Avignon where he was appointed Assistant Professor with the reduced salary of £64. He endeavoured to add to his income by private teaching, but grudged the time thus taken from his favourite studies. A welcome addition to his resources was obtained some years after by his being appointed Conservator of the Requiem Museum in Avignon. A long but ultimately successful search for a dye to take the place of madder gained him the title of "Chevalier of the Legion of Honour," and the additional honour, if honour it was, of being presented to Napoleon III., but "one man soweth and another reapeth," he gained no money by his discovery, though other people did. After twenty years in Avignon he had to leave, having given offence to some powerful individuals there. For some time he was in dire straits and it was a most welcome

relief when John Stuart Mill, with generous good feeling, sent him the present of £120. He turned his attention to the writing of popular scientific text-books, and these were so well received that in a few years he was enjoying an income of £600 per annum. He retired to the village of Seignac in Provence and there spent the rest of his life. But his ill-luck had not yet quite deserted him. About 1895 his text-books went out of use and his income vanished. From this misfortune, however, he was rescued by the help of friends, so that for the rest of his life he was free from precuniary care.

We are told that his favourite studies were Mathematics and Natural Science. He himself tells us that from childhood "I had delighted in beetles, bees and butterflies. The materials lay ready on the hearth but the spark to kindle them was lacking. The accidental perusal of a pamphlet by Léon Dufour, the patriarch of entomology of that day, was the spark. I had a mental revelation. So then to arrange lovely beetles in a cork box, to name and classify was not the whole of science; there was something far superior, namely, the close study of the structure, and still more the faculties of insects. Thrilled by emotion I read of a grand instance of this." The grand instance was the story told in the pamphlet. In it Dufour tells that a friend sent him two pretty beetles of a kind new to his collection, saying that they had dropped on to his coat from wasps that were carrying them as booty. Some time afterwards Dufour visited this friend and enquired into the circumstances. Search was made and they soon came on a number of the nests of this wasp, which were galleries excavated in the hard soil of a garden path with large cells around the base to contain the eggs and a store of food for the young when hatched. On digging up these galleries with care, each cell was found to contain a specimen of the new beetle, placed there as food for the larva of the wasp when it should issue from the egg. Dufour gives a long and interesting account of the manner in which the wasp constructs these galleries, and of its manner of seizing and carrying its prey. One thing struck him as exceedingly strange about the beetles found in the nest cells. Although seemingly motionless and unquestionably dead they not only keep their freshness of colour but every bit of them, of their feet, antennæ, and mouth parts, is perfectly supple and flexible. And this freshness they retain for a long time, long after a normally dead beetle would have wholly decayed. Dufour's explanation of this strange fact was that the wasp injected into the beetle a preservative liquid which kept the body from decay for a long time. This explanation did not satisfy Fabre, and his first entomological work was to investigate the whole matter anew.

Studying not the same wasp, but a larger one, belonging to the same genus, he found its abode and its habits similar to those of the one described by Dufour. Its prey was a different kind of beetle, one belonging to the weevil family. Two things in especial struck

him. One was that which had already caught the attention of Dufour, the freshness of the apparently dead prey. Fabre came to the conclusion, and completely proved it, that the beetle was not dead but permanently paralysed, and continued in this dead alive condition long enough to afford fresh food to the larva of the wasp after it had emerged from the egg. The other point was, how it came about that the sting of the wasp, inserted once or twice at the same point, and making punctures so minute that they could not be detected by the microscope, should be so powerful as to strike the beetle with instantaneous and complete paralysis. He found by observation and enquiry that the wasps of this family invariably chose their victims from three different kinds of beetles. These three kinds had this in common, that whereas in most other beetles the three nerve clusters which are the seats of movement, are widely separate, in those which form the prey of the wasp they are close together so that one or two insertions of the sting can paralyse the whole. The wasp also invariably inserts the sting in the only place where it is possible for it to do so with effect.

Fabre tried for a long time to observe the wasp in the act of seizing and striking its prey but could never succeed in doing so. He then experimented by watching the wasp when returning to its hole laden with a victim, and whilst it was storing its captive placing a fresh and active beetle close to the mouth of the hole so that the wasp might get it when it came out. But the wasp would have nothing to do with a beetle supplied to it, its prey must be of its own catching. Fabre, however, was not to be beaten. His next experiment was this. As soon as the wasp alighted with a paralysed captive, he drew the victim from under her with a pair of pincers, and instantly threw her a living weevil in exchange. What followed is best told in his own words. "As soon as the wasp felt the prey slip under her body and escape her, she stamped with impatience, turned round, and perceiving the weevil which had replaced hers, flung herself upon it and clasped it in order to carry it away. But she promptly perceived that this prey was alive, and then the drama began and ended with inconceivable rapidity. The wasp faced her victim, seized its proboscis with her powerful jaws and grasped it vigorously, and while the weevil reared itself up, pressed her fore-feet hard on its back as if to force open some ventral articulation. Then the tail of the murderess slid under the weevil, curved, and darted its poisoned lancet swiftly two or three times at the joining of the breast, between the first and second pair of feet. In a twinkling all was over. Without one convulsive movement, with no motion of the limbs such as accompany the death of an animal, the victim fell motionless for ever, as if annihilated. It was at once wonderful and terrible in its rapidity. Then the assassin turned the weevil on its back placing herself body to body with it, her legs on either side of it and flew off." Thus these robust weevils, which, pierced alive with a pin and fixed by a collector on his fatal sheet of cork, would have struggled for days, weeks, nay, whole months,

instantly lose all motion from the effect of a little prick which inoculated them with a minute drop of poison.

When Fabre published his observations on this wasp, Dufour wrote to him in warm commendation and urged him to continue his studies upon insects.

Fabre made numerous experiments upon various insects to find out what instinct can do and what it can not do. These are told in an intensly interesting manner, and the results were often surprising. Let me relate one little experiment with Fabre's comment on the result. A certain mason bee collects some limy clay and some grains of sand and moistens this with her own saliva so as to form a kind of mortar. With this, layer upon layer, she raises on the surface of a stone a little tube, a kind of miniature tower. In this she places a store of honey, then deposits an egg and closes in the top with a layer of mortar. When the grub is hatched it finds in the honey a plentiful supply of food which lasts till the grub becomes a chrysalis. When it is ready to come forth a perfect insect, it drills a hole through the hard mortar which closes in the top of the tube and issues forth into the open air. Fabre took a number of cocoons from their cells and placed each separately in a piece of reed, closed at one end and open at the other, with the head of the insect turned to the opening—these represented the nest cells. These he closed in various ways, some with kneaded clay, some with pieces of pith, and others with a stoppage of gray paper. When the time came for them to emerge, it was found that in every case they drilled a hole through the various obstacles and came forth as if in their own proper nests. Besides these he took two nests without injuring them in any way, and above the mortar which closed in the opening of one he placed in close contact a fold of gray paper. Above the other he placed a cone of gray paper so as to form a kind of outer cell into which the insect would enter when it broke through the mortar, and the paper wall of which it would have to pierce by a second effort before reaching the open air. In the case of the first, the insect drilled a hole through mortar and paper, which being in contact formed but one obstacle and required only one effort. In the case of the second, the insect drilled through the mortar but got no further. Though with one bite of its strong mandibles it could easily have torn to bits the paper obstacle, it made no second effort and died in the cell formed by the paper. "When it has broken through one obstacle it has done all that it was destined to do in order to free itself and it has no desire to do more. It would have to double that which naturally is but single; and it cannot, simply because it has not the will to do it. It perishes for the lack of the smallest ray of intelligence. Yet in this singular intellect it is the fashion nowadays to see a rudiment of human reason! The fashion will pass and the facts remain, bringing us back to the good old ideas of the soul and its immortal destinies."

From this comment it will be seen that Fabre was no believer

in the theory of evolution. Yet he was a correspondent and an admirer of the work of Darwin. In his turn the latter had such a high opinion of Fabre that he spoke of him as "the inimitable observer." Fabre's principal work is the "Souvenirs Entomologiques," published at intervals from 1878 onwards and reaching in all to seven series, several of which have been translated into English.

Before giving a brief account of the summer excursions, I may make a few remarks upon the weather of the year so far as it has gone. The average temperature for the ten months to the end of October was 47.7°, just about the mean of the last 32 years. Compared with last year it was fully two degrees lower. Every month of last year was warmer than the corresponding month this year except August and September, which were practically the same. The mean temperature of July and August was this year two degrees lower than that of the same months of last year, a very considerable difference. In bright sunshine, however, excepting in April and August, this year had a considerable advantage over last year. May and June were very sunny months, but the cold easterly and north-easterly winds which prevailed kept down the temperature. The rainfall to the end of October was slightly under the mean of the last 32 years, and was considerably above that of the corresponding period of last year. February was the rainiest month, as regards quantity, during which there fell over 5 inches, about double the amount for October, which came next. With a temperature, during July and August, which did not reach the normal, neither Walnuts nor Spanish Chesnuts could ripen. The fruits of the forest trees in general, oaks, beeches, etc., were, generally speaking, by no means a plentiful crop, and in the case of the beeches many of the husks when examined were found to be empty. On the whole, both in the case of fruits and cereals, the year was hardly up to the normal as regards fecundity.

The first excursion of the season, held as usual on Victoria Day, was to Dupplin Loch and grounds. It was seven years since we had been at Dupplin and on that occasion it was in Autumn in search of fungi. Driving from Perth on a fine morning the party, which numbered 39 ladies and gentlemen, first went to the Loch or rather the Lochs, for there are two lying adjacent to one another. There we were met by Mr. Simpson, the factor, Mr. Donald, the forester, and Mr. Caana, the gamekeeper. These gentlemen headed respectively three parties into which we divided ourselves. One went in a boat to dredge the Loch, another to look after birds, and a third to look for wild flowers. The Loch was not very prolific in plant life at this season, but two species of pond weeds were found, besides some bits of the Canadian weed, and a good deal of a species of duckweed, *Lemna trisulca*, not very common in the country.

Of Mollusca, fine specimens of the Swan Mussel, *Anadonta cygnea* were found at the boat-house. It is not at all common in Perthshire,

but was found long ago by Dr. White in the river Earn. On sedges which grow in thick beds at one side of the Loch, Mr. Coates was pleased to find specimens of a tiny, oval-shaped bivalve, *Pisidium nitidum*, a somewhat local species. Nothing very special was seen by those looking for wild flowers, but the bird party found nesting round the shores of the Loch the Swan, the Pochard, Coot, the Waterhen, the common Gull, and the Little Grebe.

The party having united, left the Loch and took their way through the beautiful policies. A short visit was paid to the nursery which, though only lately established, contained numerous thriving beds of young trees, conifers mostly, intended to furnish materials for plantations which are to be formed in regular rotation on suitable parts of the estate. A small party, under the guidance of Sir John Dewar, walked through the pinetum, which, though not entensive, contains many interesting specimens of foreign conifers. After paying our respects to the sculptured stone, which marks the site of the Battle of Dupplin, we arrived at the Castle where the whole party were most kindly entertained to tea by Sir John and Lady Dewar. After thanking our hospitable entertainers, we drove back to Perth in the beautiful evening sunshine which formed the close to a delightful day.

The second excursion took place on June 5th, when the members went to climb Craigrossie. As I was not present, Mr. Sutherland, the leader, has furnished me with the following account. "The members to the number of over a dozen left Perth by the 10.15 Train and came to Dunning Station. A waggonette conveyed them to the ancient village of Dunning (Gaelic—dunan, a small fort), where they were shown through the Parish Church by Mr. Johnstone Wright. The Church is said to have been built about 1200, and is noted for its square, massive Norman Tower, rising to the height of 75 feet. The party also examined the "branks," which are still attached to the wall outside the Church. Another object of interest was the famous thorn tree, said to have been planted to commemorate the burning of Dunning by the Jacobites in 1715. Driving on, the party reached the entrance to Kelty Castle and grounds, where they left the waggonette. The more active members, passing to the right of the Soap works and the ancient Castle, set off to visit the British Fort on the top of Rossie Law, whilst the others made for Craigrossie by the more direct route. Both met on the slopes of Craigrossie.

In a mass of debris were found numerous fine specimens of the Parsley fern. From the top of the Craig there is a splendid view of Strathearn and the Grampians. On the south-west shoulder of Craigrossie, at a considerable distance from the summit proper, there was pointed out the outline of a Roman Camp. On descending, the party went on to Auchterarder and returned by Train to Perth, having spent a most interesting and enjoyable day."

On 19th June, a numerous party journeying to Stanley by Train went first, under the leadership of Mr. Frank Scott, to visit the

splendid plantation of Douglas pines, belonging to the Earl of Mansfield, which are of the finest, if not the finest, in the country. Thence, having crossed the railway, they visited various young plantations of conifers, and passing the village of Innernytie, arrived at the bank of the Tay, within 2 miles of Taymount. This part of the journey was of much interest, but was also remarkable for the numerous fences to be climbed and ditches to be crossed, making it, under a hot sun, rather toilsome for the ladies. The walk down the wooded bank of the Tay to Stanley was very pleasant, and tea, though it had to be partaken of in three different houses by three different groups, was very refreshing after a very pleasant and interesting, though somewhat strenuous day.

On the 3rd July we went by Train to Blair-Atholl and set off to visit Loch Moraig. A long ascent and a somewhat rough road brought us to the Loch. It lies, surrounded by heathery moor, close to the shoulder of Ben-y-Gloe. It is artificial and was not found of much interest, apart from the scenery. Leaving after resting for an hour or so, we came back for some distance and then struck into the lower part of Glen Tilt above the falls of Fender, and walked down to Blair through the romantic gorge formed by the river. Here I was much surprised to find some specimens of a handsome sedge, *Carex pendula*, Huds., very rare in Perthshire, which sometimes grows to a height of six feet, though here it was little more than half of that. How it came there I cannot imagine, as I hardly think it likely to have been planted. The weather during the day was all that could be desired.

The 17th of July saw us again disembarking from the Train at Stanley. Under the leadership of Mr. M'Laren, we passed through the village and descended to the river a short distance below Stanley Mills. At a rock here, I was pleased to find still keeping their ground two plants, the Hemp Agrimony and the Yellow Mountain Saxifrage, the first because it is a rare plant in the county, and the second because, though not rare among the mountains, one finds here its nearest station to Perth. Ferrying across the river, we walked down its bank to the ruins of Cambusmichael Church. After resting for a time, we proceeded by a lovely, shady path between the lade and the river to the Stormontfield ponds, once famous for rearing young salmon, now however disused. Beds of sedges and knotgrass have taken possession of much of the area, amongst which we recognised some stems of the flowering rush, not native, however, but formerly planted. After tea in the Institute, at Stormontfield Works, we resumed our walk down the river bank to the policies of Scone to inspect the traces which are left of a former Roman Camp. These were not very easily seen at this season on account of the rank herbage, and it was agreed that the proper season for a visit would be in the early spring before growth had commenced. At Sheriffston we met a waggonette which brought us back to Perth.

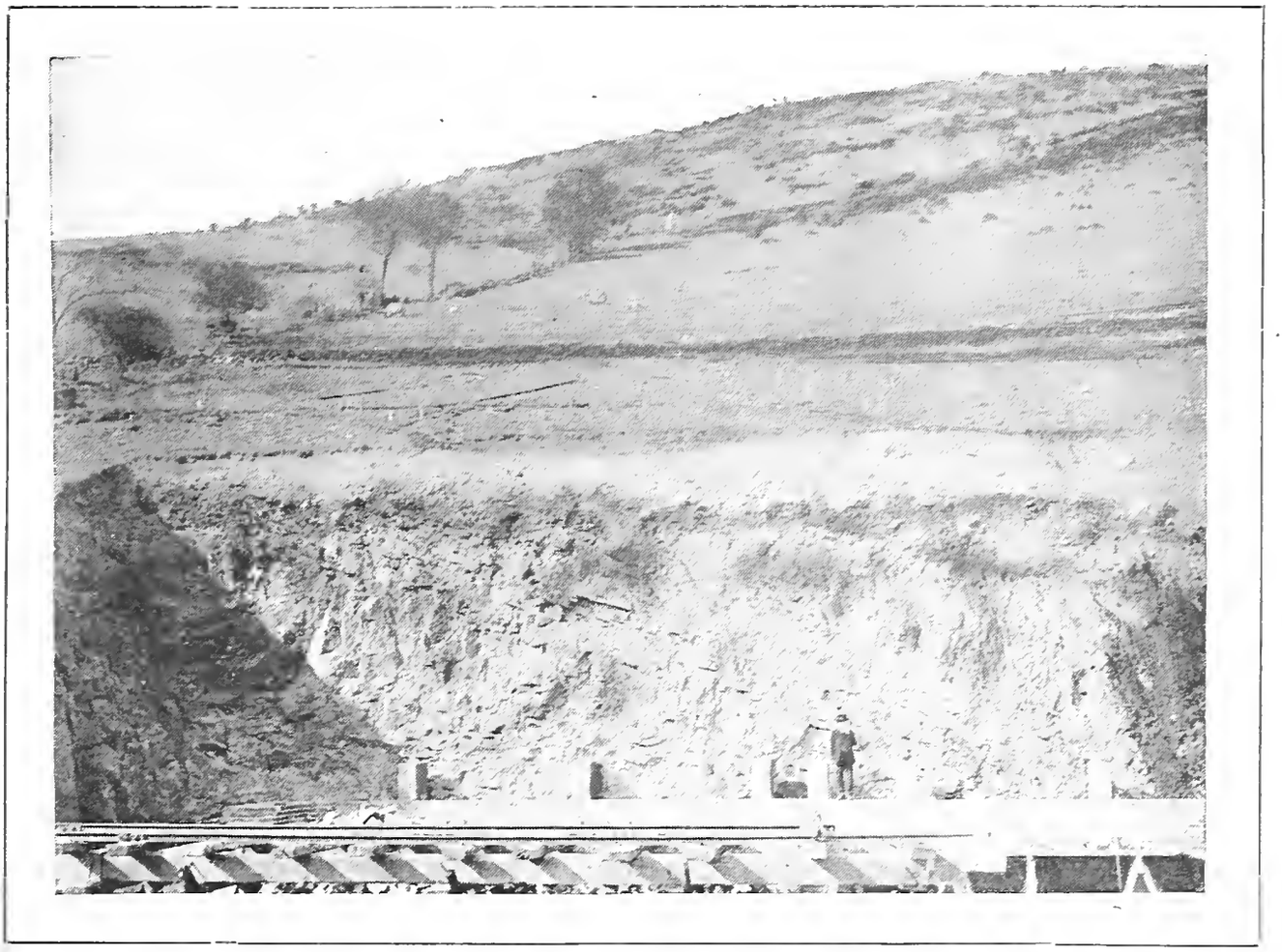
On August 7th, we went to Glenfarg by Train. Mr. M'Laren

again acted as a most efficient leader. Our object was to visit the works which are to provide the Kirkcaldy Burghs with a supply of pure water. A walk by the side of the Farg brought us to the scene of operations, where we met Mr. T. Whyte, the manager, who kindly showed us over the ground. The most striking object was a huge trench dug deep down through the rock, which is to be filled with puddled clay so as to prevent the water of the reservoir from escaping. Two or three of the party descended by ladders to the bottom of the trench to examine the rock sections which they found very interesting, but the rest preferred to look down from above. The filtering ponds, the filtered water reservoir, the arrangement for giving off the compensation water, and various other necessary works were examined with much interest by the members.

After thanking Mr. Whyte very cordially the party returned to Glenfarg by the Abbotsdeuglie road.

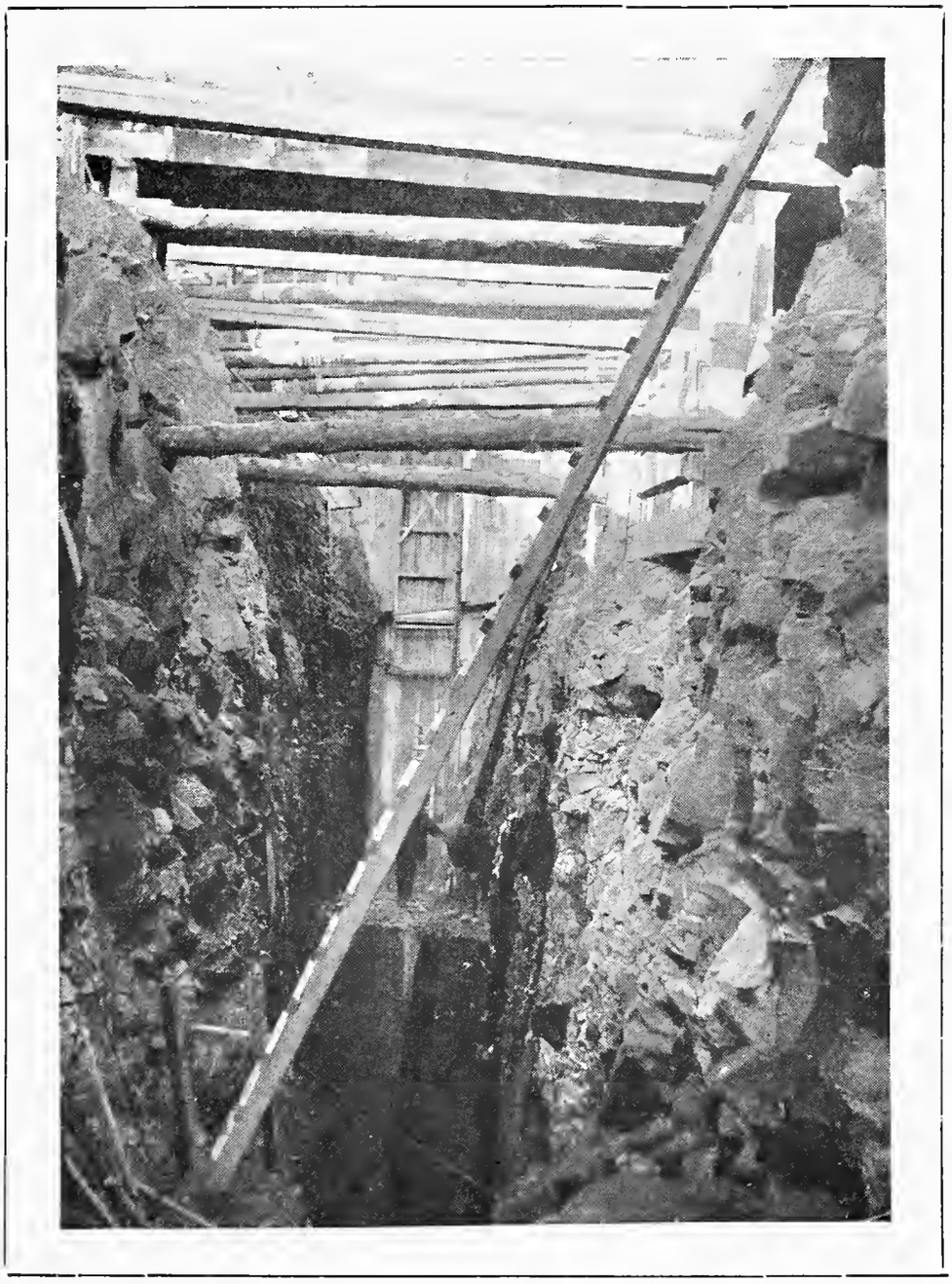
The August holiday, 23rd August, was set apart for a drive to Buchanty and the Sma' Glen, under the leadership of Mr. Clacher. The weather again favoured us, and, indeed, was as delightful as heart could wish. Going by Methven, we made a halt at Glenalmond College. Our leader had arranged that we should be shown through this fine block of buildings. We visited the library, the museum, the chapel, the dormitories, and the classrooms, and found all worthy of admiration. Setting off again, we drove on through Buchanty and the Sma' Glen to Newton Bridge. After resting here for an hour or two, we entered on the return journey. At the exit of the Glen, near the Fendoch burn, we stopped for a time to examine what is left of the Roman Camp, which formerly existed here. Very little is left of it. The present road had cut through part of it and we could see one part thus cut off which showed plainly the rampart with its ditch and at another part a redoubt which projected from the Camp and enclosed a well which is still to be seen. Crossing the Almond at the bridge below the Buchanty Spout, we went on to Harriotfield, where another halt was made for tea. After a visit to the Parish Church and half hour at Logie House, where we were kindly received by Mrs. Murray, we returned to Perth by Luncarty.

Thus completes the list of official excursions as the usual Fungus foray had to be given up on account of bad weather. But before closing I should like to say a few words about a private excursion of Mr. J. R. Matthews and myself, which had some interesting results. We met by arrangement at Dunning Station on the 26th August and walked to the Earn, reaching the river bank at a short distance above Dalreoch Bridge. Our object was to examine the flora of the bank of the river for some distance and also the river itself for water weeds. After finding beds of three or four species of pond weeds which we knew, we came upon a bed of one which neither of us had ever seen before, and which we could make nothing as it did not correspond with any described species. This I sent next day to our corresponding member, Mr. Arthur Bennett of



[Photo by H. Coates.

Plate XV.—Excavation for the Settling Pond. Glenfarg Water Works.



[Photo by H. Coates.

Plate XVI.—Deep Cutting for Puddling, lower End of Dam. Glenfarg Water Works.

Croydon, who knows pond weeds better than any other man in Britain. After close study, he pronounced it to be a hybrid between two comparatively common species. It is new to Britain, and, indeed, has previously been found only in Denmark. He has sent me a note giving a full account of it, which will be published in our *Proceedings*. In a small pond close to the river bank, we found also a fine clump of the big water dock, *Rumex hydrolapathum*, a very scarce plant in Perthshire. It may have come down from the Pond of Drummond, which drains into the Earn. I noticed also that the American Aster, which has been so long known on the banks of the Tay below Perth, has taken up its abode also on the bank of the Earn near Dalreoch Bridge. Our little excursion, therefore, was far from being unfruitful.

9th December, 1915.

W. Barclay, President, in the Chair.

The following paper was read :—

"Chlorophyll," by George F. Bates, B.A., B.Sc. The paper was illustrated by lantern slides and experiments.

13th January, 1916.

W. Barclay, President, in the Chair.

Mr. Charles M'Intosh, Inver, submitted the following note, which was read by Mr. Coates :—

"Note on the Black-headed Gull at the Scottish Horse Camp, Inver, in Winter Plumage."

A large flock of Black-headed Gulls took up their abode about the Scottish Horse Camp here. They came early last spring, being then in their summer plumage, and they continued to frequent the Camp till about the 15th of December last although the Braan was often covered with ice. The latter end of December was milder; much rainfall, and heavy floods in the rivers occurred, and then the Black-heads left. So far as I can find, the Black-head was never before seen in its winter plumage *with the head white* in this district. I thought it was going to winter with us, which would be a new thing. Perhaps it will be now as well to wait and see if they return. No doubt it is Camp refuse that has kept them about so long. There are a few Lesser Black-back about, but they are regular winter visitors.

The following paper was read :—

"The Bacteriology of Milk," by W. Asher, A.R.S.I. (See *Transactions*, Vol. VI., Part III., p. 71.)

21st January, 1916.

W. Barclay, President, in the Chair.

Mr H. Boase, Dundee, delivered a Popular Lecture entitled "The Migration of Birds." The lecture was illustrated by lantern slides.

10th February, 1916.

W. Barclay, President, in the Chair.

The following papers by H. Coates, F.R.S.E., were read :—

1. "Wanted to Complete." (See *Transactions*. Vol. VI., Part III., p. 85.)
2. "Floods and Droughts of the Tay Valley." (See *Transactions*, Vol. VI., Part III., p. 103.)
3. "Note on an old Weather Record found amongst the MSS. of the Antiquarian Museum." (See *Transactions*, Vol. VI., Part III., p. 126.)

18th February, 1916.

W. Barclay, President, in the Chair.

A Special Lecture on "The History of some Scottish Mountains," was given by Dr. J. S. Flett, F.R.S., Director of H.M. Geological Survey, Edinburgh. An excellent series of lantern slides was shown in illustration of the lecture.

FORTY-NINTH ANNUAL MEETING.

9th March, 1916.

W. Barclay, President, in the Chair.

Mr. Charles M'Intosh, Dunkeld, reported the discovery by him in his locality of a Discomycete, new to science. This he sent to Mr. Carleton Rea, who kindly named and described the plant as *Ombrophila megalospora*, Rea. Ascophore pure white at first, then pinkish, finally brown; disc. 1—1.5 mm wide; stem, 1 mm high by 3—5 mm thick, nail shaped, convex at first, then plane, subgelatinous when moist, horny when dry. Asci cylindrical, 120—135 × 12—13 μ, attenuated downwards, 8 spored. Foramen marginate, no blue reaction with iodine. Spores, boat-shaped, often curved, pointed at both ends, 27—30 × 6 μ, 1—2 seriate, filled with granulations. Prophyses exceeding Asci, adhering together and slightly thickened upwards, 130—145 × 2—3 μ, septate, containing oil drops at the apex.

On dead leaves of Carex in a stagnant pool.

Dunkeld, August 1st, 1915.

The following Office-Bearers, proposed at the previous meeting, were duly elected :—

President—Mr. Wm. Barclay.
Vice-Presidents—Messrs. J. P. Rattray, D. J. Wilson, Dr. Lyell, and T. M'Laren.
Secretary—Mr. S. T. Ellison.
Treasurer—Mr. J. Winter.
Librarian—Mr. Jas. Coates.
Editor—Mr. George F. Bates, B.A., B.Sc.
Councillors—Messrs. J. Clacher, J. Ritchie, W. Wylie, H. Leslie, Jas. Stewart, and J. Menzies.
Curator—Mr. Henry Coates, F.R.S.E.

The following Reports were read and adopted :—

REPORT OF COUNCIL.

The Council have pleasure in submitting to the Members their Forty-Ninth Annual Report, giving an account of the work carried on during the past year.

The Society has experienced the effects of the war in many ways, not the least being the removal of a large number of our younger members, who have been called to military service. We hope to welcome them all back at our Jubilee Annual Meeting, a year hence.

During the past year six Meetings were held, and six Papers read in addition to the President's two Annual Addresses.

The average attendance has been 37. The largest number at one Meeting being 49, on 11th March, 1915, and the lowest 27, on

8th April, 1915. There have been added to the Roll of Members 24 Ordinary Members, 1 Associate Member, and 1 Associate, making a total membership of 314, made up of 14 Corresponding Members, 9 Associates, 285 Ordinary Members, and 6 Associate Members.

Two Special Lectures have been given—one on 21st January by Mr. H. Boase of Dundee, on "The Migration of Birds," and the other on 10th February by Dr. J. S. Flett of H.M. Geological Survey of Scotland, on "The History of some Scottish Mountains." Both lectures were well attended.

During the summer 8 excursions were arranged, and 7 took place, the weather preventing the Fungus Excursion being held. These were mostly arranged to districts not far away, and were well attended.

The Children's Eighteenth Annual Essay Competition was on "Four Perthshire Trees," for which there were 50 competitors—36 Boys and 14 Girls, the Bronze Medal being gained by Andrew Anderson of the Caledonian Road School. The prizes were presented to the successful competitors by Sir John A. Dewar, Bart., M.P., on Saturday, 6th November, 1915.

The use of the Lecture Room has again been granted for various meetings of an educational nature.

REPORT OF TREASURER.

(See Balance Sheet p. cxxxii.)

REPORT OF LIBRARIAN.

The Library records show a substantial increase, both in the number of readers and the number of books borrowed. The following are the figures :—

New works added to Library :—

Reference Department, ...	14
Lending Department, ...	74
Total, ...	88

Total number of works in Library at 1st March, 1916 :—

Reference Department, ...	628
Lending Deparment, ...	856
Total, ...	1484

Books, Reports, Periodicals, and series of Pamphlets presented to the Library during the session—203.

[N.B.—These include a number of publications from the U.S. and Canadian Geological Surveys, the American Museums, etc.]

Books and Pamphlets bound—18.
Volumes of *Proceedings* and Periodicals bound—16.
Number of Members who have borrowed books—56.
Number of books borrowed—152.
Number of Societies with which we exchange *Transactions* and *Proceedings*—37.
Institutions to which we present *Transactions* and *Proceedings*—7.
The most important additions to the Library were a series of 52 works presented by Dr. Kidston, Stirling, and 16 works from the Library of the Literary and Antiquarian Society.

REPORT OF EDITOR.

Part II. of Vol. VI. of the *Transactions* and *Proceedings* was published towards the close of the year 1915, and distributed to Members and exchanges in the usual way. The *Transactions* contain four papers, of an almost purely botanical nature—two dealing with Perthshire botany and two of a more general nature. An excellent portrait of the late Mr. Rodger forms the frontispiece to the part, and it is intended that this shall form the frontispiece to the completed volume.
A sympathetic sketch of the life and career of Mr. Rodger is contained in the President's "Opening Address," as it appears in the *Transactions*.

The President intimated that the subject of his Annual Address was "Notes on Roses, Part II.," but owing to its technical nature he proposed that it should be taken as read, and published in the *Proceedings* in the usual manner. He then proceeded to deliver a popular address dealing with the so-called Parliament House of Perth, and the sites of other ancient buildings in the city.

Notes on Roses, Part II.

R. INVOLUTA, Sm. = *R. SPINOSSISSIMA* × *TOMENTOSA*—continued.

Before the hybrid nature of *R. involuta*, Sm., had been pointed out by Dr. Christ in 1884, it had already been divided into a large number of so-called species or varieties, and these are still maintained, or rather attempted to be maintained, by some British botanists.
In many cases these varieties were founded upon individual plants, and it may be said that some of them at least have remained individual. In very few instances can plants, met with in the field, be identified satisfactorily with any one of these named varieties. And the problem of making anything like a scientific classification is by no means a simple one. In the first place they ought to be grouped according to their parentage. So far as the one parent is concerned, *R. spinossissima*, Lin., there is no great difficulty,

because in Britain that species may be said to occur in only two forms, the type and the smooth peduncled form, which we may call var. *pimpinellifolia*, Lin. But it is not the same with *R. tomentosa*, Sm. (aggregate). This has certainly not yet been classified in anything like a satisfactory manner, and, indeed, if we consider the great number of forms of *R. tomentosa* (agg.) which have been named and described as species, founded upon characters which vary, not only from plant to plant but often upon the same plant, we find ourselves confronted with a chaotic mass which leaves us in a state of bewilderment and confusion. Before, therefore, we can do more than simply indicate *R. tomentosa* (agg.) as the second parent of *R. involuta*, Sm, it will be necessary to classify the numerous forms of *R. tomentosa*, Sm., on a sound scientific basis, a task which will be one of very great difficulty. But in the second place there is another point to be taken into account. The hybrid forms sometimes show more of one parent than of the other. When they lean to the *tomentosa* side it may render the task easier for us. As I have already pointed out, it is on that side that the difficulty chiefly lies. But on the other hand, when they lean much to the *spinossissima* side there is shown so little of the other parent that, even if we had a good classification of *R. tomentosa* (agg.), it would be very difficult to determine which variety was represented in the hybrid. At present, therefore, it is quite impossible to classify *R. involuta*, Sm., so as to show the variety or sub-species of *R. tomentosa*, which has been the second parent. In a few Scottish forms of the hybrid, we can safely affirm that the second parent forms part of what we now call the omissa group, because that group is the commoner one in Scotland, and the scabriuscula group is exceedingly rare. But there are intermediate forms between these two, and one of these may in many cases be the second parent.

But it may be said that we should keep up the old classification with the old names until we have found a better and more scientific one. That might be so, if it were not that, as I have already pointed out, the old classification is so hopelessly bad. In this opinion of its defects I am not alone, for Major Wolley-Dod is emphatic on the point. "There are," he says, "quite a number of so-called species and varieties, which, however well defined on paper, are inextricably mixed in the field." That being the case, I do not see any benefit in keeping up a classification of this kind.

Temporarily, *Involuta* hybrids might be divided into three groups. The largest, that standing more or less midway between the two parent species, using the word species in an aggregate sense, should be called *gr. Sabini*. The next would embrace those leaning more to the *tomentosa* side, and might be called *gr. Nicholsoni*. The third would embrace those showing much more of *R. spinossissima* than of *R. tomentosa*, and might be called *gr. Wilsoni*, which plant, in spite of the aberrant shape and size of its leaflets, undoubtedly shows in the sum of its characters much more of the *spinossissima* parent than the *tomentosa*. As thus—

gr. Nicholsoni—nearer *tomentosa*, Sm.
gr. Sabini—midway between both parents.
gr. Wilsoni—nearer *spinossissima*.

A number of our Scottish forms, of which *Nicholsoni Crép.* is one, come into the first group. Besides *Wilsoni* itself, such forms as *f. Margerisonii* Wolley-Dod (wrongly placed by him in the hibernica group), and a few others that I have seen, would go into the third group. As I have previously pointed out, this grouping would not be a quite satisfactory one, but it would be scientific, so far as it goes. It is, at least, the best that I can suggest at present.

R. HIBERNICA TEMPLETON.

Under this name and its *var. glabra*, Baker, four hybrids of different parentage have probably been included, viz. :—

R. spinossissima, Lin. × *canina*, Lin.
Do. × *dumetorum*, Thuill.
Do. × *glauca*, Vill.
Do. × *coriifolia*, Fr.

It is usually very difficult to decide with any degree of certainty to which of these a given specimen is to be referred. If the leaf is more or less hairy, we may safely refer it to *dumetorum* or *coriifolia*, if glabrous with probabilty, but not with absolute certainty to *canina* or *glauca*. Not with certainty, because there are forms of *dumetorum* so nearly glabrous that if we conceive, as is probable enough in some instances, that the *spinossissima* influence was the stronger, the resultant hybrid might be quite glabrous. If our specimen comes from the south of England, we may safely infer that the second parent is either *canina* or *dumetorum*, if it occurs in the north of England or in Scotland, the same inference or its opposite does not apply, and we can only decide from the characters of the specimen and from taking note of the prevailing forms, whether cristate or sub-cristate in the neighbourhood where it occurs. Moreover, the hybrid in any of its four possible derivations is so rare, that we have only a very limited number of specimens from different bushes for comparison, and this of course renders the task of determination still more difficult. Scottish forms, which I have had an opportunity of studying *in situ* and can decide upon with some degree of confidence are—

R. spinossissima × *dumetorum*—between Melvin Hall and Bellyford Burn, on the march between East and Mid Lothian. This was referred by Baker to his *var. levigata* of *R. involuta*, Sm., but Webb afterwards correctly identified it as a form of *R. hibernica*, Sm. Specimens sent to Crépin by me were determined by him as *R. pimpinellifolia* × *dumetorum*, and though I do not feel the same certainty in this

case as in the others, I am not prepared to dissent, but it is possible that instead of *dumetorum* we should say *coriifolia*.

R. spinossissima × *coriifolia*—At Mill of Melrose, near Banff—and with *R. coriifolia var. Watsoni*, Baker, as second parent at Port Seaton, on the coast of Haddington. This last so far as I can ascertain, is the only hairy form of *hibernica* with compound leaf serration which has yet been found anywhere. A number of the peduncles also were furnished with glands.

R. spinossissima × *glauca*, Vill.—On the bank of Tay above Dunkeld.

Of course besides these I have seen and examined quite a number of specimens from different localities in Scotland, England, and Ireland, but one has not the same degree of assurance in deciding upon the second parent from dried specimens, except, as I have said, in the case of those occurring in the south of England.

R. SPINOSSISSIMA × *MOLLIS.*

This hybrid was first determined by Crépin in the case of specimens sent to him from Betty Hill, Sutherland, and his determination has been generally accepted. He agreed with me also after receiving many specimens in flower and fruit (abortive), that a clump growing near Kinfauns had also *Mollis* for the second parent. Since then I have gathered what I feel quite confident is this hybrid at Boyne Castle, in Banffshire, and Mr. Marshall has found a clump of it near Tomintoul. So far as I know these are all the instances in which it has been determined with any degree of certainty, but doubtless it will be found in other localities where the two parents grow together in quantity. But the question whether the second parent is *R. mollis* or a form of the omissa group of *R. tomentosa* Sm., is very critical, and for its determination with any approach to certainty requires a thorough knowledge of the numerous variations of both of these species. In the case of some examples from near Carnoustie, even though studied on the living bush, I have been unable to come to any decision, and on specimens of these, numerous and well chosen, sent to him, Crépin refused to give any decided opinion, telling me that I was in a better position than he was to determine the question.

R. SPINOSSISSIMA, Lin. × *RUBIGINOSA*, Lin.

This hybrid is very much rarer in Britain than those in the *involuta* and *hibernica* groups. Its discovery also is of much later date, going back only to 1896. On the continent also its distribution is very restricted. It is recorded only from two or three districts in France, and a similar number from south-west Germany. The French forms have received the name of *R. biturigensis*, Bor., those of Germany, that of *R. rubiginosa* × *pimpinellifolia*, B., *Friesiana*, R. Keller. The chief difference appears to be that in the

former the peduncles and fruits are glabrous, whilst in the latter they are clothed with setæ with or without glandular heads. Keller (in Ascher & Græb Syn), describes the leaflets of the former as glabrous, those of the latter slightly hairy on both sides. I have not seen a German specimen, but one from near Bourges, in the French department of the Cher, a specimen gathered by Le Grand and published in the Herbarium Rosarum of Coste & Pons, shows the midribs thinly clothed with long hairs, which sometimes, though very rarely, extend to the other veins. All the British specimens that I have seen have peduncles and fruits thickly covered with acicles and glandular setæ, though some individuals have the fruits nearly glabrous. At Port Seaton, also, where there is a very numerous colony, the fruits on some bushes are globular, and another set ovoid or oblong, and on others, not very distinctly the one shape or the other. The localities in Britain where this hybrid has been found and identified with certainty are Box Hill in Surrey, bank of the Tay below Caputh bridge, Port Seaton on the coast of Haddington, near Abbotsford (found by Miss Hayward), and near Turriff in Aberdeenshire. In this last station, however, it was almost certainly an escape from cultivation.

In "British Roses," p. 50, Major Wolley-Dod declares, after having seen the type, that Baker's *R. involuta*, Sm., var. Moorei, founded in a specimen gathered by Dr. Moore in Derry, is really *R. spinossissima* × *rubiginosa*. I have not seen a specimen, but the description given by Mr. Baker seems to me to bear out the Major's determination.

Moreover, Mr. Baker himself saw in Moorei certain characters which seemed to indicate an approach to *rubiginosa*, and remarked that it very much resembled *R. biturigensis*. There seems little doubt but that had the hybrid nature of these groups been then known to Mr. Baker, he would have certainly put *rubiginosa* for the second parent and not *tomentosa*. The Major's diagnosis is therefore almost certainly correct.

At the same place he identifies, as belonging also to the same parentage, Crépin's variety, *Nicholsoni* of *R. involuta*, Sm. He has not seen a type specimen, but has seen a rose from Inverness collected by Mr. Marshall and named by him *R. involuta var. Nicholsoni Crép.* He founds his opinion partly on the description of the type specimen given by Crépin, and more fully by N. E. Brown in Suppl. to Eng. Bot., p. 133, and partly also, it would seem, on the fact that Mr. Marshall's plant appears to him to have *rubiginosa* and not *tomentosa* (agg.) as the second parent. With the indentification of Crépin's variety, gathered at St. Cyrus by Mr. Nicholson, I am unable to agree. In the first place it seems to me very unlikely that Crépin would fall into such a mistake, as he was well acquainted with both hybrids and had numerous specimens of most of the known forms for comparison. In the next place the description quoted by the Major seems to me to indicate pretty clearly a very glandular form of *R. involuta*, but certainly not more

so than several of our Scottish variations. With regard to Mr. Marshall's plant, I have not been as yet able to obtain the sight of a specimen, and therefore can give no opinion.

Forms of *tomentosa* of the omissa group densely glandular on the under surface of the leaflets, quite as much so as any form of *rubiginosa*, are very far from being uncommon in Scotland, and I have seen not a few which had also many glands on the upper surface. Of course such forms have a resinous scent and not the scent of the true sweet briar. Where *rubiginosa* is the second parent the resulting hybrid has also a faint sweet-briar odour, which in the field should help to identify it. In my knowledge these glandular *tomentosæ* have sometimes been mistaken for *R. rubiginosa* by southern botanists.

R. PIMPINELLIFOLIA × *ALPINA*.

It has been supposed that the specimens sent by Winch from the coast of Durham, and which were described by Smith under the name of *R. rubella*, belonged to this hybrid. So far as Smith's own description goes, it does not disclose any character which is not met with in undoubted examples of the type *spinossissima*, except the red colour of the fruit, and possibly the colour of the flowers. The description in English Flora does not differ. Smith, no doubt, described from specimens sent by Winch, but this does not seem to have been the case with those who wrote of the plant subsequently. Borrer, in "British Flora," certainly described at least in part from cultivated varieties which he supposed to belong to *R. rubella*, Sm. Here we have important differences from the original diagnosis in English Botany. The flower stalks are no longer always solitary, but "sometimes two together with a small narrow bractea." The fruit instead of being globose or globular with a short neck, is said to be of "a short oval shape tapering to each end, or sometimes, especially when two flowers occur together, flattened at the base and truly urceolate." The fruit also is said to be pendulous, and the species more nearly allied to *R. alpina* and *R. stricta*. He gives as British localities "Sandy sea-coast of Northumberland and banks of the Dee about Abergeldie."

Mr. Baker also seems to have described from similar cultivated specimens, as his description does not differ from that of Borrer. It is not at all clear that he recognised Winch's specimen as belonging to the same plant from which he was describing; indeed, he says that a plant collected near Hartlepool by Mr. Hogg and labelled *R. rubella* by Winch was ordinary *R. spinossissima*.

Grenier and some other continental botanists considered *R. rubella*, Sm., to be the hybrid *pimpinellifolia* × *alpina*, but Christ in "Rosen der Schweiz" denies this, and says that Smith's plant is a species closely allied to *pimpinellifolia*, but readily distinguished by its red, longish, pendulous fruit. Clearly he was judging, not

from Smith's, but from Baker's description. The fruit with Smith scarcely differs from that of *spinossissima* except in colour.

Specimens from Winch which exist in herbaria in this country are so poor that experts who have examined them, or some of them, such as Crépin and Major Wolley-Dod, have been unable to come to any certain conclusion, but incline to believe that *R. rubella* is simply a red-fruited variety of *R. spinossissima*. I have seen a specimen at South Kensington, one or perhaps two in the Herbarium at Edinburgh Botanic Gardens, and a few weeks ago three specimens in Winch's Herbarium at Newcastle. The latter are very scrappy and show only flowers or very young fruit. It seems to me that if any or all of these were put before an expert, who did not know the colour of fruit or flowers and was not told of their history and if he was asked to give his opinion, he would not hesitate, I think, to set them down as simply variations of *R. spinossissima*, Lin. Moreover, it appears to me to be a very strong argument against their being a hybrid of *pimpinellifolia* and *alpina*, that the latter is not a native of Britain. It is no doubt true that it is sometimes cultivated, and that even in a few instances has been found more or less wild as an escape from cultivation, but it is surely in the highest degree improbable that it grew a hundred years ago on the sandy coast of Durham, or even that it was cultivated sufficiently near to give birth to a hybrid where *R. rubella* was found.

R. GALLICA × *CANINA.*

The *R. collina*, Jacq., gathered by Briggs at Calstock, east Devon, is doubtless correctly named, as it has been identified by competent authorities. *R. collina*, Jacq., is now pretty generally accepted as the hybrid of *R. gallica* × *canina*, of which there are many varieties, and, having seen a specimen, I see no reason to doubt the fact. If this be so, then Brigg's plant must have sprung from the crossing of a cultivated *R. gallica* with one of our native *caninæ*, probably of the *dumetorum* group. There is perhaps a possibility that it might be an escape from a cultivated hybrid, for many hybrids of *R. gallica* are, and have been, in cultivation. On this point, however, an opinion of any value could only be formed by those acquainted with the locality and its surroundings. I have not seen any of the specimens from other localities which have been named *R. collina*, but all of them seem to have been named with doubt, and it seems most likely that the identification has been a mistaken one.

OTHER SUPPOSED HYBRIDS.

Major Wolley-Dod mentions three of these in his list of British Hybrids.

R. ARVENSIS, Huds., × *STYLOSA*, Desr.

I have received a specimen of this which Mr. Bickham kindly

sent to me. It may be a hybrid, but I should like to see further specimens. It comes very near some of the forms of *R. stylosa*, Desr., and may turn out to be a simple variation of that species.

R. SUBERECTA × *MOLLIS.*

This hybrid must be a singularly difficult one to distinguish from either the one or the other of its parents, which have so many traits in common. What specimens I have seen appeared to me to be nothing but variations of *R. mollis*, without anything that I could see suggesting hybridity. I should not think Dr. Dingler's opinion on this question to be worth much, as he certainly does not, or at least until lately did not, understand *R. mollis*, and his acquaintance with British forms belonging to the *omissa* groups must be very limited.

R. SUBERECTA × *CORIIFOLIA?*

This is given with the sign of doubt. I have seen no specimen and so can give no opinion on that, but I do not see anything in the description given to suggest hybridity.

R. SPINOSSISSIMA, Lin.

There has been controversy as to what Linnæus intended by his *R. spinossissima*, and the latter name *R. pimpinellifolia* has been generally used on the continent as the type name of the species. Crépin in his paper entitled "La question de la priorité des noms specifiques, &c.,"* gives a resumé of the facts regarding the varying definitions of *R. spinossissima* given by Linnæus at different times, and contends that, by that name as used by its author in the 1st edition of the "Species plantarum," the plant meant was *R. cinnamonea*, L. He infers this, not from the definition itself nor from the synonyms quoted, which he admits clearly indicate the same plant afterwards named by Linnæus *R. pimpinellifolia*, but from the Swedish habitat which is given as the place of its occurrence, a habitat where it does not occur, but where *R. cinnamonea* is to be found. That, however, seems to me to prove nothing more than that Linnæus did not know the plant except from books, and that his description was borrowed. Moreover, it is hardly credible that he could have supposed that *foliolis novenis; fructus nigricantes* could apply to *R. cinnamonea*, a species which he must have frequently seen in nature in his various journeys through Sweden. There is, therefore, it seems to me no getting over the fact, that the description given in the 1st edition of the "Species," in 1753, does accurately describe *R. pimpinellifolia*, and must, therefore, take priority of the latter, which consequently is only a synonym of later date.

* "Entrait du Bulletin de l'herbier Boissier," Tome V., No. 3 Mass., 1887, p. 143.

R. spinossissima, Lin., as it occurs in Britain is certainly most abundant near the sea, but it is found also inland in many districts. In Perthshire, we find it in a good many stations; on the banks of the Tay at several places, on the May, in Strathearn, on the shore of the Loch of the Lowes, on the hill-tops to the north-west of Dunkeld, and on the Sidlaws near Perth. In Fife, also, there are several inland stations where it is abundant.

Usually in the form of a low bush, or rather clump, from one to three, or rather four feet in height, it sometimes in favourable situations becomes taller, and on the shore of the Loch of the Lowes, for example, I have seen parts of a clump reach a height of over seven feet Not seldom you find a good many of its fruits arrested in development. Whether the cause be a bad flowering season, unfavourable for pollination, or whether the plant has formed such a large number that it is unable to bring them all to maturity, I do not know, but the fact that often many fruits do not reach maturity is one that I have frequently observed, both on living bushes and dried specimens. So far as I have observed this occurs very rarely, indeed, in the case of our other native species.

There is considerable variation in the size and in the shape of the leaflets, but they are always easily recognisable as belonging to *R. spinossissima*. The armature is usually very dense, and shows all gradations from long, sharp, slender or somewhat stoutish prickles down to acicles and glands. In shade and on old bushes they often become considerably denuded, but I have never seen any which could be referred to *R. mitissima*, Gmel., having stem and branches quite unarmed, nor have I seen continental specimens of that variety.

The serration is almost always simple, though sometimes a toothlet may be found here and there: The variety with double or composite teeth is said to have been found on Barnes Common, Surrey, but I have not seen specimens. It is found on the continent, but is exceedingly rare, and rarer still is the variety *myriacantha*, D.C., distinguished not only by compound serration but by having the under surface of the leaves and the backs of the sepals covered with glands, the peduncles thickly clothed with acicles and the flowers of a pale red colour. It has not been found in Britain. There are several other continental forms which have received names, but most of these seem to be founded on very insufficient characters and do not deserve to be considered as varieties.

In Britain, *R. spinossissima*, Lin., though varying, as has been said in size and shape of leaflets and density of prickles, is on the whole not distinguished by any well-marked variety, except that the peduncles, generally naked, are sometimes more or less glandular. It has been customary with many botanists to use the name *R. pimpinellifolia* for the smooth peduncled form, considering it as the type, and to call the glandular peduncled, much less common form, *var. spinossissima*, but if we are to consider *R.*

spinossissima, Lin. as the oldest name and use it as the name of the species, we must consider the smooth peduncled form, although the most abundant, as the variety, and call ia *var. pimpinellifolia.*

The red-fruited variety, *R. rubella*, Sm., of which I have already spoken, seems not to have been found in Britain since Winch gathered it on the sandy sea-coast of Durham. Only once have I seen a bush on which the fruits were dark red, whilst all around it were of the usual purple-black. Of the variety with red-flowers, said to have been found in two localities in England, further information is desirable, and the same remark may be made regarding the *var. mitissima*, Gmel., said to have been collected at two stations in Wales.

The following notes by Mr. A. Bennett, of Croydon, were then submitted :—

"*(a)* A Hybrid Potamogeton new to Great Britain."

"*(b)* Potamogeton gracilis, Wolfg., in Perth."

A HYBRID POTAMOGETON NEW TO GREAT BRITAIN.

× P. venustus Baagoe in Comp. rend. Cong. de botanique, Paris, p. 517 (1900). P. crispus, L., × alpinus Balb. Baagoe. P. alpinus Balb. × cripus, L., Asch. et Graeb., Syn., Fl. Mitteleup. (Potamogeton), ed. 2, p. 515 (1913).
Asch. et Graeb., "Das Pflanzenreich," IV., 11 (1907).

In the river Earn, above Dunning, Perthshire, Messrs. Barclay and Matthews, August, 1915.

This was found by Herr Baagoe. In parte amnis "Gudena" qui "Lillea" vocatur, *jyllandia*, July, 1899, and near Ringstead, Saellandia, July 20, 1899, Denmark.

In the Synopsis, l.c., the Authors observe *P. alpinus* × *crispus*, wurde bisher nur von A. Bennett (brief) aus Danemark ausgegeben und *P. olivaceus*, Baagoe, nach Fischer Ber. Bayr. B. G. XI., 33, (1907). But Baagoe had named this seven years before, and *P. oliveaceus* is of O. F. Lang in "Flora," XXIX., 472 (1846), and is a form of *P. decipiens*, Nolte.

The only difference between the Danish specimens and the Scottish is that in the former the peduncles are stouter and longer as a rule, and the central nerve is wider, but the leaf-structure is very similar, and the Danish specimens have more of the *alpinus* colouring, especially in the apex of the stems. I had originally named the specimens sent me by Herr Baagoe "× *P. Baagoei*," but afterwards found he had named them as above.

It is the invariable practice of Ascherson & Graebner to transpose the names, but in some of Mr. Fryer's names it is unfortunate they do so, as his naming was the result of careful work and watching the living specimens, not compilation from others.

They also in "Pflanzenreich," p. 72, under *P. alpinus*, Balb., *var. undulatus*, Fischer, remark "Conf. autem *P. alpinus* × *crispus*," but the leaves are not undulate in the hybrid, either in the Danish or Scottish specimens.

The specimens differ from *crispus* in the leaf-margins being non-serrulate, and in the colour, the leaves being green but suffused with purplish-red (developing while drying); from *alpinus* in the nerves being 5—7 (as in *crispus*) instead of 10—14 as in that species, and the central nerve has more of the structure of *crispus* than *alpinus*.

Both *alpinus* and *crispus* occur in the Earn,* and Mr. Barclay writes me there are specimens of the former in the Perth Museum Herbarium from Forteviot and Dupplin, and *crispus* thence is given in the "Flora."

So far this is one of the rarest hybrids in the genus, as though indicated from Bavaria it is in no means a definite record, as the author finds (?) everything European in the genus in that country, giving 45 varieties and forms under *P. alpinus* alone, these being simply local forms induced by local conditions, and not correlated with others.

POTAMOGETON GRACILIS, Wolfg., in Perth.

Mr. Barclay has sent me specimens which exactly accord with examples of Wolfgang's plant received from Dr. Kilman of Helsingfors. Dr. Kilman wrote, that in the Herbarium there were two specimens of *P. gracilis*, named and collected by Wolfgang himself.

Notwithstanding this he wrote (13/1/1889), I shall name this *P. Wolfgangii mihi*. This he did in "*Pl. Vacul*, Fenn. herb. Fenn., 34, 128, 1889." Writing to him, I protested against this new name, now we knew what Wolfgang meant by his name. But he insisted in publishing it, and I pointed out that Fries, in 1828, had named a *Potamogeton* as *gracilis* one year after Wolfgang's name appeared in "*Rœmer et Schultes Sys. Veg. Mant.*, 3 355, 1827." In the year 1907, a monograph of the genus appeared in Engler's "*Das Pflanzenreich*," and here the authors are apparently unable to decide where to put and how to treat Kilman's species. At page 89 they put it under *P. gramineus*, L. (our *P. heterophyllus*) as a sub-species, *Wolfgangii Graebner*, Kilman, giving only Finland for it. At page 132 it appears as *P. alpinus* × *gramineus*, Asch. et Graeb., Syn. "Fl. Mitteleup.," 126, 1897, with the synonym *P. gracilis*, Wolfg., *P. Wolfgangii*, Kilman, conf., A. Bennett, Jour. Botany, 76, 1891—and now giving England, Scandinavia, Finland, N. Russia, and Germany. Later I have added Japan. Kilman on his labels gave several names as synonymous, to two of which I cannot agree, having seen the authentic specimens cited. But I have

* "Flora of Perth," pp. 309--311, 1898.

no doubt that specimens I possess named *P. salicifolius*, Wolfg., *P. lanceolatus*, Reich., and others also from Sweden named *P. borealis*, Tiselius, do belong to Wolfgang's *gracilis*, and a specimen named *P. gramineus*, L., *var. mongolicus*, Maximowicz—*Mongolia*, Ordos, G. N. Potamin, 1884—received from the St. Petersburg Herbarium, is the same. Ledebour in his "Flora Rossica," Vol. IV., p. 32 (1853), had to give *P. gracilis*, Wolfg., under "Species minus notae," as it was not then known of any specimens of his being in existence. Ascherson & Graebner in the second edition of their Synop. "Mitteleuropäischen Flora.," p. 494 (1913) give it as a note under *P. gramineus*, L., but at p. 502 they give *P. alpinus* × *gramineus*, A. et G., and under it place *P. gracilis*, Wolfg., but refer to *P. Wolfgangii* at p. 494. This of course is a sort of contradiction to Kilman's reference of his plant to *gracilis*, although he founded his species on Wolfgang's own specimens. Whether or no, the plants are the same without any doubt, as I noted to Dr. Graebner when I had the proof-sheets of the "Das Pflanzenreich" to look over and correct. Until Mr. Barclay found this in Perth, the only British station was Shetland, where it was gathered by my late friend Mr. W. H. Beeby in the Loch of Lumbister, Yell., 1/7/1889.

Mr. Barclay's locality is Loch Moraig, about 3 miles N. E. of Blair Atholl. It has been formed artificially, but a long while ago. In a second letter he writes, "and as I was not satisfied that it was really *heterophyllus*, I took specimens. . . . Of the other *alpinus*, I saw only the bit" (sent). This *alpinus* is intensely red-purple in colour. Mr. Barclay mentions what may be young specimens of *gracilis* as plentiful. I hope he will again visit this Loch next year and obtain a series in various stages.

It is (if a hybrid) one that fruits, as there are well-formed fruits, and this is also the case with the Finnish specimens I have. Usually one may urge this against hybridity, but my late friend Mr. Fryer, who cultivated and studied the genus in the Cambridgeshire Fens for many years, showed that they did sometimes fruit freely under certain conditions, as a very hot summer, or some exceptional chemical condition of the water, etc.

30th March, 1916.

A Special Lecture was given by the President, his subject being "Gowrie House and Perth during the Commonwealth and reign of Charles II."

13th April, 1916.

W. BARCLAY, President, in the Chair.

The following paper was read :—

"Infant Mortality," by Dr. C. Parker Stewart, B.Sc. (See *Transactions*, Vol. VI., Part III., p. 133.)

SUMMER SESSION, 1916.

The following excursions were arranged :—

1. Monday, 12th June (Whit Monday)—Motor to Blairgowrie and round the Lochs Marlee and Clunie by Dunkeld to Perth.
2. Saturday, 24th June (Half Day)—Linn of Campsie and Taymount.
3. Saturday, 8th July (Midsummer Holiday)—Ben-y-Vrackie.
4. Saturday, 22nd July—Balmanno Castle, Ecclesia-ma-girdle Church, Castlelaw, and Ochilview.
5. Wednesday, 9th August (Half Day). Cairnton Loch.
6. Monday, 28th August (Autumn Holiday)—Drummond Castle and Auchterarder House Gardens (jointly with Perthshire Horticultural Society).
7. Saturday, 30th September—Fungus Excursion.

PHOTOGRAPHIC SECTION.

The following Syllabus was arranged and duly carried out :—

Wednesday, 24th November, 1915—Exhibition of Lantern Slides in colour (Paget Process).

Wednesday, 15th December, 1915—"Old Dundee." JAS. B. CORR.

Wednesday, 19th January, 1916—"X-Rays and the Wounded." Dr. LYELL.

Wednesday, 16th February, 1916—Salon Slides.

Wednesday, 15th March, 1916—"With Hammer and Camera in Gotland." Mr. DUNLOP, Dunfermline.

The meetings were throughout of a most interesting character, but the attendance left something to be desired. It should be noted that the meetings of the Photographic Section are open to all members of the Society, and not merely to those who take an active interest in photography.

LIST OF DONATIONS TO THE LIBRARY.

Session 1915-16.

I.—Publications acquired by Exchange with other Societies.

Aberdeen Working Men's Natural History and Scientific Society. Transactions, Vol. iii., Nos. 1-4.
American Museum of Natural History. Bulletin, Vol. xxv., Part 2, Vol. xxxv.
Arboricultural Society, Royal Scottish. Transactions, Vol. xxix., Part 2.
Ashmolean Natural History Society of Oxfordshire. Proceedings and Report for 1914 and 1915.
Australian Museum, Sydney. Records, Vol. x., No. 11. Memoir iv., Scientific Results of the Expedition of H.M.C.S. *Thetis*.
Belfast Naturalists' Field Club. Annual Report and Proceedings, Vol. vii., Part 2, 1914-15.
British Association. Report of Australian Meeting, 1914.
Buchan Club. Transactions, Vol. i., N.S., Part 2.
Buteshire Natural History Society. Transactions, Vol. viii.
Dove Marine Laboratory, Cullercoats, Northumberland. Report for 1915.
Dumfries and Galloway Natural History and Antiquarian Society. Transactions and Proceedings, 3rd Series, Vol. iii., 1915.
Essex Field Club. The Essex Naturalist, Vol. viii., Parts 1-6.
Geological Society. Quarterly Journal, Vol. lxxi., Part 1, No. 281.
Geological Society of Edinburgh. Transactions, Vol. x., Part 3, 1916.
Lloyd Library, Cincinnati, U.S. Bibliographical Contributions, Vol. ii., Nos. 4-7. Synopsis of the Section Apus of the Genus Polyporus.
Natural History Society of Glasgow. The Glasgow Naturalist, Vol. vii., Nos. 1-3.
New York Zoological Society. Zoologica, Vol. i., Nos. 1-20, Vol. ii., Nos. 1, 2.
Nova Scotian Institute of Science. Proceedings and Transactions, Vol. xiii., Parts 3, 4; Vol. xiv., Part 1.
Philadelphia Academy of Natural Science. Proceedings, Vol. lxvi., Part 3; Vol. lxvii., Parts 1, 2.
Royal Physical Society. Proceedings, Vol. xix., No. 8.
Royal Society of Edinburgh. Transactions, Vol. l., Part 2.
Scottish Marine Biological Association. Annual Report for 1914.
Smithsonian Institution, Washington, U.S. Annual Report for 1913. Report of the United States National Museum for 1914.
Society of Antiquaries of Scotland. Proceedings, 5th Series, Vol. i., 1914-15.
South London Entomological and Natural History Society. Proceedings, 1914-15.
Torquay Natural History Society. Journal, Vol. ii., No. 1, 1915.
Wisconsin Academy of Sciences, Arts and Letters. Transactions, Vol. xvii., Part 1, Nos. 1-6, 1911-13; Part 2, Nos. 1-6.
Yorkshire Philosophical Society. Annual Report for 1914.

The following Societies have not yet sent their Publications for 1914-15:—

Botanical Society of Edinburgh.
Carnegie Museum, Pittsburgh, U.S.
Dunfermline Naturalists' Society.
Hull Scientific and Field Naturalists' Club.
Kilmarnock Glenfield Ramblers' Society.
Northants Natural History Society and Field Club.
Northumberland, Durham and Newcastle-upon-Tyne Natural History Society.
Nottingham Naturalists' Society.
Royal Scottish Geographical Society.
Scottish Meteorological Society.
Stirling Natural History and Archæological Society.

Vale of Derwent Naturalists' Field Club.
Western Australian Museum and Art Gallery, Perth, West Australia.
N.B.—Some of these Publications are doubtless delayed on account of the War.

II.—Gifts from Institutions.

Board of Agriculture and Fisheries. Leaflets, Nos. 18, 287, 292, 293, 300-306. Special Leaflets, Nos. 11, 23, 24, 28, 29, 30, 32, 35, 40-54.
British Museum. Trustees of the.
Catalogue of Ungulate Mammals, Vol. iii., 1914; Vol. iv., 1915.
Catalogue of the Fresh Water Fishes of Africa, Vol. iii.
Catalogue of Lepidoptera Phalænæ, Supplement, Vol. i., Text and Plates.
Revision of the Ichneumonidæ, Part iv.
Flora of Jamaica, Vol. iii., 1914.
Guide to the Gallery of Mammals, 1914.
Guide to the Fossil Remains of Man.
Subject Index of Modern Works, 1881-1900, 1901-1905, 1906-1910.
British Mycological Society. Transactions, Vol. v., Part 1.
Brooklyn Institute of Arts and Sciences.
Report for 1914.
Children's Museum News, Vol. ii., Nos. 6-8; Vol. iii., Nos. 1-3.
Canada, Department of Mines, Geological Survey.
Memoirs, Nos. 30, 34, 36, 38, 50, 53, 56, 57, 59, 60, 61, 64-69, 74, 78, 81.
Museum Bulletins, Nos. 10-15, 17, 18, 20, 21.
Summary Reports for 1914 and 1915.
Field Museum of Natural History, Cincinnati, U.S. Publications, Nos. 178, 179, 181.
Fishery Board for Scotland.
Scientific Investigations, 1914, No. 4.
Salmon Fisheries, 1914, Nos. 3, 4.
Humanitarian League. Killing for Sport, by H. S. Salt, 1915.
Missouri Botanical Gardens, St. Louis, Mo., U.S., Annals, Vol. ii., Nos. 1-3.
National Museum of Wales. Eighth Annual Report, 1915.
Royal Botanic Gardens, Edinburgh. Notes, Vol. vi., No. 28; Vol. viii., No. 40; Vol. ix, No. 41.
Royal Zoological Society of New South Wales. The Australian Zoologist, Vol. i., Part 2.
Scottish Oceanographical Institute. Report on the Scientific Results of S.Y. *Scotia*, Vol. iv., Zoology, 1915.
United States, Department of the Interior, Geological Survey.
35th Annual Report, 1913-14.
Monographs, Nos. 53, 54.
Bulletins, Nos. 541, 544, 559-563, 565-570, 572, 573, 576, 580 J L M N O P, 581D E, 582, 586-596, 598, 600-602, 609, 611-614, 620B-620D, 621A-621D, 622.
Professional Papers, Nos. 87, 88, 90F-90L, 95A-95D.
Mineral Resources, Nos. iA, 11, 126, iii-ii20, ii29-ii35.
Water Supply Papers, Nos. 312, 326, 328, 329, 330, 331, 335, 339, 340C-340L, 341-344, 345G-345I, 347-350, 353, 354, 356, 357, 358, 364-368, 371, 375A-375F.

III.—Gifts from Individuals.

Barclay, William. Roman Monuments in Scotland, Anon.
Bennett, Arthur. Flora of West Lancashire, by J. A. Wheldon and A. Wilson.
Coates, H. The Journal of Conchology, 1915. British Rainfall, 1915. Symon's Meteorological Magazine, 1915. Observations on the Hill of Kinnoull, by Dr. J. MacCulloch, 1817. The Natural History of Aquatic Insects, L. C. Miall, 1895.

Ellison, S. T. The Entomologist, 1915. Photography, 1915.
Janet, Charles. Note Préliminaire sur l'œuf du Volvox Globator, and L'Alternance Sporophyto-Gamétophytique de Générations chez les Algues, by the donor, 1915.
Kidston, R., LL.D., F.R.S. Fify-Two Works relating to Geology, Zoology, Botany, Photography, and Microscopy.
Murray, Hon. Gladys Graham. Nature, 1915.

RESULT OF CHILDREN'S ESSAY COMPETITION, 1915.

Subject :—"Four Perthshire Trees."

First Division, 14 years and over (7 Essays).

1. Emily Jane Humphreys.
2. Mary Lindsay.
3. Alfred Wilson.

Certificates—Mary M'Intosh Wilson.
Christina Taylor M'Master.

Second Division, 13 years (22 Essays).

1. Andrew Anderson—Bronze Medal.
2. Peter Duff.
3. Annie Robertson.
   Daniel Bogie.
4. Harold Jenson.
   Gordon M'Coll.
5. James Guild.
6. John Clark.

Certificates—Donald Mitchell.
Nellie Brown.
Alexander Harrower.
Willie M'Farlane.
Robert Hutton.
Sydney Mitchell.
Catherine Ross.

Third Division, 12 years (17 Essays).

1. James Macnab.
2. Robert Bremner.
3. A. M'Donald.
4. Andrew Simpson.
5. Thomas Todd.
6. Alexander Todd.
   Duncan Banks.

Certificates—Mary Nettleship.
George Cameron.
William Rumgay.
May Morrison.

Fourth Division, 11 years and under (4 Essays).

1. Bessie Folkarde.

Certificates—Herbert Macpherson.
Dan. Niven.
Tom. Niven.

The Prizes were presented on Saturday, 6th November, 1915, by Sir John A. Dewar, Bart., M.P.

ADDITIONS TO ROLL OF MEMBERSHIP.

Session 1915-16.

ORDINARY MEMBERS.

Balfour, Edward J., M.A. B.Sc., Perth Academy ..... 9th Dec., 1915
Beaton, A. K., Highfield, Cornhill ..... 9th Mar., 1916
Begg, John, Freston, Glasgow Road ..... 9th Mar., 1916
Bow, Thomas P., 40 South Methven Street ..... 13th April, 1916
Brand, Alex., 9 Rosemount Place ..... 13th April, 1916
Brown, Mrs. A. W., Lawgrove House, Inveralmond ..... 6th Oct., 1916
Buchan, Miss, 27 Marshall Place ..... 6th Oct., 1916
Callander, J. Graham, Ruthvenfield House ..... 9th Dec., 1915
Cameron, James, 2 Brompton Terrace ..... 13th April, 1916
Chambers, C. E. S., Cardney, by Dunkeld ..... 7th Sept., 1916
Farquhar, J. G., 17 Pitcullen Terrace ..... 6th Oct., 1916
Forbes, Rev. R. W., The Pines, Glasgow Road ..... 13th April, 1916
Gray, Miss Ellen, Boatlands, Isla Road ..... 13th Jan., 1916
Howie, Jas. C., M.A., Perth Academy ..... 9th Dec., 1915
Hume, Dr. W. Maitland, F.R.C.S.E., 7 Atholl Crescent 9th Dec.,1915
Jameson, Martin, Fernhill ..... 13th April, 1916
Marsh, Mrs. Howard, 9 Vincent Square Mansions,
Westminster, S.W. 13th April, 1916
Meacher, Allan J., Marlee, Blairgowrie, ... 9th Mar., 1916
M'Innes, Mrs., Holmwood, Isla Road 9th Dec.,1915
Reid, Col. A. T., Auchterarder House ..... 8th Oct., 1916
Rutherford, Andrew, General Post Office ..... 13th April, 1916
Scott, Robert, Ladysmith, Gray Street ..... 9th Mar., 1916
Smith, David, Meadowbank, Needless Road ..... 10th Feb., 1916
Wylie J. W., Springbank, Glasgow Road ..... 9th Dec., 1915

ABSTRACT OF ACCOUNTS for the Year ending 28th February, 1916.

INCOME.

Balance from last Account,			£13 17 3
Subscriptions,			74 6 0
Bank Interest,			0 7 9
W. Heffer & Son,			4 10 0
Sundries,			2 4 11
			£95 5 11

EXPENDITURE.

Heating, Lighting, and Use of Rooms,			£20 0 0
Fire Insurance,			0 16 3
Janitor,			5 4 0
Subscriptions to other Societies,			1 16 0
Printing and Stationery,			31 11 11
Books and Magazines,			19 1 6
Furnishings,			4 16 6
Petty Expenses,			7 5 8
			£90 11 10
Balance in Savings Bank,	£1 16 11		
Due by Treasurer,	2 17 2		
			4 14 1
			£95 5 11

PERTH, 8th March, 1916.—Examined, compared with the Vouchers and found correct.

(Signed) J. MORISON, }
(,,) GEORGE F. BATES, } *Auditors.*

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1915.

MONTH.	BARO-MET'R	AIR TEMPERATURE.									HYGRO-METER.			RAIN.					SUNSHINE.		WIND DIRECTION.									REMARKS.
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Mean of		Mean of A and B.	Difference from Average.	Absolute Maximum. and Minimum.				Ground Frost, 30° and under.	Mean at 9 a.m. and 9 p.m.			Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.	Total Amount.	Daily Average.	Number of Observations at 9 a.m. and 9 p.m.									
		Maximum. (A).	Minimum (B).			Maximum.	Day of Month.	Minimum.	Day of Month.		Dry Bulb.	Wet Bulb.	Humidity.								N	N E	E	S E	S	S W	W	N W	Calm or Variable.	
	Inches.	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches.	In. Date.	Hours.	Hrs.									
JAN.	29·480	41·3	31·3	36·3	—0·9	51	13,14	23	26	20	35·4	34	87	14	—0·3	2·22	—0·30	·40 14	37·9	1·22	9	2	3	8	3	10	14	12	1	Snow, 11-13, 15.
FEB.	29·456	42·1	32·5	37·3	—0·1	53	3	23	1, 24	16	36·7	35·5	90	18	+5·3	5·19	+3·04	·89 7	57·2	2·04	7	0	10	3	4	19	3	2	8	Gales, 4, 7; Thunderstorm, 17; Snow, 23, 26, 28.
MAR.	29·947	47·6	32·1	39·9	0·0	61	14	19	19	21	38·9	36·5	82	11	—3·2	1·25	+1·12	·30 17	149·1	4·81	12	0	3	3	8	8	6	6	16	Snow, 1, 18, 26; Flood, 6; Inches partly covered.
APR.	29·937	54·2	36·8	45·5	+1·2	68	29	28	13,28	10	44·5	41·6	78	14	+2·4	1·17	—0·65	·21 4	180·6	6·00	3	0	6	1	6	21	7	9	7	Rainbows, 4, 6,
MAY	30·102	57·9	37·4	47·7	—1·3	75	22,23	26	14	9	48·2	44·6	76	9	—4·0	1·38	—0·77	·44 11	207·8	6·70	3	2	15	16	11	11	1	3	0	Spell of cold, 11-20. Leaves nipped by frost, 14.
JUNE	30·029	66·7	45·3	56·0	+0·4	79	12	34	18	1	55·7	51·8	76	5	—5·6	1·84	—0·12	1·15 26	219·7	7·32	1	0	14	13	13	18	1	0	0	Drought, 5-23; Thunder, 29.
JULY	29·768	66·7	48·8	57·8	—0·5	73	3, 4	39	26	0	57·2	53·8	79	19	+4·5	2·45	—0·49	·40 19	171·7	5·59	3	1	7	3	9	30	5	2	2	Thunderstorms, 14, 19, 23, 27; Rainbows, 12, 18, 19, 23.
AUG.	29·951	66·9	49·9	58·4	+1·3	73	11	35	31	0	57·1	55·0	86	18	+1·7	4·80	+1·31	·84 31	138·4	4·47	2	6	11	8	3	21	3	4	4	Thunderstorms, 2, 4, 11, 12, 13, 14, 15.
SEP.	29·979	61·6	45·2	53·4	+0·2	74	8	36	29	0	52·5	50·6	87	10	—3·4	1·86	—0·37	·69 24	125·1	4·17	3	1	5	10	1	18	1	11	10	1-15, only ·06 of Rain.
OCT.	30·052	52·9	38·2	45·6	—0·6	61	12	26	2, 27	7	43·2	42·4	93	15	—0·5	2·54	—0·42	·70 23	76·4	2·47	1	4	7	25	0	10	3	11	1	Heavy Spate, 24; Low night temperatures.
NOV.	29·919	41·5	28·2	34·9	—6·2	54	7	15	16,18	20	33·4	32·1	86	6	—9·2	1·92	—0·89	·81 29	75·7	2·52	9	6	0	7	0	11	1	17	9	Snow, 15, 2 inches; 15-27, no Rain.
DEC.	29·503	40·2	31·9	36·1	—1·9	49	31	19	4	18	35·6	34·7	92	24	+6·8	6·27	+3·24	1·09 5	19·4	·65	7	3	14	4	2	2	3	4	23	Snow, 5, 12; Gloomy and wet, 19-25.
YEAR	**29·844**	**53·3**	**38·1**	**45·7**	**—0·7**	..	..	.	..	**122**	..	..	**84·3**	**163**	**--5·5**	**32·89**	**+2·46**	..	**1459**	**4·00**	**60**	**25**	**95**	**101**	**60**	**179**	**48**	**81**	**81**	
Highest	**30·735**	20 xi.				**79**	12 vi.			**21** Mar				24	Dec.	**6·27**	Dec.	**1·15** 26 vi.	219·7 June. 19·4 Dec.	7·32 June ·65 Dec.					**179**				
Lowest	**28·533**	2 i.						**15**	16, 18 xi.					5	Nov.	**1·17**	Nov.					**25**							

Averages are for the period 1883-1912—30 years. Height of Station above Sea Level = 85 feet. Position—56° 23′ N. Lat., 3° 25′ W. Long.

HENRY COATES, F.R.S.E., Curator, The Museums, Perth.

BAROMETER.

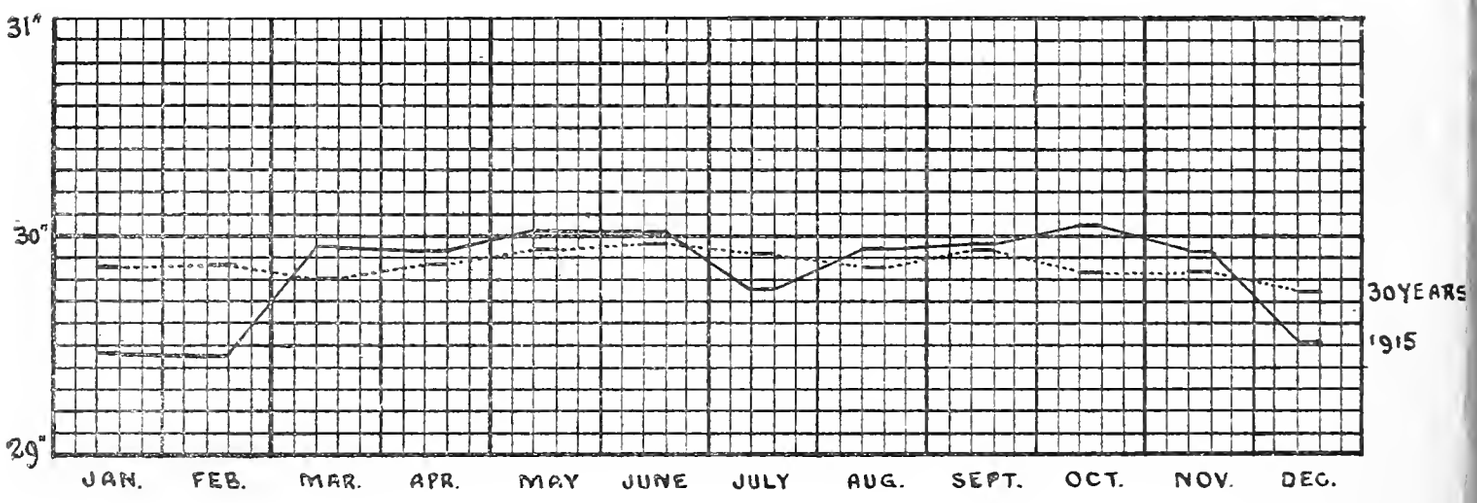


Plate XVII.

Mean Monthly Reading at Perth, 1915————

Average of Monthly Readings, 1883-1912.....

RAINFALL.

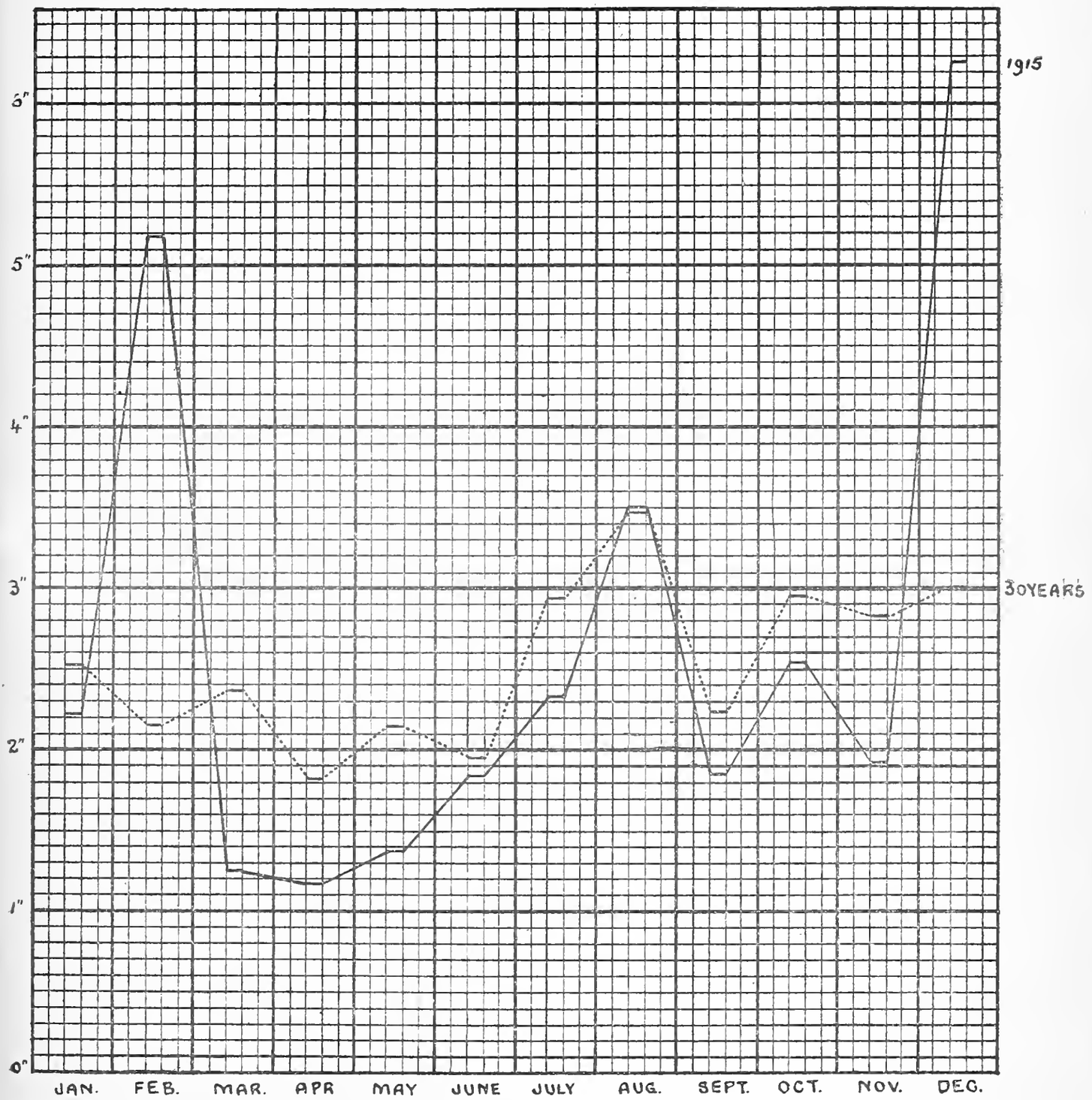


Plate XVIII.

Monthly Rainfall at Perth, 1914————

Average Rainfall at Perth, 1883-1912.....

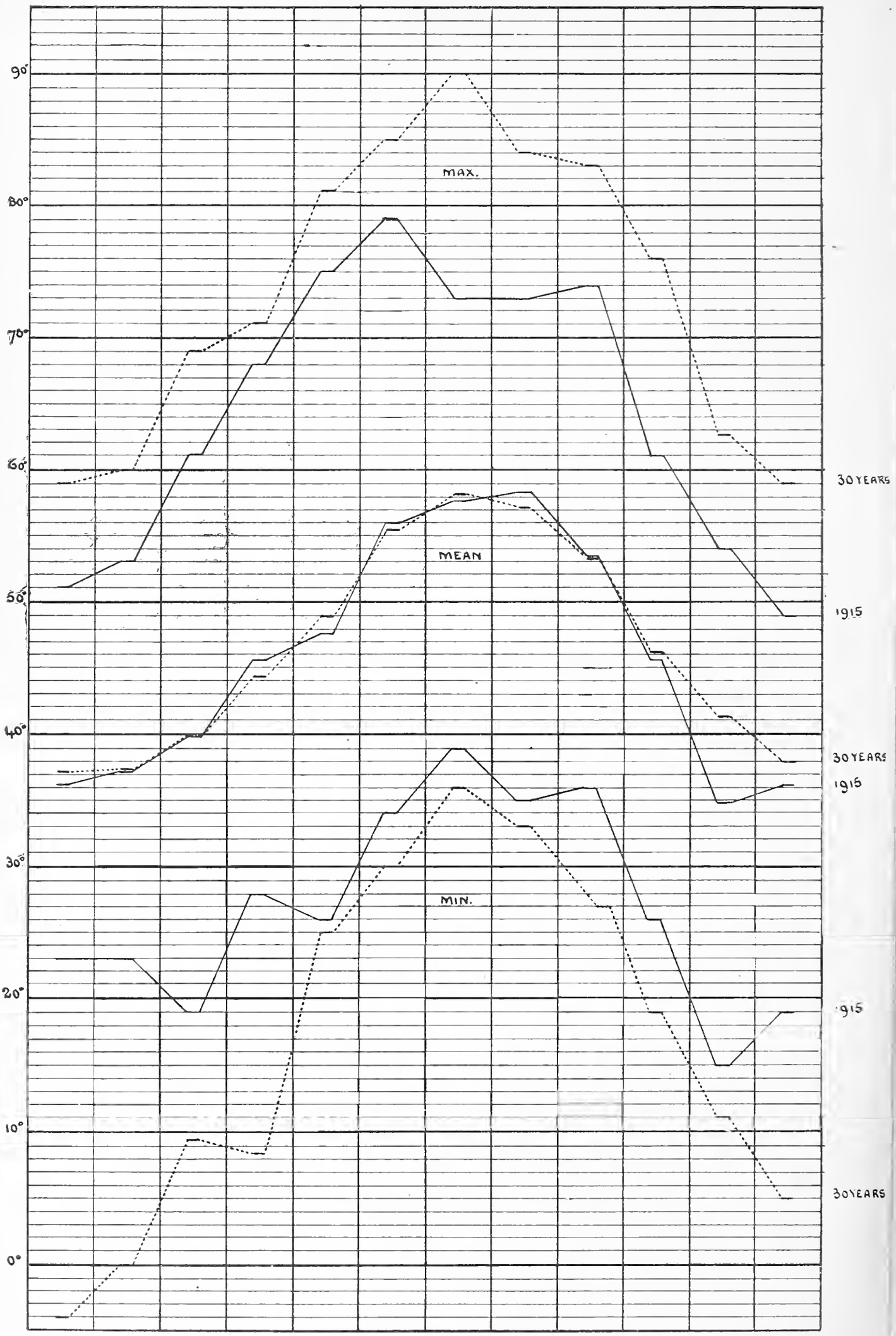


Plate XIX.

Maximum, Minimum, and Mean Monthly Temperature at Perth, 1915———
Maximum, Minimum, and Average Mean Monthly Temperature at Perth, 1883-1912.....

WINTER SESSION, 1916-1917.

10th November, 1916.

W. BARCLAY, President, in the Chair.

Various donations of books and periodicals were announced, and a number of specimens which had been received in the Museum during the summer were exhibited.

The President then proceeded to deliver the following Opening Address :—

LADIES AND GENTLEMEN,—Since we met last in April we have lost by death several of our members.

Mr. William M'Laren, Architect, has been on our roll since 1878, and though not a working naturalist, was a good friend of our Society, and in him the City has lost a useful citizen and a most worthy man. Mr. James B. Bouick was well known to all of us, and for a good many years was a regular attender of our meetings. In his profession his ability and assiduity gained him a very high place, whilst his quiet, amiable and obliging disposition made friends of all those with whom he came in contact. By his death a most useful and laborious life came to a somewhat untimely end.

A great blank in the ranks of the working members of the Society has been caused by the passing away of Dr. John Lyell. Too soon his valuable life came to a somewhat sudden and unlooked for end. From his early years he took a keen interest in Natural Science, and was always delighted when he could steal away from the daily round of regular work to pass with us a few hours in the woods and fields. He was a frequent contributor of papers at our meetings, as our *Transactions* for a good many years back will testify. He took great interest in those curious organisms, the myxomycetes, lying on the borderland between animals and plants. He was also an ardent student of the evolution of man, and by his papers kept us abreast of the latest discoveries of the remains of man or of his implements, which bore, or were thought to bear, upon the first appearance of mankind upon the earth. Only a few months before his death he gave us a most interesting and lucid account of the nature and method of production of the X Rays, and by practical demonstration showed how they are put to use, and how great is the help they now render to the surgeon and the physician. As operator of the X Ray apparatus in the Perth Royal Infirmary he for several years did much useful work in a quiet way, for which perhaps he has not obtained the credit he deserves. On the whole, a man of much ability, and power of work, combined

with a quiet, unassuming manner, but with a feeling heart and a most kindly and lovable nature.

J. A. Harvie-Brown of Dunipace House, a member of our Society for a quarter of a century, was one of the foremost of British Zoologists, especially in the department of Ornithology. Early in life he acquired a keen interest in Natural History, and his circumstances enabled him to devote his life to his favourite pursuit. In youth he travelled in Norway, Russia, Finland, and Transylvania, chiefly to study the ornithology of these countries and to make scientific collections. Later in life, along with the great ornithological authority Seebohm, he spent some time in the basin of the Petchora in North-east Russia with the same end in view. A great misfortune befell him in 1897, when his extensive collections were almost totally destroyed by an accidental fire. This was a great loss, not only to himself, but to Science. Of his numerous scientific papers, none were published in our *Transactions*, as they required and merited vehicles which commanded a much wider circulation than we could give. Of the numerous volumes—some written, and all edited by him—on the Fauna of many districts in Scotland, that which connects him with ourselves most closely, is his full and accurate monograph on the Fauna of the Tay basin, a work which could only have been written as the result of long, patient, and intelligent research. In his later years, he made a fine collection of agates, employing others to collect for him as he was himself unfit for much active exertion. Only a short time before his death he made a valuable gift of two finely mounted specimens of rare Perthshire birds to our local Museum. We have reason to be proud of having had the name of such a distinguished naturalist on our roll of membership.

The weather of the period since November of last year has been marked by some peculiar and unusual features, so that it is worthy of special notice. In the middle of that month there occurred about ten days of very severe frost, the thermometer reaching to 17° below freezing point. The thermometer has on several occasions within the last thirty years fallen as low, but such a long continuance of keen frost at so early a period of the winter has not been recorded during that time. On the whole, the average temperature of that month fell no less than six degrees below the average of the last thirty years. December, again, though very little colder than the average, had rather more than twice the usual amount of rain. January was very much warmer, and also a good deal wetter than usual. Of the next four months April was slightly warmer than the average of the last thirty years, March much colder, and the other two slightly colder than the average of the same period. April was also drier than usual, whilst the others, especially February and May, had a good deal more than the normal amount of rain. June was both a good deal colder and a good deal wetter than usual, and throughout the spring months the prevailing wind came from east to north-east, and this continued even into July.

July was very cold for about two weeks at the beginning, but then grew warmer, and towards the end of the month very warm, so that the average temperature for the whole month was slightly over the average. But the chief feature of the weather of July was the excessive rainfall in certain districts which occurred during the first ten days. The rain storm came from the north-east, so that besides the lower Tay valley and the tributaries which fall into it, the Isla and the Tummel districts suffered more severely than the western, towards Aberfeldy and Killin. In Perth, and for a certain radius around it, the rainfall was almost, if not altogether, heavier than on any former occasion. In the twenty-four hours preceding the morning of the 8th July nearly three and a half inches fell, and during that week the huge total for this town of seven and a half inches was recorded. The result was such a surface flooding as certainly no living person has ever seen in this locality during the summer months. Railway trains were running within the town boundaries through several feet of water, and streets were flooded that no one had ever seen flooded before. The heights on the east and south-west sent down streams of water over roads and fields, which in some places ploughed long furrows in the ground three or four feet deep, and at the lower extremity of these scattered with explosive force a huge quantity of stones and earth over a wide surface. We have all heard of the flooding of the bowling green at Muirhall Terrace. Craigie Burn also overflowed its banks and did some damage in gardens, and more to the roads, whilst the force of water going over the fall was so great that about fifty tons of rock were torn off and fell. The Scone Burn, too, as we all have heard, brought down the front wall of a cottage, and did much other damage. In the Bridge of Earn district also, the rainfall was quite as heavy, and, indeed, all along the lower Earn valley fields were inundated, and much damage done to the standing crops. The river itself, though it reached the eighteen feet mark at Perth Bridge, has often been higher, so that it was the severity of the local rain storm rather than the unusual height of the river that caused the damage. But the greater marvel was that the flood occurred in the month of July, a month for which big floods have not previously been recorded. Of course, it must be remembered that we have few records previous to the beginning of the nineteenth century; not many, in fact, till half a century after that. Before that it is only in cases of big disasters, such as the breaking down of the Bridges, that special note has been taken of floods. But such incidental remarks as that which we find in the "Rentale Dunkeldense," where it is recorded that in 1510 the Bishop of Dunkeld paid 27/- for "winning the hay at Kinnowle damaged by inundation of the water of Tay"; or the pretty frequent orders in the Town Council Records to repair damages caused by river floods, show us clearly that spates in the river, and big ones, too, were as frequent then as now. I might quote an example or two of these entries: On 10th February, 1667, the Town Council appoints the

Treasurer " to provyd horses for Baylie Orme, himself, John Foot, Andrew Jak, Matthew Chaip and Henry Crie, to visit the Bridge of Earne, Shiel's Bridge,* passing to Pitthevles, Lowswark, and other the Town's Marches, to know what prejudice the late inundation have done, and caus repair them and report."

Again, on 26th May, 1684: " The Counsell impowers the treasurer to cause repair the Bunch Bridge, Croy at the head of the South Inch and what breaches within and without the town wer occasioned by the lait winter spait of snow and ice."

Or again, 11th March, 1753: " To cause repair a large breach in the bulwark at the Muirtown made this winter by an extraordinary speat in the river Tay."

But still, allowing for the imperfection of records, we can still be certain that big July floods have always been exceedingly rare.

In August and September the amount of heat was not very different from the average, whilst the rainfall was considerably less than the normal. Last month, October, was again very wet, the rainfall being more than twice the average of the last thirty years, and November bids fair to follow suit.

Turning now to the summer excursions. On Whit-Monday, which this year was as late as the 12th June, we set out from Perth by motor on a fine, but somewhat blowy, morning. Going by the Blairgowrie road we passed through the picturesque village of Meikleour, and after coming in sight of Loch Marlee made a short halt at Marlee House. Here we were kindly met by Mr. Meacher, who showed us through the old house, and gave us a short sketch of its history and the various additions which have been made to it from time to time. We had also the pleasure of listening to a selection of music artistically played upon the fine organ which has been installed in the house to gratify the musical tastes of the inmates, and also to enable them to afford pleasure to parties from the neighbourhood, who are invited now and again to visit the house to spend a musical evening. The central portion of the house is by far the oldest portion, dating from about the last quarter of the seventeenth century. Originally, it belonged to the Leslies. About the time of the Revolution it was owned by the Rev. Thomas Fowler, Minister of Kinfauns, who was deprived of his living for refusing to pray for William and Mary. By the favour of the people, however, who had a great liking for him, he managed to hold on for other seven years before he was finally expelled. By him or his heirs, the house was sold to the Farquharsons of Invercauld, who about 1750 added to two wings which, with their rounded corners, form perhaps the most striking feature of the building. It remained with that family until a comparatively recent period. After inspecting the house, we spent a short time in the garden and grounds and then, thanking Mr. Meacher very

*A bridge over a streamlet a short distance south of the Old Bridge of Earn, still called by the same name. It is frequently mentioned in the Town Council Records.

cordially, again proceeded on our way. A pleasant drive of a few miles through a fine valley brought us to Loch Cluny, by the shore of which we made a stay of about a couple of hours. We made some examination of the flora of the neighbourhood which, though rich, contained nothing remarkable. The Loch itself is noted as being rich in Pond weeds with some rare species, but it was too early in the season for water plants. We made a pilgrimage to the Church to do homage at the tomb of the Rev. William MacRitchie, a former minister of Cluny, and a keen and accomplished botanist of his time. We should have liked to have visited the island and its ancient Castle, but we had neglected to provide a boat, and even if we had been careful to do so, the strong gale would have made the voyage somewhat too risky to attempt.

The Castle and other structures on the island were built, or rather re-built, by George Brown, Bishop of Dunkeld, in the last years of the fifteenth century, and the Bishop spent a portion of each year in this quiet retreat. At this time the whole district between Dunkeld and Cluny belonged to the diocese of Dunkeld, so that Bishop Brown was able to ride from his Palace in that town to his Island Castle of Cluny by three several roads without going off his own land. He also spent a part of each year in Perth, residing either with the Whitefriars of Tullielum, who were under his jurisdiction, or in his lodging in the South Street of Perth. This lodging, however, did not please him, so that he acquired a new one, also in the South Street, between the south end of the Watergate and what is now St. John Street. This new lodging he greatly enlarged, and spent a good deal of money in furnishing and decorating, so that it became known as the Bishop's Palace. From his account book, part of which has come down to us, we can see that the Bishop did not spend all his money in building, but a good deal of it in charity. He was specially kind to the Greyfriars. Besides a regular annual allowance of 26 bolls of meal, his occasional gifts were frequent, such as 1 mart and 4 muttons; 32/- to purchase 41 ells of linen cloth; in alms of meat at the Nativity to the Greyfriars 30/-, and so on. To the Blackfriars his gifts were comparatively small, and to the Charterhouse very rare. Probably the Greyfriars were the poorest and most needy, for it is hardly likely that the Bishop acted upon the adage—"To every one that hath, shall be given."

At Dunkeld a bridge over the Tay, opposite the Palace, had been built by Bishop Lauder in the third quarter of the fifteenth century. This, which was partly of stone and partly of wood, appears to have been broken down not very many years after, and a new bridge on the same site was begun by Bishop Brown. He only lived to see one arch completed, but it was finished by his successor, the celebrated poet, Gavin Douglas. How long it stood I have not ascertained, but it certainly did not survive the great flood of 1621, when our bridge at Perth was hurled into the bed of the stream.

Returning now to our excursion, we left Cluny and drove along past Lochs Butterstone, Benachally and the Lowes and over a wooded ridge to Dunkeld. After a short stay for tea, we returned to Perth by Murthly and Stanley, a route which affords fine views, and these the fine summer evening allowed us fully to appreciate and enjoy.

On 24th June, a half-day excursion took place to Linn of Campsie and Taymount. As I was not present, I am indebted to the leader, Mr. Henry Coates, for information regarding it. The party spent some time at the Linn examining the trap dyke and other geological features, and then set off along the river side through the grounds of Taymount, where many fine trees were seen, claiming attention. Unfortunately, the weather at this point broke down, and the rest of the way was rendered unpleasant by rain, which became heaver the further they went. Passing through the grounds of Taymount, they went on to Ballathie, and there were ferried over to Cargill, where Miss Dewar kindly mitigated their discomfort by a plentiful supply of hot tea. When setting out for the station, they looked in for a short time at the old churchayrd, where there are some interesting memorials. An antique sundial over the arch of the entrance gate also attracted their notice.

On 22nd July, we went by motor 'bus to Balmanno, under the leadership of Mr. John Ritchie. We found great alterations going on there, which will to a certain extent obscure, if not obliterate, many of the features of this fine old castle dating from about 1570. One striking feature, which it is hoped will be preserved, is the moat, which can still be clearly seen in the greater part of its extent, and this is by no means commonly the case. On leaving Balmanno, we walked under the the hot sun to Glenearn, and visited the interesting mansion house dating from the seventeenth century, and the ruins of the old chapel of Ecclesiamgirdle. I need not say that here, as at Balmanno, our guide pointed out the distinguishing features of each building in his wonted lucid manner. On our way to visit the gardens we saw many marks of the damage done by the great rain storm in the beginning of the month. Proceeding through the beautiful grounds we journed on to Kintillo, and received a warm reception at Ochil View from our fellow member and companion during the day, Mr. Brough. After tea in the open air, we paid a visit to his celebrated garden, and were made acquainted by him with the many varieties and beautiful plants which it contains. We shall not soon forget the kindness with which he treated us on this occasion.

On 5th August took place our usual mountain excursion. This had been fixed for the 8th July, but had been postponed owing to the fact that all the usual July holidays had been, on account of the necessity of keeping up the supply of munitions, put off till August. We were still in the hot spell which set in after the great floods in July and continued till about the middle of August. It was a warm walk from Pitlochry to the foot of Ben Vrackie, but a cool breeze

made the ascent to the summit much less fatiguing. Mr. Bates made a most efficient leader, and pointed out the principal geological features met with on the way. The president and another zealous botanist turned aside at about 2,000 feet to examine the rocks, and were still briskly at work there when the rest of the party were on the descent. They found that the rare *Oxytropis uralensis*, and the still rarer *Astragalus alpinus*, were still plentiful, though it was too late to find them in flower. The only other alpines worth mentioning which were seen were *Cerastum alpinum*, *Potentilla alpestris*, and *Potentilla Sibbaldi*.

On the 9th August, a half-day visit was paid to Cairnton Loch and Almondbank under the leadership of Mr. A. W. Brown, who had carefully prospected the ground beforehand. Driving out to Bertha, we then walked to the loch, examining the flora on the way, but not finding anything very rare. The loch is an artificial one, formed about fifteen years ago. Several pond-weeds were seen, and specimens got of two, but without flowering spikes. One was certainly *Pot. heterophyllus*, but the other I have not identified as yet. A walk through the woods brought us to the great cairn or tumulus, from which I suppose the loch derives its name. It is a large mound with a cairn of stones on the top. The whole mound, however, appears to be part of the cairn, though only the top is uncovered, and that probably has had its covering of earth removed. Only excavation, however, could unveil the secrets hidden below. A scramble over barbed wire, a walk through the fields, and then through a shady den where a little rill, swollen by the rain, had wrought great havoc on the 8th July, brought us to the bank of the Almond high above the river. After some distance, the bank turns away from the stream, and then we reached what is certainly an irregularly shaped fortification enclosed by a trench and rampart, which are doubled at one corner. It does not appear to be Roman, and, in fact, nothing definite seems to be known as to the time of its construction, or as to who were the constructors. A pleasant afternoon was wound up by tea at Almondbank, whence we returned by the motor 'bus.

The Autumn Holiday Excursion on 28th August was a combined one, the Horticultural Society joining with us in paying a visit to Drummond Castle and Auchterarder House. The day cleared up finely, and the drive from Perth to Crieff, and thence to the Castle, was very enjoyable. The road through the grounds for the greater part of the way proceeds along the top of one of those trap dykes which cross the country from Perth to the shore of Loch Lomond. To the right, the Loch of Drummond, everywhere girt with reeds, and in part fringed with alders and birches, formed a fine feature in the landscape. The Castle itself is built upon the broad summit of the same dyke. The original building was erected about the end of the fifteenth century, and consisted of an oblong keep with a projecting turret, which enclosed a staircase. In the beginning of the seventeenth century, a lower building was added on the south, and

subsequently other erections were constructed on the north, which, however, are now only a mass of ruin. On a former excursion, an account was given of what is now to be seen inside, which I need not repeat. We spent a considerable time in the celebrated gardens, which, though still a fine show, had perhaps suffered from the want of hands, taken away to serve in the war. Four young ladies from Crieff Academy were unselfishly spending their holidays in working in the garden, and were busy with rake and hoe. We were much indebted to the head gardener, Mr. Cook, for conducting us through the Castle and gardens, and thanked him heartily on taking leave. Proceeding onwards through Muthill, and thereafter reaching the Earn, and passing without crossing Kinkell Bridge, we turned to the right and soon reached Auchterarder House. Here the contrast was great between the gardens we had left and the gardens and grounds we now saw. The former was the perfection of the antique and formal, the latter an exquisite example of the free modern style. Everything was in perfect taste, and so laid out as not only to be in itself pleasing to the eye, but to afford fine peeps at the landscape beyond. Mr. Reid, the proprietor, conducted us through the grounds, and afterwards entertained the large company in the fine modern mansion in which he dwells. His kindly hospitality well merited the cordial vote of thanks which he received. We afterwards drove home to Perth in the cool of a fine evening, and all delighted with the day's excursion.

The usual fungus excursion under the leadership of Mr. Menzies was favoured with fine weather, and was very successful. From Dunning Station we walked to Gask, and in the grounds found many fungi of various species. We visited the remains of the "Auld Hoose," so long the abode of the Oliphant family, and which has been embalmed in imperishable verse by the gifted poetess who was born within its walls. Some splendid Spanish chesnuts, about 250 years old and of enormous girth, attracted our attention and admiration, and strangely enough it was on two of these that the best finds of the day were made. On one was found *Polyporus intybaceus*, a very rare species, at least in Perthshire, and on another fine specimens *Fistulina hepatica*, the beef-steak fungus, so called from the red and streaky flesh of its fructifications. After leaving Gask, we proceeded along the old Roman road, which goes in a straight line towards Innerpeffray, then turning to the right, passed by the village of St. Davids, and went over the ridge to Madderty. Here at the manse, the Rev. Mr. Brown kindly entertained us to tea, which was very welcome after our long walk, longer, however, in the imagination of several members, than it was in reality. Thus came to a close a very successful series of excursions. These had been very well attended, and it was evidently a relief and a valuable tonic to the members to throw off for a few hours the nightmare of the war, and to find renewed strength from a brief communion with Nature.

In conclusion, I should like to mention one or two interesting

discoveries during the summer. In June, Mr. Menzies in walking through the South Inch came upon many examples of a grass which was new to him, but which he correctly identified as *Cynosurus echinatus*, a near relation of our common-crested dogstail. It is considered native in Jersey, but as an alien in Britain. It must have come to the South Inch in the fodder supplied to the horses of the troops quartered there in the previous year. Mr. Menzies has also made some new discoveries amongst the smaller fungi, which he has promised to communicate to us during the present session.

In the middle of August I paid a visit to Blair Atholl, and walked to Loch Moraig. My object was to see if I could find further specimens of *Gentiana amarella*. To my great disappointment, I saw no gentian of any kind. Walking along the edge of the loch, my attention was attracted by considerable masses of pond-weed, which had been torn up by the waves and blown by the winds towards the side. On examining the mass, I found that it consisted of one species with some fragments of another. The prevailing one was somewhat like *P. heterophyllus*, but apparently not at all identical. I took specimens, and also the bits of the other species. On sending them to Mr. Arthur Bennett, he recognised the one which was plentiful as *P. gracilis Wolfgang*, which is reputed to be a hybrid of *P. alpinus x heterophyllus*, but differs from all, or almost all, other pond-weed hybrids in being fertile and producing good fruit. A note from Mr. Bennett giving a full account of it will appear in the next number of our *Transactions*. It has hitherto been found in Britain in only one station in the Shetland Islands. The other fragments were identified by Mr. Bennett as belonging to *P. alpinus*.

A visit in August to the Woody Island brought me both pain and pleasure. It was sad to see great part of the island stript of its trees and covered with tall ragwort, and tansies and thistles. But in one part still unspoiled I was pleased to find a great glowing golden mass of *Nasturtium sylvestre*, a fresh arrival in the island. This plant is accepted as a native without any doubt, but when it occurs, as it sometimes does, beside railway station and in waste ground amongst other aliens, in such places it seems to have been introduced indirectly by the agency of man. On the banks of the Earn it abounds in many places, and seems undoubtedly native there and in similar stations.

I found also in the island quite a clump of Campanula rapunculoïdes, a creeping blue bell. Single specimens of this have once or twice been previously found, but they did not keep their ground. Now, however, it looks as if it were thoroughly established.

The following paper was then read :—

"Note on Stone Cists found at Flawcraig and Burnfoot, in the Carse of Gowrie," by Henry Coates. (See *Transactions*, Vol. VI., Part IV., p. 149.)

8th December, 1916.

W. BARCLAY, President, in the Chair.

The following paper was read :—

"Arctic Animal Life," by the Hon. Miss G. Graham Murray. The paper was excellently illustrated by a series of lantern slides.

12th January, 1917.

W. BARCLAY, President, in the Chair.

The following papers were read :—

1. "Note on the Food of the Hedgehog," by D. Sutherland, M.A.

The writer stated that in July, 1916, he found a young hedgehog caught in the net which protected his strawberries. The little creature was almost suffocated, but after a time he revived and began to move about. Next day, about 2 p.m., he found the hedgehog in front of one of his hives busily engaged in eating the bees. With astonishing quickness he snapped at and caught the bees that were flying near him, and crunched them with his teeth. He also caught some of the bees that were crawling about on the ground, but paid no attention to dead bees. This showed the kind of fare the hedgehog resorted to at times.

2. "Local Societies and Archæological Research, with Notes on Prehistoric Antiquities in the Perth Museum," by J. Graham Callander, F.S.A.Scot. (See *Transactions*, Vol. VI., Part IV., p. 151.)

26th January, 1917.

W. BARCLAY, President, in the Chair.

A Special Lecture was given by J. Stewart, L.D.S., on "Science to Date—Something not Generally Known."

9th February, 1917.

W. Barclay, President, in the Chair.

Officer-Bearers for Session 1917-18 were proposed as follows :—

President—Mr. W. Barclay.
Vice-Presidents—Messrs. T. M'Laren, J. Clacher, J. Ritchie and W. Wylie.
Secretary—Mr. S. T. Ellison.
Treasurer—Mr. J. Winter.
Librarian—Mr. J. Coates.
Editor—Mr. G. F. Bates, B.A., B.Sc.
Councillors—Messrs. H. Leslie, J. Stewart, J. Menzies, E. Smart, B.A., B.Sc., W. T. Morrison, J. J. Simpson.
Curator—Mr. H. Coates, F.R.S.E.

The following paper was read :—

"The Origin of Landscape," by George F. Bates, B.A., B.Sc. The lecture was fully illustrated by a series of lantern slides.

21st February, 1917.

W. Barclay, President, in the Chair.

A Special Lecture was given by W. G. Smith, D.Sc., Edinburgh, entitled—" Some Botanical Notes from Denmark."

FIFTIETH ANNUAL MEETING.

9th March, 1917.

W. Barclay, President, in the Chair.

Letters of congratulation on the Society's attaining its Jubilee were received from :—

The Kirkcaldy Naturalists' Society;
Prof. J. Arthur Thomson, M.A., LL.D., Aberdeen University;
Prof. J. W. H. Trail, M.A., F.L.S., etc., Aberdeen University;
Lieut.-Commander J. G. Millais, F.Z.S.; and from
Sir Archd. Geikie, O.M., K.C.B., LL.D., D.C.L., President of the Royal Society, who says :—

" It would please me if the Society would accept my hearty congratulations on its anniversary, and my best wishes for its con-

tinued vigour and prosperity. I have long admired its enthusiasm and success, as shown not only by its published volumes of papers, but perhaps still more by the admirable Museum which it has established in Perth. I think every county town should try to have a similar institution, and no better model could be found than the Society's Museum."

The Office-Bearers proposed at the February Meeting were unanimously elected.

The following Reports were submitted :—

REPORT OF COUNCIL.

The Council have pleasure in submitting to the Members their Fiftieth Annual Report, giving an account of the past year's work.

During the year 6 Ordinary Monthly Meetings were held, at which 6 Papers were read, as well as the 2 Annual Addresses of the President.

The average attendance has been 40. The largest number at one Meeting being 80, on the 8th December, 1916, and the lowest 22, on the 13th April, 1916.

There have been added to the List of Members 19 Ordinary Members, making the total Membership 310—embracing 14 Corresponding Members, 9 Associates, 281 Ordinary Members, and 6 Associate Members.

Three Special Lectures have been given, one by the President on 30th March, 1916, on "Gowrie House and Perth during the Commonwealth and Charles II."; the 2nd on 26th January, 1917, by Mr. James Stewart, L.D.S., on "Science to Date—Something not generally known"; and the 3rd by Dr. W. G. Smith, of Edinburgh, on "Some Botanical Notes from Denmark" was given on 21st ult. The attendance at these Lectures was very good, and the Council are greatly indebted to these gentlemen for their services.

During the summer 7 Excursions were held, 2 being jointly with the Horticultural Society, and all were fairly well attended. A Fungus Excursion was this year carried out to the Woods of Gask, and was very successful.

The Children's 19th Essay Competition was on "A Naturalist's Diary," and 33 Essays were sent in—15 by boys and 18 by girls. The prizes were given out to the successful Competitors on Saturday, 14th October, 1916, by Major and Mrs. Mercer of Huntingtower.

The Council had hoped that such an auspicious event as the Jubilee Meeting of the Society would have been celebrated in a fitting manner, but the continuance of the War has put that out of the question. Perhaps on some future date it may be suitably recognised, when, let us hope, those Members at present serving on Military Service shall have returned home.

The Council feel that this event cannot be allowed to pass with-

out some reference to the work accomplished during the past fifty years. At a Meeting held on the 28th February, 1867, in King James VI. Club Room it was decided to form a Society, and a Constitution was drawn up, the first Meeting of the Society being held on 7th March. Of the fourteen Original Members, as far as can be ascertained all, except one, have passed away. The foundations were well and truly laid, and doubtless if the Original Members had lived until now they would have been surprised at the success the Society has attained. The objects set forth in the Constitution were :—

The Study of Natural Science by the Exhibition and Preservation of Specimens.

The Reading of Communications.

By Lectures, Excursions, and the Formation of a Library and Museum.

These aims were steadily kept in view, and the Society has advanced to an eminent position amongst the Scientific Societies of the Country. Its *Transactions* and *Proceedings* are much sought after by Societies and Libraries, not only in Britain, but over the seas. A valuable Scientific Library has been collected; and as to the Museum, which the Society not only formed, but housed, and which some years ago was handed over—buildings and collections—to the keeping of the Town Council, it has received the highest commendations from those most competent to judge as being one of the most valuable local Museums in the Country. The Council therefore feel proud of the position to which the Society has attained, and they trust with regard to the future that all may be animated with the spirit of enterprise of the earlier Members in carrying on the progressive Study of Natural Science in general, and of Perth and Perthshire in particular.

REPORT OF LIBRARIAN.

The Library has been well patronised during the past year. 220 books have been borrowed by 63 Members, and in addition a large number of Works of Reference have been consulted on the premises.

16 Works have been added to the Lending Library and 5 to the Reference Library, making a total of 21 New Works. Of these, 13 were presented by Members and friends, and 8 were purchased. The total number of Works in the Library at 1st March, 1917, was as follows :—

Reference Department, ...	633
Lending Department, ...	864
Total, ...	1497

During the year 25 Volumes of Periodicals were bound, and 23 books were bound or re-bound.

We have received publications from 47 Institutions, at home and abroad, and have sent our *Transactions* and *Proceedings* to 46 Institutions. Of the latter, 39 were for exchange, and the remaining 7 for presentation.

REPORT OF EDITOR.

Volume VI., Part III. of the Society's *Transactions* and *Proceedings* was duly published towards the end of 1916. It was issued to Members and to other Societies, etc., in the usual way.

The Part may be considered as being of more than ordinary value, recording, as it does, a considerable amount of original work and discoveries in Botany.

REPORT OF TREASURER.

(See Abstract of Accounts for year ending 28th February, 1917, page clxxxvii.)

The President then delivered his Annual Address, reviewing the fifty years of the Society's existence, as follows :—

Ladies and Gentlemen,—Half-a-century has now rolled past since the Perthshire Society of Natural Science was born into the world, and though, amidst the din and stress of war, in the very crisis of the most fateful and most wasteful struggle in the history of mankind, its jubilee cannot be so joyfully celebrated as it would have been in a happier time, yet it cannot be quite passed over in silence and without due record. During the fifty years of its existence many such societies have taken their rise in various towns in Scotland, but most of these perhaps have had but a brief existence, death has been their portion, or what is worse, arrest of growth, torpor and sluggishness, a living death. Our Society, however, though but a babe at first, was a healthy and vigorous babe, and as the years went on, its growth was steady, and on the whole, unchecked, until it grew to the full stature of manhood ; and as yet there are to be seen no signs that age has impaired its strength or lessened its vigour. And if you ask why this is so, why we have been more fortunate than so many others?—I reply that in the main it is the result of the wisdom and foresight of its founders and early leaders, of the liberality of its Constitution, of the noble aims which it has had in view from its beginnings, and of the steadfastness with which it has sought their realisation.

Its membership was and is open to all on easy terms. It sought to enrol in its ranks not only actual workers in Natural Science, and those who took such an interest in its work as to attend its meetings or excursions, but also all who thought it worthy of their countenance and support. It set before itself as the chief object of its existence the study of the Fauna, Flora, and Geology of Perth-

shire. To attain this it welcomed all who had already been turning their attention to any of the various branches of these subjects: and it endeavoured by example and by precept to induce others to become workers also, so as to keep a continuous succession of actual students. Without such succession no society of the kind can long continue to live, and must cease to fulfil the chief purpose of its existence. To keep such a succession is comparatively easy in a University town or in a large city, but it is not so easy in a place like Perth, and requires on the part of those who are themselves students a constant endeavour to attract others and to imbue them with a share of their own enthusiasm for the study of Natural Science. The second aim of the promoters of the Society was by means of lectures and demonstrations to diffuse as widely as possible some knowledge of the various branches and a taste for such knowledge, to popularise the subject in short, and to enlighten people as to its great value and importance. This was also intended as a means of attracting others to take up the study of the subject in one of its aspects. The third object kept in view by the promoters was to issue at regular intervals a record of the work done, a series of papers in which should be permanently recorded the results of the investigations of the working members, not mere compilations of other men's work or popular lectures, but actual original and personal work.

Lastly, the Society set before its Members as objects of the highest importance to be constantly kept in view and striven for: the provision of a meeting place for the Society, and especially the founding and equipping of a Museum, in which should be stored and kept a complete series of specimens of the Natural History of the County—a Perthshire Natural History Museum. Part of these stores should of course be displayed for interesting and instructing the general public, but there should also be fuller collections in which students would find ample materials for studying the Natural History of the County in all its departments.

These, the main purposes for which the Society was founded, are well known and have often been set forth. Let us now enquire whether the Society has carried on its work during the last fifty years in accordance with the aims of its original founders and promoters, and to what extent it has achieved these aims.

Let us begin with the Museum. This aim may be said to have been thoroughly attained. By the generous liberality of Members like Sir Robert Pullar and Mr. Andrew Coates and by the exertions of the Members in general, buildings were erected and equipped, containing not only a hall and library in which the work of the Society has since been carried on, but also sufficient space for housing and displaying the numerous collections of specimens which the Society has gathered together during the period of its existence. These collections have in the main been specimens actually collected by the Members themselves, or especially in the case of vertebrate animals, have been presented to the Society by friends and well

wishers. When therefore the Museum was handed over a few years ago to the Town Council, it was well on the way to completion. That it will ever be perfectly complete in the eyes of its curator, I do not believe, and do not desire. The curator who thinks there is nothing more for him to add is not the ideal curator, and certainly the present holder of that office is not likely to imagine that nothing further can be done except the keeping of the specimens in order. Though the Society is no longer the owner of the Museum, its Members will, doubtless, continue their interest in its welfare, and give their assistance to bring it always nearer and nearer to perfection. On this part of its work the Society can look with just pride and with the consciousness of having attained its purpose.

During the early years of the Society there was no proper record of its *Transactions*. By an arrangement with the "Perthshire Constitutional" reprints of the Reports of the *Proceedings* were obtained, which were afterwards issued to Members in parts. Certain contributions also appeared in the *Scottish Naturalist*, then under the editorship of Dr. Buchanan White, and for some time the organ of the Society and published under its auspices. But many papers were read at the Society's meetings which were not published in either way, and the loss of which we now regret. In 1886, however, the Society began to publish yearly its own *Transactions* and *Proceedings* in the form in which they now appear. These form five substantial volumes with the greater part of a sixth. In these volumes are recorded the results of the labours of the Members and they form a record of which the Society may well be proud, and the value of which is highly estimated by all—and these are not few—who have occasion to consult them. Of late years also the illustrations, which were but scanty at first—there were only two in the first volume—have become much more numerous, and now form a feature not only attractive, but which adds greatly to the value of the papers. In this respect also the aim of the promoters has been fully attained.

The Society has also fully done its duty in endeavouring by means of lectures and demonstrations to diffuse a knowledge of Natural History, to create an interest in the subject and to enlighten the popular mind as to its value and importance. Our winter meetings have never been confined to Members, but have been open to all who had sufficient interest in the subject to attend. And besides our regular meetings, we have had for a good many years special lectures on scientific subjects, treated in a popular manner, and often rendered more attractive by lantern illustrations. To these all are invited, and they have been well attended and have, I believe, done much good.

To come now to what is, after all, the most important of the objects which the promoters had in view—the investigation of the Natural History of Perthshire under the heads of Systematic Zoology, Botany, and Geology. To what extent has this been accomplished?

In Zoology it may be said that the Vertebrates, the Mammals, Reptiles, Amphibians, Birds and Fishes have been pretty well investigated. Numerous papers in our *Transactions* testify to the zeal with which the study of these has been pursued and the work which has been accomplished. The work of incorporating all these results with all that could be gathered from other sources, and with his own long continued observations, has been done by one who did not belong to our Society, the late Mr. Harvie-Brown. For much of the information contained in "The Vertebrate Fauna of the Tay Basin," however, he acknowledges his great indebtedness to the work of our Members as recorded in our *Transactions* and *Proceedings*, and also to the collections gathered together in our Museum. And this leads me to say that not only in this department of Natural History, but in all, we have been greatly helped, and our work has been supplemented by the labours of those who were not Members of our Society; or at least not ordinary and resident members, but who approved of and sympathised with our aims, and were interested in the Natural History of our County, and found in it rich material for their own studies.

In the great Invertebrate Section, though the same measure of completeness has not been obtained, a great amount of valuable work has been done. In the class of insects much attention has been paid to the Lepidoptera, the Butterflies and Moths, and as a result the Perthshire species are pretty well known, and a full list drawn up by Dr. White was published by the Society in 1871. The Hymenoptera also, the Bees, Ants, Wasps, and Gall-flies have been studied, though perhaps not so fully, and the same may be said of the Coleoptera and the Beetles. It is to be wished that lists of these orders, full lists with notes, based on the various papers and notices that have appeared in our *Transactions*, and also on the collections stored in the Museum, should be taken in hand by experts, brought up to date, and published. The other orders that have received attention are the Hemiptera, which have been carefully studied and a list of Perthshire species drawn up; to some extent also the Diptera, the two-winged flies, as also the Odontata or Dragon flies, but much remains to be done with regard to all of these. Most of the other orders have been as yet neglected, except the Collembola and Thysanura, small wingless insects. A valuable account of the Perthshire species of these we owe to Mr. Wm. Evans, of Edinburgh.

The Mollusca of the County have been well studied in certain areas, and many valuable papers have been contributed. There is still, however, much to be done, especially amongst the mountains and lochs of the Highlands. What has been done as regards the Arachnida, the spiders, has been largely owing to Professor Trail, and valuable as his work has been, a good deal yet remains to be done to make it complete. The fresh water Crustaceans, the Myriapods, and the whole class of Protozoa are still almost untouched fields of work, so far as the Society is concerned.

It will be seen from the above that on the whole, as regards Perthshire Zoology, a very large amount of work has been done during the last fifty years.

Turning now to the Botany of the County. The flowering plants, the Ferns and Characeæ have been fully described in Dr. White's "Flora of Perthshire," a work which is most esteemed by those who are best able to appreciate its value. But that even so elaborate a work, the result of so many years' labour, has not completely exhausted the subject may be seen from the pretty considerable list of additions which was compiled and published three or four years ago. And even since then several new and important discoveries have been made. The Mosses have also been very fully investigated, and pretty exhaustive lists have been published, but it is highly desirable that a Moss-flora should be taken in hand, and friendly pressure should be used to induce Mr. Meldrum to undertake the work. It will be a long time before we find one so thorougly competent. A very valuable preliminary account of the Lichens of Perthshire has been published by Messrs. Wheldon & Wilson, but little has been done in this department of study by our own Members. The Fungi were for a considerable time favourite objects of study by Dr. White, and he published a pretty full list of the Perthshire species. Since his time, the subject has been pursued with ardour by several of our Members, and the only fault that I find with them is that they do not oftener record in our *Proceedings* the discoveries which they have made, discoveries which have been numerous and important. To the fresh water Algæ and to unicellular organisms little attention has as yet been paid, although they form a very attractive field of study for those who can use the microscope.

A fresh field of study has been opened up of late years in what is called Ecology, the study of plant associations as it was at first called. This department inquires into the influence of the environment upon the structure of plants—that is, the influence of the chemical constituents and physical properties of the soil, the amount of light, heat and moisture which the plants receive, and how the influence of these various factors causes different plant associations, plants growing together which are fitted to live in the same kind of environment, what changes in the flora, changes in the environment or any of its factors bring about, and the different ways in which different plants meet these changes. This new method of study was first introduced into this country by the late Robert Smith, one of our Members, and some of his earliest work was done in surveying Perthshire, accounts of which appeared in our *Transactions*. The work as regards Perthshire has been continued by his brother, Dr. Wm. Smith, and by their labours the greater part of the county has been surveyed and mapped as regards its chief plant associations. But this is only a general outline, the details of which have to be worked out and filled up. In this department there is a wide and fruitful field for further workers.

But on the whole, the botanical work of the Society has been prosecuted with great zeal and with wonderfully great results.

As regards the Geology of the County, the chief work has, of course, been done by the officers of the Ordnance Survey, but Members of the Society have not been idle. Many valuable papers have been contributed to our *Transactions*, and ample materials for study have been collected, labelled, and displayed in the cabinets of the Museum. A full and able account of the Geology of the County, so far as hitherto worked out, has been given by Mr. MacNair—a former ordinary, and still a corresponding Member—in the "Geology and Scenery of the Grampians." But very much remains to be done. There are many problems with regard to the Highland rocks that have by no means been fully solved, and regarding which experts are at variance, and the same thing is true, though perhaps to a less extent, with regard to the old red sandstone, so that there is therefore ample scope and ample need for further labour which will furnish full and attractive occupation for many years to come to those of our Members who pursue the study of rocks and minerals.

I have as yet said nothing regarding our excursions. These though primarily intended for the study of the Natural History of some selected portion of the county by the working Members of the Society, have usually been made to serve another purpose. At most of them there have been present a considerable number of Members who, though not working naturalists, take some interest in Nature and natural objects, and desire to learn something about these from those who have studied them; to make some direct acquaintance with animals or plants in their habitations, and to enjoy the varied aspects of river and wood, of hill and valley, and all that make up the fine scenery of our native shire. Official excursions are not sufficient for students. They require to go out much more frequently, alone, or with one or two kindred spirits, when they can devote their whole attention to their favourite pursuit without distraction. They have their reward, but to the others also our excursions have, I am sure, brought much pleasure and much food for thought. Such days in the country have proved a blessed relief from ordinary work, often harassing, and from the cares of life, often distressing. Of all those present who have taken part in them I would ask if they do not often recall with pleasure many a long bright day spent amidst beautiful scenes and in pleasant company when curious traits of plant or animal or rock were pointed out which opened their eyes to the wonders of Nature?

Although our Society was established for the Study of Natural Science, and has always kept this before it as its main object, we have by no means kept our Meetings and our *Transactions* closed to all other subjects. We have had papers on many other subjects, some more or less allied to Natural Science, others having little or no connection with it: Papers on Agriculture, Forestry, Geographical papers, Chemical papers, Meteorological papers, papers on

the Antiquity of Man, or Heredity, on Electricity, and many other subjects, Eugenics and The Fourth Dimension. We have had many Archæological papers, and in the course of our excursions have usually kept in view any buildings or monuments of archæological interest that were to be seen on our way.

In response to a desire from a considerable number of Members we established a special section for photographers, and provided facilities for working. It is very doubtful, however, if the experiment has been so successful as was anticipated. Certainly the Society has benefitted greatly by the presence of its Photographic Members, and to them it owes most of the illustrations which have enriched its *Transactions* of late years and many of the lantern slides which have been exhibited to illustrate papers read. But apart from the facilities provided for working, it is not so certain that photography would not have profited more by remaining in its former position as one of the subjects admissable though not coming under the definition of Natural Science. But although a Photographic Section was established, there was no suggestion made by any body that the definition of the main objects of the Society should be altered, or that it should be re-named "The Perthshire Society of Natural Science and Photography." It is to be noted also that we have not refused to publish in our *Transactions* any paper bearing on any science or its application because of its subject. Where it included some amount of original research, and was not a mere compilation, we have always been ready to give it a place. Not that papers which are compilations giving the result of other men's labours are to be undervalued; they are often most useful and most instructive, but it is only in very exceptional cases that they ought to be published in the *Transactions* and *Proceedings*.

But while thus welcoming other subjects in the most liberal spirit, we ought, I think, always to keep in view that we are and have always been a Society established for the Study of Natural Science, more especially in Perthshire. To this end were we born and for this in the main we have lived and laboured. We have been known from the beginning as "The Perthshire Society of Natural Science." Under this name we have gained respect throughout the scientific world of Britain, and have obtained esteem and valuable help from those who were not in our ranks. And this has in large measure been due to the fact that we have, on the whole, been true to the ideal which shaped itself in the minds of those who founded the Society and fashioned it during the first years of its existence. The late Mr. Harvie-Brown in the Preface to the "Fauna of the Tay Basin" quotes with approval the words of another scientific authority who said, "The P.S.N.S. has set an example to all local societies in adhering to its sphere of first usefulness, the elucidation of the Fauna and Flora, the Geology and Topography of the area in which its labours have been cast, and to the practical education of the rising generation." I see no reason, therefore, for departing from the method we have hitherto followed,

keeping our own aims as chief objects, but so far as compatible with these, treating other subjects with the utmost liberality. And in my opinion any addition to or alteration of the old name will not help in any way the object of those who desire it, whilst it may on the other hand do much harm in lessening the respect which has hitherto been accorded by those whose goodwill we greatly desire to retain.

All through I have hitherto spoken of the work as done by the Society as a whole, and have spoken as little as possible of the work of individual Members. To have done otherwise would have led me too much into detail, and into too great diffuseness. Nor was it needed, for their names and labours are fully recorded in our *Transactions* and *Proceedings*. But I think it would not be right to pass over in silence those whom I have spoken of as the main promoters of the Society during its early years, those who bore the chief part in shaping its course and defining its aims. These were its first four Presidents. The first of these, Dr. Buchanan White, was its founder, and it may be interesting to say that of the other fifteen gentlemen who were, along with him, the original Members, only one, Mr. James M'Farlane, is now alive. Dr. White was then in early manhood, vigorous in no common degree, both mentally and physically, and having lost nothing of his youthful enthusiasm for science. To this study he had resolved to devote his life, and he was even then well known for his attainments in several branches both of Zoology and Botany. A fitter man for organising and guiding the infant Society could not have been found. The amount of scientific work which he himself performed was very great, and he had the happy gift of inspiring others with a share of his own ardour and perseverance. During the next twenty-seven years of his life he occupied various positions in the Society, but whatever position he held, he was always the foremost man in its ranks, the ablest and most prolific worker, the guide and inspirer of the others. So solidly were the foundations of the Society laid, mainly by him, that even his loss and other severe losses which occured about the same time, were not able to overturn the structure which had been reared; we have gone on, and prospered up till now.

Sir Thomas Moncreiffe was President of the Society for six years, from 1874 till his death in 1880. Besides doing valuable work in investigating the Lepidoptera of the district, it was owing chiefly to him that the project for erecting the original Museum took definite shape and was brought to a successful completion. He did not indeed live to see that completion, but he lived long enough to be assured that his exertions would be crowned with the success which they deserved. His gatherings of insects also were given over to the Museum after it was opened, and form a large part of the Lepidoptera collection. To him the Society and the City of Perth is greatly indebted.

Dr. James Geikie was a resident in Perth for several years when he was an officer of the Geological Survey. One of our Members

for several years, he occupied the President's chair from 1880 to 1882, in succession to Sir Thomas Moncreiffe. He did much during the time he was with us in promoting the knowledge and the study of the Geology of the County. He contributed several papers on this subject, and at many excursions he acted as leader, and in his lucid and interesting manner described as he went along the principal features of the different formations met with on the way. In his Presidential Address, in 1881, he gave a masterly sketch in outline of the Geology of Perthshire, a sketch which perhaps no other at the time could have made, and which formed the guide to be followed by those who afterwards continued the study of the subject. He was able also, from a wide experience, to give valuable advice as to the best methods of fitting up and arranging the contents of the Museum, and in his time of sojourn with us he did much which tended to the usefulness and prosperity of the Society.

Colonel Drummond Hay, who had been President in 1872-74, again occupied the Chair for two years in succession to Dr. Geikie. He was an accomplished botanist, and to him was entrusted the task of investigating the Flora of the Carse. This he did pretty thoroughly, but his favourite study was Ornithology, and on this subject his contributions were both numerous and of the highest value. No one knew so well as he did the birds, resident and migratory, which frequent the Estuary of the Tay, and he was ever on the alert for fresh knowledge with regard to them. To his exertions we owe in great part the fine collection of birds, which is one of the features of our Museum, and almost the last months of his life were spent in arranging them in the new cases required when the last great extension of the Museum took place. He had the satisfaction of completing the work, and of seeing the Museum re-opened and of knowing that the result of his labour received the warm approval of those most competent to judge.

Those whom I have mentioned have long passed from our midst. Of those still living, there is one whose claims to our gratitude ought not to be passed over, and this, not on account of his scientific work, though that has been of considerable value. That, however, can be seen and estimated in our *Transactions*, but the work which he has done as the Honorary Secretary of the Society is not chronicled there. For thirty years Mr. Samuel Ellison has fulfilled the duties of that post, which are not merely honorary but very onerous. They go on silently and continuously, winter and summer, and to a large extent escape the notice, and therefore are not appreciated as they deserve to be by the Society at large. To him as our Secretary for this long period we owe a deep debt of gratitude.

All that I have spoken of hitherto belongs to the past, but what shall we say to the future? Although it is true that almost every institution in the Kingdom is more or less crippled by the measures necessary for carrying on this cruel War, and we cannot hope to escape quite unscathed, yet I think we have good reason to expect

that when that shall have ended we may go on and prosper for a long time to come. I see no signs of decay as yet, and so long as the Society can keep up a succession of active workers, I have no fears for its running a long career of usefulness. Looking back, the results of the labours of the Society have been far beyond what even the boldest and most sanguine could have dreamed. There is plenty yet to do before our programme can be completed, if it ever can be completed, which I doubt, for ever as you go up thinking you are almost at the top, "hills peep o'er hills and alps on alps arise." But let us go forward with faith and steadfast purpose, keeping in mind the motto of the Society—"Πάντα δοκιμάζετε" "Prove all things," as well as the other half of the verse from which the motto is taken—"το καλον κατεχετε" "Hold fast that which is good." So that when another half-century shall have glided by, and most of us will no longer be on the Roll of Membership, men may still say of our Society what the poet has said of the lowly flower, which is its emblem—"The daisy never dies."

13th April, 1917.

W. Barclay, President, in the Chair.

The Curator, Mr. H. Coates, submitted the following note :—

Note on a Sub-fossil Elk's Horn found at Methven in 1801.

Being informed by Colonel Smythe, of Methven, that the horn of an Elk, which had been found on the estate, was hanging in the Hall of Methven Castle, I went out to Methven by appointment last week, to examine the specimen.

The record of its discovery is contained in a MS. book, entitled "Memorabilia de Methven," kept by Thomas Bishop, gardener, and afterwards land steward, at Methven, from 1795 till his death in 1851. The entry, retaining the original spelling, is as follows :—

> "In the Summer of 1801 whilst digging out Marl in the old Glebe Meadow, between the village and Methven Castle, an Elk or Mouse Deer's Horn was found, 7½ feet below the surface, which was placed by Lord Methven's desire in the Entrance Hall at Methven Castle, who said that altho' no Historian had recorded that Animal as a native of Scotland, this was a proof that it had been so. It lay contiguous with the first bed of Marl."

The specimen is the left horn of a young Elk, *Alces machlis*, Gray. It measures 27 inches across, from the one extreme snag to the other, and 23 inches long, from the burr to the point of the

longest snag. The shaft, from the burr to the beginning of the palmation, is 5 inches long, and $2\frac{1}{4}$ inches in diameter. There are 10 snags, of which the longest is 6 inches long. A piece has been broken out at the side of the palmation, probably by the pick in digging it out. The weight is $8\frac{1}{4}$ lbs.

Mr. Bishop's description shows a considerable amount of discrimination, for the true Elk has frequently been confused with the Irish Elk on the one hand, and the Fallow Deer on the other. Dr. James Ritchie, of the Royal Scottish Museum, Edinburgh, who has examined a photograph of the Methven horn, assures me, however, that it belonged to the true Elk. Mr. Bishop is correct also in stating that the Elk had not been recorded as a native of Scotland, for Dr. John Fleming in his "History of British Animals," published in 1828, referring to a pair of large deer's horns found in a marle-pit at Marlee, says they "*appear* to be the horns of the Elk-deer," but this remark occurs under the heading of "Fallow-deer, *Cervus dama*." In the Proceedings of the Society of Antiquaries of Scotland for 1870-71, Volume IX., p. 297, there is a paper by Dr. John A. Smith entitled "Notice of the Discovery of Remains of the Elk *(Cervus alces*, Linn., *Alces machlis*, Gray*)* in Berwickshire: with Notes of its occurrence in the British Islands, more particularly in Scotland." In this paper he refers to the Marlee specimen, and also to another Perthshire specimen got at Airleywight about 1821, 1822, or 1823, and now in the Hunterian Museum, Glasgow. The Methven specimen makes the third Perthshire record. The Marlee record is of special interest, because it was from the same marle-pit that our Beaver's Skull was got.

The Elk, of which only one living species is known, is a native of the northern regions of both the old world and the new, and occurs in a sub-fossil condition in the Pliestocene deposits of both. In Great Britain it did not survive the close of the Great Ice Age.

In the "Memorabilia de Methven," Mr. Bishop has also the following interesting note on the finding of the sub-fossil remains of the Red Deer:—

> "On the last day of July, 1841, part of the Skul and Horns of a Royal Red Deer was dug from the bog, on the south east field on Forebrae Farm, Keillour, 3 feet below the surface, embedded in Peat Moss, with 5 antlers [=branches?] on each horn, 3 feet in length. The remnant of the Skul girthing 2 feet 3 inches, by 1 foot 4 inches, the whole weighing Twelve pounds 5 oz., which I carried to the Castle and got placed in the entrance Hall."

This specimen, which is striking from its massive proportions, still hangs in the Hall at Methven Castle, beside others of more recent date. Mr. Bishop is to be commended for the care and accuracy with which he indicated both the measurements of the specimens, and the positions in which they were found.

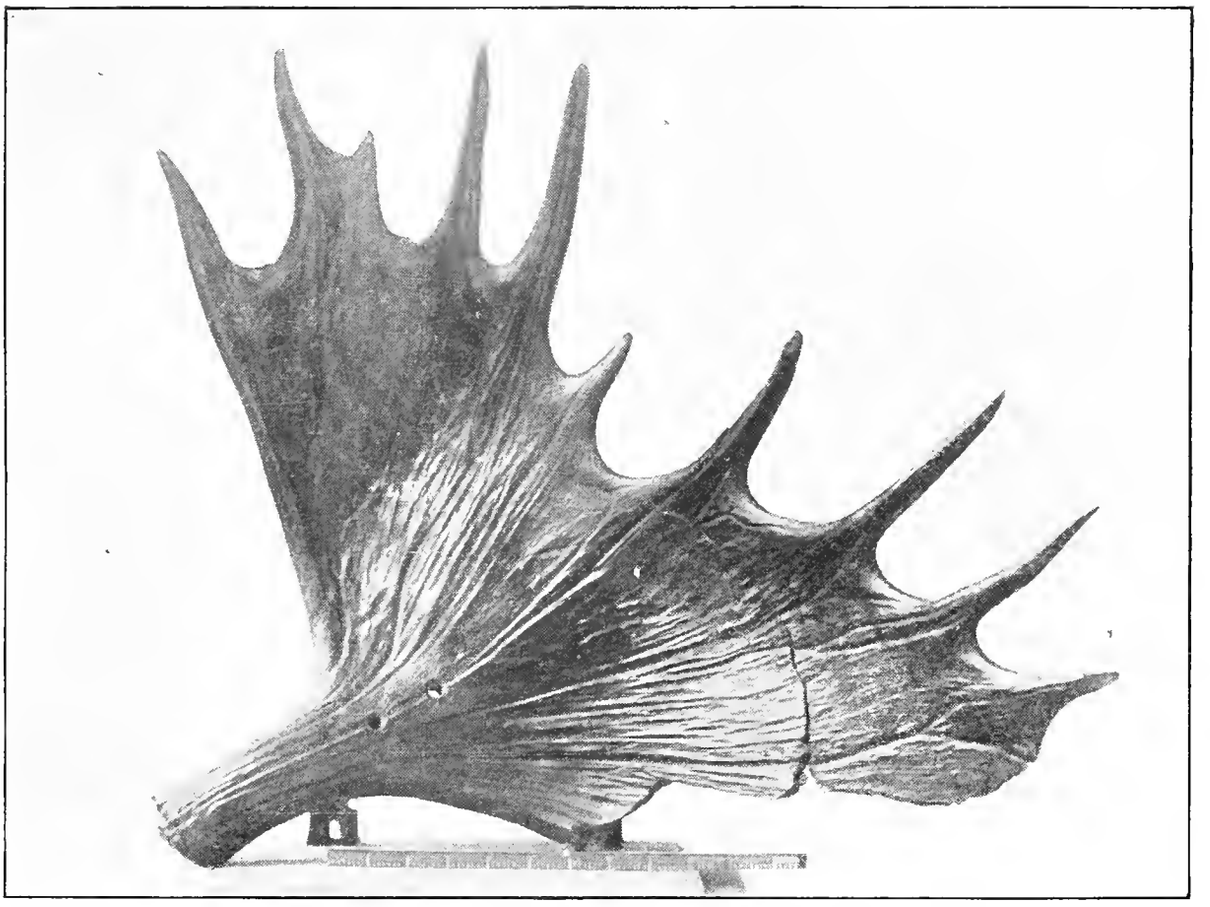


Plate XX.—Sub-Fossil Antler of Elk, Alces Machlis, found near Methven, in 1801.

Colonel Smythe has very kindly allowed me to have a model of the Elk's Horn prepared, to be placed in the Museum as a permanent record of the occurrence of the Elk in the near neighbourhood of our City.

The following papers were read :—

1. "Some Aspects of the Forestry Question," by J. A. Donald, Dupplin. (See *Transactions*, Vol. VI., Part IV., p. 159.)
2. "Botanical and Other Notes—Mid Perth," by D. A. Haggart, Killin. (See *Transactions*, Vol. VI., Part IV., p. 169.)

The Curator, Mr. H. Coates, then continued his notes on the Annals of the Society, giving Part III., as follows :—

Annals of the Society—Part III., from March, 1905, to March, 1917—Completing Fifty Years.

The fiftieth anniversary of the founding of our Society seems an appropriate occasion for bringing up to date the "Annals" which have appeared in our *Proceedings* from time to time.

These Annals and Retrospects will be found in our publications as follows :—

1. The Annals of the Society from its Foundation to the Present Time. By Dr. Buchanan White. Read 24th November, 1881. (The fifteenth year of the Society.) *Proceedings*, 2nd Series, p. xliii.
2. Retrospect of the Past History of the Society. By Dr. Buchanan White. Read 8th March, 1888. (The twenty-first year of the Society.) *Proceedings*, 3rd Series, Vol. I., p. xxvii.
3. Retrospect of the History of the Society. By Dr. Buchanan White. Read 10th March, 1892. (The twenty-fifth year of the Society.) *Proceedings*, Vol. I., p. cxxxv.
4. The Annals of the Society, from March, 1881, to March, 1905. By Henry Coates. Read March, 1905. (The fifteenth to the thirty-eighth year.)
5. Notes on the first two year's Proceedings of the Society. By Wm. Barclay. Read 12th November, 1908. *Proceedings*, Vol. V., p. i.
6. Annals of the Society, Part III., from March, 1905, to March, 1917, Completing Fifty Years. By Henry Coates. *Proceedings*, Vol. VI., p. clxi.

I shall now continue the "Annals" in the same form in which they formerly appeared, adding, afterwards, tabulated statements of some of the achievements of our work.

Thirty-ninth Year, 1905-6.

President, H. Coates; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, Wm. Barclay; Curator, Alex. M. Rodger.

Five meetings were held, at which seven papers were read. Eight excursions were made, including one mountain excursion and one fungus excursion, the former being joined by the Scottish Natural History Society of Edinburgh. Eighteen new members were elected, making a total membership of 430.

The subject of the Children's Essay Competition was "Half-a-dozen Wayside Flowers." 189 Children competed, and the prizes were presented by Prof. D'Arcy W. Thomson, C.B., Dundee.

A successful Conversazione was held on 22nd Febraury, 1906, in the Society's Rooms and adjoining buildings, at which Prof. J. Y. Simpson, B.Sc., delivered an address.

The more important papers read were "Notes on the Discovery of the Remains of an Earth-house at Barnhill, Perth," by Alex. Hutcheson, F.S.A.Scot.; "On the Phenomena of Sinistrosity in the Mollusca," by Rev. G. A. Frank Knight; and "On the Microscopic Structure of Some Perthshire Igneous Rocks," by Geo. F Bates, B.A., B.Sc.

Fortieth Year, 1906-7.

President, H. Coates; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, Wm. Barclay; Curator, Alex. M. Rodger.

Six meetings were held, at which eight papers were read. Seven excursions were held. Thirty-five new members were elected, making a total membership of 434.

The subject of the Children's Essay Competition was "The Land and Fresh-Water Shells of Perthshire." 99 Essays were sent in, and the prizes were presented by Prof. J. Arthur Thomson, of Aberdeen.

Papers were read by Rev. G. A. Frank Knight on "A Molluscan Visit to Some of the Inner Hebrides"; and by the President on "The Evolution of a Haughland," and "The Glaciation of Perthshire."

This year Mr. Rodger issued the second edition of the "Illustrated Handbook to the Perthshire Natural History Museum; and Brief Guide to the Animals, Plants and Rocks of the County,"

the first edition of which had been published in 1904. The sub-title correctly describes its scope, for it contains much useful information, in condensed form, regarding the local fauna, flora and geology.

Forty-First Year, 1907-8.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, George F. Bates; Curator, Alex. M. Rodger.

Six meetings were held, at which eleven papers were read. Eight excursions were held. Fifteen new members were elected, making a total membership of 404.

The subject of the Children's Essay Competition was "Four Objects in the Perthshire Natural History Museum that Interest Me Most." 36 Essays were sent in, and the prizes were presented by Mr. A. D. Millar, H.M. Inspector of Schools.

Mr. Alex. Hutcheson, F.S.A.Scot., contributed a paper on "The Archæology of Tentsmuir," and Mr. Bates read the second part of his paper on "The Microscopic Structure of Some Perthshire Igneous Rocks." The subject of the President's Address was "Some Early Perthshire Botanists."

Forty-Second Year, 1908-9.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, George F. Bates; Curator, Alex. M. Rodger.

Six meetings were held, at which eight papers were read. Eight excursions were made. Fourteen new members were elected, making a total membership of 382.

The subject of the Children's Essay Competition was "The Teeth of Different Animals, and their Uses." 61 Essays were sent in, and the prizes were presented by Rev. G. A. Frank Knight.

The papers read included the following:—"Additions and Corrections to the Perthshire List of Mosses," by R. H. Meldrum; "Methven Moss as a Collecting Ground for Entomology," by Wm. Wylie; and "The Microscopic Structure of Some Local Igneous Rocks,—Part III.," by Geo. F. Bates. In addition, Mr. A. W. Watt, Edinburgh, delivered a popular lecture on "The Climate of Scotland."

Forty-Third Year, 1909-10.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, George F. Bates; Curator, Alex. M. Rodger.

Six meetings were held, at which seven papers were read. Seven excursions were held. Fourteen new members were elected, making a total membership of 363.

The subject of the Children's Essay Competition was "Four Perthshire Birds." 71 Essays were sent in, and the prizes were presented by W. S. Gall, Esq., H.M.I.S.

The papers read included one by Mr. Bates on "The Dyke Rocks of the Schiehallion District," and one by Mr. W. E. Sharp on "Some Coleoptera of Kinnoull Hill." The subject of the President's Address was "Afforestation in Scotland."

The part of the *Proceedings* for this year contained a valuable series of Tables by Mr. A. M. Rodger, showing the meteorological condition of the district during each month since 1883.

Forty-Fourth Year, 1910-11.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, George F. Bates; Curator, Alex. M. Rodger.

Six meetings were held, at which eight papers were read. Seven excursions were held. Nine new members were elected, making a total membership of 340.

The subject of the Children's Essay Competition was "Perthshire Mammals, including Domesticated Species." 66 Essays were sent in, and the prizes were presented by Lord Provost Macnab.

Amongst the papers read were the following :—"David Douglas, Scone, Botanist and Pioneer of Arboriculture," by R. Dow; "Perthshire Roses," by the President; and "Some Discomycetes of the Locality and their Habitats," by James Menzies. The subject of the President's Address was "Our Alpine Flora."

Two members who had taken a very active part in the work of the Society were removed by death, namely, Miss M. Thomas and Mr. J. S. Grant.

Forty-Fifth Year, 1911-12.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, George F. Bates; Curator, Alex. M. Rodger.

Six meetings were held, at which ten papers were read. Eight excursions were held. Twenty-one new members were elected, making a total membership of 330.

The subject of the Children's Essay Competition was "The Nesting Habits of Four Perthshire Birds." 61 Essays were sent in, and the prizes were presented by Mr. James Coates.

Amongst the members removed by death was Mr. Peter Campbell, long a familiar figure at the summer excursions.

The following were amongst the papers read :—"Notes on Some Highland Rocks," by Geo. F. Bates; "A List of the Macro-Lepidoptera of the Kinfauns District, with a General Description of Some of the Rarer Forms," by W. Wylie; and "Notes on Some of the Ectoparasites in the Museum, Perth," by Rev. J. Waterston, B.D., B.Sc. The subject of the President's Address was "Our Native Hybrid Roses."

Forty-Sixth Year, 1912-13.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, George F. Bates; Curator, Alex. M. Rodger.

Six meeting were held, at which eight papers were read. Nine excursions were held. Ten new members were elected, making a total membership of 320.

The subject of the Children's Essay Competition was "A Perthshire River." 80 Essays were sent in, and the prizes were presented by Lord Provost Scott.

Sir Robert Pullar and Mr. James F. Pullar, two of the chief benefactors of the Society, were removed by death.

A series of two lectures on "Palæolithic Man in Scotland and Ireland" was delivered by the Rev. Fred. Smith, of South Queensferry, one of the oldest members of the Society.

The most important paper contributed to the *Proceedings* was the President's Address on "The Additions to the List of Perthshire Plants since the publication of Dr. White's 'Flora.'" Amongst the other papers read were "A List of Perthshire Diptera (Family *Syrphidæ*)," and "Perthshire Diptera,—Aberfoyle District," by A. E. J. Carter; "Archæological Notes from Perthshire and Argyllshire," by Rev. G. A. Frank Knight; and "Notes on Some New and Rare Fungi from the District," by James Menzies.

Some important additions were made to the Reference Department of the Library, including "The Scientific Results of the Scottish National Antarctic Expedition," by Dr. Wm. S. Bruce; "The Bathymetrical Survey of the Scottish Freshwater Lochs," by Sir John Murray and Mr. Laurence Pullar; and E. J. Bartholomew's "Physical Atlas."

Forty-Seventh Year, 1913-14.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, A. W. Brown; Librarian, James Coates; Editor, Geo. F. Bates; Curator, Alex. M. Rodger.

Six meetings were held, at which eight papers were read. Nine excursions were held. Seven new members were elected, making a total membership of 315.

The subject of the Children's Essay Competition was "Six Fruits." 84 Essays were sent in, and the prizes were presented by Mr. H. S. Pullar.

Two members who had for many years taken a very active part in the work of the Society were removed by death. These were Mr. Robert Dow, botanist and geologist, and Col. John Campbell, ornithologist.

The papers read included an address by the President on "The Wild Flowers of Spring"; "The Evolution of Man in the Great Ice Age," by Dr. Lyell; "New Perthshire Fungi," by James Menzies; and "Further Notes on Highland Rocks," by Geo. F. Bates.

Forty-Eighth Year, 1914-15.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, James Winter; Librarian, James Coates; Editor, Geo. F. Bates; Curator, Alex. M. Rodger (afterwards, H. Coates).

Six meetings were held, at which seven papers were read. Six excursions were held. Twenty-two new members were elected, making a total membership of 324.

The subject of the Children's Essay Competition was "Perthshire Amphibians and Reptiles." 52 Essays were sent in, and the prizes were presented by Ex-Dean of Guild Wotherspoon.

Amongst the papers read was one on "The Evolution of Plant Life on a Haughland," by the present writer.

In this, the first year of the Great War, the Society sustained a great loss through the sudden death of Mr. Alex. M. Rodger, who had been Curator of the Museum since 1895. Professor Jas. Geikie, formerly President, and for many years an Honorary Member of the Society, also passed away.

This year marks the beginning of a new era in the history of the Museum, for, on 15th May, 1914, the Town Council took over the Antiquarian Museum from the Perth Literary and Antiquarian Society, for the purpose of administering it along with the Perthshire Natural History Museum.

In July, 1914, the Photographic Convention of the United Kingdom again met in Perth, and had a very successful gathering.

Forty-Ninth Year, 1915-16.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, James Winter; Librarian, James Coates; Editor, Geo. F. Bates; Curator, H. Coates.

Six meetings were held, at which eight papers were read. Seven excursions were held. Twenty-six new members were elected, making a total membership of 314.

The subject of the Children's Essay Competition was "Four Perthshire Trees." 50 Essays were sent in, and the prizes were presented by Sir John A. Dewar, Bart., M.P.

The subject of the President's Address was "Notes on Roses," and amongst the other papers read were the following by the present writer:—"'Wanted to Complete'—Perthshire Vertebrates," "Floods and Droughts of the Tay Valley," and "Note on an Old Weather Record found amongst the M.SS. of the Antiquarian Museum." In addition, popular lectures were delivered by the President on "Perth at the End of the Eighteenth Century," and by Dr. J. S. Flett, Director of the Geological Survey of Scotland, on "The History of Some Scottish Mountains."

The library received an important addition of 52 works from Dr. Kidston, Stirling, and 16 works from the Library of the Literary and Antiquarian Society.

Fiftieth Year, 1916-17.

President, Wm. Barclay; Secretary, S. T. Ellison; Treasurer, James Winter; Librarian, James Coates; Editor, Geo. F. Bates; Curator, H. Coates.

Six meetings were held, at which eight papers were read. Seven excursions were held. Nineteen new members were elected, making a total membership of 310.

The subject of the Children's Essay Competition was "A Naturalist's Diary." 33 Essays were sent in, and the prizes were presented by Major Mercer, of Huntingtower.

The subject of the President's Address was "Notes on Roses, Part II.", and amongst the other papers read was one on "Local Societies and Archæological Research, with Notes on Prehistoric Antiquities in the Perth Museum," by Mr. J. Graham Callander, in which he urged the importance of a systematic survey being undertaken of the archæological remains in the county.

The Junior Section of the Society, which had been inaugurated in 1904, had gradually increased in popularity until this year the membership attained a total of 130. Quite a number of those who were originally members of the Junior Section have afterwards become full members of the Society. The Museum, also, is indebted to members of the Junior Section for many interesting specimens.

Looking now at the period of fifty years as a whole, we find that the membership, from first to last, has been as follows :—

Original Members, 1867, ...	16
Since elected, ...	1296
Total Names on Roll, ...	1312
Died or Retired, ...	1002
Remaining at March, 1917, ...	310

The total of the present membership is made up as follows :—

Honorary Members, ...	0
Corresponding Members, ...	14
Ordinary Members, ...	281
Associate Members, ...	6
Associates, ...	9
Total, ...	310

As the names of the sixteen Original Members have not yet been published in our *Proceedings*, it may be useful to record them here. The names, as registered in the Original Roll of Membership by the members' autograph signatures, are as follows :—

(1) F. Buchanan White, M.D.
(2) Andrew Buist, M.D.
(3) George Stewart, V.S.
(4) J. Allen Harker.
(5) John Dawson.
(6) John Stewart.
(7) John Bruce.
(8) Hugh Thomson.
(9) James Henderson.
(10) D. Brown.
(11) T. Berry.
(12) John Drummond.
(13) Wm. Herd.
(14) James McFarlane.
(15) James Trotter.
(16) Wm. Deas.

Of this noble band of founders, only one survives, after the lapse of fifty years, namely, Mr. James McFarlane, who now resides in Inverness.

As indicating how faithful our Office-bearers have been in the long discharge of their several duties, it is interesting to note how very few ex-Office-bearers still survive. They are as follows :—

Ex-President (one)—H. Coates (now Curator).
Ex-Secretary (one)—Jas. McFarlane.
ExTreasurers (three)—R. Keay, Melville Jameson, and A. W. Brown.
Ex-Librarians (two)—Rev. Fred. Smith and Geo. P. K. Young.
Ex-Editors (two)—H. Coates (now Curator) and Wm. Barclay (now President).

The length of service of the present Office-bearers is as follows :—

President—Wm. Barclay, 10 years (and 12 years as Editor).
Secretary—S. T. Ellison, 32 years.
Treasurer—Jas. Winter, 3 years.
Librarian—Jas. Coates, 35 years.
Editor—Geo. F. Bates, 10 years.
Curator—H. Coates, 3 years (besides 8 years as Editor, and 15 years as President).

During the fifty Winter Sessions, 335 meetings have been held. At these meetings 478 papers have been read, including 81 Presidential Addresses. These Addresses are made up as follows :—

First President's Inaugural Address, ...	1
Annual Addresses, ...	49
Opening Addresses (started in 1885), ...	31
Total, ...	81

These figures show an average of 6.7 meetings each session, with an average of 9.6 papers. In addition, however, a number of Notes and shorter communications were read, many of which were in explanation of specimens exhibited at the meetings.

During the fifty Summer Sessions, 316 excursions were held, almost all of which were to localities in Perthshire, or the Basin of the Tay. This is an average of 6.3 for each session. Of these 316 excursions, 249 have been described in our *Proceedings*, leaving 67 of which no record has been kept.

On several occasions excursions were held jointly with other Societies, such as the Royal Horticultural Society of Perthshire, The Scottish Natural History Society of Edinburgh, The Dunfermline Naturalists' Society, The Dundee Working Men's Field Club, and the Photographic Convention of the United Kingdom.

A list of the Excursions held from 1905 to 1916 inclusive, which have been described in our *Proceedings*, will be found in Appendix A. This list, which is arranged topographically, shows that the numbers held during the two periods were as follows :—

	Before 1905.	1905 to 1916.	Total.
Cross-Country Excursions, ...	20	26	46
River Banks, ...	29	6	35
Glens, ...	26	7	33
Lochs, ...	22	11	33
Hills (under 3,000 feet), ...	11	5	16
Mountains (over 3,000 feet), ...	10	10	20
Quarries and Geological Sections, ...	17	2	19
Archæological Excursions, ...	15	6	21
Coast Excursions, ...	7	1	8
Special Excursions, ...	4	14	18
Totals, ...	161	88	249

It will thus be seen that Cross-Country Excursions have been the most popular, while River Banks, Glens, and Lochs have received about equal attention.

No publications have been issued by the Society since the "Annals" of 1905, beyond the usual annual parts of the *Transactions* and *Proceedings*. The issues of these to the present date have been as follows :—

	Years.
"Proceedings," 12mo., 1869 to 1870 (1 vol.), ...	1
"Proceedings," double column 4to, 1881 to 1886 (1 vol.),	5
"Transactions and Proceedings," 4to, 1886 to 1917 (5 vols. and 4 parts),	31
Total, ...	37

In Appendix B will be found a continuation of the list of papers published in our *Transactions* and *Proceedings* bearing on the Natural History of the district. The following abstract of this list is interesting as showing which branches of Natural Science have been the most popular during the two periods. :—

	1867 to 1905.		1905 to 1917.		Totals.
Zoology:		68		21	89
Mammals, ...	3		1		4
Birds, ...	30		8		38
Reptiles and Amphibians,	2		0		2
Fishes, ...	1		0		1
Molluscs, ...	13		2		15
Spiders, ...	2		0		2
Insects, ...	16		10		26
Other Invertebrates, ...	1		0		1
Botany:		53		22	75
Flowering Plants, ...	29		11		40
Trees, ...	3		3		6
Ferns, ...	2		0		2
Mosses, ...	7		1		8
Fungi, ...	7		4		11
Algæ, ...	2		0		2
Ecology, ...	3		1		4
Historical, ...	0		2		2
Geology, ...		35		11	46
Archæology, ...		3		6	9
Physiography, ...		5		0	5
Chemistry, ...		1		0	1
Meteorology, ...		20		11	31
Totals, ...		185		71	256

From the above table it will be seen that Geology, Flowering Plants, and Birds have been the most popular subjects, while after them come Insects, Meteorology, and Mollusks. The only important branch of local Natural History on which no paper has yet been contributed is the Lichens.

Appendix C contains a list of all the Children's Essay Competitions which have been held since their institution in 1898. Twenty Competitions have been held, for which a total of 1820 Essays have been sent in, being an average of 91 for each session. Of the twenty Competitions, ten were on Zoological subjects, four Botanical, one Geological, two Physiographical, one Meteorological, and two on the Museum.

The Society's Library now contains 1,497 works, of which 633 are in the Reference Department, and 864 in the Lending Department. These works cover all branches of Natural History, including Archæology, and embrace many publications of outstanding importance, which would be beyond the means of the average naturalist.

APPENDIX A.

List of Excursions organised by the Society from 1905 to 1916 inclusive, of which notices have been published in the *Proceedings*, arranged topographically.

1.—Cross-Country Excursions.

St. Madoes to Pitfour, June, 1908. Proc., Vol. V., p. iv.
Crieff to Drummond Castle and Ardoch, August, 1908. Proc., Vol. V., p. vi.
Forfar to Fotheringham, and back, May, 1909. Proc., Vol. V., p. lxiii.
Dunkeld to Grandtully, August, 1909. Proc., Vol. V., p. lxvi.
Coupar Angus to Belmont, May, 1910. Proc., Vol. V., p. ciii.
Guay to Loch Ordie, and thence to Dunkeld, June, 1910. Proc., Vol. V., p. civ.
Bankfoot to Birnam, by Glengaur, August, 1910. Proc., Vol. V., p. cv.
Blairgowrie to Bridge of Cally and Craigton, August, 1910. Proc., Vol. V., p. cv.
Scone, by Balbeggie and Dunsinane, to Inchture, June, 1911. Proc., Vol. V., p. cxxxvi.
Dunblane, by the Wharry Burn, to Sheriffmuir, June, 1911. Proc., Vol. V., p. cxxxvii.
Errol, by Pitroddie and Muir of Durdie, to Perth, July, 1911. Proc., Vol. V., p. cxxxvii
Glenfarg, over the Ochils, to Bridge of Earn, July, 1911. Proc., Vol. V., p. p. cxxxvii.
Callander, the Trossachs, Aberfoyle and Lake of Menteith, August, 1911. Proc., Vol. V., p. cxxxix.
Comrie to Lochearnhead and back, May, 1912. Proc., Vol. V., p. clxxxix.
Glenfarg to Abernethy, by Balvaird, June, 1912. Proc., Vol. V., p. cxc.
Stanley to Luncarty, by Cambusmichael, July, 1912. Proc., Vol. V., p. cxci.
Aberfeldy to Glenlyon, August, 1912. Proc., Vol. V., p. cxcii.
Meigle to Glamis and Auchterhouse, and back, May, 1913. Proc., Vol. VI., p. xxxvi.
Almondbank to Methven Wood and Cromwell Park, and back, July, 1913. Proc., Vol. VI., p. xxxix.
Perth, by Bridge of Earn and Glenfarg, to Falkland, and back by Newburgh and Abernethy, August, 1913. Proc., Vol. VI., p. xl.
Crieff to Comrie and Glenartney, and back by Mill of Fortune, July, 1914. Proc., Vol. VI., p. lxix.
Newburgh to Lindores Abbey and Lindores Loch, June, 1914. Proc., Vol. VI., p. lxx.
Stanley to Innernytie and Taymount, June, 1915. Proc., Vol. VI., p. cviii.
Perth to Glenalmond and the Sma' Glen, and back by Logie House, August, 1915. Proc., Vol. VI., p. cx.
Perth to Blairgowrie, and thence by Lochs Marlee and Clunie to Dunkeld, June, 1916. Proc., Vol. VI., p. cxl.
Perth to Drummond Castle and Auchterarder House. Jointly with the Royal Horticultural Society of Perthshire, August, 1916. Proc., Vol. VI., p. cxliii.

2.—River Banks.

Left Bank of Tay, Guay to Ballinluig, June, 1906. Proc., Vol. IV., p. cxl.
Right Bank of Tay, Taymouth to Aberfeldy, July, 1906. Proc., Vol. IV., p. cxl.

Banks of Tay, Murthly to Cargill, July, 1909. Proc., Vol. V., p. lxvi.
Left Bank of Tay, Cargill to Linn of Campsie, June, 1912. Proc., Vol. V., p. cxc.
Left Bank of Tay, Ballinluig to Dunkeld, June, 1913. Proc., Vol. VI., p. xxxvii
Right Bank of Tay, Taymount to Ballathie, June, 1916. Proc., Vol. VI., p. cxlii.

3.—Glens.

Glen Tilt, June, 1905. Proc., Vol. IV., p. cvi.
Den of Airley, June, 1906. Proc., Vol. IV., p. cxxxvii.
Glen Turret, June, 1907. Proc., Vol. IV., p. clxx.
Glen Lednock, June, 1908. Proc., Vol. V., p. iii.
Glen Tarken, June, 1909. Proc., Vol. V., p. lxiv.
Pass of Killiecrankie, June, 1909. Proc., Vol. V., p. lxv.
Glen Garry and Glen Tilt, August, 1911. Proc., Vol. V., p. cxxxix.

4.—Lochs.

Fingask Loch, July, 1905. Proc., Vol. IV., p. cvii.
Loch Tummel, August, 1905. Proc., Vol. IV., p. cvii.
Loch of Lintrathen, June, 1906. Proc., Vol. IV., p. cxxxvii.
Loch Voil, May, 1907. Proc., Vol. IV., p. clxix.
Loch Ard, August, 1907. Proc., Vol. IV., p. clxxii.
Loch Marlee, August, 1908. Proc., Vol. V., p. v.
Blindwells Loch, July, 1913. Proc., Vol. VI., p. xxxviii.
Loch Voil, June, 1914. Proc., Vol. VI., p. lxx.
Dupplin Loch, May, 1915. Proc., Vol. VI., p. cvii.
Loch Moraig, July, 1915. Proc., Vol. VI., p. cix.
Cairnton Loch, August, 1916. Proc., Vol. VI., p. cxliii.

5.—Hills (Under 3,000 Feet).

Ben-y-Vrackie, July, 1907. Proc., Vol. IV., p. clxxii.
Farragon, June, 1910. Proc., Vol. V., p. cv.
Hill of Tulloch, August, 1913. Proc., Vol. VI., p. xxxix.
Craigrossie, June, 1915. Proc., Vol. VI., p. cviii.
Ben-y-Vrackie, July, 1916. Proc., Vol. VI., p. cxlii.

6.—Mountains (Over 3,000 Feet).

Ben Voirlich (jointly with the Scottish Natural History Society), July, 1905. Proc., Vol. IV., p. cvi.
Stob Garbh, July, 1906. Proc., Vol. IV., p. cxl.
Maol Ghaordie, July, 1907. Proc., Vol. IV., p. clxxi.
Ben Laoigh, July, 1908, Proc., Vol. V., p. iv.
Ben Chonzie, July, 1909. Proc., Vol. V., p. lxvi.
Meall Chiurn, July, 1910. Proc., Vol. V., p. cv.
Stob Garbh and Cruach Ardran, July, 1911. Proc., Vol. V., p. cxxxviii.
Sgairneach Mor, July, 1912. Proc., Vol. V., p. cxci.
Carn-na-Main, July, 1913. Proc., Vol. IV., p. xxxviii.
Ben Lawers, July, 1914. Proc., Vol. VI., p. lxx.

7.—Quarries and Geological Sections.

Rosyth, August, 1906. Proc., Vol. IV., p. cxli.
Sections at Glenfarg Waterworks, August, 1915. Proc., Vol. VI., p. cix.

8.—Archæological Excursions.

Roman Remains at Battledykes, July, 1905. Proc., Vol. IV., p. cv.
Dunfermline Abbey, June, 1906. Proc., Vol. IV., p. cxxxviii.
Archæological Remains at Balquidder, May, 1913. Proc., Vol. VI., p. xxxvii.
Cambusmichael Church and Grassie Walls, Scone. Proc., Vol. VI., p. cix.
Balmanno Castle and Ecclesia-ma-girdle, July, 1916. Proc., Vol. VI., p. cxlii.

9.—Coast Excursion.

Arbroath to Auchmithie, August, 1912. Proc., Vol. V., p. cxcii.

10.—Special Excursions.

(a) Photographic.

Meikleour and Blairgowrie (jointly with the Scottish Photographic Federation). June, 1905. Proc., Vol. IV., p. civ.

(b) Cryptogamic.

Abercairney,	-	Sept , 1905.	Proc., Vol. IV., p. cviii.
Ochtertyre,	-	Sept., 1906.	Proc., Vol. IV., p. cxli.
Comrie,	-	Oct., 1907.	Proc., Vol. IV., p, clxxiii.
Dupplin,	-	Oct., 1908.	Proc., Vol. V,, p. vi.
Craighall,	-	Sept., 1909.	Proc., Vol. V., p. lxviii.
The Cairnies,	-	Sept., 1910.	Proc., Vol. V., p. cvi.
Moncreiffe,	-	Oct., 1911.	Proc., Vol. V., p. cxl.
Delvine,	-	Sept , 1912.	Proc., Vol. V., p. cxciii.
Balgowan,	-	Oct., 1913.	Proc., Vol. VI., p. xl.
Gask,	- -	Sept., 1916.	Proc., Vol. VI., p. cxliv.

(c) Ornithological.

Tentsmuir, May, 1907. Proc., Vol. IV., p. clxx.
Muir of Thorn, July, 1907. Proc., Vol. IV., p. clxxii.
Meikleour, May, 1908. Proc., Vol. V., p. iii.

APPENDIX B.

List of Papers published by the Society from March, 1905, to March, 1917, bearing on the Natural History of Perthshire and the Basin of the Tay, arranged systematically.

1.—Zoology.

(a) Mammals.

"Wanted to Complete"—Perthshire Vertebrates (Mammals). H. Coates. February, 1916. Trans., Vol. VI., p. 85.

(b) Birds.

The Nesting of the Great Crested Grebe *(Podiceps cristatus)* in Perthshire. W. Wylie. January, 1905. Trans., Vol. IV., p. 83.

Half-a-day on Tentsmuir. W. Whyte. April, 1907. Trans., Vol. IV., p. 200.

Birds observed during the Winter of 1906-7. W. Whyte. April, 1907. Trans., Vol. IV., p. 202.

The Cuckoo. Atholl MacGregor. June, 1909. Trans., Vol. V., p. 30.

Note on a Ring Ouzel. C. McIntosh. November, 1913. Trans., Vol. VI., p. 2.

Note on a Flock of the Little Auk *(Mergullus alle)* in Perthshire, in December, 1914. H. Coates. January, 1915. Proc., Vol. VI., p. lxxiv.

Note on the First Occurrence of Tengmalm's Owl (*Nyctala tengmalmi*, Gmelin) in Perthshire. H. Coates. April, 1915. Proc., Vol. VI., p. xc.

"Wanted to Complete"—Perthshire Vertebrates (Birds and Nests). H. Coates. February, 1916. Trans., Vol. VI., p. 85.

(c) Mollusks.

On the Phenomena of Sinistrosity in the Mollusca. Rev. G. A. Frank Knight. April, 1905. Trans., Vol. IV., p. 100.

The Pearl Mussel and its Fishery. J. Stewart, Falkirk. April, 1909. Trans., Vol. V., p. 17.

(d) Insects.

Methven Moss as a Collecting Ground for Entomology. W. Wylie. December, 1908. Trans., Vol. V., p. 1.

Some Coleoptera of Kinnoull Hill. W. E. Sharp, F.E.S. January, 1910. Trans., Vol. V., p. 47.

Notes on some Ectoparasites in the Museum, Perth. James Waterston, B.D., B.Sc. Part I., February, 1910; Part II., January, 1912. Trans., Vol. V., pp. 48 and 123.

A List of Diptera collected in Perthshire. A. E. J. Carter. April, 1910. Trans., Vol. V., p. 51.

A List of the Macro-Lepidoptera of the Kinfauns District, with a General Description of some of the Rarer Forms. W. Wylie. December, 1911. Trans., Vol. V., p. 114.

A List of Perthshire Diptera (Family Syrphidæ). A. E. J. Carter. April, 1912. Trans., Vol. V., p. 129.

Note on the Occurrence of *Phyllobius maculicornis*, Germ., on Raspberry in Perthshire. May, 1912. Thos. Anderson, B.Sc. January, 1913. Trans., Vol. V., p. 162.

Perthshire Diptera—Aberfoyle District. A. E. J. Carter. April, 1913. Trans., Vol. V., p. 176.

A Plague of Caterpillars. C. McIntosh. November, 1913. Trans., Vol. VI., p. 4.

On the Occurrence of the Longicorn Beetle (*Acanthocinus œdilis*, Linn.) at Pitlochry. H. Coates. January, 1915. Proc., Vol. VI., p. lxxiii.

2.—Botany.

(a) Flowering Plants.

Our Alpine Flora. W. Barclay. March, 1910. Proc., Vol. V., p. lxxii.

Perthshire Roses (Revised to October, 1910). W. Barclay. November, 1910. Trans., Vol. V., p. 66.

Our Native Hybrid Roses. W. Barclay. March, 1911. Proc., Vol. V., p. cxii.

The Additions to the List of Perthshire Plants since the publication of Dr. White's "Flora." W. Barclay. March, 1912. Proc., Vol. V., p. cxlviii.

Notes on Some Perthshire Plants. D. Campbell. March, 1913. Proc., Vol. V., p. cc.

The Wild Flowers of Spring. W. Barclay. March, 1913. Proc., Vol. V., p. cciii.

List of Plants in Flower in November, 1913. W. Barclay. December, 1913. Trans., Vol. VI., p. 5.

Potomogeton trichoides, Cham et Schlect, as a probable Perthshire Species. A. Bennett, F.L.S. January, 1914. Trans., Vol. VI., p. 6.

Botanical Notes: Appin, Fortingall, Schiehallion and Ben Lawers. D. A. Haggart. February, 1914. Trans., Vol. VI., p. 44.

Notes on "Additions to the List of Perthshire Plants since the Publication of Dr. White's Flora." A. Bennett, F.L.S., Croydon. March, 1915. Proc., Vol. VI., p. lxxx.

Notes on Roses. W. Barclay. Part I., March, 1915. Proc., Vol. VI., p. lxxxii. Part II., March, 1916. Proc., Vol. VI., p. cxv.

(b) Trees.

On the Parent Larches at Dunkeld. J. S. Grant. February, 1908. Proc., Vol. IV., p. clxxxiii.

Afforestation in Scotland. W. Barclay. March, 1909. Proc., Vol. V., p. xiv.

The Natural Regeneration of Woods. Frank Scott. Feb., 1915. Trans., Vol. VI., p. 56.

(c) Mosses.

Additions and Corrections to the Perthshire List of Mosses. R. H. Meldrum. February, 1909. Trans., Vol. V., p. 13.

(d) Fungi.

The Natural History of the Mycetozoa, with Notes on some Local Species. Dr. Lyell. April, 1908. Trans., Vol. IV., p. 235.

Some Discomycetes of the Locality, and their Habitats. Jas. Menzies. Nov., 1910. Trans., Vol. V., p. 75.

Notes on some New and Rare Fungi from the District. Jas. Menzies. Feb., 1913. Trans., Vol. V., p. 173.

New Perthshire Fungi. Jas. Menzies. February, 1914. Trans., Vol. VI., p. 19.

(e) Ecology.

The Evolution of Plant Life on a Haughland. H. Coates. December, 1914. Trans., Vol. VI., p. 33.

(f) Historical.

Some Early Perthshire Botanists. W. Barclay. March, 1908. Proc., Vol. IV., p. clxxxix.

David Douglas, Scone, Botanist and Pioneer of Arboriculture. R. Dow. April, 1910. Trans., Vol. V., p. 55.

3.—Geology.

The Agates of the Sidlaws. R. Dow. April, 1905. Trans., Vol. IV., p. 87.

On the Microscopic Structure of Some Perthshire Igneous Rocks. G. F. Bates. Part I., February, 1906, Trans., Vol. IV., p. 128; Part II., April, 1907, *id.*, p. 189; Part III., April, 1908, *id.*, p. 228.

The Evolution of a Haughland, as illustrated in the Camping Ground of the Boys' Brigade at Ballinluig. H. Coates. March, 1906. Proc., Vol. IV., p. cxiv.

Geological Notes. H. Coates. November, 1906. Proc., Vol. IV., p. cxxxiii.

The Glaciation of Perthshire. H. Coates. January, 1907. Proc., Vol. IV., p. cxliii.

Note upon Crystals of Grossularite from Corsiehill Quarry. S. J. Shand, Edinburgh. January, 1908. Trans., Vol. IV., p. 210.

The Dyke Rocks of Schiehallion District. G. F. Bates. April, 1909. Trans., Vol. V., p. 23.

Notes on Some Highland Rocks. G. F. Bates. April, 1911. Trans., Vol. V., p. 194.

Note on the Occurrence of a Beam of Timber under the Carse Clay at Barnhill. H. Coates. November, 1911. Proc., Vol. V., p. cxliv.

Further Notes on Highland Rocks. G. F. Bates. February, 1914. Trans., Vol. VI., p. 22.

Note on a Sub-Fossil Elk's Horn found at Methven in 1801. H. Coates. April, 1917. Proc., Vol. VI., p. clix.

4.—Archæology.

Notes on the Discovery of the Remains of an Earth House at Barnhill, Perth. Alex. Hutcheson, Broughty Ferry. April, 1905. Trans., Vol. IV., p. 96.

The Archæology of Tentsmuir. Alex. Hutcheson, Broughty Ferry. March, 1907. Trans., Vol. IV., p. 174.

Archæological Notes from Perthshire and Argyllshire. Rev. G. A. Frank Knight. January, 1913. Trans., Vol. V., p. 142.

Note on a Curious Stone at Inver. C. McIntosh. November, 1913. Trans., Vol. VI., p. 3.

Note on Stone Cists found at Flawcraig and Burnfoot, in the Carse of Gowrie. H. Coates. November, 1916. Trans., Vol. VI., p. 149.

Local Societies and Archæological Research, with Notes on Prehistoric Antiquities in the Perth Museum. J. Graham Callander, F.S.A.Scot. January, 1917. Trans., Vol. VI., p. 151.

5.—Meteorology.

Seasonal Notes, 1904. H. Coates. March, 1905. Proc., Vol. IV., p. lv.
Seasonal Notes, 1905. H. Coates. November, 1905. Proc., Vol. IV., p. cii.
Seasonal Notes, 1906. H. Coates. November, 1906. Proc., Vol. IV., p. cxxxv.
Seasonal Notes, 1906. H. Coates. January, 1907. Proc., Vol. IV., p. cl.
Seasonal Notes, 1907. H. Coates. November, 1907. Proc., Vol. IV., p. clxxiv.
Sunset and Twilight. D. M. Y. Somerville. February, 1908. Proc., Vol. IV., p. clxxxiv.
Seasonal Notes—The Rainfall of 1907. H. Coates. March, 1908. Proc., Vol. IV., p. cxciv.
Meteorological Observations in Perth. Alex. M. Rodger. January, 1909. Proc., Vol. V., p. xlv.
The Drought of 1913. C. McIntosh. November, 1913. Trans., Vol. VI., p. 1.
Floods and Droughts of the Tay Valley. H. Coates. February, 1916. Trans., Vol. VI., p. 103.
Note on an Old Weather Record found amongst the M.SS. of the Antiquarian Museum. H. Coates. February, 1916. Trans., Vol. VI., p. 126.

Perth
28th February 1867

A few gentlemen having considered the importance of instituting a Society for the practical study of Natural Science in Perth, and with that view having prepared and drawn up a series of Laws and Regulations applicable to such a Society, a meeting was held this day in King James the Sixth's Club Room for the purpose of considering these.

Mr John Dawson was called to the chair, and having shortly stated the object of the meeting and the benefits likely to result from the establishment of a Society of the nature contemplated the proposed Laws and Regulations were read and discussed.

These having been approved of it was unanimously resolved that a Society should be constituted under the title of The Perthshire Society of Natural Science. The following gentlemen were at the same time declared to form the Original Members of the Society

F Buchanan White M.D.
[illegible]
[illegible]
[illegible]
John Dawson
John Stewart
John Bryce
Hugh Thomson
James Henderson
D Brown
[illegible]
John Drummond
Wm Head
[illegible]
[illegible]
Wm. Dees

Plate XXI.—Facsimile of Minute of First Meeting of the Society, with Signatures of the Original Members.

Perthshire Society of Natural Science.

TABULAR VIEW OF THE PROGRESS OF THE SOCIETY.

SESSION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
YEAR	1867-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92
MEMBERS ELECTED.	43	23	14	30	34	30	13	7	28	5	43	42	21	7	76	32	49	32	30	15	18	10	33	9	10
TOTAL ORDINARY MEMBERS	33	59	78	108	121		98	98	120	125	168				286	258	306	310	307	283	289	298	293	271	237
TOTAL MEMBERSHIP.	43	64	85	113	134		103	106	128	133	176	212			288	271	321	318	327	304	309	318	314	290	278
NUMBER OF MEETINGS.	12	11	13	10	9	7	7	7	7	4	6	7	5	6	5	6	8	6	7	7	7	7	7	7	8
PAPERS.	13	11	17	18	13	14	8	9	9	4	3	7	8	11	9	6	8	7	16	10	12	10	11	13	7
EXCURSIONS.	2	6	0	4	0	3	0	7	6	4	3	3	2	4	4	4	4	8	7	7	8	7	8	8	8

SESSION	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
YEAR	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-1900	1900-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
MEMBERS ELECTED.	34	19	83	61	32	17	64	28	28	23	21	32	26	17	33	6	14	4	4	20	8	9	21	23	19
TOTAL ORDINARY MEMBERS	274	283	268	323	321	326	333	369	382	363	384	395	406	385	400	374	333	335	314	304	293	286	293	283	28[illegible]
TOTAL MEMBERSHIP.	292	284	284	369	368	374	410	402	412	416	417	422	442	430	434	404	382	365	340	330	320	315	354	316	310
NUMBER OF MEETINGS.	6	7	6	6	8	7	8	6	8	8	5	6	8	5	6	8	8	8	6	6	6	6	8	6	6
PAPERS.	8	10	8	7	7	10	10	10	9	11	9	10	9	7	8	11	8	7	8	10	8	8	7	8	6
EXCURSIONS.	7	8	7	8	10	11	8	8	7	7	10	9	8	8	7	8	8	7	7	8	8	6	6	7	7

PRESIDENT.
- Dr Buchanan White, 1867-1872, 5 years
- Col. D. Hay, 1872-74, 2 years
- Sir T. Moncreiffe, 1874-1880, 6 years
- Dr Geikie, 1880-82, 2 years
- Col. D. Hay, 1882-84, 2 years
- Dr Buchanan-White, 1884-1892, 8 years
- Henry Coates, 1892-1907, 15 years
- William Barclay, 1907

SECRETARY
- J. Stewart, 1867-69, 2 years
- James McFarlane, 1869-70, 1 year
- A. T. Scott, 1870-72, 2 years
- Dr B. White, 1872-74, 2 years
- J. Young, 1874-1885, 11 years
- S. T. Ellison, 1885.

TREASURER.
- J. Bruce, 1867-69, 2 years
- John Henderson, 1869-70, 1 year
- James Henderson, 1870-71, 1 year
- P. Thomson, 1871-72, 1 year
- Robert Keay, 1872-73, 1 year
- [illegible], 1873-75, 2 years
- Jas. Duncan, 1875-77, 2 years
- M. McGregor, 1877-1884, 7 years
- John Stewart, 1884-1900, 16 years
- A. W. Brown, 1900-1914, 14 years
- James Winter, 1914

LIBRARIAN.
(For the first [illegible] the [illegible] of Librarian and Curator were combined)
- [illegible], 1867-68, 2 years
- John Bruce, 1869-70, 1 year
- James Stewart, 1870-71, 1 year
- [illegible], 1871-73, 2 years
- J. Davidson, 1873-75, 2 years
- F. Smith, 1875-77, 2 years
- George Young, 1877-82, 5 years
- James Coates, 1882.

CURATOR
- Jas. McFarlane, 1872-74, 2 years
- Colonel Drummond-Hay, 1874-1895, 29 years
- Alexander M. Rodger, 1895-1914, 19 years (Died [illegible] 1914)
- Henry Coates, 1914

EDITOR.
- Editorship instituted 1874
- Dr Buchanan White, 1874-1884, 10 years
- Henry Coates, 1884-1892, 8 years
- Dr B. White, 1892-95, 3 years
- William Barclay, 1895-1907, 12 years
- G. F. Bates, 1907

Societas Perthensis Scientiarum Naturae · 1867 ·

Nemo me impune lacesset

Plate XXII.

APPENDIX C.—List of the Children's Essay Competitions from 1898 to 1917.

No.	Year.	Science.	Subject.	Number of Essays
1.	1898.	The Museum	A Visit to the Perthshire Natural History Museum.	45
2.	1899.	Zoology.	The Divisions of the Animal Kingdom, as illustrated in the Index Museum	70
3.	1900.	Zoology.	The Legs, Feet, and Bills of Birds.	81
4.	1901.	Botany.	The Trees of Perthshire.	118
5.	1902.	Zoology.	The Insects of Perthshire.	100
6.	1903.	Geology.	The Part which Water has played in the Breaking down and Building up of the Rocks of Perthshire.	163
7.	1904.	Zoology.	The Fishes of the Lochs and Streams of Perthshire.	315
8.	1905.	Botany.	Half-a-dozen Wayside Flowers.	189
9.	1906.	Zoology.	The Land and Fresh-water Shells of Perthshire.	99
10.	1907.	The Museum.	Four Objects in the Perthshire Nat. Hist. Museum that interest me most.	36
11.	1908.	Zoology.	The Teeth of Different Animals and their uses.	61
12.	1909.	Zoology.	Perthshire Birds.	71
13.	1910.	Zoology.	Perthshire Mammals, including domesticated species.	66
14.	1911.	Zoology.	The Nests and Nesting Habits of any four Perthshire Birds.	61
15.	1912.	Physiography.	A Perthshire River.	80
16.	1913.	Botany.	Six Fruits.	84
17.	1914.	Zoology.	Perthshire Amphibians and Reptiles.	52
18.	1915.	Botany.	Four Perthshire Trees.	50
19.	1916.	Meteorology.	A Naturalist's Diary.	33
20.	1917.	Physiography.	The Valley of the Tay.	46
			Total, ...	1820

SUMMER SESSION, 1917.

The following excursions were arranged, and duly carried out, with the exception of that on 11th August, which was abandoned owing to rain :—

1. Monday 28th May—Abercairney to Muthill.
2. Wednesday, 20th June (Half-Day)—Denmarkfield and Luncarty.
3. Saturday, 7th July—Moulin Almond and Methven Woods.
4. Saturday, 11th August—Walk over Callerfountain Hill to Forgandenny and Bridge of Earn.
5. Monday, 27th August—Stenton.
6. Saturday, 22nd September—Fungus Excursion to Methven Woods.

PHOTOGRAPHIC SECTION.

The following Meetings were held :—

Wednesday, 14th February, 1917—Demonstration on Velox Printing. Mr. NEWGAS.

Wednesday, 14th March, 1917—Salon Slides.

LIST OF DONATIONS TO THE LIBRARY.

SESSION 1916-17.

I.—PUBLICATIONS ACQUIRED BY EXCHANGE WITH OTHER SOCIETIES.

Botanical Society of Edinburgh. Transactions and Proceedings, Vol. xxvii., Part 1, 1915-16.
Dundee Naturalists' Society. Proceedings and Transactions, Vol. i., Parts 1 and 2.
Northants Natural History Society and Field Club. Journal, Vol. xviii., Nos. 141-144.
Northumberland, Durham, and Newcastle-upon-Tyne Natural History Society. Annual Report, 1915-16.
Western Australian Museum and Art Gallery. Records, Vol. i., Part 1.
Aberdeen Working Men's Natural History and Scientific Society. Transactions, Vol. iii., No. 5, 1915-16.
American Museum of Natural History. Memoirs, New Series, Vol. i., Part 6. Bulletin, Vol. xxxiv.

Aboricultural Society, Royal Scottish. Transactions, Vol. xxx., Part 1; Vol. xxxi., Part 1.
Australian Museum, Sydney. Records, Vol. xi., Nos. 3 and 5. Memoir iv., Scientific Results of the Expedition of H.M.C.S. *Thetis*., Vol. xi., Nos. 1-2.
Belfast Naturalists' Field Club. Annual Report and Proceedings, Vol. vii., Part 3, 1915-16.
British Association. Report of Manchester Meeting, 1915.
Buchan Club. Transactions, Vol. ix., Parts 1-2.
Dumfries and Galloway Natural History and Antiquarian Society. Transactions and Proceedings, 3rd Series, Vol. iii., 1915.
Essex Field Club. The Essex Naturalist, 1916.
Geological Society. Quarterly Journal, Vol. lxxi., Parts 2-4, Nos. 282-234.
Lloyd Library, Cincinnati, U.S. Bibliographical Contributions, Vol. ii., Nos. 8-11.
Natural History Society of Glasgow. The Glasgow Naturalist, 1916.
New York Zoological Society. Zoologica, Vol. ii., Nos. 3-5.
Nova Scotian Institue of Science. Proceedings and Transactions, Vol. xiv., Part 2, 1915-16.
Philadelphia Academy of Natural Science. Proceedings, Vol. lxvii., Part 3; Vol. lxviii., Parts 1 and 2.
Royal Physical Society. Proceedings, Vol. xix., No. 9; Vol. xx., No. 1.
Royal Society of Edinburgh. Transactions, Vol. i., Parts 3-4. Proceedings, Vol. xxxvi., Parts 1-2.
Scottish Marine Biological Association. Annual Report for 1915.
Smithsonian Institution, Washington, U.S. Annual Report for 1915.
Society of Antiquaries of Scotland. Proceedings, 5th Series, Vol. i., 1914-15.
South London Etomological and Natural History Society. Proceedings, 1915-16.
Torquay Natural History Society. Journal, Vol. ii., No. 2, 1916.
Wisconsin Academy of Sciences, Arts, and Letters. Transactions, Vol. xviii., Part 1.
Yorkshire Philosophical Society. Annual Report for 1915.

The following Societies have not yet sent their Publications for 1914-15:—

Carnegie Museum, Pittsburgh, U.S.
Dunfermline Naturalists' Society.
Hull Scientific and Field Naturalists' Club.
Kilmarnock Glenfield Ramblers' Society.
Nottingham Naturalists' Society.
Royal Scottish Geographical Society.
Scottish Meteorological Society.
Stirling Natural History and Archæological Society.
Ashmolean Natural History Society of Oxfordshire.
Buteshire Natural History Society.
Dove Marine Laboratory, Cullercoats, Northumberland.
Geological Society of Edinburgh.
Vale of Derwent Naturalists' Field Club.

II.—Gifts from Institutions.

Instituto Geologico de Mexico. Boletin, Nos. 31-34. Proceedings, Vol. V., Parts 1-10.
Ministry of Public Instruction and Fine Arts, Paris. La Science Française, 2 Vols., 1915.
Michigan Academy of Science. 16th Annual Report, 1914.
University of Illinois. Illinois Biological Monographs, 1916.
Louisiana State Museum, New Orleans. Fifth Biennial Report, 1914-15.
Cambridge University Press. The Birds of Britain: their Distribution and Habits, by A. H. Evans, F.Z.S.
Verhandlungen der Schweizerischen Naturforschenden Gesellschaft, 1914, i.-ii.
Societé Helvetique des Sciences Naturellas. Actes, 1915, Parts 1-2.
Board of Agriculture and Fisheries. Leaflets, Nos. 80, 112, 100, 250, 307. Special Leaflets, Nos. 56, 58, 59, 61, 62, 5, 46, 65, 32, 67, 70.

British Museum. Trustees of the.
Catalogue of Ungulate Mammals, Vol. v., 1916.
Catalogue of the Fresh Water Fishes of Africa, Vol. iv., 1916.
Catalogue of the Mesozoic Plants,—Lower Greensand Plants of Britain. 1915.
The Louse, and its Relation to Disease. 1915.
Guide to Insects and Ticks in Relation to Disease. 1916.
British Mycological Society. Transactions, Vol. v., Part 2.
Brooklyn Institute of Arts and Sciences.
Children's Museum News, Vol. iii., No. 6; Vol. iv., Nos. 1-5.
Canada, Department of Mines, Geological Survey.
Memoirs, Nos. 51, 55, 58, 72, 73, 76, 77, 79, 83, 85.
Museum Bulletins, Nos. 22, 23, 24.
Summary Report for 1916.
Field Museum of Natural History, Cincinnati, U.S. Publications, Nos. 186, 187, 188.
Fishery Board of Scotland.
Thirty-fourth Annual Report. 1915.
Salmon Fisheries, 1915, Nos. 1-2.
Missouri Botanical Gardens, St. Louis, Mo., U.S., Annals, Vol. ii., No. 4; Vol. iii., No. 1.
National Museum of Wales. Ninth Annual Report, 1916.
Royal Botanic Gardens, Edinburgh. Notes, Vol. ix., Nos. 42-45.
Royal Zoological Society of New South Wales. The Australian Zoologist, Vol. i., Part 3.
United States, Department of the Interior, Geological Survey.
Thirty-sixth Annual Report, 1914-15.
Bulletins, Nos. 603, 8, 610, 615, 621, 623, 626, 628, 629, 632, 633, 634, 640, 641.
Professional Papers. Nos. 89, 95E-I, 98A-H.
Mineral Resources. Nos. i1, i2, i10-26, iA-1914, iA-1915, iii1-10, ii21-31, ii35.
Water Supply Papers. Nos. 332, 351, 352, 355, 359, 369, 370, 372, 379, 383, 385, 388, 397-400 A.

III.—Gifts from Individuals.

Evans, Miss. Arrangement of British Plants, by William Withering. 4 Vols., 1818.
Barclay, William. The Lichens of Perthshire, by J. R. Wheldon and R. Wilson. 1915.
Coates, H. The Journal of Conchology, 1916. British Rainfall, 1916. Symon's Meteorological Magazine, 1916. Transactions, Edinburgh Geological Society, 1916. British Ferns, by Thos Moore.
Ellison, S. T. The Entomologist, 1916. Photography, 1916.
Murray, Hon. Gladys. Nature, 1916. Scottish Geographical Magazine, 1916. Hunting Trips of a Ranchman, by Theodore Roosevelt, 1886.
Mackenzie, Alex. The Polarity of Matter, by Alex. Clark. Expedition to Borneo, by Capt. Keppel.
Ritchie, John. Guild Acts, edited by John Thomas, 1911.

RESULTS OF 19th CHILDREN'S ESSAY COMPETITION, 1915-16.

Subject :—"A Naturalist's Diary."

First Division, 14 years and over (3 Essays).

1. Annie K. Robertson, Scone Public School.
2. Nellie Brown, Scone Public School.

Second Division, 13 years (15 Essays).

1. Chrissie Stalker, Scone Public School.
2. Annie T. Ross, Scone Public School.
3. { William Rumgay, Scone Public School.
   { Betty M'Donald, Scone Public School.

Certificate—William Mackay, Scone Public School.

Third Division, 12 years (14 Essays).

1. Isobel E. Nettleship, Scone Public School.
2. Jeannie Stewart, Scone Public School.
3. Nellie Black, Scone Public School.
4. May Gray, Scone Public School.
5. Cecilia H. S. Martin, Scone Public School.

Certificates—Connie Dow, Scone Public School.
Isobel Harris, Scone Public School.
David Macpherson, Scone Public School.
John Brown, Scone Public School.

Fourth Division, 11 years (1 Essay).

1. Bessie Folkarde, Cherrybank Public School.

The Prizes were presented by Major Mercer, of Huntingtower, on Saturday, 14th October, 1916.

RESULTS OF 20th CHILDREN'S ESSAY COMPETITION, 1916-17.

Subject :—"The Valley of the Tay."

FIRST DIVISION, 14 years and over (5 Essays).

1. Betty M'Donald, Scone Public School.
2. Peter Gow, Scone Public School.

Certificate—Elsie Reid, Scone Public School.

SECOND DIVISION, 13 years (17 Essays).

1. (Medal). Isobel Nettleship, Perth Academy.
2. Alexander Law, Perth Academy.
3. May Gray, Scone Public School.
4. Greta Williamson, Perth Academy.
5. Donald Patton, Scone Public School.
6. Kenneth Conely, Scone Public School.

Certificates—Jeanie Stewart, Perth Academy.
Tibbie Harris, Scone Public School.
David MacPherson, Scone Public School.
Thomas Anderson, Scone Public School.
Mary Wighton, Scone Public School.
Peter E. Clarke, Scone Public School.

THIRD DIVISION, 12 years (20 Essays).

1. Hannah Morris, Southern District School.
2. Willie B. Forbes, Perth Academy.
3. Jessie Adamson, Southern District School.
4. David Neish, Southern District School.
5. Annabella M. White, Perth Academy.
   Jean M. Rumgay, Scone Public School.
   Jack Fordyce, Scone Public School.

Certificates—John MacIntyre, Scone Public School.
Mary M'Laren, Southern District School.
Mary A. Ross, Perth Academy.
Andrew Stalker, Scone Public School.
Lizzie Paterson, Scone Public School.

FOURTH DIVISION, 11 years (4 Essays).

1. Alison Rutherford, Southern District School.

Certificates—John Ortcheson, Southern District School.
Annie Hay, Southern District School.

The Prizes were presented by Rector Smart, Perth Academy, on Saturday, 27th October, 1917.

ADDITIONS TO ROLL OF MEMERSHIP.

Session 1916-17.

HONORARY MEMBERS.

Professor J. A. Thomson,.....9th Mar., 1917
Professor J. W. H. Traill,.....9th Mar., 1917

CORRESPONDING MEMBERS.

Dr. J. S. Flett, H.M. Geological Survey, Edinburgh,.....9th Mar., 1917
Lt.-Commander J. G. Millais, F.Z.S.,.....9th Mar., 1917
Dr. W. G. Smith, East of Scotland College of Agriculture,
Edinburgh, 13th April, 1917

ORDINARY MEMBERS.

Anderson, Chas. S., Strathornia, Young Street,.....13th April, 1917
Ashbridge, Miss C. E., 16 Scott Street,.....8th Dec., 1916
Asher, John, F.S.A.Scot., 1 Muirhall Terrace,.....25th July, 1917
Baxter, Peter, 31 James Street,.....9th Mar., 1917
Campbell, Jas. W., Welshill Terrace,.....8th Dec., 1916
Dunedin, The Right Hon. Lord, Stenton, Dunkeld,.....12th Jan., 1917
Dunedin, Lady, Stenton, Dunkeld,.....12th Jan., 1917
Gow, Neil, St. John Street,.....9th Feb., 1917
Gilmour, Allan S., Royal Infirmary,.....10th Oct., 1917
Hutcheson, Jas., Annbank, Tullylumb Terrace,.....12th Jan., 1917
Miller, Chas., Craigie Haugh,.....9th Mar., 1917
Mitchell, W. G., Perth Academy,.....9th Feb., 1917
Munsie, Jas., Craigie Road,.....9th Mar., 1917
Newlands, Mrs., Craigend Manse,.....16th Aug., 1917
Proudfoot, Miss, 12 Queen's Avenue,.....13th April, 1917
Rollo, Jas. A., 55 St. John Street,.....9th Mar., 1917
Valentine, George, The Knowe, Craigie,.....9th Mar., 1917
Wood, W. J., Royal Bank Buildings,.....9th Mar., 1917

ASSOCIATE.

Cranna, John, Dupplin,.....13th April, 1917

ABSTRACT OF ACCOUNTS for the Year ending 28th February, 1917.

INCOME.

Balance from last Account,			£4 14 1
Subscriptions,			66 3 6
Life Member,			5 5 0
Bank Interest, etc.,			6 14 9
Sum due Treasurer,		£7 7 8	
Less in Bank,	£6 12 2		
Due by Mr. Coates,	0 6 0		
		6 18 2	
			0 9 6
			£83 6 10

EXPENDITURE.

Heating, Lighting, etc.,	£20 0 0
Fire Insurance,	0 16 3
Janitor,	4 17 6
Subscriptions to Societies,	1 1 0
Printing and Stationery,	36 13 0
Books and Magazines,	6 11 0
Petty Expenses,	13 8 1
	£83 6 10

PERTH, 9th March, 1917.—Examined, compared with the Vouchers and found correct.

(Signed) J. MORISON, *Auditor.*

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1916.

MONTH.	BARO-MET'R	AIR TEMPERATURE.									HYGRO-METER.			RAIN.					SUNSHINE.		WIND DIRECTION.									REMARKS.
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Mean of		Mean of A and B.	Difference from Average.	Absolute Maximum. and Minimum.				Ground Frost, 30° and under.	Mean at 9 a.m. and 9 p.m.			Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.			Number of Observations at 9 a.m. and 9 p.m.									
		Maximum. (A).	Minimum. (B).			Maximum.	Day of Month.	Minimum.	Day of Month.		Dry Bulb.	Wet Bulb.	Humidity.								N	N E	E	S E	S	S W	W	N W	Calm or Variable.	
	Inches.	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches.	In. Date.	Hours.	Hrs.										
JAN.	29·803	49·1	37·1	43·1	+6·3	54	19,21	27	27,28	4	42·9	40·9	85	18	+3·7	3·65	+1·14	·64 19	51·1	1·65	3	2	0	3	2	30	18	4	0	
FEB.	29·647	42·3	31·9	37·1	—0·4	50	6	22	20	11	35·9	34·6	89	19	+6·3	4·25	+1·89	·74 7	78·9	2·72	5	9	2	2	5	19	5	11	0	Snowstorms, 6-8, 27; Solar halo, 20.
MAR.	29·760	41·6	32·3	37·0	—2·8	55	31	26	7	19	36·3	35·6	89	15	+0·8	3·12	+0·65	·83 16	88·0	2·84	6	15	12	1	1	11	3	13	0	Snowstorms, 10-12, 25-27.
APR.	29·776	52·9	37·2	45·1	+1·1	63	28	28	2	7	44·7	42·6	85	14	+1·4	1·65	—0·39	·39 24	157·4	5·25	3	5	5	8	3	27	2	7	0	
MAY	29·876	57·2	41·4	49·3	—0·2	75	18	35	6,14	0	49·1	46·2	78	18	+5·0	3·93	+1·67	1·28 5	141·4	4·56	1	7	11	12	3	21	3	4	0	Thunder, 27, 28.
JUNE	29·835	61·7	45·4	53·6	—1·8	71	14,23	34	14	1	53·2	49·7	77	13	+2·4	2·11	—0·06	·03 24	132·4	4·41	3	3	5	10	4	19	1	15	0	
JULY	29·950	67·4	50·6	59·0	+0·7	79	22,23, 26	42	13,18	0	57·7	55·4	85	12	—1·5	9·44	+6·38	3·42 7	135·2	4·36	2	2	1	18	16	15	3	5	0	Phenomenal Rainfall and Flooding, 7, 8; Thunder, 22.
AUG.	29·860	67·8	49·7	58·8	+1·5	83	5	33	29	0	57·1	55·4	88	8	—2·3	2·98	—0·51	1·33 25	144·9	4·67	0	4	3	15	21	12	3	4	0	
SEP.	30·003	61·6	44·9	53·3	+0·0	72	7	32	20	0	52·0	50·2	87	9	—4·4	1·40	—1·05	·32 27	123·0	4·10	6	3	0		18	19	3	3	0	
OCT.	29·631	54·0	39·9	47·0	+0·6	64	12	21	17	7	46·3	44·8	90	23	+7·5	6·81	+3·78	·83 27	72·2	2·33	1	1	1	17	16	21	4	1	0	Continuous Rains.
NOV.	29·571	48·8	8·7	45·8	+2·8	59	11,13	31	16	4	44·2	42·7	89	19	+3·8	4·59	+1·53	1·15 19	40·2	1·34	5	2	4	11	11	20	5	2	0	
DEC.	29·536	41·2	30·8	36·0	—1·1	50	28,31	21	5	19	36·4	35·6	93	18	+0·8	3·70	+0·50	1·75 8	31·0	1·00	2	3	2	8	7	22	2	16	0	
YEAR	**29·771**	**53·8**	**40·0**	**47·3**	**+0·9**	..	..	..	..	**72**	..	..	**86 33**	**187**	**+18·5**	**47·56**	**+17·13**	..	**1195·9**	**3·27**	**37**	**56**	**46**	**113**	**10**	**36**	**52**	**85**	**0**	
Highest	**30·509**	2 ix.				**83**	5 viii.			**19 Mar**				23	Oct. Aug.	**9·44**	July	**3·42** 7 vii.	157·4 Apr.	5·25 Apr.					**236**					
Lowest	**28·460**	16 ii.						**21**	17, x. 5 xii.	Dec				9	Sept.	**1·40**	Sept.		31·0 Dec.	1·00 Dec	**37**									

Averages are for the period 1883-1912—30 years.

Height of Station above Sea Level = 85 feet.

Position—56° 23′ N. Lat., 3° 25′ W. Long.

HENRY COATES, F.R.S.E., Curator, The Museums, Perth.

BAROMETER.

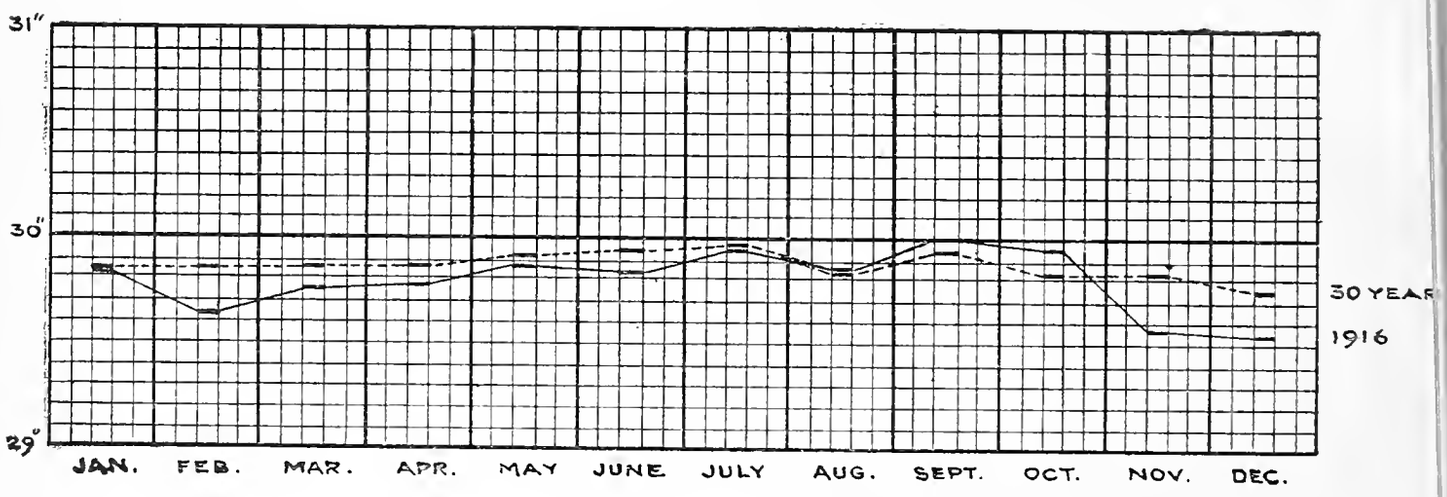


Plate XXIII.

Mean Monthly Readings at Perth, 1916————

Average of Monthly Reading, 1883-1912.....

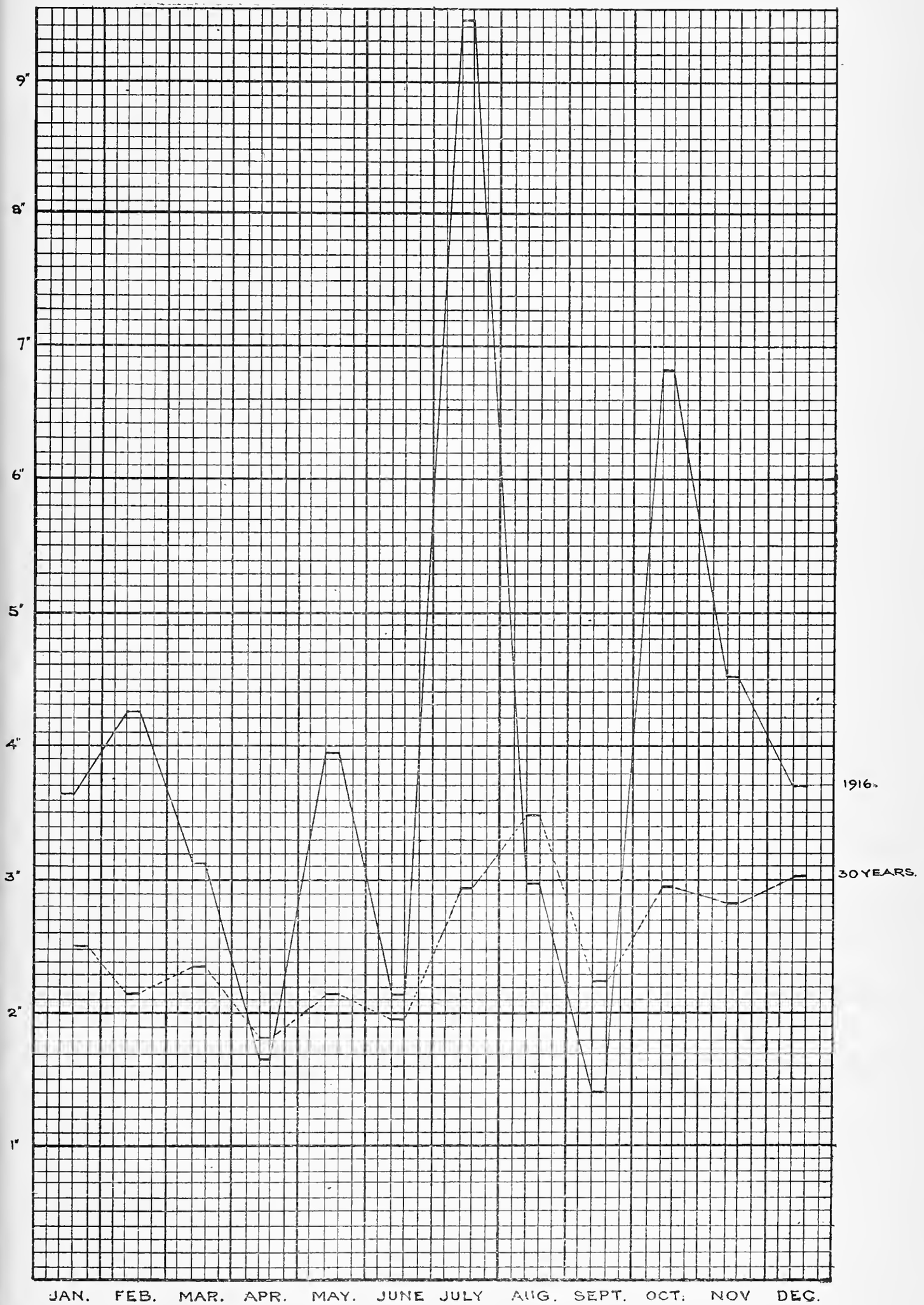


Plate XXIV.

Monthly Rainfall at Perth, 1916————
Average Rainfall at Perth, 1883-1912.....

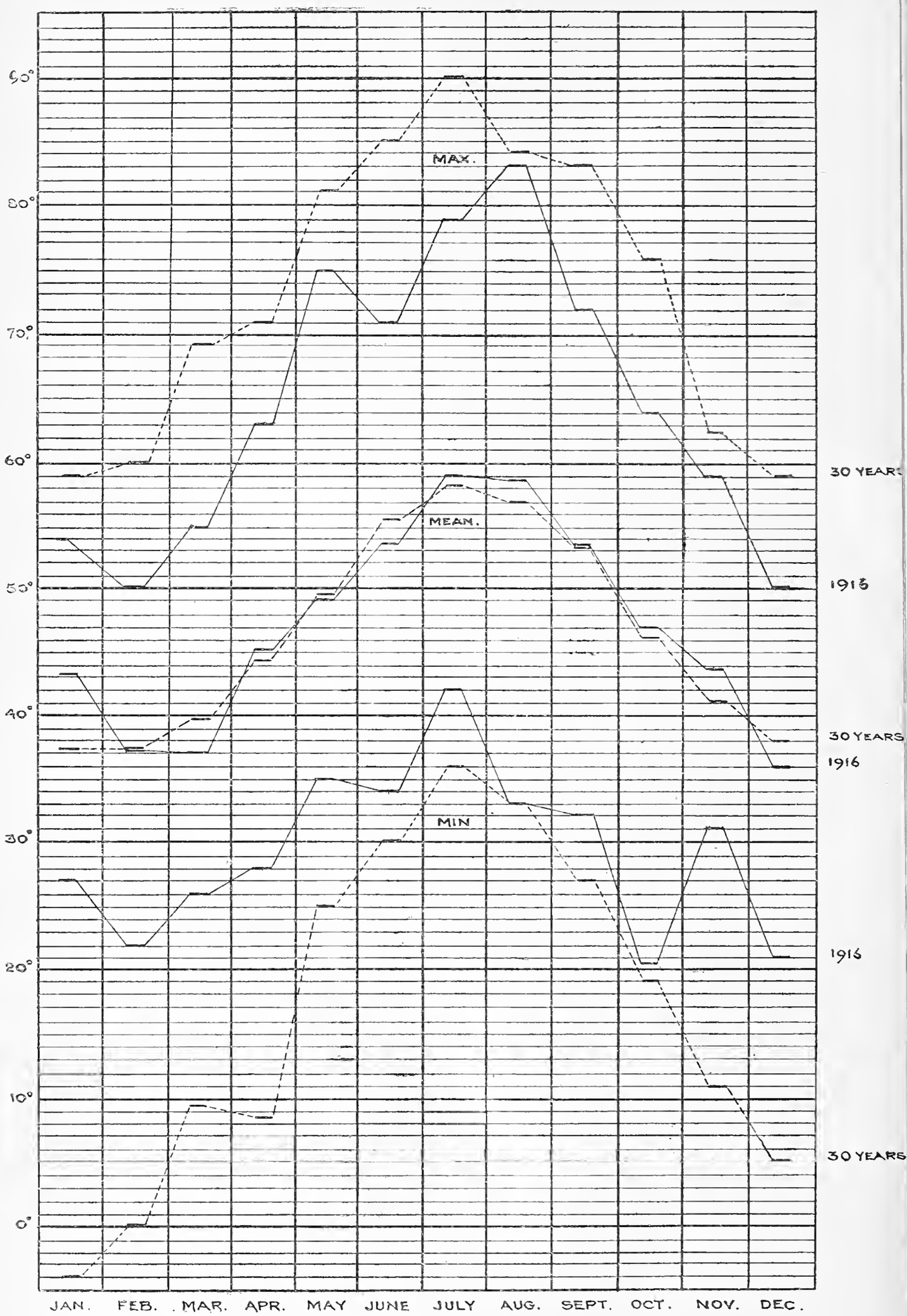


Plate XXV.

Maximum, Minimum, and Mean Monthly Temperatures at Perth, 1916———
Maximum, Minimum, and Mean Mean Monthly Temperatures at Perth, 1883-1912.....

WINTER SESSION, 1917-18.

9th November, 1917.

W. BARCLAY, President, in the Chair.

Various donations of books and magazines were announced, and a number of specimens which had recently been presented to the Museum were exhibited by the Curator.

On the recommendation of the Council, it was agreed to change the name of the Junior Section of the Society to the Perthshire Junior Naturalists' Association, and a revised Constitution for the Association was adopted.

The President then delivered the following opening address :—

LADIES AND GENTLEMEN,—We have this year to deplore a much longer list than usual of Members removed by death since the end of last Winter Session. Mr. G. Gibbons Thomson was not a Member of our Society for more than two or three years, but nevertheless he was a keen naturalist. Formerly a Member of the Edinburgh Geological Society, and taking an active share in its work, the pressure of his daily duties prevented him since he came to Perth from doing much to his favourite studies, but on his retiral from active work he was looking forward to a period of leisure which would enable him to resume geological work. But this hope proved vain, for a sudden and unlooked for death removed him from our midst and put an end to his usefulness.

Mr James Smith was also not long a Member. A busy life of useful work gave him but little leisure for the study of Natural History. That little leisure, however, he delighted to spend in rambling in search of wild flowers. A friend of his informs me that he had formed and mounted in an album a specimen of the leaf of all the plants of the Woody Island which he could find and identify, and that it was a pleasure to hear him talk with enthusiasm of the flowers of the field.

Dr. Urquhart joined our Society so far back as 1882. Though his special studies were not in any department of Natural History, he was always a steady supporter of our Society and contributed several papers to our *Proceedings* on various aspects of the physiology of the brain and nervous system. He was also greatly interested in antiquities and in past local history. The booklet which was published under the title of "Auld Perth" was edited by him, and he was also the author of one of the papers contained in it. A kindly man of much ability, and with a fund of numerous stories with which he could enliven even a very dry subject.

Miss Murray MacGregor was also a Member for a long period. To her we were indebted for several papers on the topography and natural history of some parts of Hungary, especially the mountainous Tatra, with lists of the plants which she had observed during her many sojourns there. The papers are written in a lively style, and show that she was a keen observer and that she was possessed of a vigorous mind. When she was taken away at a ripe old age the Society lost a sincere friend.

Mr. Robert Gloag, a Member for more than twenty years, was one of those working men who take up in their leisure hours some branch of Natural History as a hobby and pursue it with keenness, deriving from it refreshment from toil and a considerable amount of mental culture—a wider horizon than would otherwise be open to their gaze. His favourite study was mineralogy.

Mr. Charles Miln on his retirement from active work and taking up his residence in Perth, became a Member of our Society in 1911. He was a regular attender at our meetings and also at our excursions as far as his strength permitted. He devoted part of his leisure to photography. To him, after a long period of almost continual suffering, borne with patient fortitude, death came as a desired relief.

To the Members of our Society, as to the public in general, the sudden illness and speedy death of Mr. Rufus Pullar, and the sad circumstances attending these, caused a shock of surprise and of deep regret. The name of his father is closely linked with the early history of the Society, and the success which attended our efforts to build up a meeting place and a Museum was largely owing to his powerful aid and encouragement. In the son also we had a sincere friend and efficient helper on many occasions. His connection with the Society goes back for a period of forty-two years, and during all that time his help could always be relied on when need came. Only a few weeks before his death, he sent a fine series of microscopic Natural History slides to enrich the cabinets of the Museum. This is not the place to dwell upon his many virtues as a citizen and as an employer, and I will only add that by his death the community of Perth has lost a true friend and a willing and able helper in all that tended to the public weal.

George Tod was for many years a Member of the Junior Section. He acted for several of these years as its Secretary, and was of the greatest help to Mr. Rodger in bringing that body to a most efficient and satisfactory condition. His influence amongst his fellow members was great, and it was used only for good. He was devoted to the study of the habits and mode of life of birds, and studied them both in the field and in his own home. Several papers which he read showed marked ability as an observer, and were rendered attractive by a vein of quaint humour which ran through them. He had but joined the Society itself when he was called away to fight for his country on the plains of Flanders. Physically and mentally, he was a fine specimen of a Scottish soldier, and the news

that he was missing brought a pang of keen regret to all who knew him. He is the first actual Member of the Society, I think, who has laid down his life in this murderous strife. To his relatives we extend our sympathy, as well as to those of our Members—and they are many—who have lost son or brother, and to whom David's lament for Absalom will henceforth have a deeper meaning.

Turning now to glance at the weather during the present year, it may be said that a cold and dry spring was followed by a summer rather cooler and slightly drier than the average. Both spring and summer, though the total rainfall was less than usual, were much more showery, rainy days being much more numerous. June and July were the sunniest months, but the prevalence of easterly and north-easterly breezes prevented the average temperature from rising above the normal. August was the warmest month, and also the wettest, and one of the dullest, the average bright sunshine being only a fraction over three-and-a-half hours per day. The greatest cold in spring was on the 9th March, when the thermometer marked 27° below freezing point. The greatest degree of heat was experienced on the 24th July, when 78° in the shade were registered. Taking the whole ten months, the average temperature was just 1° below the average, whilst the total rainfall was deficient by 3.29 inches. The cold and damp spring rendered the seed time later than usual, but the grain crop on the whole in this district has been of about average bulk, and was secured in excellent condition. The root crops also are at least quite up to the average. The fruit crop, on the whole, was, I think, somewhat deficient, and certainly wild fruits are not so abundant as usual. On the whole, however, in present circumstances, we have reason to be glad that the harvest has been so bountiful.

Those who have lived long in Perth, and have been in the habit of strolling along the river bank between the North Inch and the mouth of the Almond, have noticed great changes in the neighbourhood of the Woody Islands. Taking first the island next the river bank, which is also the upper island. No doubt this was originally separted from the mainland by a constantly flowing stream, and for a long time this channel decreased in depth but slowly. Twenty-five or twenty-six years ago it had still at its head an open gravelly bed, dry indeed when the river was low, but requiring only a slight rise to be filled by a running stream. In the summer of 1891 or 1892, Dr. Buchanan White and I were crossing this bed a little below where it left the river, when we noticed that it was thickly covered with young willow plants, mostly not more than ten or twelve inches in height. We speculated as to what the result would be if these plants should keep their ground and grow up. They did keep their ground, and some are now as many feet in height as they were then inches. They have gathered silt around them, and other vegetation has sprung up, and there is now no trace of the bare gravel. This gathering has continued upwards, so that at ordinary states of the river you can walk over dry ground covered with

vegetation. Below also the channel has become narrowed and more or less obstructed. It requires now a considerable rise in the river before any stream can enter, in fact, what was formerly an island is now a peninsula, except when the river is considerably swollen.

Turning now to the channel between the inner and outer islands, a similar change has taken place, and in much the same period. When I was cataloguing the flora of the Woody Islands in the summer of 1886, a good many plants were found on the gravel bed, a short distance below the head of the outer island, between that and the inner one. These had sprung from seeds brought down by the main stream. There is no longer a gravel bed. It has become silted up at the head, and has gathered a mass of vegetation, and the change has extended all the way down between the two islands, and especially at the lower end of this channel, so that, except when there is a very considerable rise in the river, the two islands have become one.

But a more remarkable change has taken place on this outer island within the memory of many persons still living. At one time, I do not know exactly when, but certainly more than sixty years ago, it may be considerably more, the river was cutting into the bank on the Scone side a little way above the Woody Island. To prevent this going further, a croy was built to stem and turn aside the current. Whether this was the sole cause of what subsequently took place or whether it only accentuated a change which was already begun, I shall not venture to decide. But certainly, after that, the current began to alter its direction and to cross over and impinge with force upon the outer side of the lower half of the outmost of the two Woody Islands. This outer island at that time stretched for a considerable distance below the lower end of its inner neighbour. But the powerful current began now to cut into its side and to cut away piecemeal its lower end. Every flood undermined a portion of its bank, narrowing and shortening. In 1886, I estimated that it had lost about an acre or more of its area, but even then it still projected some distance below the inner island. Just a year or so before that time a croy was built about the middle of its outer side to try and prevent further destruction. This, however, proved of little or no use, and the outer island appeared doomed to ultimate extinction. All this time a striking change was taking place on the Scone side. The river, as is the custom of rivers, whilst destroying one side was building up on the other. A huge mass of gravel was gradually heaped up at some distance below the croy which had been erected on the Scone ground. This formed an island or peninsula, narrowing the channel of the main stream, and thus increasing the strength of the current which was striking against the Woody Island. A good many years ago, ten or twelve, I think, the croy on the west side was lengthened, but I doubt if this had much to do with the change that is now taking place. Gradually the outer island was worn away, until now and for some years past, the lower ends of the two islands have become

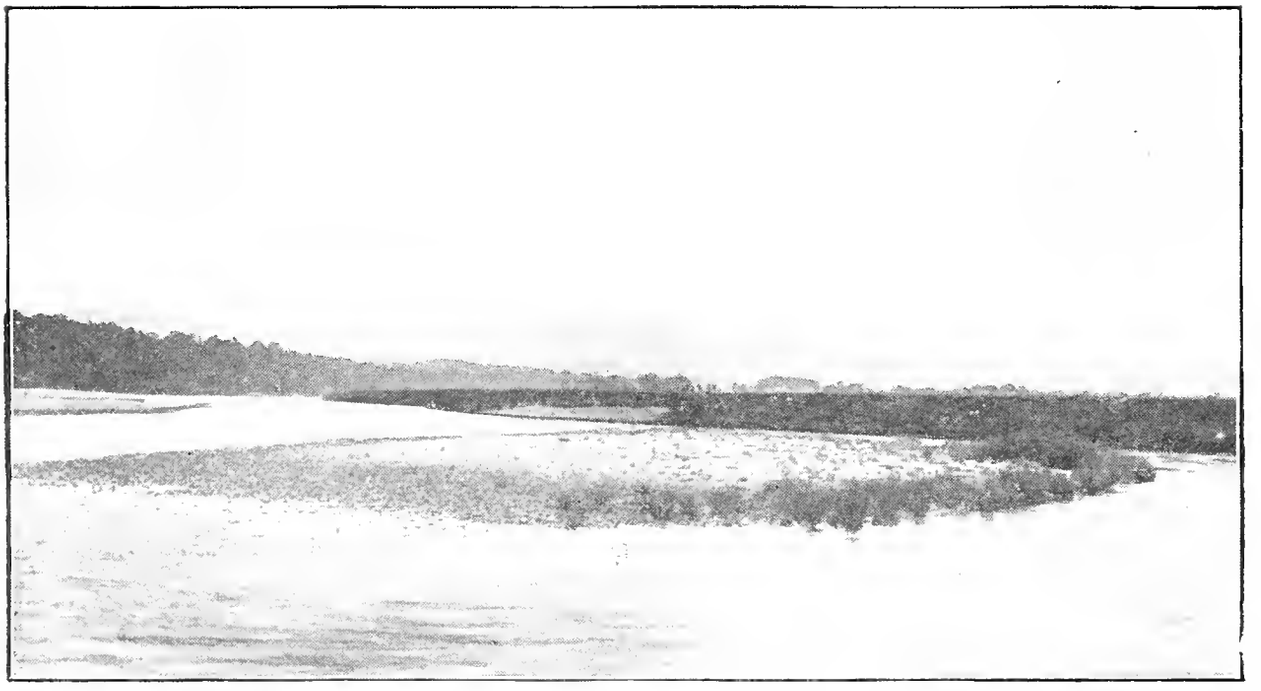


Plate XXVI.—The Newly Formed Island, below Woody Island.

co-incident. The current swung round the lower ends with furious force, and where it struck the mainland, not being able to break through, it hollowed out a deep channel for a long way alongside, a pool where in autumn numerous salmon found a congenial resting place. At the same time it was depositing gravel on the other side, forming a new bank separated from the first formed island on that side by a depression through which flowed a comparatively feeble stream. But within a very few years a change has become visible. As I have said, I do not think the lengthening of the croy has had much to do with it, though it may have had some share in the work. The recent accumulation of gravel has narrowed the channel of the main stream striking upon the island near the croy and swinging round the end to rush against the main bank. The deep pool at this point has been largely filled up and become shallow for a considerable distance. The feeble stream between the two accumulations of gravel has now become the main stream, so that the latest mass of gravel has become a third island, on which a few willow bushes have already taken root, and which, if the process goes on, will ultimately become an extension of the lower island and restore it again to its original dimensions. This change seems to me to be owing chiefly to the narrowing of the channel by the river itself heaping up gravel on its outer edge. Doubtless, but for the work of man in strengthening at intervals the Muirton bank, the current would have found relief by breaking through that bank and forming a huge bend at that part. Not being able to do this, it has had to find scope in the way I have described. Whether the process thus begun will go on I do not venture to prophesy, the vagaries of rivers are hard to foresee, but I have thought it would be useful to chronicle the facts for the sake of those who will see what I cannot hope to behold.

Our first excursion, held on Victoria Day, the 28th of May, took us by train to Abercairney, from which we walked southward over the watershed and entered the valley of the Earn. The ground on the top of the ridge was moory and in places marshy, with the characteristic vegetation of such ground. By the road side we came upon a fine clump of the Masterwort, *Pucedanum Ostruthium*, with its great leaves twice divided into threes. It is not a native plant, but was formerly cultivated for its root, which has some medicinal properties, and being hot in the mouth was sometimes found useful in allaying the pangs of toothache. We turned off the road, and followed a path leading past the farm of Shearerston. Here we crossed and followed for a short distance the old Roman military way, which led from Ardoch to Strageath, and, crossing the Earn there, went on past Gask to Dupplin, where all trace of it is lost. A little way from Shearerston, we visited in a wood one of those fortifications, several of which are found near this Roman road, and which are generally considered to have been outposts of the Romans to defend the road from enemies. Having reached Innerpeffray, we spent some time in the fine library, which was founded and endowed about 250

years ago by David, third Lord Maddertie, a brother-in-law of the great Montrose. Many interesting volumes were shown to us by the keeper, a retired schoolmaster from Edinburgh. Amongst these, was the pocket Bible of the great Marquis, with numerous quotations scattered throughout from various authors, poets and others, written by his own hand, and casting light upon the character of the man. We next inspected the old chapel, which is close by, a long, low and narrow building, with no very striking exterior, but with many interesting features inside. The site has been well chosen, being placed on the top of a high and steep cliff, past whose base the river runs, and bending sharply a little further down, leads past the ruined castle, to which we now took our way. The site of this is lower than that of the chapel, the high steep bank being now on the other side. It dates from the beginning of the seventeenth century, and shows plainly the transition stage from the ancient stronghold to the modern mansion. The lower storey has the main features of the old keep, thick walls, stone-vaulted roof, and narrow slits for windows. But above we have large windows lighting up fine spacious apartments befitting the residence of a Lord. From the castle we adjourned to the river side for an hour's rest. Several interesting plants were found here—*Cardamine amara*, *Stellaria nemorum*, and others—along with an alien with flowers of a lovely blue, *Anchusa sempervirens*, the evergreen alkanet. The scenery for some miles here is very picturesque. The high banks clothed with wood now on one side of the stream and now on the other, and the sparkling river, all lighted up by the bright sun, formed a picture which was cheering to look upon. After our rest, we retraced our steps to the chapel and descended to the brink of the river a little further up, and were ferried across and proceeded on our way to Muthill. A few of the party left the others for a short time to ascend a plateau on the left and look for traces of the great camp which formerly stood there, but which is now almost obliterated by the plough. It is still possible, however, to trace, in some measure, the outline of the work. Our walk to Muthill was through a pleasant landscape, and after a welcome tea there, we took the motor 'bus for Crieff, and thence returned to Perth.

The next excursion took place on the 20th of June, a half-day one. I was not present, but the leader tells me that the party drove out to the Bridge of Almond. Thence they visited and inspected the remains of a camp which formerly stood at the mouth of the Almond, respecting which I shall give some particulars presently. Proceeding next northwards along the river bank, they examined the standing stone known as the King's Stone, near Denmark Green, and a little further on another, which goes by the name of the Battle Stone. These will be dealt with by Mr. M'Laren in his promised paper at a later period of the present session. A visit to the old churchyard near Luncarty wound up the afternoon's proceedings.

The spot at the mouth of the Almond which was visited on this occasion is a very interesting one, partly from the amount of fable and conjecture which has gathered round it. Disregarding the mythical Bertha of Boece, supposed precursor of Perth, and the hardly less mythical Orrea of Roy and others, let us enquire as to what is more or less certainly known regarding this place. The first notice known to me regarding a camp at Almond Mouth is given in "Maitland's History of Scotland and its Antiquities," published in 1757. It was based on personal investigations made by himself during a five years journey through Scotland, and he is therefore undoubtedly telling us what he had himself seen, not mere hearsay. He says that at this period there existed what was evidently part of the southern parapet of a camp, and which ran for a distance of 150 yards along the northern bank of the River Almond. The opposite or northern rampart, with a spacious ditch, had been partly levelled by the plough, but a part was still to be seen extending for a distance of 226 yards. The eastern and western ramparts, having been obliterated by the plough, could not be traced. Outside the northern rampart was an arable ridge, locally called the Causeway Ridge, because it had been a road or causeway, and the pavement of this road could still be seen crossing the high-way from Perth to Dunkeld. This road ended at the River Tay, across which was a Roman bridge, the remains of which were still to be seen. He concludes that this was a station or Roman town, because a number of Roman stones or bricks had been dug up here, but whether any stones with inscriptions or coins had been got, he had not been able to learn. Clearly, in making this statement regarding Roman stones or bricks, he is relating what he had been told, not what he had seen.

In 1775 Cant says: "There is reason to believe that the Romans had a castellum or station near this place." He tells us also that at this time the River Almond flowed close to this northern bank, and in floods was undermining it, which had led to the discovery of three or four urns containing chiefly burnt bones. One contained also a piece of a glass phial and a piece of lead. In another was found a lump of lead with some letters inscribed, which he gives, but leaves the interpretation to his readers. He goes on to say: "Those urns were but a short way from the Roman military road, which (according to tradition) leads to a bridge over the Tay a quarter-of-a-mile above Bertha. The remains of this bridge are seen at low water in the summer season. Very large and long square oak planks lie sunk in the river on the spot. Some of them were lately dug up and raised, but one particularly large plank has been attempted in vain."

General Roy's account was probably written about the same period as Cant's, or a few years earlier, though not published till 1793. He says that of the camp only slight vestiges then remained. His plan shows the parapet running along the northern bank of the Almond, but he makes this to be the northern, not the southern,

rampart. The other sides as given by him are confessedly conjectural, and he believes that the whole camp, except the northern rampart, with the high ground on which it stood, had been washed away by the Almond and the Tay. The main military road leading through the camp to Derder's Ford had also been destroyed along with the camp, but he showed a branch of it going up the bank of the Tay to the supposed bridge.

Dr. Scott, in the old Statistical Account published in 1796, but written some years earlier, says that there are remains of a Roman station regularly formed into a square surrounded by a deep fosse, situated in the northern bank which was, for some years past being gradually washed away by the overflowing of the Almond. It is quite clear that at this time nothing was to be seen but the parapet running along the northern bank of the Almond. The rest, the deep fosse and regular square, existed only in the Doctor's imagination. He repeats Cant's story of the finding of the urns in much the same terms. His account of the supposed bridge is somewhat different from Cant's. He says: "The foundation of a wooden bridge thrown over the Tay at this place still remains. It consists of large oak planks from six to eight inches in diameter, fastened together by long skairs, but coarsely jointed and surrounded with clasps of iron, frequently twisted. I caused one of them to be raised some years ago, at the request of the late Dr. Hope, who assured me that the fabric of the wood was not in the least decayed."

Subsequent writers, so far as I have ascertained, simply repeat some or all of the foregoing statements. No one during the last century seems to have made a critical survey of the actual ground or a critical examination of the various statements which I have given above. When we analyse the whole, what can we take as proved? That there was a camp or fortification, of which one parapet—the south one—ran then, and still runs, along the northern bank of the River Almond. That in Maitland's time part of the northern parapet was still visible, I see no reason whatever to doubt, and that settles the direction of the camp. That there is some evidence that this camp was constructed by the Romans, but that the evidence is not very conclusive. That the presence of any portion of a Roman military road is similarly not altogether satisfactory. And lastly, that the presence in the river of oak planks, apparently parts of a broken bridge, in the middle of the 18th century, is not sufficient to establish two things: first, that the Romans built a bridge there sixteen or seventeen centuries previously; and second, that these planks were the remains of it.

On 7th July, we paid a visit to the Woods of Methven. At Inveralmond House, Col. Smythe, our guide for the day, had laid out for our inspection a most interesting collection of cameos, medallions, and other family souvenirs. One of the most interesting was a ring which had belonged to Viscount Dundee. Another

was a Dutch engagement ring, set with pearls and other brilliants, and fashioned into a pair of clasped hands with the appropriate motto : "Whom God hath joined, let not man put asunder." Passing then through the Colonel's garden, famous for its fine collection of roses, which to our regret were past their best, we strolled on through the woods. Here we were shown many fine old trees, of which records had been kept of girth and growth at intervals for more than 100 years. These had been begun and kept during his life by Mr. Bishop, a former land steward of the Methven estate, and since his death in 1850 had been continued. A splendid Scots pine, still in vigorous health, was found to have a girth of 12 ft. 3 in. at 4 feet from the ground. But the finest tree was growing on a haugh by the river side. This is a gigantic beech, which attains a height of 120 feet, and was found to measure in girth 21 ft. 1 in. at 3 feet, and 19 ft. 7 in. at 4 feet from the ground. Resuming our way through the woods towards the Castle, the Colonel pointed out some fine Spanish chestnuts about 200 years of age. These, he told us, had only once been known to produce perfect seeds—in the hot and dry summer of 1826. A clump of fine trees, the produce of these seeds, were pointed out to us. In the libarary of the Castle was displayed a collection of old manuscripts and printed books. A fine copy of the famous "Breeches Bible" attracted attention. More modern, and also more amusing, was a collection of comic cuts of the period of the First Reform Act. A very interesting document was the original warrant to Thomas Graham of Balgowan to raise the 90th Regiment of Foot in 1793. It authorised him to raise ten companies of 95 men each, with a due proportion of non-commissioned and commissioned officers—in all, about 1000 men. Another curious document was an account with prices for the wedding clothes of Margaret Smythe, daughter of the late Patrick Smythe of Methven, of the date of 1701. Leaving the Castle, we visited the spot marked by a circle of stones where Maggie Johnstone, a reputed witch, was burned in the year 1662. Near the Castle also a plant was pointed out which sprung up no one could tell how. It turned out to be a form of the Spiked Rampion, *Phyteuma Spicatum*, with flowers of a deep blue. It is not a native plant, and must have sprung from some stray seeds. We here took leave of our guide, Col. Smythe, after cordially thanking him for the trouble he had taken and the pleasure he had afforded us. We returned by the Loch, where a short halt was made, and some members took the opportunity of visiting the Bog of Methven, now known as the Gull Loch. Here I was concerned to find that *Carex irrigua* seems to be on the way to extinction, and *Vaccinium oxycoccos* was very scarce compared to what it used to be. *Cicuta virosa* was still to be seen in plenty. Mr. Gordon during the day identified no fewer than 55 species of birds, including several very interesting kinds.

The August Holiday (the 27th) had been fixed upon for an excursion to Stenton. A good many members met at the station

on the morning of that day—a very rainy morning with the promise of a rainy day. After consultation, all, except four, decided to return home. The four bold spirits, however, took train to Murthly Station, and set off to walk through the beautiful grounds. A visit was paid to a small camp in the neighbourhood. They had the advantage of being guided by Mr. Campbell, one of the four, who knows the grounds well. The many fine specimens of Conifers, for which Murthly is famous, were pointed out and described by him. Missing the boat, which was to meet them, they did not cross to Stenton, but went on through the Murthly grounds to Birnam. Though the day continued wet, it proved not quite so bad as was anticipated, and they by no means regretted that they had thus braved the elements. As was to be expected in this locality, birds were abundant, and Mr. Gordon identified no fewer than 55 different species during the day, some of which were of much interest.

On 22nd September took place the usual Fungus excursion, when we paid our second visit this season to Methven Woods. The leader, Mr. Menzies, was unfortunately not able to be with us in the forenoon though he joined us in the afternoon. Before entering the grounds, a good many species were found by the side of the Crieff Road. The woods and grounds were drier, and not so prolific as had been looked for. After Mr. Menzies joined us, we searched a different portion of the wood and found several interesting and not very common species, of which mention may be made of *Cratellus cornucopioides*, *Hygrophorus calyptræformis*, and *Pholiota spectabilis*.

In conclusion, I may mention that I have this season found *Gentiana amarella* in some quantity. It will be remembered that the only specimens of this plant gathered during the lifetime of the Society were two plants found by Mr. James Coates more than a quarter-of-a-century ago on the Hill of Tulloch, near Blair Atholl, and one specimen found by myself four years ago on the road from Loch Moraig to Blair Atholl. Search in both stations had hitherto proved vain, till on 25th August last, I found it scattered in plenty for some distance along both sides of the road near Loch Moraig. It gives me much pleasure to confirm thus satisfactorily the title of the plant to be ranked amongst the flora of Perthshire.

The following paper was then read :—

"A Perthshire Naturalist—Jas. S. M'Gregor of Glenisla," by Peter Baxter. (See *Transactions*, Vol. VI., Part V., p. 183.)

14th December, 1917.

W. BARCLAY, President, in the Chair.

The following papers were read :—

"Iceland and its Birds," with lantern illustrations, by J. G. M'H. Gordon. (See *Transactions*, Vol. VI., Part V., p. 186.)

"Note on a Stone Cist found at Kildinny, near Forteviot, November, 1917," with lantern illustrations, by T. M'Laren. (See *Transactions*, Vol. VI., Part V., p. 201.)

11th January, 1918.

W. BARCLAY, President, in the Chair.

The following paper was read :—

"Anthropology and Education," by John Asher, F.S.A.Scot.

18th January, 1918.

W. BARCLAY, President, in the Chair.

The following special lecture was delivered :—

"The Bee for Pleasure and Profit," with lantern illustrations, by Rev. John Beveridge, B.D., Fossoway.

8th February, 1918.

W. Barclay, President, in the Chair.

The following paper was read :—

"On Bronze Age Burial Urns and Other Remains found at Sherrifton, near Scone, December, 1917," by T. M'Laren. The paper was illustrated with specimens, maps, diagrams, and photographs. (See *Transactions*, Vol. VI., Part V., p. 203.)

22nd February, 1918.

W. Barclay, President, in the Chair.

The following special lecture was delivered :—

"Skin Canoes in European Waters," with lantern illustrations," by David M'Ritchie, F.S.A.Scot., Edinburgh.

FIFTY-FIRST ANNUAL MEETING.

8th March, 1918.

W. Barclay, President, in the Chair.

On the recommendation of the Council, Mr. James Macfarlane, Inverness, one of the Original Members of the Society, was unanimously elected an Honorary Member.

The Office-Bearers for 1918-19 were elected as under :—

President—Mr. George F. Bates, B.A., B.Sc.

Vice-Presidents—Messrs. J. Ritchie, LL.B., W. Wylie, Hugh Leslie, and James Stewart.

Secretary—Mr. S. T. Ellison.

Treasurer—Mr. James Winter.

Librarian—Mr. James Clacher.

Editor—Mr. E. J. Balfour, M.A., B.Sc.

Councillors—Messrs. Menzies, Edward Smart, B.A., B.Sc., W. T. Morrison, J. J. Simpson, W. Barclay, and R. H. Meldrum.

The following Annual Reports were submitted and adopted :—

REPORT OF COUNCIL.

The Council have pleasure in submitting their Fifty-first Annual Report, covering the work carried on by the Society during the past year.

Six Ordinary Monthly Meetings were held, at which 9 papers were read, as well as the two usual addresses given by the President.

The average attendance at the Meetings was 45.3. The largest number at one Meeting being 70, on 14th December, 1917; and the lowest, 27, on 13th April, 1917.

The Membership has been increased by 2 Honorary, 3 Corresponding, and 21 Ordinary Members, making a total Membership of 321—made up of 2 Honorary, 16 Corresponding, 10 Associates, 5 Associate Members, and 306 Ordinary Members.

Two Special Lectures were given, one on 18th January, 1918, by Rev. John Beveridge, B.D., of Fossoway, on "The Bee for Pleasure and Profit," at which there was only an attendance of 19, doubtless owing to the snowstorm that night. The other Lecture was on 22nd February, on "Skin Canoes in European Waters," by David M'Ritchie, Esq., of Edinburgh, at which there was an attendance of 47. The Council desire to record their thanks to these gentlemen for their kind services.

During the summer 6 Excursions were held. Owing to War conditions, these were all in the immediate neighourhood of Perth, and were fairly well attended. The first of the Excursions, as well as the Fungus Excursion, which was the last, were to Methven Woods by the kind permission of Col. Smythe, and the thanks of the Council are awarded to him, as well as to the other proprietors who kindly gave their sanction for several of these Excursions.

The Children's Essay Competition was on "The Valley of the Tay," and Essays were sent in by 24 Boys and 22 Girls—46 in all. The Medal was awarded to Isabel Nettleship, Scone, and it and other prizes were presented to the successful Competitors by Rector Smart, on 27th October last. The prizes were this year provided by Mr. Melville Gray of Bowerswell, and the Council thank him for his kindness.

The Council regret very much that this year they are losing the services of Mr. Barclay as President, after serving in that office for eleven years, and they thank him for what he has done for the Society. They are pleased to have secured a worthy successor in Mr. G. F. Bates, and they are sure the Members will welcome him to this position.

Mr. James Coates, who has been Librarian for thirty-six years, has also found it necessary to resign his office, and the Council record their warm appreciation of the services he has rendered the Society. Mr. Clacher has kindly undertaken to fill this office.

The work of the Society goes on very quietly, and the Council are pleased to see that even during the trying times through which we are passing, an increase in the Membership has taken place. They have to mourn the loss by death of several who had long been Members of the Society, such as Mr. Geo. A. Mackenzie, a Member since 1870, and Mr. R. D. Pullar, F.I.S., cut off in the midst of his usefulness, who was elected in 1875, and others whose connection with the Society was more recent but whose loss we all deplore.

REPORT OF LIBRARIAN.

During the past year the Library has been well taken advantage of. 63 Members have taken out books, in addition to many who have consulted books in the Library. The total number of books borrowed was 185.

A large number of new books have been added to the Library, chiefly through the generosity of Members and friends. The additions to the Lending Library number 27 works, and to the Reference Library 7 works, making a total of 34. Of these, 31 were presented, and 3 were purchased. The donations included the Encyclopedia Britannica, 9th edition, in 25 volumes, from Mr. John Ritchie; Blackie's Descriptive Atlas of the World, Blackie's Modern Encyclopedia in 8 volumes, and eight other works, from the Rev. F. Smith; 5 local works on the Carse of Gowrie, by the Rev. Adam Philip, from the author; and 9 works on birds and other branches of Natural History from the Hon. Gladys Graham Murray.

Various publications have been received from 34 Institutions at home and abroad, and we have sent our *Transactions* and *Proceedings* to 49 Institutions. Of these, 41 were for exchange, and 8 for presentation.

16 Volumes of Periodicals were bound during the past year, and 5 Library Volumes were re-bound.

REPORT OF EDITOR.

There is very little for the Editor to report, beyong the fact that Part IV., Vol. VI., of the Society's *Transactions* and *Proceedings* was duly published, and distributed to Members and others in the usual way.

The part is of very considerable historic interest, recording, as it does, the activities of the Society in its "jubilee" session, and containing the completion of the Annals of the Society to date.

In retiring from office, the Editor desires to thank all his colleagues and contributors for their uniform kindness and consideration, and, in many cases, for valuable assistance. He is confident that the Editor elect will meet with the same kindness, and that the duties will be carried on in the future, in a most efficient manner.

REPORT OF TREASURER.

(See Abstract of Accounts for the year ending 28th February, 1918, page ccxl.)

The Retiring President, Mr. W. Barclay, then delivered his Valedictory Address, as follows :—

Some Glimpses of Life in Perth 300 Years Ago.

During the first quarter of the seventeenth century, Perth, though it had long before lost its position as the capital of Scotland, could still claim to be one of the principal cities of the country. We have no means of finding accurately the number of its inhabitants during this period, but it is probable that they did not exceed 5000, possibly not quite so many.

The bulk of its people were still ignorant. Violence, drunkenness, and immorality were rife, and were by no means confined to the lower orders. The community was ruled by two authorities, the Kirk Session and the Town Council. These two bodies, though at rare times antagonistic, were usually in accord ; indeed, apart from the two ministers, the leading members of both were often the same persons. The elders of whom the Session was composed, were at this period elected annually, and when in 1617 the Bishops decreed that thereafter the Provost and Bailies should always be chosen as Members of the Session, the Council became virtual masters of the latter body.

The Session during all this period had plenty to do. Besides dealing with cases of immorality and drunkenness, which were numerous, with non-attendance at public worship, which was a heinous offence, with boys and youths playing golf on Sunday, they had also the administration of the finances of the Hospital, and

especially the extraction of these from reluctant debtors. Amidst their numerous duties they found time to ordain "ane chair of stane to be biggit in ane public pairt (of the Kirk) by the Masters of Hospitall for setting of flyters and slanderers therein," and this chair was for a long period seldom unoccupied on Sundays, and on Thursdays and Tuesdays, which were also preaching days. (See Note 1.) Besides all these they were busy during all this period, and for some years before and after in the repair of the fabric of the Kirk, which had fallen into a somewhat ruinous condition; the roof of the choir leaked; the bartisan of the steeple was decayed and had to be rebuilt, happily according to the old form; the perk of the steeple and the roof of the choir required to be covered anew with lead, and lead for this purpose was apparently not to be had at home, for we are told that "Gregory Johnston has promised to bring from Dantzick cake lead to mend the perk of the steeple withall."

Funds for these repairs were difficult to get, and were obtained from various sources. Part of the Hospital funds were made use of at times, and as in our own day special church collections were frequent. The fines inflicted upon offenders were also used for the same purpose, as for example a sum of £9, enacted as penalty from a delinquent, was ordained to be given to the workmen for completing the dyke on the south side of the Kirkyard; or again, 5 marks exacted from an erring newly married couple, and 36s. from another offender were expended in repairing the door of Halkerstone's Tower with strong bolts of iron and locks. A somewhat free-tongued burgess who had dared to say that the Session consisted of "false lownes and false knaves" was ordered to pay £100 of penalty, and this was used in "mending the west great window of the new kirk."

The Town Council also had an anxious time of it during the early years of the century. The north shore at the east end of the Hiegate had become too small, and they had to build a new shore or pier just below the Monk's Tower, which long afterwards was known as the Coal-Shore. The Tolbooth, which was a very old building, was in sore need of repair, and had to be attended to. The Bridge of Erne, which was under their charge, was reported to be in a ruinous condition, more especially the south-west pillar thereof, and this also could not be neglected. But a constant burden upon their time and resources for the first sixteen years of the century was the great work of the reparation or rebuilding of the Brig of Tay. To obtain money for this great end they tried every expedient they could think of. The numerous fines for lawless conduct which were imposed by the Bailies in the Burgh Court were, as far as possible, devoted to the Brig. Contributions, forced or voluntary, of 500 marks from the merchants and a like sum from the crafts were more than once uplifted. The Session were asked to give special church collections for the same purpose. The Council borrowed 40,000 marks upon the security of the common good, and

in 1614 had to obtain leave from the Privy Seal to grant a nineteen years' lease of some parts of this common good to repay the loan.

But it was evident that their own resources were not enough to complete the work. In the autumn of 1604 they sent Mr. William Coupar, one of their ministers, to London to crave from King James some support for the Brig. Mr. Coupar was likely to be favourably heard by the King because he had preached in Perth in support of the King's version of what had taken place during the mysterious affair which had ended in the death of Earl of Gowrie and his brother. Moreover, he was not a very strenuous opponent of the Bishops whom James was endeavouring to set up again as rulers of the Scottish Church, so feebly strenuous, indeed, that he afterwards became himself a Bishop. The Town Council gave him 1000 marks to defray his expenses and authorised him to borrow further money in London to be given "to any persones furderars of the caus"; in other words, if he found that a judicious bribe here and there would help to attain his end he was to administer it. Great was the rejoicing when he returned a few months afterwards bringing with him a warrant from the King for the sum of 10,500 marks for the Brig and a charter from the Queen gifting to the town the teinds of the parish, vicarage, and parsonage, for the support of the Church in Perth. Mr. Coupar had found it necessary or expedient to expend 3000 marks in obtaining these gifts, and liability for this sum was, of course, at once accepted by the Town Council.

I have not ascertained if the money thus promised by the King was actually paid at this time, but at any rate his goodwill and liberality were shown a few years afterwards in 1608 by settling upon the town a yearly sum of 5000 marks, to continue for seven years whether or not the bridge should be finished before that period. This gift was confirmed by Act of Parliament and the sources specified from which the annuity was to be derived, so that there can be no doubt that it was actually paid to the town. It is interesting to add that in this Act it is stated that the People of Perth "have so far procedit in the biggin of thair Brig of Tay as they have begun at the ground and raisit the haill pillars thereof above the wattir." By strenuous exertion and considerable self-denial on the part of Town Council and citizens the bridge was at length finished and was inspected by King James on his visit to the City in 1617. No doubt he was much gratified to behold the royal arms sculptured on the bridge in token of gratitude to himself for the help he had given. We can easily imagine what was the dismay of the Town Council and of the whole City when, four years afterwards, this fine structure, for which they had toiled and schemed so long, was tumbled, a shapeless mass into the bed of the river. To use their own words: "by this fearfull inundatione, such as na man liveing has seen nor read of, not onlie many privat houses war overthrowne to the undoing of the owners, but also oure Tolbuith and workes of our common milnes and walles war

grettumlie spoyled and overthrowne in sindrie places. And (which we lament most) oure bridge, being the onlie safe and certain passage between the north and south partis of this realme in all kyndes of weather, was utterlie overthrowne and run-downe."

To do anything for its restoration at this time was quite beyond the power of the town. Nothing could be done except what they called " redding the feit of the brig "—that is, clearing the channel between the pillars of a few of the arches so as to allow boats to pass. It taxed their resources to the full for several years to repair the other damage wrought by the flood, especially that done to the Tolbooth, which had to be partially re-built, and along with its round or tower to receive a new roof. To save the expense of quarrying, they took stones wherever they could find them, some from the ruined bridge and some, for example, from " the tua gabillis and back wall of the chappell above the hiegate port "—that is the walls of the old chapel of St. Paul, which were to be taken down to the height of a man and made use of for the Tolbooth.

Turning now from the doings of the Town Council, let us look for a little at the inhabitants in general and their way of life. The principal portion of these consisted of the freemen or burgesses, divided into two classes—the merchants or general traders and the craftsmen, at that time consisting of nine incorporations or trades. None but a freeman was allowed to open shop in the town or to buy or sell for profit, except at the weekly markets and annual fairs. None but freemen could be Members of the Town Council, which at this period consisted of fourteen merchants and fourteen craftsmen, but the offices of Provost, Dean of Guild, and three of the four Bailieships could only be occupied by merchants. At the weekly markets the country people brought in their produce for sale and bought from the townsmen in their turn. The various markets were held on different days, and were stationed at different parts of the town, as, for example, the fishmarket beside the north shore, and the shoemarket in the Watergate. (See Notes 2 and 3.) The meal market had been held from time immemorial in the Southgate, from a little below the Meal Vennel upwards, and this probably was the original of the name as being the vennel leading to the meal market. A little further down the Southgate was the site of the flesh market, The annual fairs of Perth were at this period seven—Little Dunning, Midsummer, Palmsune'en, and so on, and these were on a wider scale. To them sellers and buyers came from all parts of the country, and much business was done. At both markets and fairs, not only commodities were exchanged, but also the news of the day. With regard to Midsummer Fair, a curious custom is recorded in an order of the Town Council of the date 28th June, 1605. " All in ane voice has condesendit that Midsummer Fair be kepit according to use and wont— that is to say, the craftsmen to be in armour and in number usit and wont to circuit the town and the counsell and the rest of honest men to accompanie thame conforme to the auld rule." It would seem that this ceremony had been unobserved for

some time, and that there was a wish to revive and continue it. It would be interesting to know when and why it originated. I fear the revival did not continue long, as I have found no mention of it at a later date. (See Note 4.)

In the City itself maximum prices were periodically fixed of the commodities in daily use. Such entries as the following occur frequently in the records :—" Ordains the baxters to baik na breid but 12d breid and 6d breid and the 12d breid to be 18 unces." " Ordains na malt to be deirar sauld nor 9 markis the boll and na browstar to sell ony deirar aill nor 10d the pynt under the pane of £5 toties quoties." " Ordains the collis to be na deirar sauld nor 22 markis the chalder." The price of the loaf seems to have been always kept at the same figure, but the weight varied according to the goodness or badness of the year's crops, whilst in the case of malt and ale it was the price that varied. Ale, of course, was in daily use by all classes in the absence of any other beverage, such as tea or coffee. I do not find in the town's records during this period any mention of whisky, and although known long before this it apparently was not commonly sold by the taverners. Besides maximum prices, meatless days were not quite unknown to the people of those days. In December, 1603, a proclamation was issued at Perth in name of the King, " It is of a truth that ane greet number of persones preferring their own inordinate appetyte and the feeding of their bellies to that dew reverence and obedience quhilk they sud render to our actis and proclamations they forbeir not to prepair and mak reddie and eit fles upone the said forbidden dayis (Wednesdays, Fridays, and Saturdays) thairby forstering and interteining the derth of all kynde of fles, with that maist heichlie contemming us, our authoritie and laws." It goes on to charge all and sindrie Provosts and Bailies to cause the said acts and proclamations to be inviolably observed within their bounds and the names of contraveners to be sent to the Lords of the Secret Council " that they may be callit, persewit and punist." I do not know what caused the issue of this proclamation, but apparently it was a time when cattle were scarce.

Proclamations were made by the drummer, swasher as he was called, and he was an important personage, as it was only through him, or the bellman—almost equally important—that advertisement of any kind could be made.

Here is one that was proclaimed through the town in June, 1603, " Command and charge in our Soverane Lord's name the Provost and Bailies of this burgh that na inhabitant within the same nor suburbs thairof tak upon thaim at ony time heirefter without speciall licence of the secreit counsell and counsell of this burgh to ludge, intertene, gif meit or drink to, or furneis in ony sort, or minister whatsumever necessaris to ony of the surname of Macgregor quha wer denouncit and remainis our Soveraine Lords rebellis as they sall be answerabell to his Majestie thairfor." Rather a drastic measure against a whole clan, confounding innocent

and guilty and apparently including women and children as well as men.

Another musician in the service of the town was the piper. One of the duties of the drummer and piper was to perambulate the streets at four hours in the morning and eight hours in the evening. The rattle of the drum and the scraich of the pipes at so early an hour must have caused all, except hardened sluggards, to leave their beds and begin the labours of the day. There was no need in those days for putting forward the clocks during the months of summer.

The pest or plague was a not infrequent visitor of Scottish towns in those days, and the fear of it was always present. It was sometimes very deadly, which is not to be wondered at when we consider the state of the streets and the total want of all attempt at sanitation. The streets, or calsays, as they were called, were supposed to be kept clean by the householders who dwelt fronting them. The people were much more active in laying down filth than in removing it. When some great man was to visit the town, or a Convention of any kind was to be held in it, the Town Council issued orders to cleanse the calsays, and then a sort of clean up would take place, and the dirt, if not altogether removed, would at least be put out of sight for the time. Shopkeepers would, no doubt, regularly sweep out from their doors into the kennels, but it was only when a violent rain storm took place that the muck would partially at least, find its way to the river. Of course, it must be remembered that Perth, within the walls, was a comparatively open town. The tenements and booths or shops were built next the street, behind these were outhouses, and behind these again, garden ground reaching to the walls or to the river. There were certainly what were called inner lands, especially along the sides of the Vennels, but on the whole there were large spaces of open ground throughout the City. This, of course, tended to mitigate the state of matters which we have described, although it must be added that in these outhouses were often kept swine and horses, if not cattle.

During the years 1604 to 1608 the plague was prevalent in various parts of Scotland; at first in the Edinburgh district and Fife, and latterly in Dundee and its neighbourhood. The same grim visitor re-appeared in Edinburgh in 1624, and claimed a good many victims. On these occasions the Town Council adopted drastic measures to prevent the infection from finding its way into Perth. Close watch was kept at the ports, and no one was allowed to enter without a certificate testifying that he did not come from an infected place, and this had to be shown to the Bailie of the quarter, and his sanction obtained. Severe penalties were enacted against any inhabitant who should "resort to any suspect part where the plague is." Usually the punishment threatened was loss of freedom and perpetual banishment from the burgh, but in 1624 it was "the pane of hanging of him before his awn doar." "All strange (*i.e.*, strong) and idill beggaris, gangrallis, vagabonds,

and utheris, that hes not thair names enrollit in the tounis boukis" were ordered "that they incontinent despache and repair aff the toun to thair awn parochine and places wherfra they come under the pane of deathe." Several of the ports might be closed altogether and egress or ingress permitted only at the others. Any suspected case occurring in the burgh or in the district around was rigorously examined, and those who had come in contact with it were shut up in their own houses for a time.

But such measures did not always avail. In the end of 1606, and again in the later months of 1608, the pest was prevalent in Perth. The school was shut up, and the Master Mason of the Brig, Johne Myln "lay idill the time of the pest." Huts, or "ludges," as they were called, were put up in the Common Muir, and possibly in other places outside the town, and it was ordained that "gif ony persone beis fundin seik of the pest, tryell being tane, in ony hous, the seik persone to be put furth incontinent and clene persones to be clenzit."

Two officials were appointed with assistants under them, the one called the "Foull clenzer," the other the "Clene clenzer." The foull clenzers took charge of actually diseased persons, and took them forth to the ludges, and in case of death carried out their bodies for burial. Those put forth in the Leonards, and dying there, were to be buried in the Leonards, which place was to serve also for persons in the Southgait, and the Highgait beneath the Cross, and the Watergate. Those put forth in the "Lon of Balhousie and the Blackfriars Croft," and died there, were to be buried in the Blackfriars Kirkyard, which was also appointed for persons in the Highgait above the Cross.

In October, 1606, Henrie Leis was appointed "overseir of the haill plenissing, gudes and geir of the people infekit and to be infekit during the will of God and to wret up the inventar thereof and to have command of the clene clenzers and he to have 40/- ouklie."

In the end of 1624 the plague again visited the Burgh, and many deaths took place.

It was the prevalence of the plague in Edinburgh that caused the Parliaments of 1604 and 1606 to be held in Perth. That of 1604 met in the New Kirk—that is, the West Kirk, and, though not expressly stated, I have no doubt but that the Parliament of 1606 met in the same place.

The ryding to Parliament on the latter occasion must have been interesting to the people of Perth, "the Marquises and Erles riding two and two, all clad in scarlet robes; the bishops, headed by the Archbishop of St. Andrews, all the prelattes in silk and with velvet fute mantles; the lords also resplendent in scarlet, and the commissioners of burrows in their official robes and with fute mantles." The prevalence of scarlet caused this to be called the Red Parliament. (See Note 5.) Its acts in favour of the bishops greatly grieved the Presbyterians, and on the last day of its meeting the

undaunted Andrew Melville, who like Knox, never feared the face of men, forced his way into the kirk and protested against what had been done.

Other meetings in the same kirk must have given the citizens something to talk about and to interest them apart from their ordinary occupations. There were two or three sessions of the convention of royal burghs, and livelier still, the famous General Assembly of 1618, at which were passed the five articles of Perth.

But perhaps the gathering most notable for what the newspapers call "scenes," was the meeting of the Provincial Synod in the Kirk of Perth on the 1st Tuesday of April, 1607. Lord Scone, who then held the post of Controller under the King, and was also Provost of Perth, appeared with a Commission from the King which practically enjoined him to allow neither words nor deeds in opposition to certain Acts tending towards Episcopacy, which the King and his party had induced the General Assembly to sanction. Mr. Wm. Row, minister of Forgandenny, the Old Moderator, presided at first, and preached the opening sermon. The forenoon passed quietly enough, but after the interval, the Synod, paying no attention to a request from Lord Scone that they should wait till he returned from dinner, resolved not to elect, as Moderator, one of four persons who had been nominated as constant Moderators at the Synod of Linlithgow, but to choose one of their own number according to use and wont. They were proceeding to do this, and the old Moderator had already begun to call over the roll and take votes, when Lord Scone, informed of what was going on, returned in haste and in wrath. The afternoon was spent in altercation, and at length the matter was put off till the following day. Next morning the dispute began again, and at length the Synod, out of patience, called on the Moderator to proceed with the election. This order he obeyed, holding the roll of members in his left hand and taking their votes, while with his right hand held down Lord Scone in his chair. Mr. Henrie Livingston was chosen as the new Moderator, and took his place among his brethren at the middle of the table. He began by asking the Synod to join with him in prayer, saying: "Brethren, let us begin at God, and be humbled in the name of Jesus Christ." On this, Lord Scone, in a great rage, and "chopping his breast," called out in a loud voice, "The devill a Jesus is here"—a saying somewhat profane, no doubt, but perhaps not quite destitute of truth. Mr. Henrie "went forward in prayer," doubtless not forgetting to petition that the hard heart of their adversary might be softened, and that his profanity might be pardoned. The Controller overturned the table upon the kneeling brethren, who, however, took no notice. Subsequently, they were locked out of the Church, but held the rest of their meeting in the Kirkyard, where their sympathisers among the citizens quickly brought stools, chairs, and benches for their accommodation.

All these meetings, however lively, were distractions from the

daily round of work, but were too seriously looked upon to be called amusements. But of amusements they had a share also. There was golf and archery, and football was not quite confined to the boys. It is pretty certain that horse-racing had gained a footing by this time, the course being on the South Inch, and the prizes three silver bells, which, however, did not become the property of the winners. Then there were periodical "wapinschaws." The procedure for these seems to have been as follows:—A proclamation was sent down in the name of the King commanding all citizens to appear with their best arms on a certain day, usually a month later. This was announced through the town by the drummer. The Town Council then appointed a "master dreillar" to give beforehand lessons in drill and the use of arms, and at these lessons all fit to bear arms were ordered to attend. When the great day came all assembled on the South Inch in presence of the Provost and Magistrates. The Provost wore "a white band with ane rapier and his cloak about him. The Baillies, Dene of Gild, and Treasurer wore white bands and carried white staffs, and nane uthers to have staffs." There were two companies, one of the merchants, and the other of the craftsmen, each with a captain and subordinate officers, and the captains were to have feathers in their hats. At the head of each company was carried the town's colours, white and red, the "halie lamb in the middis." The arms were pikes and muskets, the latter probably matchlocks. After the inspection they marched through the town, headed by the Provost and Magistrates. We can easily imagine the groups of women at the closeheads or at upper windows gazing admiringly at their husbands or sweethearts as they marched past, and how the boys marched alongside and tried hard to strut along in time with their fathers and brothers.

At the wapinschaw of 1625 a coolness arose between the Provost, now become Viscount Stormont, and the Town Council. The Provost wished the town's colours to be altered, but to this the Council would not agree. They sent a deputation to Scone "to speik the Provest that the commones and the haill toun will have their anseigneis of na uther culloris but white and reid according to use and wont." At this Lord Stormont took offence and did not come to the Council meetings for about two months. A deputation was then appointed "to gang to Scone on Fryday nixt and desyre my Lord of Stormont to come to the Counsill and continew thair frend in the auld maner." The following extract will show what success this deputation had:—"6th March, 1626.—The Counsill all in ane voice ordains Adame Patersone, treasurer, to satisfie and pay Johne Fleming, Baillie, 3 scoir 9 pounds 10s., advanst and debursit be him on the penult day of February last for ane dinner to My Lord of Stormont, Provest, My Lord Balmanno, Dene Myln, and the Counsill on account of the reconsiling of the Provest and Counsill." As Burns has it:—

"When neebors anger at a plea,
And just as wud as wud can be,
How easy can the barley bree
Cement the quarrel."

Although the bulk of the community consisted of merchants and craftsmen, who were on the whole a hard-working body of men, honest and well-meaning according to their lights, which were not certainly very bright, there was a lower stratum sunk in ignorance and given to drunkenness and vice. All classes were still too prone to quarrelling and violence, both with hands and tongue. Such entries as the following are too common:—"Ordain George Auchinlek in Mureton and Coline his sone creave the Counsill's pardon for striking John Lamb, baillie, in the Tolbuyth, and crave John Lamb's pardon for the offence done be them to him, quhilk they obeyit be humiliation on their knees and taking the pairtie by the hand."

Even the Councillors themselves were at times guilty of violence, as for example, Andrew Conqueror, Bailie, and Councillor David Murray were found guilty of striking the town's treasurer in the Tolbooth, and were "wardit" till they should find caution "to underlie the law in cais he be in danger of his lyf."

Nevertheless there was a distinct improvement in this respect from what had been the case during the previous generation. The law was better enforced, and was making itself respected. The feuds between the town and neighbouring lairds, which had been not uncommon at one time, and had resulted in such doings as the destruction of the House of Dupplin under the Oliphants, or that of the House of Craigie under the Rosses, had nearly come to an end, and one which occurred in the year 1607 must have been the last of them. In that year we are told a great trouble arose between the magistrates and inhabitants of Perth on the one hand, and some friends of Patrick, Lord of Lindores, on the other, with some bloodshed. John, Earl of Tullibardine, "became bound for 10,000 marks that the Provost and Baillies of the present year and the 4 Baillies of the year before shall keep the peace till November next." What the quarrel was about has not been ascertained. No doubt many disputes occurred afterwards between the town and the lairds, but these were fought out with no deadlier weapons than lawyers' tongues and pens.

There were two schools in Perth during this period, the Grammar School and the Music School. The latter was situated at the south-east corner of St. Ann's Vennel, and had several teachers succeeding each other during this time, of whom the most notable, though not necessarily the best, was Henry Adamson, author of the "Muses Threnodie." The Grammar School was, of course, "The School of Perth," and had a considerable reputation at this period. The subjects taught were reading, writing, and grammar—that is, Latin. Boys only were received, and these

mostly sons of the better class of citizens, and of neighbouring lairds. There were also "weemen schools," where girls were taught to read, and possibly to write, but no schools were allowed which would compete with the Grammar School.

Cant tells us, without giving his authority, that this school, which was afterwards pulled down by the soldiers of Cromwell, and the materials used to build the citadel, was three stories high, and contained rooms for the rector, doctors, and music teacher. There was no music teacher in the Grammar School at this time, nor, I think, at any subsequent period. If by rooms he meant rooms in which they lived, and not merely rooms in which they taught, he is also wrong, for the salary of 250 markis with the fees which was allowed to Mr. John Durward, master, during the latter part of this period is distinctly stated to have been "for service, house rent and coals, all and haill." Similarly in the case of Mr. John Row, who succeeded him in 1633. The Council bind themselves in both cases to "find and furneiss ane sufficient and meit scole hous for instructing and learning of the said bairns." What the idea at that time was of a meet and sufficient school house may be gathered from the following extract from the Town Council minutes, 26th April, 1638:—"Ordains the treasurer to caus lay the floor of the schole with dallis for saiffeing the bairnes fra the venomous beistis that breids thairin, and making the same warm and dry for the bairnes, and ordains him to caus calsay that pairt foiranent the schole till it cum the length of foiranent umquhill Thomas Gallis back yett." Thomas Gall's house was the fourth tenement on the south side of the Southgate, counting from the Speygate. It was behind these first four houses that the school was situated. And a lane leading to it from opposite the present St. John Street was at that time called "The Schoolhouse Vennell."

This entry plainly implies that up to 1638 the floor of the school was the bare ground, and also implies that the site was damp. From this and certain other entries we may conclude that the school was a long one-storey building, possibly having separate rooms for the master and doctors to teach in, and that it was on a damp site, as the Spey Stank is said to have been at the west gavill. If this be so, the troopers of Cromwell did no great harm when they made use of it to build their citadel. But it is not the building that makes the school; it is the teacher. In this wretched building a succession of able and scholarly masters and doctors did excellent work, and deservedly raised the School of Perth to a high place amongst the Burgh Schools of Scotland.

NOTES.

Note 1.—One would think that these two preaching days weekly besides Sunday, must have been felt as a great hindrance to work, but no one was bold enough to say so openly. The Town Council, however, ventured to complain, not of the preachings themselves or their inordinate length and frequency, but

of "the langsum ringing of the preching bellis ouklie," and sent three of their members "to speik with the sessione" on the matter and report their answer. The answer, however, is not given in the record.

It would appear that the meetings of the Town Council were preceded by morning prayers, immediately before the bell was rung to summon the members to business. An entry of 18th October, 1603, makes this clear,—"Ordains the Counsell bell to be rungin ouklie on Monday immediatalie efter the morning prayeris, and the bell to ring bot anes, and to ring than the space of ane quartir of ane hour, and wha compeirs not, befoir the chappin of half ane hour to ten, to pay 6/8 unforgiven."

There are many entries at different times regarding fines to be exacted from members who came late, or who were absent without reasonable excuse. It would appear, however, that, whilst excuses, more or less plausible, and not easy to be rejected, were numerous enough, fines were very hard to get.

NOTE 2.—In the Register of the Privy Council under the date 4th January, 1798-9, we are told that certain inhabitants of the Southgate of Perth entered a complaint against the Provost and Bailies of that town. They stated that at the first erection of Perth into a "frie burgh regall" the magistrates and inhabitants ordained "the fische mercat thairof to be haldin and kepit upon the said South Gait at that parte thairof foiranent Allareit Chappell as a place maist meit and commodious thairto." It remained there till about the year 1387, when "through the negligence of the magistrates" and "utheris troublis quhilkis intervenit," it was removed to another place. On a complaint by the inhabitants of the Southgate made to the Earl of Fyffe, the Governor, it was again brought back to its former site, where it remained till about 1486, when it was again shifted to another place, but again upon a complaint made by the people of the Southgate it was re-established in that street. And now again for a number of years previous to the present complaint it had been once more removed and "sett down at the Brig." The complainers asked of the Privy Council that the Bailies should be ordained "to remove the said fishmarket from the Brig, where it is now held, to the Southgate foreanent the Allareit Chapell." The Bailies, not appearing to oppose the demand, were ordained to remove the said market as above within three days under pain of rebellion.

If it was really at this time removed from the Shore Head at the end of the Brig to the South Street in front of the Chapel of Loretto, it did not remain there long. On 3rd September, 1610, the Provost and Bailies were charged, by letters raised at the instance of Mr. John Brown and other citizens to transport "the fysche mercat fra the schoir head to the Southgait port, within ten days under the pane of horning." Pressure was, however, brought to bear upon Mr. John Brown and his friends, with the result that, a month afterwards, he appears before the Council "passis fra the chargis and letters rasit theranent and refers the same in their wills and has deliverit the saidis letters in the Clerkis handis."

At the same meeting "the Provest, Baillies, Counsell and Decanes of Craftis, all in ane voice, hes consentit and ar contentit that the fysche mercat be transportit to the grene yeard besyd the Spey toure." This resolve, however, was not carried out, and probably was never meant to be carried out.

A year afterwards, about the time of the annual rouping of the Common Good, the Council "appointis the grene yeard to be roupit, and dischargis the act maid to have haid the fysche mercat to be hauldin thair."

The Fish Market accordingly remained at the Shore Head, but nearly 80 years afterwards another attempt was made to bring it back to its old place in the South Street. On 7th March, 1678, a petition was presented to the Council from the heritors of houses in the Meal Vennel, stating that their houses were becoming ruinous from want of a market there. The Council in answer ordained that the Fish Market should be changed to the Southgait, a little above the Meal Vennel, "if the heritors there would put the causeway in repair."

Whether the change actually took place or not does not appear from the records, but I incline to think that it remained at the Shore Head. At some subsequent time, however, it was removed further up to the street to the end of

the Watergate, for on 1st July, 1788, the Council agreed that the Fish Market should be removed from where it "formerly stood at the end of the Watergate" to the Shore Head, and should continue there during the Council's pleasure. So far as I have ascertained, it remained at that place till the formation of Tay Street within living memory.

NOTE 3.—On 2nd November, 1767, the Council ordained that the Shoemarket should no longer be held in the Watergate, but that it should be removed to the South Street from the Salt Vennel on both sides westward—that is, above the present St. John Street. No doubt this change was made owing to the narrowness of the Watergate, which was then the only approach to the centre of the town from the Speygait port. The vulgar name, "Shoegait," for South Street, afterwards came into use on account of the Shoemarket being held on this stance.

NOTE 4.—The Midsummer Fair Cattle Market was at this time held on the Burrowmuir, and when in 1714 the Council resolved to plant the muir with trees, the stance of this market and "the place of execution where the gibbet stands," were to be left unplanted. On 7th June, 1717, we are told that Helen M'Quattie having been sentenced by the Lords of Justiciary to be hanged this day on the Burrowmuir, it is declared to be the duty of Bailie Caw, as third Bailie, to attend and see sentence carried out. It is statute that such duty shall always fall to the third Bailie, who is also ordered to attend with his guards at the Burrowmuir on the Midsummer Mercat day to keep order and administer justice. But within half-a-century afterwards the market had been removed elsewhere, probably to the North Inch, for on 3rd November, 1766, the Council resolved that the part of the Burrowmuir where the Midsummer Cattle Market formerly stood, should be enclosed and planted with trees, leaving a small space unplanted for the gallows and gibbetts and execution guard.

NOTE 5.—The exact order of the Ryding was fixed as follows by the Privy Council:—Commissioners of Burrows, twa and twa in a rank will march forwart; and nent to thaim the Commissioners of the Barons, twa and twa in a rank upon horseback; nent unto thaim the Abbots and Pryors, twa and twa in a rank; and immediatelie after thaim the Lords, rankit as said is and the laitest in creation to march forwart; and nent unto the Lords the Bischops and Archbishops, twa and twa in a rank according to thair dignities; and immediately after thaim the Earls, rankit as said is and the laitest in creation to march foirmest, and nent unto thaim and immediately afoir the Commissioners, the honours; and immediately after the Commissioner, the Marquisses of Hamilton and Huntly.

All were on horseback except one of the Bishops, Mr. Peter Blackburn, Bishop of Aberdeen, who not thinking it beseeming for a Minister to ride, went on foot. The Abbots and Pryors were of course not actual heads of Abbeys and Priories, which by this time were mostly in ruins, but laymen who had received these titles in order that they might draw the revenues, probably handing over the major part of these to some of the nobles.

[The authorities from which the chief facts stated in the foregoing are derived are:—1st, the Rev. Mr. Scott's Transcript of the Kirk Session and Hospital Registers, preserved in the Advocates' Library, Edinburgh, and 2nd, The Perth Burgh Records. For access to the latter I have to thank the Lord Provost and Magistrates. Especially also I owe thanks to Mr. Begg, Town Clerk, for granting me a corner of his office to work in, where I fear, I have been at times a bit of a nuisance to Mr. Todd, who, however, has been always kind and obliging.

Other works consulted are "Registers of the Privy Council," "Cant's Edition of the Muses Threnodie," "Dr. Milne's Rental Book of King James VI.'s Hospital," "Calderwood's History," and others.—W.B.]

The retiring President then vacated the Chair in favour of his successor, Mr. G. F. Bates, who delivered his Inaugural Address, as follows :—

Mr. BARCLAY, LADIES AND GENTLEMEN,—I am keenly sensible of the honour you have conferred upon me in electing me to fill the position of President of the Perthshire Society of Natural Science. For seventeen years I have enjoyed the privileges of membership and of intimate association with many of you in the work of the Society, and if during this period I have been able to contribute, in however small a degree, to the Society's progress, and to the extension of your knowledge of Natural Science, I am more than repaid by your generous appreciation. I take the Chair at your invitation, but with mingled feelings. On the one hand, I am proud to think that you have deemed me worthy of this honour, on the other, I regret exceedingly that you, Mr. Barclay, have found it necessary to retire from the position you have held so honourably for ten years, and nothing but your definite decision to give up that position at this time would have induced me to accept nomination and election as your successor. I am glad to think that we are still to have the advantage of retaining you as a Member of Council, and the benefit of your wide knowledge and experience; and I am sure that every member of the Society joins me in the earnest wish that the evening of your well-spent life may be prolonged, peaceful, and happy. During my tenure of office as Editor, and before that as Member of Council, I have received nothing but kindness and consideration at the hands of my fellow office-bearers, and whether I am destined to be your President for a long period or a short one, I can ask nothing better than a continuance of this same consideration. At all times it will be my earnest endeavour to act for the good of the Society, and in a manner worthy of my eminent predecessors.

I have now to ask your attention to the following paper on the Rocks found in the Bore at the Water-house, completed during the summer of 1917.

This Bore was carried down to a depth of 450 feet. Solid rock was met with at a depth of 218 feet 9 inches : down to that depth fluvial and estuarine sands and clays, together with between 50 and 60 feet of glacial deposits, were found. It is not my intention to deal with these superficial deposits, though they have much to tell us regarding the past history of the Tay Valley, from the time when it formed an outlet for the ice which covered Central Perthshire, as well as the rest of Scotland, during the Glacial period, down to the present day, through all the varied conditions which have existed at various times during that vast period.

It is rather to the solid rocks which formed the cores from a depth of 218 feet 9 inches, down to 450 feet, at which depth, as already stated, the bore ceased, that I wish to direct your attention. The upper 74 feet 6 inches of solid rock consisted of sandstones and

conglomerates, the lower 144 feet 3 inches of igneous rocks, separated by a bed, some 12 feet 6 inches thick, of ashy sandstone. As might naturally be expected, all these rocks belong to types which are prevalent in the immediate neighbourhood, and they can be matched without difficulty by specimens taken from natural or artificial exposures within very short distances of the Water-house. I propose to describe in detail the igneous types of rock, and then to consider what light the solid rocks of the bore throw upon the geological history of the neighbourhood.

Plate XXVII. shows a diagrammatic vertical section of the bore, the original drawing having been prepared by Mr. T. M'Laren with his usual care and skill.

Four more or less closely related types of igneous rocks occur, and microscopic slides have been prepared from selected specimens of each type. These slides we now proceed to examine in detail. It may be premised that three of the specimens are lavas, and the fourth a volcanic ash.

1. *Porphyritic Andesite* (Plate XXVIII.).—This is a rock consisting of two main constituents—plagioclase felspar and a rhombic pyroxene, *i.e.*, it is a typical pyroxene andesite, such as occurs very commonly among the volcanic rocks of Old Red Sandstone age. Taking the constituents in detail, they may be described as follows :—

(i.) The felspar crystals are in two generations (a) comparatively large crystals (phenocrysts or porphyritic crystals—hence the name of the rock), and (b) much smaller crystals—appearing in the section as laths.

The phenocrysts are in some cases beautifully twinned, and it is by this character that they are recognised as plagioclase : from their small extinction angle they would appear to be andesine—a lime-soda felspar.

Other felspar crystals show little or no evidence of twinning.

In nearly all cases the crystals are full of inclusions—glassy, greenish bodies of rounded or elongated outlines—probably portions of the original magma enclosed at the time of crystallisation. Decomposition and corrosion products are also abundant. On the whole, the felspars are not nearly so fresh as in rocks which are now much nearer to the surface a very short distance away—indicating that alteration of crystals in igneous rocks may be as much due to subterranean agencies as to atmospheric.

The smaller felspars are fresher—but, as might be expected the evidence of twinning is not so good. These smaller felspars are crowded together, forming a kind of felt.

(ii.) The pyroxene. The pyroxenes are a group of ferro-magnesian silicates, with fairly obvious crystalline characters

and optical properties. They are divided into two groups according to their crystal system. All that I have been able to find are rhombic pyroxenes—probably hypersthene. Fresh, complete crystal sections are conspicuous by their absence. The mineral, as seen in section, varies in colour from green to brown : the latter material is frequently fibrous in appearance—this being known as the bastite modification. The rhombic pyroxenes are an interesting group of minerals—three are quite common, enstatite, bronzite, and hypersthene ; and, as they readily undergo alteration it is not always easy to say which a given mineral originally was—they differ chiefly in depth of colour and percentage of iron. It may be remarked in passing that the pyroxenes in our rock are very beautiful by reflected light—the alteration has proceeded along the cracks of the mineral and given rise to mesh-work of a rich brown colour.

The above are the essential minerals of the rock. In addition we may note :—

(iii.) Numerous fragments—irregular and lath-shaped—of iron ores. These are probably magnitite—recognised by its opacity and lustre under reflected light.

(iv.) The "base."—A fragmentary substance, probably originally glassy, but now stony, filling up the meshes of the felspar felt. It represents the uncrystallised portion of the original magma.

(v.) Interstitial irregularly-shaped crystalline fragments, polarising in bright colours—probably calcite, derived from the decomposition of the lime-soda felspars.

2. Compact or Fine-grained Andesite (Plate XXIX.).—This differs from the preceding type chiefly in the absence of the porphyritic crystals of felspar. The pyroxenes are also on the whole much smaller and the crystal outlines less perfect.

3. Amygdaloidal Andesite (Plate XXX.).—The general mass of this rock agrees very closely with the porphyritic andesite described above. The minerals are, on the whole, distinctly less altered, and some of the larger felspar crystals are very fine, and show beautiful twinning under polarised light. Secondary calcite is very abundant, filling up what have been cracks in the rock, and in some cases running across the large felspars, which show similar optical phenomena on both sides of the calcite vein, thus clearly demonstrating the secondary nature of the calcite. The most notable difference between this type and the former, however, is in the presence of the amygdules to which the rock owes its name. These are approximately spherical kernels of very soft minerals, varying in size from that of a small pin head to that of a small marble, filling up what have been cavities in the original rock. These cavities owe

their origin to steam or other gases present in the original lava, which escaped from solution when the pressure was released on eruption, and formed "bubbles" in the viscous mass. After solidification the cavities were gradually filled up with secondary minerals derived by infiltration from the surrounding mass. The external layer of the amygdule, *i.e.*, the lining of the cavity, consists usually of a fibrous material, belonging to a class of silicates known as zeolites. The particular zeolite is not easily named—possibly it is natrolite, a hydrated soda-aluminium silicate. The central portion of the amygdule is generally calcite—recognised by its crystalline form and optical properties. It can be readily recognised by the naked eye in the larger amygdules.

These three types of rock occur abundantly amongst the igneous rocks of Old Red Sandstone age, and can be obtained readily at Corsiehill Quarry and elsewhere in the neighbourhood of Perth, and specimens of them from various localities are on view in the Museum.

4. The last of the igneous rocks is of a very different type (Plate XXXI.). It consists very largely of rock and crystalline fragments, embedded in a matrix of finely granular material. The crystalline fragments appear to be almost entirely felspars: some of them are practically perfect crystals, and here and there indications of twinning can be detected. The rock fragments can be recognised as small pieces of andesite, the felspars being as fresh as in the types previously described, but, as might be expected, pretty badly altered. The ground mass is very fine grained, reddish-brown in colour, and shows no crystalline structure even under high magnification, though it has some slight action on polarised light. Comparison with recent deposits shows that we are here dealing with a consolidated volcanic "ash," such as those which have formed a conspicuous feature in numerous volcanic eruptions of late years. It shows little sign of having been subjected to the action of water, like the aqueo-igneous tuff found at Corsiehill. It is also much more massive than the Corsiehill deposit. A stratum of this kind probably marks the re-commencement of volcanic activity after a more or less prolonged period of quiesience—the solidified materials obstructing the vents being blown into fine fragments by the expansive force of the gases and lava below, and distributed far and wide by violent explosions. The only surface exposure of a rock of this type, so far as my knowledge goes, is in a quarry at Craigend.

Overlying these volcanic deposits there is a layer of coarse ashy sandstone, which probably marks a period of transition from volcanic conditions to those in which the sandstones and conglomerates were laid down. It is 12 feet 6 inches in thickness. At a depth of just over 400 feet, there is a thin stratum of what the borers term "fakey blaes." This is a miner's term for a rock of somewhat indefinite character—a mixture of sandy and clayey

material, and like the much thicker bed at the top of the volcanic series, probably marks an interruption, in this case temporary, of the volcanic action.

The sandstones and conglomerates of the bore must be dismissed in a few works—they agree very closely with the similar rocks exposed in numerous quarries in the neighbourhood, notably at the Burghmuir, Lamberkin, and elsewhere.

We may now pass on to consider the conditions under which the rocks of Old Red Sandstone age were deposited—for all the rocks in the bore belong to that period—and in doing so, we find ourselves at once launched into a subject of acute controversy. The various views may be briefly summarised as follows :—

1. *The "Lake" Theory.*—This is perhaps the most widely accepted view, its chief exponent being Sir A. Geikie. According to it, the Midland Valley—that part of Scotland lying between the Southern Uplands and the Highlands—was in Old Red Sandstone times occupied by a vast lake, to which the name Lake Caledonia is given. This lake received the drainage and detritus from the neighbouring elevated areas, and was itself an area of depression, in which the materials now forming sandstones and conglomerates were deposited to a thickness of hundreds of feet. It was also an area of volcanic activity, as is shown by the existence of enormous beds of lava and ashes, now mainly andesites and tuffs. The vents from which these materials were ejected may have been subaqueous, or insular, or even marginally situated. After long continuance of these conditions, during which the Lower O.R.S. was deposited, changes and earth movements took place, and the Upper O.R.S. was subsequently deposited unconformably on the Lower. (It may be noted that the Upper Old Red Sandstone is absent from the bore, and does not occur in the immediate neighbourhood of Perth.)

2. *The "Marine" Theory.*—This is as old as Hugh Miller, and is strongly upheld by Macnair. According to this theory the separated areas of Old Red Sandstone Rocks—Central Scotland, Caithness, Lorne, etc.—were once continuous :the whole Highland area being denuded to such an extent that a sea flowed over the sites of what are now some of the highest mountains of Scotland, while a large land mass lay to the north-west, where now the Atlantic rolls. In this sea the Old Red was deposited. Chapter ix., vol. ii., of Macnair's "Geology and Scenery of the Grampians" goes into the question very thoroughly, and certainly makes out a strong case for the views here indicated. Time does not permit me to go into the details of the arguments.

3. *The "Continental" Theory.*—This theory only dates from 1904, when it was advanced by the late J. G. Goodchild. Since then, various geologists, British and Foreign, have investigated the subject, and a very valuable summary of their views is given in a

paper by Horne in the number of the "Scottish Geographical Magazine" for September, 1917. I take the liberty of quoting from that paper:—"The deposits of the lower division (of the O.R.S.) in Central Scotland were accumulated "under Continental conditions, partly in large inland lakes, partly as torrential deposits of various kinds, partly as old desert sands, and partly as the result of extensive volcanic action." (Goodchild.)

"Often the sandstones lie on the steep-walled cores of the ancient mountains, filling up deep basins, so that great regions of deposition, as the lakes of Orcadie, Caledonia, and Lorne, can be distinguished. One should not conceive under that term, however, enduring bodies of water, but rather wide basins surrounded by mountains limited by temporary sheets of water, which converged to shallow lakes of variable area and depth. These would dry up till the next period of rain filled them." (Walther.)

Professor Barrell of Yale University "presents a new interpretation, based on fluviatile deposition in a continental region with a semi-arid climate and seasonal rainfall. This view lies midway between the permanent lakes of British Geologists and the permanent deserts of Walther and Goodchild. The essential point in this theory is fluviatile deposition, spreading sediments over broad and flat river plains, a form of deposition intermediate between torrential and lacustrine, and distinct from either."

The paper by Horne, from which these quotations are taken, deals with the discovery of silicified peat beds in the Old Red Sandstone near Rhynie, in Aberdeenshire. A very full and interesting account of the plants occurring in the beds is given in the *Transactions* of the Royal Society of Edinburgh.

The existence of a peat bed implies the existence of a former land surface, and its bearing upon the conditions under which the Old Red Sandstone was deposited is obvious. Where authorities like these differ, I am certainly not going to venture on a definite opinion. When all the evidence is taken into account, each theory appears to have a good deal to be said in its favour; and it is perhaps not impossible that during a vast geological period like that of the Old Red Sandstone, conditions may have varied largely from time to time and place to place.

It now remains to consider briefly the sequence of events indicated by our rocks. The volcanic ash described above occurs at the greatest depth, and, as already indicated, probably marks an outburst of volcanic activity after a more or less prolonged period of repose. This bed was penetrated to a depth of 21 feet 6 inches—how much thicker it is we have no means of knowing. Neither can we be certain of its lateral extension, but it must represent millions of tons of volcanic dust. Overlying it we have $22\frac{1}{2}$ feet of amygdaloidal andesite—representing a flow of lava highly charged with steam or other gases—the remains, probably, of the gases which in the preceding stage of activity caused the tremendous explosions which led to the formation of dust in such

vast quantities. The thin bed of "fakey blaes" lies on the top of this, and probably represents a brief interruption of volcanic activity, as already indicated. Over 80 feet of lava follow—now compact and porphyritic andesites. Central Scotland at the time of the outpourings of these must have been a veritable land of fire. Once again the activity ceased, possibly for centuries, and again it was renewed, giving rise to the upper bed of volcanic ash. Whether this outburst finally exhausted the subterranean forces or not we cannot say—there may have been still other overlying lavas, of which now no traces remain. Ultimately, however, conditions arose, after a transition period represented by the ashy sandstones, under which the sandstones and conglomerates were laid down.

Between the Old Red Sandstone and the overlying glacial deposits there is a vast geological gap—represented elsewhere by whole systems—Carboniferous, Permian, etc. It is more than probable that during the vast ages which elapsed, younger rocks were laid down upon the Lower Old Red in this neighbourhood; Upper Old Red Rocks are found down the Carse and in Strathearn, and Carboniferous at Dron. Whatever may be the sequence of events, all these younger rocks have now vanished under the destroying hand of time, and the comparatively recent glacial deposits now directly overlie the Old Red Sandstone. As already hinted, these glacial deposits, with the estuarine and fluviatile materials above them, can tell us much about the conditions which have prevailed during the later periods in the history of the Tay Valley, but this subject must be left on one side, for the present, at all events. Sufficient has been said to show that the site of our ancient city has passed through various vicissitudes, and that its geological history is perhaps not less interesting than its human associations.

12th April, 1918.

G. F. Bates, B.A., B.Sc., President, in the Chair.

The following papers were read:—

"An Irish Iona," with lantern illustrations, by John Ritchie, LL.B.

"Note on a Stone Cist Found at Dalguise," by Charles M'Intosh, Inver. (See *Transactions*, Vol. VI., Part V., p. 206.)

SECTION OF STRATA IN ARTESIAN BORING AT PERTH WATER-WORKS.

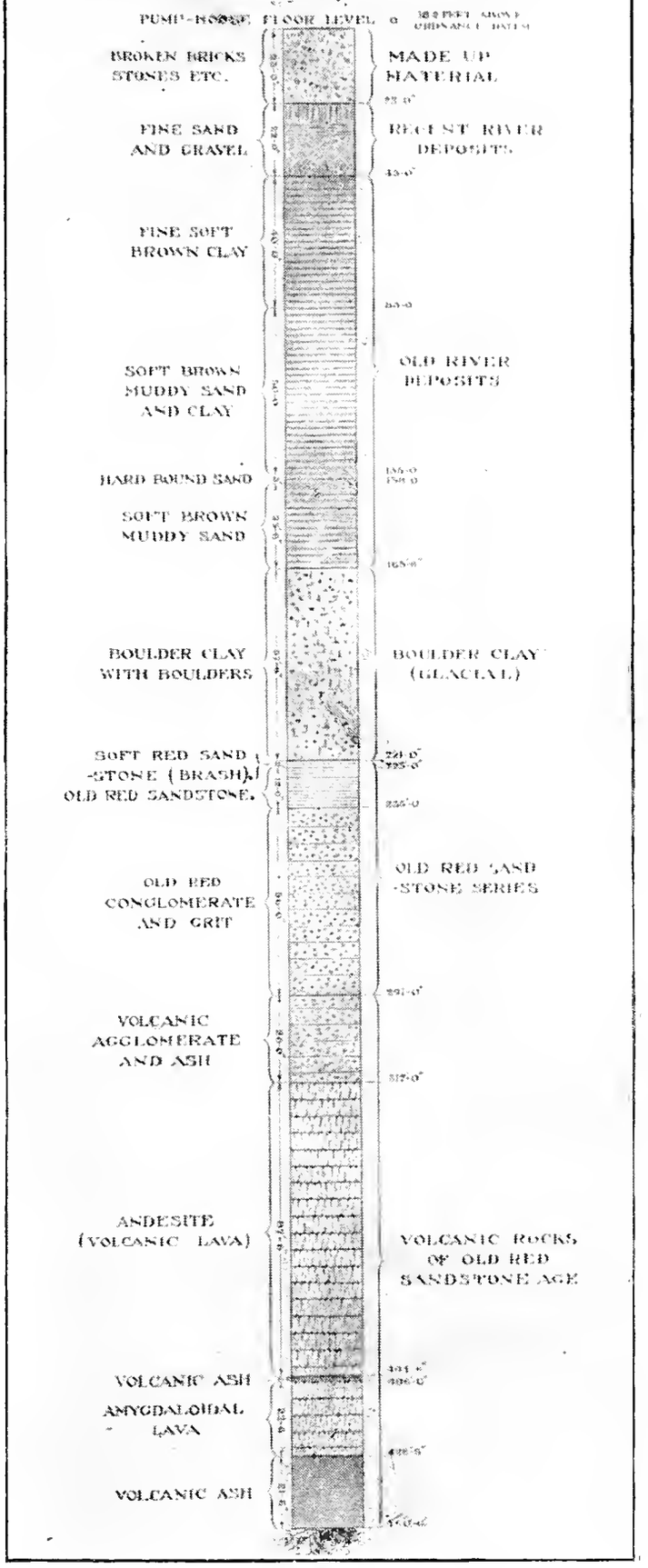


Plate XXVII.

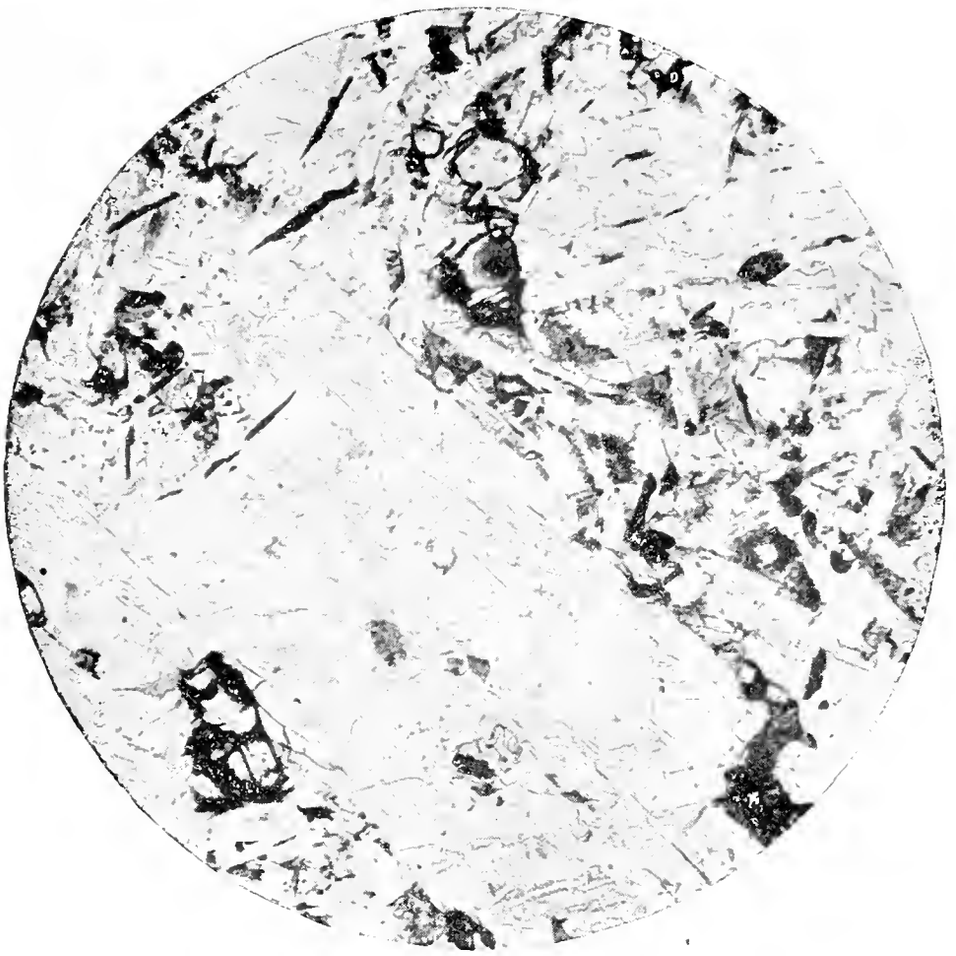


Plate XXVIII.—Porphyritic Andesite × 30.
From Bore at Waterhouse, Perth (350 ft.).

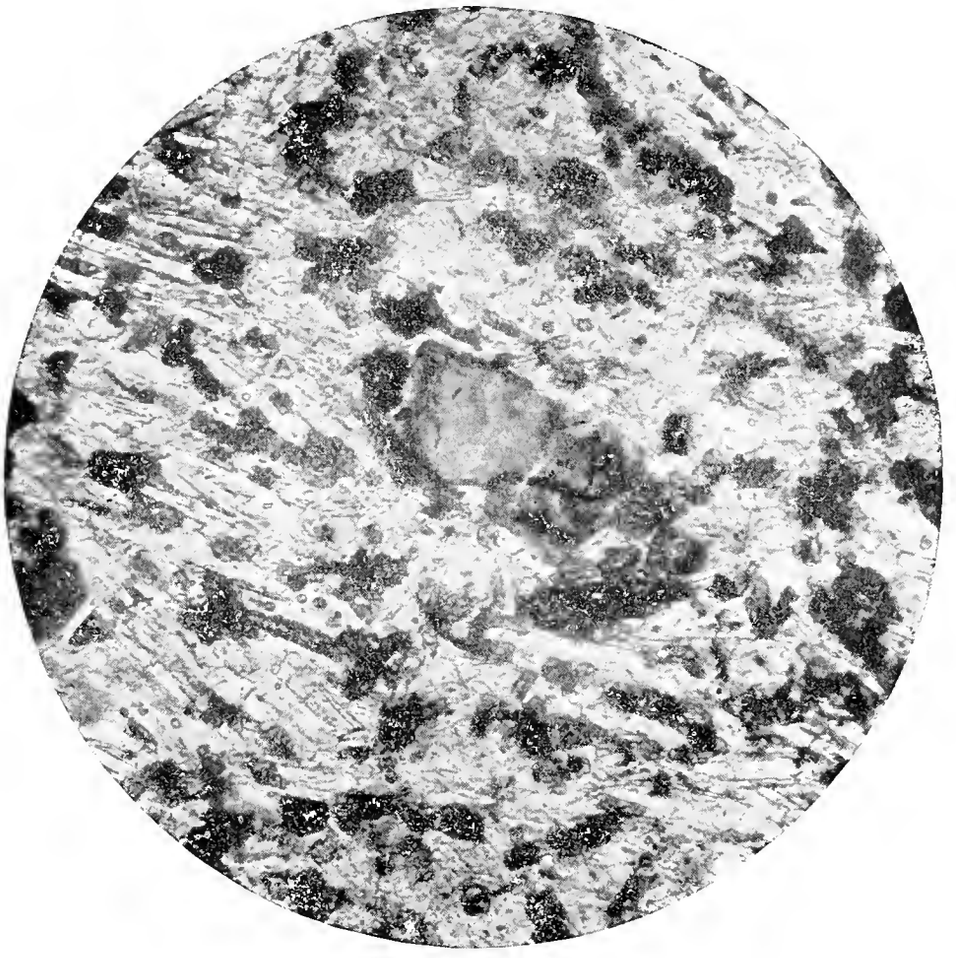


Plate XXIX.—Compact Andesite × 65.
From Bore at Waterhouse, Perth (380 ft.).

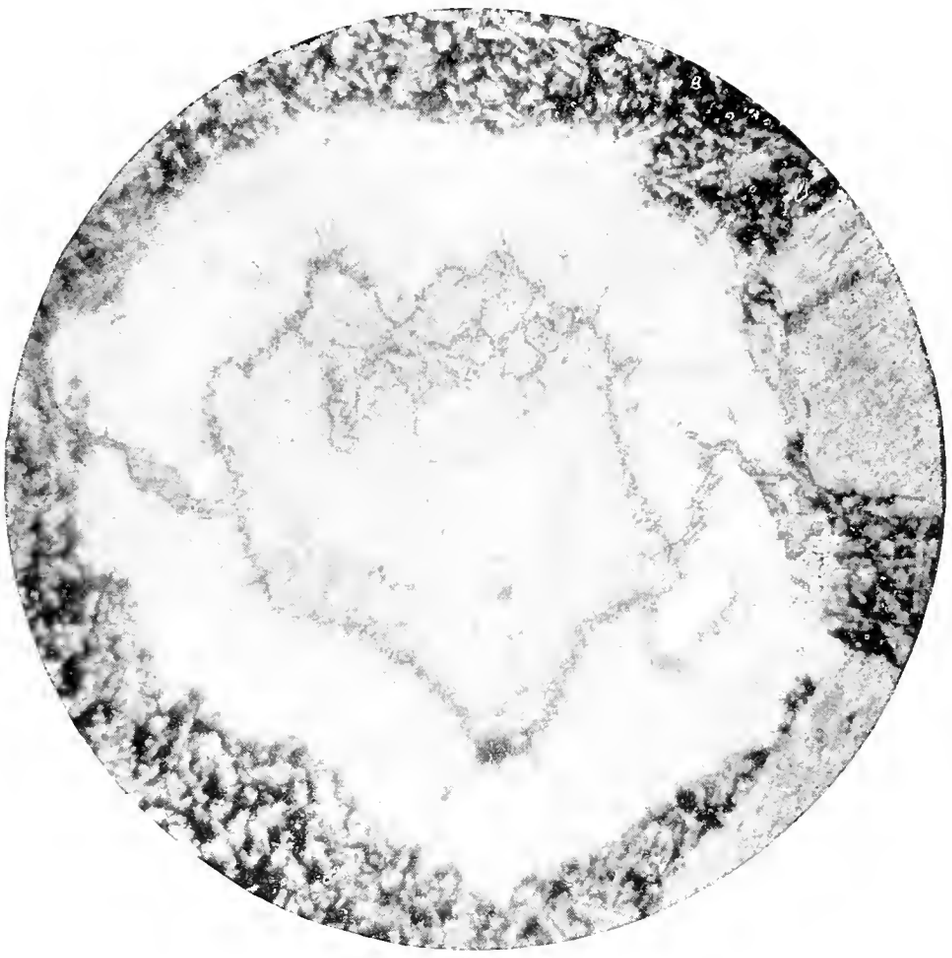


Plate XXX.—Amygdaloidal Andesite × 30.
From Bore at Waterhouse, Perth (420 ft.).

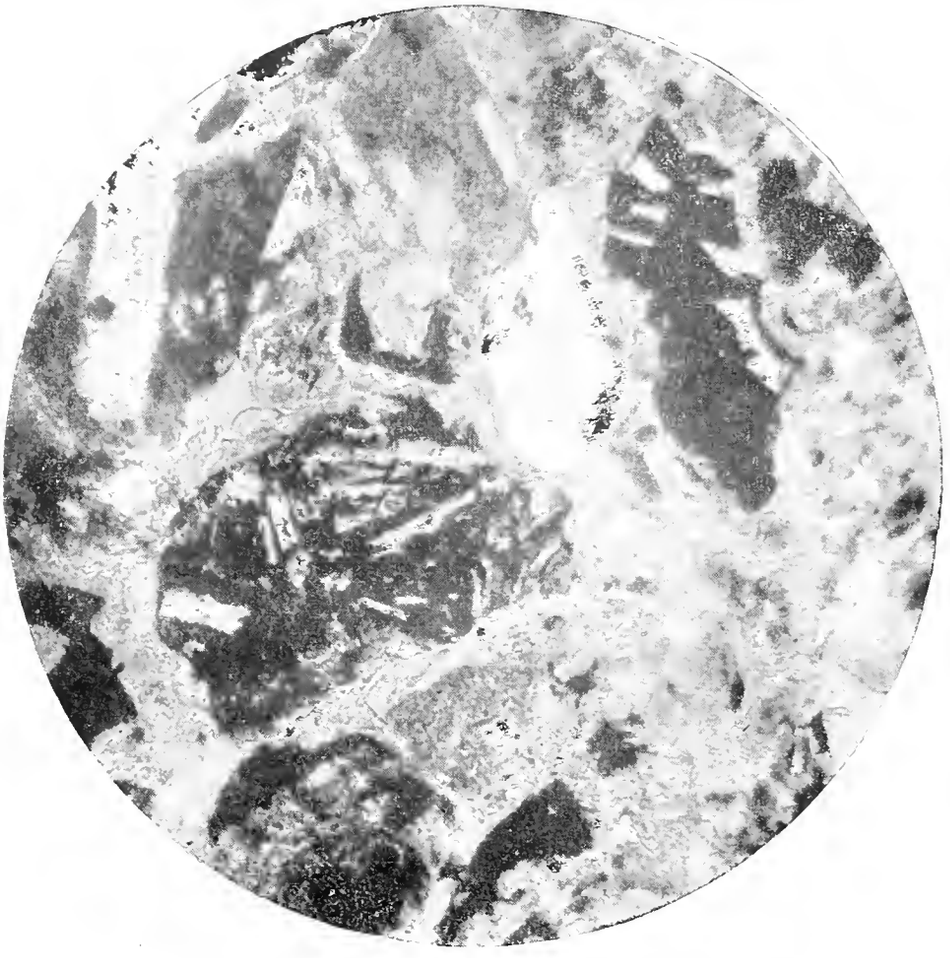


Plate XXXI.—Volcanic Tuff × 65.
From Bore at Waterhouse, Perth (440 ft.).

SUMMER SESSION, 1918.

The following excursions were arranged :—

1. Monday, 20th May—To St. Martins. Leader, Mr. Scott.
2. Wednesday, 19th June—To Glendoick. Leader, Mr. Edward.
3. Saturday, 6th July — From Blairgowrie to Coupar Angus. Leader, Mr. Barclay.
4. Saturday, 27th July—From Birnam to Murthly. Leader, Mr. J. W. Campbell.
5. Monday, 26th August—Moncreiffe Hill. Leader, Mr. J. Menzies.
6. Saturday, September—Fungus Excursion. Leader, Mr. Menzies.

PHOTOGRAPHIC SECTION.

The following meeting was held :—

Friday, 15th February, 1918—Exhibition of Salon Slides, described by the Chairman, Mr. W. Barclay. Also Exhibition of Colour Photography Slides taken in Pittencrieff Park, Dunfermline, by Mr. James W. Campbell.

LIST OF DONATIONS TO THE LIBRARY.

Session 1917-18.

I.—Publications acquired by Exchange with other Societies.

Arboricultural Society, Royal Scottish. Transactions, Vol. xxxi., Part 2, Vol. xxxii., Part 1.

American Museum of Natural History. Bulletin, Vol. xxxv., 1916. Bibliography of Fishes, 1916. Check-List of Mammals of North America, 1917.

Australian Museum, Sydney. Records, Vol. xi., Nos. 6-12.

Belfast Naturalists' Field Club. Annual Report and Proceedings, Vol. vi., Part 4, 1916-17.

British Association for the Advancement of Science. Report of Newcastle Meeting, 1916.

Dumfries and Galloway Natural History and Antiquarian Society. Transactions and Proceedings, 3rd Series, Vol. iv., 1916.

Essex Field Club. The Essex Naturalist, 1917.

Geological Society. Quarterly Journal, Vol. lxxii., Parts 1-4, Nos. 285-8.

Glasgow, Natural History Society of. The Glasgow Naturalist, 1917.

Lloyd Library, Cincinnati, U.S. Bibliographical Contributions, Vol. ii., No. 12.

Northants Natural History Society and Field Club. Journal, Vol. xviii., Nos. 145-148.

Philadelphia Academy of Natural Science. Proceedings, Vol. lxviii., Part 3, Vol. lxix., Part 1.

Royal Physical Society. Proceedings, Vol. xx., Nos. 2-3, 1915-17.

Royal Society of Edinburgh. Transactions, Vol. li., Parts 1-4; Proceedings, Vol. xxxvi., Parts 3-4, Vol. xxxvii., Parts 1-4.

Scottish Marine Biological Association. Annual Report for 1916.

Smithsonian Institution, Washington, U.S. Annual Report for 1916.

Society of Antiquaries of Scotland. Proceedings, 5th Series, Vol. ii., 1915-16.

South London Entomological and Natural History Society. Proceedings, 1916-17.

Torquay Natural History Society. Journal, Vol. ii., No. 3, 1917.

Wisconsin Academy of Sciences, Arts and Letters. Transactions, Vol. xviii., Part 2, 1916.

Yorkshire Philosophical Society. Annual Report for 1916.

The following Societies have not yet sent us their Publications for 1916-17 :—

Aberdeen Working Men's Natural History and Scientific Society.
Botanical Society of Edinburgh.
Buchan Club.
Carnegie Museum, Pittsburgh, U.S.
Dundee Naturalists' Society.
Hull Scientific and Field Naturalists' Club.
Kilmarnock Glenfield Ramblers' Society.
New York Zoological Society.
Northumberland, Durham, and Newcastle-upon-Tyne Natural History Society.
Nottingham Naturalists' Society.
Nova Scotian Institute of Science.
Royal Scottish Geographical Society.
Stirling Natural History and Archæological Society.
Vale of Derwent Naturalists' Field Club.
Western Australian Museum and Art Gallery.

II.—Gifts from Institutions.

Board of Agriculture and Fisheries.
Leaflets, Nos. 299, 311, 312.
Special Leaflets, Nos. 60, 63, 71, 72, 74, 75, 76, 77, 78.
Food Production Leaflets, Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 17, 18, 21, 23, 25, 26.

British Mycological Society. Transactions, Vol. v., Part 3, 1916.

Brooklyn Institute of Arts and Sciences.
Report for 1916.
The Geographical Models, 1917.
Children's Museum News, Vol. iv., Nos. 7, 8, Vol. v., No. 1.

Canada, Department of Mines, Geological Survey.
Memoirs, Nos. 31, 84, 87, 88, 89, 92, 93, 94, 96, 97.
Museum Bulletins, Nos. 25, 26.
Summary Report for 1916.

Field Museum of Natural History, Cincinnati, U.S. Annual Report, Vol. v., Part 2, 1916.

Fishery Board of Scotland.
Thirty-fifth Annual Report, 1916.
Scientific Investigations, No. 1, 1917.

Instituto Geologico de Mexico. Anales, Nos. 1, 2, 4, 1917.

Liverpool Botanical Society. Proceedings, 1912-15.

National Museum of Wales. Tenth Annual Report, 1916-17.

Royal Botanic Gardens, Edinburgh. Notes, Vol. x., No. 46, Vol. vi., Nos. 29, 30.

United States, Department of the Interior, Geological Survey.
Professional Papers, Nos. 91, 98—I, J, K, M, N.
Mineral Resources, Nos. I. : 3, 4, 5, 7; II. : 12, 13, 14, 16, 17, 19, 20.
Water Supply Papers, Nos. 360, 384, 387, 395.

III.—Gifts from Individuals.

Balfour, E. J., M.A,. B.Sc. Nature Pictures, by C. & R. Kearton, 2 Vols., 1910.

Coates, H., F.R.S.E. Journal of Conchology, 1917. British Rainfall, 1917. Symon's Meteorological Magazine, 1917.

Ellison, S. T. The Entomologist, 1917. Photography, 1917.

Folkarde, A., Hamilton. Petrifactions and their Teachings, by Dr. G. A. Mantell, 1851.

Matthews, J. R., M.A., Liverpool. Annals of the Liverpool School of Tropical Medicine, 5 Parts.

Murray, Hon. Gladys Graham, Stenton.

Nature, 1917.
Scottish Geographical Magazine, 1917.
What is Instinct? by C. Bingham Newland, 1916.
The Catholic Highlands of Scotland, by Dom Odo Blundell, 1917.
Our Big Game, by Dwight W. Huntington, 1904.
Shakespeare and Precious Stones, by Geo. F. Kunz, 1916.
Wild Sport with Gun, Rifle, and Salmon Rod, by G. W. Hartley, 1903.
The Wilderness of the North Pacific Coast Islands, by Chas. Sheldon, 1912.
The Story of a Hare, by V. C. Tregarthen, 1912.
The Way of the Air, by Edgar C. Middleton, 1917.
Hill Birds of Scotland, by Seton Gordon, 1915.

Philip, Rev. Adam, M.A., Invergowrie.

Things Grave and Gay from Gowrie, by Rev. A. Philip, 1916.
The Parish of Longforgan, by Rev. A. Philip, 1895.
The Evangel in Gowrie, by Rev. A. Philip, 1911.
Songs and Sayings of Gowrie, by Rev. A. Philip, 1901.
The Ancestry of R. T. Davidson, Archbishop of Canterbury, by Rev. A. Philip, 1903.

Ritchie, John, LL.B. The Encyclopædia Britannica, 9th Edition, 1889, 25 Vols.

Smith, Rev. Fred., South Queensferry.

Blackie's Descriptive Atlas of the World.
Blackie's Modern Cyclopædia, 8 Vols.
Life of Sir Charles Lyell, by Mrs. Lyell, 2 Vols., 1881.
Lay Sermons, Addresses, and Reviews, by T. H. Huxley, 1872.
Creatures of Other Days, by Rev. H. N. Hutchinson, 1896.
Pioneers of Evolution, by Edward Clodd, 1907.
The World of Animal Life, by Rev. F. Smith.
The Animal Book, by Rev. F. Smith.
A Brief Introduction to Commercial Geography, by Rev. F. Smith.
The World we Live in, by Rev. F. Smith, 1901.

RESULTS OF 21st CHILDREN'S ESSAY COMPETITION, 1917-18.

Subject—"BIRDS I HAVE SEEN DURING MY RAMBLES."

FIRST DIVISION, Age 14 and over (32 Essays).

1. Margaret M. M'Kenzie.
2. Mary R. Duncan.
3. Agnes Ford and Jeanie Keith.
5. Jessie Cameron.

Certificates of Merit—Spence Niven, Charles Frenz, Ray Gourdie, Annie Y. Murray, John Fenwick, Mary W. Fraser, John Donaldson, Jessie Bruce.

SECOND DIVISION, Age 13 (66 Essays).

1. Isabella R. Smith.
2. Frank Templeman.
3. David Hay.
4. David Munro.
5. James Christie and Jack Fordyce.
7. Janet B. Anderson.
8. Jessie B. M'Lagan.
9. Catherine D. Watson.

Certificates of Merit—Margaret M'Rae, Mary A. S. Redpath, James Brodie, Grace A. Munro, Margaret C. W. Lamb, Lizzie Paterson, Tom Wilson, Mary Duncan, Wm. M'Millan, Christina M. Syme, Annie M'E. Thomson, Violet A. T. Wilson, Grace C. Dunbar, Annie Robertson, Mary Clark, Cathie Watson, Elsie Forbes, John M'Intyre, Isabel Fenwick, Andrew Stalker, Julia Anderson, Agnes M'Kay, Jean M. Rumgay.

THIRD DIVISION, Age 12 (23 Essays).

1. George Nettleship.
2. Agnes M'L. Miller.
3. Elizabeth H. Croll.
4. David Gray.
5. Bruce Munro.

Certificates of Merit—Margaret Marshall, Hannah Morris, Robina G. B. Campbell, Sarah Ferguson, Euphemia Dougall, Dorothy Todd, Isa M'Pherson, Jessie P. D. Miller.

FOURTH DIVISION, Age 11 (2 Essays).

1. Jane Menzies.

Certificate of Merit—James Tarbet.

The Prizes and Certificates were presented by Mr. A. D. Millar, H.M.I.S., on November 30th, 1918.

ROLL OF MEMBERSHIP, AS AT 31ST OCTOBER, 1918.

* Life Members.

† Original Member.

HONORARY MEMBERS.

†Macfarlane, James, Ardlair, 54 Fairfield Road, Inverness, ... 28th February, 1867—12th April, 1918.
Thomson, Professor J. A., M.A., LL.D., The University, Aberdeen, ... 9th March, 1917.
Trail, Professor J. W. H., M.A., M.D., F.R.S., F.L.S., The University, Aberdeen, ... 8th February, 1872—9th March, 1917.

CORRESPONDING MEMBERS.

Bennet, Arthur, F.L.S., 143 High Street, Croydon, ... 9th January, 1913.
Brebner, James, M.A., 2 Scotswood Terrace, Dundee, ... 3rd December, 1885.
Bruce, W. S., LL.D., Scottish Oceanographical Institute, Surgeons' Hall, Edinburgh, ... 14th March, 1907.
Calman, W. T., D.Sc., British Museum (Natural History), Cromwell Road, London, ... 11th April, 1895.
Flett, Dr. J. S., F.R.S., Geological Survey, 38 George Square, Edinburgh, ... 9th March, 1917.
Geddes, Professor Patrick, F.R.S.E., University College, Dundee, ... 3rd February, 1881.
Kennedy, James, 19 Polwarth Gardens, Hyndland, Glasgow, ... 1st May, 1884—10th December, 1914.
M'Gregor, Thomas M., F.E.S., Australia, ... 5th March, 1885.
Macnair, Peter, F.R.S.E., F.G.S., The Museum, Kelvingrove, Glasgow, ... 13th November, 1890.
Millais, Lieutenant-Commander J. G., F.Z.S., Compton's Brow, Horsham, Sussex, ... 9th March, 1917.
Mill, Dr. H. R., F.R.S., 62 Camden Square, London, N.W., ... 7th April, 1892.
Ramsay, E. P., F.L.S., Curator, The Australian Museum, Sydney, New South Wales, ... 7th February, 1884.
Smith, Rev. Fred., 10 Mayo Road, Sherwood Rise, Nottingham, ... 5th December, 1872—13th November, 1890.
Smith, Dr. W. G., B.Sc., College of Agriculture, George Square, Edinburgh, ... 13th April, 1917.
Thompson, Professor D'Arcy W., C.B., B.A., F.R.S., The University, St. Andrews, ... 10th November, 1892.
White, Mrs. Buchanan, Manitoba, Canada, ... 10th March, 1904.

ASSOCIATES.

Adams, Captain W., *S.S. Diana*, ... 14th March, 1901.
Dewar, D., Remony, Kenmore, ... 5th February, 1885.
Greig, Mr., Gamekeeper, Eastwood, Dunkeld, ... 14th April, 1898.
Haggart, D. A., Riverview, Killin, ... 11th December, 1913.
Laidlaw, Mr., Gamekeeper, Castle Menzies, Aberfeldy,... 7th February, 1884.
M'Intosh, Chas., Inver, Dunkeld, ... 1st May, 1873.
Robertson, Captain T., *S.S. Scotia*, ... 14th March, 1901.
Rodger, Mrs., Laurel Bank, Pitcullen, ... 11th March, 1915.
Cranna, John, Gamekeeper, Dupplin, ... 13th April, 1917.

ORDINARY MEMBERS.

Alexander, John, M.A., Midfield, Glasgow Road, ... 14th December, 1893.
Anderson, Andrew, Ryefaulds, Craigie Road, ... 9th December, 1897.
Anderson, John L., Viewlands Terrace, ... 12th April, 1906.
Anderson, Chas. S., Strathornia, Young Street, ... 13th April, 1917.
Ashbridge, Miss Cora E., 10 Scott Street, ... 8th December, 1916.
Asher, John, F.S.A.Scot., 1 Muirhall Terrace, 9th Dec., 1897—25th July, 1917.
Asher, William, A.R.S.I., Sanitary Inspector's Office, 5 High Street, ... 11th February, 1915.
Atholl, His Grace The Duke of, Blair Castle, Blair Atholl, ... 13th April, 1911.
*Atkinson, Miss A. R., Knockfarrie, Pitlochry, ... 14th December, 1917.

Balfour, E. J., M.A., B.Sc., Perth Academy, ... 9th December, 1915.
*Barbour, George F., D.Phil., Bonskeid, Pitlochry, ... 11th January, 1912.
Barclay, William, Friar Street, Craigie, ... 1st February, 1883.
Barclay, William A., Bank House, Tay Street, ... 9th December, 1897.
Barlas, James, 231 High Street, ... 13th February, 1908.
Bates, George F., B.A., B.Sc., Westoe, Craigie Road,... 13th December, 1900.
Bates, R. Martin, School Board Office, Rose Terrace, ... 13th April, 1911.
Baxter, Peter, 31 James Street, ... 9th March, 1917.
Beaton, Alex. K., Highfield, Cornhill, ... 9th March, 1916.
Beatty, S., M.B., Craigvar, Pitlochry, ... 9th December, 1897.
*Bedford, Her Grace The Duchess of, Woburn, Bedfordshire, ... 12th December, 1907.
Begg, John, Freston, Glasgow Road, ... 9th March, 1916.
*Bell, A. K., Campsie Hill, by Perth, ... 11th April, 1912.
*Bell, Mrs. A. K., Campsie Hill, by Perth, ... 11th April, 1912.
Bell, R. D., Craigenvar, Scone, ... 11th January, 1912.
Blair, Robert, 32 Scott Street, ... 11th December, 1902.
Bow, Thomas P., 40 South Methven Street, ... 13th April, 1916.
Brady, George, 8 Comely Bank, ... 11th April, 1895.
Brand, Alexander, 9 Rosemount Place, ... 13th April, 1916.
Brand, Robert, 10 Barossa Place, ... 7th April, 1892.

Breadalbane, The Marquis of, K.G., Taymouth Castle, Aberfeldy, ... 7th April, 1892.
Brough, Miss Elizabeth, 44 Wilson Street, Craigie, ... 13th March, 1902.
Brough, Robert, Ochilview, Bridge of Earn, ... 9th December, 1909.
Brown, Alfred W., Lawgrove House, Inveralmond, ... 14th December, 1903.
Brown, Mrs. A. W., Lawgrove House, Inveralmond, ... 10th November, 1916.
Brown, Dr. R. Dodds, F.R.C.P.E., Murray House, ... 12th March, 1914.
Buchan, Miss, 27 Marshall Place, ... 10th November, 1916.
Butter, Thomas, 8 Marshall Place, ... 8th March, 1894.

Calderwood, James, 18 Pitcullen Crescent, ... 12th April, 1906.
Callander, J. Graham, F.S.A.Scot., Ruthvenfield House, Almondbank, ... 9th December, 1916.
Cameron, A. J., Beechwood, Glasgow Road, ... 12th April, 1918.
Cameron, David, 31 Commercial Street, ... 14th December, 1884.
Cameron, James, 2 Brompton Terrace, ... 13th April, 1916.
Campbell, David, Auchter Villa, Clyde Place, ... 7th April, 1904.
Campbell, Edward, Lignwood, Scone, ... 11th April, 1889.
Campbell, Peter W., Muirton Bank, ... 9th March, 1899.
Campbell, John, Tregaron, Glasgow Road, ... 12th January, 1911.
Campbell, James W., Wellshill Cottage, ... 8th December, 1916.
Campbell, Robert, Drumcharry, Glasgow Road, ... 8th March, 1918.
Carter, A. E. J., The Retreat, Monifieth, ... 10th December, 1908.
Chambers, C. E. S., Cardney, by Dunkeld, ... 10th November, 1916.
Clacher, James, 9 George Crescent, ... 3rd April, 1879.
Coates, Miss, Corarder, Glasgow Road, ... 3rd January, 1878.
Coates, James, Corarder, Glasgow Road, ... 9th May, 1875.
Cox, W. H., Snaigow, Murthly, ... 8th December, 1898.
Craigie, James, Sandeman Public Library, ... 12th March, 1903.
Crapper, E., Moor Cottage, Cherrybank, ... 11th January, 1918.
Crawford, Rev. Thomas, B.D., Cultoquhey, Crieff, ... 7th April, 1892.
Crichton, John, L.D.S., 7 Charlotte Street, ... 14th January, 1904.
Cumming, A. G., 153 High Street, ... 12th March, 1896.

Davie, Miss, Cornhill House, ... 10th January, 1901.
Deas, Miss, 4 Balhousie Street, ... 16th January, 1896.
Dewar, Hon. John, Dupplin Castle, ... 9th December, 1897.
Dixon, A. Gregor, Glentulchan, Glenalmond, ... 10th December, 1914.
Dixon, J. H., Clach-na-faire, Pitlochry, ... 8th February, 1912.
Donald, D., 30 Shield's Buildings, Dunkeld Road, ... 11th December, 1902.
Donald, James A., Forester, Dupplin, ... 4th May, 1915.
Donald, James S., 16 Scott Street, ... 8th March, 1918.
Douglas, Henry, Town Clerk's Office, City Chambers, 11th January, 1900.
*Drummond, Miss Sybil, 15 Grosvenor Crescent, London, ... 9th January, 1902.
Drummond, Neil, Cherrybank, ... 13th February, 1913.
Dunbar, Sir William C., Bart., C.B., Earnbank, Bridge of Earn, ... 12th December, 1912.
Dunedin, The Right Hon. Lord, Stenton, by Dunkeld, 12th January, 1916.

Dunedin, Lady, Stenton, by Dunkeld, ... 12th January, 1916.

Edward, David L., 1 Hospital Street, ... 11th January, 1918.
Ellison, S. T., Garth, Barnhill, ... 7th March, 1878.
Ellison, William, Cragville, Barnhill, ... 3rd March, 1881.
Evans, Miss Z. E., 32 Balhousie Street, ... 10th December, 1896.

Farquharson, J. G., 17 Pitcullen Terrace, ... 10th November, 1916.
Fenton, James, 26 High Street, ... 14th January, 1915.
Fenwick, Fred. H., 6 The Glebe, Kinnoull, ... 8th December, 1898.
Fenwick, James E., 5 Comely Bank, ... 14th December, 1911.
Ferguson, Archibald M., 10 Pitcullen Terrace,... ... 13th December, 1900.
Ferrier, D., 1 Edin Terrace, Edinburgh Road, ... 10th December, 1891.
Folkarde, Miss, Whitelaw, Cherrybank, ... 8th April, 1915.
Forbes, Rev. R. W., The Pines, Glasgow Road, ... 13th April, 1916.
Forbes, John J., Lindville, 38 Balhousie Street, ... 8th March, 1918.
Fordyce, John, Ellangowan, Murray Crescent, ... 14th December, 1911.
Forgan, James, Belhelvie Terrace, Glasgow Road, ... 8th February, 1912.
Fothringham, Col. W. Steuart, Murthly Castle, Murthly, 13th April, 1905.
Forteviot, The Hon. Lord, Dupplin Castle, by Perth, ... 7th February, 1878.
Frew, Thomas D., 1 King James Place, ... 16th January, 1896.
Fulton, W. M., 3 Moredun Terrace, Craigie, ... 10th April, 1913.

Gall, Miss, 8 Glover Street, ... 14th November, 1895.
Gall, W. S., Duneaton, Glasgow Road, ... 16th December, 1903.
Gardiner, James, M.P., Curravechter, Taymount Terrace, 9th April, 1914.
Gilmour, Allan S., Royal Infirmary, ... 9th November, 1917.
Gordon, J. G. M'H., Corsemalzie, Wigtownshire, ... 14th December, 1917.
Gorrie, David, 43 King Street, ... 14th January, 1915.
Gow, Neil, 9 St. John Street, ... 9th February, 1917.
Graham, John T., M.D., Dunalastair, ... 10th December, 1891.
Grant, Miss, 59 North Methven Street, ... 12th April, 1906.
Grant, Miss, Halbeath, Scone, ... 12th April, 1918.
Gray, George, Bowerswell, ... 2nd February, 1882.
Gray, Melville, Bowerswell, ... 10th December, 1914.
Halley, Robert, 5 Barossa Place, ... 16th January, 1896.
*Hay, Lieut.-Col. Drummond, Seggieden, by Perth, ... 14th January, 1897.
Hay, Miss Drummond, Westwood, by Perth, ... 14th December, 1899.
Hay, H. M. Drummond, c/o Messrs. Finlay, Muir & Co., Colombo, Ceylon, ... 12th December, 1907.
Henderson, Lieut.-Col. H. Dalton, The Orchard, Glasgow Road, ... 14th January, 1904.
Home-Drummond, Lady Georgina, Woodlands, ... 8th February, 1918.
Howie, Miss, 8 Moredun Terrace, Craigie, ... 7th April, 1904.
Humble, Miss Eleanor W., 32 Balhousie Street, ... 10th December, 1896.
Hume, W. Maitland, M.D., Ch.B., F.R.C.S.E., 7 Atholl Crescent, ... 9th December, 1915.
Hunt, Leigh, M.B., C.M., 1 Graham's Place, King St., 2nd February, 1882.
Hunter, Robert, St. John's, Glasgow Road, ... 9th December, 1909.
Hunter, Thomas, Nimrod, Glasgow Road, ... 8th March, 1918.

Hutcheson, James, Annbank, Tullylumb Terrace, ... 12th January, 1916.
Hutton, James, Secretary's Office, Inland Revenue, Somerset House, London, W.C., ... 12th January, 1911.

Jack, Ernest, C.A., Poplar Bank, Scone, ... 11th January, 1912.
Jameson, Martin, Fernhill, ... 13th April, 1916.
Jameson, Melville, Hasland, Kinnoull, ... 7th January, 1869.
Jamieson, Miss, Ardbeg, Glasgow Road, ... 3rd January, 1878.
Jarvie, John Stirling, 24 Hay Street, Balhousie, ... 10th April, 1906.

Kaye, John, Westerfield, Viewlands Road, ... 12th December, 1907.
Kaye, Miss Jeannie, Westerfield, Viewlands Road, ... 12th December, 1907.
Kaye, Thomas, Westerfield, Viewlands Road, ... 13th March, 1902.
Kenna, Miss Margaret, 20 King Street, ... 12th April, 1900.
Kidston, Robert, LL.D., F.R.S., F.G.S., 12 Clarendon Place, Stirling, ... 4th December, 1884.
King, Mrs., 2 Blackfriars Street, ... 11th April, 1901.
Kippen, Robert M., 38 Tay Street, ... 2nd March, 1882.
Knight, Rev. G. A. Frank, M.A., F.R.S.E., 52 Sardinia Terrace, Hillhead, Glasgow, ... 12th December, 1901.
Kyd, Miss L., 22 Barossa Place, ... 10th March, 1904.

Lambie, John, M.A., B.Sc., Elibank, Glasgow Road, ... 9th February, 1911.
Landreth, Rev. P. R., The Manse of West St. John's, Dundee Road, ... 12th January, 1899.
Leslie, Hugh, Strone, Brompton Terrace, ... 12th April, 1900.
Leslie, James, Strone, Brompton Terrace, ... 10th December, 1914.

Malloch, Gilbert D., 7 Viewlands Terrace, ... 16th January, 1896.
Malloch, Joseph N., Rustic Place, Dundee, ... 9th February, 1905.
Malloch, P. D., Almond Villa, Glasgow Road, ... 2nd December, 1870.
*Mansfield, The Right Hon. The Earl of, Scone Palace, 14th February, 1907.
Marshall, David, Craigmount, Barnhill, ... 7th January, 1869.
Marshall, Jas. M'Lean, Bleaton Hallet, by Blairgowrie, 10th March, 1910.
Marshall, Thomas, The Store, Stanley, ... 1st October, 1868.
Marshall, Thomas B., 52 Balhousie Street, ... 14th December, 1911.
Martin, David, Lothair, Strathearn Terrace, ... 10th April, 1913.
Matthews, James R., Johnston's Tropical Laboratory, Liverpool University, ... 13th April, 1911.
Meacher, Allan J., Marlee, by Blairgowrie, ... 9th March, 1916.
Meldrum, R. H., Muirhall Bank, Bridgend, ... 1st May, 1884.
Menzies, James, 117 Scott Street, ... 12th March, 1896.
Mercer, Major W. L., Huntingtower, by Perth, ... 8th December, 1904.
Mercer, W. B., 95 High Street, ... 8th January, 1899.
Millar, A. D., H.M.I.S., Maristuen, Crieff, ... 11th January, 1912.
Miller, Alexander, Osborne Terrace, Wilson Street, Craigie, ... 14th November, 1895.
Miller, Geo. A., W.S., Knowehead, ... 2nd December, 1886.
Miller, J. G., Mayfield, ... 23rd March, 1893.
Miller, Charles, Craigiehaugh House, ... 9th March, 1917.

Miller, F. Norie, Cleeve, ... 8th March, 1918.
Miln, David N., Ingleside, Wilson Street, Craigie, ... 16th January, 1896.
Mitchell, Hugh, F.S.A.Scot., Union Bank, Pitlochry, ... 8th June, 1915.
Mitchell, W. G., Perth Academy, ... 9th February, 1917.
Mitchell, J. W. Rollo, 3 Atholl Place, ... 12th April, 1918.
Moncreiff, John, Summerbank, ... 8th March, 1906.
Moncrieff, Mrs. J., Summerbank, ... 8th March, 1906.
Moncrieff, Thomas R., Springland, ... 5th March, 1885.
Moray, The Right Hon. The Earl of, Kinfauns Castle, by Perth, ... 8th December, 1904.
Morison, James, 4 Blackfriars Street, ... 7th February, 1884.
Morison, Miss, Scarhead, Glenfarg, ... 13th February, 1890.
Morrison, William T., Glensaugh, Bowerswell Road, ... 16th January, 1896.
Muirhead, George, 6 Muirhall Terrace, ... 14th November, 1895.
Munro, William, 44 Hay Street, ... 14th January, 1915.
Munsie, James T., Minnie Villa, 34 Craigie Road, ... 9th March, 1917.
Murray, David, 3 Craigie Crescent, ... 11th December, 1902.
Murray, George J., Yewbank, Monifieth Road, Broughty Ferry, ... 10th February, 1910.
Murray, The Hon. Gladys Graham, Stenton, by Dunkeld, ... 8th January, 1899.
M'Ainsh, Rev. John, B.D., U.F. Manse, Strathbraan, by Dunkeld, ... 12th January, 1899.
Macaulay, Robert F., 2 Barossa Place, ... 10th December, 1914.
M'Callum, W. B., 8 Scott Street, ... 14th January, 1909.
M'Cash, W. F., Cornhill House, ... 11th March, 1909.
M'Cash, Mrs., Cornhill House, ... 11th March, 1909.
M'Donald, Miss, Castleview, Glasgow Road, ... 11th February, 1897.
M'Ewen, James, Craigie Bank, ... 7th April, 1892.
Macfarlane, Miss, Rose Cottage, Scone, ... 14th December, 1917.
M'Gibbon, Miss, 1 Murray Road, Scone, ... 14th December, 1917.
Macgregor, Atholl, J.P., Ardchoille, ... 7th December, 1882.
M'Gregor, John, Rosaire, 24 Strathmore Street, ... 4th March, 1886.
M'Innes, Mrs., Holmwood, Isla Road, ... 9th December, 1915.
Mackay, A. T., 16 Barossa Place, ... 9th April, 1903.
*M'Kendrick, Andrew, Livadia, Greece, ... 9th April, 1896.
M'Kinlay, John, Ballachladich, Needless Road, ... 8th March, 1918.
M'Lagan, John, Maxwellton, Kinnoull, ... 11th January, 1912.
M'Laren, Thomas, Redcliffe, Barnhill, ... 11th April, 1912.
MacLeod, Miss, Albert Villa, Dunkeld Road, ... 10th February, 1898.
M'Leod, John, Alness, Moncreiffe Terrace, ... 11th March, 1915.
Macnab, Miss, LL.A., 5 Fitzroy Terrace, ... 14th November, 1895.
Macnaughton, Malcolm, The Gardens, Scone Palace, ... 8th February, 1918.
M'Nicoll, Robert, County Buildings, Tay Street, ... 12th December, 1907.

Nairne, William P., 5 George Crescent, Glasgow Road, 9th April, 1903.
Newlands, Miss Helen, Tayside, ... 10th January, 1901.
Newlands, Rev. T. S., B.D., U.F. Church Manse, Craigend, by Perth, ... 9th April, 1908.

Newlands, Mrs., U.F. Church Manse, Craigend, by Perth, ... 9th November, 1917.
Nicol, Edward, Paradise Place, Victoria Street, ... 10th December, 1891.
Nisbet, Peter, C.A., 5 St. John Street, ... 12th April, 1918.
Noad, Col. W. Cranswick, Balcraig, by Perth, ... 14th December, 1905.

Pagan, Miss, M.A., Dallerie, Crieff, ... 14th April, 1898.
Paterson, William, Domus, Cherrybank, ... 14th December, 1899.
Peddie, David, 2 Pedwarden Road, ... 1st May, 1873.
Pinkerton, Miss Anne, ... 9th December, 1897.
Plumb, The Right Rev. Bishop, D.D., St. Andrews, ... 14th February, 1907.
Proudfoot, James, 46 Balhousie Street, ... 5th March, 1885.
Proudfoot, Miss I., 12 Queen's Avenue, Craigie, ... 13th April, 1917.
Pullar, Albert E., Durn, ... 23rd November, 1883.
Pullar, Mrs. A. E., Durn, ... 7th April, 1892.
Pullar, Major Herbert S., Dunbarney Cottage, Bridge of Earn, ... 5th May, 1887.
Pullar, Mrs. H. S., Dunbarney Cottage, Bridge of Earn, 11th February, 1904.
Pullar, Laurence, Dunbarney House, Bridge of Earn, ... 11th February, 1904.
Pullar, Mrs. L., Dunbarney House, Bridge of Earn, ... 11th February, 1904.
Pullar, Mrs. R. D., Brahan, by Perth, ... 3rd March, 1887.
Pullar, R. Morison, Brahan, by Perth, ... 8th April, 1909.
Purves, George, Elvan Villa, Clyde Place, ... 8th February, 1918.

*Raffan, Miss Eliza, LL.A., Randwick, Buckie, ... 13th December, 1900.
Reid, Arthur S., M.A., F.G.S., Trinity College, Glenalmond, ... 10th December, 1891.
*Reid, Col. A. T., Auchterarder House, Auchterarder, 10th November, 1916.
Richardson, James, 27 High Street, Blairgowrie, ... 11th April, 1901.
Ritchie, John, LL.B., Rockbank, Kinnoull, ... 12th January, 1893.
Ritchie, Mrs., Rockbank, Kinnoull, ... 10th January, 1895.
Robb, Alexander, 43 High Street, ... 8th April, 1909.
Robertson, Miss Isabella, 2 Blackfriars Street, ... 11th April, 1901.
Robertson, James, 4 Mansfield Place, ... 14th December, 1893.
Robertson, Robert Hay, Viewbank, Brompton Terrace, 2nd March, 1882.
Robertson, William, Spoutwells, Scone, ... 12th April, 1906.
Rollo, James A., 55 St. John Street, ... 9th March, 1917.
Ross, Alexander, Groydyr, 3 Western Avenue, ... 8th March, 1918.
Ross, John Christie, Belmont, Meigle, ... 12th April, 1918.
Ruggles-Brise, Lady Dorothea, Blair Castle, Blair Atholl, ... 10th December, 1903.
Rutherford, Andrew, Superintendent, G.P.O., ... 13th April, 1916.
Rutherford, William, 28 Pitcullen Terrace, ... 5th March, 1885.

Scott, Frank, Jeannie Bank, Old Scone, ... 8th February, 1912.
Scott, Miss Ina, 9 Ballantine Place, ... 8th March, 1900.
Scott, William M., 4 Sealsbank, Bridge of Earn, ... 12th December, 1901.
Scott, Alexander, Beulah, Jeanfield, ... 27th June, 1914.
Shepherd, Miss, 16 Queen Street, Craigie, ... 12th December, 1912.

Shepherd, Miss M., 16 Queen Street, Craigie,... ... 13th December, 1900.
Simpson, J. J., Estate Office, Dupplin, ... 14th January, 1915.
Smart, Miss, Rockbank, Kinnoull, ... 10th January, 1895.
Smart, Edward, B.A., B.Sc., F.R.S.E., Perth Academy, 14th November, 1895.
Smith, Alexander, Claremont Villa, Kinnoull, ... 14th February, 1901.
Smith, David, Meadowbank, Needless Road, ... 10th February, 1916.
Smyth, J. Ross, Laggan, Clyde Place, ... 9th March, 1905.
Smythe, Col. D. M., Moulin Almond, Almondbank, ... 13th April, 1882.
*Somerville, Rev. J. E., B.D.—Summer Address, Castellar, Crieff; Winter, Villa Jeanne, Mentone, 10th December, 1896.
Speedie, Alexander, 48 Tay Street, ... 8th December, 1904.
Steel, J. Sydney, 1 Rosemount Place,... ... ... 12th April, 1894.
Stewart, C. Parker, M.B., C.M., B.Sc., 13 Marshall Place, ... 13th December, 1900.
Stewart, James, L.D.S., 19 Princes Street, ... 5th January, 1882.
Stewart, John, High School, Falkirk,... ... ... 9th May, 1889.
Stewart, J., Craigie Road, ... 8th December, 1898.
Stewart, Miss M. N., Caledonian Road School, ... 14th February, 1907.
Stirling, Robert, M.D., F.R.C.S.E., 4 Atholl Place, ... 13th February, 1890.
Sturrock, Dr. J. P., Craigknowe, Biggar, ... 9th December, 1909.
Stuart, Dr. C. C., Woodside, Balhousie, ... 14th April, 1910.
Sutherland, Donald, M.A., The Schoolhouse, Scone, ... 11th December, 1902.
Syme, Bruce, Muirton Bank, Balhousie, ... 10th January, 1901.

Thom, Andrew, Auburn Cottage, Feus Road, ... 8th April, 1915.
Thomson, Andrew, M.A., D.Sc., F.R.S.E., 17 Riselaw Road, Edinburgh, ... 13th November, 1890.
Thomson, R. Gloag, Wellbank, Kinnoull, ... 9th January, 1902.
Trotter, Alexander, M.B., C.M., Tayview House, Tay Street, ... 14th January, 1904.
Turpie, James, Depute-Town Clerk, City Chambers, ... 8th February, 1900.

Valentine, George, The Knowe, Craigie, ... 9th March, 1917.
Valentine, George P., Glendalough, Needless Road, ... 10th December, 1914.

Waldron, Major P. J., East Haugh, Pitlochry, ... 16th July, 1915.
Walker, Dugald, Northern District School, Balhousie,... 13th February, 1902.
Walker, William, The Glebe, Kinnoull, ... 12th April, 1918.
Watson, Robert R. B., 27 Pitcullen Terrace, ... 10th December, 1903.
Watson, William, Strathview, Glasgow Road, ... 10th January, 1895.
Watt, John, M.A., Perth Academy, ... 7th April, 1904.
Wells, J., Burnbrae, Scone, ... 9th April, 1914.
Wells, William, 3 Scott Street, ... 10th April, 1913.
White, J. Martin, Balruddery, by Dundee, ... 2nd March, 1882.
Whyte, A. F., ... 14th April, 1910.
Wilson, Andrew L., Myrtle Road, Scone, ... 8th April, 1915.
Wilson, David J., J.P., 11 King's Place, ... 13th December, 1894.
Wilson, Mrs., 11 King's Place, ... 9th March, 1899.

Wilson, Duncan K., M.A., Perth Academy, ...	10th December, 1914.
Wingate, A. K. P., Seahacrine Cottage, Dungarvan, Waterford Co., Ireland, ...	14th December, 1917.
Winter, James, 4 Rosemount Place, ...	12th January, 1893.
Winter, Mrs., 4 Rosemount Place, ...	9th April, 1914.
Wood, John, Rio Villa, Kinnoull, ...	11th April, 1889.
Wood, W. J., Murrayville, Kinnoull, ...	9th March, 1917.
Wotherspoon, Archibald U., 1 Dupplin Road, Bridgend,	11th March, 1915.
Wright, Robert D., 30 Balhousie Street, ...	4th March, 1886.
Wylie, J. W., Springbank, Glasgow Road, ...	9th December, 1915.
Young, Rev. D. G., B.D., The Manse, Moneydie, ...	12th December, 1901.
Young, George C., M.A., Croft Lodge, Queen Street, Craigie, ...	10th December, 1903.
Young, George P. K., A.R.I.B.A., Union Mount, Glasgow Road, ...	2nd May, 1872.
Young, W. Cochrane, 13 Rose Terrace, ...	7th December, 1882.

ASSOCIATE MEMBERS.

Bisset, John, 4 Hillyland Crescent, ...	8th April, 1915.
Carson, Alexander, Stanley Villa, Feus Road, ...	12th April, 1918.
Innes, David, 20 Strathmore Street, Bridgend, ...	10th November, 1904.
Rattray, J. P., 89 Main Street, Bridgend, ...	14th April, 1898.
Wylie, William, 17 Commercial Street, Bridgend, ...	12th March, 1896.

ERRATUM.

In the list of the sixteen Original Members of the Society (*Proc.*, Vol. VI., Part IV., p. clxviii) the following mistake occurs :—

(11) T. Berry should be

(11) T. Brady.

ABSTRACT OF ACCOUNTS for Year ending 28th February, 1918.

INCOME.

Subscriptions, ...	£78	6	6
Life Member, ...	5	5	0
Donation for Prizes, ...	4	0	0
Bank Interest, etc., ...	5	15	0
	£93	6	6

EXPENDITURE.

Heating, Lighting, etc., ...				£20	0	0
Fire Insurance, ...				0	16	3
Janitor, ...				6	10	0
Subscriptions to other Societies, ...				1	1	0
Printing and Stationery, ...				34	11	1
Books and Magazines, ...				12	0	3
Sundries, ...				7	4	11
				82	3	6
Debit Balance from last Account, ...				0	9	6
Balance in hand—						
Bank Account, ...	£9	1	8			
Due by Treasurer, ...	1	11	10			
				10	13	6
				£93	6	6

PERTH, 5th March, 1918.—Examined, compared with the Vouchers and found correct.

(Signed) J. MORISON,
GEORGE F. BATES, } *Auditors.*

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1917.

MONTH.	BARO-MET'R	AIR TEMPERATURE.									HYGRO-METER.			RAIN.					SUNSHINE.		WIND DIRECTION.								REMARKS.
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Mean of		Mean of A and B.	Difference from Average.	Absolute Maximum. and Minimum.				Ground Frost, 32° and under.	Mean at 9 a.m. and 9 p.m.			Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.	Total Amount.	Daily Average.	Number of Observations at 9 a.m. and 9 p.m.								
		Maximum. (A).	Minimum (B).			Maximum.	Day of Month.	Minimum.	Day of Month.		Dry Bulb.	Wet Bulb.	Humidity.								N	N E	E	S E	S	S W	W	NW	Calm or Variable.	
	Inches.	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches.	In. Date.	Hours.	Hrs.									
JAN.	29·957	39·0	31·5	35·5	—1·7	53	3	22	5	27	35·1	34·2	91	15	+0·7	1·30	—1·21	·23 10	20·5	0·66	10	3	17	8	1	17	2	4	0	
FEB.	30·104	41·8	29·2	35·5	—2·1	51	26	12	13	22	34·5	33·4	88	7	—5·7	0·70	—1·57	·40 20	72·1	2·58	6	4	2	6	4	17	9	5	3	Tay frozen, 6-7.
MAR.	29·795	43·7	29·1	36·4	—3·7	55	24	5	9	27	36·5	34·5	83	20	+5·8	2·73	+0·24	·90 10	118·3	3·82	5	2	11	4	4	26	5	5	0	Tay frozen, 9.
APR.	29·822	48·7	33·6	41·2	—3·3	63	22	19	1	17	41·5	38·4	77	13	+1·4	1·49	—0·29	·30 13	131·3	4·38	1	7	4	4	4	22	4	14	0	Snowstorm, 3-5.
MAY	30·027	57·7	40·9	49·3	—0·5	74	4	28	6	4	49·3	47·7	89	15	+2·0	2·15	—0·07	·35 14	134·2	4·33	0	4	21	10	8	13	4	1	1	Thunder storm, 27.
JUNE	29·958	63·5	46·8	55·2	—0·5	70	10	36	30	0	55·0	52·2	82	10	—0·6	1·86	—0·11	·59 20	202·6	6·75	2	1	11	5	6	25	6	4	0	
JULY	30·038	68·5	48·9	58·7	+0·3	78	24	39	1	0	59·0	56·2	83	8	—5·5	1·18	—1·71	·50 18	197·2	6·36	6	1	13	9	5	15	8	5	0	
AUG.	29·594	66·8	52·1	59·5	+2·2	76	7	42	31	0	58·1	56·1	87	19	+2·7	5·67	+2·30	·77 14	112·8	3·64	8	2	10	11	12	13	4	2	0	
SEP.	29·843	62·6	46·4	54·5	+1·2	71	7	35	10	1	54·2	52·2	86	18	+4·6	1·11	—1·12	·40 13	109·4	3·65	0	4	0	1	1	43	7	4	0	
OCT.	29·526	50·4	35·9	43·2	—3·2	60	2	22	7	16	43·0	40·8	83	24	+8·5	2·77	—0·08	·50 7	97·8	3·15	9	0	0	3	12	24	6	2	6	
NOV.	29·846	50·1	38·1	44·1	+3·0	60	21	27	25	10	44·2	41·9	82	20	+4·8	2·99	+0·18	1·00 5	57·4	1·91	4	1	0	0	6	38	7	2	2	
DEC.	30·123	41·5	29·5	35·5	—2·0	55	5	10	22	19	34·2	33·2	89	15	—2·2	1·89	—1·34	·82 19	32·8	1·06	2	0	1	4	7	27	7	13	1	Aurora Borealis, 16.
YEAR	**29·886**	**52·9**	**38·5**	**45·7**	**—0·7**	..	..	..	..	**143**	..	..	**85**	**184**	**+15·5**	**25·84**	**—4·59**	..	**1286·4**	**3·52**	**53**	**29**	**90**	**65**	**70**	**280**	**69**	**61**	**13**	
Highest	**30·620**	25 iv.				**78**	24 vii.			**27**			**91**	24	Oct.	**5·67**	Aug.	**1·00** 5 xi.	202·6 June 20·5 Jan.	6·75 June 0·66 Jan.						**280**				
Lowest	**28·738**	24 x.						**5**	9 iii.				**77**	7	Feb.	**0·70**	Feb.					**29**								

Averages are for the period 1883-1912—30 years.

Height of Station above Sea Level = 85 feet.

Position—56° 23′ N. Lat., 3° 25 W. Long.

BAROMETER.

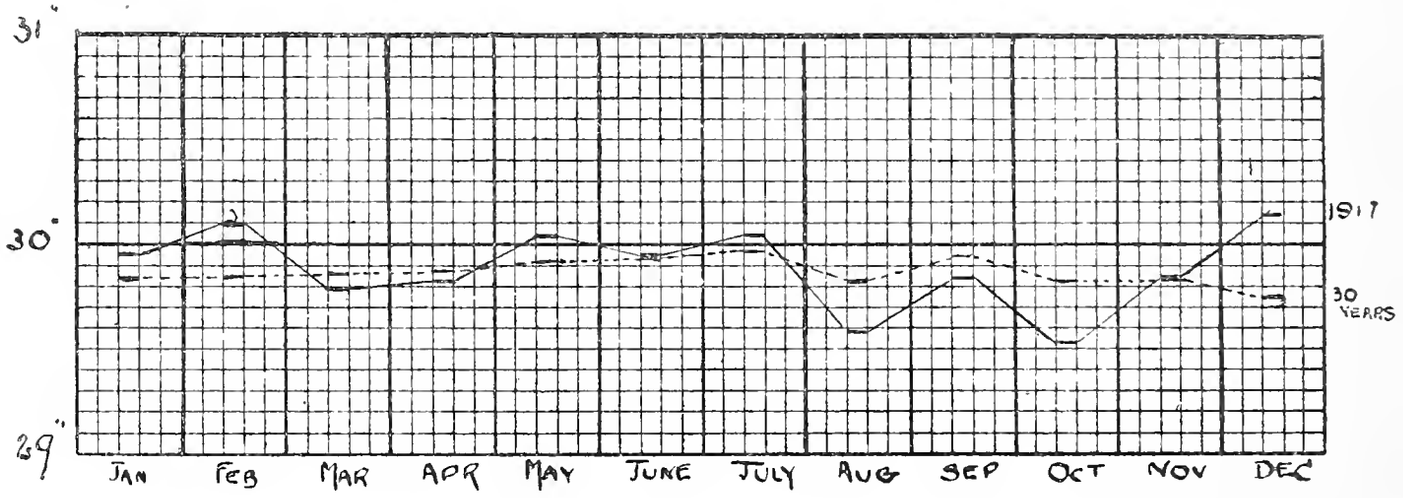


Plate XXXII.

Mean Monthly Readings at Perth, 1917———

Average of Monthly Readings, 1883-1912.....

RAINFALL.

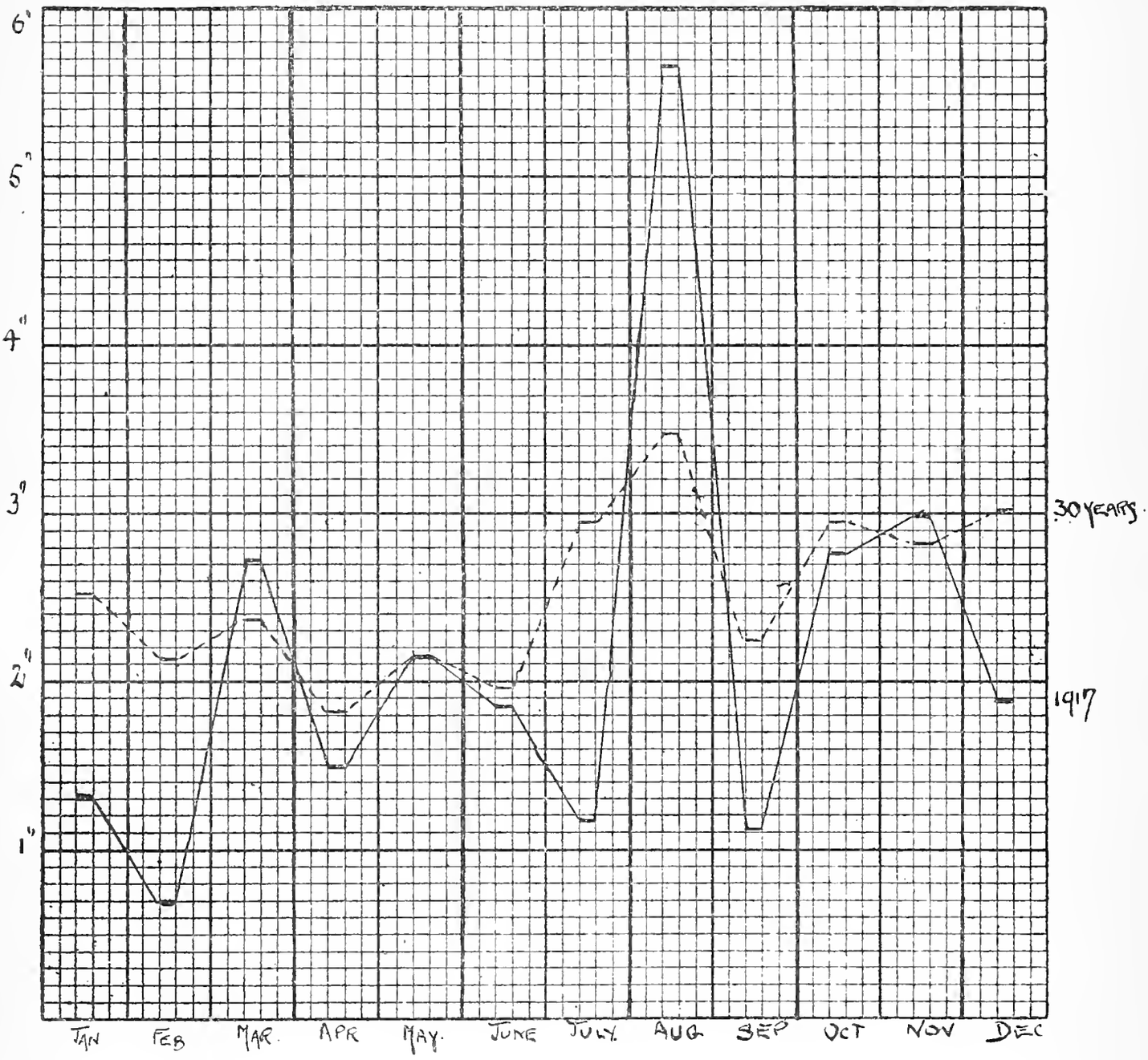


Plate XXXIII.

Monthly Rainfall at Perth, 1917————

Average Rainfall at Perth, 1883-1912.....

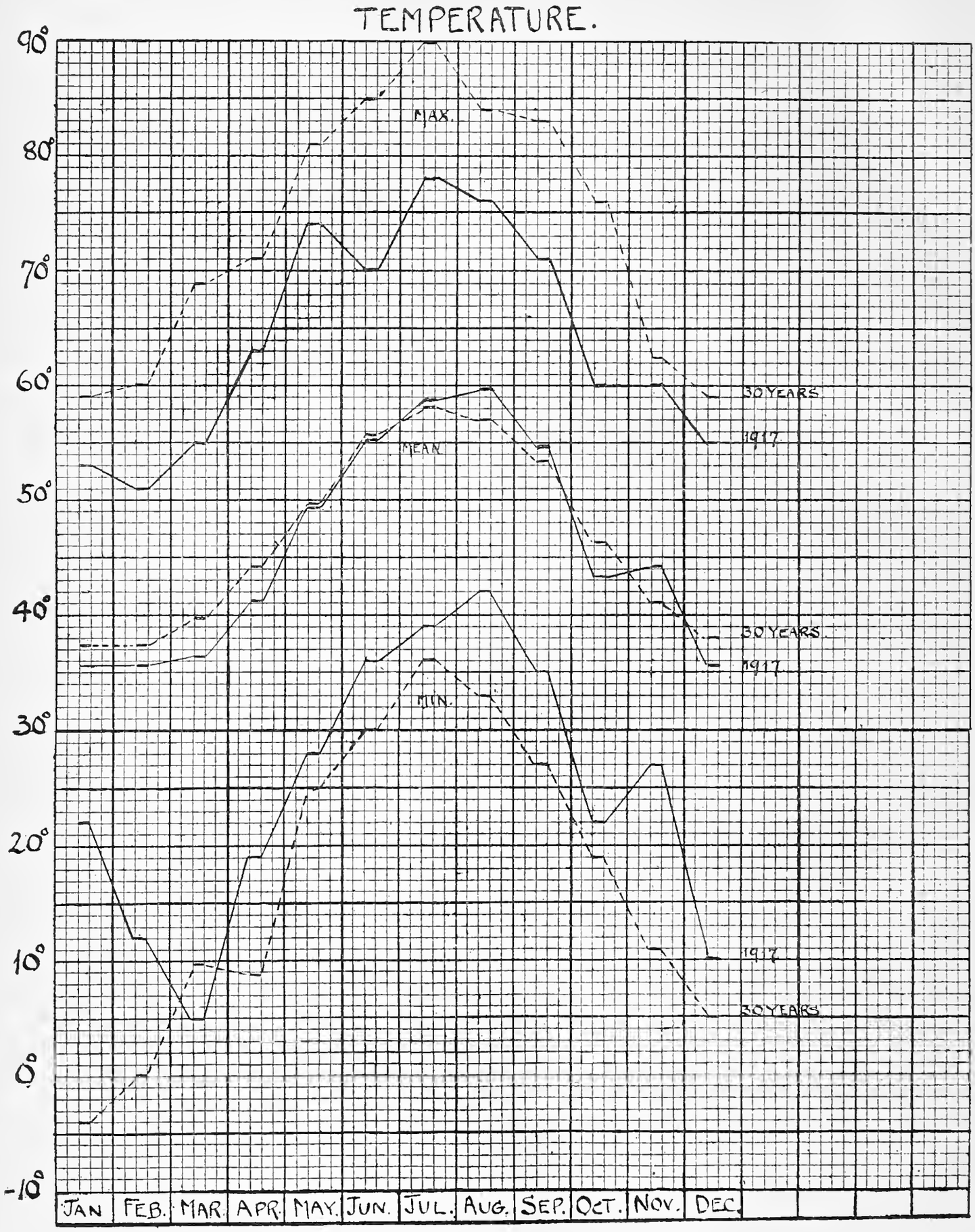


Plate XXXIV.

Maximum, Minimum, and Mean Monthly Temperature at Perth, 1917———

Maximum, Minimum, and Average Mean Monthly Temperature at Perth, 1883-1912. . . . .

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