PROCEEDINGS

OF THE

PERTHSHIRE SOCIETY OF NATURAL SCIENCE.

PROCEEDINGS

OF THE

PERTHSHIRE

SOCIETY OF NATURAL SCIENCE

VOLUME V.

1909 TO 1914.

PERTH:

PUBLISHED BY THE SOCIETY,
AT THE PERTHSHIRE NATURAL HISTORY MUSEUM.

1914.

MILLER AND SMAIL, PRINTERS, PERTH.

INDEX.

CONTENTS.

SUBJECT INDEX.

TITLES OF PAPERS READ BUT NOT PUBLISHED.

SPECIES MORE SPECIALLY NOTICED.

EXCURSIONS.

CONTRIBUTORS.

OBITUARY NOTICES.

ILLUSTRATIONS.

MAPS.

PROCEEDINGS

OF THE

PERTHSHIRE SOCIETY OF NATURAL SCIENCE.

WINTER SESSION, 1908-1909.

12th November, 1908.

W. BARCLAY, President, in the Chair.

The President moved the following resolution regarding the recent death of Mr. Duncan Macnaughton, and it was unanimously carried:—

> "That the Secretary be instructed to record in the minutes and convey to Miss Macnaughton and the other members of the family the sympathy of the members of the P.S.N.S. with them in their bereavement, and the Society's sense of the loss which Ornithological Science in Scotland has suffered by the death of Mr. Duncan Macnaughton."

The President then delivered the following Opening Address:—

LADIES AND GENTLEMEN,—At the beginning of another winter session I am glad to be able to say that our Society has had a very successful series of excursions during the summer, and that our programme for the winter gives promise of a number of useful and interesting papers, which should make our meetings highly profitable to our members. It is now well on for forty-two years since the Society was founded by 14 gentlemen, all of whom, except one, have now departed this life. That one, Mr. Jas. M'Farlane, I had the pleasure of meeting here a short time ago. He was the first Curator of the Society; afterwards acted as Secretary for a year, and subsequently was elected one of its Vice-Presidents. Although for long years resident in Inverness, he still takes a keen interest in the progress of the Society, and has of late years paid more than one visit to the Museum. On this occasion he brought with him and left behind him a scroll minute book of the proceedings of the Society during the first two years of its existence, two busy years of struggle and stress, during which, however, the foundation was securely laid of what has now become one of the most useful institutions of the

City of Perth. The first ordinary meeting was held in a room of King James the Sixth's Hospital, but for the rest of that period the meetings took place in the Glovers' Hall, in George Street. At least one Council meeting was held in Cottrell's Inn, rather a dubious place, perhaps, for the Council of a scientific society to meet in, but at least it could be said that they met under the shadow of the kirk. From the first Annual Report, we learn that 15 papers had been read during the year, most of them by resident members. The subjects bore chiefly upon the Natural History of portions of the county, such as "The Botany of Ben Lawers," "The Botany of Methven Bog," "The Entomology of Craigie," and "Animal Life in Moncreiffe Pond." It is to be regretted that these papers have not been preserved, as they would have been of much interest and utility to present working members. Another paper by Mr. John Stewart had for its subject "The Death's Head Hawk Moth," an insect which has been found several times in the neighbourhood this autumn, and it would have been highly interesting to have had a record of what a competent observer like Mr. Stewart had observed during his time of its occurrence in the neighbourhood. During its first year the membership of the Socicty increased from 14 to 39 ordinary members.

In the second Annual Report it is stated that the membership had increased to 64, that ten papers had been read during the year, and besides these, that a lecture had been given by an honorary member, Dr. Brown, of Haddington, on "The Dessication of Africa." The subjects of those papers took a wider range than those of the first year, but all were on subjects of Natural Science. As this is the beginning of our winter session, one sentence may be quoted from this report, "The Council desire to urge on members the advantages of these monthly meetings, and the courtesy they owe, at least by attendance, to those gentlemen who take the trouble of preparing and reading papers for their benefit."

During the first year only two excursions were held, one to Kinnoull Hill and the other to Invermay, and both seem to have been spoiled by bad weather. Probably more would have taken place had not the President been busy in Rannoch all the summer. During the second year six short excursions were held to such places as the North Inch and Quarrymill, the most distant one being to Kinfauns. The President spent this summer in Ross-shire, as a paper communicated by him was read at the August meeting, entitled "Notes of an Entomological and Botanical Excursion to Ben Wyvis."

It is to be observed that during these years monthly meetings were held during the summer, at which one of the members gave an account of the excursion which had taken place during the previous month. That plan was, I suppose, not found to be successful, and was afterwards discontinued. Nor do I think it would be more successful now, but, if it could be arranged that the gatherings made during a Saturday excursion could be exhibited in the Lecture Room on an early evening of the succeeding week, and that at a stated hour a member would attend and give some conversational account of

them to all who chose to come, such a plan might be found attractive as well as profitable to many who are unable to attend the excursions. This, if it could be done, would not in any way interfere with the exhibitions of common plants which Mr. Rodger has so successfully carried on during the last two or three seasons, but would, I think, tend to make them still more attractive.

I shall now proceed to give some account of the excursions of the past summer :—

The first of these took place on the 23rd of May, to the grounds of Meikleour. Its object was chiefly the study of bird-life, under the leadership of the late Mr. Duncan M'Naughton. From Cargill Station we walked along the road till we came to the policies, then turning east we crossed the Tay by the new bridge, stopping to admire the fine view up and down the river from over its parapets. The day was delightful; balmy, bright, and invigorating. We spent some time amid the ruins of the castle, or rather the fort of Kinclaven, trying, not very successfully, to make out what like it had been in the days of its strength, and recalling the story of its capture by Wallace, and how he destroyed it by fire to prevent its being again occupied by the Southrons. Re-crossing the bridge, we had a delightful walk through the policies along the bank of the river, amidst primroses, cowslips, the lovely white star-wort, the cuckoo flower, the wood cress, the anemone, and other spring flowers. Many noble trees attracted admiration. Birds were not numerous, but Mr. M'Naughton showed us several interesting nests. At the upper end of the policies on the flats by the side of the river we saw the goosander and the ring plover, and on the gravel beds several nests of the oyster-catcher. A swan, disturbed at our approach, went splattering over the shallows till she managed to rise into the air, and for a long distance we watched her strong though heavy and somewhat clumsy flight. Leaving the river we returned to the station by road.

On Victoria day we journeyed by rail to Comrie, and thence drove up Glen Lednock. The day was fair and fine, though the wind was somewhat cold. Part of the members preferred to walk by the side of the stream as far as the Deil's Cauldron. On the way amongst other plants observed was the curious birds' nest orchid, which, though a widely spread, is by no means a very common plant. The thickly wooded slopes of the gorge clothed in "nature's rokelay green" delighted the eye. The trees, except the ash, were now in full leaf, though the oaks still kept the brownish tint which marks the young leaves when newly unfolded from the bud. After leaving this romantic gorge we drove up the Glen, which now becomes bare, but affords some fine views of distant mountains. A short halt was made at a spot where a footbridge crosses the stream, and where our leader, Mr. Bates, pointed out to us a fine exposure of diorite, one of the rocks which enters into the very complex geological structure of the Glen. At Innergeldie we left our brakes and proceeded on foot to Spout Rollo, where the stream after leaving the schists falls over an

intrusive mass of a dark-coloured rock of intense hardness called Gabbro, forming a very picturesque cascade. It is quite bare of trees, though fringed above and below the fall by willow bushes. The ledges at the base were gay with the golden balls of the globe flower, and a few other plants of a sub-alpine character were gathered on the rocks, the mountain sorrel, the alpine lady's mantle and the yellow saxifrage. After spending two or three hours here, which passed all too quickly, we walked back to Innergeldie and thence drove to Comrie.

The next excursion took place on the 20th of June to St. Madoes and Pitfour. We were again favoured with a fine bright day. At St. Madoes Church we examined and admired the fine sculptured cross, the pride of the place. It is a fine example of the best period of the art, but nothing is known of its history. We were sorry to see that it is weathering fast. It is a pity that it is not put under cover, so that it may be preserved as much as possible from further decay. In a cottage garden not far off a curious boulder, known locally as the Hawk's Stane, was examined. It is apparently a block of mica schist, evidently what is known to geologists as a "travelled boulder." We then spent a short time in Clashbennie Quarry. This quarry of the upper old red sandstone was made famous during the first half of last century by the discovery of many interesting fossils, but as the quarry has long ceased to be worked, and is choked up with rubbish, all that we could do was to make a superficial examination of the strata. Next we paid a visit to the Pitfour Brick Fields, where a thick and extensive bed of Carse clay has long been worked. A search for fossils here proved fruitless, though, at an excursion of the Society in the beginning of 1869 to the kindred beds at Errol, many glacial shells were obtained. There is, however, no record of any having been got at Pitfour. On leaving the clay beds we had a pleasant walk through the woods to the bank of the Tay and thence returned to Glencarse by Cairnie.

On the 4th July the Annual Mountain Excursion of the Society took place. On this occasion we journeyed once more to Ben Laoigh, well known for its botanical riches. The railway authorities kindly stopped the train about half way between Tyndrum and Dalmally, which brought us within about a mile from the base of the hill. Some of the party chose to go to the summit, a stiff climb, but well rewarded on a clear day by the magnificent view from the top. On this occasion, however, the landscape was veiled by a haze which prevented any extensive view, though in other respects the day was highly favourable for mountain climbing. Most of the botanists preferred to work the lower ledges, where most of the rarities of the mountain are to be found. These ledges are formed of a kind of mica-schist, rich in lime, which weathers down into a moist soil peculiarly favourable for the growth of plants. Most of the rarer plants were seen, though several of them, such as *Pyrola rotundifolia* and *Pyrola secunda* were either not in flower or much scarcer than on previous visits. The scattering of the members and the limited time at our disposal prevented the usual meeting of the Mountain Club, but all enjoyed the day spent on the mountain.

On the 25th July the place fixed for our excursion was Aberfoyle and Loch Ard. Our visit to this district the previous year was well remembered, and, as the morning of the 25th was threatening, only two members turned up at the General Station. These two, however, are not particularly afraid of bad weather, and so after a short consultation they resolved to risk it and go. Arrived at Aberfoyle, we found that there had been heavy rain the previous day, and that the waters were in flood. Thinking, however, that the clouds must by this time be pretty empty we went on our journey. On emerging from the village the road on one side is fringed with handsome villas, backed by a long ridge of high slaty cliffs. Here we were accosted by a man whom we overtook, and who, seeing our tin box, said, "Are you gentlemen botanists?" "Well, we do a little in that line," was the reply. "Oh, I wish you would come and look at a plant in my garden and tell me what it is." "We shall be very pleased to do so, but we do not profess to know garden plants. If it were a wild plant probably we should be able to recognise it." "I got it growing in a potato field, and thought it so curious that I transferred it to my garden, where it has thriven well." "Very well, we shall be glad to look at it at all events." We soon arrived at a neat cottage, with a nicely kept garden around it. Here we were glad to be able to tell the owner that his plant was the Caper Spurge, *Euphorbia Lathyris*. It belongs to a family with milky juice, usually acrid, and with greenish or yellowish flowers of a very peculiar structure. It is doubtfully native in any part of Britain, though occasionally found, at least in England, more or less naturalised. How it came into the potato field I cannot imagine. Proceeding on our way we passed through the famous Pass of Aberfoyle, and along the edge of Loch Ard, taking note of that celebrated spot where the immortal Bailie Nicol Jarvie once swung by the coat-tails from the branch of a tree overhanging the waters of the lake. On the way we fell in with some plants of *Agrimonia odorata*, the best find of the day. As the loch was much above its usual level we could not see what aquatic plants grew in its shallows, but from the character of the Loch I doubt if we lost much on that account. We turned aside from the road and spent some time in exploring and admiring a series of picturesque waterfalls known by the name of the Falls of Ledard. Up to this time the day had been dull and somewhat misty, but now it began to clear, and soon the sun shone out and brightened up the landscape. Turning the head of the Loch, we ascended the opposite side, and from this point had a magnificent view of the Loch and the whole district. Leaving the Loch we climbed up a sort of saddle, and striking the road made by the Glasgow Corporation during the construction of the conduit which carries the waters of Loch Katrine to the great city of the West, we crossed into the valley of the Duchray, one of the streams which go to constitute the River Forth. The vegetation consisted chiefly of common enough plants of the hill moor. Following the road through the fine scenery of this valley, we crossed the dark waters of the river and returned to Aberfoyle.

On the 8th of August we paid a visit to Loch Marlee. This is well known chiefly by the labours of the late Abram Sturrock, a

former member of our Society, for its wealth of pond-weeds and other aquatic plants. The day was pleasant enough, but a strong wind, blowing in the wrong direction, made the task of searching and collecting a very difficult one. Most of the rarer pond-weeds, however, were got, and amongst other aquatics, *Nais flexilis* in small quantity, and *Elatine hexandra*, a diminutive flowering plant which carpets the mud in large patches in the shallow water of three or four of the lochs of Perthshire. Those who took turns in rowing the boat had rather a hard task. The President, it may be stated, having had experience of similar toil on former occasions, did not himself take an oar, but very faithfully performed the arduous duty of directing and encouraging those who manfully drove the boat against the wind.

On the 28th of August, the annual holiday, we journeyed by rail to Crieff, and thence drove to Drummond Castle. We spent some time in the armoury, looking over the fine collection of weapons belonging to the old warfare and the new, some of them of great historic interest. In the picture gallery we saw the portraits of many men and women whose names, whether of good or ill repute, live in the annals of our country. From the parapets we viewed the magnificent landscape, seen in full beauty by the bright sunlight, and then paid a visit, all too short, to the celebrated flower garden. Amidst the famous parterres, glowing with a wealth of colour, we examined the fine sundial, the work of John Milne the third son of that John Milne who lies buried in Greyfriars' Churchyard. Tearing ourselves with difficulty from this delightful spot, we drove out through the policies and turned up the valley of the Machany. A short halt was made to visit a stone circle about half-a-mile from the road on the opposite side of the river. Two upright stones comprise all that remains of the circle. In a field close by is a single standing stone, a gigantic boulder. None of them were cup-marked so far as we could see. Proceeding on our way through a district somewhat bleak, but with fine views ahead of the hills of Upper Strathearn, we reached Blairinroar, and after crossing the watershed turned down the valley of the Knaik. Our way at first lay through a bare heathery moor, which gradually turned into woods and cultivation as we approached Braco. For some time a haze had been gathering over the hills, which soon reached the valley, and gradually thickening, changed into a drizzle and then into heavier rain. It lightened sufficiently, however, to allow us to inspect thoroughly the famous camp at Ardoch, and also to visit the hill fort at Grinan, new to most of us. We next drove on to Muthill, and a fair interval permitted us to examine the old ruined church, and the still older square tower of Norman architecture. Little of the church now remains except parts of the roofless walls, though it is less than a century since it ceased to be used as a place of worship. The tower, however, is in fair preservation, and its belfry still shows a window in each face, plainly of the Norman period, two of which are larger and more highly ornamented than the other two. We then returned to Crieff in time to escape the heavy rain which marked the close of the day.

On the 3rd October took place our last excursion for the season, when

we spent the day amidst the fine policies of Dupplin Castle searching for fungi. The day was fine, but a thick haze veiled the landscape. Abundance of fungi rewarded our search. The most striking, perhaps, was the beautiful white translucent agaric *Armillaria nucida*, which adorned the dead beech stumps and the trunks of decaying trees. Another delicate little gem, *Trogia crispa*, was not rare on dead branches. We encountered in our wanderings the Celtic cross which marks the site of the battle where Edward Baliol defeated the Regent Mar in 1332, and as the result seated himself as the vassal of Edward III. on the throne of Scotland for three months, when he was chased from the country by the indignant Scots. The cross is evidently much older than the date of the battle. The experts who were with us pronounced it to be one of the Irish type, rare in Scotland, and from the sculpture inferred that it belonged to a late period of the art when the work was of a debased and inferior cast. We also paid a visit to the gardens and finished up the day by partaking of open-air tea on the station platform.

Although not at any of our official excursions, several new discoveries have been made during the season. Two new species have been added to the list of Perthshire Shells. One of these, *Helix rufescens*, was found by Master W. Wylie in his father's garden. The other, *Sphaerium lacustre*, was found in the town's lade by Master Fred Smith. These two are zealous members of the junior section, and it is very creditable to them that they have been so diligent and so successful in their labours. A new plant has also been added to the Perthshire Flora, a composite allied to the dandelion, known as *Leontodon hirtum*. The discoverer is Mr. Campbell, a recruit who has for some time been zealously prosecuting the study of our native plants. On looking at Dr. White's Flora of Perthshire one would think that this is not a new discovery, as in that work it is stated that the plant is recorded in Smith's Flora Britannica of the year 1800, as having been found by Mr. Miller "in a field below the Earl of Kinnoull's seat near Perth," very nearly the spot where it has been found by Mr. Campbell.

On referring, however, to the Flora Britannica I found that there was no such record in that work, but after some trouble I found in the appendix that quite another plant *Thlaspi hirtum* is recorded as having been found by Mr. Miller at the above station. This plant, a pepperwort, which is common enough in the county, became afterwards known by the name of *Lepidium hirtum*, and under this name the same record is repeated in Smith's English Flora of 1825. It is easy to see how the mistake occurred. Dr. White had taken a note of the record as *L. hirtum* for *Lepidium hirtum*, but afterwards in reading his notes had read *Leontodon hirtum*, a plant which, no doubt, he had looked for, but never succeeded in finding, and which therefore has never, so far as is known, been found in the country by any one till Mr. Campbell's fortunate discovery.

A few more zealous recruits like Mr. Campbell, whether in Botany or any other branch of Natural Science, would be heartily welcomed.

Dr. H. R. Mill, the Society's delegate to the Corresponding Societies Committee of the British Committee of the British Associa-

tion, reported that he had attended one of the meetings of the Committee as the Society's representative.

Miss M. L. Miles, L.L.A., gave the following report of this year's meeting of the Cryptogamic Society of Scotland at Drumnadrochit :—

This year the Cryptogamic Society of Scotland held its Annual Conference at Drumnadrochit, in the third week of September, and the British Mycological Society held its Annual Foray at the same place and time.

Owing to the joint-meeting the gathering was a large one: it was the more helpful and interesting in that it brought together many, who although members of both societies, have no opportunity of meeting and interchanging ideas, except on such an occasion as this.

Drumnadrochit, as everyone knows, is situated amidst beautiful scenery, and this, together with the abundance of the fungi, made the meeting a most enjoyable one.

The President of the Cryptogamic Society for this year was Mr. Bradley Martin, of Balmacaan, and on the second day of the Conference he entertained the two societies to dinner.

The members of both societies assembled at Drumnadrochit Hotel, on Monday, September 14th, and on Tuesday an excursion was made to the woods and policies of Beaufort Castle, thrown open to the members by Lord Lovat.

The best finds here were :—

Collybia mephitica, Fr.	Sparassis crispa and S. laminosa, Fr.
Mycena rosella, Fr.	Pleurotus corticatus, Fr.

Hydnum auriscalpium, Linn, was found growing in hundreds on decaying fir-cones in a young pine-plantation at Dunballoch, and numerous groups of *Spathularia clavata*, Sacc., were also observed.

On the same day a *Tricholoma*, unknown to any of the members, was discovered. Specimens were forwarded to M. Boudier for identification. He has expressed the belief that the fungus is a new one.*

On Wednesday, Balmacaan and Divach Woods were explored, where the best finds were :—

Inocybe cincinnata and I. hystrix, Fr.	Trogia crispa, Fr.
Nolanea icterina, Fr.	Phlegmacium variicolor (Pers.)Fr.
Leptonia euchroa, Pers.	Collybia semitalis, Fr.
	Cordyceps ophioglossoides, Link.

On the evening of Wednesday both societies held their respective business meetings. Mr. Angus Grant, Drumnadrochit; Miss M. L. Miles, Perth; and Mr. Rennison, Paisley, members of the Council of the Cryptogamic Society, were appointed local secretaries for their own districts.

* This Iricholoma has been named *Iricholoma luteocitrinum*, Rea.

The Cryptogamic Society chose Stranraer for its place of meeting in 1909, while the British Mycological Society fixed on Bakewell, in Derbyshire.

Mr. Carleton Rea, of the British Mycological Society, then read his Presidental Address, "Some remarks on basidia and spores, and the classification suggested by their study." This interesting paper was afterwards ordered to be issued to the members by resolution dated the 18th of September, and was already in their hands by November 1st.

On Thursday, Borlum and Lennie Woods were visited, where the best finds were:—

Armillaria robusta, A. and S.
Pholiota flammans, Fr.
Hydnum imbricatum, Linn.
Bulgariella pulla, Karst.
Dermocybe miltinus, Fr.
Tricholoma portentosum, Fr.
Tricholoma equestre, Linn.
Lactarius sanguifluus, Fr.
Pleurotus porrigens, Pers.
Dermocybe cotoneus, Fr.
Inocybe haemacta, Berk. and Cke.
Polyporus brumalis, Fr.
Russula coerulea, Fr.
Russula delica, Fr.
Tricholoma album, Schaeff.
Pholiota erebia, Fr.
Flammula alnicola, Fr.
Cantharellus cupulatus, Fr.

Many of the members of the Cryptogamic Society left Drumnadrochit on Thursday, the Conference lasting as on former occasions for only three days, but as the Foray of the British Mycological Society always extends over a week, an excursion was made on Friday to Mr. Bradley Martin's woods, in the vicinity of the hotel. Here the best finds were:—

Cantharellus muscigenus, Fr.
Telamonia bivelus, Fr.
Mycena acicula, Schaeff.
Phlegmacium largus, Fr.
Pholiota caperata, Pers.
Hygrophorus russo-coriaceus, B. and Br.
Helvella lacunosa, Afzel.
" elastica, Bull.

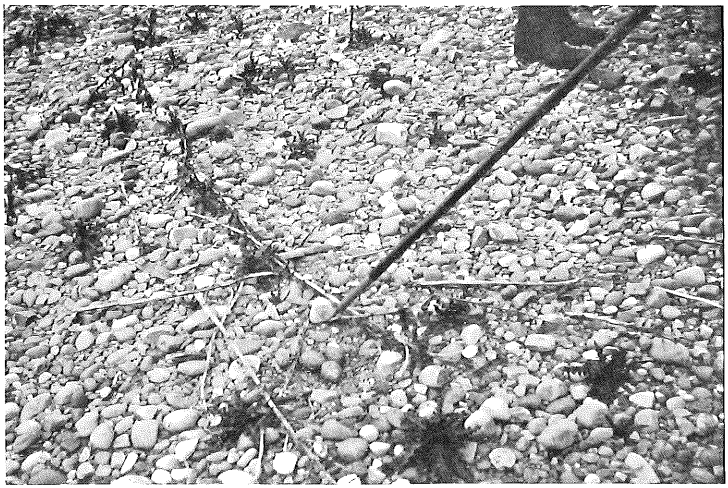
Besides the larger fungi found during the week, about 150 species of micro-fungi were collected, most of which proved to be the commoner forms.

Mr. Carleton Rea also records 16 myxomycetes as found at Drumnadrochit. Of one of these, *Cribraria pyriformis*, Schrad., he states that this is the first record for Scotland. *Dianema corticatum*, Lister, is also a good find.

For the display of the specimens found during the excursions, a cottage in the village was secured, and both before and after breakfast, and in the evenings, before dinner, the cottage was the rendezvous of the more enthusiastic of the members, and here at a small table, near a window which caught the best light, Mrs. Carleton Rea could be seen daily, engaged in painting most life-like representations of the rarest of the finds. At another window microscopes were set up, which were much in use for the examination of spores, as an aid to the identification of species.

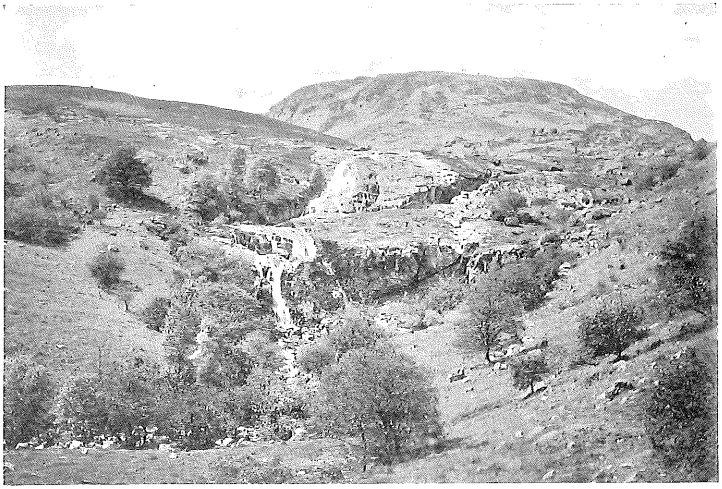
[Photo by Major Mercer.

Plate I.—Spanish Chestnut Tree, Meikleour.



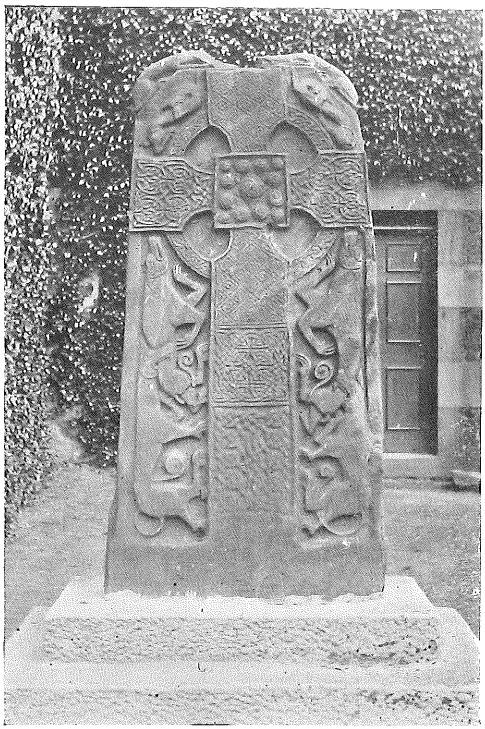
[Photo by Major Mercer.

Plate 2.—Oyster Catcher's Nest, Meikleour.



[Photo by A M Rodger.

Plate 3.—Spout Rolla, Glen Lednock.

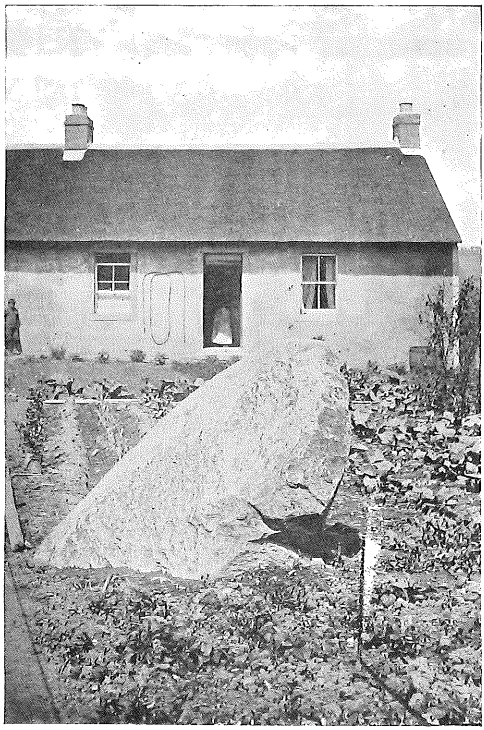


[Photo by A. M. Rodger.

Plate 4.—Cross, St. Madoes Churchyard (Front view).

[Photo by A. M. Rodger.

Plate 5.— Cross, St. Madoes Churchyard (Back view).



[Photo by A. M. Rodger.

Plate 6.—The Hawk-stane, near Cottown.

[Photo by A. M. Rodger.

Plate 7.—Clashbennie Quarry.

The Rev. J. M. Strachan, B.D., of Kilspindie, read a paper, "Ten Minutes on Birds," for which he received the hearty thanks of the meeting.

Among a number of interesting exhibits on view at the meeting were the following :—

Specimens of *Leontodon hirtum*, from Mr. D. Campbell.

Two shells, *Helix rufescens* and *Sphaerium lacustre*, new to Perthshire, found by Mr. Wm. Wylie and Mr. Fred Smith of the junior section.

Two egg-cocoons of a spider, *Meta menardi*, new to the country, taken by Mr. A. S. Reid, Glenalmond.

A specimen of the giant wood-wasp, *Sirex juvencus*, from Mr. Geo. Gray, Bowerswell.

10th December, 1908.

WM. BARCLAY, President, in the Chair.

The following paper was read :—

"The Insects of Methven Moss," by Wm. Wylie. (See *Transactions*, Vol. V., Part I., page 1.)

In the absence through illness of Sir Alex. Muir Mackenzie, Bart., who was to have read a paper on "Wild Life in Glen Tilt," a series of photographs, taken during a holiday in Switzerland, was exhibited and explained by Wm. Ellison.

14th January, 1909.

WM. BARCLAY, President, in the Chair.

A lecture on "The Climate of the British Isles" was given by Mr. Andrew Watt, M.A., F.R.S.E. The lecture was illustrated by a serie of diagrams and lantern slides.

11th February, 1909.

WM. BARCLAY, President, in the Chair.

Miss Thomas exhibited and described a rare fungus (*Peziza coccinea*) found and sent in by Mr. A. S. Reid, M.A., F.G.S., of Trinity College, Glenalmond.

The following notes have been contributed by Messrs. A. S. Reid and J. Menzies :—

NOTE ON "PEZIZA COCCINEA."

I first found this handsome Peziza in the year 1885 or 1886 in a locality on the banks of the Almond. Every year since I have visited the habitat in the months of January, February, or March, and have

usually taken up some 50 specimens, leaving as many more for "stock." I have once or twice found a specimen outside this particular spot, but only once or twice; the specimens seem confined to an area about 50 yards by 20. The Peziza is parasitic on dead and decaying branches lying on the ground. I imagined at one time that it favoured oak, but apparently it does not do so. In wet seasons it is far more prolific than in dry weather, and if the dead wood, on which it grows, is brought into the house and kept wet with damp moss round it the specimens are often quite fresh after a month has elapsed. Its period seems to be from January to March, though I once found a single specimen on October 10th. On January 24th, 1907, I brought in a single branch with 26 specimens on it. Although I had known this Peziza, in its habitat here, since 1886, it was not till the year 1907 that I was aware that it was *Peziza coccinea*, and that it had not hitherto been recorded from Perthshire. To Mr. James Menzies is due the credit of having recognised the species, and I trust he will add a note to this as to previous records of its occurrence, etc. I believe I sent a few specimens to Dr. Buchanan White a year or two years before his death. Specimens were shown at the Society's meeting on February 13th, 1908, by Mr. Menzies, and again on February 11th, 1909, by Miss Thomas.

ARTHUR S. REID, M.A. (Cantab), F.G.S.,
Trinity College, Glenalmond.

GEOPYXIS COCCINEA (Mass).

This species seems to have been first discovered in Scorland by Lightfoot, and recorded in "Flora Scotica" as *Peziza cyathiformis*.

As *Peziza coccinea* a description of the plant, accompanied by a beautiful drawing, is given in Grevelle's "Cryptogamic Flora." Found in woods, Dumfriesshire; abundant Appin, Roslin woods.

In Stevenson's "Mycologia Scotica," localities given—Tweed, Forth, Moray, Solway, Clyde, Argyle.

In Dr. Buchanan White's Preliminary List of Perthshire Fungi no mention is made of this species.

In Revision of Scotch Discomycetes by Prof. J. W. H. Trail in Vol. X. of the "Scottish Naturalist," as *Sarcoscypha coccinea* (Jacq.), the fungus is recorded from Tweed, Solway, Forth, Clyde, Tay, Argyle. Prof. Trail expressly gives Dr. Buchanan White as his authority for Fungi recorded from the Tay locality. In the absence of any mention of the plant in his Preliminary List of Perthshire Fungi, as well as in the "Transactions of the Perthshire Society of Natural Science," I do not think Dr. White found this plant himself, but simply recorded it on the strength of the specimens sent to him by Mr. Reid. At all events, it has not been found anywhere else in the county, and this station in the Glenalmond woods is our only one.

J. MENZIES.

The following papers were read:—

"Additions and Corrections to the Perthshire List of Mosses," by R. H. Meldrum, Tibbermore. (See *Transactions*, Vol. V. Part I., page 13.)

"Finger Prints and other Modes of Identification," by Dr. Lyell. This paper was illustrated by a series of lantern slides. (See *Transactions*, Vol. V., Part I., page 6.)

FORTY-SECOND ANNUAL MEETING.

11th March, 1909.

WM. BARCLAY, President, in the Chair.

Mr. J. Menzies exhibited and described an interesting fungus (*Desmazierella acicola*, Libert), contributing the following note:—

About the end of February of this year, while examining some branches of *Pinus sylvestris*, I met with this curious fungus. The branches had been lopped from some felled trees and were lying by the side of that road through Kinfauns Woods above the Deuchney Quarry. The trees had been cut about 12 months prior to this and the leaves were almost black. The fungus clustered thickly on the leaves here and there, and were in all stages of development, from tiny hedgehog like balls up to the fully expanded plant. *Desmazierella acicola* was confined to one branch, but a further search revealed some other species to be present in great abundance, *Lophodermium pinastri* (Chene), *Phacidium abietinum* (Kotze and Schmill), *Dasyscypha acuum* (Sacc. Syll.)

Specimens of all these were sent to Mr. Charles M'Intosh, at Inver, who made a systematic search of cut pine branches in that locality, with the result that he found the same fungi there, and added another which I had missed. This was *Belonidium Jerdoni* (Mass). None of these so far as I am aware have hitherto been recorded for Perthshire. In our Floras dead or fallen pine leaves is given as the habitat of all these fungi, but I think the circumstances point to the conclusion that pine leaves severed from the parent tree in the flush of growth afford fungi a richer nutrient than leaves falling from the trees by natural decay. J. MENZIES.

The following Reports were read and adopted:—

REPORT OF COUNCIL.

In presenting their Forty-Second Annual Report, the Council are pleased to say the work of the Society continues very steadily.

During the past year 6 monthly meetings have been held, at which 6 papers were read in addition to the President's opening and annual addresses, as well as a special lecture on 14th January. The Council regret the attendance has not maintained the high average of several recent years, only being 44. The largest number at one meeting was 60 on 10th December, 1908, and the lowest 35 on 9th April, 1908.

Fourteen ordinary members have been admitted, making a total membership of 382, made up of 1 Honorary, 13 Corresponding

Members, 7 Associates, 6 Associate Members, and 355 Ordinary Members.

For the summer months, 8 excursions were arranged. At most of these the attendance was very fair, and the weather being usually fine, very successful and enjoyable days were spent. The Council desire to record their indebtedness to various landed proprietors for permission for some of these excursions being carried out, and also to various other gentlemen for their services as leaders, or in other ways contributing to the success of these excursions.

Your Council also desire to express their thanks to Mr. Andrew Watt, M.A., F.R.S.E., of the Scottish Meteorological Society, for giving a most instructive lecture on "The Climate of Scotland," on 14th January last.

Various Educational Societies have again had the use of the Lecture Room for meetings, and a very successful and well attended course of lectures on Horticulture was given by Mr. G. P. Berry, Lecturer in Edinburgh and East of Scotland College of Agriculture. It is proposed to have a second course next winter.

During the winter the Photographic Section have held three very successful and interesting meetings, and a series of summer excursions is to be arranged. Those interested and wishing to join should give their names to the Secretary, Mr. Henry Douglas.

For the Children's Essay Competition on "The Teeth of different Animals and their Uses" 61 essays were sent in. These have now been adjudicated upon, and the prizes are to be presented to the successful competitors by Rev. G. A. F. Knight, M.A., F.R.S.E., on Saturday, 20th March, at 3 p.m. The subject for this year's competition is "Four Perthshire Birds."

REPORT OF TREASURER.

(See Balance-Sheet, page xxxix.)

REPORT OF LIBRARIAN.

As time passes the number of volumes in the library steadily increases, and the problem of accommodation becomes more difficult to solve. After relegating to the back premises of the Museum a large pile of bulky volumes very rarely in use, the space thus set free has again become fully occupied, and within the last few weeks it has become necessary to add a further range of shelving extending to the ceiling.

The total number of volumes has now reached 2960, of which 1848 are in the Lending, and 1112 in the Reference Department. 96 volumes have been added during the year, including gifts, purchases, exchanges, and magazines bound. All donors are cordially thanked.

49 readers have taken books from the Lending Library and 227 works have been taken out. The Reference collection continues to be largely made use of on the spot principally by the scientific workers, but all members of the Society are free at all times when the Library is open to consult the many valuable works it contains.

REPORT OF EDITOR.

The fifth and concluding Part of Vol. IV. of the Society's *Transactions and Proceedings* was published in November 1908, and duly issued to members, as well as to the various scientific institutions and societies whose publications are received in exchange. Favourable notices appeared in a number of scientific papers. The Editor's thanks are due to his predecessor, Mr. Barclay, for much valuable assistance, especially in connection with the indexing of Vol. IV.

The following Office-Bearers were elected :—

President—Wm. Barclay.

Vice-Presidents—Major Mercer, J. S. Grant, W. Steuart Fothringham, J. Craigie.

Hon. Secretary—S. T. Ellison.

Hon. Treasurer—A. W. Brown.

Hon. Librarian—James Coates.

Hon. Curator—A. M. Rodger.

Editor—G. F. Bates, B.A., B.Sc.

Councillors—R. B. R. Watson, James Stewart, J. Morison, T. G. Laidlaw, M.B.O.U.

The President then delivered the following address on "Afforestation in Scotland" :—

LADIES AND GENTLEMEN,—During the last quarter of a century strong efforts have been made to direct public attention to the neglect of scientific forestry in Britain, to the small amount of home-grown timber coming into the market compared with the immense quantity which we import from abroad, and to the fact that, if matters were managed as they ought to be, we could grow this timber at home of quite as good quality, and that we could do this profitably on land which is at present worth little or nothing. These efforts have not been altogether fruitless, but progress has been very slow, and hardly any practical step has been taken on the part of the nation in the way of planting our large area of heath and mountain land. It is to be hoped, however, that the report of the Royal Commission on Afforestation which was issued last year will cause matters to proceed more quickly, and that their recommendations will be carried out without undue delay.

From foreign countries we import every year about eight and a half million tons of timber. This does not include teak, mahogany, and other fancy woods which cannot be grown in this country, but consists solely of coniferous woods, and of others, such as oak, which can be produced equally well at home. Our home production has been estimated at about two million tons, so that it can easily be seen to what a large extent we are dependent on other countries for our supply of common timber. Of the total area of the United Kingdom

only about four per cent. is under wood, and this is the lowest percentage of any European country except Portugal. It may be said, therefore, that in proportion to our area, we consume more and produce less timber than any other country in Europe. Moreover, not only is our supply of home timber sadly deficient in quantity, but in quality it is also inferior to what we import from other countries. This does not result from any inferiority of our soil or climate, which are quite as suitable for growing timber as those of any European country, but solely from lack of skill and good management. Even where the ground at first received a sufficient stock of young plants, and this was not always the case, no care was taken in most instances to fill up gaps caused by failure to grow in the first five or six years after planting. But the greatest mischief has been caused by thinning too early and thinning too much, so that the trees developed side branches too low down, with the result that the timber became full of knots, the bole became too short and tapered too much from root to crown. In many cases too, the best trees were cut down in the process of thinning, as they would sell better, and the inferior ones left, so that when the wood was ready for the final cutting there were far too few trees upon the ground, and these not of the best quality. Often, also, the welfare of the woods was sacrificed to the interests of sport, for it is impossible for a plantation to thrive if ground game, and especially rabbits, obtain admittance. These not only kill off many of the young trees by stripping off their bark, but spoil the timber even of those which do not succumb to their ravages. Witnesses, speaking from dear bought experience, declare that where rabbits are numerous it is hardly possible to keep them out, even by the most elaborate system of fencing. In fact, rabbit protecting and good forestry cannot exist together.

There are many other points in which the management of British forests has been faulty, but from what I have said it must be plain that forestry in Britain has not been so profitable as it would certainly have been if conducted on a better system. But one other defect must be pointed out. To be sure of obtaining even the market price for timber it is necessary that a proper system of rotation be followed, so that the owner of a forest may have a certain quantity of timber to dispose of annually, and which the timber merchant can rely upon getting. But it has usually been the case that an owner has a large quantity to dispose of one year and none at all perhaps for several succeeding years. The consequence is that the timber merchant has to look to imported timber, a regular supply of which he can depend upon, and if he offers at all for the large supply which the home grower has occasionally to dispose of, he will only offer for it at a reduced rate. This shows that forestry, in order to pay as it ought to do, must be carried on upon a pretty large scale and on a regular rotation system. All this leads to the conclusion that what we need in Britain is—1st, sufficient facilities for proper training in modern forestry; and 2nd, a very large extension of the area at present under wood, the planting on a large scale of our moors and hillsides, and perhaps also of a good deal of the poorest agricultural or pasture land, which at present yields but a small return, and which would be much more profitable under a crop of trees.

In the providing of means for instruction in forestry, something has been done during the last few years. Forestry departments have been instituted in our agricultural colleges, where sound instruction has been given. Short courses of lectures at various places throughout the country, such as we had in Perth a short time ago, have done a good deal in the way of opening the eyes of foresters and others to the defects of our present system or want of system, and have awakened in them the desire for further enlightenment. In connection with Edinburgh University and one or two of the English Universities, lectureships on forestry have been established. These have been attended chiefly by landed proprietors, estate agents, and by those who wish to qualify themselves in the higher departments of the science, forest botany, geology and entomology, surveying and the laying out of forests, the forming of working plans, the economics of forestry, and so on. But the efforts of the lecturers have been sadly crippled by not having in their neighbourhood a suitable and sufficient forest area for the practical illustration of their teaching, so that those who wish to qualify themselves thoroughly in the subject must still go to the Continent to complete their education. Again, at the Forest of Dean in England and at Avonmore in Ireland, forest schools have been established by the Government for the training of students in the various operations of forestry, the proper methods of planting, thinning, etc., and to give them also some knowledge of the various diseases to which trees are subject from the commoner fungus and insect pests. These schools are intended to train skilled foresters, and to fit them to become foremen and managers. But even these are also, I believe, not very well furnished with such a sufficient area of actual forest as is desirable. No such school has yet been established in Scotland, but the Government has lately acquired the estate of Inverliever, by the side of Loch Awe, in Argyllshire, for the purpose of carrying out a scheme of afforestation on scientific lines. Possibly a forestry school may be established there, although the woods at present on the estate are not supposed to be very suitable for that purpose. But it is obvious that the number of students, apart from proprietors and estate managers, or those who wish to become estate managers, who will take a university course of forestry, even though sufficient facilities were provided, and also the number of those who may be expected to attend and work in these forest schools, will be very limited indeed, so long as there is no better prospect of obtaining employment after they have finished their education than exists in this country at present. We have not as yet a sufficient area under wood to give employment to any considerable number of either of those classes, and even where there are situations to be had the remuneration is not usually very tempting. It will therefore be largely a waste of money to provide such facilities unless there be a very great extension of the area under wood in the United Kingdom.

The question now arises, how is this great extension to be brought about? Is it to be done by private enterprise or by the State? To this question the Royal Commissioners emphatically answer, "It must be done by the State." It can hardly be expected that owners in general will lay out large sums of money in planting

waste lands, when it is certain that not themselves, but their successors, will reap the profits. In very many instances, even though they were willing, they have not the money to lay out, and it is not possible to borrow money on the security of plantations not yet formed. There is no certainty, moreover, that the woods planted by private enterprise will continue to be managed according to the scientific scheme which was laid down by the planter. His successor may, for the sake of obtaining an earlier return, depart from the scheme and fall back upon the over thinning and other faulty methods of the past. It has been suggested that owners might obtain loans from the State to enable them to plant, but in that case the State, in order to make sure of repayment, would require to bind the owner and successor to a regular scheme of management, and would require to see that this was not departed from. Practically, the control of the woods would be in the hands of the State. This plan, however, though it might be adopted to some extent as a subsidiary method, would not be at all adequate for the afforestation of waste lands on such a scale as is required, and the Commissioners therefore recommend as the only adequate, and on the whole, the best way of accomplishing the ends desired, that a special State Forestry Department should be formed, and should be furnished with sufficient powers. This Department would in the first place cause a survey to be made of all waste and inferior land in the United Kingdom suitable for forest planting. Such lands as they should find to be suitable, they should have power to acquire either by negotiation with the owners, or, if necessary, by compulsory purchase. These lands thus acquired, not of course all at once, but at a fixed amount, year by year, they should plant as obtained and manage on a regular scheme laid down on scientific lines. For the purpose of carrying out these ends they should be empowered to borrow from the State annually such moneys as were necessary, the State to pay the interest until the returns from the forests became sufficient to do away with the necessity of this, which would be at the end of 40 years.

In illustration of the fact that afforestation on a large scale would result in a profit to the State, and that the money thus expended would ultimately bring in a steady income yielding a very fair interest, the Commissioners have drawn out two detailed schemes. The first supposes that the State should take in hand the acquisition and afforestation of 9,000,000 acres. This, they calculate, is the maximum extent of suitable waste and inferior land in the United Kingdom, situated at less than 1,500 feet of elevation. They suppose this to be acquired and planted at the average rate of 150,000 acres per annum, thus requiring sixty years to bring the whole under wood. The forest is to be wrought on an eighty years rotation, that is, the final and mature crop of what was planted the first year would be felled at the end of the eightieth year, so that after the eightieth year 112,000 acres of mature wood would be felled annually. They estimate that there would be nothing derived from the forest during the first twenty years, but from that period there would be an annual revenue, small at first, but increasing rapidly after the fortieth year. The annual deficit on this revenue would reach a maximum of rather

more than £3,000,000 in the fortieth year, but after that period it would rapidly diminish until the eightieth year. After the eightieth year, the annual revenue derived from the forest would amount on the average to nearly 17½ million pounds, sufficient to give interest at the rate of 3¾ per cent. on the excess of accumulated charges over receipts.

In the second scheme they suppose only 6,000,000 acres to be acquired and afforested at the rate of 75,000 acres per annum. The expense would of course be less in proportion, and the final result would be that after the eightieth year there would be an average annual revenue of £10,000,000, sufficient as in the former case to return rather more than 3¾ per cent. on the accumulated amount expended by the State.

It is claimed therefore that State Afforestation would entail no loss, but, on the contrary, be a profitable experiment, and ultimately bring in a large and steady annual income to the National Treasury. This is the case in Germany, France, and other Continental countries, and it is the case also in our own dependency of India, where a State Forestry Department has been in existence for over forty years, and where a large and increasing annual revenue is derived from the forests. But afforestation on a large scale would be beneficial to our country in other ways. The forests would afford shelter from cold and stormy winds, and thus in many places enhance the value of cultivated or pasture land in their neighbourhood. We should have a steady and more or less sufficient supply of home-grown timber, and thus be less dependent on foreign countries than we are at present. And what gives this more importance is the fact that, on the whole, the world's stock of timber, at least of timber within easy reach of transport, has been diminishing, so that prices have gone up and are likely to go up still further in the not very distant future. A still more important result of the scheme recommended by the Commissioners would be its effect in stemming the tide of rural depopulation. The number of men required to maintain an established forest in proper working order would be, at least, ten times the number required in ordinary agricultural or pastoral farming. Besides these, a large number of additional men would find employment for a part of the year during the planting and felling season, and this at the time of the year when work is scarcest and unemployment greatest. This does not take into account the additional employment required in removing the timber, converting it into boards, planks, &c., and that which would be afforded to wheelwrights, joiners, carpenters, and cabinetmakers in applying it to purposes of utility.

No doubt, if according to the scheme of the Commissioners, 9,000,000 acres chiefly of mountain and heath land under 1,500 feet of elevation were afforested, there would be some diminution in the production of mutton, and perhaps of ground game. The land suitable for planting would, however, be in general of low grazing or sporting value, and it is estimated that the diminution thus caused in the production of mutton would amount to less than 5 per cent. of our present home-grown supply, and a little over 2½ per cent. of our

total annual consumption. Any shepherds or gamekeepers also whose present occupation would be gone, would in a short time easily qualify themselves, if they chose, to become foremen in the management of the forests. Opportunities for sport would not be materially diminished. Low ground shooting would not be appreciably affected, the present deer forests would not be interfered with to any extent, and there would still be a very large area of waste land which would not be suitable for planting, but which would be available for game.

The existing woodlands would be left as at present under private ownership. Many of these have been planted, not so much for obtaining a supply of timber, as to afford cover for game. A good deal of timber also has been grown for the beautifying of parks and pleasure grounds, and in the form of shelter belts for the protection of houses, and fields and cattle. For ornament and protection, no doubt, our present system of open woods is the best. Where, however, existing woods have been planted for the sake of timber, the State forests would form valuable object-lessons for the guidance of proprietors, and they would gradually bring these woods under a better and more profitable system of management, and ultimately work them on a regular rotation. As in several Continental countries also, the services of Government experts would be put at the disposal of proprietors for the purpose of giving advice as to the best methods of improving and managing existing woods, or where they wished to plant new ones, advising as to what trees or mixtures of trees would be best suited to the soil and locality.

The Scottish people ought to be deeply interested in the proposed scheme, seeing that of 9,000,000 acres proposed to be afforested, two thirds, or 6,000,000 are estimated to be found in Scotland. In our country at present only $4\frac{1}{2}$ per cent. of the surface is covered with wood. If this small proportion were raised, as it is proposed, to about 35 per cent., what a difference it would make. Even if the lesser scheme were adopted, one-fourth of the area of Scotland would be forest, and our country would then be as well wooded as Germany, and much better wooded than France. Apart from the material benefits which I have already enumerated, what a wonderful transformation it would make on the appearance of the landscape, if large tracts of our bare uplands, our heathery hill-sides and wide stretching moors were clothed with woods. Who can doubt that it would add greatly to the attractions of our Highland scenery, and render our country even more picturesque and beautiful than it is at present?

And now, what about our own County of Perth? The lower grounds, the Plain of Strathmore, the Carse of Gowrie, the Valleys of the Tay and many of its tributaries, may be said, truly enough, to be well wooded. Many of our lowland hills also are covered with trees, and indeed Lowland Perthshire may challenge competition with any part of Scotland, I might say of Europe, for its delightful combination of wood and water. On many Perthshire estates the proprietors have taken great interest in the growth of trees, in forestry as then understood. In travelling from Perth to Blair Athol, the fine scenery which delights the eye owes much of its charm to the mani-

fold woods through which you pass. On the Mansfield property, Murthly, and the estates of the Duke of Athol, much has been done in the planting of trees. Many experiments have been made in the growth of foreign species, and thus much valuable information has been acquired, which should be of great service in the future. On Scone, for example, it has been shown that the Douglas pine, when grown in a suitable situation, will form a valuable and profitable addition to the species commonly reared. Perhaps the greatest experiment ever made in Scotland in planting what was then an exotic species not very long introduced, was that made by John, fourth Duke of Athole, in the latter quarter of the eighteenth and first quarter of the nineteenth century. He planted during that period upwards of 8000 acres of pure larch, that is unmixed with any other species. The work appears to have been done quite in keeping with the best scientific knowledge of the time. In an old book, an Atlas of Scotland, published about the year 1844 (the title page is wanting, but it was published before any railway came to Perth), after giving a pretty full account of the planting operations, the writer goes on to say, "In the latter years of his life the Duke planted 6500 acres of mountain ground solely with larch, which in the course of seventy-two years from the date of planting, will be a forest fit for building the largest ships of the British Navy. During that interval it will have been thinned out to about 400 trees per acre, and as each tree will contain about 50 cubic feet, or one load of timber, at the low price of 1/- per cubic foot, it will give £1000 per acre, or the immense sum of 6½ million pounds sterling! Such is the princely fortune which John, fourth Duke of Athole, has bequeathed to his successors on ground previously barren and unproductive."

I am afraid that was rather a sanguine estimate. His successors do not seem to have kept a regular account of expenditure and drawings, and I do not know to what extent the woods were well or ill managed during their growth. The trees on the whole throve well, however, and the larch disease had not then begun its ravages, and although severe gales at recurring intervals have done much harm, there is every reason to believe that the Duke's larch experiment has been far from unprofitable. In fact, where the disease is absent, a larch forest is known to be one of those that pay best. No doubt, scientific forestry will find means, if not altogether to prevent, at least largely to mitigate the ravages of that dreadful fungus pest which has, during the past thirty or forty years, done so much harm to plantations of larch.

But in spite of the comparatively large areas planted by the Duke of Athole and many other Perthshire proprietors, we find that less than 6 per cent. of the surface of the county is clothed with trees. In actual extent of woodland, Perthshire, it is true, ranks third among the counties of Scotland, but in proportion to her size, she has to take fourteenth place. Her area of mountain and heath land is given as 900,000 acres, and of this only about 94,000 acres are covered with wood. If the 6 per cent. at present planted were raised to even 25 per cent., it would mean that an additional 300,000 acres would be afforested. This is undoubtedly a low estimate of the amount of

available land in Perthshire. The county, also, from its situation, climate and soil, is known to be highly suitable for the growth of trees. Such an extension of forest area in the county would mean that permanent employment throughout the year would be found for 3000 workmen, affording maintenance for them and their families. It would mean also that regularly recurring employment during the winter months would be provided for a much larger number, whilst indirectly the removing, cutting up, and manufacturing of the timber would give additional work to a vast number of persons, and probably cause new industries to spring up where at present there are none.

I have given but a very brief outline of my subject, but I think what has been said will be enough to show its importance. It seems to me conclusively proved that the planting of the waste and inferior lands of the United Kingdom would be highly beneficial to the country; that this can be done effectively only by the State, and that therefore every thoughtful man who loves his country should support, as far as he can, the recommendations of the Royal Commission.

The following resolution, proposed by Mr. James Coates and seconded by Major Mercer, was subsequently carried :—

"That this Society cordially approves of the recommendations of the Royal Commission, that a State Forestry Department should be formed with powers to carry out an extensive scheme of afforestation in Britain, believing that such a scheme would be profitable to the country, not only financially, but by providing employment for many thousands of persons and in many other respects. Further, that copies of this resolution be sent to the Prime Minister, the Secretary of State for the Home Department, the Secretary for Scotland, Earl Carrington, Chairman of Woods and Forests Department, and the members for the City and County of Perth."

8th April, 1909.

WM. BARCLAY, President, in the Chair.

Mr. Rodger exhibited specimens of the snail *Hyalinia lucida*, Drap, a species new to the county, found by Fred Smith of the Junior Section.

Mr. C. M'Intosh, of Inver, forwarded, and Mr. Menzies exhibited, a number of fungi. Mr. M'Intosh contributed the following notes. It will be observed that one of these—*Dasyscypha globulifera* is probably new to Britain :—

During the summer of 1908 some tree pruning was carried out along a wood road in the Inver woods, and the prunings left on the ground, where they have lain exposed since. Among the trees operated on were some maples about 30 or 35 years old. I am not sure of the exact species of maple, but it is an exotic, a common

large-leaved one. The prunings consisted of twigs and branches up to two inches in diameter. On the 28th December, 1908, a fungus was seen bursting through the epidermis of the twigs and branches. Specimens were taken for observation at home, and left exposed. On that date the fungus consisted of a mass of conidia protruding through the ruptured epidermis, underneath which were seen the undeloped perithecia of what turned out to be a Valsa—the old genus Valsa has been broken up. On the 30th January, 1909, the fungns was, on the material I had at home, nearly mature. One peculiarity of the fungus was the strong odour of mice; it had this odour from the first, and retains it still. On the 1st February, I went to see what the fungus looked like in the wood. Between the dates 28th December and 1st February there had been two heavy falls of snow, and the rabbtts were no doubt hard up for food. I found that they had devoured every bit of bark on which the fungus was—every bit they could get at—yet the bark was dry and weathered, and as you will see from the specimens sent, easily separated from the wood. The fungus was submitted to Mr. Carleton Rea, who replied :—

> "I felt very doubtful about your specimens, so asked Miss Lorrain Smith for her opinion. She says that it is *Diaporthe protracta, Nitscthe,* the description of which is as follows :— Stoma generally very wide spread, surrounding the whole branch, colouring the surface of the bark dark brown, covered generally by the unaltered split periderm which is seldom star-shaped, caused by the boring through of the beaks of the *perethecia*; on the inside the substratum is unaltered or coloured grey, but always pounded by a dark line. *Perithecia* closely gathered together in long rows which are narrow or bent. *Perithecia* of various sizes, round, often compound and sunk in the wood; their beaks causing long slits in the periderm, which break through 2 and 3 together, and make the surface of the branch rough. Asci narrow, oblong or almost clavate, sessile, 8-spored, 52-60 x 8 *micra*. Spores 2 seldom 1-rowed, narrow oblong or almost cylindrical, blunt at both ends, 2-4 celled, with 4 oil-drops, later somewhat beaked, hegaline, 10-15 x 4 *micra*. On dry Acer branches. To my mind this does not seem to quite agree with your plant, but of course I bow to Miss Lorrain Smith's superior knowledge of this group; otherwise I favour *Diaporthe lsngirostus* (Tul.) Sacc.—Stoma crowded, compressedly conical, short, at first rounded celiptical or irregular, 1-3 mm. broad, white inside, outside whitish, yellow or chestnut brown, erumpent. *Perithecia* round, separate from each other and sunk in the stroma, with a long, thin, bent, confluent, pointed, broad, prominent beak. Asci elongate, egg-shaped, short, attenuated at the base, 8-spored. Spores crowded together, thin, lancet-shaped, pointed at each end, 2-celled, 20-25 x 3-4 *micra hyaline*. On dead Acer branches.
>
> I will leave you to prefer which description accords closest with your careful observations."

I am inclined to favour the one given by Mr. Carlton Rea himself, but of course Miss L. Smith is the authority on the subject.

There is a species of *Dasy scypha* on dead heather stems among the mass which Mr. Carleton Rea has kindly examined and named. He makes it *D. globulifera.* This species is not included in Massee's British Fungus Flora, and may be a new British one, but of this I am not sure. Mr. Menzies had the same fungus, which does not seem to be confined to heather stems. I send diagnosis from Mr. Rea, and as of this and the former fungus there is not likely to be any description in any British work, it might be as well to print them in the *Transactions*:—

> "I have carefully examined your *Dasy scypha*, and come to the conclusion that it fairly agrees with *D. globulifera*, Feh.—Apothecia at first closed, and then becoming round and cup-shaped, and out-spreading with a distinct rim, white, ultimately becoming yellowish to brownish on the hymenium; with a 1-2 mm. high stalk. Outside white with hairs in stripes 1-3 mm. broad. Ascus cylindrical, somewhat stalked, 72 *micra* long, 0 *micra* broad, 8 spored. Spores club-spindle-shaped (kenlig-spindelformig), straight, 1-celled, colouriess, 10-12 *micra* long by 4 *micra* broad, arranged obliquely in one row.
>
> The fact that the *hy menium* became yellowish brownish is not a striking feature, and I only notice it when the plants are in decay, but the distinct rim seems a very marked feature in your specimens. I measured the asci, 66-75 x 6.7 *micra*, so that comes very near the description. The spores are stoutly spindle-shaped, It is quite a different thing from *D. nivea*, which I have never seen so stout and outspread."

I am also sending specimens of a fungus on the bark of young Douglas fir. During the summer of 1908 a considerable number of deaths occurred among Douglas firs from some, at the time at least, unknown cause. The leaves were shrivelled and weathered as if they had been blasted by frost. Often the whole plant was affected, sometimes the top, sometimes the lower branches, and on larger trees only some of the branches. In every case the affected parts were seen to be dead—they had been dead before the heat of summer shrivelled the leaves. As the matter has been put into the hands of the Forestry authorities by Mr. Murray, Murthly, I need only say that during February and March the dead stems and branches were seen to be covered by a minute fungus, which is appearing in vast numbers both here and at Murthly. Regarding the fungus, as it is now in the hands of authorities, I will only say that it appears to be a *Sclerodersis.* Mr. Menzies thinks that it is not a recorded British species, and such is my own opinion. It appears to be a parasite, and if so, is most likely the cause of the deaths among the Douglas firs.

ADDENDUM.

I have just seen a letter from Dr. Borthwick to Mr. Murray, Murthly, regarding the deaths among Douglas firs. Dr. Borthwick

says, "The frost is the cause of the damage; the fungus is a secondary phenomenon." The fungus may be a secondary phenomenon, but a single night of severe frost last April will not account for the damage that I have seen. What I was most concerned about was to have the fungus named, and in this I am disappointed. They speak of it as a *Peziza*. In the meantime I am going to take it as *Sclerodersis livida*, Mass. British Fungus Flora, Vol. IV., page 127.

The appearance of the fungus this season in such vast numbers will excuse me for laying the matter before the Society.

The following papers were read:—

1. "Notes on the Fresh-water Pearl Mussel," by J. Stewart, Falkirk. (See *Transanctions*, Vol. V., Part I., page 17.)
2. "The Dyke Rocks of the Schiehallion District," by Geo. F. Bates, B.A, B.Sc. (See *Transactions*, Vol. V., Part I., page 23.)

SUMMER SESSION, 1909.

The following Excursions were arranged :—

1. Monday, 31st May. Fothringham.

2. Saturday, 12th June. St. Fillans and Glentarken.

3. Saturday, 26th June. Banks of Tummel, Killiecrankie to Pitlochry

4. Saturday, 3rd July. Ben Chonzie 3,080 feet.

5. Saturday, 24th July. Right Bank of Tay, Murthly to Kinclaven Bridge.

6. Wednesday, 25th August. Dunkeld and Grandtully.

7. September. Fungus Excursion.

PHOTOGRAPHIC SECTION.

The Photographic Section of the P.S.N.S. was reconstructed in the beginning of the year. Three meetings were held during the winter session, which were fairly well attended.

These meetings took the form of a photographic demonstration ; a conversazione, at which a number of members' prints were exhibited ; and the annual business meeting, at the termination of which one of the members gave an exhibition of lantern slides.

A programme of Excursions was arranged for the summer session :—

1. Monday, 31st May. Fothringham. (Joint Excursion with P.S.N.S.)
2. Saturday, 5th June. Scottish Photographic Federation Excursion to Strathyre.
3. Saturday, 10th July. Banks of Almond.
4. Saturday, 14th August. Stanley and Stobhall.
5. Saturday, 11th September. Perth to Kinfauns and Elcho.
6. Wednesday, 6th October. Blairgowrie.

LIST OF DONATIONS TO THE LIBRARY,

SESSION 1908-09.

I.—GIFTS FROM INSTITUTIONS.

Belfast, Annual Report and Proceedings, Belfast Naturalists' Field Club, Vol. VI., Part 1, 1907-08—The Society.

Brooklyn, Museums of the Brooklyn Institute of Arts and Letters, Report for the Year, 1907; The Museum News, 1908—The Museum.

Cambridge, Forty-second Annual Report of the Museums and Lecture Rooms Syndicate, 1907—Superintendent of Museum of Zoology.

Cincinnati, Bulletin. No. 10.

Mycological Notes, Nos. 27, 28, 29—The Lloyd Library and Museum.

Colchester, Report of the Museum and Muniment Committee, year ending 31st March, 1908—The Corporation Museum.

Dumfries, The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society, Session 1906-7—The Society.

Edinburgh, Proceedings of the Royal Society of Edinburgh, Vol. xxviii., Parts 3-4-5-6-7-8-9—The Society.

Proceedings of the Society of Antiquarians of Scotland, 1907-8, Vol. xlii.—The Society.

Twenty-sixth Annual Report of the Fishery Board for Scotland, Parts 2-3, 1907—The Board.

Memoirs, Geological Survey of Scotland, "The Geology of the Small Isles of Inverness-shire" (sheet 60)—The Geological Survey.

Transactions of the Edinburgh Geological Society, Vol. ix., Part 2—The Society.

Transactions of the Edinburgh Field Naturalists and Microscopical Society, Vol. vi., Part 1—The Society.

Transactions of the Royal Scottish Arboricultural Society, Vol. XXI., Part 2, Vol. XXII., Part 1—The Society.

Memoirs of the Royal Caledonian Horticultural Society, 1908—The Society.

Essex Naturalist, Vol. XV., Parts 2, 3—The Field Club.

Halifax, The Proceedings and Transactions of the Nova Scotian Institute of Science, Vol. XI., Parts 3-4; Vol. XII., Part 1—The Society.

Halle, Ueber bandformige Wurzeln.

Abr. der Kaiserl. Leop. Carol.—Deutschen Akademie der Naturforscher, Band., LXXXVIII., Nr. 1.

Hull, Transactions of the Hull Scientific and Field Naturalists' Club, Vol. IV., Part 1—The Society.

Liverpool, Quarterly Journal, Institute of Commercial Research in the Tropics, Vol. III., No. 6—The Institute.

London, Guide to the Horse Family.

Guide to the Exhibited Series of Insects.

Guide to the Elephants (Recent and Fossil).

Guide to the Fish Gallery.

Guide to the Domesticated Animals.

The British Museum (Natural History).

London, Quarterly Journal of the Geological Society, Vol. LXIV., parts 1, 2, 3, 4, 1908.
Geological Literature added to the Geological Society's Library, 1907.
List of Members.
The Society.
Report of the British Association, Leicester, 1907—The Association.
Annual Report of Intelligence Division, Part 1, 1907—Board of Agriculture.
Board of Agriculture and Fisheries Leaflets, Nos. 29, 66, 78, 188, 199, 201, 202, 203, 204, 205, 206, 209, 211, 212, 213, 215, 216, 217.
Proceedings of the South London Entomological and Natural History Society, 1907-8—The Society.
British Desmidiaceae, Vol. III.—Ray Society (by sub).
Manchester, The Manchester Museum Report, 1907-8—The Director.
Mexico, Boletin del Instituto Geologico de Mexico.
Parergones del Instituto Geologico de Mexico, Tomo II., Nos. 1-7—The Institute.
Millport, Marine Biological Association of the West of Scotland, Annual Report 1907—The Association.
Montevideo, Anales del Museo, Flora Uruguayo, Tomo III., Ent. III., 1908—The Museum.
New York, Bulletin of the American Museum of Natural History, Vol. XXIV., XXV., Part 1—The Museum.
Memoirs of the American Museum of Natural History, Vol. III., Part 4; Vol. IX., Part 4—The Museum.
The American Museum of Natural History—39th Annual Report, 1907—The Museum.
Newcastle, Report of the Council of the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne, 1907-8—The Society.
Report on the Scientific Investigations for the year, 1907—The Northumberland Sea Fisheries Committee.
Northants, Journal of the Northants Natural History Society and Field Club, Nos. 109 to 112, 1907—The Society.
Nottingham, 55th Annual Report and Transactions of the Nottingham Naturalists' Society—The Society.
Ottawa, Annual Report, Vol. XVI., 1904.
General Index to Reports, 1885-1906.
Report on Gold Values in Klondike, No. 979.
Summary Report, Geological Survey, 1906.
The Falls of Niagara, 1907.
Publications, Nos. 982, 986, 996, 1028.
Maps and Sections, Halifax, N.S., Nos. 643, 650, 666, 765, 721, 768, 745, 773, 937, 1012.
Report on a Portion of N.W. Ontario, No. 992.
The Telkwa River and Vicinity, B.C., No. 980.
The Geological Survey of Canada.
Oxford, Historical Account of the Ashmolean Natural History Society of Oxford, 1880-1905, by F. A. Bellamy, 1908—The Society.
Perth, 17th Annual Report by the County and Chief District Sanitary Inspector, 1907—The Department.
Health Report for the City of Perth for 1907—The Medical Officer.
Annual Report of the Perthshire Natural History Museum, 1908—The Curator.

Peterhead, Transactions of the Buchan Field Club, 1907-8—The Club.
Philadelphia, Proceedings of the Academy of Natural Science, Vol. LIX., Part 3; Vol. LX., Parts 1-2—The Academy.
Pittsburgh, 11th Annual Report of the Directors for the year ending March 31, 1908—The Carnegie Museum.
St. Louis, Mo., 19th Annual Report, Missouri Botanical Garden—The Director.
Southport, The 12th Report of the Society of Natural Science, 1906 7—The Society.
Springfield, Bulletin, No. 1, 1904—The Museum.
Stirling, Natural History and Archaeological Society, Transactions, 1907-8—The Society.
Sydney, Records of the Australian Museum, Vol. VI., No. 6—The Museum.
Washington, United States Geological Survey—Bulletins, Nos. 325, 334, 339.
Bulletins, Nos. 328, 335, 337, 338, 340, 343, 344, 345, 346, 348, 350.
Professional Paper, No. 62—The U.S. Geological Survey.
Bureau of Statistics—Bulletin, 59.
Office of Experiment Station—Bulletin, 196.
Bureau of Plant Industry—Bulletins, 111, 119.
Bureau of Entomology—Parts 1-2, No. 75.
Experiment Station Record, Vol. XIX., No. 4.
Bureau of Entomology—Technical Series, No. 15.
,, ,, Circulars, 32, 57, 60, 75, 101, 102.
Bureau of Animal Industry—Bulletin, 105.
,, ,, Circulars, 97, 102, 120, 128, 129, 132.
Bureau of Chemistry—Bulletins 108, 109.
Forestry Service—Circulars, 103, 117.
Office of Public Roads—Circular, 47.
United States Department of Agriculture.
Wisconsin, Academy of Science, Arts and Letters, Vols. VI. to XV.—The Academy.
York, Annual Report, 1907—The Yorkshire Philosophical Society.

II.—Gifts from Persons.

Coates, James, Buffons' Natural History, 20 vols.
Text Book of Botany, Sachs.
Mudie's British Birds, 2 vols. 1841.
Illustrations of British Ornithology, 2 vols. 1833.
Ornithological Dictionary of British Birds, 1831.
British Ornithology, 1821.
Coates, H., British Rainfall, 1907.
Campbell, Col. John, The Scottish Geographical Magazine, 1908.
Ellison, S. T., Entomologist, 1908.
Hjort, Dr. John, Some Results of the International Ocean Researches.
Kidston, Dr. Robert, Nature, Vols. LXXVII. LXXVIII.
Oliver, The Hon. Frank, Canada's Fertile Northland (with map), 1907.
Rea, Carleton, M.A., B.C.L., The Mycological Society—Presidential Address, 1908.
Richardson, Ralph, The Influence of the Natural Features and Geology of Scotland on the Scottish People (re-print).
Steel, Adam, Transactions of the Highland and Agricultural Society of Scotland, Vol. XIX., 1907.
Stewart, John, Framed Portrait, First Secretary of the P.S.N.S—Dr. C. P. Stewart.

LIST OF PRIZES GAINED IN THE CHILDREN'S ESSAY COMPETITION, 1908.

Subject: "THE TEETH OF DIFFERENT ANIMALS AND THEIR USES." 61 Essays (20 Girls, 41 Boys).

FIRST DIVISION, Age 14 and over (2 Essays).

1st Prize—Christina Harris, Perth.
Certificate—Christina Robertson, Perth.

SECOND DIVISION, Age 13 (34 Essays).

1st Prize (and Bronze Medal)—Fred Smith, Perth.
2nd ,, —Johanna R. Macnab, Perth.
3rd ,, —Peggie Folkarde, Perth.
4th ,, —W. Baxter Bell, Perth.
Certificate—Nellie Murray, Perth.
,, —James Wallace, Perth.

THIRD DIVISION, Age 12 (15 Essays).

1st Prize—Lizzie Macpherson, Scone.
2nd ,, —Mary Peddie, Perth.
3rd ,, —Nettie Small, Scone.
Certificate—Jessie Miller, Scone.
,, —Alexander Milne, Scone.
,, —Annie Bell, Scone.
,, —George Martin, Scone.
,, —James Crow, Perth.

FOURTH DIVISION, Age 11 (10 Essays).

1st Prize—Lizzie Robertson, Perth.
2nd ,, —Frank M'Kinlay, Perth.
3rd ,, —Jessie Strang, Perth.
Certificate—Rita Laing, Perth.

ROLL OF MEMBERSHIP, AS AT 31ST OCTOBER, 1909.

* Life Members.

HONORARY MEMBER.

Geikie, James, LL.D., F.R.S., etc., Professor of Geology, Edinburgh University, ...	2nd February, 1882

CORRESPONDING MEMBERS.

Brebner, James, M.A., Harris Academy, Dundee, ...	3rd December, 1885
Bruce, W. S., LL.D., Surgeons' Hall, Edinburgh, ...	14th March, 1907
Calman, W. T., D.Sc., British Museum, Cromwell Road, London, ...	11th April, 1895
Geddes, Patrick, F.R.S.E., University College, Dundee,	3rd February, 1881
Macnair, P., 70 Eastwood Avenue, Shawlands, Glasgow,	13th November, 1890
M'Gregor, T. M., Australia, ...	5th March, 1885
Mill, Dr. H. R., F.R.S.E., 62 Camden Square, London, N.W., ...	7th April, 1892
Ramsay, E.P., F.L.S., Curator of Australian Museum, Sydney, ...	7th February, 1884
Smith, Rev. Frederick, The Parsonage, South Queensferry, ...	13th November, 1890
Thomson, Professor D'Arcy, M.A., C.B., University College, Dundee, ...	10th November, 1892
Trail, J. W. H., M.A., M.D., F.L.S., High Street, Old Aberdeen, ...	8th February, 1872
Wilson, Dr. Andrew, F.R.S.E., 110 Gilmore Place, Edinburgh, ...	4th January, 1883
White, Mrs. Buchanan, Manitoba, ...	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
Laidlaw, Mr., Gamekeeper, Castle Menzies, Glenlyon,	7th February, 1884
Milne, Captain W., *S.S. Eclipse*, ...	14th March, 1901
M'Intosh, Charles, Inver, Dunkeld, ...	1st May, 1873
Robertson, Captain T., *S.S. Scotia*, ...	14th March, 1901

ORDINARY MEMBERS.

Alexander, Charles, St. John's Place, ...	16th January, 1896
Alexander, John, M.A., Sharp's Institution, ...	14th December, 1893
Alexander, J., Seedsman, High Street, ...	6th April, 1897
Allan, Thomas, Insurance Agent, St. John Street, ...	13th April, 1899
Allison, Harry C., Feu House, ...	9th January, 1908
Anderson, Andrew, c/o P. D. Malloch, New Scott Street,	9th December, 1897

Anderson, John L., Nenthorn, Gray Street, ...	12th April, 1906
Asher, J., The Academy, ...	9th December, 1897
Anderson, Thos., M.A., B.Sc., 5 Picardy Place, Edinburgh, ...	10th December, 1908
Barclay, Miss E. A., Bank House, Tay Street, ...	13th December, 1906
Barclay, William, Friar Street, Craigie, ...	1st February, 1883
Barclay, William A., Pitcullen Terrace, ...	9th December, 1897
Barlas, J., 231 High Street, ...	13th February, 1908
Bates, G. F., B.A., B.Sc., Westoe, Craigie Road, ...	13th December, 1900
Beattie, S., M.B., Craigvar, Pitlochry, ...	9th December, 1897
*Bedford, Duchess of, Woburn, Beds., ...	12th December, 1907
Bell, Mrs., Priestfield, Glasgow Road, ...	13th December, 1900
Blair, Robert, New Scott Street, ...	11th December, 1902
Blair, Douglas D., M.B., C.M., South Methven Street,	10th March, 1898
Bouick, James B., Gowan Bank, Abbot Street, ...	14th February, 1895
Brady, George, 8 Comely Bank, ...	11th April, 1895
Brand, John, Upland, Kinnoull, ...	10th December, 1891
Brand, Robert, 7 Melville Street, ...	7th April, 1892
Breadalbane, Marquis of, K.G., Taymouth Castle, Aberfeldy, ...	7th April, 1892
Brough, Miss Elizabeth, Wilson Street, Craigie, ...	13th March, 1902
Brown, Alfred W., Seedsman, High Street, ...	14th December, 1903
Brown, J. A., Harvie, F.Z.S., Dunipace House, Larbert,	10th December, 1891
Buchanan, T. R., M.P., 12 South Street, Park Lane, London, ...	9th April, 1903
Buchanan, Mrs., 12 South Street, Park Lane, London,	9th April, 1903
Burnett, C., Comely Bank, ...	22nd February, 1894
Butter, Thomas, 8 Marshall Place, ...	8th March, 1894
Brown, Peter M. W., 28 Nasmyth Place, Kelty, Fife-shire, ...	10th December, 1908
Caird, Miss K. C., M.A., Perth Academy, ...	13th December, 1906
Calderwood, James, 18 Pitcullen Crescent.	12th April, 1906
Cameron, David, Commercial Street, Bridgend, ...	14th December, 1884
Campbell, Archibald, Davaar, Scone, ...	13th December, 1900
Campbell, Col., Westwood, Cupar-Fife, ...	18th January, 1884
Campbell, D., Clyde Place, ...	7th April, 1904
Campbell, Edward, Lignwood, New Scone, ...	11th April, 1889
Campbell, Peter, Lignwood, New Scone, ...	4th April, 1878
Campbell, P. W., Muirton Bank, ...	9th March, 1899
Chapman, Samuel, King James Place, ...	16th January, 1896
Christie, James, 8 Paul Street, ...	11th April, 1895
Chrystal, George, St. John's Foundry, ...	2nd December, 1880
Clacher, James, 9 George Crescent, ...	3rd April, 1879
Coates, Henry, F.R.S.E., Balure, Glasgow Road, ...	9th May, 1875
Coates, James, Balure, Glasgow Road, ...	6th May, 1875
Coates, Miss, Balure, Glasgow Road, ...	3rd January, 1878
*Coats, Archibald, Battleby, Redgorton, ...	14th December, 1899
Coats, Mrs. W. H., Battleby, Redgorton, ...	14th December, 1899
Coats, James, jun., Ferguslie House, Paisley, ...	10th December, 1903
Carter, A. E. J., Royal Bank House, Blairgowrie, ...	10th December, 1908
Cumming, A. G., 153 High Street, ...	12th March, 1896

*Colquhoun, Col., Clathick, Crieff, ...	5th December, 1878
Cox, Mrs., Glendoick, Glencarse, ...	14th November, 1895
Cox, W. H., Snaigow, Dunkeld, ...	8th December, 1898
Craigie, James, Sandeman Public Library, ...	12th March, 1903
Crawford, Rev. T., B.D., Orchill, by Auchterarder, ...	7th April, 1892
Crawford, Thomas, High Street, ...	10th January, 1889
Crichton, John, L.D.S., 7 Charlotte Street, ...	14th January, 1904
Crystal, Peter, Moredum Terrace, ...	12th April, 1906
Davidson, Alex., The Pines, Glasgow Road, ...	2nd March 1882
Davie, Miss, Cornhill House, ...	10th January, 1891
Deas, John B., Rosemount Place, ...	1st September, 1870
Deas, Miss, Rosemount Place, ...	16th January, 1896
Dewar, Sir John A., Bart., M.P., Abercairney, ...	7th February, 1878
Dewar, John, jun., Abercairney, ...	9th December, 1897
Dickson, Miss, Greenbank, ...	2nd February, 1882
Dickson, Miss M. G., Greenbank, ...	9th April, 1896
Dodson, Charles, Jeanfield Cottage, ...	12th April, 1900
Donald, D., 30 Shields' Buildings, Dunkeld Road, ...	11th December, 1902
Douglas, Henry, City Chambers, ...	11th January, 1900
Dow, Robert, Schoolhouse, Longforgan, ...	4th May, 1882
Dow, Thomas, Clontarf, Feus Road, ...	10th April, 1901
Drummond, Col. H. S. Home-, Blairdrummond, Stirling,	9th March, 1899
Drummond, The Hon. Mrs., Megginch, ...	13th March, 1902
*Drummond, Miss Sybil, 15 Grosvenor Crescent, London, ...	9th January, 1902
Drummond, Col. Arthur N. H. Hay, Cromlix, Dunblane,	13th April, 1895
Duncan, G. Smith, Law Park, Blairgowrie, ...	3rd December, 1885
Durran, George, M.A., Perth Academy, ...	8th March, 1906
Ellison, Samuel T., Garth, Barnhill, ...	7th March, 1887
Ellison, William, Cragville, Barnhill, ...	3rd March, 1881
Evans, Miss Z. E., 32 Balhousie Street, ...	10th December, 1896
Evans, W., 38 Morningside Park, Edinburgh, ...	12th January, 1889
Ewing, Robert, Queen Street, Craigie, ...	8th December, 1892
Falconer, William D. M., The Alders, Rattray, Blairgowrie, ...	9th March, 1899
Farquhar, Rev. Canon, Balhousie Bank, ...	8th December, 1887
Fehrenbach, G. W., Watchmaker, Dunkeld,... ...	7th February, 1884
Fenwick, F., Pitcullen Terrace, ...	8th December, 1898
Ferguson, Archibald M., Pitcullen Terrace, ...	13th December, 1900
Ferguson, John, Chemist, Scott Street, ...	10th December, 1903
Ferguson, Rev. J., M.A., B.D., Manse, Aberdalgie, ...	5th January, 1882
Ferguson, R. C., Ferndale, Barnhill, ...	11th April, 1889
Ferrier, D., 1 Edin Terrace, Edinburgh Road, ...	10th December, 1891
Fothringham, W. Steuart, Murthly Castle, ...	13th April, 1905
Fraser, Mrs. J. M., Invermay, ...	10th December, 1903
Fraser, Lovat, Invermay, ...	10th December, 1903
Frew, Thomas, King James Place, Perth, ...	16th January, 1896
Gall, Miss, 8 Glover Street, ...	14th November, 1895
Gall, W. S., Duneaton, Glasgow Road, ...	16th December, 1903

Gellatly, James, Hillyland, ... 7th April, 1904
Gloag, Robert, Cherrybank, ... 13th December, 1894
Graham, John T., M.D., Dunalastair, ... 18th December, 1891
Grant, John S., 3 Muirhall Terrace, ... 13th December, 1894
Grant, Miss, Melville Street, ... 12th April, 1906
Gray, George, Bowerswell, ... 2nd February, 1882
Gray, The Hon. Morton Stuart, Kinfauns Castle, ... 8th December, 1904
Grieve, George, Young Street, Craigie, ... 14th December, 1905
Gillan, Thos., 8 Scott Street, ... 8th April, 1909

Halley, Robert, Barossa Place, ... 16th January, 1896
Hamilton, R., Gleniffer Cottage, Dunkeld Road, ... 12th April, 1906
Harker, Mrs., Blowfield Hall, Norwich, ... 14th December, 1899
*Hay, Lieut.-Col. Drummond, Seggieden, ... 14th January, 1897
Hay, Miss Drummond, Seggieden, ... 14th December, 1899
Hay, H. M. Drummond, Finlay, Muir & Co., Colombo, Ceylon, ... 12th December, 1907
Heiton, Mrs. Granger, Huntingtower Cottage, ... 13th December, 1906
Henderson, H. Dalton, Hughenden, Glasgow Road, ... 14th January, 1904
Henderson, J., Parkview, Muirton Place, ... 9th December, 1898
Hodge, A., 10 Balhousie Street, ... 11th April, 1889
Howie, Miss, 8 Moredun Terrace, ... 7th April, 1904
Humble, Miss Eleanor W., 32 Balhousie Street, ... 10th December, 1896
Hunt, Leigh, M.B., C.M., King Street, ... 2nd February, 1882
Hutcheson, Mrs., Beechwood, ... 11th April, 1901

Jameson, Melville, Brompton Terrace, ... 7th January, 1869
Jameson, Miss Margaret, Craigard, Kinnoull, ... 13th December, 1906
Jamieson, Miss S., 1 Muirhall Terrace, ... 3rd January, 1878
Jardine, John, Brickhall, Bridge of Earn, ... 9th February, 1905
Jardine, Mrs., Brickhall, Bridge of Earn, ... 14th November, 1895
Jarvie, John Stirling, Balhousie Terrace, ... 12th April, 1906

Kaye, John, Westerfield, Viewlands Road, ... 12th December, 1907
Kaye, Miss Jeannie, Westerfield, Viewlands Road, ... 12th December, 1907
Kaye, Thomas, Westerfield, Viewland Road, ... 13th March, 1902
Kenna, Miss Maggie, Paradise Place, ... 12th April, 1900
Kennedy, James, Teacher, Ballinluig, ... 1st May, 1884
Kidd, Miss L., Barossa Place, ... 10th March, 1904
Kidston, R., F.R.S., F.G.S., LL.D., 12 Clarendon Place, Stirling, ... 4th December, 1884
King, Mrs., 2 Blackfriars Street, ... 11th April, 1901
King, Mrs., 2 Blackfriars Street, ... 11th April, 1901
Kinloch, R., W. S., Clydesdale Bank, ... 18th December, 1890
Kinloch, Sir John, Bart., Kinloch, Meigle, ... 7th April, 1892
Kinnaird, James, Birnam, ... 12th January 1899
Kinnear, James, 7 Bellavista Terrace, ... 8th April, 1909
Kippen, R. M., Solicitor, Tay Street, ... 2nd March 1882
Kirkcaldy, Geo. W., F.E.S., Honolulu, ... 14th January, 1904
Knight, Rev. G. A. F., M.A., F.R.S.E., St. Leonard's Bank, ... 12th December, 1901
Knight, Mrs., St. Leonard's Bank, ... 7th April 1904
Kyd, Miss L., Barossa Place, ... 10th March, 1904

Laidlaw, T. G., M.B.O.U., Bank of Scotland, Perth, ...	11th December, 1902
Landreth, Rev. P. R., Fairmount Villas, ...	12th January, 1899
Large, Mrs., Darena, Bellwood, ...	11th December, 1902
Lawson, Robert, Croft Park, Craigie, ...	11th April, 1895
Leslie, Hugh, Kinnoull Public School, ...	12th April, 1900
Leslie, Thomas, 37 Balhousie Street, ...	12th April, 1906
Lowe, Miss, Tay Street, ...	12th April, 1902
Lowson, D. S., M.A., The Pines, Balhousie, ...	1st April, 1886
Lyell, John, M.D., 15 Marshall Place, ...	13th December, 1900
Lyell, Miss, 15 Rose Terrace, ...	12th December, 1907
Malloch, Gilbert, Almond Villa, Glasgow Road, ...	16th January, 1896
Malloch, Joseph N., Stormont Cottage, Bridgend, ...	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, Archibald M'Lean, Bleaton Hallet, Blairgowrie, ...	13th December, 1906
Marshall, D., Tay Street, ...	7th January, 1869
Marshall, Thomas, The Store, Stanley, ...	1st October, 1868
Meldrum, R. H., Schoolhouse, Tibbermore, ...	1st May, 1884
Menzies, Alex., LL.D., Kirriemuir, ...	7th December, 1882
Menzies, James, 2 Keir Villa, 71 Strathmore Street, ...	12th March, 1896
Mercer, Major, Huntingtower, ...	8th December, 1904
Mercer, W., Princes Street, ...	8th January, 1899
Miles, Miss M. L., L.L.A., 2 Laurel Bank, ...	14th December, 1899
Millais, Sir J., Bart., 38 Lower Belgrave Street, Eaton Square, London, ...	13th March, 1902
Miller, Alex., Osborne Terrace, Craigie, ...	14th November, 1895
Miller, George A., W.S., Knowehead, ...	2nd December, 1886
Miller, J. G., Solicitor, Blackfriars Street, ...	23rd March, 1893
Miller, William, 9 Rose Terrace, ...	7th February, 1884
Milln, D. N., County Place, ...	16th January, 1896
Moffat, Thomas, Teacher, Forgandenny, ...	14th November, 1895
Moncreiff, John, Summerbank, ...	8th March, 1906
Moncrieff, Mrs., Summerbank, ...	8th March, 1906
Moncrieff, Thomas, Springland, ...	5th March, 1885
Morison, J. Broun, F.R.S.E., Murie, Errol, ...	4th April, 1878
Morison, James, Hasland, Kinnoull, ...	7th February 1884
Morison, Miss, Hasland, Kinnoull, ...	13th February, 1890
Morrison, W., Gowrie Street, Bridgend, ...	16th January. 1896
Muirhead, George, Muirhall Terrace, ...	14th November, 1895
Murray, David, 3 Craigie Crescent, ...	11th December, 1902
Murray, D. Scott, Laurel Bank, ...	11th April, 1901
Murray, The Hon. Miss Gladys Graham, Stenton, Dunkeld, ...	8th January, 1899
M'Ainsh, Rev. John, B.D., U.F., Manse, Strathbraan, Dunkeld, ...	12th January, 1899
M'Arthur, John, Gray Street, ...	7th February, 1884
M'Donald, D. M., M.D., M.R.C.S., Lagmhor, Dunkeld,	8th December, 1904
M'Donald, Miss Barbara, Castleview, Glasgow, Road, ...	11th February, 1897
M'Donald, Robert M., Elcho Park, ...	9th March, 1905
M'Dougall, Miss Jessie, E., Eastertyre, Ballinluig. ...	13th December, 1906

M'Ewen, James, Craigie Bank, ... 7th April, 1892
M'Farlane, Miss, 2 King's Place, ... 13th December, 1900
MacGregor, Atholl, Ardchoille. ... ... 7th December, 1882
MacGregor, Lady Helen, of MacGregor, Edenchip, Balquhidder, ... 8th December, 1904
MacGregor, Miss Murray, Barossa Place, ... 9th March, 1899
M'Gregor, Alex., 71 High Street, ... 12th April, 1906
M'Gregor, John, Rosaire, 24 Strathmore Street, ... 4th March, 1886
M'Kay, A. T., 16 Barossa Place, ... 9th April, 1903
M'Kay, Miss Ada, 16 Barossa Place, ... 7th April, 1904
M'Kendrick, Andrew, Livadia, Greece, ... 9th April, 1896
M'Kenzie, Alex., Kinnoull Street, ... 14th April, 1898
Mackenzie, George A., Solicitor, George Street, ... 12th April, 1870
M'Lagan, Miss B. C., Queen Street, Craigie, ... 11th April, 1907
M'Laren, William, Architect, Balhousie, ... 7th February, 1878
M'Leish, James, Mill Street, ... 4th April, 1878
M'Leod, Miss, 7 Fitzroy Terrace, ... 10th February, 1898
M'Nab, Duncan, Solicitor, George Street, ... 12th April, 1906
M'Nab, Miss, L.L.A., Fitzroy Terrace ... ... 14th November, 1895
M'Naughtan, John, M.D., I.S.O., General Prison, ... 4th April, 1880
M'Phail, Miss Annie, Craigie Industrial School, ... 8th March, 1906
M'Nicoll, Robert, County Buildings, Tay Street, ... 12th December, 1907
M'Callum, W. B., 4 Brunswick Terrace, ... 14th January, 1909
M'Callum, C. B., 12 Moredun Terrace, ... 11th February, 1909
M'Cash, W. F., Cornhill House, Burghmuir Road, ... 11th March, 1909
M'Cash, Mrs. W. F., Cornhill House, Burghmuir Road, 11th March, 1909

Nairne, William, Caledonian Road Public School, ... 9th April, 1903
Newlands, Major, 2 Albert Villa, Dunkeld Road, ... 8th February, 1907
Newlands, Miss Helen, Tayside, ... 10th January, 1901
Newlands, Rev. T. S., B.D., Craigend Manse, ... 9th April, 1908
Newlands, Mrs., Craigend Manse, ... 9th April, 1908
Nicol, A., 37 York Place, ... 12th November, 1895
Nicol, Edward, 37 York Place, ... 10th December, 1891
Nicoll, Miss Annie B., Craigie Public School, ... 9th April, 1908
Nisbet, R. B., R.S.A., Ferntower Road, Crieff, .. 14th December, 1905
Noad, W. Cranswick, Fernhill, Kinnoull, ... 14th December, 1905

Oswald, Rev. Robert, B.D., Freston, Glasgow Road ... 13th April, 1899

Pagan, Miss M. E., Dollerie, Crieff, ... 14th April, 1898
Parker, The Right Hon. Charles S., Fairlie, Larg ... 7th December, 1871
Paterson, William, Domus, Cherrybank, ... 14th December, 1899
Peddie, D., Ironmonger, Market Street ... ... 1st May 1873
Peebles, George, 81 High Street, ... 13th December, 1900
Philips, Miss, 52 Tay Street, ... 18th January 1884
Pinkerton, Miss Anne, Kincarrathie Crescent, ... 9th December, 1897
Plenderleith, Miss Wilna, 20 Marshall Place,... ... 14th December, 1905
Plumb, The Right Rev. Bishop, M.A., St. Ninian's House, 14th February, 1907
Proudfoot, James, Balhousie Street, ... 5th March, 1885
Pullar, A. E., Durn, ... 23rd November, 1883
Pullar, Mrs. A. E., Durn, ... 7th April, 1892
Pullar, James F., Rosebank, ... 5th December, 1872
Pullar, Herbert S., Dunbarney Cottage, ... 5th May, 1887

Pullar, Mrs. H. S., Dunbarney Cottage, ... 11th February, 1904
Pullar, Laurence, Dunbarney House, ... 11th February, 1904
Pullar, Mrs. L., Dunbarney House, ... 11th February, 1904
Pullar, Rufus D., F.C.S., Brahan, ... 6th May, 1875
Pullar, Mrs. R. D., Brahan, ... 3rd March, 1887
Pullar, Sir Robert, M.P., LL.D., Tayside, ... 2nd March, 1871
Pullar, R. Morison, Brahan, ... 8th April, 1909

Raffan, Miss Eliza, L.L.A., The Academy, ... 13th December, 1900
Ramsay, Miss Connie, Feu House, ... 9th April, 1908
Reid, Arthur S., M.A., F.G.S., &c., Trinity College, Glenalmond, ... 10th December, 1891
Riach, Miss, 3 Mansfield Place, ... 3rd January, 1878
Riach, T. G., 3 Mansfield Place, ... 12th April, 1894
Richardson, James, 27 High Street, Blairgowrie, ... 11th April, 1901
Richardson, Ralph, F.R.S.E., Ballendrick, Bridge of Earn, 8th December, 1904
Ritchie, J., LL.B., Solicitor, Rosemount Place, ... 12th January, 1893
Ritchie, Mrs., Rosemount Place, ... 10th January, 1895
Robertson, Charles, 95 High Street, ... 14th April, 187
Robertson, Dr. Robert, Errol, ... 2nd May, 1867
Robertson, Miss Isabella, 2 Blackfriars Street, ... 11th April, 1901
Robertson, James, 4 Mansfield Place, ... 14th December, 1893
Robertson, Miss, Springbank, ... 3rd January, 1878
Robertson, Robert, Blairgowrie, ... 4th Jaunary, 1877
Robertson, Robert Hay, 22 High Street, ... 2nd March, 1882
Robertson, William, 16 King Street, ... 12th April, 1906
Robertson, Miss C. M., Craigie Public School, ... 9th April, 1908
Robinson, Rev. J. A. Grant, Baptist Manse, Glasgow Road, 12th December, 1907
Rodger, Alex. M., Museum, Tay Street, ... 14th February, 1895
Roy, Mrs., Springbank, ... 3rd January, 1878
Ruggles-Brise, Lady Dorothea, Blair Castle, Blair Atholl, 10th December, 1903
Rutherford, W., Pitcullen Terrace, ... 5th March, 1885
Robb, Alex., Tobacconist, High Street, ... 8th April, 1909

Saunders, J. S., 20 Pitcullen Terrace, ... 12th December, 1907
Saunders, Mrs., 20 Pitcullen Terrace, ... 12th December, 1907
Scott, Miss Ina, Dunottar, Crieff Road, ... 8th March, 1900
Scott, William M., 8 Mill Street, Coupar-Angus, ... 12th December, 1901
Sellar, James T., The Den, ... 1st March, 1883
Sheppard, Miss M., Queen Street, ... 13th December, 1900
*Sievewright, Sir James, K.C.M.G., Tulliallan Castle, Clackmannan, ... 13th December 1900
Smail, William, Norma Villa, Wilson Street, Craigie, ... 8th February 1906
Smart, David, Rockbank, Kinnoull, ... 2nd May, 1878
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, Rev. Harry, M.A., Tibbermore Manse, ... 13th February, 1896
Smythe, Col. D. M., Methven Castle, ... 13th April, 1882
Smyth, J. Ross, Laggan, Clyde Place, ... 9th March, 1905
Somerville, Duncan M. Y., M.A., D.Sc., St. Andrews University, ... 9th February, 1905
*Somerville, Rev. J., B.D.—summer address, Castellar, Crieff; winter address, Villa Isaune, Mentone, ... 10th December, 1896

Speedie, Alex., 48 Tay Street, ...	8th December, 1904
Steel, Adam, Fairmount, ...	14th February, 1895
Steel, J. Sidney, 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, Robert, St. John Street, ...	12th January, 1899
Stewart, J., Verena Terrace, Craigie, ...	8th December, 1898
Stewart, Miss M. N., Caledonian Road Public School,	14th February, 1907
Stirling, David H., M.D., Kinnoull Cottage, ...	4th April, 1880
Stirling, Robert, M.D., F.R.C.S.E., 4 Atholl Place, ...	13th February, 1890
Strachan, Rev. J. M., B.D., Kilspindie Manse, ...	10th December, 1903
Sutherland, Donald, M.A., Schoolhouse, Scone, ...	11th December, 1902
Syme, Bruce, Muirton Bank, ...	10th January, 1901
Taylor, David, 40 Balhousie Street, ...	9th February, 1893
Thomas, John, 25 Barossa Place, ...	3rd November, 1870
Thomas, Miss, L.L.A., 25 Barossa Place, ...	2nd December, 1886
Thomson, Andrew, M.A., D.Sc., F.R.S.E., Ardenlea, Pitcullen,...	13th November, 1890
Thomson, Mrs., Ardenlea, Pitcullen, ...	8th January, 1903
Thomson, James, Wellbank, Kinnoull, ...	23rd November, 1883
Thomson, R. Gloag, Wellbank, Kinnoull, ...	9th January, 1902
Trotter, Alexander, M.B., C.M., Tay Street, ...	14th January, 1904
Turpie, James, Depute Town Clerk, City Chambers, ...	8th February, 1900
Turnbull, Rev. W. Hogarth, Crossmount, ...	9th April, 1908
Urquhart, A. R., M.D., F.R.C.P.E., Murray House,...	14th May, 1882
Walker, Dugald, Balhousie Public School, ...	13th February, 1902
Watson, Miss, Inchyra, ...	13th December, 1894
Watson, Robert, R. B., 11 Pitcullen Crescent, ...	10th December, 1903
Watson, W., Plumber, Caledonian Road, ...	10th January, 1895
Watt, John, M.A., Perth Academy, ...	7th April, 1904
White, J. Martin, Balruddery, near Dundee, ...	2nd March, 1882
White, William, 29 Kirkgate, ...	14th November, 1895
Wilson, D. J., Atholl Place, ...	13th December, 1894
Wilson, Mrs. D. J., Atholl Place, ...	9th March, 1899
Winter, James, Rosemount Place, ...	12th January, 1893
Winton, William, 12 Glover Street,...	11th February, 1898
Wood, John, Dupplin Bank, Kinnoull, ...	11th April, 1889
Wright, Robert, Balhousie Street, ...	4th March, 1886
Young, Rev. D. G., B.D., Moneydie, ...	12th December, 1901
Young, George C., M.A., Southern District Public School,	10th December, 1903
Young, George, P. K., Tay Street, ...	2nd May, 1872
Young, T. B., 8 Murray Street, ...	14th April, 1898
Young, W. Cochrane, Solicitor, St. John Street, ...	7th December, 1882
Young, John, 5 Rosemount Place, ...	10th November, 1908

ASSOCIATE MEMBERS.

Campbell, R., The Lodge, Durn, ...	11th February, 1897
Innes, David, 15 Keir Street, ...	10th November, 1904
Rattray, J. P., Whitefriars, Dovecotland, ...	14th April, 1898
Simpson, W. L., 31 High Street, ...	10th November, 1904
Wylie, William, 61 Commercial Street, Bridgend, ...	12th March, 1897

BALANCE-SHEET OF THE PERTHSHIRE SOCIETY OF NATURAL SCIENCE for the Year ending 27th February, 1909.

INCOME.

Balance in Savings Bank, March 1908, ...		£55 14 10
Balance in Treasurer's hands		1 9 1
		£57 3 11
Subscriptions and Entrance Fees ...	£93 4 6	
Sale of Publications, &c.	2 9 10	
Contributions towards Coal and Gas ...	1 0 0	
Interest on Savings Bank Account ...	1 10 0	
Year's Receipts		98 4 4
		£155 8 3

EXPENDITURE.

Heating, Lighting, and use of Rooms, ...		£20 5 0
Fire Insurance, ...		0 16 3
Printing, Stationery, &c., ...		31 10 3
Books, Magazines, and Binding, ...		26 13 1
Janitor and Assistant, ...		6 1 0
Subscriptions to other Societies, ...		1 8 6
Furnishings, ...		3 10 6
Lecture Expenses, ...		1 19 6
Postages and Petty Outlays, ...		7 15 0
Year's Payments, ...		£99 19 1
Balance in Savings Bank, March, 1909,	£52 2 4	
Balance in Treasurer's hands, ...	3 6 10	
		55 9 2
		£155 8 3

PERTH, 11th March, 1909.—Examined, compared with the Vouchers, and found correct.

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

METEOROLOGICAL OBSERVATIONS, MUSEUM, PERTH,

1908.

ALEX. M. RODGER.

MONTH.	BAROMETER.	THERMOMETERS.							HYGROMETER.			WINDS.									RAIN.					REMARKS.
	Sea-level and 32° Mean	Maximum. Temp. Date	Mean Max.	Minimum. Temp. Date	Mean Min.	Mean Temp.	Differ'e from Av'ge 1883—1908.	Frost 32° and u'der	Dry.	Wet.	% Humidity.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.	·01 or more.	Diff. from Average	Inches.	Diff. from Average	Greatest Fall, 24 Hours.	
																					Days.	Days.		Inches.	Ins. Date	
January, -	29·994	52, 17	41·0	18, 4	31·9	36·9	−0·21	18	36·2	34·4	85	2	1	4	3	0	5	19	7	21	9	−5·28	1·89	−0·68	·51, 7	
February, -	29·889	54, 8	47·5	28, 29	34·9	41·2	+3·93	11	39·2	37·1	83	6	0	0	0	0	3	22	12	15	10	−2·32	1·24	−0·91	·27, 21	Snow, 28th.
March, -	29·759	54, 29	44·9	24, 13	32·0	38·5	−1·20	17	37·2	35·3	83	3	3	9	6	1	5	10	1	24	17	+2·92	3·97	−1·57	1·22, 24	
April, - -	30·000	67, 17	49·6	*8·5,24	33·3	41·5	−2·66	11	40·4	38·0	81	6	10	8	5	1	1	7	3	19	11	+0·47	0·92	−0·86	·25, 8	Snow, 22, 23, 24.
May, - -	29·915	*81, 28	60·8	35, 22	44·6	52·7	+3·21	—	51·4	48·3	80	1	7	14	8	6	19	5	1	1	22	+8·70	1·86	−0·20	·41, 8	Thunder and Lightning, 30th
June, - -	30·045	*85, 27	66·8	39·5,12	48·7	57·8	+2·13	—	55·9	52·0	76	1	7	8	7	8	15	7	7	0	14	+3·86	1·68	−0·28	·30, 16	
July, - -	29·959	*88, 2	68·2	39, 19	48·8	58·5	+0·33	—	58·8	54·7	76	3	4	9	16	6	17	6	1	0	14	−0·56	2·11	−0·84	·40, 8	Thunder, 2nd. [Hail, 28.
August, -	29·904	79, 2	67·8	34, 12	46·9	57·4	+0·40	—	56·1	52·2	75	3	3	10	5	1	17	18	5	0	16	−0·17	2·93	−0·56	·55, 24	Thun. and Light., 24, 25.
September,	29·842	69, 17	60·3	33, 5	47·1	53·7	+0·37	2	52·9	50·8	87	2	4	8	7	7	11	8	11	2	25	+10·96	3·96	+1·59	1·16, 7	Thunder & Lightning, 26th.
October, -	30·102	*76, 4	58·4	26, 25-6	45·9	*52·2	+6·00	4	50·0	48 5	90	2	7	13	11	5	9	3	3	9	14	−1·56	2·33	−0·63	·60, 19	Aurora, 7-8 p.m., 31.
November,	29·902	55, 24	48·8	27, 10	37·8	43·2	+1·73	6	42·7	40·9	86	2	6	2	4	6	16	9	8	10	19	+4·22	2·40	−0·47	·63, 25	
December,	29·766	53, 22	44·3	18, 28 30	32·6	38·5	+1·00	12	38·0	36·5	87	2	7	9	1	9	13	4	6	8	17	+0·79	2·08	−0·88	·65, 28	Snow, 27, 29, 30.
Totals, 1908								81				33	59		73	50	131	118	65	109	188		27·41			
Averages ,,	29·923		55·1		40·4	47·75					82·4															
Highest, ,,	30·630 6th Feb.	88	68·2	39·5	48·8	58·5					90·										25		3·97			
Lowest, ,,	28·607 9th Mar.	52	41·0	8·5	31·9	36·9					75·										9		0·92			
Difference from 26 years' Average, 1883-1908.	+·045		+1·32		+1·37	+1·34					−6·4	+ 7·3	+ 30·46	+ 2·66	+ 22·86	+ 17·05	+ 40·76	+ 52·	+ 49·82		+22	+22	−3·09	−3·09		

* Temperatures marked thus are also extremes for the period 1883-1908.

BAROMETER.

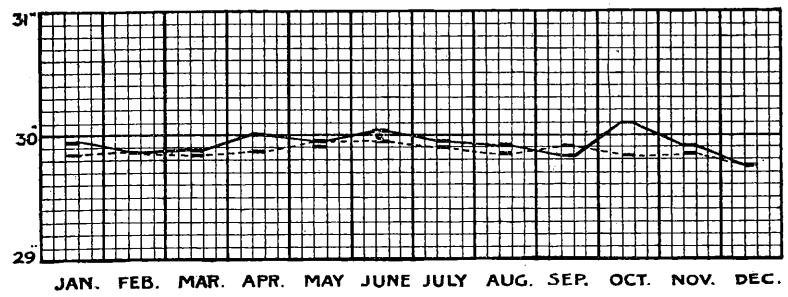


Plate 8.
Mean Monhtly Barometer Readings at Perth, 1908 ———
Average of Mean Monthly Barometer Readings, 1883 to 1908 .....

RAINFALL.

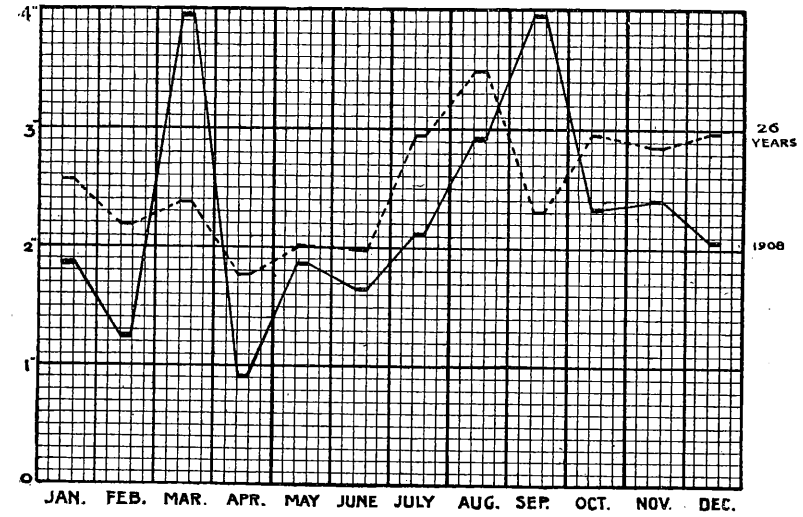


Plate 9.
Monthly Rainfall at Perth, 1908 ———
Average of Monthly Rainfall at Perth, 1883 to 1908 .....

TEMPERATURE.

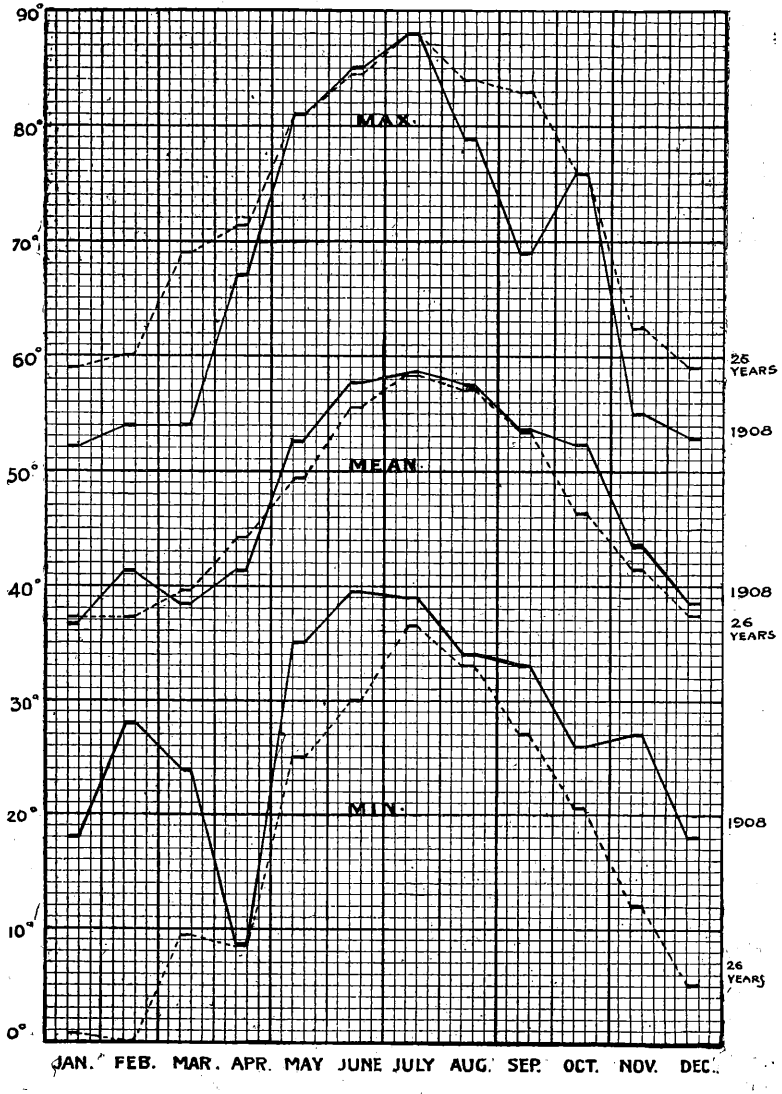


Plate 10.

Maximum and Minimum Monthly Temperature at Perth, 1908 ———

" " " " 1883 to 1908 .....

Mean Monthly Temperature at Perth, 1908 — — —

Average of Mean Monthly Temperature at Perth, 1883 to 1908 .....

APPENDIX.

METEOROLOGICAL OBSERVATIONS IN PERTH.

Meteorological observations have been taken in Perth since the foundation of the Scottish Meteorological Society in 1856, and appear in the Journal of that Society. The first observations were made by various gardeners for Lieut.-Gen. Sir A. Lindsay, K.C.B., R.A., 1856-1871; from 1872-1880 by Mr. Moncur, General Prison; from 1880-1899 by various gardeners to Mr. James F. Pullar, Rosebank; and from 1899 to 1908 by Mr. John Leslie, the gardener to Mr. Coates, Pitcullen.

The results of some of these observations were worked into the reports on the Barometric pressure, Mean temperature, and Rainfall of Scotland, published by the late Alexander Buchan, M.A., LL.D., F.R.S., in the Journal of the Scottish Meteorological Society.

The figures herewith given show the mean values and extreme readings for each month, for a period of 26 years, viz., 1883 to 1908.

At the end of the series the mean values and extreme readings are given for each month, quarter, and year for the period.

I am indebted to all those who have taken the daily readings for over half-a-century in this city; to Mr. Watt of the Scottish Meteorological Society, for permission to use their reports; and also to Mr. David Campbell for verifying my figures for the period 1883-1908.

JANUARY.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·799	—	—	—	—	—	36·7	35·1	86	3	5	1	4	6	3	9	0	17	4·44
4	29·750	52·0	44·5	24·0	35·5	39·8	40·8	38·9	86	2	1	2	3	1	18	0	4	22	4·47
5	29·813	48·5	39·8	20·0	30·6	35·2	35·0	34·2	92	6	2	7	4	2	6	1	3	18	2·09
6	29·549	54·0	39·1	6·0	28·5	33·8	33·4	32·2	87	8	3	5	8	0	7	0	0	23	4·27
7	29·831	52·0	42·9	22·0	32·7	37·8	37·6	36·3	89	0	0	3	11	1	15	1	0	23	2·61
8	30·090	52·0	43·4	17·0	33·1	38·3	38·4	36·9	88	3	2	12	2	1	11	0	0	16	2·40
9	29·978	54·9	44·8	20·0	32·8	38·8	39·4	37·6	86	0	1	11	5	5	9	0	0	16	1·05
1890	29·587	59·0	47·2	18·0	35·0	41·1	41·7	39·7	85	0	2	6	4	4	15	0	0	20	3·85
1	29·973	50·5	40·4	11·9	28 6	34·5	36 0	34·6	87	1	1	13	3	4	8	1	0	15	1·56
2	29 726	57·5	41·2	0·8	28·7	35·0	35·9	34·4	86	1	3	10	3	3	10	0	1	8	2·11
3	29·971	53·2	41·8	15·0	32·1	36·9	37·3	35·5	85	0	2	14	4	1	8	1	1	10	1·82
4	29·623	53·0	42·6	4·0	30·6	36·6	37 0	35·4	86	0	1	10	1	0	18	0	1	20	3·91
5	29 748	42·5	36·2	9·0	25·3	30·8	29·9	29·0	85	7	4	13	0	0	6	0	1	8	3·10
6	30·196	52·0	44·6	20·5	33·4	39·0	38·6	37·3	90	2	2	10	1	2	13	0	1	14	1·09
7	29·940	46·8	38·4	21·0	29·8	34·1	33·9	32·8	88	7	5	12	1	1	3	1	1	9	1·86
8	30·083	56·0	49·1	27·5	37·5	43·3	43·5	41·9	87	0	0	5	0	9	14	1	2	11	1·56
9	29·680	49·5	41·5	13·5	29·4	35·5	35 0	33·9	89	1	6	12	0	2	8	1	1	19	4·46
1900	29·782	56·0	42·4	26·0	32·6	37·5	37·6	36·1	87	3	1	6	1	4	1	11	1	10	3·88
1	29·892	51·0	41·5	20·0	30·6	36·1	36·0	35·1	92	2	0	7	4	3	3	7	2	11	1·99
2	29·958	52·5	43·1	7·5	30·9	37·0	36·3	34·9	88	4	2	2	1	1	4	16	0	8	1·41
3	29·765	53·5	40·6	11·0	31·4	36·0	35·8	34·2	86	2	4	8	8	6	6	16	4	18	4·54
4	29·722	51·5	44·1	28·0	33·6	38·7	39·0	37·2	86	2	0	0	11	7	15	15	2	—	1·49
5	30·047	54·0	44·2	22·0	32·9	38·6	38 6	36·7	85	0	0	4	6	1	5	32	0	8	0·53
6	29·706	53·0	43·9	23·5	34·4	39 2	39·2	37·7	88	2	1	6	1	0	1	34	1	14	3·30
7	30·153	54·0	42·6	20·0	31·9	37·3	37·0	36·1	91	4	0	2	1	1	1	34	1	10	1·19
8	29·994	52·0	41·9	18·0	31·9	36·9	36·2	34·4	85	2	1	4	3	0	5	19	7	9	1·89

FEBRUARY.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETERS.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A.B. Mean Temp.	Dry.	Wet.	°/₀ Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·919	54·0	44·4	20·0	33·9	39·2	39·4	37·3	83	2	2	2	8	2	8	3	1	15	3·46
4	29·763	53·0	44·5	23·0	34·3	39·4	39·6	37·7	85	0	4	3	10	1	10	0	1	19	2·41
5	29·466	51·5	44·4	21·0	33·3	38·8	38·2	36·6	87	1	2	4	3	4	13	1	0	19	3·12
6	30·072	48·0	38·8	12·5	28·0	33·4	33·0	32·3	92	1	0	15	6	0	5	1	0	14	2.07
7	30·209	54·5	45·0	19·0	33·0	39·0	38·4	36·7	86	0	2	4	3	3	14	2	0	15	1·42
8	30·046	53·0	41·4	14·0	30·1	35·7	35·2	34·1	89	1	8	11	1	0	8	0	0	10	0·50
9	29·855	56·2	43·9	20·0	31·3	37·6	37·0	35·3	85	2	5	7	0	7	7	0	0	14	1·36
1890	30·243	56·0	42·7	22·5	30·9	36·8	36·0	34·8	89	0	6	15	2	0	5	0	0	5	1·43
1	30·354	58·5	47·7	24·5	32·9	40·3	39·7	38·2	88	0	1	12	1	2	12	0	0	6	0·17
2	29·760	55·0	43·0	10·5	29·9	36·4	35·5	34·3	88	4	3	10	2	2	8	0	0	18	2·60
3	29·559	52·0	44·4	24·5	33·7	39·0	38·4	36·8	87	0	4	6	6	7	4	1	0	20	4·08
4	29·738	53·0	44·4	23·5	33·6	39·0	38·4	36·5	85	0	0	6	0	6	15	0	1	21	6·62
5	30·165	47·0	35·4	0·0	18·5	27·0	26·4	25·3	76	4	2	20	0	0	0	2	0	6	1·06
6	30·202	54·2	47·5	25·2	36·5	42·0	40·9	39·2	87	0	1	4	9	2	13	0	0	11	0·99
7	29·924	60·0	45·1	20·5	35·0	40·1	40·0	38·2	86	0	0	11	0	4	12	1	0	14	1·44
8	29·726	55·2	45·1	21·0	33·1	39·1	38·5	36·4	83	3	3	1	0	1	14	4	2	13	1·60
9	29·794	53·5	44·2	21·0	30·9	37·6	37·2	35·9	88	4	2	6	5	6	5	0	0	12	2·72
1900	29·550	49·0	38·5	6·0	24·1	31·3	30·2	29·2	84	3	0	14	1	4	0	2	2	9	2·59
1	30·051	48·0	41·5	17·0	27·8	34·7	33·0	32·0	89	12	5	2	0	0	2	1	3	4	1·93
2	29·888	47·5	39·0	10·0	27·2	33·1	32·2	31·5	91	6	2	9	5	1	1	3	0	3	1·24
3	29·756	57·0	49·3	27·0	36·4	42·8	42·5	40·0	81	1	0	2	0	3	15	26	6	18	4·69
4	29·494	47·5	40·8	22·0	30·2	35·5	35·2	33·8	85	2	1	17	14	2	6	4	0	—	4·46
5	29·970	52·5	44·8	25·0	35·1	39·0	37·9	36·6	89	3	0	4	1	1	1	27	5	11	0·85
6	29·624	49·0	41·5	21·0	28·7	35·1	34·5	32·5	76	9	2	6	1	1	2	15	4	10	1·44
7	29·859	58.0	42·6	11·0	29·1	35·8	34·7	33·6	90	7	0	0	0	0	7	20	4	11	1·46
8	29·889	54·0	47·5	28·0	34·9	41·2	39·2	37·1	83	6	0	0	0	0	3	22	12	10	1·28

MARCH.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETERS.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	30·038	57·0	42·2	21·0	29·2	35·7	35·7	34·0	84	9	1	2	2	2	4	2	9	9	1·98
4	29·782	62·0	46·2	26·0	33·6	39·9	40·4	38·7	87	1	2	2	14	2	10	0	0	20	3·18
5	29·992	53·0	46·3	27·0	33·8	40·0	39·0	38·0	92	11	1	6	3	2	7	1	0	14	3·56
6	29·899	60·9	42·5	12·5	30·4	36·4	36·7	35·8	93	3	3	7	7	0	6	5	0	19	3·20
7	30·020	57·5	46·1	18·0	31·4	38·8	37·3	35·8	87	4	3	6	3	3	12	0	0	18	2·32
8	29·657	52·0	41·5	9·5	28·8	35·1	35·2	34·1	89	0	8	19	0	0	4	0	0	22	4·27
9	29·888	59·5	46·9	11·0	32·2	39·6	39·2	37·2	84	1	6	8	8	2	6	0	0	18	1.25
1890	29·660	56·5	48·8	20·5	34·9	41·8	42·4	40·0	82	2	5	10	4	2	8	0	0	17	2·82
1	29·752	55·5	44·7	17·5	30·4	37·6	37·6	35·4	82	7	6	9	0	1	8	0	0	8	1·67
2	30·044	60·0	44·1	12·8	29·0	36·6	36·5	34·6	84	2	6	10	7	1	5	0	0	10	0·96
3	29·937	69·0	52·0	24·0	34·7	43·3	41·8	39·6	84	2	3	7	2	3	13	1	0	11	1·25
4	29·784	63·0	51·6	26·5	34·1	42·8	41·0	38·8	83	1	0	5	8	1	14	1	1	9	2·37
5	26·621	57·0	46·4	24·0	35·1	40·8	40·4	39·0	89	6	3	5	2	10	0	0	0	20	2·24
6	29·597	55·5	49·2	27·0	34·8	42·0	41·8	38·8	79	1	1	1	2	5	18	1	2	16	1·84
7	29·465	57·5	47·0	26·8	36·0	41·5	41·1	38·9	82	6	2	8	4	0	11	0	0	23	4·64
8	29·893	59·0	47·5	22·0	33·0	40·3	39·4	37·7	87	7	3	3	4	1	11	0	2	5	0·47
9	29·948	65·5	48·3	19·0	33·3	40·7	40·5	38·4	83	5	3	4	0	5	13	1	0	11	2·57
1900	30·070	56·0	45·2	20·0	29·5	37·4	35·9	33·7	82	8	1	12	0	1	0	2	2	4	1·24
1	29·751	57·0	45·4	16·0	32·4	38·9	37·8	36·2	87	4	1	13	3	2	1	5	1	9	1·65
2	29·670	57·0	49·8	24·0	34·2	42·0	40·4	38·5	85	2	2	2	1	1	5	14	2	6	1·02
3	29·539	55·5	47·6	26·0	34·6	41·1	40·7	38·4	82	0	0	3	2	8	29	12	3	25	4·34
4	29·970	54·5	44·9	22·5	31·6	38·2	37·2	35·2	83	3	3	18	5	5	11	4	1	—	1·71
5	29·555	58·0	49·0	26·0	34·7	41·8	40·5	38·8	86	1	0	7	5	5	3	27	1	19	3·92
6	29·924	54·5	46·4	12·0	31·2	38·8	37·9	35·6	81	16	5	1	0	0	1	18	3	10	1·92
7	29·968	65·0	50·9	26·0	34·2	42·6	40·5	38·7	86	0	1	2	0	0	3	31	6	12	1·93
8	29·759	54·0	44·9	24·0	32·0	38·5	37·2	35·3	83	3	3	9	6	1	5	10	1	17	3·97

APRIL.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max. Temp.	Mini-mum Temp.	B. Mean Min, Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	30·077	68·0	52·4	28·0	37·1	44·8	45·2	42·6	81	6	4	0	1	1	10	8	0	9	1·58
4	29·867	58·0	50 4	26·0	34·6	42·5	44·3	41·2	77	0	5	7	17	0	1	0	0	13	1·09
5	29·785	63·0	51·7	28·0	37·0	44·4	44·1	42·6	88	5	1	6	7	1	8	1	1	—	—
6	29·834	65·0	51·6	29·0	36·0	43·8	43·0	40·6	82	2	5	4	5	0	14	0	0	16	1·67
7	29·972	61·0	51·9	25·5	34·3	43·1	41·7	38·3	76	0	3	6	7	2	10	0	2	11	2·37
8	29·864	60·0	50·9	24·5	35·2	43·0	43·3	40·2	77	1	5	9	4	0	11	0	0	9	1·51
9	29·750	66·0	49·4	29·5	36·4	42·9	43·1	40·2	81	1	9	10	7	0	3	0	0	21	5·24
1890	29·813	62 2	52·3	25·0	34·6	43·4	43·7	40·5	76	2	5	12	7	0	3	0	1	10	0·93
1	30·032	58·0	49 5	25·2	33·2	41·4	41 7	38·8	79	2	3	17	5	0	3	0	0	11	2·41
2	30·016	68·5	53·4	19·5	33·2	43·3	42·8	39·1	73	3	8	12	1	0	6	0	0	4	0·58
3	30·180	71·2	57·1	26 5	37·6	47·4	45·9	43·3	82	0	3	14	1	3	8	0	1	8	1·41
4	29·878	63·0	54·8	32·0	39·9	47·4	46·4	43·9	83	0	0	20	6	0	3	0	1	11	1·31
5	29·823	61·0	53·4	28·0	38·9	46·2	45 6	42·6	79	2	5	8	2	2	11	0	0	11	1·18
6	30·045	64·2	56·8	32 0	40·7	48·8	48·2	44·0	72	3	4	1	0	1	16	4	1	9	1·18
7	29·832	58·2	49·9	27·0	35·3	42·6	42·9	40·0	79	4	0	12	3	1	6	0	4	14	1·79
8	29·803	62·0	54·2	25·0	40·1	47·2	45·8	43·0	80	1	0	14	1	2	12	0	0	15	2·55
9	29·735	61 8	51·5	25·0	36·5	44·0	43·5	40·6	78	2	7	11	0	0	8	1	1	18	2·99
1900	29·858	70·0	54·6	26·0	35·4	45·0	44·7	42·1	81	2	0	11	0	1	2	11	1	9	1·63
1	29 745	70·5	54·5	25·5	34·8	44·6	43·0	40·8	83	3	0	6	1	6	7	3	0	11	2·39
2	29 921	61·5	53·7	24·5	34·5	44·1	42·9	40·5	83	3	1	7	7	3	1	3	1	10	1·66
3	29·835	60·5	50 6	25·0	33·3	44·9	41·8	38·4	76	11	3	15	7	0	2	9	6	—	0·96
4	29 727	62·5	54·1	30 0	36·9	45·5	45·5	42·3	77	1	0	0	2	4	3	35	3	10	3·30
5	29·806	57·0	50·2	21·5	34·4	41·5	42·3	39·2	83	6	2	13	4	2	1	10	6	13	1·38
6	30·035	66·5	54·7	23·0	31·4	42·2	43·0	39·4	80	1	0	4	7	0	1	21	5	10	0·90
7	29·750	62·0	52·0	25·0	36·3	43·4	43·4	40·8	80	4	4	5	18	1	2	15	1	10	1·78
8	30·000	67·0	49·6	8·5	33·3	41·5	40·4	38·0	81	6	10	8	5	1	1	7	3	11	0·92

MAY.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·916	67·0	57·5	32·0	39·6	48·6	48·5	45·1	77	4	1	0	1	9	8	4	4	9	1·04
4	29·898	75·0	57 9	31·0	39·5	48·7	50·3	46·4	75	1	0	5	9	1	12	2	1	15	2·09
5	29·718	63·0	53·5	29 9	39·2	46·4	46·0	42·8	78	3	5	6	4	3	7	0	3	—	—
6	29·902	70·0	55·3	30·0	40·2	47·8	47·0	43·8	78	1	3	6	6	3	12	0	0	20	—
7	30·028	69·5	59·6	30·0	40·8	50·2	50·0	45·8	73	2	3	8	5	4	9	0	0	8	0·65
8	29·912	67·5	56·4	30·5	40·0	48·2	49·1	45·7	77	0	2	9	7	1	12	0	0	12	2·30
9	29·813	73·0	60·9	37·0	44·5	52·7	51·9	49·4	83	0	0	16	13	0	2	0	0	18	3·28
1890	29·865	71·5	59·7	33·5	42·7	51·2	51·2	48·1	80	0	0	11	12	0	8	0	0	15	1·65
1	29·778	74·5	55·8	29·5	38·3	47·0	47·4	45·1	84	1	5	13	5	2	5	0	0	12	2·67
2	29 902	68·5	59·7	29·0	40·1	49·9	50·0	46·7	78	1	2	13	0	3	12	0	0	19	3·26
3	30·030	73·0	61·3	35·0	45·2	53·2	52·3	49·0	78	3	1	13	6	1	7	0	0	8	0·66
4	29·946	66·0	55·1	28·5	38·9	47·0	46·7	43·4	78	6	3	14	3	1	4	0	0	20	2·73
5	30·105	72·5	63·1	36·0	42·5	52·8	52·9	48·8	74	5	2	12	1	1	7	3	0	8	0·95
6	30·261	77·0	65·3	34·5	43·9	55·6	54·1	49·6	72	4	0	6	6	4	9	0	2	6	0·51
7	29·919	66·5	57·5	29·2	39·1	48·3	48·0	44·5	76	4	0	7	5	2	12	1	0	11	1·53
8	29·836	65·5	57·0	30·2	39·5	48·2	48·4	44·5	74	2	6	12	0	2	8	1	0	12	4·49
9	30·028	70·0	54·9	30·5	37·9	46·4	47·0	44·2	80	0	6	13	4	4	4	0	0	15	4·46
1900	29·924	72·0	58·6	28·5	40·5	49·6	49·7	45·6	73	0	2	9	0	8	1	4	4	8	1·57
1	30·124	74·0	63·2	33·0	40·4	57·8	50·2	47·4	81	0	1	14	4	5	1	4	0	8	2·58
2	29·946	72·5	54·6	28·5	37·9	46·2	46·5	43·4	79	11	2	3	4	3	3	4	1	20	2·23
3	29·875	75·5	58·9	33·5	40·1	49·5	49·2	46·2	79	4	4	19	4	10	11	0	0	—	1·30
4	29·865	66·5	57·1	31·5	40·4	48·8	48·8	45·7	79	2	5	19	4	5	3	15	2	—	2·57
5	30·102	67·5	60·0	29·0	40·5	50·2	49·7	46·8	81	1	1	12	1	2	7	20	3	7	1·67
6	29·800	66·0	56·3	25·0	40·2	48·2	47·9	45·4	83	4	5	16	2	6	6	8	0	18	4·71
7	29·838	67·5	55·4	31·0	40·0	47·7	47·4	44·6	81	4	2	13	10	5	2	12	1	15	3·04
8	29·915	81·0	60·8	35·0	44·6	52·7	51·4	48·3	80	1	7	14	8	6	19	5	1	22	1·86

JUNE.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETERS.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A.B. Mean Temp.	Dry.	Wet.	°/₀ Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·950	79·0	63·6	36·0	45·4	54·5	55·9	52·0	77	1	0	0	0	12	5	12	0	13	1·42
4	29·988	82·0	65·1	37·0	46·2	55·6	56·5	52·0	72	1	6	0	14	0	8	1	0	7	0·34
5	30·017	74·5	63·8	34·5	46·2	55·0	54·8	50·2	71	1	5	5	5	1	11	1	1	6	0·64
6	29·921	77·0	62·8	37·2	45·6	54·2	54·8	49·6	68	0	4	3	5	1	16	1	0	9	0.10
7	30·201	84·5	69·0	36·0	48·0	58·5	58·8	54·2	73	0	0	5	9	5	10	1	0	7	0·60
8	29·965	76·0	61·1	30·0	43·1	52·1	51·7	48·7	80	0	3	14	11	0	2	0	0	12	2·03
9	30·054	78·5	67·4	37·0	47·6	57·5	57·2	53·3	76	0	1	17	5	0	7	0	0	7	1·10
1890	29·905	67·0	62·8	37·0	47·6	55·2	55·5	51·9	78	0	0	5	12	0	13	0	0	19	3·98
1	30·062	77·0	66·6	34·0	45·9	56·2	56·6	53·0	77	0	2	3	14	3	7	1	0	5	0·60
2	29·906	82·0	62·6	34·0	44·3	53·2	53·8	50·4	78	1	5	12	1	3	8	0	0	17	3·21
3	29·967	83·5	67·2	44·0	48·9	58·0	58·1	53·8	74	4	5	11	2	3	5	0	0	7	2·16
4	29·970	72·5	63·0	36·0	47·2	55·1	54·5	51·0	77	0	0	11	2	6	11	0	0	9	3·40
5	30·044	77·5	66·1	35·0	46·7	56·4	56·4	52·2	74	3	1	11	1	8	6	0	0	10	2·28
6	29·907	77·5	65·7	39·0	49·5	57·6	56·3	53·6	82	2	0	14	0	5	9	0	0	18	3·15
7	30·002	69·5	62·4	40·0	48·5	55·4	55·2	52·5	83	0	0	13	5	4	6	1	1	21	4·60
8	29·928	76·5	65·4	38·0	46·8	56·1	55·9	52·0	76	1	2	4	6	5	12	0	0	12	1·84
9	30·055	76·5	68·8	39·5	48·3	58·6	58·5	54·5	76	1	1	10	7	4	4	2	1	9	2·09
1900	29·877	76·0	65·2	39·0	47·8	56·5	55·0	52·5	84	2	0	10	0	6	3	3	1	8	2·49
1	29·960	80·0	64·1	33·0	45·5	54·9	54·6	50·7	76	3	0	2	4	6	3	7	4	8	2·02
2	29·939	79·5	62·2	34·5	45·5	53·8	52·7	50·4	85	2	4	15	1	5	1	1	0	9	1·93
3	30·105	82·0	64·1	32·5	44·7	54·4	53·9	50·4	77	0	10	13	7	8	4	4	7	—	1·66
4	30·002	78·0	64·9	37·0	45·6	55·2	54·2	50·7	77	0	3	21	7	6	4	11	0	—	1·14
5	29·984	80·5	65·9	34·0	46·2	56·0	54·7	51·9	81	1	1	20	4	2	4	9	0	7	0·56
6	30·099	80·5	68·2	36·5	47·2	57·7	55·9	52·4	78	0	6	11	1	5	7	15	1	8	1·30
7	29·687	70·5	60·0	33·5	44·1	52·1	51·5	49·6	87	1	2	4	2	7	6	24	2	22	4·66
8	30·045	85·0	66·8	39·5	48·7	57·8	55·9	52·0	76	1	7	8	7	8	15	7	7	14	1·68

JULY.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETERS.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·750	73·0	65·0	40·0	48·1	56·6	57·6	56·6	94	0	0	0	0	12	7	12	0	21	4·46
4	29·855	82·0	66·2	40·0	49·9	58·0	—	—	—	0	3	9	9	4	6	0	0	26	6·25
5	30·094	83·0	68·3	41·0	50·3	59·3	—	—	—	0	2	2	5	3	18	1	0	8	0·71
6	29·796	81·5	67·1	37·5	49·4	58·2	57·8	53·8	76	1	1	2	4	6	14	3	0	16	3·91
7	29·905	81·0	70·9	42·0	51·4	61·1	60·7	56·4	75	0	1	3	3	1	23	0	0	13	1·29
8	29·729	72·5	61·5	36·5	46·8	54·2	54·6	51·6	80	0	4	8	14	3	1	1	0	21	5·62
9	29·880	75·0	65·7	41·5	47·6	56·6	56·9	53·4	78	0	8	14	5	0	4	0	0	12	2·85
1890	29·782	71·5	64·9	42·0	47·1	56·0	55·6	53·0	84	0	8	5	1	0	11	0	6	23	4·16
1	29·837	75·8	68·2	44·5	51·2	59·7	59·0	55·6	80	2	2	5	9	1	9	1	0	14	3·04
2	29·975	75·5	64·9	37·5	47·5	56·2	55·7	52·4	80	0	0	18	3	0	8	0	2	9	1·93
3	29·841	76·0	65·8	43·0	51·4	58·6	57·5	54·3	80	3	0	18	1	0	9	0	0	15	2·61
4	26·842	81·5	67·1	45·0	51·2	59·2	59·0	56·2	83	4	2	5	8	2	9	0	1	21	3·76
5	29·766	71·0	64·8	43·0	48·9	56·9	57·0	53·5	78	1	4	7	1	2	10	1	5	19	4·22
6	29·956	74·5	66·9	40·5	49·3	58·1	58·2	54·7	79	2	0	4	5	3	6	9	2	12	3·91
7	29·948	86·5	68·8	41·0	50·1	59·4	59·0	55·2	77	0	0	6	7	1	9	8	0	12	1·71
8	30·068	78·0	69·3	38·5	48·4	58·8	58·4	53·8	73	3	6	2	2	4	11	2	1	8	1·40
9	30·014	78·0	67·3	44·5	52·7	60·0	59·5	—	—	4	1	5	2	5	3	9	2	9	3·76
1900	29·920	76·5	68·2	38·0	52·4	60·3	59·0	56·3	84	3	1	6	0	5	3	11	0	14	3·21
1	30·019	82·5	73·2	42·0	53·1	63·1	61·6	58·7	83	0	2	5	4	8	3	5	0	9	1·38
2	29·930	77·5	64·3	37·5	46·8	55·5	55·2	52·0	80	2	1	5	0	1	2	15	4	—	2·30
3	29·838	74·5	65·7	37·0	48·3	57·0	56·4	53·7	83	1	3	12	4	3	10	17	6	—	5·42
4	29·978	75·0	66·3	40·0	49·1	57·7	57·3	54·4	81	1	1	5	13	9	6	7	1	—	1·86
5	29·946	80·0	70·4	39·0	49·8	60·1	59·3	56·5	83	2	0	2	1	1	0	43	0	10	1·24
6	29·922	72·5	66·2	40·0	47·6	56·9	56·6	53·6	81	1	1	1	8	2	2	28	2	15	1·24
7	29·979	83·0	64·7	37·0	48·2	56·5	55·3	52·7	83	1	3	2	8	0	1	12	5	14	2·34
8	29·959	88·0	68·2	39·0	48·8	58·5	58·8	54·7	76	3	4	9	16	6	17	6	1	14	2·11

AUGUST.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max. Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	°/. Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	—	78·0	65·5	42·0	48·2	56·9	—	—	—	0	0	0	0	4	13	13	0	13	3·59
4	29·923	75·0	67·1	40·0	49·0	58·0	59·9	59·3	96	0	1	5	8	5	10	2	0	15	1·99
5	29·954	72·5	62·3	38·0	45·9	54·1	54·2	53·0	92	0	1	7	10	3	9	0	1	11	2·32
6	29·867	72·5	64·8	40·0	49·1	57·0	57·0	53·8	80	0	3	5	3	3	13	4	0	12	1·19
7	29·950	79·0	67·6	38·5	47·5	57·6	56·6	52·9	77	0	6	11	7	0	7	0	0	10	3·11
8	29·873	70·0	64·4	35·5	46.8	55·6	54·3	51·9	84	0	2	9	4	3	12	1	0	17	2·47
9	29·751	76·0	64·3	39·0	49·1	56·7	56·2	53·5	83	0	6	10	5	2	7	1	0	23	5·14
1890	29·788	72·5	64·4	33·5	47·8	56·1	55·8	53·6	87	0	4	11	0	0	13	0	3	20	2·71
1	29·658	68·0	64·6	38·8	48·5	56·5	57·1	54·4	83	0	1	5	8	7	8	2	0	23	4·60
2	29·784	72·5	65·3	33·0	48·6	56·9	56·3	53·7	83	6	0	10	1	3	11	0	0	16	4·69
3	29·887	84·0	69·1	37·8	52·0	60·5	59·6	56·6	82	3	3	7	1	1	13	0	3	17	2·90
4	29·808	68·5	64·6	42·0	48·8	56·7	55·8	53·0	82	6	1	2	2	4	10	2	4	18	6·26
5	29·744	76·0	65·5	42·0	52·9	59·2	58·0	55·7	85	0	1	8	4	5	12	1	0	26	7·07
6	29·965	75·5	64·6	36·0	47·9	56·2	55·8	52·3	78	5	2	6	4	2	12	0	0	17	2·63
7	29·691	75·5	68·2	42·5	51·8	60·0	59·0	56·3	84	2	1	9	3	4	12	0	0	22	2·86
8	29·891	74·8	66·7	38·0	49·3	58·0	57·0	54·3	83	0	3	6	0	5	14	1	2	15	2·35
9	30·067	78·0	68·9	38·0	50·0	59·5	58·5	56·0	84	0	0	11	4	1	2	7	1	5	1·22
1900	29·951	78·0	63·7	38·5	47·9	55·8	55·0	53·0	87	0	2	13	1	0	1	5	1	16	3·74
1	29·941	75·0	67·0	40·0	50·3	58·6	56·6	53·7	80	1	1	1	5	6	5	6	3	10	3·89
2	29 874	72·0	62·9	36·0	46·3	54·6	53·4	51·3	86	2	2	5	3	2	2	9	1	—	3·49
3	29·675	70·5	63·8	37·0	46·4	55·1	54·5	52·1	84	0	0	1	3	0	4	45	1	—	3·67
4	29·910	77·0	65·2	36·5	47·9	56·5	55·6	53·2	84	1	2	3	4	11	8	7	6	—	4·96
5	29·814	71·0	64·4	37·0	47·6	56·0	55·1	53·0	88	3	0	7	8	0	6	24	2	17	3·03
6	29·870	79·0	65·8	40·0	50·1	58·0	57·4	55·7	89	1	2	0	6	5	4	12	1	15	4·48
7	29·797	67·0	62·9	36·0	46·0	54·5	53·6	51·0	82	0	0	0	2	3	2	35	5	18	3·56
8	29·904	79·0	67·8	34·0	46·9	57·4	56·1	52·2	75	3	3	10	5	1	17	18	5	16	2·93

SEPTEMBER.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·764	70·0	60·5	35·0	45·8	53·2	—	—	—	0	0	0	1	1	0	27	1	18	2·44
4	29·905	72·5	62·7	34·0	46·5	54·6	54·7	53·2	90	0	3	7	8	1	9	2	0	25	2·56
5	29·701	64·0	59·1	27·0	43·6	51·4	—	—	—	0	3	3	3	11	8	2	0	26	3·92
6	29·943	69·0	60·4	30·0	44·3	52·4	51·2	49·5	88	0	0	6	7	4	10	3	0	16	3·21
7	29·851	67·0	61·0	30·0	44·3	52·6	51·2	48·8	84	0	4	16	3	1	6	0	0	19	4·31
8	30·134	70·5	61·5	36·0	43·2	52·4	50·2	48·3	87	0	4	13	1	3	9	0	0	11	0·55
9	29·987	72·0	60·7	29·5	45·2	52·9	51·6	49·1	83	0	8	7	7	2	6	0	0	8	0·68
1890	29·988	74·8	66·4	39·0	47·5	57·0	56·2	54·1	86	0	2	3	3	1	21	0	0	11	3·13
1	29·812	75·5	60·5	36·5	47·4	54·0	53·6	51·2	84	0	3	6	2	2	16	0	1	19	2·63
2	29·779	69·0	59·0	32·5	43·1	51·0	50·6	48·1	83	1	1	4	2	6	16	0	0	14	3·24
3	29·715	71·5	61·3	32·0	44·8	53·0	52·3	49·4	80	4	2	10	0	0	14	0	0	12	1·26
4	30·210	68·0	60·5	34·2	43·8	52·0	51·4	48·6	82	6	5	15	2	0	2	0	0	3	0·22
5	30·038	72·5	65·9	38·0	49·7	57·8	55·4	53·3	87	1	0	5	3	16	5	0	0	8	1·10
6	29·654	65·5	59·1	35·8	46·5	52·8	52·8	51·0	87	1	3	5	12	2	7	0	0	21	4·64
7	29·882	71·0	60·6	32·0	43·5	52·0	51·2	48·5	82	6	1	2	4	3	10	4	0	18	1·75
8	29·978	83·0	65·9	36·0	48·8	57·3	55·5	53·2	85	1	0	3	4	7	15	0	0	11	2·48
9	29·703	72·0	61·3	29·0	42·7	52·0	51·0	48·3	82	2	0	1	0	1	1	21	2	11	3·35
1900	29·982	72·0	62·2	32·0	43·0	52·6	51·9	49·8	87	1	0	1	1	4	2	13	4	9	2·91
1	29·869	67·5	61·7	33·0	47·5	54·6	53·8	52·1	88	0	1	4	9	5	4	2	0	12	1·95
2	30·009	71·0	60·6	36·5	45·1	52·9	52·6	50·6	86	2	2	5	2	4	3	5	2	—	2·19
3	29·967	66·5	59·4	29·0	45·0	52·2	51·6	49·5	85	1	0	15	4	5	4	17	6	—	2·61
4	30·015	67·5	60·4	35·0	44·8	52·6	51·6	49·3	84	0	1	6	11	10	4	3	0	—	2·83
5	29·911	69·5	60·2	30·0	44·4	52·3	51·2	49·3	87	1	1	9	2	3	7	18	4	11	1·44
6	30·159	82·5	63·6	32·0	44·7	54·1	51·8	50·2	88	0	0	1	3	1	1	17	4	9	1·42
7	30·057	75·0	62·8	30·0	43·9	53·4	51·8	50·1	88	—	—	—	—	—	—	—	—	6	0·84
8	29·842	69·0	60·3	33·0	47·1	53·7	52·9	50·8	87	2	4	8	7	7	11	8	11	25	3·96

OCTOBER.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETERS.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max-Temp.	Mini-mum Temp.	B. Mean Min. Temp.	A.B. Mean Temp.	Dry.	Wet.	°/o Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·760	—	—	—	—	—	—	—	—	0	1	0	0	5	9	10	6	13	2·43
4	29·928	64·0	54·2	31·5	40·8	47·5	47·0	44·8	85	0	0	0	0	3	19	3	6	19	2·08
5	29·688	57·2	50·3	21·0	35·0	42·6	41·7	39·8	86	4	11	4	1	1	7	2	0	13	1·75
6	29·787	65·5	54·6	30·0	42·9	48·8	48·4	47·2	92	1	0	15	8	2	5	0	0	26	4·51
7	30·063	63·5	52·8	23·0	35·4	44·1	43·4	40·9	80	5	4	5	10	0	6	0	0	10	0·77
8	29·918	62·0	53·7	30·2	41·5	47·6	47·1	45·0	85	0	5	3	8	4	11	0	0	19	1·81
9	29·677	59·0	52·0	29·5	37·7	44·8	43·9	42·8	91	0	0	25	2	0	4	0	0	25	2·95
1890	29·927	65·5	55·7	28·0	41·7	48·7	48·2	46·1	85	1	3	6	0	1	19	1	0	17	2·34
1	29·635	60·5	53·9	25·0	38·5	46·2	45·5	43·7	87	0	3	7	8	6	7	0	0	17	3·40
2	29·699	55·5	49·5	20·5	35·8	42·6	42·0	40·3	87	5	9	8	2	2	2	3	0	16	4·91
3	29·697	62·5	55·7	28·0	40·7	48·2	47·0	44·0	79	0	0	6	1	6	18	0	0	10	2·26
4	29 93o	62·5	53·0	22·0	36·3	44·6	43·4	42·1	90	2	6	14	6	0	3	0	0	18	4·43
5	29·792	67·5	50·7	26·5	36·3	43·5	41·7	39·8	86	7	5	8	1	1	7	0	2	15	2·14
6	29·693	63·0	49·8	21·5	34·7	42·2	41·6	39·3	82	6	3	12	0	0	8	2	0	15	3·61
7	30·092	63·5	56·0	26·0	39·8	47·9	47·4	45·7	88	3	0	15	6	0	7	0	0	13	2·17
8	29·811	71·0	56·0	31·5	43·7	49·9	49·3	47·6	88	0	0	12	4	6	9	0	0	19	6·78
9	29·944	64·0	55·5	25·0	39·0	47·3	45·3	43·6	87	2	1	7	1	4	3	6	1	7	1·54
1900	29·804	61·5	52·1	24·0	36·9	44·5	43·9	42·5	89	3	2	5	1	1	1	14	3	11	3·28
1	29·817	63·0	52·8	26·5	37·6	45·2	44·4	43·2	91	1	0	5	4	5	5	4	1	13	2·37
2	29·919	59·5	53·6	26·5	38 o	45·8	44·6	42·8	87	1	3	5	1	1	2	10	1	—	1·53
3	29·452	62·5	52·7	27·0	40·4	46·6	46·4	44·6	87	1	0	8	16	7	10	13	1	—	6·16
4	30·001	60·0	53·9	26·0	39·6	46·8	46·1	44·4	88	0	0	1	0	2	5	21	5	—	1·09
5	29·974	63·0	51·6	21·0	34·7	43·2	41·1	39·0	83	3	1	5	0	0	2	15	9	10	2·23
6	29·712	64·5	54·0	28·0	40·7	47·4	47·0	45·8	92	3	2	2	10	4	5	16	2	17	3·39
7	29·612	61·0	53·2	26·0	40·3	46·8	45·6	44·7	94	0	2	14	6	6	3	2	0	21	4·79
8	30·102	76·0	58·4	26·0	45·9	52·2	50·0	48·5	90	2	7	13	11	5	9	3	3	14	2·33

NOVEMBER.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETERS.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maximum Temp.	A. Mean Max-Temp.	Minimum Temp.	B. Mean Min. Temp.	A. B. Mean Temp.	Dry.	Wet.	% Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·581	56·0	45·8	25·0	34·2	40·0	39·6	39·0	95	1	1	0	3	5	4	11	5	20	3·08
4	30·065	59·0	45·6	18·0	35·1	40·4	—	—	—	8	3	2	3	4	7	0	3	14	2·13
5	29·857	58·0	45·2	13·0	34·2	39·7	39·4	38·2	90	0	2	9	9	1	9	0	0	21	2·41
6	29·812	59·0	49·3	26·2	36·1	42·7	41·2	39·6	88	2	5	8	7	2	6	0	0	16	1·72
7	29·653	54·0	44·7	21·0	33·5	39·1	38·9	37·4	88	0	5	8	12	0	5	0	0	20	4·06
8	29·637	57·5	48·3	26·5	38·2	43·2	43·0	40·9	83	0	0	12	3	0	15	0	0	22	6·39
9	30·086	62·5	49·4	21·0	36·7	43·0	42·8	41·3	88	1	2	14	2	0	11	0	0	13	1·09
1890	29·730	56·5	46·6	12·0	32·2	39·4	39·8	38·4	89	2	4	15	3	1	5	0	0	24	5·62
1	29·794	51·0	45·6	24·0	34·0	39·8	39·9	38·6	90	2	5	9	5	3	6	0	0	17	3·79
2	29·904	55·5	46·6	25·0	34·8	40·7	41·7	40·4	90	2	0	8	8	4	8	0	0	16	2·11
3	29·974	54·5	44·8	24·5	33·4	39·1	39·0	36·8	83	6	6	10	0	1	6	1	0	8	0·95
4	29·771	58·5	50·6	26·5	38·9	44·8	45·0	42·8	84	0	0	4	2	6	18	0	0	14	1·12
5	29·774	56·0	47·1	24·0	37·2	42·2	41·7	40·2	89	1	0	13	5	1	9	1	0	23	4·73
6	30·110	53·0	47·0	22·2	36·3	41·6	41·6	39·9	87	3	1	9	0	7	10	0	0	9	1·07
7	30·093	57·8	50·2	22·5	41·2	45·7	45·5	43·8	88	1	2	9	4	3	11	0	0	18	2·03
8	29·772	59·8	48·4	19·5	35·4	41·9	41·3	39·6	87	1	4	13	2	4	6	0	0	13	5·26
9	29·916	58·5	53·0	27·0	40·0	46·5	46·3	44·0	84	1	0	4	1	6	9	6	0	11	3·09
1900	29·705	56·0	45·9	22·0	35·7	40·8	40·4	39·5	93	1	2	8	4	3	3	2	0	15	4·81
1	30·073	54·5	46·0	17·0	31·7	38·8	37·9	36·4	88	4	5	4	1	2	1	10	0	5	1·96
2	29·835	58·5	49·1	26·0	38·1	43·6	43·0	41·8	90	1	0	6	12	4	1	3	0	—	3·02
3	29·916	54·0	47·4	21·5	34·4	40·9	40·8	38·9	85	7	0	5	0	0	6	28	9	—	1·33
4	29·936	60·0	45·8	12·0	32·2	39·0	38·7	37·2	88	8	4	1	2	1	0	25	0	—	0·60
5	29·638	54·0	44·2	15·0	32·6	38·4	37·7	36·3	88	0	2	12	4	2	4	14	0	17	4·53
6	29·777	59·0	49·0	27·0	38·7	43·9	43·7	42·2	88	2	5	3	7	0	11	20	4	17	3·57
7	29·890	57·0	46·0	22·0	34·0	40·0	38·1	37·0	90	0	0	4	8	4	5	5	0	8	1·97
8	29·902	55·0	48·5	27·0	37·8	43·2	42·7	40·9	86	2	6	2	1	6	16	9	8	19	2·40

DECEMBER.

YEAR.	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAIN, ETC.	
	At Sea-Level and 32° F.	Maxi-mum Temp.	A. Mean Max. Temp.	Mini-mum Temp.	B. Mean Min, Temp.	A. B. Mean Temp.	Dry.	Wet.	°/. Hum.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches.
1883	29·988	53·0	44·4	24·0	33·4	38·9	39·8	37·8	84	4	1	0	1	1	15	5	4	14	1·58
4	29·640	53·7	40 4	19·8	31·7	36·0	35 8	34·6	89	2	5	6	6	1	11	0	0	20	3·37
5	30·037	54·0	43·8	14·0	33·2	38·5	38·6	37·0	87	2	7	1	2	0	19	0	0	14	2·46
6	29·542	51·5	37·3	11·5	25·4	31·4	31·2	30·2	85	9	3	3	5	1	7	3	0	15	2·43
7	29·655	55·0	41·7	16·5	29·9	35·8	35·6	34·2	88	4	3	11	2	2	9	0	0	10	1·70
8	29·807	55·0	45·0	19·5	34.1	39·6	40·1	38·9	90	0	5	11	12	2	1	0	0	14	2·81
9	29·981	54·5	44·2	20·0	31·8	38·0	38·5	37·2	89	2	0	4	12	5	8	0	0	16	1·55
1890	30·103	53·5	38·6	13·0	29·3	34·0	34·6	33·4	88	1	3	22	4	0	1	0	0	16	2·26
1	29·721	56 5	43·9	10·8	30·4	37·2	37·4	36·0	88	2	0	6	5	4	14	0	0	18	4·15
2	29·875	53·9	38·6	8·0	27·0	32·8	33·2	32·0	87	1	3	9	7	2	7	1	1	8	0·82
3	29·701	54·5	46·6	21·5	36·3	41·4	41·3	39·6	79	2	0	5	0	5	19	0	0	19	2·38
4	29·827	55·5	45·2	29·0	34·5	40·c	40 0	38·2	86	4	2	6	2	5	10	2	0	18	2·19
5	29·690	52·5	41·5	21·0	32·5	37·0	37·0	35 8	89	2	2	10	4	1	11	1	0	21	4·25
6	29·689	55·0	43·0	20·5	31·8	37·4	37·8	36·8	92	1	7	7	4	2	5	5	0	22	5·73
7	29·704	53·0	42·9	19·0	31·6	37·3	37·8	36·5	90	0	4	16	1	0	10	0	0	17	4·19
8	29 744	57·0	49·5	22·0	38·1	43·8	43·6	41·0	80	4	1	4	2	1	19	0	0	20	3·12
9	29·827	55·0	39·0	5·0	27·1	33·0	32·9	31·8	87	2	1	15	1	2	1	3	1	11	3·43
1900	29·618	59·0	48·2	28·0	37·6	42·9	42·8	41·3	88	0	0	5	3	2	6	11	3	22	3·93
1	29·479	58·0	40·8	18·0	30·5	35·7	35·4	34·0	87	4	4	6	2	1	2	9	2	19	3·02
2	29·895	54·0	44·1	16·0	33·5	38·8	38·6	37·2	89	1	0	6	5	2	1	13	1	—	6·10
3	29·710	52·5	40·3	19·0	29·4	34·8	34·9	33·7	89	4	2	7	20	6	2	6	0	—	3·53
4	29·778	55·5	42·6	11·0	31·2	36·9	36·3	35·4	93	3	0	2	0	0	5	19	5	—	2·17
5	30·023	53·5	46·7	26·5	37·7	42·2	41·9	40·5	90	0	0	6	3	0	3	35	2	14	1·96
6	29·846	55·0	41 5	11·0	29·9	35·7	35·5	34·4	90	10	0	0	0	0	2	19	6	11	1·47
7	29·632	48·0	40·9	23·0	34·2	37·6	36·5	35·3	89	0	0	8	9	3	9	8	0	17	4·29
8	29.766	53·0	44·3	18·0	32·6	38·5	38·0	36·5	87	2	7	9	4	9	13	4	6	17	2·08

MEAN VALUES AND EXTREME READINGS FOR THE MONTHS, QUARTERS, AND YEAR, BASED ON METEOROLOGICAL OBSERVATIONS, PERTH,

26 Years, 1883-1908.

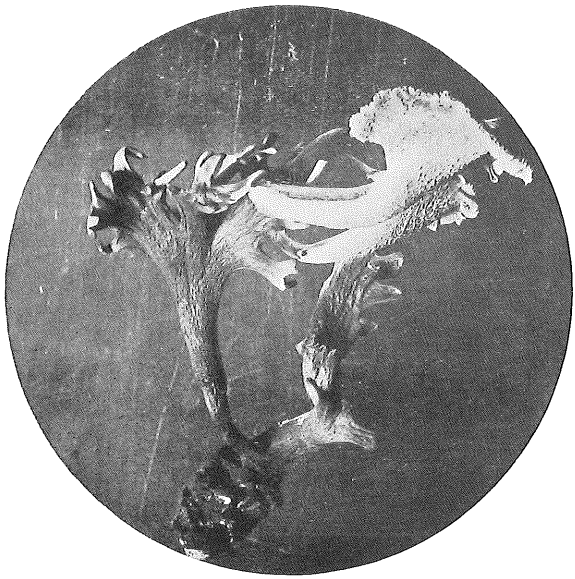
MONTHS.	BAROMETER.	THERMOMETERS.					HYGROMETER.			WINDS.								RAINS.	
	Mean at Sea-level and 32°	Highest.	A Mean Highest.	Lowest.	B Mean Lowest.	Mean A.B.	Dry Bulb	Wet Bulb	% Humidity.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Days.	Inches
January, - -	29·859	59·0	42·47	−4·0	31·75	37·11	37·15	35·70	87·30	2·38	1·92	7·07	3·46	2·50	8·19	7·73	1·27	14·28	2·57
February, - -	29·879	60·0	43·36	0·0	31·17	37·27	36·59	35·07	85·85	2·73	2·11	7·34	3·00	2·27	7·31	5·19	1·57	12·32	2·19
March, - -	29·814	69·0	46·74	9·5	32·65	39·70	39·00	37·12	84·84	4·04	2·76	6·88	3·53	2·42	8·00	5·19	1·30	14·08	2·39
1st Quarter,	29·850	69·0	44·19	−4·0	31·85	38·02	37·58	35·96	85·99	9·15	6·79	21·29	9·99	7·19	23·50	18·11	4·14	40·68	7·15
April, - - -	29·884	71·2	52·50	8·5	35·80	44·24	43·71	40·90	79·50	2·73	3·34	8·92	4·80	1·19	5·88	4·92	1·46	11·47	1·78
May, - - -	29·932	81·0	58·28	25·0	40 63	49·49	49·29	46·01	78·11	2·46	2·61	10·88	4·67	3·50	7·34	3·19	0·84	13·30	2·00
June, - - -	29·982	85·0	64·80	30·0	46·58	55·67	55·34	51·71	77·42	0·96	2·61	9·30	5·07	4·34	7·19	3·90	0·96	11·00	1·99
2nd Quarter,	29·932	85·0	58·52	8·5	41·00	49·80	49·45	46·20	78·34	6·15	8·56	29·10	14·54	9·03	20·41	12·01	3·26	35·71	5·77
July, - - -	29·904	88·0	66·91	36·5	49·43	58·17	57·75	54·48	80·47	1·30	2·23	6·15	5·10	3·15	7·76	7·34	1·45	14·56	2·95
August, - -	29·853	84·0	65·43	33·0	48·56	57·00	56·33	53·82	83·92	1·27	1·80	6·23	3·88	3·07	8·73	7·50	1·50	16·17	3·49
September, -	29·917	83·0	61·49	27·0	45·23	53·33	52·42	50·26	85·45	1·12	1·83	6·12	3·91	3·87	7·24	5·68	1·00	14·04	2·37
3rd Quarter,	29·891	88·0	64·61	27·0	47·71	56·16	55·49	52·84	83·28	3·69	5·86	18·50	12·89	10·09	23·73	20 52	3·95	44·77	8·81
October, - -	29·824	76·0	53·42	20·5	38·95	46·20	45·28	43·52	87·16	1·92	2·57	7·88	4·11	2·76	7·15	4·80	1·53	15·56	2·96
November, -	29·853	62·5	47·31	12·0	35·63	41·47	41·18	39·89	87·90	2·15	2·46	7·38	4·15	2·69	7·38	5·19	1·11	15·65	2·87
December, -	29·779	59·0	42·88	5·0	32·18	37·55	37·50	36·16	87·69	2·53	2·30	7·19	4·46	2·19	8·07	5·53	1·19	16·30	2·96
4th Quarter,	29·818	76·0	47·87	5 0	35·56	41·72	41·32	39·87	87·58	6·60	7·33	22·45	12·72	7·64	22·60	15·52	3·83	47·51	8·79
Year, - -	29·873	88·0	53·79	−4·0	39·03	46·42	45·96	43·70	83·80	25·59	28·54	91·34	50·14	33·95	90·24	66·16	15·18	168·67	30·52

CORRECTIONS, 28th FEBRUARY, 1910.

January,	1894,	for	4·0	read	−4·0.		
February,	1905,	,,	35·1	,,	33·1.		
April,	1905,	,,	41·5	,,	42·3.		
,,	1905,	,,	42·3	,,	41 5.		
,,	1907,	,,	43·4	,,	44.2 (mean).		
June,	1886,	,,	0·10	,,	1·01.		
July,	1904,	,,	75 0	,,	74·0.		
April,	1903,	for	25·0	read	23·0.		
,,	1903,	,,	44·9	,,	41·9.		
,,	1906,	,,	42·2	,,	43·0.		
,,	1906,	,,	43·0	,,	42·2.		
May,	1901,	,,	57·8	,,	51·8.		
June,	1901,	,,	33·0	,,	39·0.		
October,	1899,	,,	25·0	,,	23·0.		

ALEX. M. RODGER.

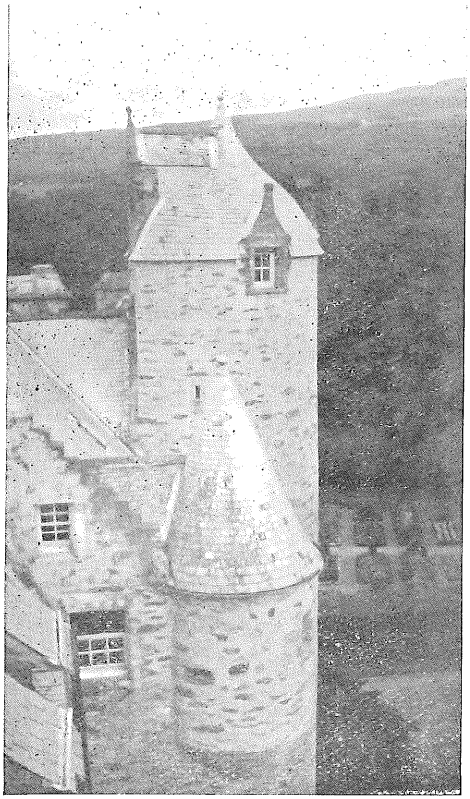
[This part, pp. i.-lviii., published December, 1909.]



[Photo. by A. M. Rodger

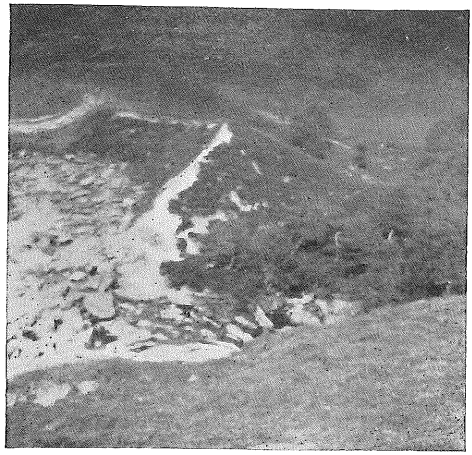
Plate II.—Polyporus Squamosus, F.

See Massee B.F.F., Vol. I., p. 233. W. G. Smith's Basidiomycetes, p. 338.
Grew in a Tool Shed, and sent to the Museum, Perth, September 17th, 1909.



[Photo. by Major Mercer.

Plate 12.—Turret, Grandtully Castle.



[Photo. by Major Mercer.

Plate 13.—Glentarken Dam.

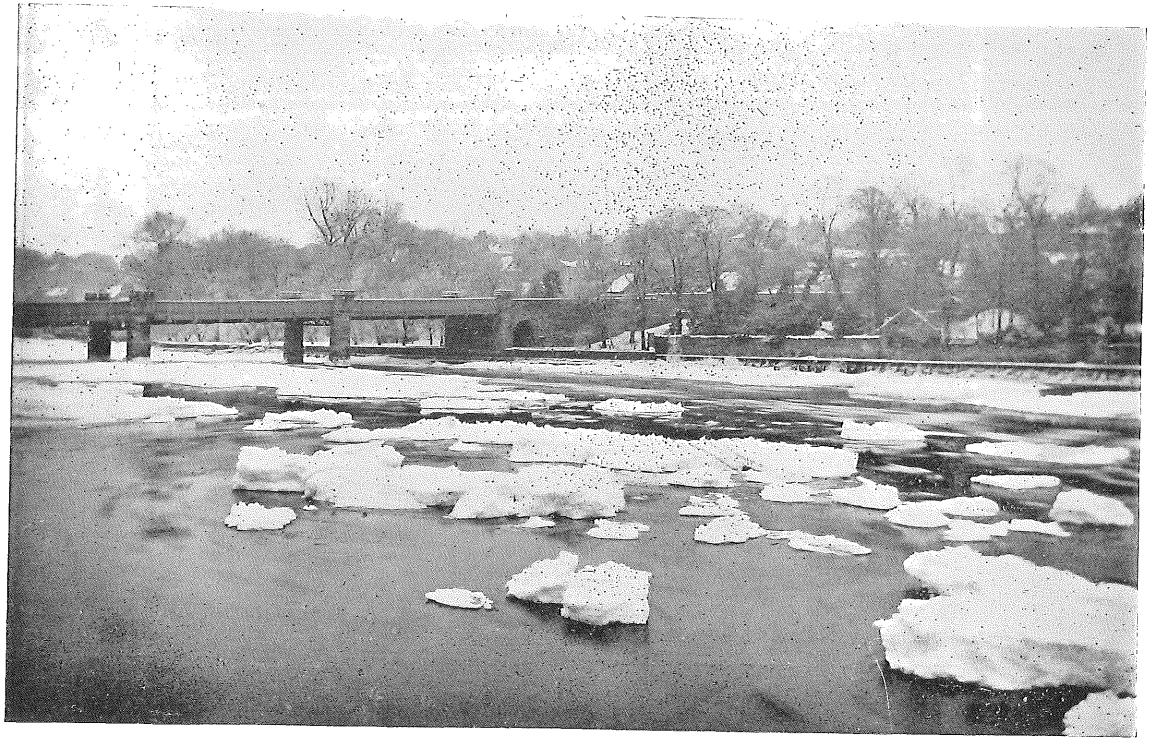


Plate 14.—Tay at Perth, January 28th, 1910. [Photo. by A. M. Rodger.

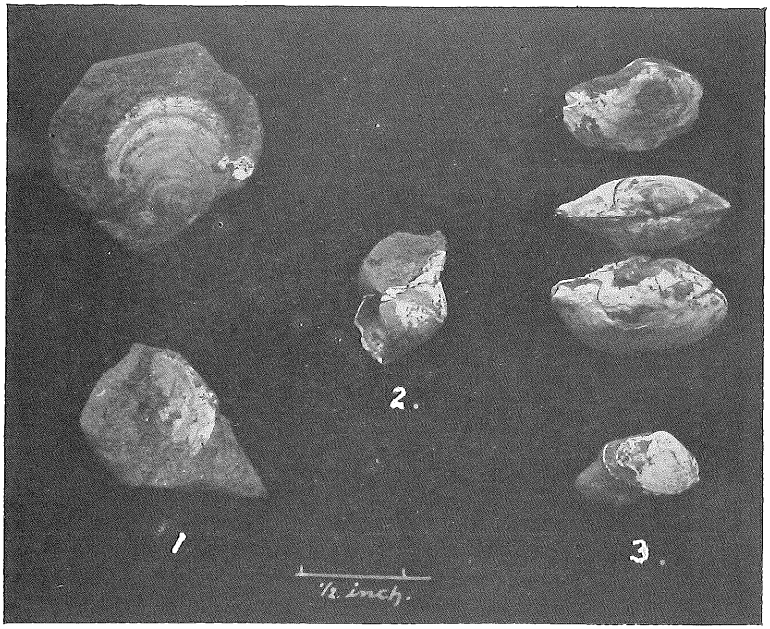


Plate 27.—Arctic Shells from Clay-bed at Pitfour

1. Pecten abyssorum, Sovin.
2. A naticoid shell.
3. Neilo arctica, Gray.

To face p. lix.]

WINTER SESSION, 1909-1910.

11th November, 1909.

W. BARCLAY, President, in the Chair.

EXHIBITS.

Nest of Great Spotted Woodpecker, taken in Perthshire.
Puffin, from Killiecrankie, sent by T. M'Glashan, Esq., M.A.

MOLLUSCA.

Pisidium amnicum, Mull. Taken by Master Fred Smith, in the Lade, near Perth, August, 1908. (New to Perthshire.)

Hyalina lucida, Drap. Taken at Dickson & Turnbull's Nurseries, opposite Museum, April, 1909, by Fred Smith; also by James Leslie, in August, 1909, at Aberfeldy. (New to Perthshire.)

Helix aspersa, Mull. Taken at Craigie, in July, 1909, by James Leslie. (New locality.)

Arctic Shells from the clay beds at Pitfour.—*Neilo arctica*, Gray., *Pecten abyssorum*, Lov., and a species of *Natica*, from Mr. Wm. Gilmour, Manager of the Pitfour Brick Works.

FUNGI.

Polyporus squamosus, Fr. From workshops of Messrs. Dunn & Laing, Perth, 17th September, 1909. A very irregular form of this common species found growing on a block of beech in a shed. See photograph.

Geaster rufescens, Per. Growing on the ground in old woodland at Rossie Priory, 9th October, 1909. R. Dow.

Naucorina erinacea. A rare and beautiful species growing on wood, in this instance willow and rose. J. Menzies, November, 1909.

A specimen of the water-spider, *Argyroneta aquatica*, was also shown, and Mr. Rodger contributed the following note:—

THE WATER-SPIDER, *Argyroneta aquatica*, Latr.

As intimated, in the annals of Scottish Natural History, October, 1909, the water-spider was obtained at an excursion of the Junior Section of the P.S.N.S. to Methven Moss, on Saturday, 4th September. While netting the pools for aquatic larvae, quite a number of these interesting spiders were observed, and five were brought away; two of these are still living and appear quite healthy, one in each of the glass vessels kept in the museum for aquatic animals.

As this species is not recorded in either of the lists of Perthshire spiders which appear in the Society's *Transactions*, the following references to its distribution—as far as I find published—is somewhat

interesting, although I have no doubt it is more generally distributed in old ponds and peat moss holes throughout Scotland, than even these references would seem to indicate :—

1878. Scotston Moor, near Aberdeen. The Scot. Nat., Vol. V., p. 261. Professor J. W. H. Trail, Aberdeen, 26th February, 1880.
1868-7. Possil Marsh: and a quarry hole near Glasgow. The Scot. Nat., Vol. V., p. 311. J. M. Campbell, Glasgow, 7th April, 1880.
1878. Possil Marsh. Proc. Nat. Hist. Soc., Glasgow, Vol. III., p. 351.
1885. Bavelaw Moss. Edin. Nat. Field Club, Vol. I., p. 297. A. B. Herbert, Edinburgh, 18th February, 1885.
1885. Luffness Marshes, Haddingtonshire. Proc. Royal Phys. Soc., Vol. VIII., p. 504. A. Gray, Edinburgh.
1893. Loch Pithulais, Aviemore, Inverness-shire. Ann. Scot. Nat. Hist., 1894, p. 229. Wm. Evans, Edinburgh, May, 1893.
1897. Braid Hills. Ann. Scot. Nat. Hist., 1897, p. 126. John Lindsay, Edinburgh.
1894. Proc. Royal Phys. Soc., Vol. XII., p. 545.

Mr. A. E. J. Carter, of Blairgowrie, on reading my note in the Annals of *Scot. Nat. Hist.*, tells me he took one example of this species in June, 1908, at the curling pond, Muirton of Ardblair, Blairgowrie, and on approach of winter he returned it to the pond.

A note from Mr. T. Laidlaw, M.B.O.U., was read, intimating the occurrence of the Honey Buzzard, near Bridge of Earn, on July 7th, 1909.

Mr. C. MacIntosh, of Inver, contributed the following note on the floods of 1868 and 1903 :—

The great flood of March, 1868, which did so much damage to the railway at Dalguise and Dalmarnock, was one of the heaviest recorded floods of the Tay, although, at Perth, the flood of 1847 exceeded it. Yet, above the Braan, there could have been but little difference between 1847 and 1868—the points reached at Inver on both occasions being nearly the same. There is a mark on a tree at Inver of the height attained by the flood in 1868, and to a person acquainted with the locality, there are several marks by which the height of the river can be judged in a roughly correct manner. Comparing the flood of 31st January, 1903, I made the 1903 flood to be four inches less than 1868. This agrees with what Mr. Grant says in his notes to the very fine photo which appears in P.S.N.S. *Transactions*, 1902-1903. Mr. Grant says, "The Tay almost reached the very highest point." I noted the height of the river at the old Tollhouse, Inchmagrannachan, during the flood of 1868, and the height of the flood may be easily estimated from the fact that the water of the river entered the house and rose to such a height that the beds, mattresses,

etc., were soaked. In 1903, the river did not even get on the road in front of the house. This I observed myself during the progress of the flood. Now, the difference between 1868 and 1903 at Inchmagrannachan must have been between 30 to 36 inches. It is not possible to be exact, but allow 6 inches between 1868 and 1903 and you have still a good 2 feet.

This disparity betweed the floods mentioned at Inchmagrannachan is, I think, accounted for as follows:—A little below Inchmagrannachan the haugh land of this stretch of the valley terminates, and the gravelly banks, which form such a prominent feature of the lower slopes of the valley, approach the river so close at this part, that they form the river bank, rising on the Inch side of the river to about 50 feet—the same conditions occur more or less all the way down to Inver. Till about 1870 there ran along the foot of this bank an irregular terrace about 12 to 20 feet broad (it is to be seen still at some parts farther down). At its edge next the river it was fringed with a fine growth of natural wood, alder, willow, hazel, etc. It did not rise above flood level and was consequently often flooded, and from this cause it was a growing bank. About 1870, for about half a mile downwards from the Inch, the fringe of wood was cut. Immediately afterwards the river began to eat into the terrace, and in a few years it had disappeared. The river, when in flood, then began to undermine the gravelly banks beyond, and the oak coppices and standards that grew on their summits and slopes year by year slid down into the river and were carried away with the floods. At present the weightier material of the banks, together with the roots of trees which have accumulated at the base of the eroded bank, and on which young wood has begun to take root, has partially checked the encroachment of the river, but the bed of the river at this part has been widened somewhere between 40 and 90 feet.

The connection of this with what I have stated regarding the floods of 1868 and 1903 will be evident.

Regarding the influences of such fringes of wood in checking the erosion of the river banks, it is generally said that the roots seem to bind the soil together; but I think that such tangled overhanging masses of stems and branches lessen the erosive power of the current by checking its force when the river is in flood.

Miss M. L. Miles, L.L.A., gave an interesting account of the meetings of the Scottish Cryptogamic Society at Stranraer; after which the President delivered his opening address as follows:—

Ladies and Gentlemen,—At the beginning of each winter session we always find that one or more have dropped from our ranks since last we met. In the case of all we are the weaker from their loss, and sometimes it happens that we have to regret that one has passed away whom we can ill afford to lose. Such a one was Sir Alexr. Muir Mackenzie of Delvine. We have but few workers at the subject which he had long and zealously studied, the Antiquities of Perthshire. On many occasions he was our guide when visiting

such places as the Roman Camp at Ardoch, or the Roman and other remains at Inchtuthill; and at such times he was always ready to point out the chief features of the spots, to give an account of any excavations that had been made, and of relics that had been found, and, as far as possible, to give the results of the latest researches. At our winter meetings also he read to us papers, or rather gave us lectures on various antiquarian subjects—subjects sometimes dry enough in themselves, but always rendered interesting by the vigour of his speech and the genial humour with which he could invest the dreariest details. We deeply regret that we shall see his face no more, or hear his voice again.

Ex-Provost Love was a member of the Society for the long period of 27 years. The cares of a large and engrossing business, and the performance of many public duties, prevented his taking any active part in our proceedings, but the sympathy and countenance of public men is encouraging and of much value, and that sympathy and encouragement he gave us. In him we have lost a friend, and the public in general have lost one who did much good service to the community during the course of a busy and useful life.

I should like also to refer to William Kaye, cut off in the flower of his age, lamented by many friends. He frequently joined in our excursions and did good work in directing his pupils to the study of nature and natural objects. With his father I was present at many excursions of the Society a quarter of a century ago.

Fifty years ago this present month was published the most important biological work of the nineteenth century, Charles Darwin's "Origin of Species by means of Natural Selection." Several previous thinkers had put forth the idea of evolution, the derivation of higher forms of life from lowlier forms that had preceeded them, but none of them had made any attempt to show how this could come about. For this reason mainly, the idea had not made way; it was generally ignored, or passed by as an ingenious speculation which had no foundation in fact. Scientific men still held to the doctrine of catastrophes, sudden periodic extinctions of existing species, followed by successive creations of new forms to take the place left vacant by the removal of the former. But Darwin's theory of natural selection showed how new and higher species could be evolved from pre-existing lowlier forms, Moreover, his theory was not merely a fanciful speculation as to how this might occur, the product merely of a vivid imagination. It was the product of the toil and thought of long years.

Innumerable facts bearing on the subject were gathered from the observations and experiments of himself and others. Patient and intense thought brought to bear upon these facts gave birth to the theory of natural selection, and to the conviction that in this way transmutation of species not only might have, but had actually taken place. Even then observations and experiments were continued to test still further the truth of the theory, and of its fitness to act as a key to the interpretation of nature. All possible objections, which could be imagined to be brought against it, were weighed and tested. Only after all this had been done, and on such a solid foundation, was the theory given to the world.

In spite of the clamour of blind bigotry, and of natural unwillingness to depart from long held opinions, Darwin's ideas were quickly and eagerly received by many eminent men of science, many of whom became the able and zealous advocates of natural selection. During the half century that has elapsed since then, the theory has maintained and increased its hold upon the minds of men, and it may be said that most scientific naturalists now hold it as settled that, in the course of past ages, there has been a gradual progression in the appearance of living organisms, that higher forms have been evolved from lower, and that natural selection has been, not the sole, but most likely the chief factor by which this evolution of higher from lower has been brought about.

The effect upon biological science which was caused by the publication of the "Origin of Species," and the numerous works which were subsequently put forth by Darwin in further support and elucidation of his theory, was wonderful. New life was breathed into biology, and especially perhaps into botany. Plants and animals were no longer looked upon as consisting of a multitude of isolated types, wonderful in structure and in working, but totally unconnected, and each completly distinct from the other. They were now seen to form a genealogical tree if not directly descended from each other, at least of the same kind and sharing in descent from common ancestors. The details of their structure, and of their habits and modes of living, were looked upon as if with other eyes; it soon appeared that the higher could be best understood by a study of the lower, and of the various steps by which the one had been gradually transformed into the other. The progress which has been made in the various branches of biological science since that time has been wonderful, and the greater part of that progress has been directly owing to the new spirit breathed into that science by the work of Darwin. Nor has this influence been confined to biology, but has penetrated and vivified many of the other branches of science, geology, ethnology, social science; in fact, it may be said that there is hardly any branch of human study which has not, in some degree, been influenced and advanced by applying to it the theory of evolution as expounded by Darwin.

Whatever verdict may ultimately be passed in the light of future researches and discoveries upon the the theory of natural selection, whether it be finally accepted as the chief factor in the process of evolution, or whether it be found that there are other more or less important factors which have been working more or less powerfully to the same end, even if the latter supposition should turn out to be true, it will detract but little from the greatness of Darwin, and will not effect in the least our estimate of the immense benefit to science which resulted from his labours.

Our first excursion, which as usual took place on Victoria Day, was to Fothringham, near Forfar, to visit which we had been kindly invited by its proprietor. A pleasant drive of about seven miles brought us to the entrance of the policies. The weather, which had

been somewhat threatening all morning, now broke down, and this caused the party to separate, the ladies taking a road through the woods, which, though rather soft, was better than tramping over the wet moor, as was the lot of the others. Here were some plantations of silver fir and of larch, about fifteen or sixteen years old. The silver firs had a thriving appearance and promised to turn out well, but amongst the larches disease had broken out and rendered it very doubtful, in some parts at least, if as many would manage to survive as would yield anything like a fair return for the outlay. The way was led by Mr. Fothringham, who kindly acted as leader throughout the day, and was at first over a tract of land which had formerly been a forest, but the trees had been felled, and it was now bare except that here and there decaying stumps still cumbered the ground. In a few places some seeds had sprung up, but the roots of the Scots pines failed to pierce the hard pan which lay below the surface, so that instead of a tree you saw only a stunted bush. Our guide led us to where a splendid view should have been got of the Firth of Tay and the hills of Fife, but an occasional glimpse or two through a blurred landscape only served to show how fair a prospect would have greeted our eyes had the day been fine. The rain became heavier and heavier, and at length, after lunching at a fine spring, we rejoined the ladies, who had sheltered for a time at a farmhouse near by. Soon we set off again and had a walk under rather better weather conditions down through a shady den, some parts of which were remarkable for the way in which *Rumen alpinus* had taken complete possession of the ground. A fair interval now permitted us to view, with comparative comfort, the fine gardens. We were then conducted into the castle, where Mrs. Fothringham received us with a hearty welcome and supplied us with hot tea, very acceptable indeed after the drenching rain and muddy roads. During the drive back to Forfar the sun shone out and we thought little of the wet day, but much of the kindly hospitality which we had received from Mr. and Mrs. Stewart Fothringham, and we hoped that, on some future occasion, we might visit them again under more favourable weather conditions.

On the 12th of June we paid a visit to Glen Tarken, a glen which opens up from the north shore of Loch Earn, about a couple of miles from St. Fillans. Near the village we met in with some specimens of the *Masterwort*, *Pucedanum Ostruthium* Koch, an umbelliferous plant naturalised here and there, a relic of former cultivation. Whilst walking along the side of the Loch we found growing on the dykes by the wayside, the pretty *Geranium lucidum* Lin, the *Shining Cranesbill*, and also came upon a small bed of the great bladder sedge, *Carex vesicaria* Lin, a somewhat local plant. We could not but admire the profusion of blossom with which the Traveller's joy, *Clematis vitalba* Lin. was covering and adorning the walls of one or two of the villas which we passed. Arrived at the entrance to the glen, we began to ascend by a rather steep road, from which at various points we enjoyed splendid views of the loch and the mountains beyond, Ben Voirlich lifting its head high above the rest. We now left the road and reached the bank of the Larken, which here and for

some distance above and below flows through a deep ravine, the sides steep and rocky at places, and decked with a profusion of the usual spring flowers, but with nothing out of the common. On reaching the head of the ravine, we found the stream flowing through a heathery moor, which stretched away to the horizon. On some boulders, by the side of the stream, we sat down for lunch. The day was fine and the air bracing. Whilst we sat there Mr. Atholl M'Gregor read an interesting paper on some of the habits of the cuckoo, the result of his own observations. As he read we could hear, from the hill-side at intervals, the well-known call of the bird itself, almost the only bird, except a grouse or two, which we saw or heard during our ramble through the glen. Near this in the bed of the stream Mr. Bates detected and pointed out to us two trap dykes, which had penetrated the schists, and which the weathering of the super-incumbent rocks had exposed to view. On resuming our ramble we had the good fortune to come upon the nest of a greenshank, with four eggs marked by dusky spots. It was in a tuft of heather, not very far from the edge of the stream, and though no doubt comfortable enough, its construction did not display much architectural skill. The bird is a migrant, not very common, having its breeding haunts amongst the hills. A visit to some rocks on the hill-side at some distance showed that they were rather dry to yield many plants, but here were gathered the Holly fern, the Rose-bay Willow-herb, the Moschatel (the first record of this singular little plant for Dr. White's district of Highland Earn), the alpine Lady's mantle, and on a wet spot the yellow mountain *saxifrage* just coming into flower. The only other plant worth mentioning was one specimen of the lesser Tway-blade, picked up by Mr. Bates, on a bit of burnt muir. Its usual habitat is amongst heather in fir woods. In coming back we crossed the stream by a rustic bridge at some distance above the lower end of the ravine, and kept the hill-side for most of the way to St. Fillans. Here we came across the ruins of former habitations, and in fact these occurred at various points high up the glen, showing that once on a time men and women lived where now sheep and grouse possess the land. It must, however, have been a hard struggle indeed to gain a living in such a place.

A fortnight after this, on the 26th June, we walked through the Pass of Killiecrankie and the grounds of Faskally. We were again favoured with delightful weather, and spent a pleasant day amidst the grandest scenery. A search was made in the Pass of Killiecrankie for a very rare plant, which used to grow there, and which may be there still, but on this occasion we failed to find it. On leaving the Pass we paid a visit to the Falls of Tummel, and then returning entered the grounds of Faskally. Going through the woods to the bank of the Tummel, we saw ornamenting the ground a profusion of that lovely little plant, *Trientalis europœa* Lin., the chickweed evergreen. On the bank of the stream we fell in with several good plants, *Astragalus danicus* Retz., *Astragalus glycyphyllos* Lin, *Valeriana pyrenaica* Lin., and others. We then visited the museum and spent some time in examining the many heads of African wild beasts, which are displayed and beautifully arrayed upon its walls, trophies no doubt

of many a dangerous stalk and toilsome hunt. On the road to Pitlochry, we turned aside into a cottage garden to visit the remains of a stone circle which is said to be there, but as the tenant of the cottage was just then engaged with a swarm of bees right in the path to the circle, we put off its inspection to a future date.

As usual, Midsummer Saturday, this year on the 3rd July, was fixed for our mountain excursion. It was not the first time we had visited Ben Chonzie, but many of those who now journeyed with us had not previously visited that mountain. We drove up Glen Turret, halting by the way to pay a short visit to the romantic falls. Arrived at the lodge, we set off to walk up the glen amidst the numerous moraines with which it is strewed, and then ascended the the bank of one of the many little streams that come down from the mountain. Unluckily a dense mist hid the top from our sight, and clothed the hillside more than half-way down. This caused us to take more time to the ascent than we should otherwise have done, but at last we were pleased to see the cairn looming through the mist and were soon seated at its base, making use of it to shelter ourselves as completely as possible from the cutting wind which blew across the summit. Quickly the cairnmaster took his place and constituted a meeting of the Mountain Club. A number of new members were then admitted with the customary impressive rites, and the quaich was then handed round, as is usual at the close of a meeting. By this time the mist had thickened into a cold drizzle, which soon turned into driving rain. It was high time to depart. Descending therefore by a route different from that by which we came up, we came to a ridge of steep rocks and spent some time in botanizing, for these rocks being of a friable nature weather down into moist ledges, where many fine plants find a congenial home. Here we found such plants as *Silene acaulis*, *Potentilla rupestris* Lin., *Sedum roseum* Scop., *Saussurea alpina* D.C., *Cerastium alpinum* Lin., with many others. A party, who searched a different part of the hill, brought some fine specimens of the lovely *Veronica fruticans* Jacq., one of the gems of the high mountains. The return journey was made under pleasanter conditions of weather, and on the whole the day could not be considered altogether bad.

The next excursion, that of the 24th July, I shall notice very briefly, as a wet morning resulted in only two members turning up at the station. They, however, resolved to go, and having journeyed by train to Murthly, set off to follow the river bank to Kinclaven and thence across by the new bridge to Cargill. They enjoyed a very pleasant stroll, for the day, though varied by an occasional shower, was on the whole fine.

On the 28th August, the annual holiday, another showery and rather threatening morning made the party smaller than usual on this holiday. At Dunkeld we were joined by Mr. Stewart Fothringham. We drove by Inver and up the right bank of the Tay. The day, though somewhat cold, remained dry, and continued to improve as we proceeded on our journey. After passing through the village of Grandtully we stopped to pay a visit to the Institute, a gift to the people of the district from Lady Stewart of Grandtully. It contains

a library and a recreation room. Outside is a miniature rifle range, and a large and fine bowling green has lately been added. It must be a great boon to the district and to the numerous summer visitors who come to enjoy a holiday. We then drove on to Grandtully Castle, where we were most kindly received by Lady Stewart. We spent some time in examining the castle, outside and inside. Although a large addition was made to it in 1893, the older portion is quite unchanged in its architectural features and in its internal divisions. It consisted originally of a large square tower or keep, with two smaller towers, one at the north-east, and one at the south-west angle. At the outer junction of the latter with the main building is a turret containing the staircase. This turret is larger than usual, and does not occupy the usual position. This smaller tower on the south-west was carried higher up than the roof of the main building, whilst the staircase turret has been carried higher still, and has been covered with an O.G. roof, at the back of which is a dormer window, ornamented by a carved shield displaying the Stewart arms, and bearing also the date 1626, along with the initials W.S. The castle is supposed to have been built about the year 1560, but to have been remodelled in 1626, when the staircase turret was heightened and finished off with the O.G. roof. Under the lower floor of south-west tower was the dungeon, into which we did not seek to descend, but by means of an electric lamp, which was lowered into it, we were able to gain a good idea of what like it was, and to pity those who had been forced to abide in such a dreary hole. After inspecting the old part of the castle we were conducted through the drawing-room and dining-room, where Lady Stewart pointed out the numerous historical portraits which adorn the walls. The most interesting one perhaps was the portrait of Mary, Queen of Scots, representing her during her first widowhood. On leaving the castle we paid a visit to the gardens. Here many comparatively common garden plants were grown in large masses, making a very striking display and giving quite an uncommon character to the garden. We then set off through the fields for about a mile to see the old Church of Grandtully. From outside it appears as a long somewhat barn-like structure, which at a distance would give you no idea of a church, if it were not for the cross which is fixed on the roof at one of the gables. We found it, however, to be much more interesting in the inside, for it has one of those painted ceilings which are so rarely found in Scotland. It is formed of wooden boards so fixed to the rafters as to give it a circular form. The surface is divided into four rows of circular discs, each row containing six circles. In these are represented the four Evangelists, with suitable mottoes, some of which can still be read. In others are depicted various coats of arms, amongst which are those of Scotland and Ireland, and also those of Sir William Stewart of Grandtully and of his wife, Dame Agnes Moncrieff, daughter of Sir John Moncrieff of Moncrieff. The combined initials of the pair are also carved over a small window in the east gable. The church has been divided into two unequal parts by a stone wall, and the painted ceiling occupies the western half of the eastern portion. Another interesting

relic of pre-Reformation times is a small aumbry or press in the north wall, quite entire, and with the original wooden door and hinges. This last feature is almost quite unique in Scotland. The Church, or as it was then called, the Chapel of St. Mary of Grandtully, is known to have been built somewhere about the year 1533, whilst the painted ceiling was added by Sir William Stewart about a century later. Returning to the castle, we were entertained to tea by the kind hospitality of Lady Stewart, and then set off homewards, highly delighted with our visit to the old castle and domain. On crossing at the bridge of Grandtully we halted to admire the fine appearance of the river, which here takes on the nature of a torrent, rushing furiously over a rocky bed through a narrow defile. We then drove down the left bank of the river to Ballinluig, where another halt was made and a second tea partaken of. No looker-on would have guessed that it was the second, so keen is the appetite awakened by the Highland air. After setting off we again stopped for a little at the top of a high bank near Guay, and the very striking geological features of this part of the Tay valley were pointed out. As we had some spare time on arriving at Dunkeld, we made use of it to inspect the newly renovated Cathedral. No doubt, the renovation has been successful and is a great improvement, but some of us at least were glad that the work had not extended to the roofless part, and that this still remains as a fine old ruin. This brought to a close what was certainly one of the pleasantest excursions of the season.

An autumn expedition for the study of fungi has now become the regular closing excursion of our summer session. This year we visited the romantic grounds of Craighall, and as usual found an efficient leader in Mr. James Menzies. On entering the policies, we followed the road which leads upwards to the mansion house, deviating here and there to search the ground. The dry and somewhat cold weather of the previous month had, however, not been at all conducive to the growth of fungi, which require for their development a certain degree of warmth and a good deal of moisture. After persevering for a time and finding but little for our pains, we began, under the guidance of two or three experts who were with us, to turn our attention to the numerous species of foreign coniferous trees which adorn the grounds of Craighall. We found this a very interesting, though to those of us who were tyros, a somewhat bewildering occupation. We saw too many different species for a first lesson, and would, I daresay, have made much more progress if we had confined ourselves to a few of the leading types. Arrived at the mansion house we followed the path which leads along the brink of the wonderful gorge or canõn, which for a distance of a mile or two the Ericht has carved out of the conglomerate rocks. These in sheer cliffs form the boundary walls of the gorge. The grandeur of the scene impressed us greatly, and now and again we turned our eyes backwards to behold the mansion house perched on the very brink of a dizzy cliff, whose base is fretted by the rushing stream. As we arrived towards the head of the ravine, the cliffs became closer and steeper, the stream raced in a narrower bed, with pools deeper and blacker, and the whole scene became wilder and wilder. Up till now the

day had been dull and misty, but here the sun shone out and brought to the full all the features of the gorgeous landscape. After resting a while to enjoy the prospect, we retraced our steps by the same path. During our walk we came upon a clump of *Paris quadrifolia*, each plant with a purplish blackberry rising from the middle of the four-leaved collar. But the best find of the day was a bed of the narrow-leaved Solomon's seal, *Polygonatum verticillatum*, a plant which, I think, not more than one of the party had ever seen growing before in a wild state. It is very rare and local, is not found at all in England, and is found in more stations on the banks of the Ericht than anywhere else in Scotland. It is not a new record for Craighall, but it was satisfactory to observe that it still keeps its ground there, and has not been rooted out, as has been the fate of many rare plants.

At the close of the address a series of photographs taken at the excursions by Major Mercer were shown on the screen.

———

December 9th, 1909.

WM. BARCLAY, President, in the Chair.

Mr. Barclay exhibited a plant of Butcher's broom, and Mr. Rodger a Tarpon fish, presented to the Museum by Mr. Norie-Miller, of Cleeve, and also specimens of talcose schist, from a quarry four miles south of Kenmore.

The following paper was read :—

"The Reading of Character," by D. Sutherland, M.A., Scone.

The paper was illustrated by blackboard drawings.

———

January 20th, 1910.

WM. BARCLAY, President, in the Chair.

Mr. Rodger exhibited a number of examples of *Paludestrina Jenkinsi*, Smith, taken in the Tay, near Elcho, by Mr. Barclay in 1906. This is the first time the species has been noted in Scotland ; it is supposed to have been introduced into Britain along with Baltic timber. The species was identified by Mr. J. W. Taylor, Leeds, and the identification confirmed by Mr. Fred. Taylor, Oldham, Official Recorder of the Conchological Society.

The following papers were read :—

1. "Some Coleoptera of Kinnoull Hill," by W. E. Sharp, F.E.S. This paper was illustrated by specimens actually collected by Mr. Sharp, and presented by him to the Museum, seven of the species being new to our cabinets. (See *Transactions*, Vol. V., Part II, page 46.)

2. "Some Lessons from the Darwin Centenary," by Dr. Lyell. (See *Transactions*, Vol., V., Part II., page 35.)

February 10th, 1910.

WM. BARCLAY, President, in the Chair.

The exhibits included photographs of the frozen Tay by Messrs. Coates and Rodger; a Siberian mammoth tooth from Mr. D. Humble; photograph of a Gyr Falcon taken in Perthshire in January, 1910; and a number of plants from the Channel Islands, brought by Miss Macdonald, and described by the President.

The following papers were read:—

1. "Notes on Some Ectoparasites in the Museum, Perth," by the Rev. J. Waterston, B.D., B.Sc. The paper was illustrated by specimens collected from time to time by Messrs. Hart, Crawford, Hutchison, Smith, and Rodger. (See *Transactions*, Vol. V., Part II., page 48.)
2. "The Life History of a Forest," by W. Dawson, M.A., B.Sc., Aberdeen. This paper was illustrated by a series of lantern slides.

FORTY-THIRD ANNUAL MEETING.

March 10th, 1910.

WM. BARCLAY, President, in the Chair.

REPORT OF COUNCIL.

Your Council, in submitting their Forty-Third Annual Report, have to regret that the membership does not continue to increase, although the interest of the members in the meetings has been well maintained.

During the past year 6 monthly meetings were held, at which 5 papers were read, as well as the President's 2 usual addresses, one at the annual meeting and the other at the opening of the session in November. The average attendance was 42 as compared with 44 last year, but the Council consider this very fair, as on several of the meeting nights other attractive meetings were held in the town. The largest attendance at one meeting was 89 on 10th February, 1910, and the smallest 21 on 11th November, 1909.

Fourteen ordinary members have been elected, making a total membership of 363, made up of 1 Honorary, 13 Corresponding Members, 7 Associates, 5 Associate Members, and 339 Ordinary Members. During the year the roll has been gone over and many names removed of those whose subscriptions were far behind, and the Council trust members will endeavour to induce some of their ends to join.

During the summer 7 excursions were held, at which their was a fair attendance. Through the kind invitation of Mr. and Mrs. Steuart Fothringham, a large party visited Fothringham, their residence in Forfarshire, on the spring holiday, and received a hearty reception, though the weather was exceedingly wet. For the August holiday a very large party gave in their names to visit Grandtully Castle, but owing to a wet morning only a few turned up. But those who went had a most enjoyable day, as the weather cleared up beautifully, and the kindness the party received from Lady Stuart, who showed them the castle and grounds and entertained them most graciously, they will not readily forget. The Council desire to record their thanks to Mr. and Mrs. Fothringham; to Lady Stuart; to Mr. Keith Murray, for permission for the mountain excursion to Benchonzie; to General J. Clark Rattray, for permission so readily granted for the fungus excursion to Craighall Woods; as well as to others who granted permission for other excursions, or who rendered services in connection with these excursions.

The Society has to record the loss the Society has sustained by the death of several of the members. Those who join the excursions will miss the familiar face of Mr. W. Kaye, and amongst the lady members Miss Phillips, who was for many years one of the most regular in her attendance at the meetings, but who, through the advance of age, has not recently been much amongst us.

Various Educational Societies have again had the use of the Lecture Room for meetings.

This year's Essay Competition for the children was upon "Four Perthshire Birds," and 71 essays were received from 18 girls and 53 boys—37 essays being from 5 city schools and 34 from 4 county schools.

REPORT OF TREASURER.

(See Balance-Sheet, page xciii.)

REPORT OF LIBRARIAN.

The number of volumes in the library continues to increase year by year, and as a considerable re-arrangement on the new shelving has become necessary, it has been found inconvenient to take the annual stock at this time. It is therefore not possible, as is customary, to give the number of volumes as it stands at the present date, but it is intended to carry out a thorough overhaul of the books during the summer, which will enable an accurate statement of the contents to be prepared for next annual report.

During the year 57 readers have taken advantage of the Library and 217 volumes have been borrowed, but this does not take into account the extent to which books from the Reference Library have been consulted. Free use has been made of them by students wishing to obtain information on special subjects, and this applies, not only to adults, but to the juvenile section of the Society, and thus the existence of the library as an educative agent is amply justified.

REPORT OF EDITOR.

Part I., Vol. V., of the Society's *Transactions and Proceedings* was published in December, 1909. A new feature was the first of a series of annual Meteorological Reports, with comparative diagrams for Barometric pressure, Temperature, and Rainfall. Tables showing the meteorological conditions prevailing at Perth since 1883 were included as an appendix, and represent a large amount of labour on the part of Mr. Rodger, who has taken up this work.

The following Office-Bearers were elected:—

President—Wm. Barclay.

Vice-Presidents—W. Steuart Fothringham, J. Craigie, R. R. B. Watson, James Stewart, L.D.S.

Secretary—S. T. Ellison.

Treasurer—A. W. Brown.

Librarian—James Coates.

Editor—G. F. Bates, B.A., B.Sc.

Curator—A. M. Rodger.

Councillors—James Morison, T. G. Laidlaw, M.B.O.U.; Rev. G. A. F. Knight, M.A.; James Menzies.

Auditors—J. Morison, G. F. Bates.

The President then delivered his annual address, the subject being "Our Alpine Flora":—

LADIES AND GENTLEMEN,—The rich mountain flora which adorns many of our Perthshire hills, especially those of the Breadalbane district, has long been known to British botanists. Lightfoot and Stuart, more than a century ago, were the first to examine and make known the riches of our county, to enter upon ground till then untrodden, except by the feet of ignorant shepherds. Since their time crowds of eager searchers have climbed our cliffs, peering into every nook, scanning with sharp eyes every rocky ledge, and bearing off in triumph, sometimes with reckless greed, the rare and beautiful plants that have rewarded their toil. These mountain plants are usually termed Alpines, because nearly all of them are also found in greater or less abundance upon the Alps of Switzerland. But they are also a part of the flora of Scandinavia, and indeed a considerable portion of them are circumpopular, that is to say they occur in the north of Asia and in the north of America. Hence they are now usually spoken of as Arctic or northern plants. And this is more correct, for they are not considered to have had their origin in the Alps, but in the North, possibly in Siberia or the north of America. Moreover the Alps nourish a rich mountain flora which is not Arctic, but probably in part at least indigenous, and hence properly called Alpine. The Arctic flora of Scotland and Scandinavia, and that of

Switzerland, have plainly had a common origin, but naturalists are not agreed as to what portion of the globe first gave them birth.

In these northern plants then the Breadalbane hills of Perthshire are exceptionally rich, rivalled but certainly not excelled by the mountains of Clova. Many of them, such as the Alpine Forget-me-not, the little *Gentiana nivalis*, and the Mountain Dryas, are amongst the loveliest of our native flowers, and to see these in their native home is ample reward for the stiffest and most toilsome climb.

In a large proportion of our mountain plants we find some of the organs, and especially the leaves, modified so as to adapt them to the severe conditions of their lofty abodes. They require protection from severe cold, but even more they require protection from excessive loss of water, which would speedily cause their death. At times severe cold will prevent the roots from absorbing water, even though it be present in the soil. At other times the thin soil in which most of them find root becomes so parched and dry that they cannot find a sufficient supply. If then the leaves were to transpire freely during such times, the plants would wither and die. Hence we find that the breathing pores in these plants are often covered with hairs to lessen the transpiration. Or the epidermis of the leaf becomes thickened and coriaceous and the stomata are sunk in pits. In others again the edges of the leaf are rolled back so as to protect the stomata and lessen the transpiring surface. Most of them are low-growing herbs, often creeping along the ground so as to escape the full force of stormy blasts, whilst other grows in close cushion-like clumps, easily absorbing moisture and keeping the ground beneath from becoming dried up by exposure to the hot sun. Of course there are considerable differences in the actual stations on which they grow. Some like marshy ground, some like to grow on peat, though the greater number perhaps like to grow on moist rocky ledges, or the clefts of rocks.

But now comes the question, how came these plants to our mountains? It is believed by many geologists and naturalists that during the glacial period the whole of Britain north of the Thames and Severn lay buried under a mass of snow and ice, and consequently the whole pre-existing flora perished except perhaps such Arctic plants as might survive in the south of England. When more genial times returned, as the glaciers slowly lessened and retreated, the Arctic flora gradually overspread the country. Those that had survived, if there were any such, were re-inforced by a strong force of others which came from Central Europe, then also peopled by Arctic plants driven south from Scandinavia when that country lay also buried beneath the ice sheet. They had an easy passage into Britain, for at that time the land stood at a much higher level than now, so that Britain was directly connected with Belguim and France. As the climate grew still milder and the glaciers passed completely away, another flora, that of our present Lowlands, followed the first, and being better fitted for living in the Lowlands gradually took possession of the whole country except the mountains, where a portion at least of the Arctic flora managed to hold its own, and where it still survives. It is thought, however, that there were

one or two, if not more, renewals of glacial conditions, when the Lowland plants were again forced to retreat, and yield ground to the Arctic, but not perhaps to the same extent as on the first occasion. At any rate, the final passing away of the glaciers again gave the Lowland plants the supremacy, and finally confined the Arctic plants to the upland and northern parts of the country. A lowering of the level of the land cut off Britain from the Continent and prevented further direct communication with Central Europe, which accounts for the fact that our flora comprises such a limited number of species compared with Germany or France. This account of the Ice Age and its effects upon the flora of our country appears very plausible, and indeed satisfactory, but it is very far from being universally accepted as true. Take, for instance, two of the latest and ablest writers upon this subject. The first of these, Professer Scharff, believes that our Arctic flora reached Britain from Scandinavia in pre-glacial times, when Britain and Scandinavia were directly connected with each other and with North America by a land bridge. A small part may have come from the Western Alps. Subsequently, but still in pre-glacial times, a part of our present Lowland flora came from Germany. He says emphatically that in his opinion the whole of the existing Irish flora and fauna is of pre glacial times, and has arisen from a remnant which has persisted there until the present. If I understand him rightly, he believes also that in Britain, at least a remnant of both these floras persisted through the glacial period, seemingly at various centres. After glacial conditions had passed away, this remnant again overspread the country, when the Lowland plants re-inforced by a fresh influx of plants from Germany, prevailed over the Arctic plants, and after a keen struggle, drove them to their present mountain homes. He does not believe in the exceptional destruction of our fauna and flora during the glacial period, although, no doubt, many species became extinct. In his opinion geographical changes were the chief factors in determining the flora of our Island. Let us now see what another eminent writer, Mr. Clement Reid, says on this subject. To him it seems certain that "the enormous fall and great oscillations of temperature, and the accumulation of vast uninhabitable deserts of ice and snow during the glacial period must have blotted out all plant life over great part of Britain." He recognises that Arctic plants existed in Britain at least in early glacial times, but doubts whether they had sufficient time to occupy the whole country before the mantle of ice and snow overwhelmed the Lowlands. The result seems to have been the total extinction of the flora north of the Thames and Severn, with the possible exception of some high hills which rose above the ice. Even these were probably so smothered in ice that only the steeper crags were bare in summer. In the district south of the Thames and Severn only the Arctic plants could survive, whilst the temperate species must have entirely disappeared. All Ireland was glaciated, so nothing could live there except a few Arctic plants on the mountain tops. After the passing away of the ice there was a return to genial conditions, when there was time for the Arctic flora to die out and for a large temperate flora to take possession of the country.

I do not think that Mr. Reid means that the Arctic flora quite died out, but merely that it died out except on the mountains. He speaks of a second period of glaciation, and remarks that it is difficult to believe that anything but a poor Arctic vegetation could have withstood the conditions of the climate during that period. It is somewhat difficult to understand exactly in what way Mr. Reid thinks that Britain, after the final passing away of the ice, was again re-stocked with plants. He does not seemingly believe in the necessity of land communication, although he says that England was at the beginning of the Neolithic period almost connected with France and Belgium. He believes apparently that the Arctic plants which survived would spread over the country, and that others were brought first from Central Europe and afterwards from Scandinavia by the ordinary means of dispersal—by birds chiefly, but also by the wind—and in this connection he lays stress upon the fact that almost all our Arctic plants have very small seeds, and thus would be very easily transported. He allows several changes of the level of the land during the glacial period, but thinks that these were of small importance compared with the climatic changes. Our Lowland or Germanic flora seemingly entered the country in the same way by the ordinary means of dispersal, and after a struggle for mastery displaced the Arctic flora, except in their present mountain strongholds.

We can now see how utterly divergent are the views of these two of our latest and ablest inquirers into this difficult subject. And these are only a sample of the conflicting opinions held by geologists as to the way in which our Arctic, and, indeed, our Lowland flora also, came into the country. It is to be hoped that future researches will throw further light on the matter, and enable geologists and biologists to arrive at something like an agreement as to what really took place during the glacial period or periods.

It has been long known, as I have already pointed out, that certain mountains, especially in the Breadalbane district of Perthshire and the Clova district of Forfarshire, were especially rich in Arctic plants, and some feeble attempts were even made to ascertain if this was owing to the nature of the rocks, but these attempts had no success. Botanists had noticed that where the mica schist weathered easily down into a friable and porous soil, you were pretty sure to find a good crop of alpines, and likely enough some of the rarer species. If, however, the rock was hard, and not easily weathered, your success was not likely to be great. In a paper read before our Society, in 1898, Mr. Peter Macnair made a considerable step in advance and put the matter in a new light. He pointed out that according to the geological survey a band of sericite schist runs across the country from Ben Lui to Clova and Canlochan, cropping out at a considerable altitude on all the best botanical hills, and maintained that the richness of these hills is owing to the existence of this ridge. A detailed examination of our mountain flora shows that in the main Mr. Macnair is right, though some of his statements are open to question. I have made out a list of 90 of these mountain plants and have examined their distribution so far as materials are available. These do not include all our Arctic or northern plants,

for there are others, such for example as *Linnaea borealis*, *Habenaria albida*, and *Trientalis europæa*, which, though certainly northern, are not strictly speaking, mountain plants in this country. Of the 90 I find that 15 are confined entirely to Mr. Macnair's ridge, two of these, *Lychnis alpina* and *Mulgedium alpinum* being confined to Clova, whilst four, *Cherleria sedoides*, *Saxifraga cernua*, *Carex ustulata* and *Cystopteris montana* occur only in the Breadalbane district. Fourteen are very rare except on this sericite band. Thirty-nine, though occurring more or less abundantly elsewhere, are certainly more plentiful and seemingly more at home in the Breadalbane and Clova districts. There are five which are not found on the sericite ridge. One of these is *Phyllodoce coerulea*, which in Britain is found only on the Sow of Atholl. Five others, though occurring on our ridge, are more plentiful on the more northern hills. These are *Rubus Chamæmorus*, *Cornus suecica*, *Loisleuria procumbens*, *Saxifraga rivularis* and *Betula nana*.

It will be seen then that if we were to take away the plants which grow on the sericite band, our mountain flora would be very much poorer than it is. A considerable number of species would be quite lost to us and a very considerable number of others would be left on a very precarious tenure indeed. But we can now ask ourselves what is there in the soil formed by this sericite schist which renders it such a suitable habitat for these Arctic plants. Is it owing to its chemical constituents or to its physical constitution? Of course it may be said, and said truly, that its physical condition, the fine friable soil formed by its weathering, depends upon its chemical constituents. No doubt this is true, but the question may be put in this way. Would a soil similar in its physical properties, but formed from a rock of different chemical materials, form an equally suitable habitat? Or, if you like, do these plants find in the soil of our ridge some constituent of their food which is not so easily obtained in that formed from the harder rocks? This is a question on which authorities greatly differ. It would seem, however, that in the case of a few plants, such for example, as *Dryas octopetala*, a certain proportion of lime in the soil is necessary for their well-being. But, in the great majority, if not the whole, of our Artic plants it is certain that they flourish in other countries on soil formed from the weathering of very different rocks. In Switzerland, a considerable number, if not the majority, of our Arctic plants are found on the soil of granitic rocks. We find also that most of our mountain plants when sown or planted in ordinary soil will thrive well enough if certain other conditions are fulfilled. Many of them, for example, will not endure severe frost, from which they are protected in their native home by a thick covering of snow, and if grown where they are deprived of their snow mantle, they require to be sheltered in some other way. We must recognise too, that there are other factors to be taken into account as well as the nature of the soil. Many, I believe most of them, will not endure the full glare of the sun, but require a northern exposure, or at least do not thrive on rocks which look to the south. Some require wet, others drier spots. These are the factors which bring it about that all exposures of

sericite schist are not equally prolific. On Ben Vrackie, for example, where this rock is exposed, we find indeed two very rare Alpines, but great dearth of others. That light for example has in some cases, at least, a very powerful influence was shown by an experience of mine which occurred many years ago. I brought from the top of Ben Lawers two or three plants of *Saxifraga cernua*. At first it was planted in very poor soil in the open ground in a shady spot. All, except one, were soon devoured by slugs. The one which was left was put into a pot in ordinary garden soil, and set in the sill of a windw facing the south. It did not thrive at all and seemed about to die. I then removed it to the other side of the house facing the north. It grew luxuriantly and flowered even better than in its native abode. For two years, I think, it throve, and was coming away splendidly in the following spring when one night a big black snail found out the delicious morsel and devoured it down to the very root. This shows, that so far at least as this plant was concerned, one particular kind of soil is not essential to its growth, that it does not endure too great exposure to sunlight, and it also gives a hint that other enemies than the Germanic plants may have had something to do with the retreat of our Alpines to the high places of our mountains.

In the conclusion of his paper Mr. Macnair contends that in this band of sericite schist "we have one of the most important factors in determining the distribution of our Alpine flora, and that, wherever this band of schist rises to a sufficient altitude, there these plants have been enabled to maintain an existence in the great struggle which has exterminated them from the plains, the hills, and the majority of even our highest summits." With that statement I concur, with the exception of the last phrase, "the majority of even our highest summits." It seems to me very doubtful indeed if they ever occupied the highest summits in any greater numbers than they do at present. They certainly have not been driven from them by the competition of Lowland plants, for this competition is much stronger on the band of sericite schist than it is on the poorer hills. It is not the competition of Lowland plants which keeps them from these summits but the want of suitable soil. If therefore they ever did occupy these summits, their environment must have been very different from what it is at the present time. If ever they found there suitable soil on which to grow, this must have been washed away in the course of ages, or covered with a thick layer of peat, and in either case the extermination of the plants would result. But it seems to me very unlikely that, at least, since the close of the glacial period, they have ever been more abundant on these hills than they are at the present time.

April 14th, 1910.

WM. BARCLAY, President in the Chair.

Mr. Rodger exhibited a Gyr Falcon which has been purchased for the Museum.

The following papers were read :—

1. "A list of Diptera collected in Perthshire," by A. E. J. Carter. Specimens were exhibited in illustration of this paper. (See *Transactions*, Vol. V., Part II., page 51).
2. "David Douglas of Scone," by R. Dow. (See *Transactions*, Vol. V., Part II., page 55).

SUMMER SESSION, 1910.

The following excursions were arranged :—

1. Monday, 23rd May. Coupar Angus and drive by Kettins, and Pitcur Castle to Meigle, returning by Kinloch and Arthurstone.
2. Saturday, 4th June. Guay to Dunkeld.
3. Saturday, 25th June. Farragon.
4. Saturday, 2nd July. Meal Churn, 3,007 feet.
5. Saturday, 6th August. Bankfoot by Glengarr to Birnam.
6. Wednesday, 24th August. Blairgowrie and drive by Bridge of Cally and Craigton to Kirkmichael.
7. September. Fungus Excursion.

PHOTOGRAPHIC SECTION.

Seven meetings were held during the winter session, and six excursions were arranged for the summer session. The winter meetings were fairly well attended; but the attendance at the excursions left something to be desired. A lecture by Mr. John Ritchie on "Pre-Reformation Churches in Perthshire" proved one of the most interesting items on the winter syllabus. A number of the slides illustrating the lecture were prepared ftom photographs taken by members during the summer session in the course of a photographic survey of these Churches.

The winter session terminated with an exhibition of lantern slides of Switzerland and the Dolomites by Mr. Wm. Ellison, which was highly appreciated.

The following excursions were arranged for the summer months :—

1. Monday, 23rd May. Pitcur and Meigle. (Joint Excursion with P.S.N.S.)

2. Saturday, 4th June. Dunkeld Cathedral.

3. Saturday, 25th June. Kinclaven.

4. Saturday, 9th July. Perth to Kinfauns and Elcho.

5. Saturday, 6th August. Bankfoot and Glengarr. (Joint Excursion with P.S.N.S.)

6. Saturday, 10th September. Banks of Tay near Luncarty.

LIST OF DONATIONS TO THE LIBRARY,

SESSION 1909-10.

I.—GIFTS FROM INSTITUTIONS.

Banff, Transactions of the Banffshire Field Club, 1907-08—The Society.

Belfast, Annual Report and Proceedings, Belfast Naturalists' Field Club, Vol. vi., Part 2, 1908-09—The Society.

Bern, Verzandlungen der Schweizerischen Naturforschenden Gesellschaft. Band I., II., 1908.

Brooklyn, Museums of the Brooklyn Institute of Arts and Letters, report from the Year 1908; The Museum News, 1909—The Museum.

Cold Spring Harbour, Monograph VII., The Fresh Water Cyclops of Long Island, 1909—The Brooklyn Institute of Arts and Science.

Cambridge, Forty-third Annual Report of the Museums and Lecture Rooms Syndicate, 1908—Superintendent of Museum of Zoology.

Chicago, Field Museum of Natural History, Annual Report of the Directors, 1908. Contributions to a Flora of the Bahamian Archipelago. publication 136.

Cincinnati, Bulletin, No. 11, 1909—The Lloyd Library and Museum.

Colchester, Report of the Museum and Muniment Committee, year ending 31st March, 1909—The Corporation Museum.

Dumfries, The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society, Session 1907-8—The Society.

Edinburgh, Proceedings of the Royal Society of Edinburgh, Vols. xxix., xxx., Parts 1-2—The Society.

Transactions, Vol. xlvi., Parts 2-3; Vol. xlvii., Part 1.

Proceedings of the Society of Antiquaries of Scotland, 1908-9, Vol. xliii. The Society.

Proceedings of the Royal Physical Society, Vol. xvii. Nos. 1-6; Vol. xviii., No. 1.

Twenty-seventh Annual Report of the Fishery Board for Scotland, Parts 2-3, 1908—The Board.

Transactions of the Edinburgh Geological Society, Vol. ix., Parts 3-4—The Society.

Transactions and Proceedings of the Botanical Society of Edinburgh, Vol. xxiii., Part 4; Vol. xxiv., Part 1.

Transactions of the Edinburgh Field Naturalists and Microscopical Society, Vol. vi., Part 2—The Society.

Transactions of the Highland and Agricultural Society of Scotland, 1873, 1874, 1877 to 1879, 1884 to 1888, 1894 to 1898—Sandeman Library.

Transactions of the Scottish Arboricultural Society, Vol. xxii., Part 2; Vol. xxiii., Part 1—The Society.

The Royal Scottish Museum, Report for the year 1908—The Directors.

Essex Naturalist, Vol. xvi., Parts 1, 2, 4, 5, 6—The Field Club.

Hull, Transactions of the Hull Scientific and Field Naturalists' Club, Vol. iv. Part 1—The Society.

Liverpool, Quarterly Journal, Institute of Commercial Research in the Tropics, Vol. iii. No. 6—The Institute.

Transactions, Liverpool Botanical Society, Vol. i.
Proceedings of the Liverpool Geological Association, Session 1906.07—The Society.

London, The British Museum (Natural History).
Hand List of Birds, Vol v.
Catalogue of Moths, iii. (text and plates); 1 Vol. vii. (text and plates).
Catalogue of Cretaceous Bryozoa, 1 Vol. v.
Catalogue of African Freshwater Fishes, Vol. i.
Synopsis of British Basidiomycetes.
Guide to Anthropology.
Guide to Whales, Porpoises, and Dolphins
Special Guide, No. 4—Memorials of Darwin.
Introduction to the Study of Rocks.
Introduction to the Study of Meteorites.
Quarterly Journal of the Geological Society, Vol. LXV., parts 1, 2, 3, 4, 1909.
The Centenary of the Geological Society of London, 1907.
Geological Literature added to the Geological Society's Library, 1908—The Society.
Report of the British Association, Dublin, 1908—The Association.
Board of Agriculture and Fisheries Leaflets, Nos. 97, 208, 214, 218, 219, 220, 222, to 226.
Proceedings of the South London Entomological and Natural History Society, 1908-9—The Society.
British Freshwater Rhizopoda and Heliozoa, Vol. II.—Ray Society (by sub).

Manchester, The Manchester Museum Report, 1908-9—The Director.

Mexico, Boletin del Instituto Geologico de Mexico, No. 26.
Parergones del Instituto Geologico de Mexico, Tomo II., Nos. 9-10., Tomo III., No. 2—The Institute.

Millport, Marine Biological Association of the West of Scotland, Annual Report 1908—The Association.

Montevideo, Anales del Museo Nacional, Flora Uruguaya, Tomo IV., Ent. I., 1909—The Museum.

New York, Bulletin of the American Museum of Natural History, Vols. XV., Part 2; XVII., Part 5; XVIII., Part 4; XXVI.
Memoirs of the American Museum of Natural History, Vol. IX., Part 5.
The American Museum of Natural History—40th Annual Report, 1908—The Museum.

Newcastle, Report of the Council of the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne, 1908-9—The Society.

Northants, Journal of the Northants Natural History Society and Field Club, Nos. 113 to 116, 1907—The Society.

Nottingham, 56th Annual Report and Transactions of the Nottingham Naturalists' Society— The Society.

Ottawa, Geological Survey of Canada.
Catalogue of Publications, 1909.
Report on portions of Algoma and Thunder Bay District.
The Coal Fields of Manitoba.
Report on the Whitehorse Copper Belt, Yukon Territory.
A descriptive sketch of the Geology and Economic Minerals of Canada, 1909.
Annual Report of the Mineral Production of Canada, 1906.

Summary Report of the Geological Survey Branch of the Department of Mines, 1908.
Preliminary Report on Gowganda Mining Division.
Catalogue of Canadian Birds, 1909.
Geological Survey Maps, Nova Scotia, Nos. 565, 592, 607, 634, 624, 700, 807, 908, 1005, 1025, 1019, 985, 1043, 1036, 1037, 826, 51, 52.
Summary Report on Explorations in Nova Scotia.
The Geology and Mineral Resources of New Brunswick.

Oxford, Ashmolean Natural History Society of Oxfordshire, Proceedings and Report, 1900 to 1908, etc.

Perth, 18th Annual Report by the County and Chief District Sanitary Inspector, 1908—The Inspector.
Health Report for the City of Perth for 1908—The Medical Officer.
Annual Report of the Perthshire Natural History Museum, 1909—The Curator.

Norwich, The Report of the Museum Committee, 1909.
Proceedings of the Norwich Museum Association—The Curator.

Michigan, Report of Michigan Academy of Science, 1 to 10 inclusive—The Academy.

Peterhead, Transactions of the Buchan Field Club, Vol. IX., Part 3, 1908—The Club.

Philadelphia, Proceedings of the Academy of Natural Science, Vol. LX., Part 3; LXI., Parts 1, 2—The Academy.

Pittsburgh, 12th Annual Report of the Directors for the year ending March 31, 1909—The Carnegie Museum.

St. Louis, Me., 20th Annual Report, Missouri Botanical Garden—The Director.

Stirling, Natural History and Archæological Society, Transactions, 1908.9—The Society.

Torquay, Journal of the Torquay Natural History Society, 1909—The Society.

Washington, United States Geological Survey—
Professional Papers, Nos. 58 to 61; 63, 64; 66, 67—The U.S. Geological Department.
Bulletins, 341, 347, 349; 351 to 368; 370, 371; 373 to 380; 382 to 385; 387 to 389; 392 to 395; 399, 401, 403.
Water Supply, Papers 219 to 226; 228 to 232; 234, 235, 242.
Mineral Resources, 1907; Parts 1, 2.
Directors' Report, 1908.
United States Department of Agriculture—
Forest Trees of the Pacific Slope.
Tests concerning Tubercle Bacilli in Circulating Blood.
Italian Lemons and their by-products.
The Rabbits of North America.
The Brown Rat in the United States.
Biological Investigations in Alaska and Yukon Territory.

Wisconsin, Academy of Science, Arts and Letters, Vol. XVI., Parts 1 to 6—The Academy.

York, Annual Report, 1908—The Yorkshire Philosophical Society.

II.—GIFTS FROM PERSONS.

Barclay, W., Studier ofver Salices I Linnes Herbarium—S. J. Enander, Uppsala, 1907.

Coates, H., British Rainfall, 1908.
Journal of Conchology, Vol. XII.

Campbell, Col. John, The Scottish Geographical Magazine, 1909.

Ellison, S. T., Entomologist, 1909.

Photography, 1909.

Janet, Dr. Charles, Notes extraites des Comptes Rendus des Séances de l'Academie des Sciences, Nos. 17, 18, 19, 20.

Anatomie du Corselet et Histolysis des muscles vibrateurs, aprés le vol nuptial, chez la Reine de la Fourmi (Lasius niger), Text and Plates.

Kidston, Dr. Robert, Nature, Vols. LXXIX., LXXX., 1909.

Botanishes Centralblatt, 1902 to 1909, 1910, Parts 1, 2.

Steel, Adam, Transactions of the Highland and Agricultural Society of Scotland, Vol. XX., 1908.

Pullar, Sir Robert, Salmon Scales, as indicative of the Life-History of the Fish.

Meek, Prof. A., Northumberland Sea Fisheries Commission Report, 1908-09.

Murray, The Hon. Gladys Graham, Nature Studies by Night and Day; Animals and their Ways; First Studies of Plant Life; The Animal Creation; An Introduction to the Study of Biology; The Making of Species; "Nature," 1909, incomplete.

RESULTS OF CHILDRENS' ESSAY COMPETITION, 1909.

Subject: "FOUR PERTHSHIRE BIRDS."
71 Essays (18 Girls, 53 Boys).

FIRST DIVISION, Age 14 years and over (14 Essays).

1st Prize—James Leslie, Perth.
2nd ,, —Peggie Folkarde, Aberfeldy.
3rd ,, —Robert Bruce, Perth.
Certificates:—Peter Meldrum, Perth.
,, —John Harper, Auchtergaven.
,, —Thos. Murray, Auchtergaven.
,, —Chas. M'Lagan, Perth.
,, —Robt. Peddison, Perth.

SECOND DIVISION, Age 13 (35 Essays).

1st Prize—Jeanie Anderson, Scone.
2nd ,, —Nettie Stewart, Perth.
3rd ,, —James Stobie, Perth.
4th ,, —Jeanie Miller, Scone.
5th ,, —George Martin, Scone.
6th ,, Donald Butter, Perth.
Andrew Kinnear, Scone.
Duncan Ireland, Perth.
John Crerar Easson, Perth.

THIRD DIVISION, Age 12 years (19 Essays).

1st Prize—Dorothy Staines, Perth.
2nd ,, —Ferguson Smith, Perth.
3rd ,, —James Murray, Perth.
4th ,, John Allen Willis, Perth.
Robert Mackay, Scone.
Certificates:—James Miller, Stanley.
,, —Don. Cumming, Auchtergaven.
,, —Jack R. Graham, Stanley.

ROLL OF MEMBERSHIP, AS AT 31ST OCTOBER, 1910.

* Life Members.

HONORARY MEMBER.

Geikie, James, LL.D., F.R.S., etc., Professor of Geology, Edinburgh University, ...	2nd February, 1882

CORRESPONDING MEMBERS.

Brebner, James, M. A., Harris Academy, Dundee, ...	3rd December, 1885
Bruce, W. S., LL.D., Surgeons' Hall Edinburgh, ...	14th March, 1907
Calman, W. T., D.Sc., British Museum, Cromwell Road, London, ...	11th April, 1895
Geddes, Patrick, F.R.S.E., University College, Dundee,	3rd February, 1881
Macnair, P., 70 Eastwood Avenue, Shawlands, Glasgow,	13th November, 1890
M'Gregor, T. M., Australia, ...	5th March, 1885
Mill, Dr. H. R., F.R.S.E., 62 Camden Square, London, N.W., ...	7th April, 1892
Ramsay, E.P., F.L.S., Curator of Australian Museum, Sydney, ...	7th February, 1884
Smith, Rev. Frederick, The Parsonage, South Queensferry, ...	13th November, 1890
Thomson, Professor D'Arcy, M.A., C.B., University College, Dundee, ...	10th November, 1892
Trail, J. W. H., M.A., M.D., F.L.S., High Street, Old Aberdeen, ...	8th February, 1872
Wilson, Dr. Andrew, F.R.S.E., 110 Gilmore Place, Edinburgh, ...	4th January, 1883
White, Mrs. Buchanan, Manitoba, ...	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
Laidlaw, Mr., Gamekeeper, Castle Menzies, Glenlyon,	7th February, 1884
Milne, Captain W., Tayport, ...	14th March, 1901
M'Intosh, Charles, Inver, Dunkeld, ...	1st May, 1873
Robertson, Captain T., *S.S. Scotia*, ...	14th March, 1901

ORDINARY MEMBERS.

Alexander, John, M.A., Sharp's Institution, ...	14th December, 1893
Alexander, J., Seedsman, High Street, ...	6th April, 1897
Allan, Thomas, Stanley, ...	13th April, 1899
Alison, Harry C., Feu House, ...	9th January, 1908
Anderson, Andrew, c/o P.D. Malloch, New Scott Street,	9th December, 1897

Anderson, John L., Nenthorn, Gray Street, ...	12th April, 1906
Anderson, Thos., M.A., B.Sc., 5 Picardy Place, Edinburgh, ...	10th December, 1908
Barclay, Miss E. A., Bank House, Tay Street, ...	13th December, 1906
Barclay, William, Friar Street Craigie, ...	1st February, 1883
Barclay, William A., Pitcullen Terrace, ...	9th December, 1897
Barlas, J., 231 High Street, ...	13th February, 1908
Bates, G. F., B.A., B.Sc., Westoe, Craigie Road, ...	13th December, 1900
Beattie, S., M.B., Craigvar, Pitlochry, ...	9th December, 1897
*Bedford, Duchess of, Woburn, Beds., ...	12th December, 1907
Bell, Mrs., Priestfield, Glasgow Road, ...	13th December, 1900
Blair, Robert, New Scott Street, ...	11th December, 1902
Blair, Douglas D., M.B., C.M., South Methven Street,	10th March, 1898
Bouick, James B., Gowan Bank, Abbot Street, ...	14th February, 1895
Brady, George, 8 Comely Bank, ...	11th April, 1895
Brand, John, Upland, Kinnoull, ...	10th December, 1891
Brand, Robert, 22 Balhousie Street, ...	7th April, 1892
Breadalbane, Marquis of, K.G., Taymouth Castle, Aberfeldy, ...	7th April, 1892
Brough, Miss Elizabeth, Wilson Street, Craigie, ...	13th March, 1902
Brough, Robert, Ochilview, Bridge of Earn, ...	
Brown, Alfred W., Seedsman, High Street, ...	14th December, 1903
Brown, J. A., Harvie, F.Z.S., Dunipace House, Larbert,	10th December, 1891
Buchanan, T. R., 12 South Street, Park Lane, London,	9th April, 1903
Buchanan, Mrs., 12 South Street, Park Lane, London,	9th April, 1903
Burnett, C., Comely Bank, ...	22nd February, 1894
Butter, Thomas, 8 Marshall Place, ...	8th March, 1894
Brown, Peter M. W., 28 Nasmyth Place, Kelty, Fife-shire, ...	10th December, 1908
Caird, Miss K. C., M.A., Perth Academy, ...	13th December, 1906
Calderwood, James, 18 Pitcullen Crescent, ...	12th April, 1906
Cameron, David, Commercial Street, Bridgend, ...	14th December, 1884
Campbell, Archibald, Davaar, Scone, ...	13th December, 1900
Campbell, Col., Westwood, Cupar-Fife, ...	18th January, 1884
Campbell, D., Clyde Place, Needless Road, ...	7th April, 1904
Campbell, Edward, Lignwood, New Scone, ...	11th April, 1889
Campbell, Peter, Lignwood, New Scone, ...	4th April, 1878
Campbell, P. W., Muirton Bank, ...	9th March, 1899
Chapman, Samuel, King James Place, ...	16th January, 1896
Chisholm, John, The Steward, Murthly Asylum, ...	9th December, 1909
Christie, James, 8 Paul Street, ...	11th April, 1895
Chrystal, George, Bridgend House, ...	2nd December, 1880
Clacher, James, 9 George Crescent, ...	3rd April, 1879
Coates, Henry, F.R.S.E., Balure, Glasgow Road, ...	9th May, 1875
Coates, James, Balure, Glasgow Road, ...	6th May, 1875
Coates, Miss, Balure, Glasgow Road, ...	3rd January, 1878
*Coats, Archibald, Battleby, Redgorton, ...	14th December, 1899
Coats, Mrs. W. H., Battleby, Rodgorton, ...	14th December, 1899
Coats, James, jun., Ferguslie House, Paisley, ...	10th December, 1903
Carter, A. E. J., Royal Bank House, Blairgowrie, ...	10th December, 1908
Cumming, A. G., 153 High Street, ...	12th March, 1896

*Colquhoun, Col., Clathick, Crieff, ...	5th December, 1878
Cox, Mrs., Glendoick, Glencarse, ...	14th November, 1895
Cox, W.H., Snaigow, Murthly, ...	8th December, 1898
Craigie, James, Sandeman Public Library, ...	12th March, 1903
Crawford, Rev. T., B.D., Orchill, by Auchterarder, ...	7th April, 1892
Crawford, Thomas, High Street, ...	10th January, 1889
Crichton, John, L.D.S., 7 Charlotte Street, ...	14th January, 1904
Davidson, Alex., The Pines, Glasgow Road, ...	2nd March, 1882
Davie, Miss, Cornhill House, ...	10th January, 1901
Deas, John B., Rosemount Place, ...	1st September, 1870
Deas, Miss, Rosemount Place, ...	16th January, 1896
Dewar, Sir John A., Bart., M.P., Abercairney, ...	7th February, 1878
Dewar, John, jun., Abercairney, ...	9th December, 1897
Dickson, Miss, Greenbank, ...	2nd February, 1882
Dickson, Miss M. G., Greenbank, ...	9th April, 1896
Dodson, Charles, Auchter Villa, Clyde Place, ...	12th April, 1900
Donald, D., 30 Shields' Buildings, Dunkeld Road, ...	11th December, 1902
Douglas, Henry, City Chambers, ...	11th January, 1900
Dow, Robert, Schoolhouse, Longforgan, ...	4th May, 1882
Drummond, Col. H. S. Home-, Blairdrummond, Stirling,	9th March, 1899
Drummond, The Hon. Mrs., Megginch, ...	13th March, 1902
*Drummond, Miss Sybil, 15 Grosvenor Crescent, London, ...	9th January, 1902
Drummond, Col. Arthur N. H. Hay, Cromlix, Dunblane,	13th April, 1905
Duncan, G. Smith, Law Park, Blairgowrie, ...	3rd December, 1885
Durran, George, M.A., Perth Academy, ...	8th March, 1906
Ellison, Samuel T., Garth, Barnhill, ...	7th March, 1878
Ellison, William, Cragville, Barnhill, ...	3rd March, 1881
Evans, Miss Z. E., 32 Balhousie Street, ...	10th December, 1896
Evans, W., 38 Morningside Park, Edinburgh, ...	12th January, 1899
Ewing, Robert, Queen Street, Craigie, ...	8th December, 1892
Falconer, William D. M., The Alders, Rattray, Blairgowrie, ...	9th March, 1899
Farquhar, Rev. Canon, Balhousie Bank, ...	8th December, 1887
Fehrenbach, G. W., Watchmaker, Dunkeld, ...	7th February, 1884
Fenwick, F., Pitcullen Terrace, ...	8th December, 1898
Ferguson, Archibald M., Pitcullen Terrace, ...	13th December, 1900
Ferguson, Rev. J., M.A., B.D., Manse, Aberdalgie, ...	5th January, 1882
Ferguson, R. C., Ferndale, Barnhill, ...	11th April, 1889
Ferrier, D., 1 Edin Terrace, Edinburgh Road, ...	10th December, 1891
Fothringham, W. Steuart, Murthly Castle, ...	13th April, 1905
Fraser, Mrs. J. M., Invermay, ...	10th December, 1903
Fraser, Lovat, Invermay, ...	10th December, 1903
Frew, Thomas, King James Place, Perth, ...	16th January, 1896
Gall, Miss, 8 Glover Street, ...	14th November, 1895
Gall, W. S., Duneaton, Glasgow Road, ...	16th December, 1903
Gellatly, James, Hillyland, ...	7th April, 1904
Gloag, Robert, 8 Hospital Street, ...	13th December, 1894
Graham, John T., M.D., Dunalastair, ...	10th December, 1891

Grant, Miss, Melville Street, ... 12th April, 1906
Gray, George, Bowerswell, ... 2nd February, 1882
Gillan, Thos., 8 Scott Street, ... 8th April, 1909

Halley, Robert, Barossa Place, ... 16th January, 1896
Hamilton, R., Gleniffer Cottage, Dunkeld Road, ... 12th April, 1906
*Hay, Lieut.-Col. Drummond, Seggieden, ... 14th January, 1897
Hay, Miss Drummond, Seggieden ... ... 14th December, 1899
Hay, H. M. Drummond, Finlay, Muir & Co., Colombo, Ceylon, ... 12th December, 1907
Henderson, H. Dalton, Hughenden, Glasgow Road, ... 14th January, 1904
Hodge, A., 10 Balhousie Street, ... 11th April, 1889
Howie, Miss, 8 Moredun Terrace, ... 7th April, 1904
Humble, Miss Eleanor W., 32 Balhousie Street, ... 10th December, 1896
Hunt, Leigh, M.B., C.M., King Street, ... 2nd February, 1882
Hunter, Robert, St. John's, Glasgow Road, ... 9th December, 1909

Jameson, Melville, Brompton Terrace, ... 7th January, 1869
Jameson, Miss Margaret, Craigard, Kinnoull, ... 13th December, 1906
Jamieson, Miss, 1 Muirhall Terrace, ... 3rd January, 1878
Jardine, John, Brickhall, Bridge of Earn, ... 9th February, 1905
Jardine, Mrs., Brickhall, Bridge of Earn, ... 14th November, 1895
Jarvie, John Stirling, Balhousie Terrace, ... 12th 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 Maggie, Paradise Place, ... 12th April, 1900
Kennedy, James, Teacher, Ballinluig, ... 1st May, 1884
Kidston, R., F.R.S., F.G.S., LL.D., 12 Clarendon Place, Stirling, ... 4th December, 1884
King, Mrs., 2 Blackfriars Street, ... 11th April, 1901
Kinloch, R., W.S., Clydesdale Bank, ... 18th December, 1890
Kinnaird, James, Birnam, ... 12th January, 1899
Kinnear, James, 7 Bellavista Terrace, ... 8th April, 1909
Kippen, R. M., Solicitor, Tay Street, ... 2nd March, 1882
Knight, Rev. G. A. F., M. A., F.R.S.E., St. Leonard's Bank, ... 12th December, 1901
Knight, Mrs., St. Leonard's Bank, ... 7th April, 1904
Kyd, Miss L., Barossa Place, ... 10th March, 1904
Landreth, Rev. P. R., Fairmount Villas, ... 12th January, 1899
Large, Mrs., Darena, Bellwood, ... 11th December, 1902

Lawson, Robert, Croft Park, Craigie, ... 11th April, 1895
Leslie, Hugh, Kinnoull Public School, ... 12th April, 1900
Leslie, Thomas, 37 Balhousie Street, ... 12th April, 1906
Lowe, Miss, Tay Street, ... 12th April, 1902
Lowson, D.S., M.A., The Pines, Balhousie, ... 1st April, 1886
Lyell, John, M.D., 15 Marshall Place, ... 13th December, 1900
Lyell, Miss, 15 Rose Terrace, ... 12th December, 1907

Malloch, Gilbert, Almond Villa, Glasgow Road, ... 16th January, 1896
Malloch, Joseph N., Stormont Cottage, Bridgend, ... 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, Archibald M'Lean, Bleaton Hallet, Blairgowrie, ...	13th December, 1906
Marshall, D., Tay Street, ...	7th January, 1869
Marshall, Jas. M'Lean, Bleaton Hallet, Blairgowrie, ...	10th March, 1910
Marshall, Thomas, The Store, Stanley, ...	1st October, 1868
Meldrum, R. H., Schoolhouse, Tibbermore, ...	1st May, 1884
Menzies, Alex., LL.D., Gairi House, Kirriemuir, ...	7th December, 1882
Menzies, James, 2 Keir Villa, 71 Strathmore Street, ...	12th March, 1896
Mercer, Major, Huntingtower, ...	8th December, 1904
Mercer, W., Princes Street, ...	8th January, 1899
Miles, Miss M. L., L.L.A., 2 Laurel Bank, ...	14th December, 1899
Millais, Sir J., Bart., 38 Lower Belgrave Street, Eaton Square, London, ...	13th March, 1902
Miller, Alex., Osborne Terrace, Craigie, ...	14th November, 1895
Miller, George A., W.S., Knowehead, ...	2nd December, 1886
Miller, J. G., Mayfield, ...	23rd March, 1893
Miller, William, 9 Rose Terrace, ...	7th February, 1884
Milln, D. N., Newrow, ...	16th January, 1896
Mitchell, Miss M. R., 3 Rose Terrace, ...	9th December, 1909
Moncrieff, John, Summerbank, ...	8th March, 1906
Moncrieff, Mrs., Summerbank, ...	8th March, 1906
Moncrieff, Thomas, Springland, ...	5th March, 1885
Moray, The Right Hon. The Earl of, Kinfauns Castle,	8th December, 1904
Morison, J. Broun., F.R.S.E., Murie, Errol, ...	4th April, 1878
Morison, James, Hasland, Kinnoull, ...	7th February, 1884
Morison, Miss, Hasland, Kinnoull, ...	13th February, 1890
Morrison, W., Gowrie Street, Bridgend, ...	16th January, 1896
Muirhead, George, Muirhall Terrace, ...	14th November, 1895
Murray, David, 3 Craigie Crescent, ...	11th December, 1902
Murray, D. Scott., Laurel Bank, ...	11th April, 1901
Murray, Geo. J., 4 Castle Terrace, Broughty Ferry, ...	10th February, 1910
Murray, The Hon. Miss Gladys Graham, Stenton, Dunkeld, ...	8th January, 1899
M'Ainsh, Rev. John, B.D., U.F. Manse, Strathbraan, Dunkeld, ...	12th January, 1899
M'Arthur, John, Gray Street, ...	7th February, 1884
M'Callum, W. B., 4 Brunswick Terrace, ...	14th January, 1909
M'Cash, W. F., Cornhill House, Burghmuir Road, ...	11th March, 1909
M'Cash, Mrs. W. F., Cornhill House, Burghmuir Road,	11th March, 1909
M'Donald, Miss Barbara, Castleview, Glasgow Road, ...	11th February, 1897
M'Donald, Robert M., Elcho Park, ...	9th March, 1905
M'Dougall, Miss Jessie E., Eastertyre, Ballinluig, ...	13th December, 1906
M'Ewen, James, Craigie Bank, ...	7th April, 1892
M'Ewen, Major, Craigie Bank, ...	9th December, 1909
M'Farlane, Miss, 2 King Street, ...	13th December, 1900
MacGregor, Atholl, Ardchoille, ...	7th December, 1882
MacGregor, Lady Helen, of MacGregor, Edenchip, Balquhidder, ...	8th December, 1904
MacGregor, Miss Murray, Barossa Place, ...	9th March, 1899
M'Gregor, Alex., 71 High Street, ...	12th April, 1906

M'Gregor, John, Rosaire, 24 Strathmore Street, ... 4th March, 1886
M'Kay, A. T., 16 Barossa Place, ... 9th April, 1903
*M'Kendrick, Andrew, Livada, Greece, ... 9th April, 1896
M'Kenzie, Alex., Kinnoull Street, ... 14th April, 1898
Mackenzie, George A., Solicitor, George Street, ... 12th April, 1870
M'Lagan, Miss B. C., Queen Street, Craigie, ... 11th April, 1907
M'Laren, William, Architect, Balhousie, ... 7th February, 1878
M'Leish, James, Mill Street, ... 4th April, 1878
M'Leod, Miss, Rose Terrace, ... 10th February, 1858
M'Leod, Nurse, 4 Rose Terrace, ... 14th April, 1910
M'Nab, Duncan, Lord Provost, High Street, ... 12th April, 1906
M'Nab, Miss, L.L.A., Fitzroy Terrace, ... 14th November, 1895
M'Naughtan, John, M.D., I.S.O., General Prison, ... 4th April, 1880
M'Phail, Miss Annie, Wellshill Industrial School, ... 8th March, 1906
M'Nicoll, Robert, County Buildings, Tay Street, ... 12th December, 1907

Nairne, William, Caledonian Road Public School, ... 9th April, 1903
Newlands, Miss Helen, Tayside, ... 10th January, 1901
Newlands, Rev. T. S., B.D., Craigend Manse, ... 9th April, 1908
Newlands, Mrs., Craigend Manse, ... 9th April, 1908
Nicol, A., 37 York Place, ... 12th November, 1895
Nicol, Edward, 37 York Place, ... 10th December, 1891
Nicoll, Miss Annie B., Craigie Public School, ... 9th April, 1908
Nisbet, R. B., R.S.A., Ferntower Road, Crieff, ... 14th December, 1905
Noad, W. Cranswick, Charlesfield, Gask, Auchterarder, 14th December, 1905

Oswald, Rev. Robert, B.D., The Manse, Largs, ... 13th April, 1899

Pagan, Miss M. E., Dallerie, Crieff, ... 14th April, 1898
Paterson, William, Domus, Cherrybank, ... 14th December, 1899
Peddie, D., Ironmonger, Market Street, ... 1st May, 1873
Peebles, George, 81 High Street, ... 13th December, 1900
Pinkerton, Miss Anne, Kincarrathie Crescent, ... 9th December, 1897
Plenderleith, Miss Wilna, 10 Rose Terrace, ... 14th December, 1905
Plumb, The Right Rev. Bishop, M.A., St. Ninian's House, ... 14th February, 1907
Proudfoot, James, Balhousie Street, ... 5th March, 1885
Pullar, A. E., Durn, ... 23rd November, 1883
Pullar, Mrs. A. E., Durn, ... 7th April, 1892
Pullar, James F., Rosebank, ... 5th December, 1872
Pullar, Herbert S., Dunbarney Cottage, ... 5th May, 1887
Pullar, Mrs. H. S., Dunbarney Cottage, ... 11th February, 1904
Pullar, Laurence, Dunbarney House, ... 11th February, 1904
Pullar, Mrs. L., Dunbarney House, ... 11th February, 1904
Pullar, Rufus D., F.C.S., Brahan, ... 6th May, 1875
Pullar, Mrs. R. D., Brahan, ... 3rd March, 1887
Pullar, Sir Robert, LL.D., Tayside, ... 2nd March, 1871
Pullar, R. Morison, Brahan, ... 8th April, 1909

Raffan, Miss Eliza, L.L.A., The Academy, ... 13th December, 1900
Ramsay, Miss Connie, Feu House, ... 9th April, 1908
Reid, Arthur S., M.A., F.G.S., &c., Trinity College, Glenalmond, ... 10th December, 1891

Riach, Miss, 3 Mansfield Place, ...	3rd January, 1878
Riach, T. G., 3 Mansfield Place, ...	12th April, 1894
Richardson, James, 27 High Street, Blairgowrie, ...	11th April, 1901
Richardson, Ralph, F.R.S.E., Ballendrick, Bridge of Earn,	8th December, 1904
Ritchie, J., LL.B., Solicitor, Rosemount Place, ...	12th January, 1893
Ritchie, Mrs., Rosemount Place, ...	10th January, 1895
Robertson, Charles, 95 High Street, ...	14th April, 1878
Robertson, Dr. Robert, Errol, ...	2nd May, 1867
Robertson, Miss Isabella, 2 Blackfriars Street, ...	11th April, 1901
Robertson, James, 4 Mansfield Place, ...	14th December, 1893
Robertson, Miss, Springbank, ...	3rd January, 1878
Robertson, Robert, Blairgowrie, ...	4th January, 1877
Robertson, Robert Hay, 22 High Street, ...	2nd March, 1882
Robertson, William, 16 King Street, ...	12th April, 1906
Robertson, Miss C. M., Craigie Public School, ...	9th April, 1908
Robinson, Rev. J. A. Grant, Baptist Manse, Glasgow Road,	12th December, 1907
Rodger, Alex. M., Museum, Tay Street, ...	14th February, 1895
Ruggles Brise, Lady Dorothea, Blair Castle, Blair Atholl,	10th December, 1903
Rutherford, W., Pitcullen Terrace, ...	5th March, 1885
Robb, Alex., Tobacconist, High Street, ...	8th April, 1909
Scott, Miss Ina, Dunottar, Crieff Road, ...	8th March, 1900
Scott, William M., 8 Hill Street, Coupar-Angus, ...	12th December, 1901
Sheppard, Miss M., Queen Street, ...	13th December, 1900
*Sievewright, Sir James, K.C.M.G., Tulliallan Castle, Clackmannan, ...	13th December, 1900
Smail, William, Norma Villa, Wilson Street, Craigie, ...	8th February, 1906
Smart, David, Rockbank, Kinnoull,...	2nd May, 1878
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, Rev. Harry, M.A., Tibbermore Manse, ...	13th February, 1896
Smythe, Col. D. M., Methven Castle, ...	13th April, 1882
Smyth, J. Ross, Laggan, Clyde Place, ...	9th March, 1905
Somerville, Duncan M. Y., M.A., D.Sc., St. Andrews University, ...	9th February, 1905
*Somerville, Rev. J., B.D.—summer address, Castellar, Crieff; winter address, Villa Isaune, Mentone, ...	10th December, 1896
Speedie, Alex., 48 Tay Street, ...	8th December, 1904
Steel, Adam, Fairmount, ...	14th February, 1895
Steel, J. Sidney, 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, Robert, St. John Street, ...	12th January, 1899
Stewart, J., Verena Terrace, Craigie, ...	8th December, 1898
Stewart, Miss M. N., Caledonian Road Public School,	14th February, 1907
Stewart, Mrs., Lignwood, Scone, ...	20th January, 1910
Stirling, David H., M.D., Kinnoull Cottage, ...	4th April, 1880
Stirling, Robert, M.D., F.R.C.S.E., 4 Atholl Place, ...	13th February, 1890
Strachan, Rev. J. M., B.D., Kilspindie Manse, ..	10th December, 1903
Sturrock, D. J. P., H.M. Prison, ...	9th December, 1909
Stuart, Dr. C. C., Woodside, Balhousie, ...	14th April, 1901

Sutherland, Donald, M.A., Schoolhouse, Scone, ... 11th December, 1902
Syme, Bruce, Muirton Bank, ... 10th January, 1901

Taylor, David, 40 Balhousie Street, ... 9th February, 1893
Thomas, John, 25 Barossa Place, ... 3rd November, 1870
Thomson, Andrew, M.A., D.Sc., F.R.S.E., Ardenlea, Pitcullen, ... 13th November, 1890
Thomson, Mrs., Ardenlea, Pitcullen, ... 8th January, 1903
Thomson, James, Wellbank, Kinnoull, ... 23rd November, 1883
Thomson, R. Gloag, Wellbank, Kinnoull, ... 9th January, 1902
Trotter, Alexander, M.B., C.M., Tay Street, ... 14th January, 1904
Turpie, James, Depute Town Clerk, City Chambers, ... 8th February, 1900

Urquhart, A. R., M.D., F.R.C.P.E., Murray House, ... 14th May, 1882

Walker, Dugald, Balhousie Public School, ... 13th February, 1902
Watson, Miss, Inchyra, ... 13th December, 1894
Watson, Robert, R. B., 11 Pitcullen Crescent, ... 10th December, 1903
Watson, W., Plumber, Caledonian Road, ... 10th January, 1895
Watt, John, M.A., Perth Academy, ... 7th April, 1904
White, J. Martin, Balruddery, near Dundee, ... 2nd March, 1882
White, William, 29 Kirkgate, ... 14th November, 1895
Whyte, A. F., M.P., House of Commons, London, ... 14th April, 1910
Wilson, D. J., Atholl Place, ... 13th December, 1894
Wilson, Mrs. D. J., Atholl Place, ... 9th March, 1899
Winter, James, Rosemount, Place, ... 12th January, 1893
Winton, William, 12 Glover Street, ... 11th February, 1898
Wood, John, Dupplin Bank, Kinnoull, ... 11th April, 1889
Wright, Robert, Balhousie Street, ... 4th March, 1886

Young, Rev. D. G., B.D., Moneydie, ... 12th December, 1901
Young, George C., M.A., Caledonian Road Public School, 10th December, 1903
Young, George P. K., Tay Street, ... 2nd May, 1872
Young, T. B., 8 Murray Street, ... 14th April, 1898
Young, W. Cochrane, Solicitor, St. John Street, ... 7th December, 1882

ASSOCIATE MEMBERS.

Campbell, R., The Lodge, Durn, ... 11th February, 1897
Innes, David, 15 Keir Street, ... 10th November, 1904
Rattray, J. P., Whitefriars, Dovecotland, ... 14th April, 1898
Simpson, W. L., Inchaffray Street, ... 10th November, 1904
Wylie, William, 17 Commercial Street, Bridgend, ... 12th March, 1896

BALANCE-SHEET OF THE PERTHSHIRE SOCIETY OF NATURAL SCIENCE for the Year ended 28th February, 1910.

INCOME.

Balance in Savings Bank, March, 1910,	£52 2 4		
Balance in Treasurer's hands, ...	3 6 10		
		£55 9 2	
Subscriptions and Entrance Fees, ...	£86 12 6		
Sale of Publications, &c., ...	2 11 0		
Interest on Savings Bank Account, ...	1 9 1	90 12 7	
Year's Receipts, ...	£90 12 7		
		£146 1 9	

EXPENDITURE.

Heating, Lighting, and Use of Rooms, ...		£20 0 0	
Fire Insurance, ...		0 16 3	
Printing, Stationery, &c., ...		34 19 4	
Books, Magazines, and Binding, ...		22 5 7	
Janitor, ...		4 10 6	
Subscriptions to other Societies, ...		1 8 6	
Furnishings, ...		7 0 3	
Postages and Petty Outlays, ...		14 5 10	
Year's Payments, ...		£105 6 3	
Balance in Savings Bank, March, 1910, ...	£38 18 5		
Balance in Treasurer's hands, ...	1 17 1		
		40 15 6	
		£146 1 9	

PERTH, 10th March, 1910.—Examined, compared with the vouchers, and found correct.

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

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1909.

MONTH.	BARO-METER	AIR TEMPERATURE.									HYGROMETER.			RAIN.					WIND DIRECTIONS.									REMARKS.
		Mean of				Absolute Maximum and Minimum.					Mean at 9 a.m. and 9 p.m.								Number of Observations at 9 a.m. and 9 p.m.									
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Maximum (A).	Minimum (B)	Mean of A and B	Difference from Average.	Maximum.	Day of Month.	Minimum.	Day of Month.	Days with Frost, 32° and under.	Dry Bulb.	Depression of Wet Bulb.	Humidity.	Number of Days	Difference from the Average.	Total Fall.	Difference from Average.	Greatest Fall in 24 Hours.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	
	°	°	°	°	°	°		°		°	°		%			Inch's	Inches.	In. Date									
JAN.	29·937	43·4	33·4	38·4	+1·3	51	3, 17, 18	25	28	14	38·6	1·3	90	18	+4	2·64	+0.07	0·60 14	0	2	4	5	7	26	8	5	5	Snow, 11, 12, 14, 15, 16, 29.
FEB.	30·102	43·8	31·4	37·6	+0·3	56	3	23	7, 20, 21	16	36·0	1·6	86	8	−4	0 87	−1·32	0·39 4	6	10	5	0	4	8	7	7	9	Sleet, 9.
MAR.	29·579	42·5	31·7	37·1	−2·6	52	27	19	4	15	36·0	1·3	88	17	+3	3·87	+1·48	1·28 7	10	19	8	5	2	1	2	8	7	Snow, 1, 3, 6, 10, 14; Hail, 16.
APR.	29·881	54·5	35·6	45·1	+0·9	69	8	25	2	10	42·6	2·0	85	16	+5	3·16	+1·38	0·60 13	1	7	10	4	2	9	10	7	10	Thunder, 25, 29; Hail, 30
MAY	30·069	60·0	40·3	50·2	+0·7	75	22	29	2	4	48·6	3·3	77	13	0	3·10	+1·10	1·62 25	5	3	16	8	0	11	10	4	5	Swifts arrived, 3; Thunder, 27.
JUNE	29·999	64·5	44·6	54·6	−1·1	72	13,16	37	6, 7 13	0	53·4	3·2	79	11	0	1·13	−0·86	0·48 24	4	7	22	3	1	5	4	8	6	....
JULY	29·776	66·5	48·9	57·7	−0·5	74	16	37	1	0	57·1	3·3	80	16	+1	3·39	+0·44	1·64 25	1	2	5	1	1	23	16	12	1	Thunder, 25, 30.
AUG.	29 903	67·2	49·9	58·6	+1·6	81	9	35	26	0	57·0	2·0	87	14	−2	1·91	−1·58	0·78 28	2	0	4	3	1	33	9	9	1	....
SEPT.	30·045	59·6	42·2	50·9	−2·4	71	10	31	14	1	50·0	1·6	89	13	+1	1·49	−0·88	0·34 27	7	10	10	5	1	10	5	5	7	Thunder, 28.
OCT.	29·627	53·8	40 0	46·9	+0·7	63	2, 4	19	31	6	45·3	1·2	91	20	+4	4·28	+1·32	0·95 23	8	0	11	4	4	12	9	6	8	....
NOV.	29·941	46·3	28 5	37·4	−4·1	59	3	11	17,18	18	34·4	1·7	83	8	- 8	0·53	−2·34	0·25 2)	16	7	1	1	6	9	8	7	5	....
DEC.	29 582	40·2	29·1	34·7	−2·9	54	10	11	7	19	33·7	1·4	85	19	+3	3·35	+0·39	0·68 27	7	13	5	2	5	6	9	5	10	Snow, 1, 22.
YEAR	**29·870**	**53.5**	**38·0**	**45.8**	**−0·6**	**81**	..	**11**	..	**103**	..	..	..	**173**	**+·3**	**29·72**	**−0·80**	**1.64**	**67**	**80**	**101**	**41**	**34**	**153**	**97**	**83**	**74**	
Highest	**30.666**	9 p.m.	14th	Dec.																								
Lowest	**28.408**	9 p.m	3rd	Dec.																								

Averages are for the period 1883-1908.

Height of Station above Sea Level = 85 feet.

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

BAROMETER.

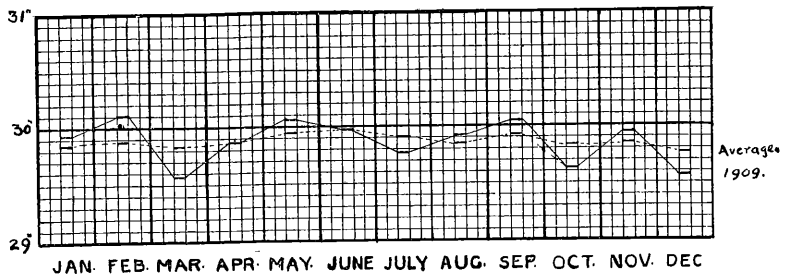


Plate 15.

Mean Monthly Reading at Perth, 1909———
Average of Monthly Readings, 1883 to 1908.....

RAINFALL.

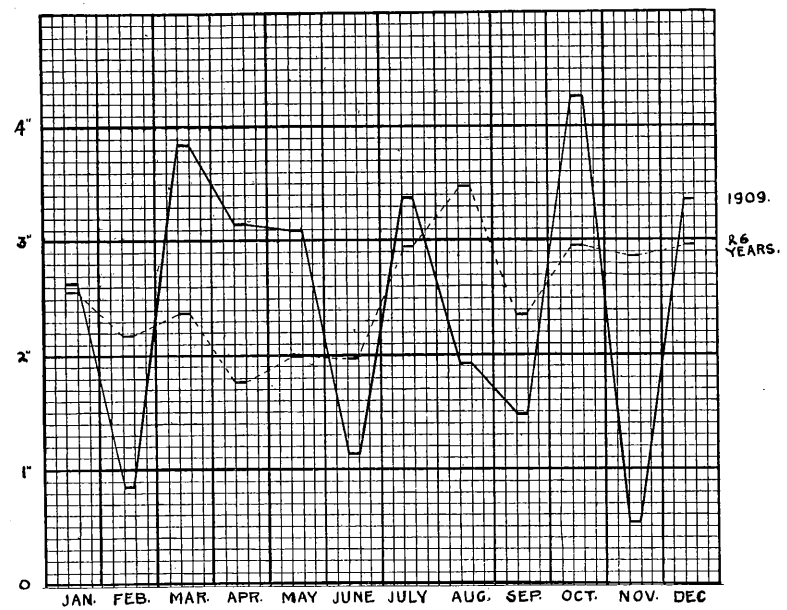


Plate 16.

Monthly Rainfall at Perth, 1909———
Average Rainfall at Perth, 1883-1908.....

TEMPERATURE.

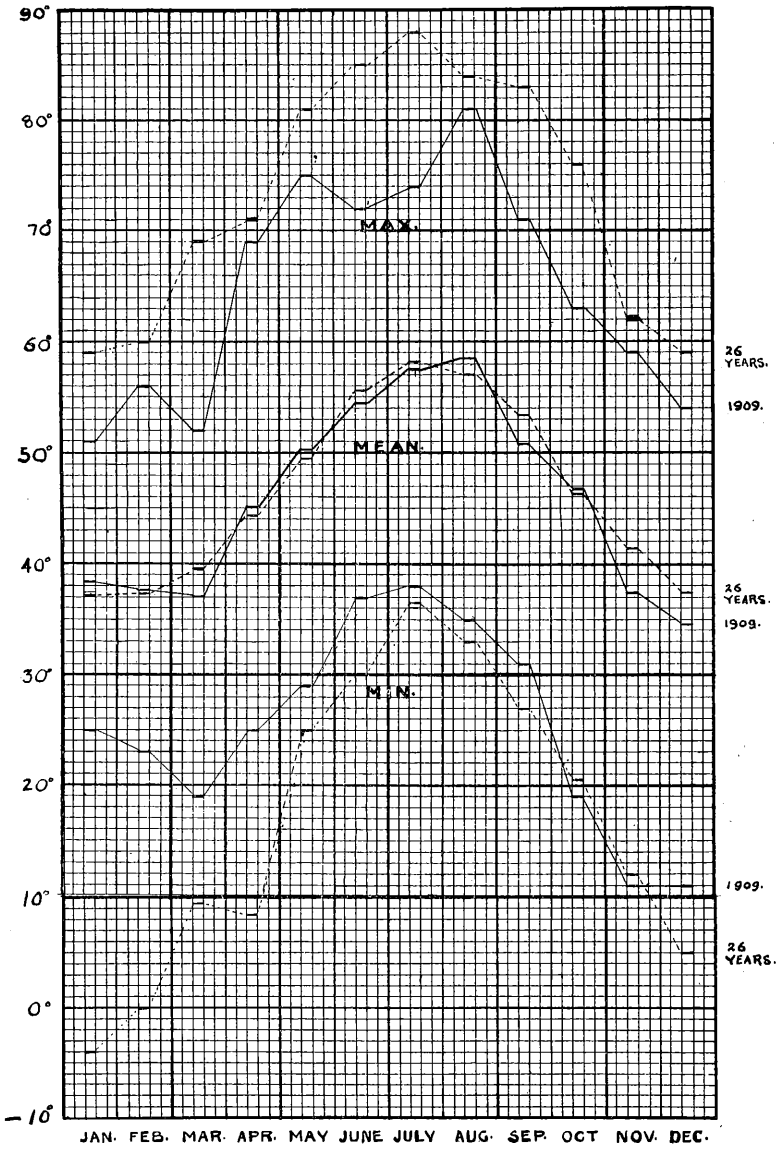


Plate 17.

Maximum, Minimum, and Average Mean Monthly Temperature at Perth, 1909————
" " " " 1883 to 1908.....

APPENDIX.

With this part is issued a series of four maps of Perthshire and the surrounding districts. The scale of the maps is comparatively small (1 inch = 10 miles), but in spite of this a large amount of valuable information is shown, and it is hoped that the maps will prove interesting.

1. OROGRAPHICAL MAP.

Maps of this kind have become quite common of recent years, and this one calls for little remark. The distinction of altitude between Highlands and Lowlands is well marked, and the "transverse" and "longitudinal" valley systems of the Highland area clearly shown.—See Geikie's "Scenery of Scotland," third edition, p. 186.

2. MAP SHOWING GLACIAL DRIFT, &c.

It is well known and universally recognised that the present surface of Perthshire, as well as that of the rest of Scotland and a large portion of England is due to the action of land-ice during what is commonly known as the glacial epoch. During this period the whole country, except, perhaps, the highest mountain tops, was covered with ice, in some places hundreds of feet thick, moving slowly, but with irresistible force, from the higher regions to the lower, and so out to sea. In Perthshire the general trend of the ice-flow, as might have been expected, was from north-west to south-east. When the ice departed, not only had the whole surface of the country been smoothed and rounded, but vast deposits of clay, sand, gravel, etc., were left covering all but the most exposed situations, where these materials could not accumulate. On the map the direction of the ice-flow is clearly indicated, as well as the area which is now covered by glacial deposits.

For detailed information Geikie's "Scenery of Scotland," chapters xi. and xvii., may be consulted, as well as an address on the "Glaciation of Perthshire" by Mr. H. Coates, published in the Society's "Proceedings," Vol. IV., p. cxliii.

3. GEOLOGICAL.

Notwithstanding the small scale of the map the leading geological features are well shown. We may note in the first instance the line of separation between Highland and Lowland regions. Comparison of maps 1 and 3 will show that the distinction betweed these regions is not one of altitude only, there is a well marked geological distinction. It will be seen that a fault-line runs across the county from S.W. to N.E., passing near Callander, Crieff, Dunkeld, and Blairgowrie. South and east of this line we meet with conglomerates and sandstones of Old Red Sandstone age, with their associated igneous rocks, best seen in the Ochils and Sidlaws, but also occurring less abundantly along the Highland border. Though for the most part gently inclined, these strata near the fault-line have been turned into an almost vertical position, as may be well seen at Callander Crags, Bracklin falls, and elsewhere.

The igneous rocks associated with the Old Red Sandstone are for the most part contemporaneous, *i.e.*, laid down during the same geological epoch. They consist mainly of andesites, the main outcrop forming a broad band extending from

the southern boundary of the county, near Bridge of Allan, north-eastward into Fife and Forfar, and rising above the general level of the country to form the Ochils and Sidlaws.

In addition to these there are numerous dolerite dykes, crossing the country from east to west, which are usually considered to be of Tertiary age. These are shown on the map as thin red lines.

North and west of the fault-line occur the rocks of the Highland Complex. These are very different from the Old Red Sandstone rocks already mentioned, and very little is known as to their geological age. They are obviously older than the Old Red Sandstone, as pebbles of Highland rock occur in the conglomerates of that period.

With the exception of the igneous rocks mentioned below, the rocks of the Highland area are of aqueous origin, but they have all been metamorphosed, i.e., profoundly changed, since they were originally laid down, by vast pressures acting upon them. The original bedding has been obscured or obliterated, and foldings, often highly complex, have been developed, and in the finer grained beds a foliated character has been produced, from which the rocks have derived their common name of "schist." In many cases, too, there has been a development of secondary minerals, i.e., minerals not originally present in the rock. Hence the variety of schists met with in the Highland area is almost endless. It is possible, however, to trace a certain order of sequence in these rocks, see Macnair, Geology and Scenery of the Grampians, Vol. I., p. 41.

The igneous rocks of the Highland area are of three types:—

1. The older intrusive igneous rocks. These consist of igneous masses which were intruded into the rocks of the Highland area before metamorphism occurred. They have therefore undergone a certain amount of metamorphism themselves, being more or less distinctly foliated like the surrounding schists. In the more basic varieties metamorphism has gone so far that it is often difficult to say whether the rock was originally aqueous or igneous. These rocks are well developed in the area to the north-east of Pitlochry and along a line extending to the south-west.
2. The newer intrusive igneous rocks. These consist of unaltered granites, diorites, etc., and as they are free from all signs of metamorphism it is reasonable to suppose that they were intruded after the metamorphism of the surrounding rocks. Good examples are seen in the granite of Glen Tilt, the diorite and granite of Glen Lednock, the diorite of Rannoch Moor, etc.
3. The dyke rocks. Many of these agree in all respects with the dolerite dykes of the Lowland area. Others, however, are quite distinct, and consist of rocks of very varied types. They are found in dozens over practically the whole of the Highland area, and in many cases at all events appear to have some connection with the newer intrusive igneous rocks.

4. VEGETATION MAP.

The pioneer of Botanical Survey Work in Scotland was the late Robert Smith, B.Sc., whose papers on "The Plant Associations of the Tay Basin" are published in the Transactions of the P.S.N.S., Vol. II., p. 200, and Vol. III. p. 69.

The same author also published papers in the Scottish Geographical Magazine for 1900 on a "Botanical Survey of Scotland," Edinburgh district on p. 385, and North Perthshire on p. 441.

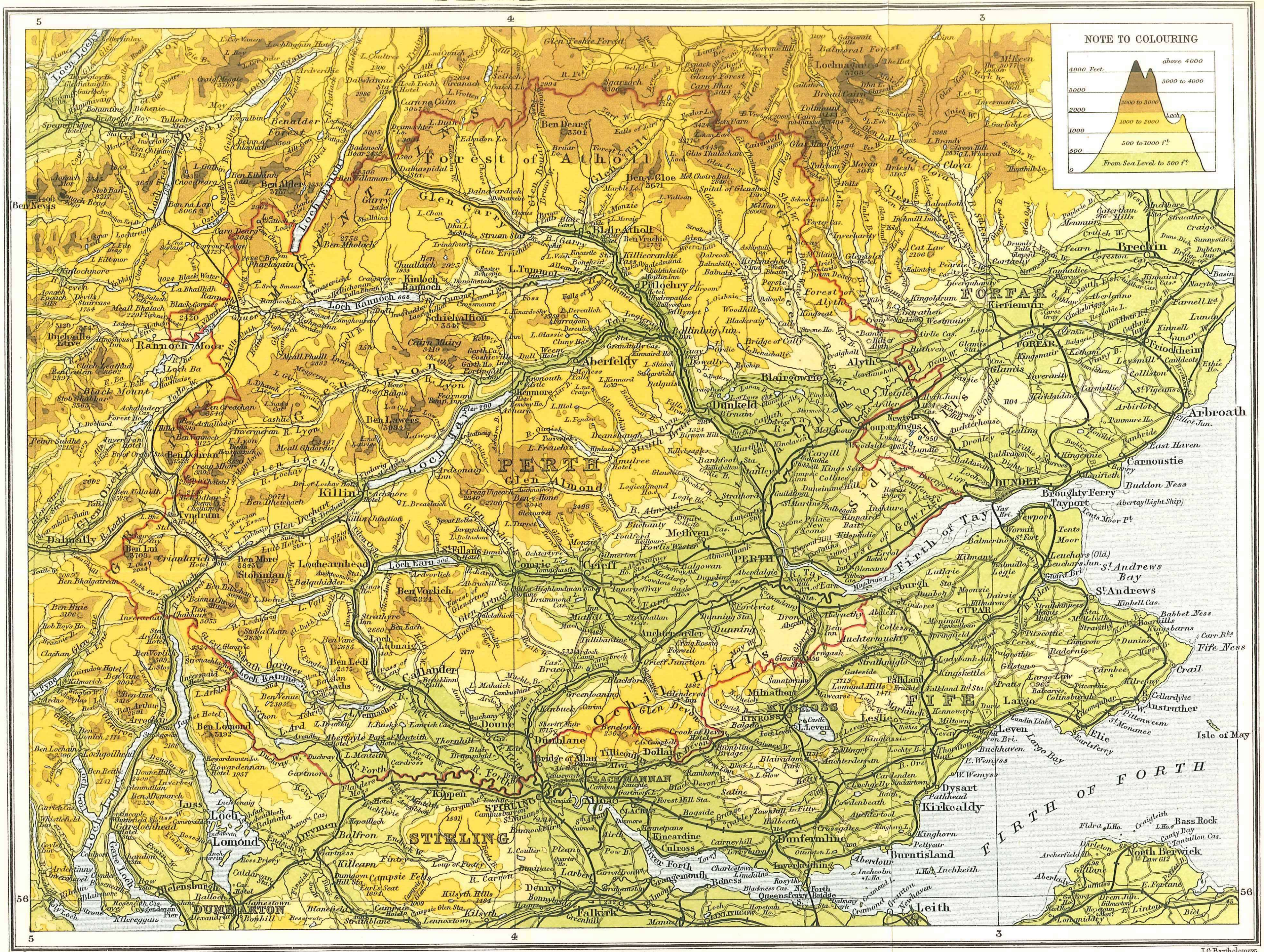
Dr. W. G. Smith, brother of the above, continued the work, and read a paper on "A Botanical Survey of Scotland" before Section E of the British Association at Glasgow in 1901. This paper is published in the Scottish Geographical Magazine for 1902, p. 132. Further papers by Dr. Smith appear in the Scottish Geographical Magazine as follows:—1904, p. 617; 1905, pp. 4, 57, 117.

The map now issued shows the results of the Botanical Survey over a much wider area, as far as possible on so small a scale.

Readers requiring further details are referred to the above-mentioned papers, and to the maps on the scale of 2 miles to an inch, with descriptive text, published by Messrs. Bartholomew.

[This part, pp. lix.-xcix., published 10th November, 1910.]

PERTHSHIRE—OROGRAPHICAL.



The Edinburgh Geographical Institute

English Miles 0 1 2 3 4 5 10 15 20

County Boundary thus

J.G.Bartholomew.

PERTHSHIRE—GLACIAL DRIFT.

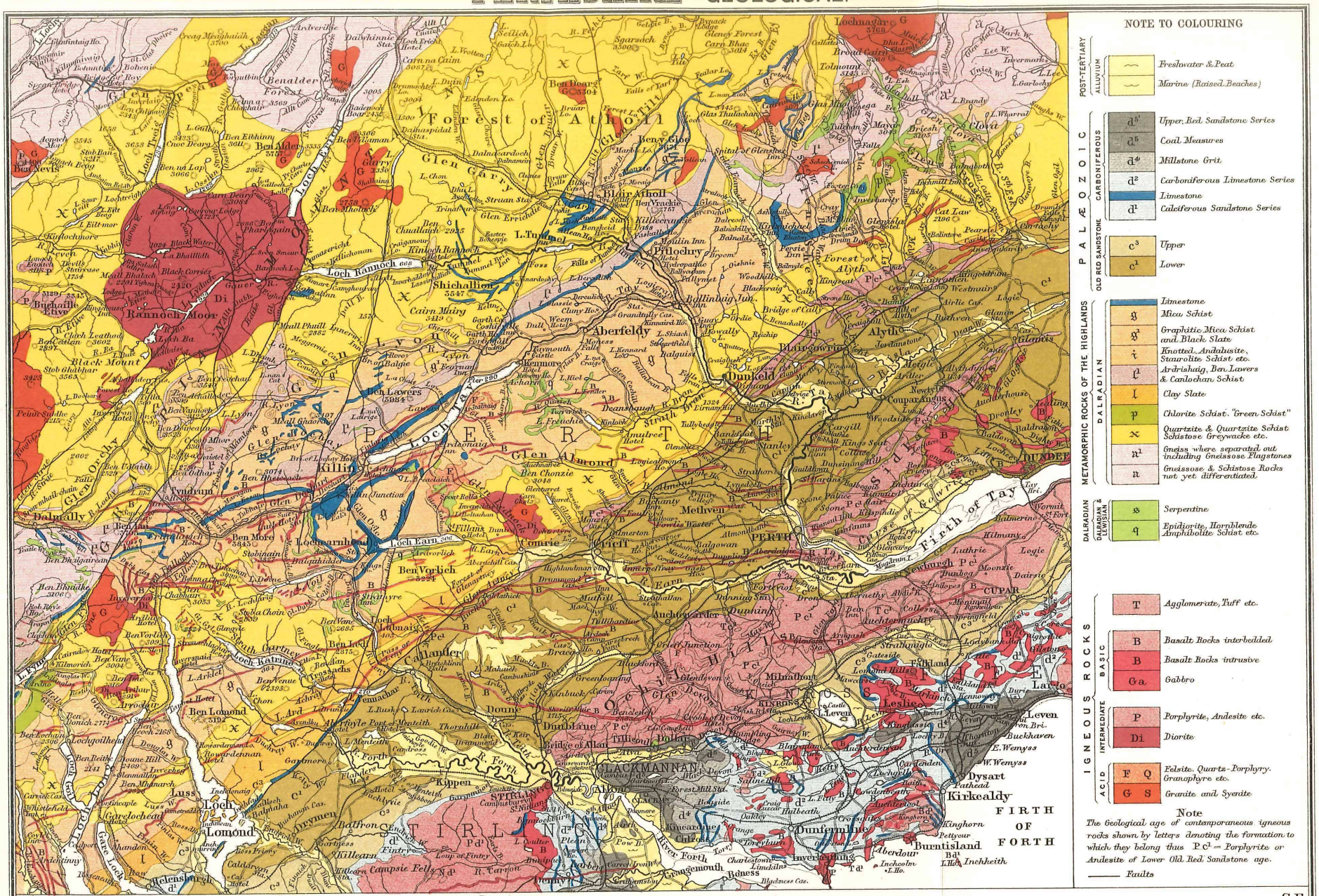
The Edinburgh Geographical Institute

English Miles

0 1 2 3 4 5 10 15 20

J.G.Bartholomew.

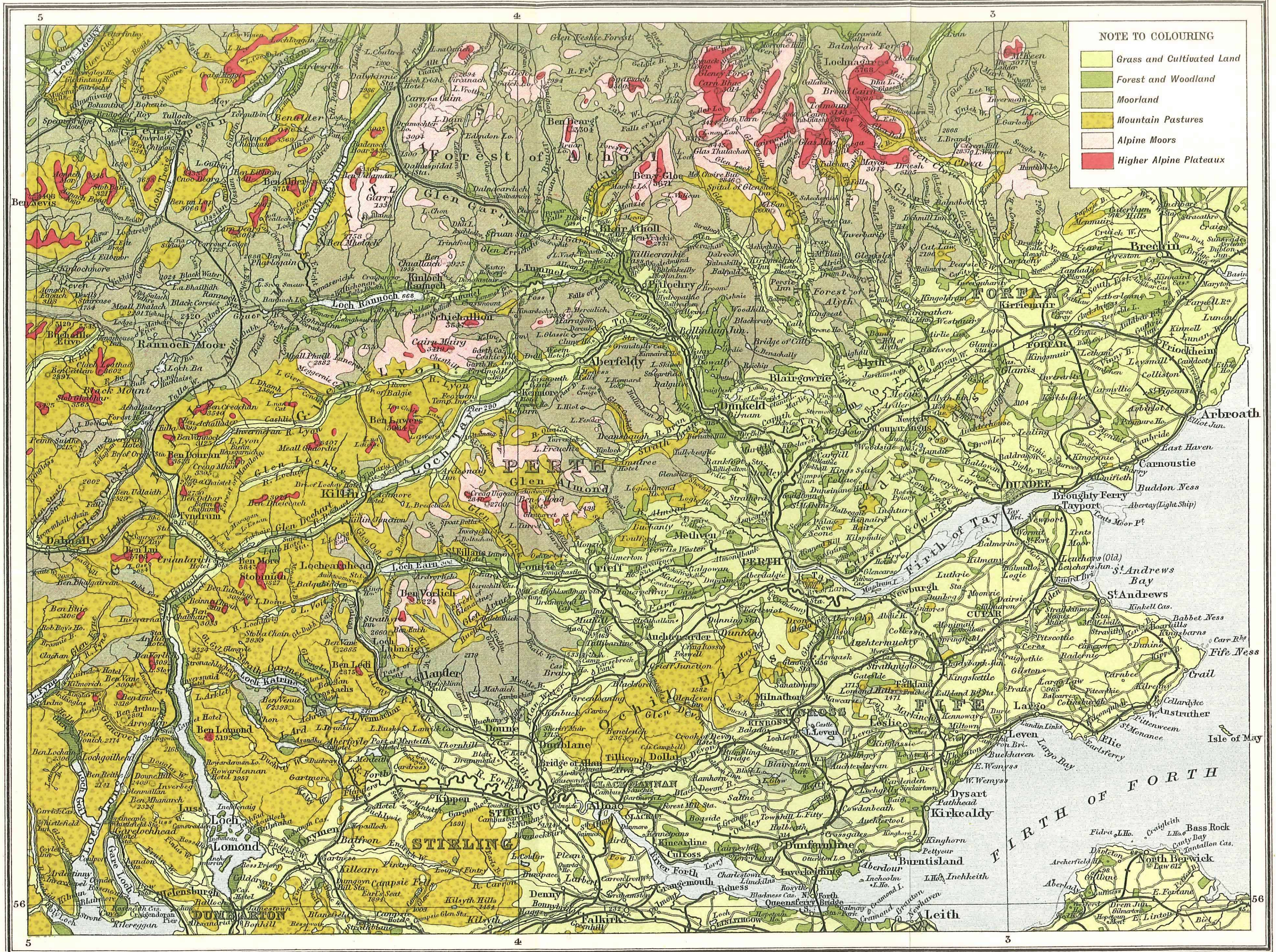
PERTHSHIRE—GEOLOGICAL.



The Edinburgh Geographical Institute

J.G.Bartholomew

PERTHSHIRE — VEGETATION.



The Edinburgh Geographical Institute

English Miles 0 1 2 3 4 5 10 15 20

J.G. Bartholomew

WINTER SESSION, 1910-1911.

10th November, 1910.

W. BARCLAY, President, in the Chair.

EXHIBITS.

Bat, Common, dark variety.
Owl, Tawny, chick, picked up dead by Mr. White.
Song Thrush, bird of the year.
Robin, summer plumage.
Whitethroat, albino (loan).
Salmon scales (7-8 years).
Trichides fasciatus, a rare beetle, new to Museum collection, from Mr. M'Glashan, Killiecrankie.
Coleoptera—23 species of Perthshire Beetles, 20 species new to Museum, from Mr. Sharp, Blairgowrie.
Diptera—46 species of Perthshire Flies, from Mr. Wylie.
Culex fatigans, from Dr. W. T. Graham.
Larva of *Hemerobius*, from Miss M'Leod.
Wasps' nests—Mr. Rodger.
Linnæa borealis—Lord Medway.
Saxifraga rivularis—Mr. Haggart, Killin.
Juncus tenuis— " "
Ascomycetous Fungi, 180 species from Mr. C. M'Intosh, Inver.
A number of Highland Rocks—Messrs. Bates and Rodger.
Photographs (4) of Perthshire Rocks—Mr. Bates.

The President proposed the following resolutions, which were unanimously carried:—

> "That the members of the Perthshire Society of Natural Science desire to record their deep regret at the death of Miss Millicent Thomas, and their keen sense of the loss which the Society has thereby sustained. They remember the great interest which she took in the welfare of the Society, and the many services which she rendered to it. They desire to express also their heartfelt sympathy with her father, Mr. John Thomas, and the rest of the family in the severe and sudden calamity which has befallen them."
>
> "That the Secretary be instructed to send a copy of this minute to Mr. John Thomas."

The President then delivered the following opening address:—

LADIES AND GENTLEMEN,—Since last we met death has been busy in our ranks, and the list of those who have gone from among us is very much larger than usual.

Mr. John Ferguson was a member of our Society for about seven years. He was interested chiefly in photography, and his sudden death in the prime of life, and in the midst of his usefulness, has been a great loss to the Photographic Section.

Sir John Kinloch, though, of course, not a working member, was one of those who gave to the Society the help of his name and influence, and in this practical manner showed that he appreciated its work and recognised its claims to public support.

The Right Hon. Charles Stuart Parker had been a member since 1871, and continued to keep up his connection long after he had left the county. He was a warm friend of the Society, and on several occasions did what he could to assist it in its work.

The Very Rev. Dean Rorison, though not a working naturalist, was a member for about twenty years, and found time, in the midst of his many other important and engrossing duties, occasionally to attend our meetings, and to show that he was a friend and well-wisher of the Society.

Dr. David H. Stirling was also a very old member, whose name has been on our roll since 1880. The heavy work of his profession, and the many philanthropic schemes of which he was the life and soul, prevented him from taking much part in the actual conduct of the Society, but he recognised its usefulness and was interested in its progress. To our herbarium he presented the interesting collection of dried plants which belonged to the late Mr. John Sim, a self-taught but able botanist who formerly resided in Perth. Dr. Stirling's life was one to be envied; long and active, filled full of work for the benefit of the men and women among whom he lived.

Mr. John S. Grant took an active part in the affairs of the Society, especially after he became resident in Perth. He acted for some time as Councillor and Vice-President. He contributed various valuable notes to the *Proceedings*. On many occasions he acted as leader at our excursions, and on these occasions the arrangements which he made for the comfort of the party were always most excellent. His kindly and pleasant manner endeared him to all, and we deeply regret his loss.

The name of Mr. G. W. Kirkaldy may perhaps not be familiar to many of those present, but he was a member of our Society for sixteen years. Although living in London, his keen interest in certain branches of entomology led him to visit Perthshire for the purpose of collecting, and he also found material for study in the entomological collection of our Museum, presented to the Society by Dr. F. B. White. He found also a zealous fellow-worker in Mr. T. M. M'Gregor, who was at that time busily engaged on the Hemiptera of the County. One paper, embodying some of the work of both, was in 1898 contributed to our *Transactions* by Mr. Kirkaldy. The latter, quite a young man, some time afterwards went to Honolulu as assistant entomologist under the Board of Agriculture of Hawaii. Not very long afterwards he joined the staff of the Experimental Station of the Hawaiian Sugar Planters' Association. He published many valuable papers on his favourite group, the Hemiptera, and took rank as one of the foremost authorities on

that group. A fall from his horse shortly after he went to Honolulu caused a fracture of the leg, which troubled him during the rest of his life, and, indeed, ultimately led to his death at San Francisco in the beginning of the present year at the early age of 36. He retained his connection with our Society up to the end of his life.

It is with a keener pang and a deeper sense of loss that I come to the last name on this melancholy roll. Miss Millicent Thomas for many years was one of the most active members of our Society, and a regular attender of our meetings and excursions. It was, indeed, by her example and influence that ladies began to take part in the summer excursions, which had up till then been attended exclusively by men. She contributed to our *Transactions* and *Proceedings*, and when Mr. Rodger introduced the practice of having a display of wild flowers during the months of June and July, she took the trouble for some years of collecting and naming them. She showed much interest also in the Junior Section, and did a good deal of work in connection with it. She became an accomplished botanist, and it was a pleasure to see her keen delight when we came across some new or rare plant. By all of us she made herself beloved by her quiet and amiable manner, and her willingness to help others in any way she could. It is hard to think of her lonely death in a foreign land, a sad end to a bright and useful life.

On the 23rd of May, Victoria Day, we journeyed by train to Coupar Angus and thence drove to Kettins. Here we were met by the Rev. Mr. Fleming, who first took us into the Church, and gave us an interesting account of its history. He showed us also the communion vessels, partly of fine old pewter, but comprising also two lovely cups of beaten silver dating back to 1636. In the churchyard we saw a large sculptured stone, which had long served as a bridge over a neighbouring rill, until rescued and placed in its present position. In another part of the churchyard we were shown the old belfry of the Church, taken down when the edifice was rebuilt. It contains the old bell, which has rather an interesting history. It was dug up from a neighbouring bog and placed in the old belfry in 1568. An inscription upon it in low Dutch shows that it was cast in the year 1519 by a Dutchman in the service of Henry VIII., and according to Mr Fleming, was probably intended to be used as a ship's bell; but how it came to be buried in a Forfarshire bog is a mystery. In the garden in front of the manse we admired a fine specimen of *Sequoia gigantea*, which girthed 9 feet at 3 feet from the ground. Mr. Fleming then conducted us to see the school garden, which is looked upon as a model of its kind, and is indeed very well laid out. We were certainly much indebted to Mr. Fleming for his kindness, though it was plain that he took much pleasure in showing the many interesting things connected with his Church. We then drove on to Pitcur Castle, the ruins of which were shown to us by Mr. Hogg, factor on the Hallyburton Estate. There does not appear to be any historical event of importance connected with this building. Mr. Hogg then conducted us to a neighbouring field, where we had the pleasure of examining one of

the finest specimens of an earth-house which is to be found in the country. It consists of one main room 180 feet long, curved at the west end. Another room, 60 feet long, runs parallel to the curve of the main room. This subsidiary room has an average breadth of 10 feet, and was probably roofed over with wood, of course with earth above. The main room, which is much narrower, was undoubtedly roofed over in the usual way with flagstones, for part of it is still uncovered and in its original condition, running below a field for a distance of about 50 feet. There were at least three entrances, one at each end and one in the middle, which also retains its original roof. We noticed two cup-marked stones, one built into the wall and another lying on the ground. This earth-house was first partly uncovered in 1878 by the tenant of the farm, Mr. Granger, and in it were found at that time a bowl of Samian ware and a Roman coin. The uncovering was further carried out by Mr. R. Stuart Menzies, M.P., when some other relics were found. It is said that about twenty of these earth-houses are known to have existed within a radius of 10 miles round Pitcur, of which all but three have totally disappeared. After cordially thanking Mr. Hogg for his kindness, we drove on to the pretty village of Newtyle. Mr. Peter Campbell, who was one of our party, related to us on the way that 75 years previously he had travelled from Dundee to Newtyle by the railway, which had then been opened but a very few years, and which, indeed, was one of the first to be constructed in Scotland: We then proceeded on our way to Meigle, spending on the journey a short time in the grounds of Belmont, by the kind permission of the proprietor, Mr. Campbell. At Meigle we spent an hour or two examining the fine collection of sculptured stones, with their mysterious emblems and grotesque animal forms. It is very satisfactory that these fine old relics are now safely housed and protected from the weather, an example which should be followed in the case of many others scattered throughout the country, and going rapidly to decay. Leaving Meigle, we set out on the return journey to Coupar Angus by a more northern road than that by which we had come. At Arthurstone we walked through the gardens, under the guidance of Mr. Kemp, the gardener. Here were pointed out to us a number of old stones carved and dressed, which had formerly been portions of Coupar Angus Abbey. This abbey, one of those gutted by a mob at the Reformation, seems afterwards to have been inhabited by that Baron Coupar, who received a grant of the Abbey lands from James VI. It was subsequently stormed and sacked by some of the soldiers of Montrose, and from that time was used as a quarry by the inhabitants of Coupar Angus, so that now scarcely anything is left of it but a single gateway. We then drove on to Coupar Angus. During the whole day the weather was fine, and besides the pleasing scenery of the valley, we enjoyed splendid views of the Grampians pierced by narrow glens, whilst opposite to them stretched the picturesque summits of the Sidlaws.

On 4th June we took train to Guay, and thence walked to Dowally, paying a short visit to the Church and churchyard. Here the sexton informed us that though the parish is now usually called

Dunkeld and Dowally, the older and correct designation is Dowally and Dunkeld. We then walked up the pretty Dowally glen until we came to the Loch. It was perhaps too early in the season for plants, but there did not appear to be very much variety. The loch is of the Highland type, whose banks nourish but a very limited flora. Walking through the woods, we came upon a busy train of ants marching in procession for a long distance along the road, and traced them to their nest within the border of the wood. Passing Glack Sawmill we came to a fine clump of junipers, noticed on a former excursion by this road. Many of these reach a height of at least thirty feet, and are trees rather than bushes. A short visit to Cally Loch showed us that the *Aponogeton* still flourishes there, and seems to be spreading. A dense growth of rhododendrons and azaleas now makes it rather difficult to reach the edge of the loch.

On 25th June the excursion was to Mount Farragon. From Grandtully Station we set out under the efficient guidance of Mr. Kennedy. It is a long way to the foot of the hill. In many places we saw roads which had been torn up by the recent rain-storm. Passing by Loch Derculich, we found its shores with a stony margin, and yielding but few plants. The lesser spearwort, *R. flammula*, with prostrate stems and rooting at the joints, was tending towards the so-called variety *R. reptans*, but could scarcely be identified with that. Farragon itself nourishes but few alpines, and these of the commonest, with the exception of one very handsome sedge, *C. atrata*, which is plentiful on one rocky ledge. The day was fine, and the view from the top well worth the rather toilsome walk to reach it.

As usual the first Saturday of July had been fixed upon for the annual Mountain Excursion. From Luib Station we crossed the Dochart and set off for the top of Meall Chuirn, a pretty long and toilsome climb. The weather was fine till we reached the top, when from the darkening sky descended a heavy shower, the forerunner of what was soon to follow. The usual meeting of the Mountain Club was held, and several new members were initiated. Some time was then spent in investigating the flora, which was found to be very poor, consisting chiefly of such plants as *Alchemilla alpina*, *Silene acaulis*, *Saxifraga stellaris*, *Carex rigida*, *Salix herbacea*, *Carex saxatilis*, and *Epilobium alpinum*, but nothing of any consequence. The descent was made amidst rain, at first a thick drizzle, which soon changed into a dense down-pour. On the way down we came across some fine groups of *Cornus suecica* and *Vaccinium uliginosum*, the latter not in flower.

The next excursion, that of the 6th August, was taken part in by two members, the same two who for three successive years have had the excursion in the beginning of this month all to themselves. They walked from Bankfoot through Glengaur to Birnam, and enjoyed to the full a fine day among the blooming heather. There was not much else to be seen in the way of vegetation going through Glengaur.

The autumn holiday, the 24th of August, was ushered in by dull skies and frequent showers. Nevertheless a party of twelve set off for Blairgowrie, where they were joined by Mr. Falconer, the leader

of the excursion, and two other gentlemen. As the weather showed some signs of improvement, flattering only to deceive, it was resolved to proceed. We drove on through Rattray, past the romantic gorge of Craighall, of which a fine view was obtained, and then northwards on the Glenshee road. Frequent showers accompanied us all the way to Craigton, where we took shelter for an hour or so from a very heavy rain. When the rain ceased we took a look at some marshy ground close at hand, but found nothing out of the common. Setting out again, we had a fine interval to cross over to the Kirkmichael road, halting on the way to examine two quarries, one of limestone and the other of epidiorite, an igneous rock which has become more or less schistose by the folding and crushing of the earth's crust. Having reached the Kirkmichael road we drove back to Blairgowrie, accompanied all the way by pelting rain. This fine excursion was thus spoilt by bad weather.

As usual, the concluding excursion for the season was to seek for fungi, and this took place on the 24th September, under the leadership of Mr. Menzies. From Methven we walked to the Cairnies to examine the grounds there, by the kind permission of Lord Medway. In belts of the wood by the wayside were numerous fungi, specially notable being the abundance of the toothed fungus, *Hydnum repandum*, which in one place formed a wide circle round a tree. Others which are worthy mention were a very sticky one called on that account *Gomphidius glutinosus*, very dark purple with yellow at the base, and of Discomycetes *Helvella crispa* and *Leotia lubrica*. The grounds proper of the Cairnies were not so prolific in fungi, but were highly interesting to a section of the party who make a special study of conifers. Many fine species were here represented, the specimens of the Menzies fir, *Abies Menziesii*, being perhaps the finest that any had previously seen. The weather was delightful, and a pleasant drive back to Methven brought to a close a most enjoyable day.

Apart from the regular excursions, one or two interesting discoveries have been made during the season. From Lord Medway I received a specimen of the pretty *Linnæa borealis*, a large patch of which, in fine flower, he had found in a fir wood in the neighbourhood of the Cairnies. In Perthshire we know of only three other localities where the *Linnæa* is to be got, and at one of these it seems never to produce flowers. Lord Medway's discovery adds a fourth, and is the only one in Dr. White's district of Lowland Perth. Besides these there are other three stations mentioned in older records, but at none of them has the plant been seen for a long time. Another discovery of Lord Medway in the same neighbourhood is equally interesting, viz., that of *Goodyera repens*. This orchid, though abundant in most of the fir-woods of the northern counties, becomes rarer as you come south, and is very scarce in Perthshire. It has been found previously in only four localities in the county, and in two of these it has been extinguished by the cutting down of the trees amongst which it grew. The addition, therefore, of a new station in a new district is very welcome.

I may also note that from Mr. Haggart, Killin, a specimen was received of *Juncus tenuis*, an American sedge which has occurred of late years in many parts of the country. This is the third station for it in Perthshire. The same gentleman sent also a specimen of the very rare *Saxifraga rivularis* from Ben Lawers, the only station for it in the county. Our herbarium contains only one other specimen from Ben Lawers, and that not collected by a Perthshire botanist. Mr. Campbell has also, I believe, some interesting finds to record, but I shall leave him to make the communication of these for himself.

In conclusion I should like to refer briefly to a ceremonial at which I was present in the beginning of September, and which should be of interest to Perthshire naturalists—the unveiling of the Don Memorial at Forfar. Don served his apprenticeship as a gardener at Dupplin, and investigated the flora of Strathearn and the Ochils. At a subsequent period he was one of the first to make known the riches of Ben Lawers and the other prolific hills of Breadalbane. In the middle of last century many of his discoveries were sneered at by a certain section of botanists, who practically, though perhaps not in plain words, implied that he wilfully made false statements. Since then, however, his good name has been cleared by the re-discovery of many of those plants, which his critics believed to have been discovered only in his own imagination, and no one now doubts his good faith. A paper by Mr. John Knox, of Forfar, contributed to our Society, and published in *Scottish Naturalist* in 1881, gave a sketch of his life and labours, and maintained the thorough honesty of his records. Mr. Claridge Druce, in 1904, wrote a biography of Don for the Report of the Edinburgh Botanic Garden, and thereafter a committee was formed, of which Mr Knox was convener, to raise funds and to place a memorial of Don in his native town. The result was the erection a plain but graceful obelisk on the grave of Don in the parish churchyard. At the unveiling ceremony Mr. Druce gave a short account of Don's life, with an appreciation of the many discoveries which he made, and of the great debt which botanical science owes to his labours.

At the conclusion of the address, Major Mercer exhibited and described a number of lantern slides from photographs taken at the excursions during the preceding summer.

Thereafter Mr. Menzies gave a valuable paper on "The Discomycetes of the Locality and their Habitats." (See *Transactions*, Vol. V., Part III., page 75.)

December 8th, 1910.

W. BARCLAY, President, in the Chair.

The following exhibits were on view :—

A number of birds' nests built in curious places.
Great Crested Grebe, male and female.

A number of Australian minerals.
A collection of Fungi.
Forty-one photographs of birds and their nests.

Miss M. L. Miles, L.L.A., gave the following report of the meetings of the Cryptogamic Society, which were held this year at Crieff:—

This year the Cryptogamic Society of Scotland held its Thirty-fifth Annual Conference at Crieff, from the 27th to the 29th of September. As all the district around Crieff has been frequently visited by the Perthshire Natural Science Society, no description of the scenery is necessary.

On Tuesday, the 27th, Drummond Castle grounds were explored, but owing to the long continued period of dry weather, the larger fungi were by no means plentiful in the woods. *Næmatelia encephala*, Fr., was found on this excursion.

On Wednesday the woods at Abercairney were visited, but rain having fallen in the morning, the search for fungi was attended with some discomfort. Not a gleam of sunshine appeared all day, and the brightest spot seemed the garden, where a gorgeous border of a bright blue salvia almost made up for a moment for the absence of a blue sky. On this excursion, amongst the few larger fungi, a single specimen of *Mycena stilobates* (Pers.) Fr., a pure white fungus, was found growing on a fallen twig. It happened that our guide round the grounds was the same forester who accompanied us when Dr. Borthwick took a number of the members of his class in Sylviculture over the same estate. The forester led us to a conifer—a miserable specimen—which he showed to Dr. Borthwick then. At that time I sent a specimen of the diseased tree to Mr. Rea of the British Mycological Society. He in his turn sent it on to a French mycologist, by whom it was stated to be a fungus new to science. Since then it has been named *Cucurbitaria piceae*, Borthwick. Some of you may remember that a specimen of this fungus was exhibited, mounted, at the last P.S.N.S. meeting.

On Wednesday night, after dinner, the annual meeting was held. Amongst visitors present was Dr. Robert Campbell of Montreal, who is much interested in fungi. He was at our meeting at Inverary three years ago. Much regret was expressed at the sudden death of Miss Thomas, who had attended the meetings of the Cryptogamic Society of the last four years. With the exception of the Secretary and myself, no one had heard of the sad event until the conference. Dr. Paul was asked to send a letter of condolence to Mr. Thomas.

On Thursday the party drove to the farthest gate of Ochtertyre. The Rev. J. E. Somerville, B.D., Crieff, was our guide for the early part of the day. Passing behind the mansion-house, we ascended gradually to the higher ground until we reached the Falls of Turret. Here, on the low bridge, a number of us were photographed by a member of the party, for the day was as bright as one could desire in September. Gradually the party dropped off, one by one, until,

by the time we reached the Falls of Barvick, only four of us remained. The most notable fungus we saw was an enormous specimen of *Polyporus giganteus*, Fr. This fungus seemed very common in the Crieff district this year, more than one cluster having been found on each of the excursions.

The following papers were read :—

"The Coloration of Animals and Birds," by Donald Sutherland, M.A.

"Ten Minutes of Padding," by R. R. B. Watson.

January 12th, 1911.

W. BARCLAY, President, in the Chair.

The Curator exhibited a brood of Sparrow Hawk nestlings and one of the Arctic Tern, recently added to the Museum; also a number of bird parasites.

The following paper was read :—

"Recent Investigations on Agricultural Botany," by W. G. Smith, B.Sc., Ph.D., Edinburgh and East of Scotland College of Agriculture. The paper included a summary of the progress of knowledge regarding the nutrition of plants from the 17th century, when the importance of the atmosphere as a source of carbon was recognised and the influence of nitrates and other mineral manures was demonstrated. A later period was initiated when Hellriegel, in 1886, showed that the root-tubercles of leguminous plants provided supplies of nitrogen available for cereal crops, and more recently the fixation of nitrogen by soil-organisms has opened a field for research. The bearing of these investigations on the fertility of the natural soils of forest, moorland, and marsh was also discussed.

The results obtained by artificial hybridisation of plants were briefly outlined, and the importance of such investigations on the origin of new species was indicated.

The paper was illustrated by numerous lantern slides and specimens.

January 26th, 1911.

A special lecture was given by Mr. Robert Somerville, B.Sc., F.R.S.E., on the "History and Manufacture of Coal Gas." The lecture was illustrated by lantern slides.

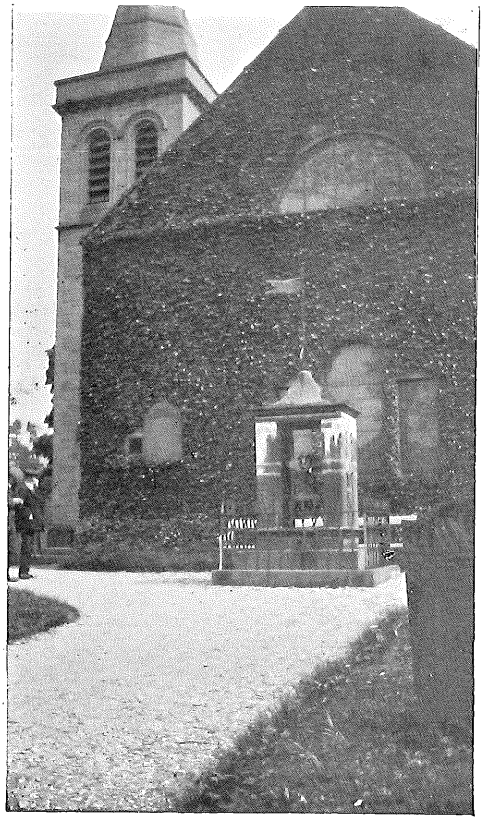
[Photo by J. Kinnear.

Plate 18.—View of North Inch, Perth, Flood of August, 1910.

[Photo by Major Mercer.

Plate 19.—Monumental Figure (from Coupar Angus Abbey) at Arthurstone.

Plate 20.—Cup-Marked Stone, Pitcur. [Photo by Major Mercer.



[Photo by Major Mercer.

Plate 21.—Old Belfry, Kettins.

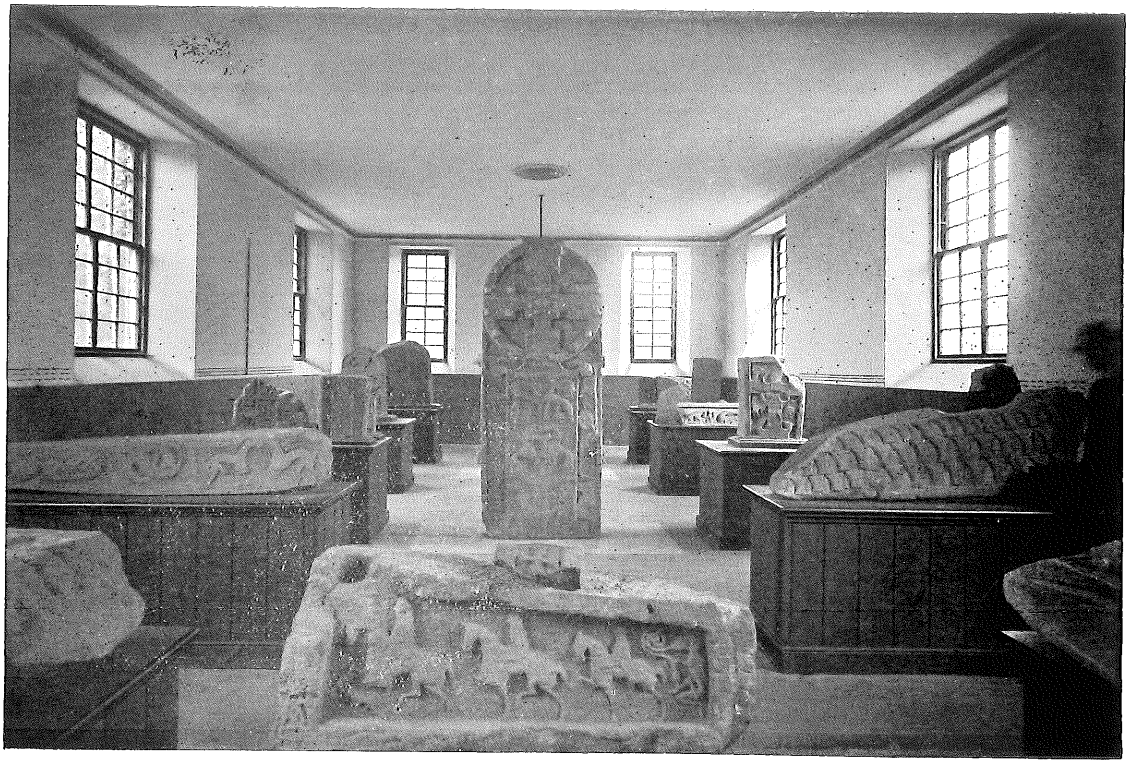
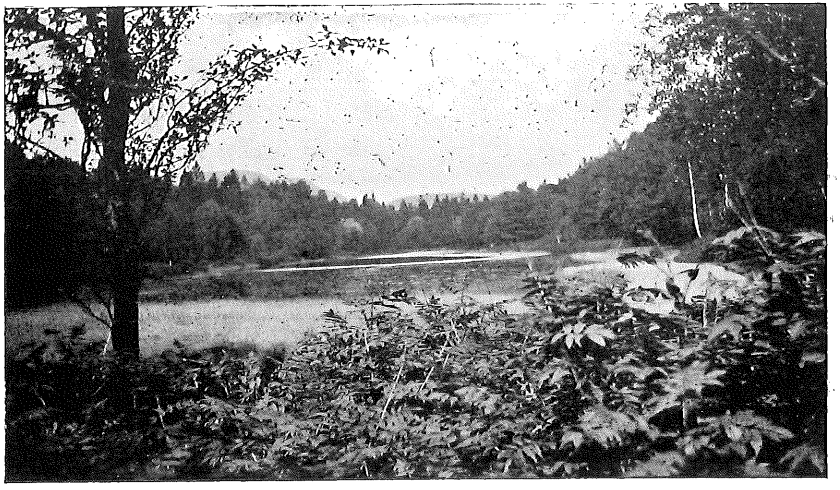


Plate 22.—Sculptured Stones, Meigle.

[Photo by A. M. Rodger.



[Photo by Major Mercer.

Plate 23.—Calley Loch, Dunkeld.

February 9th, 1911.

W. BARCLAY, President, in the Chair.

The following paper was read:—"The Modern Aspects of Eugenics," by Dr. J. P. Sturrock, of H.M. Prison, Perth. (See *Transactions*, Vol. V., Part III., p. 83).

FORTY-FOURTH ANNUAL MEETING.

March 9th, 1911.

W. BARCLAY, President, in the Chair.

The following Office-Bearers were elected:—

President—Wm. Barclay.

Vice-Presidents—R. R. B. Watson, James Stewart, L.D.S.; Rev. G. A. F. Knight, M.A., F.R.S.E.; James Morison.

Secretary—S. T. Ellison.

Treasurer—A. W. Brown.

Librarian—James Coates.

Editor—George F. Bates, B.A., B.Sc.

Curator—A. M. Rodger.

Councillors—J. Menzies, A. T. Mackay, D. Campbell, Dr. Robertson.

REPORT OF COUNCIL.

In presenting their Forty-Fourth Annual Report to the members, the Council cannot but regret that the Society's affairs do not in some aspects show much growth. We have a very heavy loss of members, chiefly through death, and rather fewer additions of new members than for some years past, and the Council take this opportunity of urging all members to endeavour to induce some of their friends to join the Society. The Council feel that many, who are not active Naturalists, might join a society such as this, as they believe that the work the Society is engaged in is deserving of the support of all connected with the City and County of Perth. The Council impose no conditions upon the members either as to attending the meetings or contributing papers, the only obligation they enforce is that members pay their subscriptions promptly when called upon to do so, and to the many who do this most regularly, though seeming to take no further interest, the Council return their hearty thanks. Six monthly meetings were held last year at which 6 papers were read, in addition to the 2 usual addresses of the President—the one at the annual meeting and the other at the opening of the winter session. The average attendance the past session shows a slight decrease, being 37·50 against 42 the previous year, the largest number attending one meeting being 49 on 10th March, 1910, and

the lowest 26 on 9th February, 1911. Only 9 members have been elected, as against 14 the previous year. The total membership at present is 340, made up of 1 Honorary, 13 Corresponding Members, 7 Associates, 5 Associate Members, and 314 Ordinary Members.

A special lecture was given on 26th January by Mr. Robert Somerville, M.A., B.Sc., of Dunfermline, on "The History and Manufacture of Coal Gas," at which there was a good attendance. During the summer months 7 excursions were held, at which the attendance was fairly well maintained. The Council again desire to thank those gentlemen who gave permission for some of these excursions taking place over their properties. As already mentioned, death has accounted for a large decrease in our membership, many during the past year having been taken from our ranks. Some of these have long been supporters of the Society, such as—The Right Hon. C. S. Parker, 39 years a member; Mrs. Roy, Springbank, 32; Dr. Stirling, 30; Rev. J. Ferguson and Dr. Menzies, Kirriemuir, 28; Mr. W. Miller, Rose Terrace, 26; Miss M. Thomas, 24; Sir John Kinloch, Bart., 18; Mr. J. S. Grant, 16; Adam Steele of Blackpark, 15; Mr. J. Ferguson, 7; and Mr. G. W. Kirkcaldy, Honolulu, 6.

The Children's Essay Competition was upon "Perthshire Mammals, including Domesticated Species." Sixty-six essays were sent in from 26 girls and 40 boys, 21 essays being from 4 city and 45 from 3 county schools. The examiner was Mr. John Stewart, High School, Falkirk, and the prizes were distributed on Saturday last, 4th March, by the Hon. Lord Provost Macnab. The Lecture Room has again been used by various societies engaged in educational work.

REPORT OF TREASURER.

(See Balance-Sheet, p. cxxxi)

REPORT OF LIBRARIAN.

Since last annual report a thorough overhauling of the books in the library has been carried out and a careful stock taken. The result shows a total of 3,143 volumes, of which 1,872 belong to the Lending Library, and 1,271 to the Reference. The library continues in both its departments to provide much of interest and of practical utility to many, but the number taking advantage of its privileges might still be largely increased with advantage to the readers. Those consulting the Reference books are mostly students, who go to them for purposes of research. As these books are not removed from the reading-room no record is kept of the readers, but from the Lending department it is found that during the year 45 members have borrowed 225 books. It should be noted that much interesting and instructive information may be derived from the records of scientific work carried on in other parts of Britain and of the world. There are many magazines issued by kindred societies which we receive in exchange for our own. These are carefully bound and will be found on our shelves.

The books which have been added to the library by purchase include such important works as Dresser's "Eggs of the Birds of

Europe," Taylor's "Monograph of the Land and Fresh Water Mollusca of the British Islands," Scott's "Studies in Fossil Botany," Calman's "Treatise on Zoology (Crustaceæ)," Crawford's "Anatomy of the British Carices," Willis's "Manual and Dictionary of the Flowering Plants and Ferns," and many others. There have also been many valuable donations of books which are included in the general list of donations to the Society. These have been acknowledged at time of receipt, but this further opportunity is taken of more publicly expressing the thanks of the Society to all donors who have thus enriched the shelves of the library.

REPORT OF EDITOR.

The Second Part of Vol. V. of the Society's *Transactions and Proceedings* was published in December, 1910, and distributed to members and to the various other societies who send their publications in exchange. The Meteorological Reports by Mr. Rodger, introduced as a new feature into the preceding part, have been continued. Attention is particularly called to the set of four maps of Perthshire, with accompanying notes, which will be found at the end of the part. It has been decided to have a number of sets of maps and notes bound separately, and to offer them for sale at sixpence per copy. Those interested in the study of geology, botany, etc., of the county should find these maps exceedingly valuable.

The President then proceeded to deliver his annual address, the subject being "Our Native Hybrid Roses":—

In 1795 Mr John Templeton, a distinguished Irish naturalist, discovered in the neighbourhood of Belfast a new rose which he described some years afterwards (in 1802-3) in the Transactions of the Dublin Society and called by the name of *Rosa hibernica*. As the discoverer of a new Irish plant he was awarded, by the Royal Irish Academy, a prize of five guineas. This new rose continued to be very rare, but by the time of the publication of Mr. Baker's *Monograph* (1869) it had been discovered in a few other stations in the north-east of Ireland and in Cumberland and Cheshire. This form has the leaves somewhat hairy on the under side, but a variety with perfectly glabrous leaves was recorded by Baker from various parts of the British Isles. Up to that time it was supposed to be confined to Britain, and indeed the original hairy form does not even yet seem to have been met with on the Continent. In 1875 Dr. Christ of Basle, in the *Journal of Botany*, put the question, "What is *Rosa hibernica* of Smith?" and answered his own question by declaring it to be a hybrid of *Rosa spinossissima* Lin. x *Rosa canina* Lin. He pointed out that in its armature, and to some extent in its foliage, it resembled *spinossissima*, whilst in its fruit and in some other of its properties it resembled the dog rose. Moreover, he pointed out that judging from specimens received by him it was not fully fertile, sterility more or less pronounced being one of the marks of a hybrid

He stated, moreover, that a rose discovered by Fries at Grundstadt, in Germany, had been determined by that excellent observer as a hybrid of *spinossissima* and *canina*, and that this was identical, or almost identical, with the glabrous form of *R. hibernica*. Dr. Christ's view was not at first very favourably received by British botanists, but it has long since been accepted as true by all competent authorities both in this country and on the Continent. With the exception of the station at Grundstadt and two or three localities in France it has not been elsewhere found on the Continent, whilst several other localities for both varieties have been discovered in Britain, notably in Scotland; and no longer ago than the autumn of last year I found on the coast of Haddington quite a new variety of the hybrid, and I have little doubt but that it will be found in other places where the parent plants grow in colonies together.

Again in 1809 in *English Botany* Smith described a rose collected in the West of Scotland under the name of *R. involuta*, a name given because the petals were supposed not to expand fully, but to remain more or less folded inwards. In 1816 Woods described other three varieties of the same rose, the commonest under the name of *R. Sabini*, and other varieties were afterwards discovered at intervals, so that in 1869 Mr. Baker, in his monograph, described no fewer than nine of these under different names, and several have been added since. Similar, though not identical, forms were met with, but very rarely indeed, on the Continent, the first of these being found in Belgium by M. Crépin in the year 1852. It is again to Dr. Christ that the honour belongs of expounding the true nature of *R. involuta*, and its varieties. In 1884, in a general treatise on European roses, he showed that this rose was a hybrid of *R. spinossissima* and *R. tomentosa*. Its characters form a mixture of those of the two parents, in some forms leaning more to the one and in others to the other. It is really strange that no British botanist had ever previously suspected that *R. involuta* might possibly be a hybrid. In the case of one of its varieties, and that one of the most remarkable, *R. Wilsoni* Borrer, it is true that Borrer asks in *British Botany*, "Can it be a hybrid production?" But he immediately adds, "Mr. Wilson finds several bushes of it, which discourages such an idea."

R. involuta, though much more plentiful and more widely spread than *hibernica*, is still by no means a common plant. On the Continent it is in comparison rarer still. As *R. tomentosa* is a rose which includes a very great number of varieties, it is to be expected that the hybrid will also occur in a great many different forms. Moreover, it is well known that in the case of hybrids even when they are the produce of the same sowing there will often be considerable differences between the resulting progeny. It is no wonder, therefore, that we find such differences between different plants of *R. involuta*, and that it is not possible to classify them in anything like a satisfactory manner. About 17 or 18 years ago Professor Crépin put forth the idea that some of the forms classed under this hybrid might have a different parent from *R. tomentosa*, that in some cases the second parent might be *R. mollis* or perhaps *R. rubiginosa*. It may be considered certain that we have in Scotland

forms of the hybrid *R. pimpinellifolia* x *R. mollis*. One of these, collected in the North of Scotland by Mr. Craig Christie, was determined by Crépin himself, and some short time afterwards I identified one growing a few miles from Perth as the same hybrid, and Crépin assented to this determination. Another station, for it was discovered by Mr. Marshall near Tomintoul, and I found near Portsoy, two or three years ago, a fine clump which I feel certain is also derived from the same parentage. But *R. mollis* and *R. tomentosa*, though distinct species, are yet so closely related in many important respects that it is excessively difficult—sometimes, I believe, quite impossible—to say which of them has been the second parent.

Crépin's opinion, that in some cases *R. rubiginosa* might be the second parent, was verified by the discovery in East Kent, by the Rev. Mr. Marshall, of a rose which is undoubtedly derived from the crossing of the Scotch rose by the sweet briar. A second station for the same hybrid was discovered by myself in 1897 on the bank of the Tay near Cargill. In both cases it was growing amidst numerous bushes of the parent species, and was most certainly a natural production. But some years afterwards Professor Trail sent me a rose which he had found near Turriff, and which I identified as the hybrid of *R. pimpinellifolia* and *rubiginosa*. On visiting the spot, however, I found that this rose was in cultivation in that district, being mistaken, in some cases at least, for the true sweet briar, and I came to the conclusion that it was not in that locality a natural production, but an escape from cultivation. This hybrid, therefore, continued to be known from only two stations until the autumn of last year. Towards the end of September last, happening to be in Edinburgh, and having an afternoon to spare, I paid a visit to Port Seaton, on the Coast of Haddington, and went along the coast for a stroll. There I had the good fortune to fall in with a rich colony of the hybrid, consisting of twenty or thirty great clumps spread over nearly a mile of the coast. The parents were growing abundantly all round, and no doubt whatever could be entertained as to its being naturally produced, and not, as in Aberdeenshire, an escape from cultivation. In nature this hybrid must continue, however, to be restricted to comparatively few stations in Scotland, because with us the localities are comparativeiy few in which you find the Scotch rose and the sweet briar growing in colony together.

It has often been remarked that hybrid plants frequently excel their parents in size and vigour. This was strikingly exemplified at Port Seaton. The hybrid there forms magnificent bushes, growing to a height of ten to twelve feet, twice the usual height of the sweet briar, which again is usually a taller plant than the Scotch rose. Like the other hybrids which I have mentioned it forms clumps rather than bushes. In this point we see clearly the influence of *R. pimpinellifolia*. This sends out numerous suckers from its root, which themselves produce roots, and soon form a thick cluster of daughter plants around the parent stock. All its hybrids partake of the same character, and I have seen a clump of *R. involuta* extending for a distance of over 20 yards, the whole evidently having arisen from one original single plant.

The four hybrids, which I have enumerated, are really all which as yet can be certainly claimed as native in Britain. It will be noticed that in all of them *R. pimpinellifolia* is one of the parents. This rose seems to hybridise very easily with other species. It may be, however, that its hybrids are more easily detected. It is so distinct in its characters from all our other species that traces of its influence are recognised without difficulty. A hybrid, however, between, say *R. mollis* and *R. tomentosa*, would be excessively difficult to determine, so close is the relation between the two parent species. Less so, perhaps, would be the difficulty in the case of a hybrid between *R. mollis* or *R. tomentosa* and one of the true dog roses, and I have not yet given up hope of finding such a form in Scotland; but even in that case there would be great need for a skilled and experienced observer, and for the very greatest caution if error was to be avoided.

It is truly strange to me that British botanists seem to have paid so very little attention to the question as to whether our native hybrid roses do or do not produce ripe fruit freely. Most of the older describers do not notice the point at all. Even Mr. Baker, except in the case of the variety Sabini, which he says "produces fruit very sparingly," would lead you to understand that the other varieties of *R. involuta* and *R. hibernica* show nothing anomalous in the production of fruit. This led Dr. Christ to imagine that both of these hybrids as they occur in Britain are fully fertile, and that mistaken notion led him to an erroneous theory which we shall notice afterwards. Even the latest writer upon our British roses, Major Wolley-Dod, says very little on this subject, and does not seem to know the true state of affairs. The fact is that the bushes of all our hybrids, so far as I have observed, and I think my opportunities of observation of them in the living state have been greater than those of most, are with hardly an exception very infertile. In almost every case they produce a wealth of flowers, and even in this state strike the eye of the trained observer as something out of the common When the flowers have fallen the young fruits usually remain for a time and swell to some extent. In this condition you may imagine that the bush is quite fertile, and that there is to be a great production of fruit. But come and visit it some weeks later. You find that by this time nearly the whole of the fruits have dropped off, and that the majority of those that remain are withered and shrivelled. A few probably will remain and develop even to full growth, but open them up and you find inside only one or two seemingly perfect grains mixed with a lot of chaffy scales, the remains of the unfertilised ovicles. Sometimes, as in the case of the hybrid of *pimpinellifolia* and the sweet briar at Port Seton, a considerable number of fruits appear to remain on and to develop, but in this case also the grains inside do not exceed two or three at the most. There is only one bush of the hybrid *R. involuta* known to me which can be described as fully fertile, the exception which proves the rule. Of course these remarks of mine only apply to our native hybrids. I do not mean to affirm that all rose hybrids are thus infertile, though I believe that as a general rule both natural and artificial rose hybrids formed between two distinct species are incapable of producing good fruit. Even

when, as I have said, some few apparently good grains have been formed in the fruits of the hybrid, it is probable that these have resulted from the fertilisation of the ovaries by the pollen of some neighbouring species.* It is a well-known fact that in hybrids it is the pollen that becomes affected, that it becomes more or less disorganised and incapable of fertilising the ovules of the plant. This character of the aborting of the young fruits is often of much use in catching the attention, and forms a useful though not an absolute mark in determining whether a rose is really a hybrid or not.

Dr. Christ had a theory that what was originally a hybrid might become a fixed and stable species. He thought that *R. involuta* was a rose of this kind. At first formed by a cross between *R. pimpinellifolia* x *tomentosa*, he thought that it was or became fertile, propagated itself by seed, and in the course of ages like other species developed

*NOTE (26th November, 1911).—It is possible that fuller knowledge may modify to some extent the statements in this paragraph.

Mr. J. H. Wilson, of St. Andrews, informs me that he raised artificially the hybrid *R. spinossissima* x *rubiginosa*, and that this hybrid, in some years at least, produced fruit pretty freely. He sowed some of the seeds thus produced, and from these several plants were raised, of which only one was paid attention to. This has not yet flowered, and Mr. Wilson is of opinion that in its vegetative characters it is nearer to *spinossissima* than the parent hybrid. This need not be wondered at, even though the hybrid were self-ferlilised. It is perhaps not quite certain that it was self-fertilised.

In the *Journal of Botany* for September, 1911 (A List of British Roses, p. 10), Major Wolley Dod remarks, "I think a gathering by Mr. Barclay from near Auchterarder, Mid Perth, is best referred here (*i.e.*, to *R. spinossissima* x *rubiginosa*) on account of its very large and numerous subfoliar glands. Both the collector and M. Sudre, however, think it a *spinossissima* x *tomentosa* form." This Auchterarder rose, the discovery of which dates back to 1892, was submitted to Messrs. Nicholson and Baker, who confirmed it as a *Sabini (involuta)* form. A year or two afterwards Crépin also identified it as a member of the *involuta* group, giving his reasons for so deciding. Many botanists at home and abroad have received specimens, and, so far as I know, no one has hitherto challenged the determination. But authorities, however eminent, do not weigh with me so much as the characters of the plant itself. Its larger prickles are straight or almost straight and quite subulate, differing much from those of the hybrid *spinossissima* x *rubiginosa*, some of which at least have the long based, stout conical *canina* shape, and approach closely those of *rubiginosa*. The leaflets, oval-oblong or ovate-oblong, differ from those of a *tomentosa (omissa)* bush, growing close by, only by being somewhat broader on the whole and blunter at the point. Many of them, however, are quite indistinguishable from some of those on the *omissa* bush. They are quite unlike the short and broad, sometimes almost circular, leaflets of the *spin.* x *rubig.* hybrid. The flowers are identical in colour with those of the *omissa* bush, deep red at first, but gradually fading after some days of sunlight. They have not the hue of the flowers of *R. rubiginosa*. The colour of the leaves of the hybrid and of the *omissa* beside it is the same, and the wood of both has the same dark purple brown colour. To clinch the matter, the leaves of the Auchterarder hybrid have the resinous scent of those of the *omissa* bush, without any trace of the faint sweet briar odour which is perceptible in the case of the hybrids of *spinossissima* x *rubiginosa*. The *omissa* bush has subfoliar glands equally dense with those of the hybrid, and these are found also on the upper surface in both cases, though not to the same extent on those of the *omissa* bush. The glands of the hybrid leaves are certainly larger, not longer but broader headed, than those of the *omissa*, but this cannot prevail against such a combination of characters as I have described. I may add that *tomentosa (omissa)* forms with dense subfoliar glands are both abundant and widely spread in Scotland. I have no doubt whatever that the Auchterarder rose is a hybrid of *R. spinossissima* x *tomentosa (omissa)*, with a strong leaning to the *omissa* side.

a considerable number of varieties. Besides its supposed fertility, he thought that in it the characters of the two parent species are more blended than in other hybrids, that they do not exist so much side by side whilst remaining distinct, but take on a shape intermediate between that of the parents. As regards our *R. involuta*, I am quite unable to assent to this theory of Dr. Christ. It is, in fact, at once disposed of when we ascertain that this rose is not in fact any more fertile than the other rose-hybrids, but that it is almost universally very nearly if not quite sterile. Nor do I think that the characters of the parents are more intimately blended in it than in the others. Its varieties arise from the two facts—firstly, that hybrids even from the same sowing often differ from each other; and secondly, that *R. pimpinellifolia* crossing with different varieties of *R tomentosa*, and these are manifold, will naturally give birth to different forms of the hybrid. The fact, too, that it is found usually in the neighbourhood of its parents is a strong proof that it still springs anew from their crossing, and that it does not increase by propagating its kind.

An interesting question, though perhaps not one of very much practical importance, is raised by Dr. Christ as to how we are to distinguish a true hybrid from an intermediate form. Intermediates between two species occasionally occur, allied in some respects to both, so that you hesitate as to which of them it ought to be referred. These may be supposed to have arisen in the process of the formation of one of these species from the other by natural selection. A species we shall say spreads from its native habitat until it comes to a locality where the environment is different from that to which it has been accustomed, less favourable, in fact, to its well being. As species tend always to vary to a slight extent, those variations which tend to render it better adapted to its new environment will gain the advantage in the struggle of life. Other variations of still greater advantage to the plant will succeed, until at length a new form is evolved, differing greatly from the original species. As the intermediate chain of varieties will at length succumb to the superiority of the ultimate form, we are then left with two new species. But supposing that for a time one of the intermediate forms should survive, it would plainly be related both to the old and to the new species; it would form, in fact, an intermediate link between them, partaking to some extent of the characters of both. How are we to distinguish such an intermediate from a hybrid? The answer is that in the intermediate the characters of the two species are intimately blended, whereas in the hybrid they, so to speak, exist side by side, but remain distinct. Moreover, it is plain that the intermediate must be fully fertile, or else the process of evolving a new species could not go on. The hybrid, on the other hand, is, as we have seen, always more or less sterile. It follows from this that intermediates are rarer even than hybrids, and that they are tending towards extinction so as to leave the two species, which they connect, entirely distinct.

No doubt there is a good deal of theory in this, and there are many questions connected with hybrids and intermediates which are still rather obscure, and which can only be resolved by artificial crossings conducted not by gardeners and floriculturists, but by skilled and trained botanists.

April 13th, 1911.

WM. BARCLAY, President, in the Chair.

The following paper was read :—

"Notes on some Highland Rocks," by George F. Bates, B.A., B.Sc. (See *Transactions*, Vol. V., Part III., page 94).

SUMMER SESSION, 1911.

The following excursions were arranged :—

1. Monday, 5th June (Victoria Day). Drive by Balbeggie and Dunsinane to Abernyte and home by Kinnaird and Kilspindie.
2. Saturday, 17th June. Wharry Burn, Glen Tye, and Sheriffmuir.
3. Saturday, 1st July. Half-day excursion to Muir of Durdie and Pitroddie.
4. Saturday, 8th July. Stob Garbh and Cruach Ardran, 3,148 feet.
5. Saturday, 22nd July. Glenfarg and Cross Hill by Old Road to Bridge of Earn.
6. Saturday, 5th August. Struan to Blair Atholl.
7. Wednesday, 23rd August. Drive from Callander by Trossachs to Aberfoyle, and return by Lake of Menteith.
8. Saturday, 14th October. Fungus excursion.

LIST OF DONATIONS TO THE LIBRARY,

SESSION 1910-11.

I.—GIFTS FROM INSTITUTIONS.

Banff, Transactions of the Banffshire Field Club, 1908-09—The Society.
Belfast, Annual Report and Proceedings, Belfast Naturalists' Field Club, Vol. vi., Part 3—The Society.
Bern, Verhandlungen der Schweizerischen Naturforschenden Gesellschaft. Band I., II., 1910—The Society.
Brisbane, The Queensland Naturalist, Vol. i., No. 3—The Society.
Brooklyn, Museums of the Brooklyn Institute of Arts and Letters. The Museum News, 1910—The Museum.
Cambridge, Forty-fourth Annual Report of the Museums and Lecture Rooms Syndicate, 1909—The Museum.
Chicago, Field Museum of Natural History, Annual Report, 1909—The Museum.
Cincinnati, Bulletin of the Lloyd Library, No. 13-14; Mycological Notes, No. 30 to 35—The Lloyd Library and Museum.
Colchester, Report of the Museum and Muniment Committee, 1909—The Museum.
Dumfries, The Transactions and Journal of Proceedings of the Dumfriesshire and Galloway Natural History and Antiquarian Society, 1908-9—The Society.
Edinburgh, Proceedings of the Royal Society of Edinburgh, Vols. xxx., xxxi., Parts 1-2.
Transactions, Vol. xliv., Parts 1-2; Vol. xlvii., Part 2—The Society.
Proceedings of the Society of Antiquaries of Scotland, 1909-10, Vol. xliv.—The Society.
Proceedings of the Royal Physical Society, Vol. xxxi., Part 2—The Society.
Royal Scottish Museum, Report 1909—The Museum.
Transactions of the Royal Scottish Arboricultural Society, Vol. xxiii., Part 2; Vol. xxiv., Part 1—The Society.
Transactions of the Edinburgh Geological Society, Vol. ix., Part 5, Special Part—The Society.
Transactions of Proceedings of the Botanical Society of Edinburgh, Vol. 25.
Transactions of the Edinburgh Field Naturalists and Microscopical Society, Vol. vi., Part 3—The Society.
Twenty-eighth Annual Report of the Fishery Board for Scotland, Part 2—The Board.
Geological Survey of Scotland (sheet 12, 4 miles to 1 inch)—The Survey.
Glasgow, The Glasgow Naturalist, Vol. 1, Parts 1 to 4—The Society.
Halifax, The Proceedings and Transactions of the Nova Scotian Institute of Science, Vol. xii., Part 2—The Society.
Hull, Guide to the Birds in the Hull Museum—The Museum.
Liverpool, Proceedings of the Liverpool Geological Association, 1907-09—The Society.

London, Catalogue of Moths, Vol. ix. (text and plates).
Catalogue of Orthoptera, Vol. iii.
Catalogue of British Chalcididæ.
Catalogue of Marine Reptiles of the Oxford Clay.
Guide to British Vertebrates.
Guide to Crustacea, etc.
Guide to Mushrooms—The British Museum.
The British Annelids, Vol. ii., Part 2.
The British Nudibranchiate Mollusca, Part 17—Ray Society (by sub.)
Board of Agriculture and Fisheries Leaflets, Nos. 70, 110, 207, 227, 229, 230, 234, 235, 237, 238—The Board.
Quarterly Journal of the Geological Society, Vol. lxvi., Parts 1, 2, 3, 4, 1910.
List of the Geological Society, 1910; Geological Literature added to the Society's Library, 1909—The Society.

Manchester, The Manchester Museum Report, Publications 67, 68, 69.

Melbourne, Geological Map of Victoria—The Department of Mines.

Mexico, Parergones del Instituto Geologico de Mexico, Tomo iii., No. 3, 4, 5, 6—The Institute.
Boletin del Instituto Geologico de Mexico, No. 26—The Institute.

Michigan Academy of Science Report, 1909-10; Meteorite Studies, Vol. iii.—The Academy.

Montevideo, Anales del Museo Nacional, Flora Uruguaya, Tomo iv., Ent. i.—The Museum.

New York, Bulletin of the American Museum of Natural History, Vol. xxviii., Report for year 1909—The Museum.

Newcastle, Report of the Council of the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne.

Norwich, Report of the Museum, 1909—The Museum.

Northants, Journal of the Northants Natural History Society and Field Club, Vol. xv., No. 117-120—The Society.

Ottawa, Geology and Ore Deposits of Hedley Mining District.
Geology of the Nipigon Basin.
Lewes and Nordenskiold Rivers Coal District.
The Edmonton Coal Field.
New Species of Shells, Berkley Sound; Maps—Albany River, etc.; Geology of St. Bruno Mountain; A Reconnaissance across the Mackenzie Mountains.
Geology of the Haliburton and Bancroft Areas.
Geological Survey Summary Report, 1909—The Geological Survey, Canada.

Oxford, Ashmolean Natural History Society, Proceedings and Report, 1909-1910—The Society.

Perth, Health Report for the City of Perth, 1909—The Medical Officer.
19th Annual Report by the County and Chief District Sanitary Inspector, 1909—The Inspector.
Sandeman Public Library, 12th Annual Report—The Librarian.
Annual Report of the Perthshire Natural History Museum, 1909-10—The Curator.

Peterhead, Transactions of the Buchan Field Club, 1909-10—The Club.

Philadelphia, Proceedings of the Academy of Natural Science, Vol. lxi., Part 3; Vol. lxii., Part 1-2—The Academy.

Pittsburg, 13th Annual Report of the Directors, 1909-10; Founders' Day, 1910—The Carnegie Museum.
St. Louis, Mo., Missouri Botanical Garden, 21st Annual Report—The Director.
Sydney, Records of the Australian Museum, Vol. viii., Nos. 1.2; Scientific Results of the Trawling Expedition of H.M.C.S. "Thetis," Mem. iv., Parts 12, 13, 14—The Museum.
Sheffield, Report of the Public Museums—The Museum.
Springfield, An Historical Sketch of the Museum of Natural History.
Bulletin, No. 2—The Museum.
Washington, Professional Papers, No. 68.
Bulletins 381, 386, 390, 391, 396, 397, 400; 404 to 428, 430; 433 to 435, 437, 440, 442, 444.
Water Supply, Papers 227, 233, 236 to 241; 243 to 255, 260, 262, 264.
Mineral Resources, 1908.
Thirtieth and Thirty-First Annual Report—Geological Survey, United States.
Five Climatic Charts—The Weather Bureau, U.S.A.
Yarmouth, 24th Annual Report, 1909-10—The Museum.
York, Annual Report for 1909—Yorkshire Philosophical Society.

II.—Gifts from Persons.

Barclay, Wm., Ferns: British and Foreign—J. Smith.
Coates, H., British Rainfall, 1909.
Craigie, James, Chemical News, 1910.
Campbell, Col. John, The Scottish Geographical Magazine, 1910.
Durning-Lawrence, Sir E., Bart., "Bacon—Shakespeare."
Ellison, S. T., Entomologist, 1910; Photography, 1910.
Humble, Miss, Manual of Botany—Balfour.
Janet, Dr. C., Sur l'ontogénèse de l'insecte.
Note sur la Phylogénèse de l'insecte.
Sur la morphologie de l'insecte.
Sur un nématode qui se developpe dans la tête de la Formica fusca.
Sur la parthénogénèse arrhénotoque de la fourmi ouvrière.
Sur la morphologie des membranes basales de l'insecte.
Meek, Prof. A., Report of the Scientific Investigations, year 1909-10.
Northumberland Sea-Fisheries Committee.
Miller, George A., Transactions of the Highland and Agricultural Society of Scotland, 1895-1902, 1904, 1905, 1907, 1908.
Murray, The Hon. Gladys Graham, The Romance of Bird Life—Lea; The Romance of Modern Geology—Grew; "Nature," 1910 (incomplete).
Steel, Adam, Transactions of the Highland and Agricultural Society of Scotland, 1909-10.
Thomas, John, Botanical Illustrations—Hooker; A Pocket Flora of Edinburgh—Sonntag; Flore des Alpes—Bouvier; Structural Botany—Gray; Physiological Botany—Goodall; Rambles in Search of Flowerless Plants—Plues; European Fungus Flora—Massee; Veitch's Manual of the Coniferae—Kent; Sytematic Botany—Oliver; A Year's Botany—Kitchener; British Mosses—Stark.

RESULTS OF CHILDREN'S ESSAY COMPETITION 1910.

Subject: "PERTHSHIRE MAMMALS INCLUDING DOMESTICATED SPECIES."
66 Essays (26 Girls, 40 Boys).

FIRST DIVISION, Age 14 years and over (6 Essays).

Special Prize—Donald Butter, Perth.
1st ,, John Harper, Auchtergaven.

SECOND DIVISION, Age 13 (38 Essays).

Special Prize—Ethel Folkharde, Aberfeldy.
1st ,, William Strathearn, Perth.
2nd ,, Archie Lees, Perth.
3rd ,, Dorothy Staines, Perth.
4th ,, Janet Drummond, Perth.
Daisy M'Intosh, Scone.
5th ,, Tina Gow, Auchtergaven.
Bella S. Murray, Scone.
Robert Mackay, Scone.

THIRD DIVISION, Age 12 (18 Essays).

1st Prize and Medal—Lottie Lindsay, Scone.
2nd ,, —Tom M'Pherson, Scone.
3rd ,, —Gwen Brittain, Perth.
4th ,, Allan Donaldson, Scone.
Margaret Tolmie, Scone.

FOURTH DIVISION, Age 11 and under (4 Essays)

1st Prize—William Robertson, Perth.

ROLL OF MEMBERSHIP, AS AT 31ST OCTOBER, 1911.

* Life Members.

HONORARY MEMBER.

Geikie, James, LL.D., F.R.S., etc., Professor of Geology, Edinburgh University, ...	2nd February, 1882

CORRESPONDING MEMBERS.

Brebner, James, M.A., Harris Academy, Dundee, ...	3rd December, 1885
Bruce, W. S., LL.D., Surgeons' Hall, Edinburgh, ...	14th March, 1907
Calman, W. T., D.Sc., British Museum, Cromwell Road, London, ...	11th April, 1895
Geddes, Patrick, F.R.S.E., University College, Dundee,	3rd February, 1881
Macnair, P., 70 Eastwood Avenue, Shawlands, Glasgow,	13th November, 1890
M'Gregor, T. M., Australia, ...	5th March, 1885
Mill, Dr. H. R., F.R.S.E., 62 Camden Square, London, N.W., ...	7th April, 1892
Ramsay, E. P., F.L.S., Curator of Australian Museum, Sidney, ...	7th February, 1884
Smith, Rev. Frederick, The Parsonage, South Queensferry, ...	13th November, 1890
Thomson, Professor D'Arcy, M.A., C.B., University College, Dundee, ...	10th November, 1892
Trail, J. W. H., M.A., M.D., F.L.S., High Street, Old Aberdeen, ...	8th February, 1872
Wilson, Dr. Andrew, F.R.S.E., 110 Gilmore Place, Edinburgh, ...	4th January, 1883
White, Mrs. Buchanan, Manitoba, ...	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
Laidlaw, Mr., Gamekeeper, Castle Menzies, Glenlyon,	7th Febuary, 1884
Milne, Captain W., Tayport, ...	14th March, 1901
M'Intosh, Charles, Inver, Dunkeld, ...	1st May, 1873
Robertson, Captain T., *S.S. Scotia*, ...	14th March, 1901

ORDINARY MEMBERS.

Alexander, John, M.A., Sharp's Institution, ...	14th December, 1893
Allan, Thomas, Stanley, ...	13th April, 1899
Anderson, Andrew, c/o P. D. Malloch, New Scott Street,	9th December, 1897

Anderson, John L., Nenthorn, Gray Street, ...	12th April, 1906
Anderson, Thos., M.A., B.Sc., 5 Picardy Place, Edinburgh, ...	10th December, 1908
Barclay, Miss E. A., Joppa, Glasgow Road, ...	13th December, 1906
Barclay, William, Friar Street, Craigie, ...	1st February, 1883
Barclay, William A., Bank House, Tay Street, ...	9th December, 1897
Barlas, J., 231 High Street, ...	13th February, 1908
Bates, G. F., B.A., B.Sc., Westoe, Craigie Road, ...	13th December, 1900
Bates, R. Martin, School Board Office, Tay Street, ...	13th April, 1911
Beattie, S., M.B., Craigvar, Pitlochry, ...	9th December, 1897
*Bedford, Duchess of, Woburn, Beds., ...	12th December, 1907
Bell, Mrs., Priestfield, Glasgow Road, ...	13th December, 1900
Blair, Robert, New Scott Street, ...	11th December, 1902
Bouick, James B., Gowan Bank, Abbot Street, ..	14th February, 1895
Brady, George, 8 Comely Bank, ...	11th April, 1895
Brand, John, Upland, Kinnoull, ...	10th December, 1891
Brand, Robert, 22 Balhousie Street, ...	7th April, 1892
Breadalbane, Marquis of, K.G., Taymouth Castle, Aberfeldy,...	7th April, 1892
Brough, Miss Elizabeth, Wilson Street, Craigie, ..	13th March, 1902
Brough, Robert, Ochilview, Bridge of Earn, ...	9th December, 1909
Brown, Alfred W., Seedsman, High Street, ...	14th December, 1903
Brown, J. A., Harvie, F.Z.S., Dunipace House, Larbert,	10th December, 1891
Brown, Peter M. W., 28 Nasmyth Place, Kelty, Fife-shire, ...	10th December, 1908
Burnett, C., Comely Bank, ...	22nd February, 1894
Butter, Thomas, 8 Marshall Place, ...	8th March, 1894
Caird, Miss K.C., M.A., Perth Academy, ...	13th December, 1906
Calderwood, James, 18 Pitcullen Crescent, ...	12th April, 1906
Cameron, David, Commercial Street, Bridgend, ...	14th December, 1884
Campbell, Archibald, Davaar, Scone, ...	13th December, 1900
Campbell, Col., Westwood, Cupar-Fife, ...	18th January, 1884
Campbell, D., Clyde Place, Needless Road, ...	7th April, 1904
Campbell, Edward, Lignwood, New Scone, ...	11th April, 1889
Campbell, Peter, Lignwood, New Scone, ...	4th April, 1878
Campbell, P. W., Muirton Bank, ...	9th March, 1899
Campbell, John, Tregaron, Glasgow Road, ...	12th January, 1911
Carter, A. E. J., Royal Bank House, Blairgowrie, ...	10th December, 1908
Chapman, Samuel, King James Place, ...	16th January, 1896
Christie, James, 8 Paul Street, ...	11th April, 1895
Chrystal, George, Bridgend House, ...	2nd December, 1880
Clacher, James, 9 George Crescent, ...	3rd April, 1879
Coates, Henry, F.R.S.E., Balure, Glasgow Road, ...	9th May, 1875
Coates, James, Balure, Glasgow Road, ...	9th May, 1875
Coates, Miss, Balure, Glasgow Road, ...	3rd January, 1878
*Coats, Archibald, Battleby, Redgorton, ...	14th December, 1899
Coats, Mrs. W. H., Battleby, Rodgorton, ...	14th December, 1899
Coats, James, jun., Ferguslie House, Paisley, ...	10th December, 1903
Cumming, A. G., 153 High Street, ...	12th March, 1896
*Colquhoun, Col., Clathick, Crieff, ...	5th December, 1878
Cox, W. H., Snaigow, Murthly, ...	8th December, 1898

Craigie, James, Sandeman Public Library, ...	12th March, 1903
Crawford, Rev. T., B.D., Orchill, by Auchterarder, ...	... 7th April, 1892
Crichton, John, L.D.S., 7 Charlotte Street, ...	14th January, 1904
Davidson, Alex., The Pines, Glasgow Road, ...	2nd March, 1882
Davie, Miss, Cornhill House, ...	10th January, 1901
Deas, Miss, Rosemount Place, ...	16th January, 1896
Dewar, Sir John A., Bart., M.P., Dupplin Castle, ...	7th February, 1878
Dewar, John, jun., Dupplin Castle,...	9th December, 1897
Dickson, Miss, Greenbank, ...	2nd February, 1882
Dodson, Charles, Auchter Villa, Clyde Place, ...	12th April, 1900
Donald, D., 30 Shields' Buildings, Dunkeld Road, ...	11th December, 1902
Douglas, Henry, City Chambers, ...	11th January, 1900
Dow, Robert, Schoolhouse, Longforgan, ...	... 4th May, 1882
Drummond, The Hon. Mrs., Megginch Castle, ...	13th March, 1902
*Drummond, Miss Sybil, 15 Grosvenor Crescent, London,	9th January, 1902
Drummond, Col. Arthur N. H. Hay, Cromlix, Dunblane,	13th April, 1905
Durran, George, M.A., Perth Academy, ...	8th March, 1906
Ellison, Samuel T., Garth, Barnhill, ...	7th March, 1878
Ellison, William, Cragville, Barnhill, ...	3rd March, 1881
Evans, Miss Z. E., 32 Balhousie Street, ...	10th December, 1896
Evans, W., 38 Morningside Park, Edinburgh, ...	12th January, 1899
Ewing, Robert, Queen Street, Craigie, ...	8th December, 1892
Falconer, William D. M., The Alders, Rattray, Blairgowrie,	9th March, 1899
Farquhar, Rev. Dean, Balhousie Bank, ...	8th December, 1887
Fehrenbach, G. W., Watchmaker, Dunkeld, ...	7th February, 1884
Fenwick, F., Pitcullen Terrace, ...	8th December, 1908
Ferguson, Archibald M., Pitcullen Terrace, ...	13th December, 1900
Ferguson, R. C., Ferndale, Barnhill, ...	11th April, 1889
Ferrier, D., 1 Edin Terrace, Edinburgh Road, ..	10th December, 1891
Fothringham, W. Steuart, Murthly Castle, ...	13th Aprit, 1905
Frew, Thomas, King James Place, Perth, ...	16th January, 1896
Gall, Miss, 8 Glover Street, ...	14th November, 1895
Gall, W. S., Duneaton, Glasgow Road, ...	16th December, 1903
Gellatly, James, Hillyland, ...	... 7th April, 1904
Gloag, Robert, 8 Hospital Street, ...	13th December, 1894
Graham, John T., M.D., Dunalastair, ...	10th December, 1891
Grant, Miss, Melville Street, ...	12th April, 1906
Gray, George, Bowerswell, ...	2nd February, 1882
Gillan, Thos., 8 Scott Street, ...	... 8th April, 1909
Halley, Robert, Barossa Place, ...	16th January, 1896
Hamilton, R., Gleniffer Cottage, Dunkeld Road, ...	12th April, 1906
*Hay, Lieut.-Col. Drummond, Westwood, Kinfauns, ...	14th January, 1897
Hay, Miss Drummond, Seggieden, ...	14th December, 1899
Hay, H. M. Drummond, Finlay, Muir & Co., Colombo, Ceylon, ...	12th December, 1907
Henderson, H. Dalton, The Orchard, Glasgow Road,...	14th January, 1904
Hodge, A., 10 Balhousie Street, ...	11th April, 1889

Howie, Miss, 8 Moredun Terrace, ... 7th April, 1904
Humble, Miss Eleanor W., 32 Balhousie Street, ... 10th December, 1896
Hunt, Leigh, M.B., C.M., King Street, ... 2nd February, 1882
Hunter, Robert, St. John's, Glasgow Road, ... 9th December, 1909
Hutton, James, c/o Mrs. Robertson, 1 Muscard Road, West Kensington, W., ... 12th January, 1911

Jameson, Melville, Brompton Terrace, ... 7th January, 1869
Jamieson, Miss, 1 Muirhall Terrace, ... 3rd January, 1878
Jardine, John, Parkhead, Burghmuir, ... 9th February, 1905
Jardine, Mrs., Parkhead, Burghmuir, ... 14th November, 1895
Jarvie, John Stirling, Balhousie Terrace, ... 12th 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 Maggie, Paradise Place, ... 12th April, 1900
Kennedy, James, Teacher, Ballinluig, ... 1st May, 1884
Kidston, R., F.R.S., F.G.S., LL.D., 12 Clarendon Place, Stirling, ... 4th December, 1884
King, Mrs., 2 Blackfriars Street, ... 11th April, 1901
Kinloch, R., W.S., Clydesdale Bank, ... 18th December, 1890
Kinnaird, James, Birnam, ... 12th January, 1899
Kinnear, James, 7 Bellavista Terrace, ... 8th April, 1909
Kippen, R. M., Solicitor, Tay Street, ... 2nd March, 1882
Knight, Rev. G. A. F., M.A., F.R.S.E., St. Leonard's Bank, ... 12th December, 1901
Knight, Mrs., St. Leonard's Bank, ... 7th April, 1904
Kyd, Miss L., Barossa Place, ... 10th March, 1904

Landreth, Rev. P. R., Fairmount Villas, ... 12th January, 1899
Large, Mrs., Darena, Bellwood, ... 11th December, 1902
Lawson, Robert, 4 Moncreiffe Terrace, ... 11th April, 1895
Leslie, Hugh, Strone, Brompton Terrace, ... 12th April, 1900
Leslie, Thomas, 37 Balhousie Street, ... 12th April, 1906
Lowe, Miss, Tay Street, ... 12th April, 1902
Lowson, D.S., M.A., The Pines, Balhousie, ... 1st April, 1886
Lyell, John, M.D., 15 Marshall Place, ... 13th December, 1900
Lambie, John, M.A., B.Sc., Elibank, Glasgow Road, 9th February, 1911

Malloch, Gilbert, Almond Villa, Glasgow Road, ... 16th January, 1896
Malloch, Joseph N., Stormont Cottage, Bridgend, ... 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, Archibald M'Lean, Bleaton Hallet, Blairgowrie, 13th December, 1906
Marshall, D., Tay Street, ... 7th January, 1869
Marshall, James M'Lean, Bleaton Hallet, Blairgowrie, 10th March, 1910
Marshall, Thomas, The Store, Stanley, ... 1st October, 1868
Matthews, James R., Duncrub, Dunning, ... 13th April, 1911
Medway, The Hon. Lord, The Cairnies, Glenalmond, 8th December, 1910
Meldrum, R. H., Schoolhouse, Tibbermore, ... 1st May, 1884
Menzies, James, 2 Keir Villa, Strathmore Street, .. 12th March, 1896
Mercer, Major, Huntingtower, ... 8th December, 1904

Mercer, W., Princes Street, ... 8th January, 1899
Miles, Miss M. L., L.L.A., 2 Laurel Bank, ... 14th December, 1899
Millais, Sir J., Bart., 38 Lower Belgrave Street, Eaton Square, London, ... 13th March, 1902
Miller, Alex., Osborne Terrace, Craigie, ... 14th November, 1905
Miller, George A., W.S., Knowehead, ... 2nd December, 1886
Miller, J. G., Mayfield, ... 23rd March, 1893
Milln, D. N., Ingleside, Wilson Strees, ... 16th January, 1896
Milln, Charles, Ingleside, Wilson Street, ... 13th April, 1911
Mitchell, Miss M. R., 3 Rose Terrace, ... 9th December, 1909
Moncrieff, John, Summerbank, ... 8th March, 1906
Moncreiff, Mrs., Summerbank, ... 8th March, 1906
Moncreiff, Thomas, Springland, ... 5th March, 1885
Moray, The Right Hon. The Earl of, Kinfauns Castle, 8th December, 1904
Morison, J. Broun, F.R.S.E., Murie, Errol, ... 4th April, 1878
Morison, James, Hasland, Kinnoull, ... 7th February, 1884
Morison, Miss, Hasland, Kinnoull, ... 13th February, 1890
Morrison, W., Gowrie Street, Bridgend, ... 16th January, 1896
Muirhead, George, Muirhall Terrace, ... 14th November, 1895
Munro, James W., B.Sc., c/o Mrs. Craig, 216 High Street, 13th April, 1911
Murray, David, 3 Craigie Crescent, ... 11th December, 1902
Murray, D. Scott, Laurel Bank, ... 11th April, 1901
Murray, Geo. J., 4 Castle Terrace, Broughty Ferry, ... 10th February, 1910
Murray, The Hon. Miss Gladys Graham, Stenton, Dunkeld, 8th January, 1899

M'Ainsh, Rev. John, B.D., U.F. Manse, Strathbraan, Dunkeld, ... 12th January, 1899
M'Arthur, John, Gray Street, ... 7th February, 1884
M'Callum, W. B., 4 Brunswick Terrace, ... 14th January, 1909
M'Cash, W. F., Cornhill House, Burghmuir Road, ... 11th March, 1909
M'Donald, Miss Barbara, Castleview, Glasgow Road, ... 11th February, 1897
M'Donald, Robert M., Elcho Park, ... 9th March, 1905
M'Dougall, Miss Jessie E., Eastertyre, Ballinluig, ... 13th December, 1906
M'Ewen, James, Craigie Bank, ... 7th April, 1892
M'Ewen, Colonel, Craigie Bank, ... 9th December, 1909
M'Farlane, Miss, 2 King's Place, ... 13th December, 1900
Macgregor, Atholl, Ardchoille, ... 7th December, 1882
MacGregor, Lady Helen, of Macgregor, Edenchip, Balquhidder, ... 8th December, 1904
MacGregor, Miss Murray, Barossa Place, ... 9th March, 1899
M'Gregor, Alex., 71 High Street, ... 12th April, 1906
M'Gregor, John, Rosaire, 24 Strathmore Street, ... 4th March, 1886
M'Kay, A. T., 16 Barossa Place, ... 9th April, 1903
*M'Kendrick, Andrew, Livadia, Greece, ... 9th April, 1896
M'Kenzie, Alex., Kinnoull Street, ... 14th April, 1898
Mackenzie, George A., Solicitor, George Street, ... 12th April, 1870
M'Lagan, Miss B. C., 8 Moredun Square, Craigie, ... 11th April, 1907
M'Laren, William, Architect, Balhousie, ... 7th February, 1878
M'Leish, James, Mill Street, ... 4th April, 1878
M'Leod, Miss, Rose Terrace, ... 10th February, 1898
M'Leod, Nurse, c/o Mrs. Bisset, Muirton Place, ... 14th April, 1910
M'Nab, Duncan, Lord Provost, High Street, ... 12th April, 1906
M'Nab, Miss, L.L.A., Fitzroy Terrace, ... 14th November, 1895

M'Phail, Miss Annie, Wellshill Industrial School, ... 8th March, 1906
M'Nicoll, Robert, County Buildings, Tay Street, ... 12th December, 1907

Nairne, William, Cherrybank Public School, ... 9th April, 1903
Newlands, Miss Helen, Tayside, ... 10th January, 1901
Newlands, Rev. T. S., B.D., Craigend Manse, ... 9th April, 1908
Newlands, Mrs., Craigend Manse, ... 9th April, 1908
Nicol, A., Paradise Place, ... 12th November, 1895
Nicol, Edward, Paradise Place, ... 10th December, 1891
Nisbet, R. B., R.S.A., Ferntower Road, Crieff, ... 14th December, 1905
Noad, W. Cranswick, Charlesfield, Gask, Auchterarder, 14th December, 1905

Oswald, Rev. Robert, B.D., The Manse, Largs, ... 13th April, 1899

Pagan, Miss M. E., Dollerie, Crieff, ... 14th April, 1898
Paterson, William, Domus, Cherrybank, ... 14th December, 1899
Peddie, D., Ironmonger, Market Street, ... 1st May, 1873
Pinkerton, Miss Anne, Kincarrathie Crescent, ... 9th December, 1897
Plenderleith, Miss Wilna, 10 Rose Terrace, ... 14th December, 1905
Plumb, The Right Rev. Bishop, M.A., St. Ninian's House, 14th February, 1907
Proudfoot, James, Balhousie Street, ... 5th March, 1885
Pullar, A. E., Durn, ... 23rd November, 1883
Pullar, Mrs. A. E., Durn, ... 7th April, 1892
Pullar, James F., Rosebank, ... 5th December, 1872
Pullar, Herbert S., Dunbarney Cottage, ... 5th May, 1887
Pullar, Mrs. H. S., Dunbarney Cottage, ... 11th February, 1904
Pullar, Laurence, Dunbarney House, ... 11th February, 1904
Pullar, Mrs. L., Dunbarney House, ... 11th February, 1904
Pullar, Rufus D., F.C.S., Brahan, ... 6th May, 1875
Pullar, Mrs. R. D., Brahan, ... 3rd March, 1887
Pullar, Sir Robert, LL.D., Tayside, ... 2nd March, 1871
Pullar, R. Morison, Brahan, ... 8th April, 1909

Raffan, Miss Eliza, L.L.A., The Academy, ... 13th December, 1900
Ramsay, Miss Connie, Feu House, ... 9th April, 1908
Reid, Arthur S., M.A., F.G.S., &c., Trinity College, Glenalmond, ... 10th December, 1891
Richardson, James, 27 High Street, Blairgowrie, ... 11th April, 1901
Richardson, Ralph, F.R.S.E., Ballendrick, Bridge of Earn, 8th December, 1904
Ritchie, J., LL.B., Solicitor, Rosemount Place, ... 12th January, 1893
Ritchie, Mrs., Rosemount Place, ... 10th January, 1895
Robb, Alex., Tobacconist, High Street, ... 8th April, 1909
Robertson, Charles, 95 High Street, ... 14th April, 1878
Robertson, Dr. Robert, Errol, ... 2nd May, 1867
Robertson, Miss Isabella, 2 Blackfriars Street, .. 11th April, 1901
Robertson, James, 4 Mansfield Place, ... 14th December, 1893
Robertson, Robert Hay, 22 High Street, ... 2nd March, 1882
Robertson, William, 16 King Street, ... 12th April, 1906
Robinson, Rev. J. A. Grant, Baptist Manse, Glasgow Road, 12th December, 1907
Rodger, Alex. M., Museum, Tay Street, ... 14th February, 1895
Ruggles Brise, Lady Dorothea, Blair Castle, Blair Atholl, 10th December, 1903
Rutherford, W., Pitcullen Terrace, ... 5th March, 1885

Scott, Miss Mary, B.Sc., 14 Rose Terrace, ...	8th December, 1910
Scott, Miss Ina, Dunnottar, Crieff Road, ...	8th March, 1900
Scott, William M., 8 Hill Street, Coupar-Angus, ...	12th December, 1901
Sheppard, Miss M., Queen Street, ...	13th December, 1900
*Sievewright, Sir James, K.C.M.G., Tulliallan Castle, Clackmannan, ...	13th December, 1900
Smail, William, Norma Villa, Wilson Street, Craigie,	8th February, 1906
Smart, David, Rockbank, Kinnoull, ...	2nd May, 1878
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, Rev. Harry, M.A., Tibbermore Manse, ...	13th February, 1896
Smythe, Col. D. M., Methven Castle, ...	13th April, 1882
Smyth. J. Ross, Laggan, Clyde Place, ...	9th March, 1905
Somerville, Duncan M. Y., M.A., D.Sc., St. Andrews University, ...	9th February, 1905
*Sommerville, Rev. J., B.D.—summer address, Castellar, Crieff; winter address, Villa Isaune, Mentone, ...	10th December, 1896
Speedie, Alex., 48 Tay Street, ...	8th December, 1904
Steel, J. Sidney, 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, Robert, St. John Street, ...	12th January, 1899
Stewart, J., Verena Terrace, Craigie, ...	8th December. 1898
Stewart, Miss M. N., Caledonian Road Public School,	14th February, 1907
Stewart, Mrs., Lignwood, Scone, ...	20th January, 1910
Stirling, Robert, M.D., F.R.C.S.E., 4 Atholl Place, ...	13th February, 1890
Strachan, Rev. J. M., B.D., Kilspindie Manse, ...	10th December, 1903
Sturrock, Dr. J. P., H.M. Prison, ...	9th December, 1909
Stuart, Dr. C. C., Woodside, Balhousie, ...	14th April, 1910
Sutherland, Donald, M.A., Schoolhouse, Scone, ...	11th December, 1902
Syme, Bruce, Muirton Bank, ...	10th January, 1901
Taylor, David, 40 Balhouse Street, ...	9th February, 1893
Thomas, John, 25 Barossa Place, ...	3rd November, 1870
Thomson, Andrew, M.A., D.Sc., F.R.S.E., Ardenlea, Pitcullen, ...	13th November, 1890
Thomson, Mrs., Ardenlea, Pitcullen, ...	8th January, 1903
Thomson, James, Wellbank, Kinnoull, ...	23rd November, 1883
Thomson, R. Gloag, Wellbank, Kinnoull, ...	9th January, 1902
Trotter, Alexander, M.B., C.M., Tay Street, ...	14th January, 1904
Turpie, James, Depute Town Clerk, City Chambers, ...	8th February, 1900
Tullibardine, The Right Hon. Marquis of, M.V.O., D.S.O., M.P., Dunkeld House, ...	13th April, 1911
Urquhart, A. R., M.D., F.R.C.P.E., Murray House,	14th May, 1882
Walker, Dugald. Balhousie Public School, ...	13th February, 1902
Watson, Robert R. B., 11 Pitcullen Crescent, ...	10th December, 1903
Watson, W., Plumber, Caledonian Road, ...	10th January, 1895
Watt, John, M.A., Perth Academy, ...	7th April, 1904
White, J. Martin, Balruddery, near Dundee, ...	2nd March, 1882

White, William, 29 Kirkgate, ...	14th November, 1895
Whyte, A. F., M.P., House of Commons, London, ...	14th April, 1910
Wilson, D. J., Atholl Place, ...	13th December, 1894
Wilson, Mrs. D. J., Atholl Place, ...	9th March, 1899
Winter, James, Rosemount Place, ...	12th January, 1893
Winton, William, 12 Glover Street, ...	11th February, 1898
Wood, John, 52 Tay Street, ...	11th April, 1889
Wright, Robert, Balhousie Street, ...	4th March, 1886
Young, Rev. D. G., B.D., Moneydie, ...	12th December, 1901
Young, George C., M.A., Caledonian Road Public School,	10th December, 1903
Young, George P. K., Tay Street, ...	2nd May, 1872
Young, T. B., 8 Murray Street, ...	14th April, 1898
Young, W. Cochrane, Solicitor, St. John Street, ...	7th December, 1882

ASSOCIATE MEMBERS.

Innes, David, 15 Keir Street, ...	10th November, 1904
Rattray, J. P., 7 Raeburn Place, Craigie, ...	14th April, 1898
Simpson, W. L., Inchaffray Street, ...	10th November, 1904
Wylie, William, 17 Commercial Street, Bridgend, ...	12th March, 1896

BALANCE-SHEET OF THE PERTHSHIRE SOCIETY OF NATURAL SCIENCE for the Year ended 28th February, 1911.

INCOME.

Balance in Savings Bank, March, 1910,	£38 18 5		
Balance in Treasurer's hands, ...	1 17 1		
		£40 15 6	
Subscriptions and Entrance Fees, ...	£79 0 6		
Life Member Subscriptions, ...	2 12 0		
Sale of Publications, &c., ...	2 6 6		
Interest on Savings Bank Account, ...	1 2 4	85 1 4	
Year's Receipts, ...	£85 1 4		
		£125 16 10	

EXPENDITURE.

Heating, Lighting, and Use of Rooms, ...	£20 0 0		
Fire Insurance, ...	0 16 3		
Printing, Stationery, &c., ...	34 2 9		
Books, Magazines, and Binding, ...	22 14 1		
Janitor, ...	5 4 0		
Subscriptions to other Societies, ...	1 8 6		
Postages and Petty Outlays, ...	13 1 8		
Year's Payments, ...	£97 7 3		
Balance in Savings Bank, March, 1911, ...	£26 3 3		
Balance in Treasurer's hands, ...	2 6 4		
		28 9 7	
		£125 16 10	

PERTH, 9th March, 1911.—Examined, compared with the vouchers, and found correct.

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

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1910.

MONTH.	BARO. METER	AIR TEMPERATURE.								Ground Frost, 32° and under.	HYGROMETER.			RAIN.					WIND DIRECTIONS.									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.					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.								Calm or Variable.	
		Maximum (A).	Minimum (B)			Maximum.	Day of Month.	Minimum.	Day of Month.		Dry Bulb.	Depression of Wet Bulb.	Humidity.						N	NE	E	SE	S	SW	W	NW		
	°	°	°	°	°	°		°		Days 0	°		%			Inch's	Inches.	In.	Date									
JAN.	29·626	41·8	29·1	35·5	−1·6	54	2	−3	28	17	35·3	1·9	82	15	+0·7	2·52	+0.35	0·61	8	7	6	1	0	4	23	10	6	5	Thun & Light. 8th, Snow 10 11, 23 2 ,26, Comet 21, Tay Frozen 28, ice at Victoria Bridge, Temp. −°
FEB.	29·379	44·1	32·5	38·5	+1·2	52	19	18	9	2)	36·7	1·7	85	21	+8·7	2 22	+0 03	0·44	16	4	6	6	7	7	13	5	4	4	Snow 7, 15, 22, 23, 24, Tay in Spate 9′ 6″ on 20th.
MAR.	30 048	50·9	35·9	43·4	+3·7	59	23 28, 30	27	28,29	11	41·5	2·4	82	9	−5·0	1·49	−0·90	0·50	1	3	3	5	5	4	23	6	10	3	Snow 17, Tay in Spate 2nd & 3rd, 10′ on 3rd.
APR.	29·715	51·1	36·0	43·6	−0·6	61	30	27	8	14	42·4	3·0	78	17	+5·5	3·83	+2 05	1·70	16	10	6	3	5	0	14	11	8	3	Snow 17, Hail 23, 28.
MAY	29·875	60·3	42·1	51·2	+1·7	74	15,22	29	9	7	49·7	3·4	77	12	−1·3	1·08	−0 92	0·22	12	2	10	9	6	2	19	5	5	4	Hail 4, 5, Thun. 13, T. & L. 21, Corncrake. 3, Cuckoo, Swift 15
JUNE	29·891	66·5	45·4	56·0	+0·3	79	12	35	6	1	55·1	3·8	76	10	−1 0	1·27	−0·72	0·31	28	6	13	12	4	0	6	13	4	2	Thun. & Light. 21, Thun. 22, 23, Hail 22.
JULY	29·836	65 7	48·8	57·3	−0·9	79	13	40	16	0	56·1	1·9	87	17	+2·4	4·66	+1·71	1·47	25	1	9	14	7	2	13	4	12	0	Thun. 2, 29, 30, Thun. & Ligh. 31
AUG.	29 771	66·1	51·9	59·2	+2·2	75	12	44	23	0	57·0	1·9	88	23	+6 8	6·80	+3·31	1·0	28	3	4	13	13	4	16	4	3	2	Thun. & Light. 4, Swifts last seen 13, Tay in Spate 26, 29, 15′ on 29th.
SEPT.	30·207	64·0	45·5	54·8	+1·5	73	4	37	20	0	52·5	2·5	83	9	−5·0	0 76	−1·61	0·70	18	3	4	15	5	4	10	10	7	2	Trees, Tay Street, heavy fall leaves 26th.
OCT.	30·057	56 4	42 0	49·2	+3·0	70	6	32	13,20	3	47·8	1·4	90	13	−2·6	2·26	−0·70	0·. 4	28	6	10	13	4	3	8	10	5	3	Fine Autumn tints on trees, Kinnoull on last week, Trees stripped on 31st.
NOV.	29·585	41·9	29 3	35·6	−5·9	48	1, 4, 5	17	23	21	33·7	1·9	80	11	−4·6	3·26	+0·39	0·72	13	11	4	8	2	0	3	11	17	4	Sleet 6, 12, Aurora 29.
DEC.	29 575	46·8	37·2	42·0	+4·5	55	23	22	28	7	42·0	2·2	84	22	+5·7	2 62	−0·34	0·45	8	4	4	13	9	5	10	8	7	2	Sl. fall snow 28.
YEAR	**29·799**	**54.6**	**39·6**	**47.1**	**+0·7**	**79**	..	**−3**	..	**101**	..	..	..	**179**	**+10·3**	**33 17**	**+2·65**	**1·70**		**60**	**79**	**112**	**67**	**35**	**158**	**97**	**88**	**34**	
Highest	**30.744**	9 a.m	14th	Oct.																									
Lowest	**28.392**	9 p.m	20th	Feb.																									

Averages are for the period 1883-1908.

Height of Station above Sea Level = 85 feet.

ALEX. M. RODGER, Curator, Museum, Perth

BAROMETER.

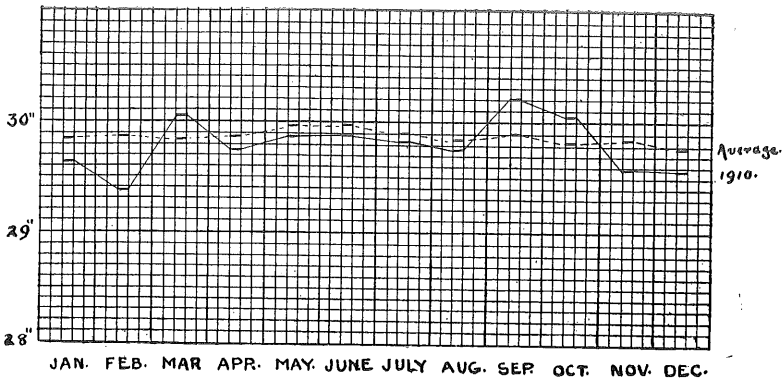


Plate 24.

Mean Monthly Reading at Perth, 1910——
Average of Monthly Readings, 1883 to 1908.....

RAINFALL.

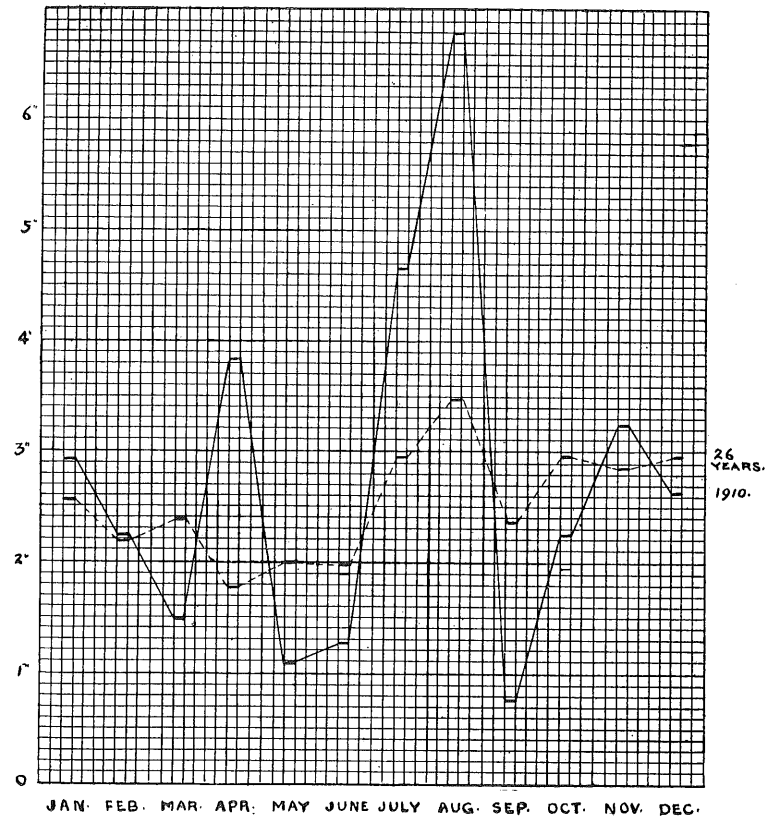


Plate 25.

Monthly Rainfall at Perth, 1910——
Average Rainfall at Perth, 1883-1908.....

TEMPERATURE.

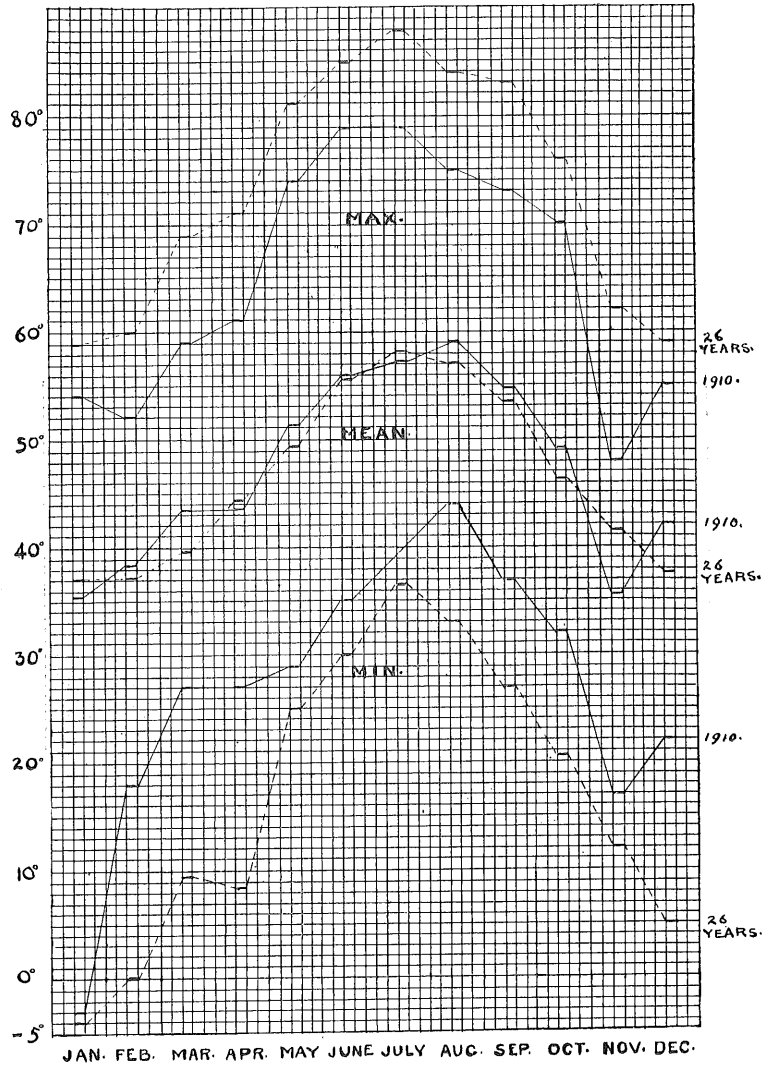


Plate 26.

Maximum, Minimum, and Average Mean Monthly Temperature at Perth, 1910————
" " " " 1883 to 1908.....

[This part, pp. ci.-cxxxiv., published December, 1911.]

WINTER SESSION, 1911-1912.

9th November, 1911.

W. BARCLAY, President, in the Chair.

A number of specimens of rocks, fungi, etc., were exhibited by the Curator.

The President delivered the following opening address:—

LADIES AND GENTLEMEN,—We have again this year to face a long catalogue of members whom death has removed from our ranks. Col. H. S. Home-Drummond, of Blair Drummond; Mr. Adam Steele, of Fairmount; Mrs. Cox, of Glendoick; Mr. T. R. Buchanan, and Mr. G. Smith Duncan, Blairgowrie, were not in any sense working naturalists, but they showed by connecting themselves with our Society as members, that they approved of our aims and appreciated the importance of the work in which we are engaged, and some of them, as occasion served, gave valuable assistance to enable the working members to carry out their investigations. Mr. Miller, Rose Terrace, was a very old member of our Society, and Mr. Alexander, of Messrs. Brown & Alexander, also took an interest in our work. Mr. R. Campbell, gardener at Durn, at one time, I believe, took a keen interest in entomology as well as in his own occupation of horticulture. The Rev. John Ferguson of Aberdalgie was a member since 1882, and though he devoted his leisure time to historical research, he had sufficient breadth of mind to appreciate and countenance the study of Natural Science. The last of those whom I have to mention on this occasion was Dr. Menzies, Kirriemuir. His connection with the Society also dates from 1882. In the early years of his membership he attended several excursions of the Society and did some work as a naturalist, and though, afterwards, pressure of work gave him little opportunity for the study of Nature, he never lost his interest in natural history, and on his retirement he told me that he meant to join our excursions more frequently. That intention he did not live to carry out, except on the occasion of our excursion to Fothringham two years ago. We must all deeply regret the loss of so many good friends.

The past summer has been such an exceptional one that I should like to say a few words regarding it. Mr. Rodger will no doubt, as usual, furnish us with exact statistics as to temperature and rainfall, so that I shall not trouble you with statistics. The striking points with respect to the summer months were warmth, dryness, and sunshine, all in an unusual degree. To find a parallel we require to go back to 1868, but of that year I have been unable to find any local statistics which would enable me to make a comparison between them. All that I can say is that in my recollection the harvest in that year was at least quite as early, and I think that the crop was even

more deficient. The summer of 1859 was also remarkably dry, and in June of that year the river had sunk to such a low level that this was recorded by a mark placed upon the Perth Bridge. By the kindness of Mr. M'Laren of the Burgh Surveyor's Office, I am able to record that on that occasion the level of the river was 5·61 ft. above Ordnance Datum. On 19th October of the present year the level was 5·60 ft. above O.D., so that practically we may say that the river in October this year was quite as low as in June 1859. That, of course, implies that the bed of the river at the bridge has not become lower since that time. That may or not be the case, but on the whole I think we may take it that the river had sunk to almost as low a level this year as it did in 1859. In the *Perthshire Advertiser* of June or July, 1859, it is stated that the Tay at that time was not quite so low at Linn of Campsie as it was in 1826, a year with the worst reputation of any on record for drought, but that it was at that place lower by 12 inches than in any year between 1826 and 1859.

In a subsequent issue of the same paper it is told that on 13th July, 1859, a horse took a load of hay from the top of Moncreiffe Island to the Sand Shore. I take it that the point of this statement lies in the fact that it was a load of hay, for it has been by no means unusual for horses with carts to ford the river at that place. To take over a load of hay, however, if it were a full load, would be rather a risky and unusual performance.

One result of the great heat and dryness of the past summer was to hurry on the flowering of plants both in the field and in the garden, and also to shorten the period during which they were in bloom. There resulted also an unusually heavy crop of many wild as well as cultivated fruits. Hips and haws have been strikingly abundant on the wild rose and hawthorn, and the crop of acorns has been wonderful in most places, the acorns also being unusually large. It is only occasionally in most districts of the county that walnuts ripen, and more rarely still that they attain full size. This year they have ripened thoroughly, have mostly reached a good average size, and in some cases have been what would be considered large even in more favoured countries. Even seldomer still does the Spanish chestnut ripen its fruit in Perthshire, but during the present year ripe fruit on this tree has been abundant, and the nuts, in some cases at least, have been of a very fair size.

On Victoria Day (5th June) a large party drove out from Perth by New Scone. Before reaching Balbeggie we turned off to the right and proceeded towards Dunsinane. The day was bright with a very hot sun, and vegetation was much further forward than usual at this season. A halt was made at the base of Dunsinane Hill, and in spite of the broiling heat we climbed to the top, whence the splendid panoramic view was a rich reward for the toil of the ascent. A few moorland plants were got on the hill, but nothing worthy of notice. Resuming our drive we passed along the base of the Black Hill and held on to the pretty little village of Abernyte. After a short halt here, where two or three interesting plants were gathered, we again resumed our journey till we came to the Lodge at Rossie Priory.

Here the brakes were sent on to await us at Inchture whilst we entered the grounds. A pleasant hour was spent in viewing the house and gardens under the guidance of Mr. M'Kiddie, who was warmly thanked for his kindly services. Leaving the house we walked through the grounds, passing a little loch on which the stately swan was majestically swimming, and came to the ruined Moncur Castle, half buried in trees.

We then walked on to Inchture, and after a welcome tea drove home in the cool of the evening by Pitroddie and Glencarse.

On Saturday, the 17th June, the morning in Perth was wet and unpromising, but nevertheless a number of members made their appearance at the station, and after some hesitation resolved to go on to Dunblane. When we got there we were welcomed by a very heavy shower, which lasted for a considerable time. This interval we utilised by visiting the Cathedral, and, of course, found there much to interest us. As the weather had now cleared up and looked more promising, we set off to find the Wharry Burn, the object of our journey. The road soon brought us to a bridge over the burn, which for some miles at this place flows through a deep and romantic den. We proceeded upwards through this den and found a rich and interesting flora, consisting chiefly of shade-loving plants, none of which, however, were new to the county. A number of bushes of the wild form of the Guelder rose were in fine flower. Emerging from the gorge we came out on the open moorland and walked through the Sheriffmuir. The flora here, of course, changed its character, and such plants were met with as the butterfly orchid, *Sedum villosum* by little rills, and several of the moorland sedges. We, of course, paid a visit to the gathering stone, marking the position of Mar's army before the famous battle, and then walked back to Dunblane. Although there were one or two showers during the day, on the whole we had little reason to complain, and the evening was fine and bright.

Saturday, the 1st July, was set down as a half-day excursion to Pitroddie and Muir of Durdie. Taking train for Errol, we took the way through the grounds at Megginch, following a path bordered chiefly by wild roses, still mostly in flower, and really lovely in their delicate tints, varying from pure white through all the shades of pink to deep red. We were met here by the proprietor, Captain Drummond, and the Hon. Mrs. Drummond. Under their guidance we first visited the castle, part of which, the north front, is very old, a contemporaneous Latin inscription upon it recording that it was built by Peter Hay in 1575. Inside we examined and admired the splendid collection of birds and of historical antiquities, amongst the latter of which a fine old money chest, bound with iron, attracted attention. A couple of man traps, which had no doubt been at one time in actual use, were also seen. Leaving the castle, we spent a short time in the gardens, and then proceeded on our way through the grounds. Many of the trees were splendid specimens, and perhaps specially noteworthy was a magnificent holly and several fine old yews. At the Dundee Road we took leave of Captain Drummond after thanking him warmly for his kindness. The ladies,

however, in spite of some showers, accompanied us to Pitroddie. Here we found many interesting plants. The Maiden pink, *Dianthus deltoides*, and a great quantity of the true hemlock were worthy of note. The latter is not at all common inland, and I do not remember ever having previously seen it in Pitroddie. We found that the great milk vetch, *Astragallus glycyphyllos*, is spreading. It formerly grew on the rocks, but these having been blasted by the quarrymen, it has taken up its abode on the *debris* on the valley floor, and will, no doubt, keep its ground there. The only plant which seems actually to have been lost to the glen by the quarrying operations is the hemp agrimony, *Eupatorium cannabinum*, but perhaps it may turn up yet in some other part. Taking leave here of Mrs. Drummond and her daughters, who had so kindly accompanied us up to this point, we walked through the Muir of Durdie, and reached Perth by the old Dundee Road at the back of Kinnoull Hill. We saw nothing noteworthy on the moor.

The mountain excursion on 8th July was to Stob Garbh and Cruach Ardran, and was attended by over a dozen (16, I think) ladies and gentlemen. I was unable to be present, but Mr. Meldrum has furnished me with the following report:—

"The weather was all that could be desired, and an enjoyable day was spent, although the botanical result was somewhat disappointing.

At the meeting of the Mountain Club on the top of Stob Garbh, several new members were initiated. Unfortunately the Cairnmaster was unable to attend, but a substitute was found in the Scribe and Annalist, the only Club official present. Major Mercer acted as Quaich-bearer and Mr. Rodger as Geometer, but no one could be found daring enough to step into the Bard's shoes—the *feet* of even the regular occupant having been known to limp painfully in these ancient brogues.

While at the top, Major Mercer, on behalf of the members of the Club, presented the Scribe with a handsome and serviceable Alpenstock in appreciation of his many years' service as leader of the mountain excursion.

The leader accepted his new official staff with grateful thanks (he may now reach the summit *inter primos*), while the rank and file seemed comforted by the thought that they had now seen the last of its singularly unpretentious predecessor. *Pax cineribus* peace to its ashes!

Some of the party ascended Cruach Ardran, from the summit of which a very fine view was obtained, whilst the others explored the likeliest botanical ground without finding anything calling for special mention."

On the 22nd July we took train to Glenfarg, and thence proceeded to walk over the Ochils to Bridge of Earn. At about half a mile from the village the old road branches off. After following it for some distance we took a cart road which branches off in order to visit Old Fordel House. A few plants of cultivated ground were picked up

on the way, amongst which were the *scarlet pimpernel*, a plant which, though common enough in many places, is rather scarce in the neighbourhood of the city. Old Fordel House, uninhabited now, has evidently, since its erection at an unknown period, been greatly transformed. The tower apparently must have been at one time much higher, and the rest of the building greatly altered. It is said to have belonged to Sir John Brown, who was taken prisoner at Inverkeithing in a fruitless attempt to prevent the crossing of Cromwell's army at that place after the battle of Dunbar. Cromwell himself is said to have slept two nights in it on his way to Perth in August 1651. It had evidently been occupied as the farm house before the new steading was built at some distance off. Returning by another path to the main road, we almost immediately left that and passed through the farm of Lochel Bank, intending to strike what is known as the Wallace Road leading over the pass between Dron Hill and West Dron Hill. This can be picked up in a field immediately beyond the farm, and can be traced with some certainty nearly all the way to an avenue of trees leading up to Dron Hill Farm, from which it becomes an unmistakable road leading over to Strathearn. We, however, took a wrong turn at the farm, and as a result had to go through very rough ground and over several fences, till we struck the right spot near Dron Hill Farm. Near the road at this point is a little knoll which is claimed as the spot from which Sir Walter Scott obtained the famous view described in the introduction to the "Fair Maid of Perth." I think this very doubtful, but there can be no doubt that the view from this knoll is well worth going to see, and we spent some time in admiring it. The flora of the hill, at all times poor, as it is eaten down by sheep, was specially poor at this time owing to the long continued drought. On leaving this we crossed the pass, and, descending the hill by a rough road, walked to Bridge of Earn, past Kilgraston House and Kintillo. With the exception of one slight shower the weather was fine, and we greatly enjoyed the breezy walk over the hill.

The excursion to Struan took place on Saturday, August 5th. The morning was very unpromising; rain began to fall almost as soon as the train started, and continued without intermission till mid-afternoon. The party was small, and decided unanimously to follow the course of the Garry for some distance above Struan, rather than to walk to Blair Atholl. Botanical work was out of the question, but the numerous igneous dykes occurring in this part of the valley of the Garry were carefully studied and specimens taken.

Train was taken to Blair Atholl about four o'clock, and a short excursion made up Glen Tilt, as far as the Old Bridge of Tilt, a glimpse being obtained of the limestone gorge through which the Tilt passes at this point.

On the August holiday, 23rd August, a pretty large party set out by train for Callander, and thence proceeded to drive to the Trossachs. The day was bright and pleasant, and as we went on our way quotations from the "Lady of the Lake" were frequent. After spending an hour at Loch Katrine we drove back through the pass, and took the road which goes over the hill to Aberfoyle. From

this road, with many windings through the heather, magnificent views are to be obtained at many points. On passing the summit, Aberfoyle and the valley of the Forth, with Lochs Ard and Chon, with Benmore in the distance, make a splendid picture.

Arrived at Aberfoyle we spent two or three hours, the greater number of the party walking to the end of Loch Ard about two miles distant, another party visiting the slate quarries, and others exploring the botany of the neighbourhood, though without much result. At the appointed hour all again met, and we drove on to the Lake of Menteith, where tea was partaken of. A short walk by the shore of the lake showed that the purple loosestrife is still plentiful, but there was little time for exploration. The evening drive back to Callander was very pleasant, and altogether we have not often spent a more enjoyable day.

The protracted drought of the season, continuing till late into the autumn, was so unfavourable to the growth of fungi, that the usual excursion was put off from time to time in the hope that the weather might take a more favourable turn. It was at last, however, fixed for the 14th of October, and even then a sharp frost, which occurred a few days previously, ruined any little hope we had felt of a successful result. The place fixed upon was the grounds of Moncreiffe House, permission being kindly granted by Sir Robert Moncreiffe. At Bridge of Earn we were joined by some members of the Conifer Club from Dundee, our comrades on several former occasions. We first visited the lower pond. In its neighbourhood several fungi were got, but were not in good condition. One bright red peziza, *Otidea onotica*, however, growing in clusters from an old elm stump, formed a very beautiful object. Leaving this we entered the grounds proper, and having passed through the gardens we devoted the rest of our time to the trees, many of which were specially noteworthy. A fine Cedar of Lebanon showed a crop of cones so abundant that none of the party had ever seen anything like it. Whether, however, the enclosed seeds would come to perfection could not be decided. A willow of very great age, whose huge branches have drooped to the ground, taken root and formed subsidiary trees, was an object of admiring wonder. Many splendid horse chestnuts occur in the ground. Ripe walnuts were gathered in abundance, showing the great heat of the summer. A visit was paid to the north avenue to inspect a stone circle, nearly perfect, and also a fine example of a sculptured cross, which are to be found there. The cross was, I believe, brought from Gask to its present position. Although so barren of fungi on the present occasion, it was believed by the experts present that in a favourable season these grounds would be exceedingly prolific, and the hope was expressed that the party might be enabled to return at some more favourable season.

That completes the list of our excursions, but it would be unpardonable if I were to pass over the visit which a party of foreign botanists paid to our county in August last. There were representatives present from Sweden, Denmark, Switzerland, Germany, and America, most of them well known for their attainments. Accompanied by Dr. Smith, Mr. Claridge Druce of Oxford, Dr. Moss

of Cambridge, and one or two other British botanists, they arrived in Perth on the afternoon of Tuesday, the 15th August. A considerable time was spent in our Museum, which was highly praised, and much interest also was taken in a representative collection of Perthshire plants selected from the *Herbarium* and laid out for their inspection. Thereafter a short excursion was made to the bank of the Tay immediately below the Railway Bridge, where, in spite of the dry season, we were able to show them some plants which, though not uncommon with us, were not so familiar to some of them. In the evening the party went on to Dunkeld. Next day, accompanied by Mr. Bates, our veteran member Mr. M'Intosh, and myself, they drove over to Loch Butterstone. A number of us preferred to walk through the woods in order to visit the little Loch Cally, where, as formerly, we saw plenty of the naturalised Cape Lily, as it is called, *Apoinogeton distachion*.

As one main object of the party was to study plant associations, they found much to interest them in the woods and hillsides as we passed along, and Dr. Smith was able to show them many examples from this point of view. Arrived at the loch the carriage was dismissed, and some proceeded to walk round Loch Butterstone and then along the shore of the Loch of the Lowes, whilst others got into a boat to examine the aquatic flora. They were successful in getting specimens of such plants as *Naias flexilis* and *Nitella translucens*, whilst by the margin we saw plenty of *Lobelia Dortmanna*, and found leaves of *Isoetes* though we did not see the plants themselves. At one part, where a private walk runs through the belt of wood which fringes the shore of Loch Butterstone, I saw more plants of the Scottish rose, *Rosa spinissossima*, than I have seen elsewhere, except near the sea. The day was bright and very hot, but everybody was very pleased with the excursion and the fine scenery of Dunkeld. In the evening we proceeded by train to Aberfeldy and thence drove to Loch Tay, one party, of which I was one, staying at Fearnan Hotel, whilst the others drove on to Lawers. Next morning we went by the first steamer to Lawers, finding on board Professor Balfour on his way to join us. Rejoining our companions at Lawers, we all set off to climb the botanically famous Ben. We ascended by the side of a burn which comes down from the west corrie, the best botanical ground. The forenoon was hazy and warm, but very suitable for hill climbing. On the way by the side of the stream many plants were taken notice of, one or two giving rise to some discussion, and in one case that of a small *Sagina* to considerable diversity of opinion. On the rocks most of the rarities of the Ben were out of flower owing to the hot summer and the somewhat late period at which the visit was paid, but a good many of them were seen in fruit. I saw a very few plants of the rare gentian, but they seemed much dwarfer than usual. Climbing afterwards to the summit, some time was spent enjoying the splendid view of Loch Tay and its surroundings. Most of the party then descended the mountain by the usual path, but about half a dozen of us, headed by Mr. Druce, who knows the mountain well, went along a ridge and came down to the rocks at the head of Loch na Cat where we spent an interesting hour or two, reaching the hotel not very long after the

others. Our party returned by the evening boat to Fearnan. Next morning all but myself went off on a visit to the Trossachs, and afterwards to spend a short time in Ireland. I spent the forenoon in walking over to Glenlyon and rambling for some miles amidst the glorious scenery of the Pass, returning in the evening to Perth.

Miss Mary L. Miles, L.L.A., gave the following report of the meetings of the Scottish Cryptogamic Society, held this year at Moffat :—

The Thirty-Sixth Annual Congress of the Cryptogamic Society of Scotland was held at Moffat from the 26th to the 28th of September. I was only able to be present on the last two days of the meeting, and these, unfortunately, were marred by weather of the worst description.

We did not expect to secure an abundance of finds this year owing to the long drought, but Moffat seemed to have suffered much less than this neighbourhood from the dry weather, as nearly three hundred different species were noted, some of which had not been previously recorded for the Solway area, while several are rarely met with in other districts of Scotland.

On Tuesday, September 26th, Gallowhill and Garden Wood were visited, the weather being fine. On Gallowhill *Podosphaera myrtillina* (Schub.) Kunze. was found in abundance on leaves of the blaeberry. In Britain this has hitherto been found only in the N.E. of Scotland, and in one locality in Midlothian.

On Wednesday, the 27th, the excursion was to Garpol Glen and Craigielands. The morning was bright and sunny when I left Perth, but before Carstairs was reached rain began. At Beattock rain fell steadily and unpromisingly when I joined the party, who were then about to begin work on Craigielands. This estate well deserves its name, for the hill behind the house which we explored was as if road metal had been scattered over it, and walking there was most unpleasant. The owner of Craigielands is Mrs. Smith. When the Society last visited Moffat eighteen years ago, Mr. Smith, who was then alive, entertained the members to tea, and this time Mrs. Smith repeated the kindness, and very pleasant it was at the end of a wet day to sit down to a refreshing tea in a dining room made cosy by a bright fire.

We remarked how little the district seemed to have suffered from the drought, and what beautiful flowers were still in the gardens, and Mrs. Smith volunteered the information that they considered this about the best time for flowers, their annual flower show being always held near the 15th of September.

On our way to Beattock station we passed through the village, where the gardens were a glory of flowers, looking bright even in a torrential downpour of rain.

After dinner the annual meeting of the Society was held in the Annandale Arms Hotel, in a room which was dedicated to fungi for the days of the meeting. It was unanimously agreed that the next conference should be held at Forres in September, 1912, and should

be arranged as a joint-meeting with the British Mycological Society, many of whose members will next year be in Scotland attending the meetings of the British Association in Dundee. Brodie of Brodie was elected President for 1912.

Professor Trail submitted particulars of an improved method of registration of information relating to records of Scottish cryptogamic plants, which he recommended for adoption, and desired the aid of the Society in carrying it into effect. A small Committee was appointed to consider the details of the scheme, and the way in which the Society could best render the assistance desired by Professor Trail.

Mr. Johnstone, the President for the year, gave an account of the mode of ejection and dispersal of the ripe spores of the *Hymenomycetes*. His remarks were illustrated by means of diagrams and an extensive series of lantern slides. Among the latter were colour photographs taken by the Lumière process by Mr. George Herriot, Glasgow. These reproduced with fidelity the bright tints of glowing red and golden yellow which are characteristic of many of the fungi that decorate the woodlands in autumn.

The early morning of the 27th gave promise of a lovely day, and the hills stood out clearly against a blue sky, but before breakfast the sky became overcast, the hills disappeared and heavy showers of sleet fell. At breakfast time the sun appeared again, and the sky was as blue as ever, and we began to prepare for the last excursion to Dumcrieff. But another heavy downfall of rain made us decide to delay starting, and it was almost noon when we chartered a conveyance to take us to the grounds, to avoid the wet roads we must traverse on our way. Before we reached the grounds such a heavy shower fell that some of the party did not leave the conveyance. Those of us who braved the storm were forced to shelter under trees before starting on the hunt for fungi, and for a time even in the wood a bitterly cold wind made our work far from pleasant. But the sun came out as the wagonette appeared to take us back to the hotel, and showed us the surrounding country in all its beauty. Over 100 microfungi were identified. *Cronartium ribicolum*, Deitr., appears to have been unknown as British in 1889, when Plowright published his manual of Uredincæ. It has now become abundant on leaves of black currant bushes in gardens in various parts of Perthshire, and appears to be common in gardens around Moffat. In its æcidiospore state (formerly known as *Peridermium strobi*, Kleb.), it occurs on bark of the Weymouth Pine (*Pinus strobus*), and sometimes proves very injurious to that tree.

The parasitic Hyphomycetes or moulds noted included *Ovularia doronici*, Sacc., on leaves of leopard's-bane; *Ovularia bistortae*, Sacc., on leaves of bistort; *Ramularia taraxaci*, Karst., on leaves of dandelion; *Ramularia plantaginea*, Sacc. and Berl., on leaves of ribwort-plantain; and *Ramularia ajugae* (Niessl.), Sacc., on leaves of common bugle. These five species are not referred to as British in Massee's "Fungus Flora," published in 1893.

Mr. Henry Coates submitted the following "Note on the Occurrence of a Beam of Timber under Carse Clay at Barnhill":—

"Recently the School Board of Perth gave instructions to Messrs. D. & R. Taylor, contractors, to make a series of borings within the Nursery Grounds at Barnhill to ascertain whether the soil were suitable for the foundations for a new Academy building. In all, eight borings were made in two series, running parallel with the bank of the river. The lower series, which were about sixty yards distant from the river, were made in ground averaging 28 feet above datum level; while the upper series, about ninety yards distant from the river, averaged 31 feet above datum level.

Taking the strata passed through in each of these eight borings, and correlating them with each other, we find that the succession works out, on the average, as follows, taking the beds in descending order:—

Black surface soil, ...	...	1 foot 11 inches.
Brownish or loamy subsoil, ...		1 ,, 10 ,,
Blue clay, ...	...	2 feet 0 ,,
Black moss or peat,	...	2 ,, 0 ,,
Soft brown or yellow sand, ...		1 foot 11 ,,
Aggregate,	...	9 feet 8 inches.

The bottoms of the bore holes thus averaged about twenty feet above datum level.

In the above mean section, the black surface soil represents pure vegetable mould. The subsoil represents vegetable mould mixed with a certain proportion of alluvial sand. The blue clay represents the fine detritus deposited over the whole of the lower Tay valley, when estuarine conditions prevailed, and when there was no appreciable current in the stream to bear along coarser material. The peat bed represents a swampy condition, when the valley floor was covered by a dense growth of vegetation, with both coniferous and hardwood trees, and an undergrowth of reeds and brushwood. The more or less pure sand at the bottom of the section represents fluviatile conditions, with a flow of current sufficient to carry the grit derived from the disintegrated Highland rocks, but not swift enough to carry and deposit gravel as at present. These varying conditions of the valley floor indicate varying elevations of the land surface.

Such is the general character of the strata disclosed in the bore holes. The most remarkable feature which they revealed, however, was a beam of timber which was found in boring No. 4, lying on its flat side in a horizontal position, immediately underneath the blue clay. Mr. Taylor, the contractor, and Mr. MacLeod, the Superintendent of the Nurseries, who were present when it was uncovered, were both of opinion that this beam had been roughly wrought by human agency. The flat under surface certainly suggests the work of man for some utilitarian end, rather than any conceivable natural process, although the surface is too much decayed to show any unmistakable tool marks. The position in which it is lying seems to indicate, as

Mr. Taylor remarked, that it had "floated into its present position." Mr. MacLeod kindly had a small section of the beam, which was exposed in the hole, sawn off for preservation in our own Museum, but the bulk still remains hidden under the primeval clay. It is about seven inches wide, by four inches thick, and consists of heavy black oak.

If this beam is really the result of man's handiwork, it is certainly a find of deep interest, because it would prove that man was an inhabitant of the land in an age not long after the close of the great Ice Age, and at a time when the physiographical conditions were so infinitely remote from those with which we are familiar at the present time."

The Rev. J. M. Strachan, B.D., Kilspindie, then read a paper entitled "Scraps for Twenty Minutes," for which he received the hearty thanks of the meeting.

14th December, 1911.

W. BARCLAY, President, in the Chair.

A number of birds received from Captain Moray, Blairdrummond. Mr. Atholl M'Gregor, and Mr. Greig, were exhibited by the Curator.

The President read the introduction to a paper by Mr. William Wylie on "The Macro-Lepidoptera of the Kinfauns District, with a General Description of some of the Rarer Forms." (See *Transactions*, Vol. V., Part IV., page 114).

Dr. Lyell read a paper entitled "A Pioneer in Criminology: Notes on the Work of James Bruce Thomson, of Perth." (See *Transactions*, Vol. V., Part IV., page 103).

15th December, 1911.

A Special Lecture was given by Mr. George P. Laidlaw, M.A., B.Sc., of Paisley, entitled "Switzerland: its Mountains, Lakes, and Glaciers." The lecture was illustrated by an admirable series of lantern slides, and was much appreciated by the large audience.

11th January, 1912.

W. BARCLAY, President, in the Chair.

A number of specimens of mountain hares, grouse, and ectoparasites were exhibited, together with a number of stereoscopic views illustrating plant associations taken by Professor Massart, of Belgium, during the visit of the International Phyto-Geographical Congress to Scotland in August, 1911.

A paper entitled "Notes on some Ectoparasites in the Museum, Perth," by the Rev. James Waterston, B.D., B.Sc., was submitted for

publication in the Society's *Transactions*. (See *Transactions*, Vol. V., Part IV., page 123).

Mr. A. T. Gillanders, forester to the Duke of Northumberland, then gave an interesting and instructive lecture on "The Structure of Trees Microscopically examined."

8th February, 1912.

W. BARCLAY, President, in the Chair.

Three microscope slides of Protozoa were exhibited. The following paper was read:—

"Botanical Notes on the Coast of Haddington," by Mr. D. Campbell.

In the unavoidable absence of Mr. J. W. Munro, a lecture entitled "The Bottom of the Sea" was given by Mr. G. F. Bates. The lecture was illustrated by lantern slides.

FORTY-FIFTH ANNUAL MEETING.

14th March, 1912.

W. BARCLAY, President, in the Chair.

The following Office-Bearers were elected:—

President—Wm. Barclay.
Vice-Presidents—James Morison, Rev. G. A. F. Knight, M.A.; James Menzies, A. Mackay.
Secretary—S. T. Ellison.
Treasurer—A. W. Brown.
Librarian—James Coates.
Editor—George F. Bates, B.A., B.Sc.
Curator—A. M. Rodger.
Councillors—D. Campbell, Dr. Robertson, William Ellison, Dr. Sturrock.

REPORT OF COUNCIL.

The Council have pleasure in submitting to the members their Forty-Fifth Annual Report. The interest evinced in the meetings has been well maintained during the past year, and although the membership again shows a small falling off, it is not nearly so large as in the previous year. With a view to increase the membership the Council in October sent out a circular to various friends in the city and county, who they thought might see their way to join the Society. They regret, however, that but a few responded to their invitation. They take this opportunity of heartily thanking those who did. During the year six monthly meetings were held, at which

eight papers were read, as well as the two addresses annually given by the President. The average attendance at the meetings was 38, as against 37·5 during 1910; the largest number attending one meeting being 71, on the 11th January, 1912, and the lowest 25, on two occasions, namely, 14th December, 1911, and 8th February, 1912. Twenty ordinary members and one associate member have been elected, as against 9 in the previous year. The total membership now stands at 330, a decrease of 10, made up of 1 honorary, 13 corresponding members, 7 associates, 5 associate members, and 304 ordinary members.

A special meeting was held on the evening of Friday, 15th December, when a most interesting lecture was given by Mr. G. P. Laidlaw, of Paisley, on "Switzerland: its Mountains, Lakes, and Glaciers." There was a large and appreciative audience, and the Council record their obligation to the lecturer for his kindness in coming to Perth on that occasion.

During the summer months eight excursions were held, at which the attendance was very gratifying. Those on the May and August holidays were largely attended. The Council give their thanks to those proprietors who so kindly consented to some of the excursions taking place over some of their properties, and they also desire to thank the leaders and all who arranged for these excursions.

The Council regret that they have again to mourn the loss of so many members by death. Quite recently there have been removed, at a ripe age, Mr. Peter Campbell, who was a member from 1878, and was a most regular attender at some of the excursions right up to the last summer; and Mr. James Thomson, who was usually present at most of our meetings, and who has been a member since 1883. Other members of long standing, whose demise we deplore, are Mrs. Cox, Glendoick, elected in 1895; Mr. J. Alexander, elected 1897; and Col. H. M. Home-Drummond, elected 1899.

The Children's Essay Competition on "The Nesting Habits of any Four Perthshire Birds" was again successful in bringing in 61 essays, by 31 boys and 30 girls, from three schools in the town and four in the county. The prizes were handed over by Mr. J. Coates to the successful writers at a meeting held in the Lecture Room on Saturday, March 2nd. The examiner was Mr. Clacher, to whom the Council present their best thanks for his labours.

The Lecture Room has again been freely granted to various societies for meeting.

REPORT OF TREASURER.

(*See Balance-Sheet, page clxxxi.*)

REPORT OF LIBRARIAN.

The Library continues to serve its purpose, thanks to the unfailing care and attention bestowed upon it by the Curator in addition to his other duties.

During the past year 44 of the members have made use of the Lending Library, and 200 separate books have been taken out. This does not take into account the extent to which the valuable

collection of Reference Books have been consulted, as these are not taken from the room, and no record is kept of their use. It is certain, however, that they have been a great boon to students, as may be judged by the large advantage that has been taken of them.

The additions to the Library during the year number 43 volumes, including 16 to the Reference Department and 12 to the Lending Library, while the remainder is made up of magazines, reports, etc., which have been bound.

A large number of presentations have been received, principally the proceedings, transactions, etc., of kindred societies at home and abroad. These have already been acknowledged, but the grateful thanks of the Council are once more here expressed to one and all of the donors.

A complete list of these is appended. (See page clxix.)

REPORT OF EDITOR.

The Third Part of Vol. V. of the Society's *Transactions and Proceedings* was published in December, 1911, and distributed to members and other societies in the usual way. There are no new features to note, but the publication continues to be highly appreciated by members and others.

The President then proceeded to deliver his annual address, which consisted of the introduction to his paper on "The Additions to the List of Perthshire Plants since the Publication of Dr. White's 'Flora.'"

LADIES AND GENTLEMEN,—It is now nearly twenty years since the death of Dr. White, and fourteen years have elapsed since the publication of the "Flora of Perthshire," under the editorship of Dr. Trail. Since then a considerable number of new records have been published, and it seems desirable that these should now be classified and brought together, a task which I have attempted in the following part of this paper. For the bulk of these records we owe grateful thanks to several critical botanists who have taken an interest in the flora of our county, especially to Mr. G. C. Druce and the Rev. E. S. Marshall, as well as to Mr. Arthur Bennett, of Croydon. The additional records comprise a considerable number of foreign and casual plants which, in most cases perhaps, will not be able to obtain a permanent footing in the county. Apart from these the additions consist mainly, not of what would have been called species by the older botanists, but of what we may call new micro-species and new varieties. Of the value of these I do not pretend to be able to judge. I give the records as I find them with a reference to the source and author of each.

In the case of additions made by local observers, I have, in all cases, satisfied myself that the record is correct, that the plant was correctly identified, and in most cases I have myself seen it *in situ*. Where no name is given I am responsible for the record. In almost all cases of local records, specimens have been placed in the local

Herbarium in authentication of the record. Doubtless in the following list there will be some omissions and some errors, but I can say that I have tried my best to avoid both.

Class I.—DICOTYLEDONEÆ.

ORDER I.—RANUNCULACEÆ.

3. RANUNCULUS.

i. *Batrachium.*

R. peltatus Schrank (B. truncatus Koch).
Recorded for Perthshire by Professor Trail ("Annals for 1905," page 124).

R. Bandotii Godr., for 88, 89.
Recorded for Perthshire by Professor Trail ("Annals for 1905," page 124).

ii. *Euranunculus.*

R. Lingua L.

L. Gowrie.

At Marlee Mere, near Longforgan (R. Smith and R. Dow).

R. Flammula L. Var. reptans (L).

L. Perth.

Shore of Loch Tummel (Druce, "Annals for 1905," page 247).

R. acris L. a. vulgatus (Jord).

H. Breadalbane.

(Druce, "Annals for 1900," page 166).

d. Steveni (Andrz.)

H. Breadalbane, Atholl.

(Druce, "Annals for 1900," page 166). As also Var. *Nathorstii* (A. Bell), from four mountains in Breadalbane.

HELLEBOREÆ.

4. CALTHA.

C. palustris L. Var. minor Bab.

H. Breadalbane.

Ben Lawers at 3000 feet. P. Ewing (Watson "Bot. Ex. Club Rep., 1907-8," page 131).

C. radicans Forster.

L. Perth.

H. Rannoch, Isla.

Near Methven Loch and Shore of Loch Tummel (Druce, "Annals for 1905," page 247).

Near Butterstone Loch (Druce, "New Phytologist," Nov. and Dec., 1911, page 307).

Adonis autumnalis L. An escape, Perthshire (Trail, "Annals for 1905," page 124).

ORDER II.—NYMPHÆACEÆ.

CASTALIA.

A plant which at first was considered as C. candida (Presl.) Schinz and Thellieng was found in Loch Cally, H. Isla in August, 1911, by the members of the Phyto-Geographical expedition. On further study, however, Dr. Ostenfeld considers it as different from the Continental form, and has named it C. alba Wood (Nymphæa alba L.) Var. occidentalis Ostenf.

ORDER V.—CRUCIFERÆ.

1. NASTURTIUM.

N. officinale. Var. siifolium Reich.

L. Isla.

Near Ardblair Loch (E. S. Marshall, J.B., 1908, page 292).

2. BARBAREA Br.

B. intermedia Bor. was found as a casual by E. S. Marshall near the Spittal of Glenshee (J. B., 1898, page 292).

4. CARDAMINE.

C. amara L. Var. lilacina B.W., occurred abundantly at Barnhill a few years ago, but owing to draining has become extinct.

Sisymbrium pannonicum Jacqu. has occurred as casual in V.C. 88.

Brassica monensis Huds recorded in the Flora as occurring in a timber yard at Perth Harbour, and other plants of the same station have been buried under some feet of rubbish.

Draba muralis L. is naturalised in a quarry at Barnhill, and was found in Glenfarg some years ago by A. Craig Christie.

14. TEESDALIA.

T. nudicaulis Br.

H. Breadalbane.

About 2 miles east of Aberfeldy, 1912.

For L. Earn an additional station is abundantly a little off Glenfarg.

9. COCHLEARIA L.

The Rev. E. S. Marshall says that the alpine plants formerly referred to C. grœnlandica L. are to be referred to C. micacea Marshall.

ORDER X.—CARYOPHYLLACEÆ.

1. SILENEÆ.

2. SILENE L.

S. noctiflora L.

L. Gowrie.

Near Longforgan (R. Dow, 1895). Still there.

II. ALSINEÆ

5. CERASTIUM.

C. triviale Link. Var. alpinum Mert. and Koch.

H. Breadalbane, Isla.

Druce ("Annals for 1900," page 168).

C. alpinum L. There does not appear to be any general agreement as to the rank and nomenclature of the various forms comprehended under C. alpinum L. and C. arcticum Lange in the flora. Mr. Druce in "Annals, 1911," page 38, has given some account of these, and has proposed a new arrangement which may or may not prove acceptable, but if so the distribution in Perthshire will have to be worked out in accordance. Mr. Druce is confirmed by Prof. Ostenfeld in diagnosing a Ben Lawers plant as C. vulgatum L. (C. triviale Link.) x C. alpinum, and thinks the occurrence of two other hybrids of alpine forms as very probable.

8. CHERLERIA.

A. peploides L. (Honkeneja of flora).

L. Gowrie. R. Smith.

10. SAGINA.

A sagina which was in full flower on Ben Lawers from about 2000 feet upwards, when the members of the Phyto-Geographical expedition visited that mountain, caused some difference of opinion. In the *New Phytologist*, November and December, 1911, page 310, Mr. Druce determines it as Sagina glabra Fenzl., var. scotica Druce. In the same journal, however, for 1912, page 117, Dr. Ostenfeld, after a critical examination of material, maintains that it is the hybrid S. procumbens L. x saginoides (L.) Dalla Torre.

Other plants on Ben Lawers Dr. Ostenfeld considered at the time to be S. nivalis L. x saginoides. (Druce, *New Phytologist*, November and December, 1911, page 310).

ORDER XI.—PORTULACACEÆ.

1. MONTIA L.

M. fontana L. A new division of the Linnean aggregate has been proposed, based on the seed character, M. verna Hecker and M. lamprosperma Cham., each with a variety growing in water. Both species have been identified in Perthshire, but the distribution remains to be worked out. (See Druce, Hayward's Botanist's Pocket Book, p. 38, and "Annals," 1909, page 121; 1911, page 251).

ORDER XV.—LINACEÆ.

1. RADIOLA Roth.

R. linoides Roth.

H. Breadalbane.

Near Loch Tay 5 miles east of Killin, Jas. Fraser. ("Annals for 1906," page 57).

ORDER XVI.—GERANIACEÆ.

G. sylvaticum. Var. Warneri Brigs.

H. Isla.

What appears to be this variety. Near Spittal of Glenshee, E. S. Marshall. (J. B., 1907, page 292).

G. phæum L.

Long naturalised at Barnhill. Bank of a little stream below Orchardneuk. Den of Rait (R. Smith.)

G. pusillum L. Has been found by Mr. D. Campbell at Kilspindie, at Kinnoull, and at Craighead Houses between Elcho and Fingask Farms. All in Gowrie.

G. columbinum L.

Perth—Several places on Craigie Golf Course, D. Campbell and W. B.

ORDER XX.—PAPILIONACEÆ.

6. TRIFOLIUM L.

T. resupinatum L. occurred as a casual on rubbish heaps near Coupar Angus in 1901.

9. ASTRAGALUS L.

A. glycyphllos L.

H. Rannoch.

Rannoch—Right bank of Tummel some distance below the Falls.
Gowrie—Not extinct at Pitroddie, but more abundant than ever.
Atholl—Abundant on left bank of Garry between Killiecrankie and Blair Atholl.
Perth—Has increased very much below Thistle Brig.

12. VICIA L.

V. tetrasperma occurs on the roadside between Wicks of Baiglie Road and Dron School (D. Campbell). Also as a casual on the railway bank near the harbour (A. Gray).

Lathyrus sylvestris L. was found at Orchardneuk as an escape in 1900 (A. Gray).

ORDER XXI.—ROSACEÆ.

IV. POTENTILLEÆ.

7. POTENTILLA.

P. argentea L.

L. Isla. Bank of Tay between Caputh Bridge and Delvine.

V. POTERIEÆ.

8. ALCHEMILLA.

A. vulgaris L. Var. alpestris Schmidt,

A. Isla.

H. Breadalbane.

Druce ("Annals for 1900," page 225).

Var. filicaulis Busser.

L. Isla.

H. Breadalbane.

Same recorder and place of record.

Var. acutidens Busser.

H. Breadalbane.

Pointed out by Dr. Ostenfeld at several places on Ben Lawers at the visit of the Phyto-geographical Expedition in August, 1911.

10. POTERIUM L.

P. Sanguisorba L.

Near Aberfeldy in Breadalbane, 1912, and in plenty near Cambusmichael in Isla, 1912. A very doubtful native in my opinion.

P. Polygamum W. and K. What from the habit I took to be this plant (it was not sufficiently advanced to make certain) occurred in some quantity on a bank by the wayside on Dunning Brae in 1910.

11. ROSA.

In the *Transactions* and Proceedings of the P.S.N.S., Vol. V., Part II. (published November, 1910), I gave as full an account as I could of Perthshire roses. I did not attempt to give their distribution in the different divisions of the county, as I was not then, and am not now, in a position to do so with anything like fullness. To that account I have, as yet, nothing to add, and there is no need to republish it here. A few notes on some of the species as given in the "Flora" may, however, be given.

R. tomentosa Sm.

Var. farinosa Rau. The Kinloch-Rannoch specimen is a coriifolia form. Of Hailstone's plant I know nothing.

Var. sylvestris Woods. As now understood var. sylvestris is not common anywhere in the county, and, indeed, the whole section to which sylvestris Woods and scabriuscula Sm. belong is very rare in Perthshire.

Of the var. with simply serrate leaves, cinerascens Dum. I have only seen three bushes. The specimen from Fingask Castle is a coriifolia form.

Var. with white flowers is not rare but common.

R. Canina L.

5. urbica Lem. is somewhat local but not rare.

6. frondosa Stev. is a mistake.

7. arvatica Baker does not occur as far as I have seen. The specimens in the herbarium with this name belong to R. coriifolia Fr., or to the group which I have named R. sub-coriifolia.

9. obtusifolia Desv. does not occur in Perthshire.

10. pruinosa Baker. Forms of R. coriifolia.

11. incana Woods. Forms of R coriifolia.

12. tomentella Lem. I have never seen anything like this var. in Perthshire. The specimens on which its occurrence was founded are forms of R. coriifolia probably of the group sub-collina Chr.

13. andegavensis Bast. I very much doubt the occurrence of this variety. The specimen from Quarrymill Den does not belong to it.

14. verticillacantha Mérat. Very doubtful, I should say, especially on Craig-na-Caillich.

15. Koscinciana Bess. An error.

16. cæsia Sm. = coriifolia Fr.

R. complicata Gren. = subcristata Baker and var. implexa Gren. do not appear materially to differ. Both are vars. of R. glauca Vill.

R. lucida Ehrh., an American species often cultivated, is pretty well established by the side of a little stream near Comrie.

ORDER XXVIII.—ONAGRARIEÆ.

1. EPILOBIUM.

E. palustre L. var. lavandulæfolium Lec. and Lam.

H. Isla.

Glenshee, Druce ("Annals for 1900," page 227).

E. alsinefolium Vill. x alpinum L. Ben Heasgarnich, Breadalbane.

Druce ("Annals for 1900," page 226).

ORDER XXIX.—UMBELLIFERÆ.

Chaerophyllum aureum L. discovered on the bank of the Teith at Callander by Mr. James Fraser in 1908, is in great abundance both opposite and below the town. I can only consider it as an introduction of not very many years standing, though how it was introduced I am unable to conjecture.

ORDER XXXII.—CAPRIFOLIACEÆ.

3. ADOXA.

A. Moschatellina L.

H. Earn.

Found on an excursion of the P.S.N.S. in Glen Tarken (June, 1909).

5. LINNÆA.

L. borealis Gron.

L. Gowrie, Perth.

Gowrie—Hill adjoining Kinnoull. Mr. A. Gray.
Perth—Wood near the Cairnies. Earl of Cranbrook.

ORDER XXXIII.—RUBIACEÆ.

3. GALIUM.

G. erectum Huds.

Rev. E. S. Marshall records this species as occurring near the Lornty Burn in L. Isla ("J. B.," 1907, page 293).

It also is established by the roadside in the mouth of Gleneagles L. Earn.

G. sylvestre Poll. Var. glabrum Koch.

Ben Laoigh. Druce ("Annals for 1900," page 225).

Var. alpestre Koch.

Ben Lawers. Druce ("Annals for 1904," page 114).

ORDER XXXVI.—COMPOSITÆ.

III. ASTEROIDEÆ.

5. ERIGERON.

E. alpinum L. Dr. Ostenfeld states that the Scottish plant called by this name appears to be not the true alpinum L., but E. borealis (Vierhapper) Simmons. (New Phytologist, April, 1912, page 120).

9. GNAPHALIUM.

G. sylvaticum L. Var. alpestre Koch.

H. Breadalbane.

Ben Lawers. Druce ("Annals for 1904," page 114).

Inula conyza DC. occurred as a casual in Kinnoull for some years from 1900.

13. MATRICARIA.

M. suaveolens Buch. (discoidea DC.) Of this American plant I first found a few specimens in September, 1904, at Perth Harbour. In 1907 it occurred in a band nearly half a mile along the edge of the footpath on the Dundee Road near Kinfauns Station, and has kept its station there. In 1908 was found by Mr. A. Gray in large quantity at the farm of St. Magdalene's. This year Mr. Bates and I saw it at Callander, and no doubt it has occurred in other parts of the country, evidently introduced with American fodder.

17. SENECIO L.

S. suaveolens Lin. was found at Burnmouth Ferry (L. Isla) at an excursion of the P.S.N.S. in 1899.

22. CENTAUREA. L.

C. nigra L. Var. rivularis Brab. is recorded by Professor Trail as occurring in 88 (F. N. Williams); and var. f. radians in 88. ("Annals for 1906," page 33).

Cnicus oleraceus L. (Cirsium oleraceum Scop.) occurred this year (1912) at Limehaugh in Gowrie. There were about sixty or seventy flowering heads growing in an uncultivated marshy meadow, but as the herbage was cut there is little chance of the plant becoming naturalised.

25. SONCHUS.

S. arvensis L. Var. glabrescens Hall recorded by Professor Trail for 88. ("Annals for 1906," page 94).

26. TARAXACUM Juss.

T. officinale Web. Var. udum (Jord) is recorded by Professor Trail. ("Annals for 1096," page 94).

28. HIERACIUM L.

The following records, additional to those given in the "Flora," are given by G. Druce ("Annals for 1904," page 114), teste A. Ley and by Rev. E. S. Marshall (J. B., 1907, page 292).

H. Pilosella L. Var. nigricans Fr. H. Isla, Glenshee (E. S. M.)

H. nigrescens Willd. Var. commutatum Lindeb. H. Isla—Glenshee (E. S. M.)

H. flocculosum Backh. Var. Bakeri. Atholl. Railway between Dalnaspidal and Struan (Druce).

Var. alpestre. Same station (Druce).

H. lasiophyllum Koch. Var. euryodon F. J. Hanb. L. Isla—By the Ericht near Craighall (E. S. M.)

H. caledonicum F. J. Hanb. H. Isla—By the Shee Water (E. S. M.)

H. silvaticum Gouan. Var. micracladium Dahlst. L. Isla—By the Ericht, Craighall. H. Isla—Spittal of Glenshee (E. S. M.)

H. Pictorum Linton. Var. dasythrix Linton. Atholl—Between Dalnaspidal and Struan by the railway (Druce).

H. rivale F. J. Hanb. L. Isla—By the Ericht near Craighall. A peculiar form tending to H. Pictorum Linton in some respects (E. S. M.).

H. sanguineum Ley (H. silvaticum var. sanguineum). Atholl—Dalnaspidal to Struan by the railway (Druce).

H. pellucidum Laestad. Var. pulcherrimum F. J. Hanb. (H. silvaticum var. pulcherrimum). H. Atholl—Dalnaspidal to Struan (Druce).

H. subulatidens Dahlst. (H. murorum var. subulatidens Dahlst.) Atholl—Dalnaspidal to Struan (Druce).

H. gravestellum Dahlst. Var. rhomboides Stenstr. Atholl—Dalnaspidal to Struan (Druce).

H. petrocharis Linton. H. Isla—Lochy Burn, Glenshee (E. S. M.)

H. sagittatum Lindeb. Var. philanthran Dahlst. H. Isla—Glen Beg and Glenshee (E. S. M.)

H. sarcophyllum Stenstr. H. Isla—Glen Beg. The form near eupallidiforme and acrogymnon mentioned in W. R. Linton's "Brit. Hieracia," page 55.

H. dissimile Lindeb. H. Isla—Glenshee and Glen Beg. Not quite typical but like the form in the Killin district.

H. porrigens Almq. H. Isla—Glenshee. Named by W. R. Linton with some little doubt as being perhaps too near another plant which is certainly H. diaphanum Fr. (E. S. M.)

H. diaphanum Fr. Atholl—Dalnaspidal to Struan (Druce).

H. acroleucum Stenstr. Var. dædalolepium Dahlst. H. Isla—Shee Water 1½ miles below Spittal (E. S. M.)

H. pinnatifidum Lönrr. H. Isla—Shee Water (E. S. M.)

H. diaphanoides Lindeb. H. Isla—Shee Water and Lochy Burn (E. S. M.)
Var. apiculatum Linton. H. Isla—Lochy Burn (E. S. M.)

H. sparsifolium Lindeb. Var. placerophyllum Dahlst. L. L. Isla—Rocks by Ericht at Craighall (E. S. M.)

30. LEONTODON.

L. nudicaule Banks and Soland. (L. hirtus L.)

L. Earn.
Roadside near Dupplin (D. Campbell).

L. hirtus L. (L. nudicaule B. and S.) given in the "Flora" as occurring "in a field below the garden at the Earl of Kinnoull's seat near Perth" (Mr. Miller in Smith's "Fl. Brit.," 1800) is a mistake as the plant referred to in "Brit. Fl." is Lepidium Smithii Hook. For an account of Mr. Campbell's discovery, and of the mistake in the "Flora," see "Annals for 1909," page 45.

ORDER XLI.—GENTIANACEÆ.

II. SWERTIEÆ.

2. GENTIANA.

G. amarella L. This plant is either very rare or has been overlooked in Perthshire. The only specimens in the Herbarium of the P.S.N.S. up to the present year were two collected by Mr. James Coates on the Hill of Tulloch about five and twenty years

ago. To these I have added one gathered this year on the opposite side of the Garry, about a mile from Blair Atholl. I saw only the one plant.

ORDER XLIV.—SOLANACEÆ.

1. SOLANUM.

S. rostratum Dumal. occurred as a casual in some quantity at Perth Harbour in 1901 (A. Gray).

ORDER XLV.—OROBANCHACEÆ.

1. LATHRÆA L.

L. squamaria L.

L. Gowrie.

Found by me in Woody Island in May, 1901, growing on the roots of sycamore. Still there.

Orobanche minor L. was found by Mr. R. Dow, parasitic on clover, near Longforgan in August, 1902.

ORDER XLVI.—SCROPHULARIACEÆ.

VI. EUPHRASIEÆ.

7. EUPHRASIA Tourn.

E. officinale L. Var. gracilis, scottica, brevipila and borealis are recorded by Mr. Druce from Sow of Atholl ("Annals for 1904," page 114), and var. foulæensis Townsend from Breadalbane in Professor Trail's additions, etc. ("Annals for 1901," page 180). No doubt these and possibly other varieties occur in other districts, but there is doubt as to the position and distinctness of some of these varieties. Professor Ostenfeld, *e.g.*, says that varieties scottica and foulæensis are merely forms of E. minima, whilst Rev. Mr. Marshall affirms that they are distinct from that and from each other. I do not pretend to give an opinion as to any of the varieties (W. B.)

8. RHINANTHUS L.

Rhinanthus stenophyllus Schur. is recorded by Mr. Druce from near Struan (Atholl), from near Comrie (H. Earn) and from Perth ("Annals for 1904," page 115).

R. borealis Sterneck (Alectorolophus) is given from Ben Lawers, Lochan-na-Larige, and Ben Heasgarnich (all Breadalbane). Named by Sterneck ("Annals for 1901," page 177).

ORDER XLVII.—LABIATÆ.

1. MENTHA L.

M. alopecuroides Hull. In several places by Loch Tay (Breadalbane). Druce ("Annals for 1900," page 225).

4. THYMUS L.

T. Serpyllum L. Var. præcox Opiz. is recorded by Rev. Mr. Marshall from Fortingal (Breadalbane). (J.B., 1909, page 347).

T. glaber Mill (T. Chamædrys Fr.)

H. Breadalbane, Rannoch, Atholl.

Breadalbane—Ben Lawers; E. F. Linton (J.B., 1909, page 347); Druce ("Annals for 1900," page 225).
Rannoch—Tummel; E. F. Linton (T. ovatus Mill). (J.B., 1909, page 384).
Atholl—Near Dalnaspidal. Druce ("Annals for 1904," page 115).

ORDER XLVIII.—LENTIBULARIACEÆ.

2. UTRICULARIA L.

Mr. A. Bennett has kindly gone over in September, 1912, all the specimens in the Herbarium in the light of fresh knowledge derived from Dr. Glück. The following embodies the results of his examination, and supersedes that given in the "Flora":—

U. vulgaris L.

L. Earn, Isla.
H. Isla, Breadalbane, Rannoch, Atholl.

L. Earn—Dupplin Loch; White Moss, Dunning.
Isla—Ardblair Loch; Loch Cluny (peculiar form of deep water).
H. Isla—Loch Moulin; Loch Broom; Peat hags above Clunie, Perthshire.
Breadalbane—Loch-na-chat; Lochan-na-Moine Mhor.
Atholl—Loch Maire; Glen Tilt.

U. neglecta Lehm.

H. Isla.

Two specimens from Cluny Loch. One is certified by Dr. Glück, the other Mr. Bennett says is probably this species.

U. minor L.

L. Earn, Isla.
H. Perth, Isla. Rannoch, Atholl.

L. Earn—Bog, Fendoch, near Monzie.
Isla—Ardblair Loch, Pools on Hatton Hall, Rattray.
H. Perth—Glen Garr.
Isla—Loch of the Lowes.
Rannoch—Loch Tummel.
Atholl—Dalnaspidal.
Of two from Cluny Loch, Mr. Bennett says they are not U. Minor L., but does not otherwise determine them.

U. intermedia Hayne.

L. Isla.

Rattray, old curling pond in Muirton Wood, Sturrock, 14th July, 1882. Of this Mr. Bennett says, "The first Scottish specimen I have seen, all others being U. ochroleuca Harm.

U. ochroleuca Harm.

L. Perth, Isla.
H. Forth, Perth, Isla, Breadalbane, Rannoch, Atholl.

L. Perth—Kinclaven.
Isla—Marsh E. of Alyth; Loch of the Lowes; Ardblair Loch ("not characteristic. I am in some doubt." A. B.)

H. Forth—Loch Lubnaig.
Perth—West end of Loch Freuchie; Loch na Crai.
Isla—Loch Broom.
Breadalbane—Near Loch Shiach; Loch-na-Meall-Cuachlar.
Rannoch—Loch Laidon.
Atholl—Dalnaspidal.
Rev. E. S. M. records this species from moorland above Crianlarich (Fide Dr. Glück). (J. B., 1912, page 132).

ORDER XLIX.—PRIMULACEÆ.

1. PRIMULEÆ.

The hybrid **P. vulgaris** x **veris** was found at an excursion of the P.S.N.S. on the right bank of the Tay above Dunkeld in 1897 (H. Perth).

2. LYSIMACHIA L.

L. thyrsiflora L.

L. Gowrie. Found by the late Mr. M'Gregor, gardener, in a marsh at Limehaugh in 1897. It was certainly not planted in this station, but probably brought down by the river from one or other of the Blairgowrie Lochs, where it is plentiful. I saw it at Limehaugh in the present year.

ORDER LIV.—POLYGONAGEÆ.

1. POLYGONUM.

P. Bistorta.

L. Gowrie. Thoroughly established in great quantity in marshy ground at Barnhill.

2. RUMEX.

R. obtusifolius L. x **sanguineus** L. (nemorosus Schrad.) was found on the bank of the Tay at Barnhill in 1911. Ostenfeld (*New Phytologist*, April, 1912).

R. acutus L.

H. Isla Glenshee, Druce ("Annals for 1900," page 233).

ORDER ARISTOLOCHIACEÆ.

Asarum europæum L. is thoroughly naturalised on the right bank of the Tay about 4 miles below Perth (Gowrie). I first found in the spring of 1900.

ORDER LIX.—CUPULIFERÆ.

1. BETULA Tourn.

B. pubescens x **verrucosa** is recorded by Rev. E. S. Marshall as occurring at Lawers (Breadalbane) and at Blair Atholl (Atholl). (J. B., 1907, page 297).

ORDER LX.—SALICINEÆ.

2. SALIX.

S. Caprea x **repens.** H. Isla, Glenshee at 1250 feet.
Rev. E. S. Marshall (J. B., 1907, page 294).

x **S. coriacea** (Schleich) = S. aurita x nigricans.
H. Isla, Glenshee, E. S. M. (J. B., 1907, page 294).

S. Lapponum x **repens.**
H. Isla, Glenshee, E. S. M. (J. B., 1907, page 294).

S. Myrsinites L.
H. Isla.
Glas Thulachan, Druce ("Annals for 1900," page 225).

S. herbacea x **nigricans.**
H. Isla.
Glenshee (E. S. M., J. B., 1907, page 294).

S. herbacea x **repens.**
H. Isla.
Glenshee between 1200 and 1500 feet (E. S. M., J. B. 1907, page 294).

x **S. Sobrina** B. W. (S. herbacea x Lapponum).
H. Isla.
Lochy Burn, Glenshee (E. S. M., 1907, page 294).

Class II.—MONOCOTYLEDONES.

ORDER LXIII.—ORCHIEÆ.

2. CORALLORHIZA Haller.

C. innata Br.
H. Breadalbane.
A specimen of this rare orchid was found by Mr. T. Midgley near the Falls of Moness in July, 1907.

5. GOODYERA Br.

G. repens Br.
L. Perth, Gowrie.
L. Perth—Near the Cairnies (Earl of Cranbrook, 1910),
Gowrie—Near Longforgan (R. Dow). Wood at Kinfauns (J. Menzies).
The old record, Muirward of Scone was confirmed by its discovery there by Mr. James Menzies in 1901.

8. ORCHIS L.

O. latifolia x **maculata.**
H. Isla.
Glenshee, E. S. M. (J. B., 1908, page 292).

O. maculata x **Habenaria gymnadenia.**
H. Breadalbane.
One specimen at Lawers (Druce, "Annals for 1911," page 173).

O. maculata x **Habenaria bifolia.**
H. Perth.
Moors north of Logiealmond. Mr. A. S. Reid found this hybrid in July, 1897. Mr. R. A. Rolfe, to whom the specimen was sent, was of opinion that Mr. Reid's determination was "correct in all probability."

9. HABENARIA Br.

H. viridis Br. Var. bracteata A. Grey.

H. Isla, Breadalbane.

Druce, "Herr Freyn Agrees" (Annals for 1900, page 225).

ORDER LXVII.—JUNCACEÆ.

1. JUNCUS.

J. tenuis Willd. was found by me on the bank of the Tay at Kinfauns in 1903 ("Annals for 1904," page 59). In the same year it was found by Miss E. Armitage in Glenfalloch. In 1910 it was found at Killin by Mr. D. S. Haggart. In 1911 near Lawers by the members of the Phyto-Geographical Expedition (*New Phytologist*, 1911, page 321), and in the same year in Glen Ogle by Mr. M'Taggart Cowan (*Scottish Bot. Review*, January, 1912, page 53). This year (1912) I found it by the roadside in Glen Ogle extending by the wayside, more or less thickly for three-quarters of a mile (*Scottish Bot. Review*, 1912, October, page 235).

J. castaneus Sm.

H. Isla.

Glas Thulachan (Druce, "Annals for 1900," page 225).

ORDER LXXI.—ALISMACEÆ.

1. ALISMA.

A. natans (L.) Var. graminifolius Wahl. A specimen from King's Myre (L. Perth) has been identified by Mr. Bennett as this variety (J. B., 1900, page 24).

3. POTAMOGETON.

In the spring of 1900 I sent a number of specimens of this genus to Mr. A. Bennett for his determination. These are referred to in the phrase "A. Bennett in litt."

P. polygonifolius Pourr.

Loch Lubnaig H. Forth (A. Bennett in litt.)

Var. ericetorum Syme. Ben Vrackie, H. Isla and Dupplin Loch, L. Perth (A. Bennett in litt.)

P. rufescens Schrad. b. lacustris Marss.

Lunan Burn L. Isla, Trail ("Annals for 1909," page 180).

P. heteropyhyllus Schreb.

H. Forth.

Loch Lubnaig (A. Bennett in litt.)

Var. graminifolius Fr. (sub gramineus) L. Isla. Fingask Loch (A. Bennett in litt.)

P. falcatus Fryer.

L. Isla.

Ardblair Loch A. Bennett, ("Annals for 1905," page 122).

P. decipens Nolte. Var. upsaliensis Tisel is recorded by Trail ("Annals for 1909," page 180) for V.C. 87, but I do not know the original record. Both the species and its variety are considered by Fryer to be lucens x perfoliatus.

P. prælongus Wulfen.

H. Forth.

Loch Lubnaig (A. Bennett in litt).

P. perfoliatus L. Var. macrophyllus Blyt.t L. Isla, River Isla (spec. from Sturrock). A. Bennett ("Annals for 1911," page 181). Var. Richardsonii A. Bennett. L. Perth, Loch Ordie (spec. from Sturrock). A. Bennett ("Annals for 1911," page 181). Var. lanceolatus Blytt H. Isla. Lochs Lawers and Butterstone. Dr. Ostenfeld (*New Phytologist*, April, 1912, page 127).

P. Sturrockii A. Bennett.

L. Isla—Monk Myre (A. Bennett in lit.) New locality, not new division.

ORDER LXXIII.—CYPERACEÆ.

4. SCIRPUS L.

S. Tabernæmontani Gm.

L. Isla.

Fingask Loch. E. S. M. (J. B., 1908, page 292).

S. cæspitosus var. Austriacus A. U. G. (a form somewhat approaching var. germanicus A. U. G.)

Ben Lawers, Dr. Ostenfeld (*New Phytologist*, April, 1912, page 124).

S. fluitans L.

L. Isla.

Marlee Loch, E. S. M. (J. B., 1908, page 292).

7. CAREX L.

C. muricata L.

H. Isla.

Roadside between Guay and Ballinluig.

C. canescens L.

Var. dubia Bailey and var. robustior Blytt. Ben Lawers and Ben Heasgarnich (Breadalbane). Druce ("Annals for 1900," page 231).

C. helvola Blytt.

H. Breadalbane.

Ben Lawers—Found in 1897 by G. C. Druce, and identified by Herr Kükenthal, who considered it as C. approximata Hoppe (lagopina Wahl.) x canescens L. As yet, however, C. lagopina Wahl. has not been found on Ben Lawers. At the same station were gathered next year, 1898, specimens somewhat different, and which were doubtfully considered by Kükenthal as C. canescens x echinata. Specimens gathered in subsequent years were still nearer canescens. For a full account of this perplexing matter see Druce ("Annals for 1909," page 238), and Arthur Bennett (*Scottish Bot. Review*, Janurary, 1912, page 41).

C. Goodenowii Gay. In "Annals for 1906," page 59, Mr. Druce gives the following varieties gathered by him and identified by Herr Kükenthal :—

Var. stenocarpa Küken. H. Atholl—Loch Tummel ; Gowrie—By Tay near Perth ; Breadalbane—Lawers.

Var. chlorostachya (Reicht) Druce. Atholl—Strath Tummel ; Breadalbane—Lawers.

Var. recta Kuken. L. Perth—Methven Bog, and in "Annals for 1911," page 173, adds Crianlarich (Breadalbane) as a station for this, and the preceding var.

Var. tornata (Fries) Küken. Atholl—Loch Tummel.

C. aquatilis Whln.

H. Isla.

Glenshee—A form between type and var. virescens And., E. S. M. (J. B., 1907, page 295).

C. aquatilis x Goodenovii was found by Mr. Marshall in Glenshee. (Same reference).

C. vaginata Tausch.

H. Isla.

Glas Thulachan, Druce ("Annals for 1900," page 233).

C. panicea L. Var. tumidula Laest.

Atholl—Strath Tummel, Druce ("Annals for 1906," page 59).

C. Oederi Retz.

H. Atholl.

Strath Tummel, Druce ("Annals for 1906," page 59).

C. flava L. Var. lepidocarpa Tausch.

Breadalbane—Ben Lawers, Druce, Teste Kükenthal ("Annals for 1900," page 225).

C. flava x Oederi. Breadalbane—Craig Mhor, Glen Lochay, Somerville (C. E. Salmon, J. B., 1906, page 227).

Breadalbane—Ben Heasgarnich, Ben Lawers, Druce (J. B., 1910, page 99).

C. lævigata Sm. An additional station in H. Earn for this sedge, rare in Perthshire, is streamlet near Comrie parallel to the Lednock.

C. obtusangula Ehrh. (inflata Stokes) var. robustior Sonder. Atholl—Near Loch Tummel, Druce (Annals for 1906, page 59, Teste Küken). Var. brunnescens (And.) Druce. Breadalbane—Ben Laoigh (J. B., 1909," page 99), and Corrie Ardron, Druce, ("Annals for 1911, page 174).

C. inflata x vesicaria. L. Forth—Plentiful by the Teith, Druce. ("Annals for 1911," page 174).

ORDER LXXIV.—GRAMINEÆ.

6. AGROSTIS Lin.

A. nigra With. is said to occur in cultivated fields near Lawers, Druce. ("Annals for 1900," page 234).

10. DESCHAMPSIA.

D. cæspitosa Beauv. Var. alpina Gaud. occurs on Glas Thulachan, H. Isla, Druce. ("Annals for 1900," page 234).

D. flexuosa Trin. Var. Voirlichensis Melvill occurs in Ben Heasgarnich, Breadalbane, Druce. ("Annals for 1900," page 234).

25. POA Lin.

P. annua Lin. Var. supina.

H. Isla, Breadalbane.

Glas Thulachan, Ben Lawers and Ben Heasgarnich, Druce. ("Annals for 1900," page 235).

P. trivialis Lin. Var. subalpina Beck.

H. Breadalbane.

Ben Lawers, Ostenfeld. (*New Phytologist*, April, 1912).

26. GLYCERIA R. Br.

G. fluitans R. Br. Var. triticea Fr.

L. Isla.

Ardblair, Stormont and Fingask Lochs, Marshall. (J. B., 1907, page 296).

27. FESTUCA.

F. rubra Lin. Var. barbata Hackel.

H. Breadalbane.

Glas Thulachan, Ben Lawers and Ben Heasgarnich, Druce. ("Annals for 1900," page 235).

Class III.—ACOTYLEDONEÆ.

ORDER LXXV.—FILICES.

11. ASPIDIUM.

A. angulare Willd. (teste Druery) is recorded by Mr. A. Bennett as having been found by Mr. Somerville in mid-Perth. ("Annals for 1906," page 170).

15. PSEUDATHYRIUM.

P. alpestre Newm.

H. Isla.

Glas Thulachan to 2900 feet, Druce. ("Annals for 1900," page 236).

17. OPHIOGLOSSUM Lin.

O. vulgatum. An additional station for this very local plant is Cairnies in L. Perth. Pointed out to me by the Earl of Cranbrook.

Note.—Annals = Annals of Scottish Natural History, J. B. = Journal of Botany.

Tuesday, 2nd April, 1912.

W. BARCLAY, President, in the Chair.

A Special Meeting of the Society was held to hear a lecture on "Extreme Alcoholism," by Dr. David Heron, of the University of London. The following is a summary of the lecture, which was much appreciated, and gave rise to considerable discussion :—

After tracing the history of the special legislation concerning inebriates, Dr. Heron pointed out that the present system of reformatory treatment of inebriates had been in operation since 1899, so that twelve years' experience of its results was available.

In comparing the incidence of alcoholism in men and women, he showed that while a far larger number of men than of women are convicted of drunkenness, among those who have been convicted at least once, a far larger number of women become habitual drunkards.

Dealing with the condition of the inebriate on admission to the Reformatory, he showed from information collected by Dr. Branthwaite, Inspector under the Inebriates Acts for England, that out of 865 female inebriates, only 311, or 36 per cent., could be said to be of average mental capacity, even when sober, and that 64 per cent. were mentally defective, mentally incapable of competition on equal terms with their normal fellows.

He declared that the fundamental problem of the study of inebriety was the origin of this mental defect. He protested against the common assumption that, whenever an unfavourable condition of body or mind was found in conjunction with alcoholism, it must be due to the direct effect of alcohol. The question to be faced was : "Is this appalling amount of mental defect due to the effects of alcohol, or does the alcoholism itself arise from a pre-existing mental defect?" All the evidence went to show that the mental defect among these inebriates to a very large extent preceded the alcoholism, and that there was only a very small increase of mental defect with age or years of drunkenness. He quoted with full approval Dr. Carswell's dictum that inebriety is more an incident in the life of the inebriate than the cause of his mental defect.

Going on to deal with the results of reformatory treatment, so far as the reform of the inebriate was concerned, he showed that the original purpose of the Act was not being fulfilled. He gave particulars of over 1900 histories of inebriates who had undergone reformatory treatment, and although a number of them had only been at liberty for less than a year, only 331 were stated to be doing well after discharge or to have reformed. Even this small number of successful cases, however, would have been still less had all the inebriates been under observation for periods long enough to test adequately the permanence of reform.

In Scotland, where nearly all the inebriates discharged had been followed up, Dr. Dunlop, the Inspector under the Inebriates Acts for Scotland, stated that only 12 out of 181 cases could be said to be doing well. Turning to the experience of the Girgenti Inebriate

Reformatory now closed, but formerly used for inebriates committed from Glasgow Courts, he showed that out of 29 inebriates who had completed their sentences in 1904 (excluding those discharged as unfit for treatment, or transferred to the State Inebriate Reformatory for refractory conduct), only two were doing well after 2½ years of liberty, while the number of convictions against 23, whose histories were followed up, totalled at least 166 after discharge.

Turning to the influence of the reformatories in reducing the amount of public drunkenness, Dr. Heron doubted whether the committal of inebriates in such small numbers, and for such limited periods, could have any appreciable effect. Somewhat extravagant claims had been made in this respect regarding the reformatory at Greenock. The Chief Constable of Greenock, Dr. Dunlop, the Inspector under the Inebriates Acts, and even the Departmental Committee on the Inebriates Acts, had all agreed that the establishment of this reformatory in Greenock had reduced the amount of drunkenness among women by one-third. Now, only females were committed to this reformatory (in fact only 22 male inebriates had been committed to reformatories from the whole of Scotland up to the end of 1909), yet from statistics supplied by the Master of Polwarth, Chairman of the Prison Commission of Scotland, Dr. Heron showed that the number of males proceeded against for drunkenness and disorder in Greenock had fallen at a greater rate than the number of females since the opening of the reformatory, and although it was claimed that Greenock was the only town in Scotland which had a reformatory capable of accommodating all the worst of its female drunkards, in other towns in Scotland, such as Paisley and Leith, with no special reformatory provision, proceedings for drunkenness and disorder had fallen in exactly the same way both among males and females.

Dr. Heron declared, however, that the very high fertility rate among the inebriates was a far more urgent social problem than the actual amount of public disorder they created. He showed that these women had not smaller but larger families than sound stocks; 389 mentally defective inebriates (married, widowed and single) had had at least 1672 children, although a large number of them were still comparatively young. He showed pedigrees to illustrate the inheritance of mental defect, and said that in the bulk of cases mental defect was undoubtedly inherited. A large number of these children would be mentally defective, and would become in turn the parents of other mentally defective children.

What, he asked, is the solution of this grave social problem? For the inebriates themselves there is little hope of reform. Even if you bring them under reformatory treatment at the earliest possible age, you will, for just so long as you keep them segregated, reduce *pro tanto* their fertility; you will not, however, except in a few cases, restore to them a normal measure of self-control. We must deal with the mental defect of which inebriety is only the outward sign, not in the Police Court, not in the Inebriate Reformatory, but in the school for mentally defective children. The only remedy for at least two-thirds of the existing extreme alcoholism is the permanent

seclusion of the mentally defective child from school age. Cut off the supply of the mentally defective at the source, and the problem of extreme alcoholism, to the extent of at least two-thirds, will be solved in a generation.

Thursday, 11th April, 1912.

W. BARCLAY, President, in the Chair.

A number of flint implements found near Perth were exhibited; also a piece of oak from a tree grown on Moncreiffe, bearing the name LIZZIE, which had been cut into the wood of the tree some 25 years ago, and since grown over.

Mr. A. E. J. Carter, of Blairgowrie, submitted a valuable paper entitled, "A Contribution to our Knowledge of Perthshire Diptera." (See *Transactions*, Vol. V., Part IV., page 129).

The following paper was read and illustrated by a series of rock-sections, etc., projected on to the screen by suitable apparatus:—"The Polarisation of Light," by George F. Bates, B.A., B.Sc.

SUMMER SESSION, 1912.

The following excursions were arranged:—

1. Monday, 27th May (Victoria Day). Drive from Comrie to Lochearnhead and round Loch Earn.
2. Saturday, 8th June. Glenfarg by Balvaird Castle and over Hill to Abernethy.
3. Saturday, 29th June. Cargill and along East Bank of River to Stanley.
4. Saturday, 6th July. Sgairneach Mor (3160 feet).
5. Saturday, 13th July (Half-day). Stanley by Cambusmichael to Luncarty.
6. Saturday, 27th July (Half-day). Almondbank, through Methven Wood to Bridge of Dalcrue and back.
7. Saturday, 3rd August. Arbroath and Auchmithie.
8. Monday, 26th August. Drive from Aberfeldy up Glenlyon and back.
9. Saturday, 2nd September. Fungus Excursion to Delvine.

LIST OF DONATIONS TO THE LIBRARY,

SESSION 1911-12.

I.—GIFTS FROM INSTITUTIONS.

Banff, Transactions of the Banffshire Field Club, 1909-10—The Society.
Belfast, Annual Report and Proceedings, Belfast Naturalists' Field Club, Vol. vi., Part 4—The Society.
Brooklyn, Brooklyn Institute of Arts and Letters; The Museum News, 1911—The Museum.
Chicago, Field Museum of Natural History, Annual Report, 1910, Analyses of Stone Meteorites—The Museum.
Cincinnati, Bulletin of the Lloyd Library, Nos. 12, 16, 17, 18.
Bibliographical Contributions, Nos. 1, 2, 3, 4.
Mycological Notes, Nos. 1, 2, 3.
Synopsis—Hexagona, Polystictus.—The Lloyd Library.
Dumfries, The Transactions and Journal of Proceedings of the Dumfriesshire and Galloway Natural History and Antiquarian Society, 1909-10—The Society.
Dundee, Report of Free Library Committee, 1910—The Librarian.
Edinburgh, Proceedings of the Society of Antiquaries of Scotland, vol. xliv.—The Society.
Royal Scottish Arboricultural Society, Vol. xxiv., Part 2; xxv.; xxvi. part 1—The Society.
Transactions of the Royal Society of Edinburgh, Vol. xlvii., Parts 3, 4.
Proceedings of the Royal Society of Edinburgh, Vol. xxxi., Parts 3, 4, 5.—The Royal Society.
Transactions and Proceedings of the Botanical Society of Edinburgh, Vol. xxiv., Parts 2-3—The Society.
Transactions of the Edinburgh Field Naturalists and Microscopical Society, Vol. vi., Part 4—The Society.
Twenty-ninth Annual Report of the Fishery Board of Scotland, 1910; Salmon Fisheries, Nos. 1, 2, 3.—The Board.
Proceedings of the Royal Physical Society, Vol. xviii., No. 3.
Essex Naturalist, Vol. xvi., Parts 7-9—The Field Club.
Hull, Scientific and Field Naturalists' Club, Vol. iv., Parts 2-3—The Club.
Museum Publications, Nos. 78, 81, 82—The Museum.
London, Catalogue of African Freshwater Fishes, Vol. ii.
Handbook of the Tsetse Flies.
Catalogue of Moths, Vol. x., Text and Plates.
Flora of Jamaica, Vol. i.
Monograph of British Lichens, Part 2—The British Museum.
Board of Agriculture and Fisheries Leaflets, Nos. 137, 146, 179, 233, 240 to 255, 257, 258—The Board.
Report of the British Association, Sheffield Meeting, 1910—The British Association.
Quarterly Journal of the Geological Society, Vol. lxvii.; List of the Geological Society, 1910-11; Geological Literature for the year ending March, 1910—The Geological Society.

Proceedings of the South London Entomological and Natural History Society, 1910-11—The Society.

Maidstone, The Preservation of Treasure Trove and other Relics—South Eastern Union of Scientific Societies.

Manchester, Report for the year 1910-11.

The Manchester Museum Handbooks, Publications 70, 71—The Museum.

Mexico, Boletin del Instituto Geologico de Mexico, Nos. 27, 28.

Parergones del Instituto Geologico de Mexico, Tomo III., Nos. 7, 8.

Millport, Marine Biological Association of the West of Scotland, Annual Report, 1910—The Association.

Montevidio, Anales del Museo Nacional de Montevideo, Tomo I., Ent. 3; Tomo IV., Ent. 3—The Museum.

Newcastle, Report of the Council of the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne, 1911—The Society.

New York, Bulletin of the American Museum of Natural History, Vol. xxix.; Report for the year 1910—The Museum.

Norwich, Report of the Castle Museum Committee, 1910; Proceedings of the Norwich Museum Association, 1909-10—The Museum.

Northants, Journal of the Northants Natural History Society and Field Club, Vol. xv., Nos. 21-24—The Society.

Nottingham, 57th and 58th Annual Reports and Transactions of the Nottingham Naturalists' Society—The Society.

Ottawa, Summary Report of the Geological Survey, 1910; Memoirs Nos. 4, 10, 11; Map No. 18A—The Geological Survey.

Perth, Health Report for the City of Perth, 1910—The Medical Officer.

20th Annual Report by the County and Chief District Sanitary Inspector, 1910—The Inspector.

Sandeman Public Library, 13th Annual Report; Geographical Journal, 1893, 1894, 1908—The Librarian.

Annual Report of the Perthshire Natural History Museum, 1910-11—The Curator.

Peterhead, Transactions of the Buchan Field Club, 1910-11—The Club.

Philadelphia, Proceedings of the Academy of Natural Science of Philadelphia, Vol. lxii.—The Academy.

Textile Industries of Philadelphia—The Commercial Museum.

Pittsburg, 14th Annual Report of the Directors, 1911—The Carnegie Museum.

Queensland, The Queensland Naturalist, Vol. i., Nos. 1, 8—The Society.

Sheffield, Proceedings of the Sheffield Naturalists' Club, Vol. i., 1910—The Club.

Stirling, Natural History and Archæological Society, Transactions, 1909-10—The Society.

Sydney, Records of the Australian Museum, Vol. ix., No. 2; Scientific Reports of the Trawling Expedition of H.M.C.S. "Thetis," Parts 15, 16—The Museum.

Torquay, Journal of the Natural History Society, Vol. i., No. 3—The Society.

Washington, Annual Report of the Smithsonian Institution, 1909—The Institution.

Bulletins 84, 89, 92; Circulars 94, 108; Technical Series, No. 21—U.S. Department of Agriculture.

Professional Papers, 70, 72, 73, 75; Bulletins, 431, 436, 438, 439, 441, 443, 445 to 447, 449 to 465, 467 to 469, 472 to 483, 486 to 490, 495; Water Supply Papers, 256 to 258, 261, 263, 265 to 270, 272 to 277; Mineral Resources, 1909, Part 1, 2; Monograph 52—U.S. Geological Survey.

York, Yorkshire Philosophical Society, Annual Report, 1910—The Society.

II.—Gifts from Persons.

Anderson, J. L., Wild Flowers, month by month.
Barclay, W., Eleanor Ormerod, LL.D. ; Handbook of the Old Northern Runic Movements of Scandinavia and England.
Campbell, Col.. Scottish Geographical Magazine, 1911.
Coates, H., British Rainfall, 1910; Symons's Meteorological Magazine, 1911.
Ellison, S. T., The Entomologist, 1911.
Photography, 1911.
Humble and Evans, The Misses, Illustrations of the British Flora, 7th edition. Crustacea and Spiders.
Kidston, Dr. Robert, Nature, Vols. 79, 82, 83, 84; Botanisches Centralblatt, Band 113 to 118.
Leslie, James, A Modern Bee Farm.
Meek, Prof. A., Report on the Scientific Investigations, Northumberland Sea Fisheries Committee, 1910-11.
Munro, J. B., The Evolution of Plants; Evolution.
Murray, The Hon. Gladys Graham, Scribblings of a Hedgerow Naturalist; Nature, 1910, incomplete.
Smith, Dr. W. G., Types of British Vegetation.

RESULT OF CHILDREN'S ESSAY COMPETITION, 1911.

FIRST DIVISION, Age 14 years and over.

1st Prize and Medal—Donald Butter, Perth Academy.
Certificates—Annie Kinnear, Scone Public School.
,, —Tina Gow, Auchtergaven Public School.
,, —Donald M'Laren, Blairgowrie.
(Special Prize)—Daisy M'Intosh, Scone Public School.

SECOND DIVISION, Age 13 years.

1st Prize— { Francis Hutchison. / Flora M'Gregor, Kinnoull Public School.
2nd ,, —Peter M'Glashan, Auchtergaven Public School.
3rd ,, —James Christie, Scone Public School.
4rh ,, { Alexander Donaldson, Scone Public School. / Nellie Fitzpatrick, Auchtergaven Public School.
5th ,, —Effie Small, Scone Public School.
Certificates—Charles Gibson, Auchtergaven Public School.
,, —John M'Caul, Auchtergaven Public School.
,, —Maggie K. Rae, Scone Public School.
,, —James Watt Thomson, Auchtergaven Public School.
,, —John M'Intosh, Auchtergaven.
,, —Elizabeth Taylor, Scone Public School.
,, —James Chalmers, Auchtergaven.
(Special Prize)—Joanna Macfarlane, Scone Public School.

THIRD DIVISION, Aged 12 years.

1st Prize—Jeanie Hendry, Kinnoull Public School.
2nd ,, —Harvey M'Leish, Auchtergaven Public School.
3rd ,, { Cissie Cameron, Auchtergaven. / Elsie Douglas, Kinnoull Public School.
4th ,, { Tom Hilson, Scone Public School. / Netta Macfarlane, Auchtergaven Public School.
Certificates—Annabella Duncan, Auchtergaven.
,, —Madge Gow, Scone Public School.
,, —Jessie Douglas, Auchtergaven.
,, —Emma Mason, Scone Public School.
,, —Effie Duff, Auchtergaven.

FOURTH DIVISION, Age 11 years.

1st Prize—Fanny E. B. Gaedecke, Kinnoull Public School.
2nd ,, —Willie Robertson, Kinnoull Public School.
Certificates—Cecil M'Adam, Cherrybank Public School.
,, —James W. R. Kidd, Cherrybank Public School.
(Special Prize)—George Hammet, Kinnaird Public School.

ROLL OF MEMBERSHIP, AS AT 31ST OCTOBER, 1912.

*Life Members.

HONORARY MEMBER.

Geikie, James, LL.D., F.R.S., etc., Professor of Geology, Edinburgh University, ...	2nd February, 1882

CORRESPONDING MEMBERS.

Brebner, James, M.A., Scotswood Terrace, Dundee, ...	3rd December, 1885
Bruce, W. S., LL.D., Surgeons' Hall, Edinburgh, ..	14th March, 1907
Calman, W. T., D.Sc., British Museum, Cromwell Road, London, ...	11th April, 1895
Geddes, Patrick, F.R.S.E., University College, Dundee,	3rd February, 1881
Macnair, P., The Museum, Kelvingrove, Glasgow, ...	13th November, 1890
M'Gregor, T. M., Australia, ...	5th March, 1885
Mill, Dr. H. R., F.R.S.E., 62 Camden Square, London, N.W., ...	7th April, 1892
Ramsay, E. P., F.L S., Curator of Australian Museum, Sidney, ...	7th February, 1884
Smith, Rev. Frederick, The Parsonage, South Queensferry, ...	13th November, 1890
Thompson, Professor D'Arcy, M.A., C.B., University College, Dundee, ...	10th November, 1892
Trail, J. W. H., M.A., M.D., F.L.S., High Street, Old Aberdeen, ...	8th February, 1872
White, Mrs. Buchanan, Manitoba, ...	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
Laidlaw, Mr., Gamekeeper, Castle Menzies, Glenlyon,	7th February, 1884
Milne, Captain W., Tayport, ...	14th March, 1901
M'Intosh, Charles, Inver, Dunkeld, ...	... 1st May, 1873
Robertson, Captain T., *S.S. Scotia*, ...	14th March, 1901

ORDINARY MEMBERS.

Alexander, John, M.A., Sharp's Institution, ...	14th December, 1893
Allan, Thomas, Stanley, ...	13th April, 1899
Anderson, Andrew, c/o P. D. Malloch, New Scott Street,	9th December, 1897
Anderson, John L., Nenthorn, Gray Street, ...	12th April, 1906
Anderson, Thomas, M.A., B.Sc., Armstrong College, Newcastle-on-Tyne, ...	10th December, 1908

*Barbour, George F., D.Phil., Bonskeid, Pitlochry, ...	11th January, 1912
Barclay, Miss E. A., Joppa, Glasgow Road, ...	13th December, 1906
Barclay, William, Friar Street, Craigie, ...	1st February, 1883
Barclay, William A., Bank House, Tay Street, ...	9th December, 1897
Barlas, J., 231 High Street, ...	13th February, 1908
Bates, G. F., B.A., B.Sc., Westoe, Craigie Road, ...	13th December, 1900
Bates, R. Martin, School Board Office, Tay Street, ...	13th April, 1911
Beattie, S., M.B., Craigvar, Pitlochry, ...	9th December, 1897
*Bedford, Duchess of, Woburn, Beds., ...	12th December, 1907
*Bell, A. K., Barclay Hills, near Perth, ...	11th April, 1912
*Bell, Mrs. A. K., Barclay Hills, near Perth, ...	11th April, 1912
Bell, Mrs., Priestfield, Glasgow Road, ...	13th December, 1900
Bell, R. D., Dumbarron, Strathmiglo, ...	11th January, 1912
Blair, Robert, New Scott Street, ...	11th December, 1902
Bouick, James B., Gowan Bank, Abbot Street, ...	14th February, 1905
Brady, George, 8 Comely Bank, ...	11th April, 1895
Brand, John, Upland, Kinnoull, ...	10th December, 1891
Brand, Robert, 10 Barossa Place, ...	... 7th April, 1892
Breadalbane, Marquis of, K.G., Taymouth Castle, Aberfeldy, ...	7th April, 1892
Brough, Miss Elizabeth, Wilson Street, Craigie, ...	13th March, 1902
Brough, Robert, Ochilview, Bridge of Earn, ..	9th December, 1909
Brown, Alfred W., Seedsman, High Street, ...	14th December, 1903
Brown, J. A. Harvie, F.Z.S., Dunipace House, Larbert,	10th December, 1891
Brown, Peter M. W., 28 Nasymth Place, Kelty, Fife-shire, ...	10th December, 1908
Burnett, C., Comely Bank, ...	22nd February, 1894
Butter, Thomas, 8 Marshall Place, ...	8th March, 1894
Caird, Miss K.C., M.A., Perth Academy, ...	13th December, 1906
Calderwood, James, 18 Pitcullen Crescent, ...	12th April, 1906
Cameron, David, Commercial Street, Bridgend, ...	14th December, 1884
Cameron, J. C., 44 Tay Street, ...	11th April, 1912
Campbell, Archibald, Davaar, Scone, ...	13th December, 1900
Campbell, Col., Westwood, Cupar-Fife, ...	18th January, 1884
Campbell, D., Clyde Place, Needless Road, ...	7th April, 1904
Campbell, Edward, Lignwood, New Scone, ...	11th April, 1889
Campbell, P. W., Muirton Bank, ...	9th March, 1889
Campbell, John, Tregaron, Glasgow Road, ...	12th January, 1911
Carter, A. E. J., Royal Bank House, Blairgowrie, ...	10th December, 1908
Chapman, Samuel, King James Place, ...	16th January, 1896
Christie, James, 8 Paul Street, ...	11th April, 1895
Chrystal, George, Bridgend House, ...	2nd December, 1880
Clacher, James, 9 George Crescent, ...	3rd April, 1879
Coates, Henry, F.R.S.E., Corarder, Glasgow Road, ..	9th May, 1875
Coates, James, Corarder, Glasgow Road, ...	9th May, 1875
Coates, Miss, Corarder, Glasgow Road, ...	3rd January, 1878
Coats, Mrs. W. H., Battleby, Redgorton, ...	14th December, 1889
*Colquhoun, Col., Clathick, Crieff, ...	5th December, 1878
Cox, W. H., Snaigow, Murthly, ...	8th December, 1898
Craigie, James, Sandeman Public Library, ...	12th March, 1903
Cranbrook, The Right Hon. Earl of	8th December, 1910
Crawford, Rev. T., B.D., Orchill, Braco, ...	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, Rosemount Place, ... 16th January, 1896
Dewar, Sir John A., Bart., M.P., Dupplin Castle, ... 7th February, 1878
Dewar, John, Dupplin Castle, ... 9th December, 1897
Dickson, Miss, Greenbank, ... 2nd February, 1882
Dixon, J. H., Dundarroch, Pitlochry, ... 8th February, 1912
Dodson, Charles, Auchter Villa, Clyde Place, ... 12th April, 1900
Donald, D., 30 Shields' Buildings, Dunkeld Road, ... 11th December, 1902
Douglas, Henry, City Chambers, ... 11th January, 1900
Dow, Robert, Oakbank Road, Cherrybank, ... 4th May, 1882
Drummond, The Hon. Mrs., Megginch Castle, ... 13th March, 1902
*Drummond, Miss Sybil, 15 Grosvenor Crescent, London, 9th January, 1902
Drummond, Col. Arthur N. H. Hay, Cromlix, Dunblane, 13th April, 1905
Durran, George, M.A., Perth Academy, ... 8th March, 1906

Ellison, Samuel T., Garth, Barnhill, ... 7th March, 1878
Ellison, William, Cragville, Barnhill, ... 3rd March, 1881
Evans, Miss Z. E., 32 Balhousie Street, ... 10th December, 1896
Ewing, Robert, Queen Street, Craigie, ... 8th December, 1892

Falconer, William D. M., The Alders, Rattray, Blairgowrie 9th March, 1889
Farquhar, Rev. Dean, Balhousie Bank ... ... 8th December, 1887
Fehrenbach, G. W., Watchmaker, Dunkeld, ... 7th February, 1884
Fenwick, F. Pitcullen Terrace, ... 8th December, 1898
Fenwick, J. E., 5 Comely Bank, ... 14th December, 1911
Ferguson, Archibald M., Pitcullen Terrace, ... 13th December, 1900
Ferguson, R. C., Ferndale, Barnhill, ... 11th April, 1889
Ferrier, D., 1 Edin Terrace, Edinburgh Road, ... 10th December, 1891
Fordyce, J., 1 Moredun Terrace, Craigie, ... 14th December, 1911
Forgan, James, Belhelvie Terrace, ... 8th February, 1912
Fothringham, W. Steuart, Murthly Castle, ... 13th April, 1905
Frew, Thomas, King James Place, Perth, ... 16th January, 1896

Gall, Miss, 8 Glover Street, ... 14th November, 1895
Gall, W. S., Duneaton, Glasgow Road, ... 16th December, 1903
Gellatly, James, Hillyland, ... 7th April, 1904
Gillan, Thomas, 8 Scott Street, ... 8th April, 1909
Gloag, Robert, 8 Hospital Street, ... 13th December, 1894
Graham, John T., M.D., Dunalastair, ... 10th December, 1891
Grant, Miss, Melville Street, ... 12th April, 1906
Gray, George, Bowerswell, ... 2nd February, 1882

Halley, Robert, Barossa Place, ... 16th January, 1896
Hamilton, R., Gleniffer Cottage, Dunkeld Road, ... 12th April, 1906
*Hay, Lieut.-Col. Drummond, Westwood, Kinfauns, ... 14th January, 1897
Hay, Miss Drummond, Seggieden, ... 14th December, 1899
Hay, H. M. Drummond, Finlay, Muir & Co., Colombo, Ceylon, ... 12th December, 1907
Henderson, H. Dalton, The Orchard, Glasgow Road, 14th January, 1904
Hodge, A., 10 Balhousie Street, ... 11th April, 1889

Howie, Miss, 8 Moredun Terrace, ...	7th April, 1904
Humble, Miss Eleanor W., 32 Balhousie Street, ...	10th December, 1896
Hunt, Leigh, M.B., C.M., King Street, ...	2nd February, 1882
Hunter, Robert, St. John's, Glasgow Road, ...	9th December, 1909
Hutton, James, Secretary's Office, Inland Revenue, Somerset House, W.C., ...	12th January, 1911
Jack, Ernest, C.A., Poplar Bank, Scone, ...	11th January, 1912
Jameson, Melville, Brompton Terrace, ...	7th January, 1869
Jamieson, Miss, Ardbeg, Glasgow Road, ...	3rd January, 1878
Jardine, John, Parkhead, Burghmulr, ...	9th February, 1905
Jarvie, John Stirling, Balhousie Terrace, ...	12th 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 Maggie, 20 King Street, ...	12th April, 1900
Kennedy, James, Glasgow, ...	... 1st May, 1884
Kidston, R., F.R.S., F.G.S., LL.D., 12 Clarendon Place, Stirling, ...	4th December, 1884
King, Mrs., 2 Blackfriars Street, ...	11th April, 1901
Kinloch, R., W.S., Clydesdale Bank, ...	18th December, 1890
Kinnaird, James, Birnam, ...	12th January, 1899
Kinnear, James, 7 Bellavista Terrace, ...	... 8th April, 1909
Kippen, R. M., Solicitor, Tay Street, ...	2nd March, 1882
Knight, Rev. G. A. F., M.A., F.R.S.E., 9 St. Leonard's Bank, ...	12th December, 1901
Knight, Mrs. 9 St. Leonard's Bank, ...	7th April, 1904
Kyd, Miss L., Barossa Place, ...	10th March, 1904
Lambie, John, M.A., B.Sc., Elibank, Glasgow Road,	9th February, 1911
Landreth, Rev, P. R., Fairmount Villas, ...	12th January, 1899
Lawson, Robert, 4 Moncreiffe Terrace, ...	11th April, 1895
Leckie, James, M.A., Craggan House, Callander, ...	11th January, 1912
Leslie, Hugh, Strone, Brompton Terrace, ...	12th April, 1900
Lowe, Miss, Tay Street, ...	12th April, 1902
Lowson, D. S., M.A., The Pines, Balhousie, ...	1st April, 1886
Lyell, John, M.D., 15 Marshall Place, ...	13th December, 1900
Malloch, Gilbert, Almond Villa, Glasgow Road, ...	16th January, 1896
Malloch, Joseph N., Stormont Cottage, Bridgend, ...	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, D., Tay Street, ...	7th January, 1869
Marshall, James M'Lean, Bleaton Hallet, Blairgowrie,	10th March, 1910
Marshall, Thomas, The Store, Stanley, ...	1st October, 1868
Marshall, T. B., 52 Balhousie Street, ...	14th December, 1911
Matthews, James R., Duncrub, Dunning, ...	13th April, 1911
Meldrum, R. H., Schoolhouse, Tibbermore, ...	1st May, 1884
Menzies, James, 2 Keir Villa, Strathmore Street, ...	12th March, 1896
Mercer, Major, Huntingtower, ...	8th December, 1904
Mercer, W., 95 High Street, ...	8th January, 1899
Miles, Miss M. L., L.L.A., 2 Laurel Bank, ...	14th December, 1899
Millais, Sir J., Bart., 38 Lower Belgrave Street, Eaton Square, London, ...	13th March, 1902

Millar, A. D., H.M.I.S., Maristuen, Crieff, ...	11th January, 1912
Miller, Alexander, Osborne Terrace, Craigie, ...	14th November, 1895
Miller, George A., W.S., Knowehead, ...	2nd December, 1886
Miller, J. G., Mayfield, ...	23rd March, 1893
Milln, D. N., Ingleside, Wilson Street, ...	16th January, 1896
Milln, Charles, Ingleside, Wilson Street, ...	13th April, 1911
Mitchell, R. M'Gregor, 42 George Street, ...	14th December, 1911
Moncrieff, John, Summerbank, ...	8th March, 1906
Moncrieff, Mrs., Summerbank, ...	8th March, 1906
Moncrieff, Thomas, Springland, ...	5th March, 1885
Moray, The Right Hon. The Earl of, Kinfauns Castle,	8th December, 1904
Morison, James, Hasland, Kinnoull, ...	7th February, 1884
Morison, Miss, Hasland, Kinnoull, ...	13th February, 1890
Morrison, W., Gowrie Street, Bridgend, ...	16th January, 1896
Muirhead, George, Muirhall Terrace, ...	14th November, 1895
Munro, James W., B.Sc., Aberdeen University, ...	13th April, 1911
Murray, David, 3 Craigie Crescent, ...	11th December, 1902
Murray, D. Scott, Laurel Bank, ...	11th April, 1901
Murray, Geo. J., Yewbank, Monifield Road, Broughty Ferry, ...	10th February, 1910
Murray, The Hon. Miss Gladys Graham, Stenton, Dunkeld,	8th January, 1899

M'Ainsh, Rev. John, B.D., U.F. Manse, Strathbraan, Dunkeld, ...	12th January, 1899
M'Arthur, John, Gray Street, ...	7th February, 1884
M'Callum, W. B., 4 Brunswick Terrace, ...	14th January, 1909
M'Cash, W. F. Cornhill House, Burghmuir Road, ..	11th March, 1909
M'Cash, Mrs. W. F., Cornhill House, Burghmuir Road,	11th March, 1909
M'Donald, Miss Barbara, Castleview, Glasgow Road,	11th February, 1897
M'Dougall, Miss Jessie E., Eastertyre, Ballinluig, ...	13th December, 1906
M'Ewen, James, Craigie Bank, ...	7th April, 1892
M'Ewen, Colonel, Craigie Bank, ...	9th December, 1909
M'Farlane, Miss, 2 King's Place, ...	13th December, 1900
Macgregor, Atholl, Ardchoile, ...	7th December, 1882
MacGregor, Lady Helen, of Macgregor, Edenchip, Balquhidder, ...	8th December, 1904
MacGregor, Miss Murray, Barossa Place, ...	9th March, 1899
M'Gregor, Alexander, 71 High Street, ...	12th April, 1906
M'Gregor, John, Rosaire, 24 Strathmore Street, ...	4th March, 1886
M'Kay, A. T., 16 Barossa Place, ...	9th April, 1903
*M'Kendrick, Andrew, Livadia, Greece, ...	9th April, 1896
M'Kenzie, Alexander, Kinnoull Street, ...	14th April, 1898
Mackenzie, George A., Solicitor, George Street, ...	12th April, 1870
M'Lagan, John, Maxweltown, Kinnoull, ...	11th January, 1912
M'Lagan, Miss B. C., 8 Moredun Square, Craigie, ...	11th April, 1907
M'Laren, Thomas, Redcliffe, Barnhill, ...	11th April, 1912
M'Laren, William, Architect, Balhousie, ...	7th February, 1878
M'Leod, Miss, Rose Terrace, ...	10th February, 1898
M'Leod, Nurse, Leith's Buildings, Dunkeld Road, ...	14th April, 1910
M'Nab, Duncan, ex-Lord Provost, High Street, ..	12th April, 1906
M'Nab, Miss, L.L.A., Fitzroy Terrace, ...	14th November, 1895
M'Nicoll, Robert, County Buildings, Tay Street, ...	12th December, 1907

Nairne, William, Cherrybank Public School, ... 9th April, 1903
Newlands, Miss Helen, Tayside, ... 10th January, 1901
Newlands, Rev. T. S., B.D., Craigend Manse, ... 9th April, 1908
Newlands, Mrs., Craigend Manse, ... 9th April, 1908
Nicol, A., Paradise Place, ... 12th November, 1895
Nicol, Edward, Paradise Place, ... 10th December, 1891
Noad, W. Cranswick, Charlesfield, Gask, Auchterarder, 14th December, 1905

Pagan, Miss M. A., Dallerie, Crieff, ... 14th April, 1898
Paterson, William, Domus, Cherrybank, ... 14th December, 1899
Peddie, D., Ironmonger, Market Street, ... 1st May, 1873
Pinkerton, Miss Anne, Kincarrathie Crescent, ... 9th December, 1897
Plenderleith, Miss Wilna, 10 Rose Terrace, ... 14th December, 1905
Plumb, The Right Rev. Bishop, M.A., St. Ninian's House, 14th February, 1907
Proudfoot, James, Balhousie Street, ... 5th March, 1885
Pullar, A. E., Durn, ... 23rd November, 1883
Pullar, Mrs. A. E., Durn, ... 7th April, 1892
Pullar, Herbert S., Dunbarney Cottage, ... 5th May, 1887
Pullar, Mrs. H. S., Dunbarney Cottage, ... 11th February, 1904
Pullar, Laurence, Dunbarney House, ... 11th February, 1904
Pullar, Mrs. L., Dunbarney House, ... 11th February, 1904
Pullar, Rufus D., F.C.S., Brahan, ... 6th May, 1875
Pullar, Mrs. R. D., Brahan, ... 3rd March, 1887
Pullar, R. Morison, Brahan, ... 8th April, 1909
Pullar, Miss Mary, Marshall Place, ... 8th February, 1912

Raffan, Miss Eliza, L.L.A., Randwick, Buckie, ... 13th December, 1900
Reid, Arthur S., M.A., F.G.S., &c., Trinity College, Glenalmond, ... 10th December, 1891
Richardson, James, 27 High Street, Blairgowrie, ... 11th April, 1901
Richardson, Ralph, F.R.S.E., Ballendrick, Bridge of Earn, 8th December, 1904
Ritchie, J., LL.B., Solicitor, Rosemount Place, ... 12th January, 1893
Ritchie, Mrs., Rosemount Place, ... 10th January, 1895
Robb, Alexander, Tobacconist, High Street, ... 8th April, 1909
Robertson, Charles, 95 High Street, ... 14th April, 1878
Robertson, Dr. Robert, Errol, ... 2nd May, 1867
Robertson, Miss Isabella, 2 Blackfriars Street, ... 11th April, 1901
Robertson, James, 4 Mansfield Place, ... 14th December, 1893
Robertson, Robert Hay, 22 High Street, ... 2nd March, 1882
Robertson, William, 16 King Street, ... 12th April, 1906
Rodger, Alex. M., Museum, Tay Street, ... 14th February, 1895
Ruggles Brise, Lady Dorothea, Blair Castle, Blair Atholl, 10th December, 1903
Rutherford, W., Pitcullen Terrace, ... 5th March, 1885

Scott, Frank, Jeannie Bank, Old Scone, ... 8th Febrnary, 1912
Scott, Miss Ina, Dunnottar, Crieff Road, ... 8th March, 1900
Scott, William M., 8 Hill Street, Coupar-Angus, ... 12th December, 1901
Shepherd, Miss M., Queen Street, ... 13th December, 1900
*Sievewright, Sir James, K.C.M.G., Tulliallan Castle, Clackmannan, ... 13th December, 1900
Smail, William, Norma Villa, Wilson Street, Craigie, 8th February, 1906
Smart, David, Rockbank, Kinnoull, ... 2nd May, 1878
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, Rev. Harry, M.A., Tibbermore Manse, ...	13th February, 1896
Smythe, Col. D. M., Methven Castle, ...	13th April, 1882
Smyth, J. Ross, Laggan, Clyde Place, ...	9th March, 1905
Somerville, Duncan M. Y., M.A., D.Sc., St. Andrews University, ...	9th February, 1905
*Somerville, Rev. J. E., B.D.—summer address, Castellar, Crieff; winter address, Villa Jeanne, Mentone,	10th December, 1896
Speedie, Alex., 48 Tay Street, ...	8th December, 1904
Steel, J. Sidney, 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, Robert, St. John Street, ...	12th January, 1899
Stewart, J., Kimberley, Edinburgh Road, ...	8th December, 1898
Stewart, Miss M. N., Caledonian Road Public School,	14th February, 1907
Stewart, Mrs., Lignwood, Scone, ...	20th January, 1910
Stirling, Robert, M.D., F.R.C.S.E., 4 Atholl Place, ...	13th February, 1890
Strachan, Rev. J. M., B.D., Kilspindie Manse, ...	10th December, 1903
Sturrock, Dr. J. P., H.M. Prison, ...	9th December, 1909
Stuart, Dr. C. C., Woodside, Balhousie, ...	14th April, 1910
Sutherland, Donald, M.A., Schoolhouse, Scone, ...	11th December, 1902
Syme, Bruce, Muirton Bank, ...	10th January, 1901
Taylor, Dayid, 40 Balhousie Street, ...	9th February, 1893
Thomas, John, 25 Barossa Place, ...	3rd November, 1870
Thomson, Andrew, M.A., D.Sc., F.R.S.E., Ardenlea, Pitcullen, ...	13th November, 1890
Thomson, Mrs., Ardenlea, Pitcullen, ...	8th January, 1903
Thomson, R. Gloag, Wellbank, Kinnoull, ...	9th January, 1902
Trotter, Alexander, M.B., C.M., Tay Street, ...	14th January, 1904
Turpie, James, Depute Town Clerk, City Chambers, ...	8th February, 1900
Tullibardine, The Right Hon. Marquis of, M.V.O., D.S.O., M.P., Dunkeld House, ...	13th April, 1911
Urquhart, A. R., M.D., F.R.C.P.E., Murray House,	14th May, 1882
Walker, Dugald, Balhousie Public School, ...	13th February, 1902
Watson, Robert R. B., 11 Pitcullen Crescent, ...	10th December, 1903
Watson, W., Plumber, Caledonian Road, ...	10th January, 1895
Watt, John, M.A., Perth Academy, ...	7th April, 1904
White, J. Martin, Balruddery, near Dundee, ...	2nd March, 1882
White, Miss, Tay Street, ...	14th December, 1912
Whyte, A. F., M.P., House of Commons, London, ...	14th April, 1910
Wilson, D. J., Atholl Place, ...	13th December, 1894
Wilson, Mrs. D. J., Atholl Place, ...	9th March, 1899
Winter, James, Rosemount Place, ...	12th January, 1893
Winton, William, 12 Glover Street, ...	11th February, 1898
Wood, John, 52 Tay Street, ...	11th April, 1889
Wright, Robert, Balhousie Street, ...	4th March, 1886
Young, Rev. D. G., B.D., Moneydie, ...	12th December, 1901
Young, George C., M.A., Caledonian Road Public School,	10th December, 1903

Young, George P. K., Tay Street, ...	2nd May, 1872
Young, T. B., 8 Murray Street, ...	14th April, 1898
Young, W. Cochrane, Solicitor, St. John Street, ...	7th December, 1882

ASSOCIATE MEMBERS.

Innes, David, 20 Strathmore Street, ...	10th November, 1904
Rattray, J. P., 7 Raeburn Place, Craigie, ...	14th April, 1898
Simpson, W. L., Inchaffray Street, ...	10th November, 1904
Wylie, William, 17 Commercial Street, Bridgend, ...	12th March, 1896
Dow, Peter, 1 Viewfield Place, ...	8th February, 1912

BALANCE-SHEET OF THE PERTHSHIRE SOCIETY OF NATURAL SCIENCE for the Year ended 29th February, 1912.

INCOME.

Balance in Savings Bank, March, 1911,	£26	3	3		
Balance in Treasurer's hands, ...	2	6	4		
				£28	9 7
Subscriptions and Entrance Fees, ...	£80	9	6		
Life Member Subscriptions, ...	5	5	0		
Sale of Publications, &c., ...	1	8	8		
Interest on Savings Bank Account, ...	0	16	4	87	19 6
Year's Receipts, ...	£87	19	6		
				£116	9 1

EXPENDITURE.

Heating, Lighting, and Use of Rooms, ...	£20	0	0		
Fire Insurance, ...	0	16	3		
Printing, Stationery, &c., ...	26	8	4		
Books, Magazines, and Binding, ...	21	5	4		
Janitor, ...	5	4	0		
Subscriptions to other Societies, ...	1	8	6		
Repairs and Furnishings, ...	2	2	6		
Postages and Petty Outlays, ...	13	13	7		
Year's Payments, ...	£90	18	6		
Balance in Savings Bank, March, 1912, ... £25 15 1					
Less due to Treasurer, ... 0 4 6					
				25	10 7
				£116	9 1

PERTH, 14th March, 1912.—Examined, compared with the vouchers, and found correct.

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

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1911.

MONTH.	BARO-MET'R.	AIR TEMPERATURE.									HYGROMETER.			RAIN.					WIND DIRECTION.									REMARKS.
		Mean of				Absolute Maximum and Minimum.					Mean at 9 a.m. and 9 p.m.								Number of Observations at 9 a.m. and 9 p.m.									
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Maximum (A).	Minimum (B).	Mean of A and B.	Difference from Average.	Maximum.	Day of Month.	Minimum.	Day of Month.	Ground Frost, 32° and under.	Dry Bulb.	Depression of Wet Bulb.	Humidity.	Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	
	°	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches	In. Date										
JAN.	30·183	44·3	35·1	39·7	+2·6	53	26	25	4, 31	13	39·5	2·3	82	13	—1·3	0·49	—2·08	·13 11	6	4	2	3	3	28	8	5	3	Bright month.
FEB.	29·948	49·5	31·6	38·8	+1·5	56	21,22	17	2	15	37·1	2·3	80	15	+2·7	2·03	—0·16	·34 21	6	6	2	4	2	16	10	8	2	Tay in Spate, 17-19 ; 22-24.
MAR.	29·880	46·4	35·3	40·9	+1·2	55	2	28	7	13	39·2	2·5	80	13	—1·0	0·87	—1·52	·17 18	8	16	9	2	2	9	2	11	3	Dry month.
APR.	29·927	53·7	37·4	45·6	+1·4	64	13	21	6	10	44·4	3·6	74	13	—1·5	0·90	—0·88	·15 17	6	5	1	4	1	16	11	11	5	Bright, Snow 17th, Hail 26th
MAY	29·975	65·0	43·1	45·1	+4·6	75	27,29, 30	32	6	1	52·4	3·6	77	9	—4·3	0·92	—1·04	47 3	1	6	12	7	8	10	11	3	4	Bright, Rain less than half the average.
JUNE	29·935	66·3	45·3	55·8	+0·1	80	4	32	13,14	1	55·8	4·5	73	8	—2·1	1·56	—0·40	·70 24	3	2	12	1	2	15	10	10	5	Bright, Thunder 1.19, Hail 30
JULY	30·085	71·9	50·8	61·4	+3·2	90	12	36	3	0	59·5	4·2	75	14	—0·6	1·63	—1·32	·41 27	2	4	5	8	3	24	10	2	4	90° record Maximum temperature.
AUG.	29·945	71·1	51·7	61·4	+4·4	81	9	41	17	0	59·6	3·6	78	13	—3·1	1·31	—2·18	·24 3	1	5	11	8	8	18	8	3	0	Rain about ⅓ the average, Thun. 24th, T. & L. 28th.
SEPT.	29·974	62·9	43·0	53·0	—0·3	71	10	28	22	2	51·5	2·9	81	8	—6.0	1·05	—1·25	·28 8	7	0	5	4	0	29	8	7	0	Rain half average.
OCT.	29·929	52·8	36·5	44·7	—1·5	59	11	19	29	7	42·8	2·0	85	14	—1·6	1·92	—1·04	·51 29	8	16	8	0	2	11	4	8	5	Rain still below average, Tay out on 30th.
NOV.	29·599	46·3	34·6	40·5	—1·0	54	15	25	10	12	39·3	2·1	84	23	+8·2	3·75	+0·88	·42 17	11	10	3	2	4	17	4	5	4	Rain over average, Tay in flood 4-8, Grampians in snow 18th, snow 21st, S.W. gales, 1-5.
DEC.	29·501	44·6	34·6	39·6	+2·1	55	18	26	4, 5, 8	14	39·4	1·6	87	24	+7·8	4·02	+1·06	·53 15	2	4	10	9	9	12	8	0	8	Rain over average.
YEAR	**29·915**	...	...	**47·9**	...	**90**	...	**17**	...	**88**	...	...	...	**167**	...	**20·46**	**—10·04**	...	**61**	**78**	**80**	**52**	**44**	**205**	**94**	**73**	**43**	
Highest	**30·831**	9 p.m.	1st Feb.																									
Lowest	**28·476**	Noon	5th Nov.																									

Averages are for the period 1883-1908.

Height of Stations above Sea-Level = 85 f

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

REMARKS ON THE WEATHER AT PERTH,

1911.

During the first 10 months rain was about 50 per cent. below the average; for the last 2 months rain was in excess. The total rainfall was 20.46 inches, or about 66 per cent. of the annual average.

The Tay was abnormally low from June to the end of August, when there was a rise, followed by another low period lasting till 19th October. Springs in many parts of the County gave out, and considerable inconvenience was experienced in some localities through lack of water.

The Mean Temperature for the months of January to August inclusive was above the average. A maximum of 90° was recorded on the 12th July.

Gales were experienced on February 16th and 23rd from the S.W.; April 14th from the W., and from the S.W. on the 22nd to 24th; on August 25th from the S.S.W.; September 5th and 19th from the S.W.; and on November 1st to 5th inclusive gales from the S.W. did considerable damage to trees and property.

In January song-birds were numerous, on the 25th a tortoiseshell butterfly was on the wing; willow catkins were out on the 29th. In February, coots were near Perth Bridge on the 3rd, some bees were noted on the 20th. In March, the rooks at Kincarrathie showed signs of building on the 19th; a bat was out on the 24th, bees on the 25th; rose leaves showing on the 25th; considerable bird migration took place on the 30th between 1 and 2 a.m. In April, frog spawn was in Muirhall Quarry pond on the 1st, and toad on the 20th; the cuckoo was heard on the 9th; cherry blossom appeared about the 16th, pear on the 27th; bats were about on the 18th, and martins were noted on this date; the corncrake was heard on the 30th. In May house martins arrived on the 2nd, swifts on the 8th; a queen wasp and a cabbage butterfly were about on the 9th; oaks were well out on the 16th, hawthorn on the 21st, elder on the 28th. In September, swallows were last seen on the 28th, and walnuts and chestnuts were ripe towards the end of the month.

BAROMETER.

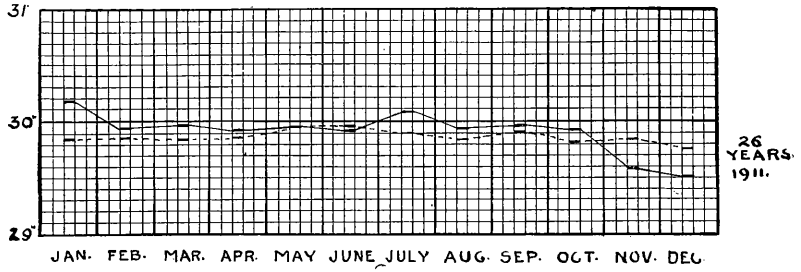


Plate 36.

Mean Monthly Reading at Perth, 1911———
Average of Monthly Readings, 1883-1908.....

RAINFALL.

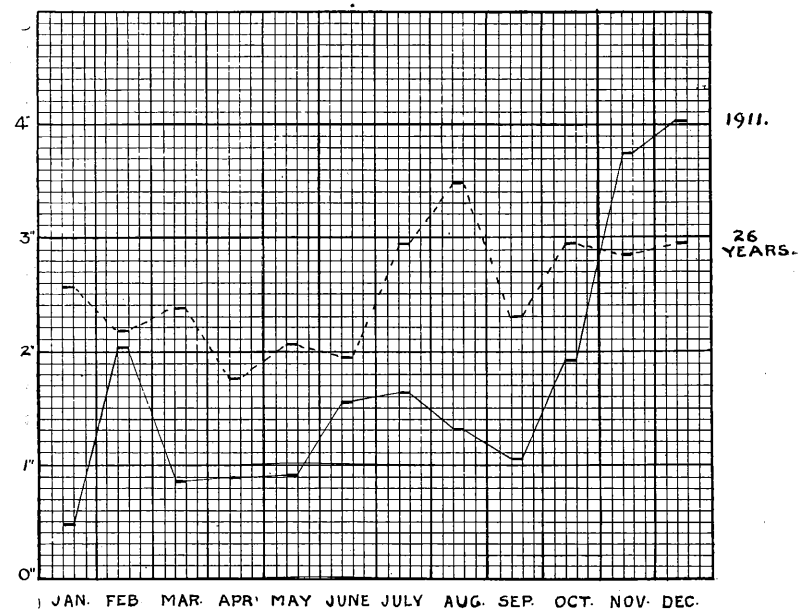


Plate 37.

Monthly Rainfall at Perth, 1911———
Average ,, ,, 1883-1908.....

TEMPERATURE.

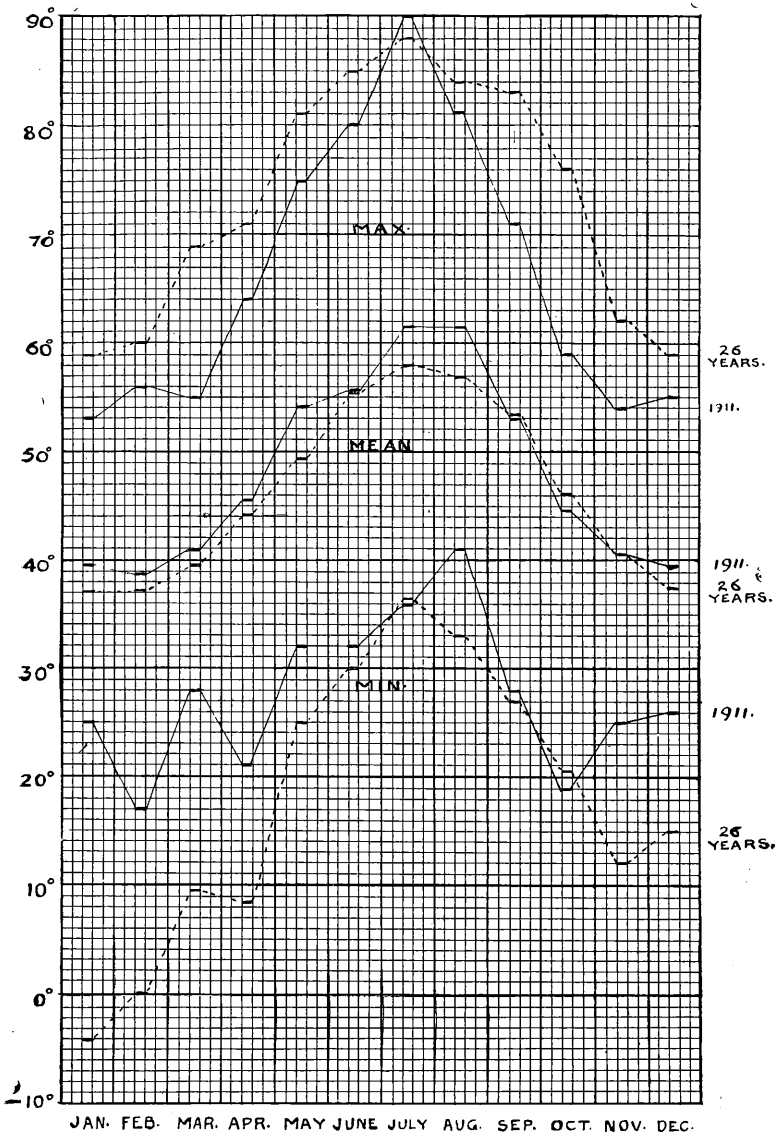
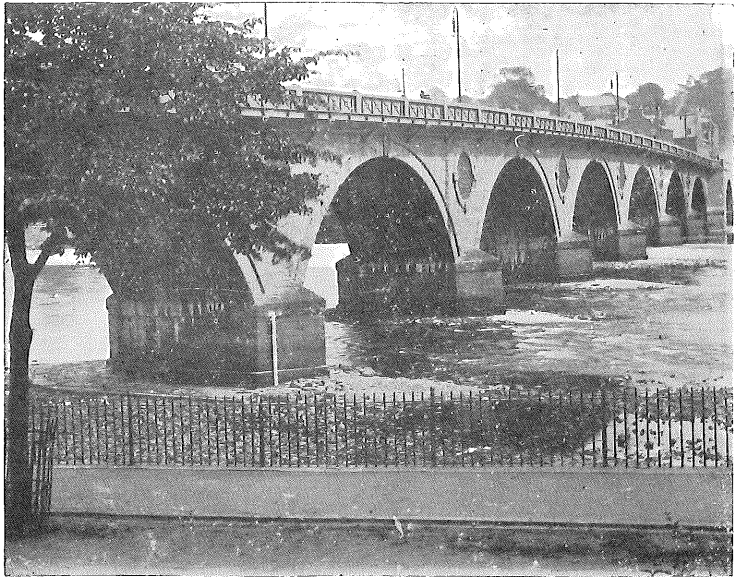


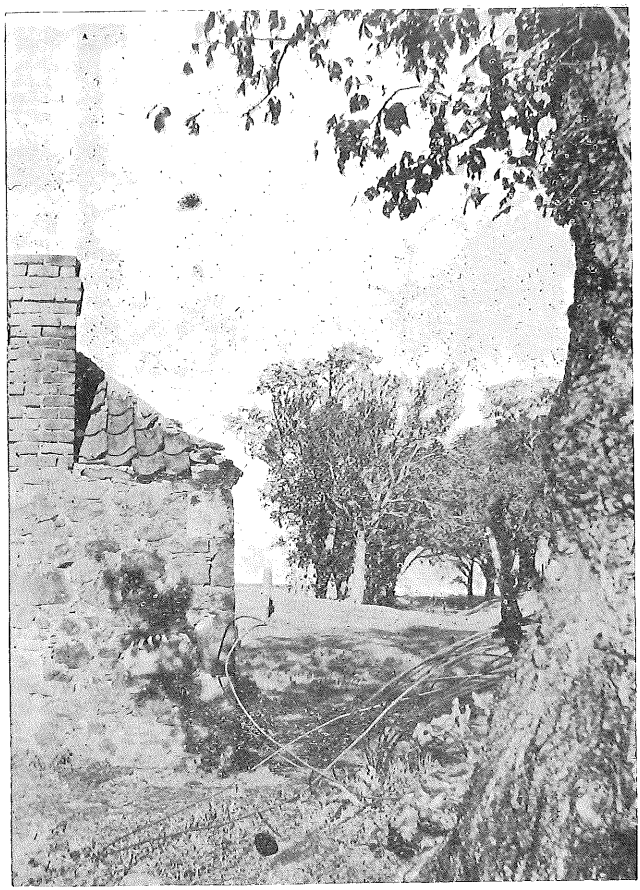
Plate 38.

Maximum, Minimum, or Average Mean Monthly Temperature at Perth, 1911———
,, ,, ,, 1883-1908.....



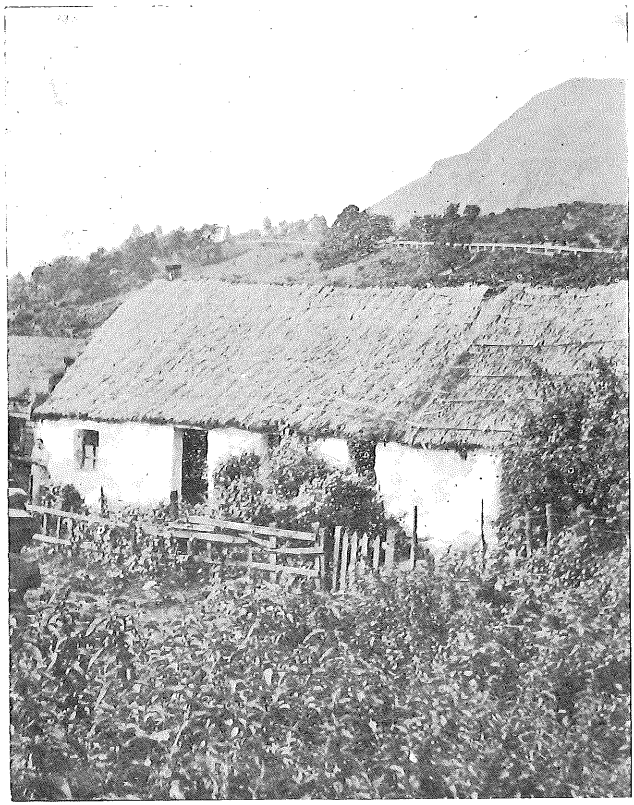
[Photo by A. M. Rodger.

Plate 28.—River Tay at Perth Bridge, June 15th, 1911.



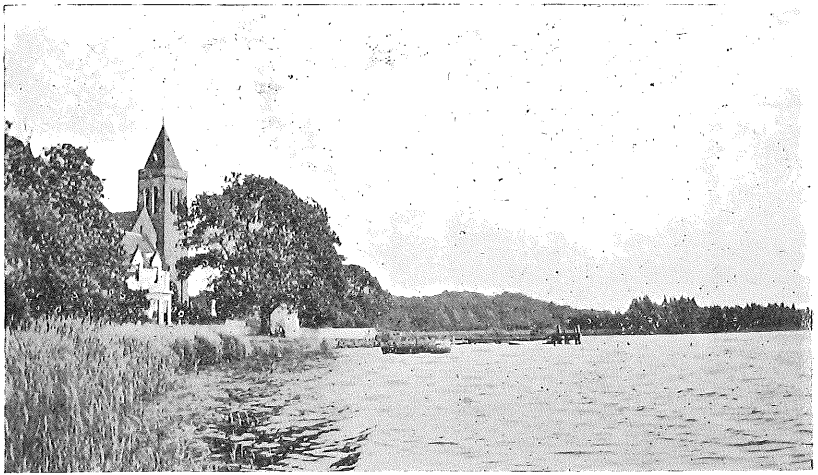
[Photo by W. Barclay.

Plate 29—Wallace Road over Ochils, above Wester Dron.



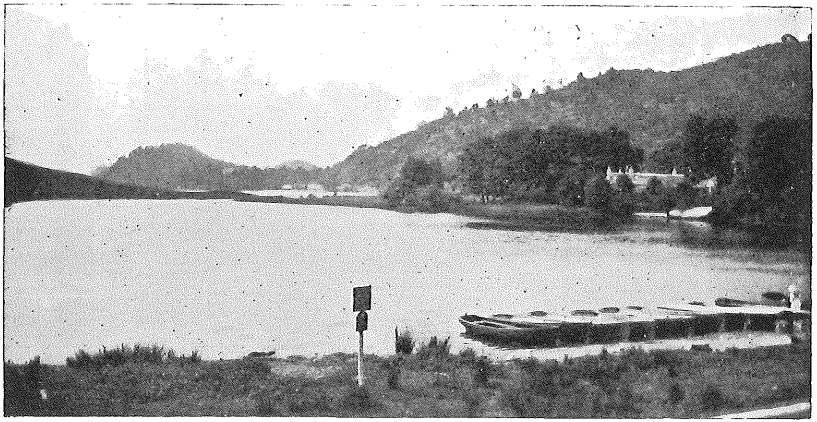
[Photo by W. Barclay.

Plate 30—Old Cottage, Aberfoyle.



[Photo by Major Mercer.

Plate 31—Loch Ard.



[Photo by W. Barclay.

Plate 32—Lake of Menteith.

KEY.

Proceeding from left to right behind stump and from right to left in front:—

G. F. Bates, Perth.
R. S. Adamson, Edinburgh.
Prof. Clements, Minneapolis.
Dr. Crampton, Edinburgh.
A. G. Tansley, Cambridge.
Dr. W. G. Smith, Edinburgh.
C. MacIntosh, Inver.
Dr. Rübel, Zurich.
Prof. Cowles, Chicago.
Mrs. Clements.
— Stewart, Gardener, Dunkeld.

Dr. Moss, Cambridge.
G. C. Druce, Oxford.
Prof. Graebner, Berlin.
Dr. Woodhead, Huddersfield.
Prof. Lindman, Stockholm.
Mrs. Cowles.
— Keir, Forester, Dunkeld.
Prof. Schröter, Zurich.
Prof. Drude, Dresden.
W. Barclay, Perth.
Miss Hayward.

Dr. C. H. Ostenfeld, Copenhagen.

[Photo by Prof. Massart, Brussels.

Plate 33 – Members of the International Phyto-Geographical Excursion at "Parent Larch," Dunkeld, August 13th, 1911.

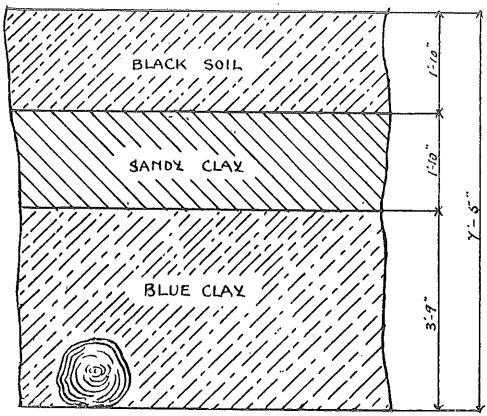
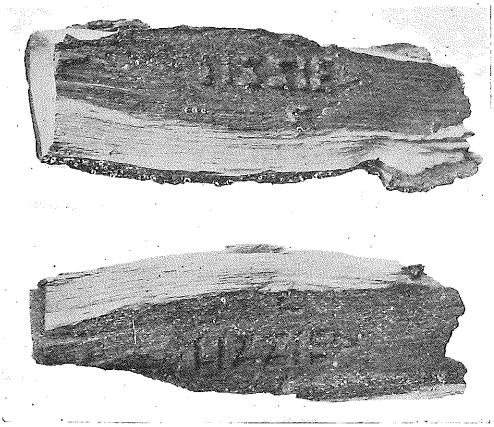


Plate 34—To illustrate Note by Mr. H. Coates.

See Proceedings, p. cxliv.



[Photo by A. M. Rodger.

Plate 35—Piece of Oak.

See Proceedings, p. clxviii.

WINTER SESSION, 1912-1913.

14th November, 1912.

W. BARCLAY, President, in the Chair.

The President proposed the following resolutions :—

1. "That the members of the Perthshire Society of Natural Science desire to express their deep regret at the death of Sir Robert Pullar, who was a member of the Society for upwards of forty years. They wish to record their appreciation of the help and encouragement he gave to the Society by attendance at its meetings and excursions, by the valuable advice which he gave at critical points in its history, and by his munificent contributions towards the building, and also to the enlargement of the Museum. They desire to record also their deep sympathy with his family in the loss which they have sustained."

2. "That the members of the Perthshire Society of Natural Science record in their minutes their keen regret at the death of Mr. James F. Pullar. For nearly forty years he was a member of the Society, and though not taking any active part in its management, he showed clearly his sympathy with its work and aims by liberal contributions towards the building and enlargement of the Museum. They desire also to express deep sympathy with his family in their bereavement."

3. "That excerpts from the minutes be sent respectively to Mr. Rufus D. Pullar and to Mr. Herbert Pullar."

These resolutions were carried unanimously.

Miss Miles gave the following report of the meetings of the Cryptogamic Society of Scotland, held this year at Forres :—

The Thirty-seventh Annual Conference of the Cryptogamic Society of Scotland was held at Forres from the 17th to the 19th of September. This was a week earlier than usual, in order that those members of the British Mycological Association, who had been attending the meetings of the British Association at Dundee, might take part in the Annual Forays before going south again.

The annual meeting of the British Mycological Society always extends over a week, and immediately after the meetings in Dundee the mycologists moved northwards, stopping at Aviemore for the week-end, to explore the ancient pine forest of Rothiemurchus.

The two societies met at Forres on the night of Monday, the

16th of September, and next day an excursion was made to Cluny Hill and Sanquhar.

On Wednesday Relugas and Darnaway were visited, and it was nearly 8 p.m. that night before any of the party returned, when all were most enthusiastic over the beauty of the gorge of the Divie. After dinner the Council and business meetings of the Cryptogamic Society were held, and Rothesay was chosen as the meeting place for 1913.

The last year has been a most unfortunate one for the Scottish Society, two of its oldest members, who were nearly always present at our meetings, having passed away, while the Treasurer's health prevented him from travelling to Forres.

The President for 1913 is Mr. D. A. Boyd of Saltcoats, who, after the business meeting, read a paper on "The Fungus Flora of the Moray District," in which he gave an account of the work of Mr. Keith, who made a very full catalogue of the fungus flora of Moray, and took a prominent part in promoting the study of fungi in Scotland.

On Thursday the excursion was to Altyre, the seat of Sir William Gordon Cumming.

Before starting I had time to ascend Cluny Hill. The people of Forres are to be envied this beautiful viewpoint. In the foreground lie the Bay of Findhorn and the famous Culbin Sands, and on the horizon is Ben Wyvis, while the fleet, which was practising in the Moray Firth, could be seeen entering Cromarty Firth, and so clear was the air that I fancied I could see the verdure of the south Sutor at Cromarty. Reluctantly descending the hill I found the rest of the party leaving the Museum, where is a good collection of books on fungi now seldom used. We drove to the Loch of Blairs in order to spend as much time as possible on the ground. Here the two societies separated, the British keeping near the loch under the guidance of a keeper, while the factor led the Scottish Society towards the mansion house and gardens Altyre is a very extensive estate, and we were not at any time left without a guide, as it would have been easily possible to lose the way.

Not far from the loch is a bare-looking corrugated iron building, an Episcopal Church, and quite near to it is the rectory, a beautiful building clad with creepers and roses, and picturesquely situated in its own garden. The contrast between the outward appearance of the two buildings was somewhat of a shock to our party.

In about half an hour we reached Altyre House, where the factor gave us into the charge of the gardener, who was most anxious to show us the gardens. The door of the hall stood open, and the gardener called our attention to the trophies of the chase which adorned the walls, naively remarking that these were *worth* hunting for! He invited us to step inside and examine the lock of the door. It is very massive, and was formerly a lock on Calton Jail.

In the afternoon, with several others of the Scottish Society, I came south again, beginning the journey in brilliant sunshine, which brought out clearly the bright red hue which the mountain ash had already taken on.

The weather during the excursions could not have been finer, but there were fewer fungi than usual in all the woods, owing to the extremely cold and wet summer.

The British Society remained at Forres until Friday. Amongst their number were Miss G. Lister, F.L.S., the President for the year, who read a paper on "The Past Students of Mycetozoa and their work;" Mr. A. D. Cotton, F.L.S., the Herbarium, Kew; Miss A. Lorrain Smith, F.L.S., the British Museum; Mr. J. Ramsbottom, B.A., British Museum, who read a paper on the "Classification of the Uredineæ," or rust-producing fungi, so destructive to wheat and other cereals; Mr. R. Finlayson, Seed Testing Laboratory, London; and Mr. H. H. Thomas, Botany School, Cambridge.

The Micro-fungi, which cause most plant diseases, were collected in abundance, but these require to be microscopically examined for full identification.

As usual when the British Mycologists are present the specimens found each day were carefully named and labelled, and arranged on tables in a room set aside for the display of the fungus-hunter's finds.

261 species of the larger fungi were recorded for the three days. Some of the finest specimens exhibited were *Armillaria robusta A. & S.*, *Hydnum imbricatum*, Linn., and a handsome fructification of *Sparassis crispa*, Fr.

The President then gave his opening address, followed by his report as the Society's delegate to the Corresponding Societies Committee of the British Association, which met this year in Dundee:—

The first of our summer excursions took place as usual on Victoria Day, which this year was on the 27th of May. Journeying by train to Comrie we found brakes awaiting us, and taking our places therein, under the leadership of Mr. Bates, set off for Lochearnhead. Passing through the woods and groves of Dunira, sadly thinned by the memorable storm of 1892, and still bearing traces of the ruin then wrought, we recalled how

> "Bonnie Kilmeny gae'd up the glen
> But it wasna to meet Dunira's men."

Soon we were going through the pleasant little village of St. Fillans, and coming to Loch Earn took the road along the north side. The day was fine but dull, though throughout the day the sun shone out at intervals. The road goes at first through shady woods, through the openings of which you catch glimpses of the loch and of the great mountains on the other side. About half way along the loch you can see into Glen Voirlich, guarded at the further end by the big Ben, and can catch a glimpse of the top of its neighbour Stuc-a-Chroin, nearly as big, and which comes prominently into view as you reach the end of the loch. At Lochearnhead a stay of an hour or two was made. Climbing the hillside above the village the flora

was found to consist mainly of the usual moorland plants, the height being too low for alpines proper. Fine views of the loch and its surroundings were obtained, and the photographers of the party were by no means idle. Some members walked up the gloomy Glen Ogle, though the time was too short to reach the head of the defile. On leaving Lochearnhead we journeyed back by the south side of the loch. A short halt was made to view the Falls and the Castle of Edinample, the latter from the outside only and at some distance. The road by the south side is rougher, and much more up and down than that on the north side. It is even more closely wooded, and the views obtained are not so fine. On this pleasant afternoon it was a delightful drive back to Comrie, where the usual social tea wound up the proceedings of an enjoyable day.

On the 8th June, we went by train to Glenfarg, and thence set off to walk over the hill to Balvaird, and from there to Abernethy. First we visited the churchyard, noting the cup-marked stones built into the wall. We inspected also the rude stone figure which is supposed to represent Margaret Barclay, by whose marriage with Sir Andrew Murray, the Barony of Balvaird and Arngask became a possession of the Murrays, and now belongs to the Earl of Mansfield, the descendant and present head of that ancient family. Taking the road again, we reached the crest of the ridge at Old Fargie, and then descending and again ascending arrived at Balvaird Castle, where we rested for some time. This venerable building, still strong even in decay, is said to have been built in the first quarter of the 15th century, but to have been repaired and enlarged in the latter half of the 16th century. It is not known to have been the scene of any important historical event, but from its commanding site and its strength it must have been a place of some importance. Over the doorway are sculptured the remains of armorial bearings, which are supposed to be those of Margaret Barclay and her husband, but they are sadly defaced by the ravages of time. We found the plant *Scrophularia vernalis* still growing at the castle, but in small quantity compared with its abundance at our former visit. Leaving the castle, we climbed a pretty long ascent through one or two farms, botanising by the way. Wild flowers were plentiful, but none of any rarity, the most striking being the beautiful yellow violet, *V. lutea*, which is quite a feature on most of the hills around Glenfarg. We came, however, very unexpectedly on a fine clump of the bald money, *Meum athamanticum*, a plant which, though local in its occurrence, is fairly abundant throughout the Highlands, but less common in the Lowlands. Up till now the day had been fine, with at times a hot and blazing sunshine, but just as we arrived at the main road leading to Abernethy, a smart shower compelled us to shelter for a short time under some trees. Soon, however, it cleared again and a pleasant walk down Abernethy Glen brought us to that ancient village, and practically to the end of a very pleasant excursion.

On 29th June, it had been arranged to walk from Cargill along the left bank of the river to Linn of Campsie and Stanley. I was not present on this occasion, but Mr. Rodger, the leader, reports as

follows:—"The party first visited a tree-clad mound, called on the map the Castle Hill, rising like an island from the adjoining plain close to the bank of the river. This bears traces of what seem to have been earthen fortifications, and indeed the place would seem at one time to have been a fort or military station. They then followed the course of the river, visiting on the way the churchyard of Cargill. Coming to Stobhall they spent some time at the old castle, and then coming down to the Linn of Campsie and crossing the Ferry arrived at Stanley. The weather was fine, and the bank of the river furnished an abundance of flower plants, amongst which they noticed the Guelder rose. On some barberry bushes also they found the cluster cups of the fungus, which in an alternate generation becomes the rust which in some countries is so destructive to the wheat crop. They also examined the trap dyke which crosses the river forming the Linn, and which, after crossing, is joined by another, meeting it at a different angle."

The mountain excursion took place on the 6th July, and was to Sgairneach Mor, a hill 3,160 feet high, which lies behind the Sow of Atholl, about 3 miles from Dalnaspidal Station. At the station we were met by the head-keeper, who guided us by the best route up the valley of a little stream, and thence by a somewhat stiff and rough path on to the shoulder of the mountain. Left then to ourselves, our own leader, Mr. Meldrum, led us by an easy way to the top. We found this side of the mountain somewhat bare of plants, except that the beautiful little shrub *Azalea procumbens* occurred in large and abundant patches, on which the tiny but lovely rosy flowers were just beginning to appear. This plant, rather rare on our western hills, is more abundant in the north, and is seldom found much below 2,000 feet. Having reached the summit, the Cairnmaster took his seat, and a meeting of the Mountain Club was held, and one or two new members were initiated with the usual secret and awful rites. Some time was then spent in enjoying the view of the panorama of encircling hills and in identifying the principal peaks. Descending by the other side of the mountain, we found it much more productive, and a considerable number of interesting plants were gathered, of which I shall only mention here *Veronica alpina*, *Potentilla sibbaldi*, *Lycopodium annotinum*, *Salix lapponum*, *Carex rigida*, *Tofieldia palustris*, *Thalictrum alpinum*, *Cornus suecica*, and a curious colour variety of *Melampynum pratense*. It was an ideal day for mountain climbing, dull at first, but afterwards with considerable intervals of bright sunlight. At Dalnaspidal Station preparations were almost completed for an *al fresco* tea on the platform, when a train —which we had been told was not to stop—stopped, and half the party leaving tea behind took the chance of getting home earlier. The others remained to enjoy their tea, and after a pleasant walk in the cool of the evening caught a later train, and arrived in Perth about midnight.

On 13th July, we walked in the afternoon of a delightful day from Stanley by Cambusmichael to Luncarty. Some time was spent at the Linn of Campsie, where we found that the rare Perthshire grass, *Calamagrostis epigeios* is still to be found in plenty. Crossing the

ferry and following the left bank of the river, we found specimens of the clustered bell-flower in the old station, but seemingly very scarce compared to what it used to be. Coming to the old church of Cambusmichael, beautifully situated amidst a grove on the high bank of the river, we made a short stay to examine it. On leaving this, whilst passing through a grove of young larches, we came upon a quantity of the salad burnet, *Poterium sanguisorba*. This plant is admitted as native in Dr. White's "Perthshire Flora," but its claims appear to me to be rather doubtful. It is, of late years, I believe, sometimes sown as a constituent of meadow grass, and in consequence has appeared in places where previously it was quite unknown. Descending again to the edge of the river we walked on to Stormontfield, and then crossing the ferry at Waulkmill came to Luncarty Station.

On August 3rd, a deviation was made from our usual practice, as the excursion was to a district outwith our own county. Under the leadership of Mr. Rodger, we walked from Arbroath along the cliffs to Auchmithie. A quarter of a century ago I traversed the same route and wrote an account of it and of the principal plants which I then gathered. This was read at a meeting of the Society and published in its *Transactions*. I shall not repeat that account here, and shall therefore say but little of this excursion. We found nearly all the plants formerly mentioned by me. We admired the grandeur of the rugged cliffs, torn and rent by the waves, and visited some of the numerous caves hollowed out in the course of ages by the ceaseless dash of waters. In the middle of a field of ripening corn we came upon the Gaylet Pot, a huge cup-shaped hollow in the ground, with a rocky tunnel communicating with the sea, through which at high tides and in storms the waves dash with fury into the pot. Auchmithie has now quite a civilised look compared with what it had five-and-twenty years ago. Since then a new harbour has been built, communicating with the village by a well-made road, so that it is no longer necessary as it then was that the fisher wives should carry up all the fish in creels on their backs by an ill-made footpath. The streets and houses too have been greatly improved; and, lastly, you can now get nothing in the former hotel stronger than tea or ginger beer. The excursion was favoured with splendid weather, and was greatly enjoyed by all who took part in it.

On the August holiday, the 26th of that month, we set off for a drive from Aberfeldy to Glen Lyon. Leaving Aberfeldy by the famous bridge, built by General Wade, we turned to the left under the rock of Weem and passed through the village of that name, remarking as we went its handsome new churches, as well as the old and now disused Parish Church. The fine old pile of Castle Menzies came now into view, surrounded by splendid trees, many of them veterans, which had braved the storms of more than one century. Passing on our right the antique little hamlet of Dull, we reached the Lyon, with the relics of Comrie Castle on the further bank, and soon arrived at Coshieville. Crossing the Keltney Burn, we were now at the entrance to the long glen. Though dull the day was fine, and a pleasant drive of some miles quickly brought us

to Fortingall, through which we passed, getting as we left the village a glimpse of what remains of the ramparts of its Roman camp. Now we entered the throat of the famous Pass of Glenlyon, and the grandeur of the scenery filled us all with wonder and admiration. At every turn new aspects, new combinations of mountain, rock, and rushing river came into view. At a point where the valley, after widening for some distance, becomes almost closed by a projecting rocky peninsula through which the road has been cut, we alighted and walked down to where a footbridge has been thrown across at the narrowest and wildest part of the gorge. Beyond this the valley opens out somewhat, and the scenery, though still grand, becomes less savage and wild. Our upward progress ceased at Invervar, where we spent an hour or two, and had the opportunity of seeing somewhat of the flora, which, however, was disappointing. The banks of the river yielded no alpines brought down from the hills, except one or two of the commonest. On the return journey we stopped for a little at Fortingall to get a glimpse of the famous yew, now, however, so sadly broken down that you can form little idea of what it was when in its prime. At Coshieville we enjoyed a welcome tea, and in the cool of the evening returned to Aberfeldy, bringing to a close a day which all those present will long remember and delight to recall.

The last excursion of the season was, as usual, a fungus foray, under the leadership of Mr. Menzies. By the kind permission of the proprietor, we were allowed to roam through the beautiful grounds of Delvine. We were again fortunate in having favourable weather, the sun looking down upon us with bright and smiling face. Fungi, though not perhaps very abundant in individuals, were of a numerous species, a few of them rare and interesting. Most of our time was spent on the curious peninsula which projects into the lower level land, and at whose extremity is situated the ancient stronghold of Inchtuthill. This is supposed to have been originally a native fort, afterwards taken and occupied by the Romans, who have left upon it unmistakable traces of their occupation. It occupies a commanding site almost inaccessible, except on one side, which had been strongly fortified by a double ditch and rampart. At Delvine we spent both a pleasant and a profitable day.

I shall close by a few words regarding a private excursion taken part in by Mr. and Mrs. Rodger, Mr. Campbell, and myself. Taking a walk by the riverside at Limehaugh, we noticed by the side of a marshy meadow a strange thistle-like plant just about to come into flower. It was evidently not a British plant, but a foreigner. Specimens which I sent in flower to the Botanic Garden in Edinburgh were identified as *Cnicus oleraceus*, a yellow-flowered thistle. This is a plant widely spread on the Continent, but unknown in Britain, except that it has occurred once or twice as a casual. There were a good many plants at Limehaugh, about 60 or 70 flowering heads. How it came there is a mystery. As the meadow was cut for hay the plant has not much chance to maintain its ground. Almost at the same place, in a strip of alder bushes, a plant or two of *Sanguisorba canadensis* has kept its ground for more than half a

century. Until the present year I never saw any signs of its spreading. But on this occasion we found several large patches of it at some distance below the original station, quite clear of the bushes, growing partly on the sides of the ditch and partly in the meadow itself. Now that it has got clear of the bushes it may spread still further, and like several other foreign plants become quite naturalised on the bank of the Tay.

A notable event to all in Scotland who are interested in science was the visit of the British Association to Dundee in the first week of September. The meeting was as usual attended by a great number of leading scientific men from all parts of Britain, from the Continent and from America, men distinguished by their attainments and their works, attended also by a greater crowd less known and undistinguished, but animated by the love of some branch of science and eager to learn the latest results from the great masters in each department.

As the delegate from the P.S.N.S., I attended the two conferences which were held of delegates to the Committee of Corresponding Societies. At the first, which was held on Thursday, the 5th, the chairman, Professor Bower, opened the proceedings by a masterly sketch of the life and labours of the late Sir Joseph Hooker. He described the various scientific journeys made by Hooker to the different regions of the globe—to the Antarctic regions, to the Himalaya, to Morocco, to Palestine, and to the Western States of America, journeys which were so fully taken advantage of that he gained an unrivalled knowledge of the flora of the various continents, the dispersion and distribution of the leading species, and their relationship with each other. He then considered Hooker as an administrator, as for thirty years the head of the great establishment at Kew, and for five years the President of the Royal Society. He then referred to his friendship with Darwin, and his conversion to the doctrine of Evolution. He was the first of the then leaders of science to become a convert, and in a series of masterly essays he upheld and confirmed from his own observations the conclusions of Darwin regarding the origin of species. It was chiefly on account of these works that he came to be universally acknowledged as the most distinguished philosophical botanist of his time.

After Professor Bower's address, there ensued a not very interesting discussion as to certain changes wished for by some of those present, that the names of the delegates should be printed in full at the end of the list of the various sections and some other minor matters.

Miss Lorrain Smith, of the British Museum, then gave in the report of a Committee appointed to receive and deal with the answers to three questions which had been sent down to the various affiliated local societies. The societies, for example, were to report as to the occurrence in their several districts of what is called the silver leaf disease which attacks plum trees, and to state if any connection could be traced between that disease and a certain fungus,

Stereum purpureum, which occurs something like a piece of skin upon dead wood. Miss Lorrain's report was very brief and to the point. Not a single answer had been sent in by any local society. At once arose delegate after delegate denying that any such questions had been received by his or her society. After a good deal of talk it was resolved to send down the questions again, the delegates promising that more attention should be paid to them on this occasion.

At the second conference the principal topic discussed was the preservation of our native flora and fauna. This was introduced by a motion, proposed by Mr. Claridge Druce, "That the conference of delegates cordially approve of the aim of the South Eastern Union of Scientific Societies to acquire and maintain certain areas so as to preserve their native fauna and flora, and in certain cases to prevent the destruction of typical geological sections." Mr. Druce showed the great danger of extirpation to which certain rare plants and animals are liable through various causes, reclamation of waste land, increase of populous towns and villages, and, perhaps most of all, through the rapacity of collectors. It was highly desirable, he thought, that certain suitable spaces should be purchased and maintained where none of these evils should be allowed to operate. A beginning had already been made in one or two cases, and he thought they would all cordially agree that the purpose for which the Society was founded was a good one, and that they would give to the project what help they could, and at least their best wishes for its success. The discussion which followed was somewhat lively, and turned chiefly upon the dangers to which rare plants were liable, and in this connection there was a strong tendency to blame school children owing to the increased attention given to Nature study in our schools of late years. To me it seemed that several at least of the speakers were talking from blind prejudice, and did not in reality have much, if any, valid ground for the accusation which they brought. In the end Mr. Druce's motion was unanimously agreed to.

A fitting sequel to this discussion was a most interesting paper, by Mr. Wilfred Webb, describing "The Brent Valley Bird Sanctuary; an Experiment in Bird Protection." In the sanctuary the birds are not only safe from molestation and intrusion of men, but are encouraged to settle by being supplied with boxes in which to build and breed. The form of these boxes is of some importance, and the lecturer showed by means of lantern illustration the shapes which, by experiment, had been found to be most useful and most attractive to the various species.

The conference was brought to a close by the reading of a valuable paper by Mr. A. Newlands on "Water Power and Industrial Development in the Highlands." In the numerous streams and torrents of the Scottish Highlands an immense amount of power, at present unused and running to waste, could easily be transformed into electrical energy, which could be employed on a large scale as a motive power, and distributed even to distant parts for the purposes of manufactures and industry. In Switzerland, for example, the water power of mountain streams is largely made use of; transmuted

into electrical force, furnishes ample power for the needs of the numerous mountain railways which have been constructed in that country during the last twenry years. If our highland streams could be utilised for industrial purposes it would not only bring wealth to the highland districts themselves, enabling them to support a much larger population than at present, but it would be an enormous boon to the country at large.

Into the other proceedings of the visit of the British Association I cannot enter: the papers read at the various sections, the popular lectures, and the numerous pleasant excursions. I shall only add that it gave me much pleasure to meet again several of the Continental and English botanists with whom in the previous year I had explored the lochs at Dunkeld and the rich corries of Ben Lawers, and with whom also on the present occasion I penetrated into the recesses of Glen Tee and Glen Dole, and startled the red deer on the hills of Glen Clova.

12th December, 1912.

WILLIAM BARCLAY, President, in the Chair.

The Curator exhibited two fishes (mud-skippers), from West Africa, specimen of calcite vein in volcanic tuff from the Sidlaws, and other specimens.

The following papers were read:—

"The Construction of a Sundial," by T. M'Laren. (See *Transactions*, Vol. V., Part V., p. 133).

" Recent Advances in Perthshire Geology," by P. Macnair.

Both papers were illustrated by lantern slides.

9th January, 1913.

W. BARCLAY, President, in the Chair.

The following papers were read:—

"Archæological Notes from Perthshire and Argyllshire," by the Rev. G. A. F. Knight, M.A., F.R.S.E. (See *Transactions*, Vol. V., Part V., p. 142).

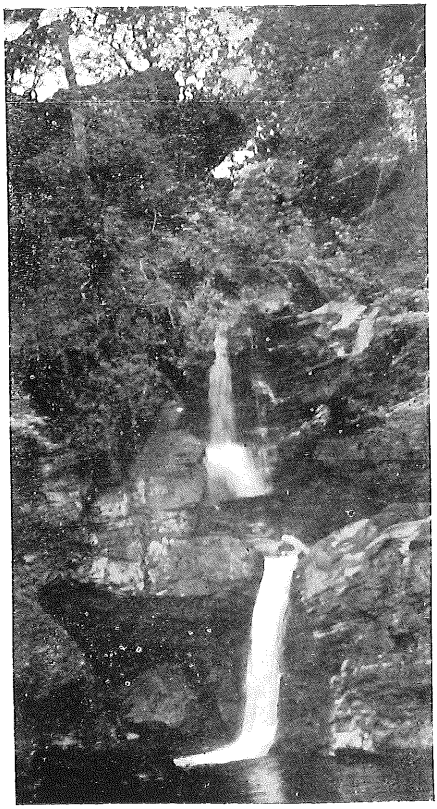
" *Phyllobius maculicornis* and the Raspberry Disease in Perthshire," by Thomas Anderson, M.A., B.Sc. (See *Transactions*, Vol. V., Part V., p. 162).

10th January, 1913.

This evening a Special Lecture, the first of a series of popular lectures arranged by the Council, on " Flies as Carriers of Disease," was given in the Lecture Room to a large and appreciatrve audience by Miss Doris L. Mackinnon, B.Sc., University College, Dundee. The lecture was profusely illustrated by lantern slides.

[Photo by G. F. Bates.

Plate 39.—Loch Earn.



[Photo by G. F. Bates.

Plate 40.—Falls of Glenample.

[Photo by W. Barclay.

Plate 41.—Balvaird Castle.

Photo by Major Mercer.

Plate 42.—Sgairneach Mor—Meeting of Mountain Club, July 6th, 1912.

[Photo by A. M. Rodger.

Plate 43.—Cambusmichael Church.

[Photo by A. M. Rodger.

Plate 44.—Gaylet Pot, Montrose.

[Photo by W. Barclay.

Plate 45.—In Glenlyon.

24th January, 1913.

The Rev. F. Smith, Queensferry, gave his lecture on "Palæolithic Man in Scotland and Ireland," the second of the series mentioned above.

7th February, 1913.

The Rev. F. Smith delivered his second lecture, "Palæolithic Man, his Methods and his Antiquity." Both this lecture and the preceding one were illustrated by lantern slides and specimens.

13th February,

W. BARCLAY, President, in the Chair.

Reference was made by the President to the great loss which Science and Discovery had sustained by the death of Captain Scott and his fellow-explorers in the Antarctic Expedition.

The President also gave notice that he would, at the next monthly meeting, propose certain changes in the constitution of the Society, the said changes having already received the approval of the Council.

The following papers were read :—

"Yeast," by J. Stewart, Falkirk. (See *Transactions*, Vol. V., Part V., p. 163).

"Notes on Some New and Rare Fungi from the District," by James Menzies. (See *Transactions*, Vol. V., Part V., p. 173).

21st February, 1913.

Mr. John Ritchie delivered the fourth of the series of popular lectures, his subject being "Christian Churches in Early Times." The lecture was illustrated by a series of lantern slides.

FORTY-SIXTH ANNUAL MEETING.

March 19th, 1913.

W. BARCLAY, President, in the Chair.

The following Office-Bearers were elected :—

President—Wm. Barclay.
Vice-Presidents—James Menzies, A. T. Mackay, D. Campbell, Dr. Robertson.
Secretary—S. T. Ellison.
Treasurer—A. W. Brown.
Curator—A. M. Rodger.

Librarian—James Coates.
Editor—George F. Bates, B.A., B.Sc.
Councillors—W. Ellison, Dr. Sturrock, D. Sutherland, J. P. Rattray, J. Winter, D. J. Wilson.

The following Reports were submitted:—

REPORT OF COUNCIL.

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

During the winter months six meetings have been held, at which six papers were read, in addition to the two addresses of the President, and the reports of the delegates to the Corresponding Societies Committee of the British Association and the Scottish Cryptogamic Society.

The average number of members attending the meetings was 34, which is a slight decrease on the last few years. The largest number at one meeting was 58, on the 9th January, and the lowest 26, on the 13th February.

Eight ordinary, 1 honorary, and 1 corresponding members have been elected as against 20 ordinary and 1 associate member last year, and the Council regret to say the membership continues to show a slight decline again this year. They hope that the abolition of the entrance fee may tend to bring an increase in the membership, which at present stands at 320, made up of 2 honorary, 13 corresponding members, 7 associates, 5 associate members, and 293 ordinary members.

A series of popular lectures were given during the months of January and February, at which the attendance was most gratifying, averaging between 60 and 70. These lectures were much appreciated, and the Council hope they may be able to arrange another course next year.

During the summer 9 excursions were held, and at most of these the attendance was good. On the spring and autumn holidays most enjoyable driving excursions took place. On 27th May the party took train to Comrie, and then drove to Lochearnhead, round Loch Earn, and back to Comrie; and on 26th August the excursion was to Aberfeldy, driving up Glen Lyon and back to Aberfeldy, and at both of these excursions good numbers turned out, and as the weather was very good most pleasant days were spent. The Committee have again to record their indebtedness to the various proprietors who gave permission for some of these excursions. They also desire to thank the leaders and others who contributed to make them so successful.

The Council have to regret the removal by death of some members who have been long connected with, and who have been most helpful to, the Society. The past year we have lost Sir Robert Pullar, LL.D., who had been a member since 1871, and who helped the Society greatly as a contributor to the erection and extension of the Museum. He was for many years a most regular attender at the

monthly meetings, and occasionally joined the excursions, and was always ready to give his advice and assistance in promoting the objects of the Society. In Mr. James F. Pullar also the Society has lost an old and valued member. Among the corresponding members also we have lost in Dr. Andrew Wilson one who, though not recently helping the Society much, had for 30 years been upon our roll.

The Children's Essay Competition was last year on a "Perthshire River," and 80 essays were sent in by 52 boys and 28 girls from two schools in city and four in county. The Council desire to thank the three gentlemen who undertook the work of judging these and arranging the prizes. These prizes are to be presented to the successful competitors at a meeting, in the Lecture Room, on Saturday, 22nd March, when it is expected Lord Provost Scott will give out the prizes, and to which all are invited.

The use of the Lecture Room has, as in former years, been granted to other local societies.

The Librarian reports that during the past year a steady increase has been made to the number of volumes on the shelves. In all, 57 have been added, 6 going to the Lending Department and 33 to the Reference, while the remaining 18 consist of periodicals, &c., which have been bound.

It seems a pity that the privileges of the Lending Library are not more largely taken advantage of by the members. The romance of science appeals widely to many tastes, and if those who have not hitherto done so would but glance over the books at their disposal they would surely find much in a high degree interesting as well as instructive.

276 different books have been borrowed during the year, but these have gone into the hands of only 42 of the members. Some valuable works have been presented, a full list of which is appended, and the donors are hereby one and all heartily thanked for their kindness. Among these the following are deserving of more than a passing mention:—

Dr. W. S. Bruce, Scottish National Antarctic Expedition, "Scientific Results of the *Scotia*."

Sir John Murray and Laurence Pullar, Esq., "Bathymetrical Survey of the Scottish Freshwater Lochs."

Dr. G. F. Barbour of Bonskeid, "Bartholemew's Physical Atlas," Vols. III. and V.

REPORT OF EDITOR.

Part IV., Vol. V., of the Society's *Transactions and Proceedings* was published in December, 1912, and distributed to members and other societies in the usual way. The part is one of particular value, containing as it does important lists of *Macro-Lepidoptera*, *Ecto-parasites*, and *Diptera* (Family *Syrphidæ*), together with the President's "Additions to the List of Perthshire Plants since the Publication of Dr. Whyte's 'Flora.'" These lists will render the part highly valuable for future reference.

The President then proposed the following alterations in the Constitution, in accordance with notice given at the previous Meeting:—

"Laws," paragraph 4, after the word "candidate" in line 6 to insert—"During the summer months, when the meetings are discontinued, a new Member shall be elected by his name being placed on the Notice Board, along with the names of his proposer and seconder, for one calendar month, and if during that time the Secretary has not received at least six negative votes from at least six Members, the Candidate shall be deemed to be elected as a Member of the Society just as though his name had been brought before a Meeting of the Members in the usual way."

"Laws," paragraph 5 to read—"The Annual Subscription for an Ordinary Member shall be 5/6 per annum, the first payment to be made within One Month of Election, and annually thereafter within one month of 1st March, which sum may at any time be compounded for by One Payment of Five Guineas. Associate Members shall pay a subscription of 3/- within one month of election, and annually thereafter within One Month of 1st March, and shall be entitled to all the privileges of the Society."

"Laws," paragraph 6, to alter "*four*" councillors to "*six.*"

"Laws," paragraph 7, line 5, to insert after "Trustees" "along with the Council."

Bye-Laws, par 3, to stop at "subscription" in line 2.

Bye-Laws, par 5, to delete first four words and insert, "To all members (except Associates)."

These proposed alterations were unanimously agreed to.

Mr. D. Campbell then submitted the following notes on plants:—

Vicia tetrasperma (Moench).—My first acquaintance with this plant was made about five years ago, when I found it growing on the roadside near Easter Moncreiffe (presumbly Mr. Meldrum's station). I have noticed it every year since in this locality, and last summer (1912) it was particularly plentiful on both sides of the road for a mile or more to beyond the farm of Wallacetown. I also found one small patch of it on the right side of the road above Fingask Farm.

Two years ago (1st October, 1910), I found a considerable quantity of this plant growing on the roadside between the Wicks of Baiglie Road and Dron School. This plant is apt to be passed over as *V. hirsuta*, but when seen growing is quite distinct from that plant, being altogether more delicate and graceful looking. It is at

once distinguished by the pods, which are normally 4-seeded and quite smooth.

Geranium pusillum, L.—On the 9th October, 1910, I gathered a specimen of this plant behind the village of Kilspindie, in the Carse of Gowrie. On the 6th August, 1912, I found it in some plenty on a dry knoll in a field at Kinmonth, near the house. Later (22nd September, 1912), I found this plant growing luxuriantly, and still abundantly in flower, on a knoll between Craighead cottages, between Elcho and Fingask farms, along with *G. molle*, *G. dissectum*, *Erodium cicutarium*, etc.

Potentilla reptans.—This plant is rare in Perthshire. I only knew one station for it (Bogle Brig railway embankment, Dunkeld Road), till 16th August last (1912), when I found a patch of it on roadside at Dunbarney House. Is this the station noted in the "Flora" as Pitkeathly (S. Dawson)? Later I have found it in considerable quantity on road between Glendoick and Hole of Clean, and also at Pitlowie.

Geranium columbinum, L.—This species, although described as "very local," seems to occur in a good many localities near Perth. I first came across it three or four years ago on Craigie Hill, not far from the upper end of the Buckie Braes ravine, and shortly afterwards Mr. Barclay found it at another spot near Cherrybank. The Craigie Knowes station was thought to be destroyed by the formation of the new road a few years ago, but the plant is still plentiful there. Another station is at Orchard Neuk, where it was exceedingly plentiful and luxuriant last year (1912). Other localities where I have found it are:—Craigend, near Elcho; Muirhall Farm, near Corsiehill; near Knowehead; and near Fingask Castle.

Dielytra formosa mentioned in a paper read by Mr. R. H. Meldrum to the P.S.N.S. in February, 1887, as occurring in Aberdalgie Den and well established, I found still holding its own in the spring of last year (1912).

Poterium sanguisorba.—In July, 1912, I gathered this plant on upland pastures behind Rait—plentiful. Did not look as if it had been sown. Later I found it in abundance in a field near Easter Moncreiffe—evidently sown along with kidney-vetch *(Anthyllis)* and *Cichorium intybus*.

Linaria minor, L.—Very abundant (1912) on waste ground at Friarton Gas Works.

Anchusa sempervirens.—Delvine, 1911.

Lepidium campestre, Br.—On 28th July, 1912, I gathered this plant on roadside near entrance lodge to Kinmonth House (Rhynd parish).

Trifolium striatum, L.—Found rather plentifully near the village of Kilspindie. It also occurs on Craigie Knowes in small quantity.

Scrophularia vernalis.—Wood near Easter Moncreiffe.

Astragalus glycyphyllos, L.—This plant is stated in the "Flora" to be extinct in Pitroddie Den on account of quarrying operations. This is not so; it seems only to have been dislodged from its former station and to have established itself on the *debris* of the quarry, where it is now (1912) flourishing most luxuriantly. Another station for this plant is on Barry Island, Kinfauns, where it has spread considerably since it was first noticed by Mr. Barclay in 1892 as a single patch; and this summer (1912) I noticed a plant of it had established itself several hundred yards further down.

Astragalus danicus, Ritz.—Summit of Craigie Hill Golf Course; near Gascon Hall Farm; and at Dalreichmoor—plentiful.

Dianthus deltoides, L.—Very plentiful behind Kilspindie Village, especially towards Balmyre Farm.

Papaver Rhoeas, L.—Rare in Perthshire. I found it this autumn near Elcho.

Fumaria officinalis, L.

Fumaria Boraei, Jord.

Fumaria densiflora, D.C.

I found these three forms growing together this autumn (1912) on the borders of a field near Elcho.

Teesdalia nudicalis, Br.—Glenfarg (Mr. Barclay, 1911).

Viola hirta, L.—Pitroddie Den (1911); Kinnaird Den.

Erodium cicutarium.—Roadside between Horsemill and West Lodge of Moncreiffe. Bank of Tay, opposite Ferguson's Manure Works (1912). I do not think it is mentioned in Flora of right bank of Tay.

Pulmonaria officinalis, L.—Roadside, near Bridge of Earn—an outcast.

It may be of interest to mention some plants observed in the early summer of 1912 at Newburgh, although just outside the county boundary. On the Mare's Craig occur the following good plants:—*Arabis hirsuta*, *Dianthus deltoides*, *Potentilla argentea*, *Vicia Lathyroides*, *Rosa spinosissima* (plentiful), *Geranium sanguineum*, *G. columbinum* (plentiful), *Ornithopus perpusillus* (plentiful), *Trifolium striatum*, *Sagina* (? subulata), *Agrimonia eupatoria*, *Trifolium arvense*, *Cerastium tetrandrum*.

In the field adjoining, I found *Centaurea cynanus*, L., plentiful; **Malva rotundifolia* on roadside at Lindores Abbey; and *Linaria cymbalaria* very abundant in railway cutting for a distance of about half a mile east of Newburgh old station.

* *M. rotundifolia* has only been recorded in Perthshire as a casual at Perth Harbour.

The President then proceeded to deliver his Annual Address, his subject being

THE WILD FLOWERS OF SPRING.

LADIES AND GENTLEMEN,—Who does not rejoice when the winter is past, when the flowers begin again to appear on the earth and the time of the singing of birds is come? As the day lengthens and the sun rises higher in the sky we forget the frosts and snows of winter, and look forward with joyful hope to the balmy airs and sunny days of the coming spring. It is true that in our climate winter does not leave us all at once, and that our hope is often cruelly deceived. Now and again we shiver once more in the cold northern blast, the sleety showers come pitilessly down, a sudden and untimely frost nips the opening bud, and "winter, lingering, chills the lap of May." But there is always the promise of better times to come, for, as the poet sings of the stormy month of March :—

> "Yet in thy reign of blast and storm
> Smiles many a long, bright, sunny day,
> When the changed winds are soft and warm
> And heaven puts on the blue of May."

When does spring begin in this country? That is a question not very easily answered. In popular language the months of spring are February, March, and April, but that is clearly wrong. With us February is certainly not a spring month; it belongs to winter. Another view which has been put forward is that spring begins at the vernal equinox, and continues till the summer solstice. This view has much to commend it, and is certainly not far from the truth, for it is seldom that we have really genial weather till after the turn of the day. Bright, hot days we often have even in May, but the nights are usually cold, and the fear of a killing frost does not quite cease to haunt the mind of the gardener till after the longest day is past. For the purpose of this paper I shall consider March, April, and May as the spring months, though perhaps the true answer to the question would be that spring does not always begin at any fixed date, but varies to a considerable extent according to the season, and is sometimes earlier and sometimes later than the first of March.

Now comes another question, perhaps even more difficult to answer. What are the flowers of spring? How are you to determine them? Not every plant which can be found in bloom in the spring months can rightly be called a flower of spring. The meadow buttercup and the dandelion can be found in flower in May and during most of the succeeding months of the year, but their principal period of blooming is early summer, so that I should hardly class them amongst the flowers of spring. The whin and even the broom can be found in flower during the late autumn months, and even in the winter time when the season is mild, but they are true spring flowers in this district, appearing in full glory in the end of April and during May. But in the case of the broom, if you go to the more upland

districts, you find it in full bloom in June, when it is with us fast running into seed; in the Highland districts, therefore, it is a flower of early summer. Another example of the same kind is the globe flower. With us its chief period of blooming is May, though still continuing into June. But go to the upper rocks and the higher mountains and you find it adorning the ledges and crannies in the beginning of July, or even later. Again, you may find considerable numbers of such plants as the Wood Cranesbill and the Red Campion blooming in May, though perhaps more abundantly in June, whilst other plants, such as the Herb Robert, bloom on from May to October. In such cases you may include them either amongst the spring or summer flowers. The humble chickweed furnishes another example. You can find it blooming abundantly from February onwards to the very end of autumn, and can therefore class it as belonging to spring, summer, or autumn. It is therefore quite impossible to draw any hard and fast line, and I shall not attempt to do so. Some of those, therefore, of which I shall take notice as flowers of spring may, in the opinion of others, belong rather to early summer, and some which I shall leave out others may consider as belonging to spring.

It is often remarked that plants which bloom in early spring, such garden plants, for example, as the snowdrop, the crocus, and the hyacinth, are furnished in their bulbs or corms with a store of manufactured food which enables them to live and grow till they have put forth roots and leaves, and are enabled to obtain fresh food from the soil and air. It is plain, however, that all herbs which die down to the root in winter, and all trees and shrubs which shed their leaves in autumn, must also, though perhaps in a less degree, have a reserve store of food to enable them to make a start and to clothe themselves with fresh leaves. In the case of some herbs, as, for example, the coltsfoot, and in the case of such trees as the alder and the elm, where the flowers appear before the leaves, the reserve store of food must be considerable. This reserve may be stored in bulbs, as in the early spring orchis, or in tubers, as in the celandine, or in the root stock, as in the coltsfoot and others, whilst in the case of the trees the reserve store is contained in the buds and twigs.

In taking a rapid survey of the Flowers of Spring I shall group them chiefly, though not exclusively, according to their Natural Orders. Beginning, then, with the Buttercup family, the *Ranunculaceæ*, the first that calls for mention is *Anemone nemorosa*, the wind flower. The name Anemone means wind flower, and is said to have been given to the plant because it refuses to open till the rough winds of March have blown upon it. The damp meadow or the shady bank suit it best. The flower in bud seems purplish, but when full blown appears perfectly white. Like many others, it rolls up its petals and droops its head when the day is dull and rainy. In similar places, and about the same time or somewhat earlier, our eyes are delighted with the bright green, heart-shaped leaves and glossy, golden, star-like petals of the Pilewort or Figwort, the lesser

Celandine of which Wordsworth was so fond.

"There's a flower that shall be mine,
'Tis the little celandine."

The names of Pilewort and Figwort were given because of the tubers attached to the roots. It is said that the pollen of this plant is often imperfect, and that hence it rarely produces fertile fruit in this country. To make up for this, there arise in the axils of the leaves numerous bulbils which fall off when mature, and enable the plant to reproduce itself and to spread readily, so that it generally grows in dense colonies. A near relation, which blooms somewhat later, and is even fonder of shady places, is *Ranunculus auricomus*, or Goldilocks, the latter name being a translation of auricomus. It is seldom that you find this plant with the full number of petals, as one or more of them are usually abortive. A great ornament of our riverside marshes in spring is the Marsh marigold, *Caltha palustris*. Its shining leaves, and its large and handsome flowers of a beautiful yellow, and its growth in great masses, give it a most striking and effective appearance. The Globe Flower, *Trollius europaeus*, is a lovely plant, commoner in marshy meadows of the upland discricts, though found occasionally on the banks of the Tay below Perth. The name, of course, has been given from the shape of the flower, and because of its incurved petals it has been also called the locken or luckin gowan. *i.e.*, the closed or locked gowan.

Coming now to the Cruciferae, the Wall-flower and Cress family, the Wall-flower itself claims mention as a well-established although perhaps not originally a native plant. The wild plant cannot compete with the fine and varied hues of the cultivated forms, but its scent is as sweet, and it is highly effective when adorning the crevices of Kinnoull Cliff, or blooming in the joints of some old castle rampart. One of the commonest of spring plants and of modest beauty is the Lady's Smock or Cuckoo flower—*Cardamine pratensis*. Properly, it is "Our Lady's Smock," one of the numerous group of plants dedicated to the Virgin Mary, such as "Our Lady's Mantle," "Our Lady's Fingers," and so on. This is said to be the flower intended by Shakespeare in the line:—

"And lady smocks all silver white."

This may be so, for though the flower is usually of a pale lilac, it occurs not seldom and sometimes in abundance of a pure white colour. A near relative is *Cardamine amara*, the Bitter Cress, distinguished at a glance by its delicate white petals and large purple anthers. It blooms rather later and for a shorter period than the Lady's Smock. A much humbler and less striking plant is *Cardamine hirsuta*, the hairy Bitter Cress, growing in all sorts of places wherever it can find room. The Thale Cress is another somewha tsimilar plant, sometimes only a few inches in length, and in better soil growing to a height of 12 or even 18 inches. A tiny plant, seldom more than an inch or two in height, is the common Whitlow grass, *Draba verna*. Old

walls, banks, and bare ground are the habitats it delights in. When growing singly, it is insignificant, but when it gets possession of a plot of bare ground, it covers it as with a white sheet, and forms a charming picture.

A much larger and coarser plant is the Garlic Hedge Mustard—*Sisymbrium alliaria*. Garlic, as part of its name, indicates its offensive smell and taste, and the word Hedge, as well as another name applied to it, "Jack by the Hedge," points out its usual place of abode. An old herbalist tells us that "when eaten by cows it gives a strong, disagreeable taste to the milk." "When fowls eat it, it gives an intolerable rank taste to their flesh." But another authority of the same kind says, "When gathered as it approaches the flowering state, boiled separately and eaten to boiled mutton, it forms a most desirable pot-herb; and to any kind of salted meat an excellent green."

Of the *Violaceæ*, the Violet family, the Wood Violet is a very common and very pretty little plant. It is by no means confined to woods, but frequents shady banks and roadsides where it can get occasional glimpses of the sun. Much rarer, at least in this district, and inferior in beauty, is the Hairy Violet, *Viola hirta*. Then we have the Marsh Violet, which frequents the edges of lakes and rivers, and is common in marshes and damp places in general. Its flowers are small but of a charming colour, delicate pale blue veined with purple.

The *Caryophyllaceae*, the Pink and Chickweed family, furnishes us with several spring flowers, but only two or three can be considered as attractive. The Three-nerved Sandwort, *Arenaria trinervia*, and three common species of the Mouse-ear Chickweed, *Cerastium glomeratum*, *C. triviale*, *C. semidecandrum*, etc., are lowly herbs neither beautiful nor interesting. But the Ragged Robin, *Lychis Flos-cuculi*, a marsh-loving plant, is very handsome, and its pink colour marks it out from the majority of spring flowers, which are white or yellow. Its English name is derived from the petals, which are laciniated, that is, divided into narrow strips. Its Latin specific name, *Flos-cuculi*, means cuckoo flower, from its time of blooming coinciding with the sojourn of the cuckoo in this country. The Lady's Smock and several others have also been called by the English name Cuckoo-flower. The Greater Stitchwort, or Starwort, as it is also called, *Stellaria Holostea*, is also a characteristic and handsome spring plant. When growing as it usually does on a grassy bank in dense clusters, its brittle stems supporting one another or propped up by the stalks of the grass, with its panicles of large white flowers spread out to the sun, nothing, to my mind, can be more beautiful. Scarcely inferior in attractiveness is its near relative *Stellaria nemorum*, the Stitchwort of the groves and woods.

Of the *Geraniaceae*, the Cranesbill family, both names derived from the long, beaked fruit, the small-flowered *Geranium molle* or Dove's-foot blooms plentifully during spring by the dusty roadside or on the open grassy bank. As I have said before, the Wood Cranesbill, *Geranium sylvaticum*, may also be classed among the flowers of spring. This handsome plant is common enough in the

Lowlands, but is much more abundant in the Highland valleys, beautifying with its large purplish flower the river banks and shady haughs, and forming a most striking ornament of the landscape. Sometimes classed in the same family, but certainly very different in appearance, is the Wood-sorrel, *Oxalis acetosella*. The leaves are tri-foliate like those of the clover, and its blossoms of a delicate white, veined with purple, are very lovely. It is sometimes said to be the true shamrock of Ireland, but it is quite as hard to say what is the true shamrock as to decide what is the real Scotch thistle. The pleasant acid flavour of its foliage renders it a favourite, especially on the Continent, as a salad, and in Lapland it is largely used by the natives and is doubtless exceedingly useful as a preventative of scurvy. The well-known salt of sorrel is extracted from its juice.

The great order of *Leguminosae* does not supply us with many spring flowers, but then two of these are the whin and the broom. The whin, or furze, or gorse, is on the whole earlier than the broom, and I need not dwell upon it as an ornament of heaths and commons, or do more than refer to the effect which the first sight of an English common, covered with furze in full bloom, is said to have had upon the great Linnaeus. Sheep are fond of this plant, nibbling the tender young shoots, and sometimes giving to the bush a rather grotesque appearance, as if it had been clipped and shaped in the once prevalent Dutch fashion, of which we occasionally see specimens in old gardens.

On the beauty of the broom it is also quite unnecessary to dwell; the poets have so often sung its praise. What a craving sometimes comes upon the Scot abroad for a sight of its yellow blooms!

"The palm tree waveth high,
And fair the myrtle springs,
And to the Indian maid
The bulbul sweetly sings.
But I dinna see the broom
Wi' its tassels on the lea,
Or hear the lintie's sang
O' my ain countrie."

The curious construction of its flowers, and the explosive force with which the pollen is expelled, render it highly interesting to the botanist. Its foliage has a bitter nauseous taste, and is said to have a deleterious effect upon sheep when they eat it, which is not very often.

Another handsome and common plant belonging to this family is the Heath-pea or Bitter Vetch, *Lathyrus tuberosus*, which is common enough in woods, on banks, and on heaths throughout the country. Its racemês of flowers are varigated with blue, purple, and crimson. It has a tuberous root, which has a sweetish taste, and is sometimes dug up and devoured by hungry boys.

To the *Rosaceæ* we owe the Blackthorn or Sloe Bush, *Prunus spinosa*. Before a leaf appears the sloe clothes itself with a profusion of white flowers; not, however, always followed by a profusion of fruit. The black sloes, however, sometimes occur plentifully enough,

but even the hungry schoolboy can hardly get them down till they are somewhat mellowed by frost. The harsh, austere taste has often furnished the poet with an apt simile :

> " The twa appeared like sisters twin
> In visage, form, and claes,
> Their faces withered, lang and thin,
> As sour as ony slaes."

The leaves were formerly used for adulterating tea, and the juice of the fruit was also at one time largely used in the manufacture of port wine. On this an old author remarks, " Many a fop, when taking his port wine, and tapping his boots with his beautiful blackthorn stick, is little aware that both wine and stick have the same origin." It is unnecessary to add that the virtue of a blackthorn stick in enforcing an argument is well-known to the Irishman.

From February onwards may be seen by the roadside, or on dry banks and waste places open to the sun, a plant which in its leaves and blossoms strongly resembles a miniature strawberry. It is *Potentilla fragariastrum*, the Barren Strawberry, not that it is really barren, but merely that the cushion on which its fruits are placed remains dry, and does not swell up and become succulent and edible like that of the true strawberry. In somewhat similar places, but later on in the spring, may be seen the large plaited leaves and numerous small greenish yellow flowers of " Our Lady's Mantle," *Alchemilla vulgaris*. It is said that the belief once prevailed that this plant had " the power of restoring feminine beauty, however faded." What a pity that we must set aside this belief as not being founded on fact. One other notable plant of the Rose family, the Water Avens, *Geum rivale*, is to be found, as is implied in its name, by the sides of streams and lochs. Its large drooping, yellowish, purplish flowers are by no means devoid of beauty. Its near relation, the Herb Bennet, *Geum urbanum*, is somewhat later in appearing : indeed, both might well be considered as belonging rather to early summer.

The family of Saxifrages, *Saxifragaceae*, furnishes us with the pretty meadow Saxifrage, *Saxifraga granulata*, the latter word referring to the little roundish tubers with which its roots are provided. To the same family belong the two species of Golden Saxifrage, *Chrysosplenium oppositifolium* and *alternifolium*, which grow in dense masses on boggy places by the edges of rills or around the mouths of springs. The gooseberry and the currants also are sometimes placed here, but doubt has been cast on their claims to be considered native. At least they occur not seldom in a wild state.

Of the *Umbelliferæ* we have only two which can be considered flowers of spring. The common Hedge Parsley, *Anthriscus sylvestris*, often mistaken for hemlock, is extremely plentiful on banks and roadsides, and its large, finely-cut leaves and wealth of flowers make it no mean ornament. Somewhat similar in appearance, but more confined to the banks of rivers and streams, is the Sweet Cicely, *Myrrhis odorata*, so called on account of its strong scent, supposed to resemble that of the myrrh of the East. Its large fruits are said to

have been used for polishing and perfuming the floors of rooms. Some people like the odour of this plant, but to me it is highly disagreeable.

An inconspicuous but graceful little plant, the Moschatel or Muschatel, found in woods and shady places, though anything but showy, is of some botanical interest. Its flowers are arranged in fives, one above the other four. The upper flower has usually its parts in fives, the others in fours. The plant, as its name implies, has a musky odour.

The large family of the *Compositæ* comprehends several plants, such as the dandelion and the groundsel, which can be found blooming in spring and during the rest of the year, but only two which can really be termed flowers of spring, the well-known Coltsfoot, *Tussilago farfara* and the Butter-bur, *Petasites vulgaris*, of neither of which is it needful to say much. The Coltsfoot, so called from the shape of its leaves, sends up its scaly flower-stalks early in March, sometimes earlier. It is a pestilent weed, difficult to eradicate when it gets into cultivated ground. From the fact of its flowers appearing before the leaves it was called in Latin *Filius ante patrem*, and the English translation of this, "The son before the father," has been applied to it in some parts of this country. It had formerly a great reputation as a remedy for coughs, hence the generic name *Tussilago*, *cough expeller*, and its leaves are said to make a good substitute for tobacco. The butter-bur, when it gets into a piece of waste ground, takes complete possession of it, and, after flowering, covers it completely with its great umbrella-like leaves. From the fact that we have only male heads of flowers, producing no fruit, I doubt very much if it is a true native of this district.

The Borage family, *Borragineæ*, supplies us in spring with two small flowered Forget-me-nots, *Myosotis collina*, and *Myosotis versicolor*; the former and rarer with flowers of unchanging blue, whereas in the latter they are at first yellow and afterwards become blue. The true forget-me-not may be found sometimes blooming in May, but really belongs to a somewhat later period.

Belonging to the Figwort family, the *Scrophulariaceæ*, we have in spring four species of Veronica, two of which are found chiefly as weeds of cultivated ground; another is rarer, and likes to hide in the depths of the wood. But the Germander Speedwell, *Veronica chamædrys*, is a lovely ornament of our banks and groves. Robert Nicoll sings of the "speedwell's peeping eyes," and Ebenezer Elliot celebrates its beauty under the name of the blue eye-bright.

> "Blue eyebright! loveliest flower of all that grows
> In flower-loved England! Flower whose hedgeside gaze
> Is like an infant's! What heart doth not know
> Thee, clustered smiler of the bank."

In ancient times this plant was thought to be effective against evil spells, and indeed a sunny bank glowing with the bright blue blossoms of the speedwell must surely delight the sad heart and banish for a time "loathed melancholy."

Of the order of *Labiatæ* I consider the Ground Ivy, *Glechoma hederacea*, as the only one which can be considered as a true flower of spring. It is common enough in woods and on banks. No doubt the white and red dead nettles might come into our category, but they bloom from April onwards through the year, and are not really distinctive of one season.

A very singular plant belonging to the order of Broom-rapes, *Orobanchaceæ*, must not be passed over. This is the Tooth-wort, *Lathræa squamaria*. It is parasitic on the roots of various trees, and the curious tooth-shaped scales which clothe its underground stems have given origin to its name. Only the flowering stems appear above ground, which they do in April and May. Having fulfilled their function they die off and disappear, and the plant remains hidden below ground for the rest of the year. *Lathræa* means hidden.

Of the *Primulaceæ* it is necessary to do little more than to mention the Primrose and the Cowslip. To attempt to describe their beauty and their charm is quite needless. They have been celebrated in poem and in song by the greatest masters of the lyre as well by lowlier bards. Their charm of colour and scent will always endear them to the true botanist, but to him the classic researches of Darwin have disclosed a beauty of structure and adaptation unknown to the poets, and quite unsuspected by all till revealed by the genius of the great naturalist.

To Darwin, also, we are indebted for shedding a clear light upon the meaning and use of the structure found in the next curious floral order of plants we shall mention, the *Orchideæ*, of which one member, the early purple Orchis, *Orchis mascula*, comes into our list of spring flowers. The method by which the pollen masses are carried by insects from the flowers of one plant to those of another to ensure cross-fertilization can very well be seen in *Orchis mascula*, which is moreover a common and handsome plant of spring. Its tubers are used for the production of Salep, a nutritious food. Previous to this last, I should have mentioned, what is often a pestilent weed, and which belongs to the Spurge family, Dog's Mercury, *Mercurialis perennis*. In this the sexes are on separate plants, and the structure is of some interest. But the plant otherwise is possessed neither of beauty nor utility, and in fact is reputed to be possessed of poisonous qualities.

The family of Lilies, *Liliaceæ*, yields us one very handsome spring flower, Wild Garlic or Ramsons, *Allium ursinum*, which delights in shady groves. At a distance its broad green leaves and showy clusters of white blossoms give it an attractive appearance, but its strong and loathsome odour forbids a nearer approach, and altogether prevents it from forming part of a bouquet.

To the same family belongs the well-known Blue-bell or Wild Hyacinth. This plant has been unfortunate in the number of scientific names which have been at different times bestowed upon it. It has been placed in at least four different genera, and has had at least three different specific names. It is no doubt nearly related to the hyacinths, and even more nearly to the squills. It

has been pretty generally known of late by the name of *Scilla nutans*, the Nodding Squill. Blue-bell is a very expressive name, but then it is shared by our Scottish blue-bell, *Campanula rotundifolia*, which sometimes causes confusion. However that may be, the wild hyacinth is a great ornament of our woods and banks, preferring perhaps the shade, but by no means confined to it. Whoever has not seen a patch of wood, or the shady bank of some stream, as for example the May, covered with the blue-bell in spring, for him "Earth hath something yet to show," a vision of delight is yet in store for him.

Of the remaining families, the Rushes, Sedges, and Grassses, each furnish a few species which flower in spring, but of these it is not necessary to say more. But I should like to take some notice of the trees which come into our list, and which I have hitherto passed over.

In most of our spring flowering trees the flowers appear before the leaves, and this is an advantage, for as the sexes are separate, and the light powdery pollen is usually carried by the wind, it renders pollination easier and more certain. The Black Alder loves the banks of rivers and streams, and though often not much more than a large bush, it will in favourable circumstances develop into a tree of considerable bulk and height. Early in March it hangs out its pendulous male catkins. These are graceful and conspicuous; the females, on the other hand, are small and require to be looked for. Its timber is highly valued for many purposes, and has the valuable property of not easily decaying under water. A little later in March the Hazel unfolds its flowers, the males, like those of the Alder, in drooping catkins, which are usually in threes; whilst the females, consisting merely of a few small scales, would be difficult to see, were it not for the bright crimson stigmas which peep out from their midst. In the South of England the hazel is cultivated for the sake of its nuts or filberts; and in other places it is extensively planted in coppices for the sake of its wood, which is used for many purposes, and especially for the making of charcoal. A forked twig of hazel formed the ancient divining rod by which it was supposed that hidden treasure could be pointed out, and even in our own day many people believe that by its use subterranean springs may be discovered.

The Birch and the Oak also come into our list, but are too well known to need further notice at this time. The numerous tribe of Willows, some of which, however, do not reach the height of even a small tree, also clothe themselves with catkins in early spring. They differ from the others in that their pollen is carried, not by the wind, but by insects, and the trees are dicecious—that is, each tree bears flowers of one sex only. Willow bark is said to be a good substitute for quinine, and the salt extracted from it has been greatly used of late years instead of the product of Peru.

A near relation of the willows is our only native poplar, the Aspen, *Populus tremula*. The trembling of its leaves in the slightest breath of wind has given origin to the specific name *tremula*, and also to the very expressive designation of "Quaking Ash," given to it

in Scotland. Trembling like an aspen leaf has become quite a proverbial expression. Many legends have gathered about this tree on account of this property of the leaves. It was believed that the Cross on which the Saviour was crucified was made of the wood of this tree, and that the leaves have been trembling ever since. Another story was that on the flight to Egypt, Joseph and his family came into a forest where all the trees made obeisance to the infant Saviour except the aspen, and that the Holy Child thereupon pronounced a curse upon it, which caused its leaves to shake and quiver ever after. This trembling is, of course, a result of the structure of the leaf-stalk, which is long, thin, and flattened. Several other poplars have the same habit, though perhaps in a less degree.

The Elm and the Ash are not catkin bearers, but generally produce an immense number of small flowers devoid of colour and beauty. In the ash many of the flowers are only male, others only female, and others hemaphrodite, all in the same cluster. I do not need to speak of the value of either as a timber-bearing tree.

Going back to the *Rosaceæ*, we have two species of the genus *Prunus*, which usually flower in May and continue into June, the Bird Cherry and the Gean. The long, pendulous racemes of the former make it a very handsome tree when in flower, but its drupes in autumn are palatable only to the birds. All know what a splendid object is a Gean tree when clothed with its blossoms, as in white, shining raiment, and all know how soon the petals fall from the tree, and lie all around withered and dead.

To a different section of the same order belongs the Rowan or Mountain Ash, well characterised by Linnæus as sober-coloured in summer, beautiful in spring and autumn. The poet also has sung of it:

> "How fair wert thou in simmer time, wi' a' thy clusters white,
> How rich and gay thy autumn dress, wi' berries red and bright."

Wonderful powers were formerly ascribed to this tree. It was potent to ward off danger from the evil eye; crosses of its wood were distributed at Christian festivals to fortify against the power of the Evil One; and it was supposed to be a sure preventative from the ill deeds of witches and warlocks. Its clusters of scarlet berries make a favourite jelly, and afford delicious food to the birds. It is quite wonderful to see how quickly the blackbirds, when once they begin, will strip a tree of its load of fruit, and leave nothing but bare twigs.

A near relation to the Rowan, the Crab-apple, is the last tree which I shall notice. Like all apple and pear trees, it is very handsome when in flower. Its fruit, however, is sour indeed, and has, I suppose, given origin to our very expressive Scottish word—crabbit. It is, however, eagerly sought after by many to be made into jelly. Its wood would be of some value if there were enough of it. A crab-tree cudgel, however, seems to have been quite as serviceable in a certain kind of warfare as the Irishman's blackthorn, for we read in Butler that:

> "With many a stout whack, many a bang,
> Stout crab-tree and old iron rang."

10th April, 1913.

W. BARCLAY, President, in the Chair.

The following papers were read :—

"Longevity," by Dr. Sturrock.

"Perthshire Diptera—Aberfoyle District," by A. E. J. Carter.

(See *Transaction*, Vol. V., Part V., p. 176).

SUMMER SESSION, 1913.

The following excursions were arranged :—

1. Monday, 12th May (Victoria Day). Drive from Meigle by Glamis and Auchterhouse back to Meigle.
2. Saturday, 31st May. The Ancient Fortifications in the Kirkton Glen, Balquhidder.
3. Saturday, 21st June. Ballinluig, along Banks of Tay to Dunkeld.
4. Saturday, 5th July. Carn-na-caim (3,087 feet).
5. Saturday, 12th July (Half day). Luncarty by Blindwells Loch to Stanley.
6. Saturday, 26th July (Half-day). Almondbank, through Methven Wood, to Dalcrue and Lynedoch.
7. Saturday, 2nd August. Blair Atholl and Hill of Tullich.
8. Monday, 25th August. Drive from Perth by Edentown, Strathmiglo, Falkland, and Auchtermuchty, to Newburgh and back to Perth.
9. Fungus Excursion.

LIST OF DONATIONS TO THE LIBRARY,

SESSION 1912-13.

I.—GIFTS FROM INSTITUTIONS.

Banff, Transactions of the Banffshire Field Club, 1910-11.
The Flora of Banffshire.—The Society.

Belfast, Annual Report and Proceedings, Belfast Naturalists' Field Club, Vol. vi., Part 5—The Society.

Bern, Verzandlungen der Schweizerichen naturforschenden Gesellschaft, 1911—The Society.

Brisbane, Queensland Naturalist, Vol. i., No. 10—The Club.

Brooklyn Institute of Arts and Science, Report for the Year 1910, 1911; Museum News, 1912—The Museum.

Cambridge, 46th Annual Report of the Museums and Lecture Rooms Syndicate, 1911-12—The Museum.

Chicago, Field Museum of Natural History, Annual Report, 1911—The Museum.

Cincinnati, Bulletin of the Lloyd Library, Nos. 19, 20.
Bibliographical Contributions. Nos. 5, 6.
Synopsis of the Section Ovinus of Polyporus.—The Lloyd Library.

Dumfries, The Transactions and Journal of Proceedings of the Dumfriesshire and Galloway Natural History and Antiquarian Society, 1911-12—The Society.

Edinburgh, Notes from the Royal Botanic Gardens, Nos. 1-21, 23, 25, 26, 27, 31, 32, 33—The Director.
Proceedings of the Society of Antiquaries of Scotland, 1910-11—The Society.
Thirtieth Annual Report of the Fishery Board for Scotland; Notes on some small Crustacea from the "Goldseeker" Collections; Salmon Fisheries, 1911.—The Board.
Transactions and Proceedings of the Botanical Society of Edinburgh, Vol. xxiv., Parts 2, 3—The Society.
Transactions of the Field Naturalists' and Microscopical Society, Vol. vi., Part 5—The Society.
Transactions of the Edinburgh Geological Society, Vol. x., Part 1—The Society.
Transactions of the Royal Scottish Arboricultural Society, Vol. xxvii., Part 1—The Society.
Transactions of the Royal Society of Edinburgh, Vol. xlviii, Parts 1, 2; Proceedings, Vol. xxxii.

Essex Naturalist, Vols. xvi., Parts 7-12; xvii., Parts 1-3—The Field Club.

Glasgow, The Glasgow Naturalist, Vols. ii., iii.—The Society.

Hull, Museum Publications, 1912—The Museum.

Liverpool Botanical Society, Proceedings, 3rd to 6th Session—The Society.

London, Board of Agriculture and Fisheries, Leaflets Nos. 259 to 262.
British Museum—Catalogue of Bats, Vol. i.; Index to Handbook of Birds; Catalogue of Moths, Vol. xi., Text and Plates; Revision of the Ichneumonidæ, Part 1; Monograph of Mycetozoa; Guide to Bible Exhibits—The Trustees.

Proceedings of the South London Entomological and Natural History Society, 1911-12—The Society.

Quarterly Journal of the Geological Society, Vol. lxviii.; Geological Literature, 1911; List of the Geological Society of London, 1912.—The Society.

Report of the British Association, Portsmouth Meeting, 1911—The Association.

Manchester, The Manchester Museum, Report for the year 1911-12—The Museum.

Mexico, Parergones del Instituto Geologico de Mexico, Tomo III., Nos. 9, 10—The Museum.

Michigan Academy of Science, 13th Report—The Academy.

Millport, Marine Biological Association of the West of Scotland, Annual Report, 1911—The Association.

Missouri Botanical Gardens, 22nd Report—The Trustees.

New York, Bulletin of the American Museum of Natural History, Vol. xxx.; Memoir, Vol. i., Parts 1, 2, 3; 43rd Annual Report.—The Museum.

Zoologica, Vol. i., Nos. 8, 9—Zoological Society.

Northampton, Journal of the Northants Natural History Society and Field Club, Nos. 125 to 128—The Society.

Nova Scotian Institute of Science, Vol. xii., Part 3—The Society.

Ottawa, Memoirs Nos. 13, 21, 24, 29; Summary of the Geological Survey Branch, 1911; Report of the Commission appointed to investigate Turtle Mountain.—Geological Survey.

Oxford, Ashmolean Natural History Society, Proceedings and Report for 1911.

Perth, County and Chief District Sanitary Inspector, Report, 1910—The Inspector.

Health Report for the City of Perth, 1910—The Medical Officer.

Sandeman Public Library, 14th Annual Report—The Librarian.

Perthshire Natural History Museum, Annual Report, 1911-12—The Curator.

Perth, W. A., Records of the Western Australian Museum and Art Gallery, Vol. i., Part 2—The Trustees.

Philadelphia, Academy of Natural Science, Proceedings, Vol. lxiv., Parts 1, 2.

Pittsburg, Annual Report of the Directors—The Carnegie Museum.

Stirling Natural History and Archæological Society, Transactions, 1911-12—The Society.

Sydney, Records of the Australian Museum, Vol. viii., No. 3; Vol. ix., No. 1—The Museum.

Torquay Natural History Society, Journal, 1912—The Society.

Washington, Annual Report of the Smithsonian Institution, 1910; U.S. National Museum—The Directors.

Bulletins 448, 466, 470, 484, 485, 491-494, 496, 498, 500, 504-509, 511, 512, 514-520, 523.

Professional Papers 69, 71, 74; Water Supply Papers 271, 278-280, 282, 284-291, 294, 296, 298, 304; Mineral Resources, 1910, Parts 1, 2.

Yorkshire Philosophical Society, Report, 1911.

II.—Gifts from Persons.

Barbour, Dr. G. F., Bartholomew's Physical Atlas, Vol. iii., Meteorology, v. Zoogeography.

Barclay, W., Transactions of the Antiquarian Society, Perth, Vol. i.

Bruce, Dr. W. S., Scientific Results of the "Scotia," 1902-4, Vols. ii., iii., iv., v.

Campbell, Col. John, The Scottish Geographical Magazine, 1912.

Coates, H., British Rainfall, 1911; Ancient Sea Margins.

Crampton, C. B., The Geological Relations of Stable and Migratory Plant Formations.

Ellison, S. T., Photography, 1911; Entomologist, 1912.

Meek, Prof. A., Northumberland Sea Fisheries Commission Report, 1912.

Murray, Sir John, and Lawrence Pullar, Bathymetrical Survey of the Fresh Water Lochs of Scotland.

Pullar, R. D. and A. E., Framed Portrait of Sir Robert Pullar; Atlas; Fish and Fisheries; Fauna and Flora of the West of Scotland; Select Ferns and Lycopods; Orchid Grower's Manual; etc.

RESULT OF CHILDREN'S ESSAY COMPETITION, 1912.

FIRST DIVISION, Age 14 years and over.

1st Prize —Angus Mackay, Perth.
2nd ,, —Robert Marshall, Perth.
3rd ,, —Ian Stewart, Pitlochry.
Certificate—Mary Mackay, Pitlochry.
,, —Robert Stott, Pitlochry.

SECOND DIVISION, Age 13 years.

1st Prize —James Buist, Perth.
2nd ,, —James Malloch, Perth.
3rd ,, —William Robertson, Perth.
4th ,, —Charles Menzies, Perth.
5th ,, —James Chisholm, Perth.
6th ,, —Madge Gow, Scone.
7th ,, —Emma Mason, Scone.
Certificate—Bessie Mackay, Scone.
,, —Robert Hendry, Scone.
,, —John Inkster, Perth.
,, —William Pethers, Perth.
,, —Alexander Shaw, Perth.
,, —Isabella Menzies, Scone.
,, —Charles Croll, Perth.
,, —William Smith, Perth.
,, —Jennie P. W. Paterson, Scone.

THIRD DIVISION, Age 12 years.

1st Prize — H. M'Naughton, Perth.
2nd ,, —Thomas L. Robertson, Perth.
3rd ,, —Jenny Aitken, Perth.
4th ,, —James Kidd, Perth.
Certificate—Ian Moncrieff Rennie, Perth.
,, —Cecil M'Adam, Perth.
,, —Roy Taylor, Scone.
,, —Gladys Watkins, Perth.
,, —James Roy, Perth.
,, —Fred Boyd, Scone.

FOURTH DIVISION, Age 11 years.

1st Prize —Alexander M'Glashan, Perth.
2nd ,, —Maggie Scott, Perth.
3rd ,, —David Pirrie.
Certificate—Mary Douglas, Rhynd.
,, —Joseph M'Donald, Rhynd.

ROLL OF MEMBERSHIP, AS AT 31ST OCTOBER, 1913.

* Life Members.

HONORARY MEMBERS.

Geikie, James, LL.D., F.R.S., etc., Professor of Geology, Edinburgh University, ...	2nd February, 1882
Murray, Sir John, Challenger Lodge, Edinburgh, ...	9th January, 1913

CORRESPONDING MEMBERS.

Bennett, 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., Surgeon's Hall, Edinburgh, ...	14th March, 1907
Calman, W. T., D. Sc., British Museum, Cromwell Road, London, ...	11th April, 1895
Geddes, Patrick, F.R.S.E., University College, Dundee,	3rd February, 1881
Macnair, P., The Museum, Kelvingrove, Glasgow, ...	13th November, 1890
M'Gregor, T. M., Australia, ...	5th March, 1885
Mill, Dr. H. R., F.R.S.E., 62 Camden Square, London, N.W., ...	7th April, 1892
Ramsay, E. P., F.L.S., Curator of Australian Museum, Sydney, ...	7th February, 1884
Smith, Rev. Frederick, The Parsonage, South Queensferry	13th November, 1890
Thompson, Professor D'Arcy, M.A., C.B., University College, Dundee, ...	10th November, 1892
Trail, J. W. H., M.A., M.D., F.L.S., 81 High Street, Old Aberdeen, ...	8th February, 1872
White, Mrs. Buchanan, Manitoba, ...	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
Laidlaw, Mr., Gamekeeper. Castle Menzies, Glenlyon,	7th February, 1884
Milne, Captain W., Tayport, ...	14th March, 1901
M'Intosh, Charles, Inver, Dunkeld, ...	... 1st May, 1873
Robertson, Captain T., *S.S. Scotia*, ...	14th March, 1901

ORDINARY MEMBERS.

Alexander, John, M.A., Sharp's Institution, ...	14th December, 1893
Allan, Thomas, Stanley, ...	13th April, 1899
Anderson, Andrew, c/o P. D. Malloch, New Scott Street,	9th December, 1897
Anderson, John L., Nenthorn, Gray Street, ...	12th April, 1906
Anderson, Thomas, M.A., B.Sc., 29 St. Andrew's Square, Edinburgh, ...	10th December, 1908

*Barbour, George F., D.Phil., Bonskeid, Pitlochry, ..	11th January, 1912
Barclay, Miss E. A., Joppa, Glasgow Road, ...	13th December, 1906
Barclay, William, Friar Strreet, Craigie, ...	1st February, 1883
Barclay, William A., Bank House, Tay Street, ...	9th December, 1897
Barlas, J., 231 High Street, ...	13th February, 1908
Bates, G. F., B.A., B.Sc., Westoe, Craigie Road, ...	13th December, 1900
Bates, R. Martin, School Board Office, Tay Street, ...	13th April, 1911
Beattie, S., M.B., Craigvar, Pitlochry, ...	9th December, 1897
*Bedford, Duchess of, Woburn, Beds., ...	12th December, 1907
*Bell, A. K., Barclay Hills, near Perth, ...	11th April, 1912
*Bell, Mrs. A. K., Barclay Hills, near Perth, ...	11th April, 1912
Bell, Mrs., Priestfield, Glasgow Road, ...	13th December, 1900
Bell, R. D., Dumbarron, Strathmiglo, ...	11th January, 1912
Blair, Robert, New Scott Street, ...	11th December, 1902
Bouick, James B., Gowan Bank, Abbot Street, ...	14th February, 1905
Brady, George, 8 Comely Bank, ...	11th April, 1895
Brand, John, Upland, Kinnoull, ...	10th December, 1891
Brand, Robert, 10 Barossa Place, ...	7th April, 1892
Breadalbane, Marquis of, K.G., Taymouth Castle, Aberfeldy, ...	... 7th April, 1892
Brough, Miss Elizabeth, Wilson Street, Craigie, ...	13th March, 1902
Brough, Robert, Ochilview, Bridge of Earn, ...	9th December, 1909
Brown, Alfred W., Seedsman, High Street, ...	14th December, 1903
Brown, J. A. Harvie, F.Z.S., Dunipace House, Larbert,	10th December, 1891
Brown, Peter M. W., 28 Nasmyth Place, Kelty, Fife-shire, ...	10th December, 1908
Burnett, C., Comely Bank, ...	22nd February, 1894
Butter, Thomas, 8 Marshall Place, ...	8th March, 1894

Calderwood, James, 18 Pitcullen Crescent, ...	12th April, 1906
Cameron, David, Commercial Street, Bridgend, ...	14th December, 1884
Campbell, Colonel, Westwood, Cupar-Fife, ...	18th January, 1884
Campbell, D., Clyde Place, Needless Road, ...	... 7th April, 1904
Campbell, Edward, Lignwood, New Scone, ...	11th April, 1889
Campbell, P. W., Muirton Bank, ...	9th March, 1899
Campbell, John, Tregaron, Glasgow Road, ...	12th January, 1911
Carter, A. E. J., The Retreat, Monifieth, ...	10th December, 1908
Chapman, Samuel, King James Place, ...	16th January, 1896
Christie, James, 8 Paul Street, ...	11th April, 1895
Chrystal, George, Bridgend House, ...	2nd December, 1880
Clacher, James, 9 George Crescent, ...	3rd April, 1879
Coates, Henry, F.R.S.E., Corarder, Glasgow Road, ...	... 9th May, 1875
Coates, James, Corarder, Glasgow Road, ...	... 9th May, 1875
Coates, Miss, Corarder, Glasgow Road, ...	3rd January, 1878
*Colquhoun, Col., Clathick, Crieff, ...	5th December, 1878
Cox, W. H., Snaigow, Murthly, ...	8th December, 1898
Craigie, James, Sandeman Public Library, ...	12th March, 1903
Cranbrook, The Right Hon. Earl of, Hemsted Park, Cranbrook, Kent, ...	8th December, 1910
Crawford, Rev. T., B.D., Orchill, Braco, ...	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, Rosemount Place, ... 16th January, 1896
Dewar, Sir John A., Bart., M.P., Dupplin Castle, ... 7th February, 1878
Dewar, John, Dupplin Castle, ... 9th December, 1897
Dickson, Miss, Greenbank, ... 2nd February, 1882
Dixon, J. H., Dundarroch, Pitlochry, ... 8th February, 1912
Dodson, Charles, Auchter Villa, Clyde Place, ... 12th April, 1900
Donald, D., 30 Shields' Buildings, Dunkeld Road, ... 11th December, 1902
Douglas, Henry, City Chambers, ... 11th January, 1900
Drummond, The Hon. Mrs., Megginch Castle, ... 13th March, 1902
*Drummond, Miss Sybil, 15 Grosvenor Crescent, London, 9th January, 1902
Drummond, Col. Arthur N. H. Hay, Cromlex, Dunblane, 13th April, 1905
Drummond, Neil, Cherrybank, ... 13th February, 1913
Dunbar, Sir W. C., Bart., C.B., Earnbank, Bridge of Earn, ... 12th December, 1912
Durran, George, M.A., Perth Academy, ... 8th March, 1906

Ellison, Samuel T., Garth, Barnhill, ... 7th March, 1878
Ellison, William, Cragville, Barnhill, ... 3rd March, 1881
Evans, Miss Z. E., 32 Balhousie Street, ... 10th December, 1896

Falconer, William D. M., Roselea, Perth Road, Blairgowrie, ... 9th March, 1889
Farquhar, Rev. Dean, Balhousie Bank, ... 8th December, 1887
Fehrenbach, G. W., Watchmaker, Dunkeld, ... 7th February, 1884
Fenwick, F., Pitcullen Terrace, ... 8th December, 1898
Fenwick, J. E., 5 Comely Bank, ... 14th December, 1911
Ferguson, Archibald M., Pitcullen Terrace, ... 13th December, 1900
Ferguson, R. C., Ferndale, Barnhill, ... 11th April, 1889
Ferrier, D., 1 Edin Terrace, Edinburgh Road, ... 10th December, 1891
Fordyce, J., 1 Moredun Terrace, Craigie, ... 14th December, 1911
Forgan, James, Belhelvie Terrace, ... 8th February, 1912
Fothringham, W. Steuart, Murthly Castle, ... 13th April, 1905
Frew, Thomas, King James Place, Perth, ... 16th January, 1896
Fulton, W. M., 3 Moredun Terrace, ... 10th April, 1913

Gall, Miss, 8 Glover Street, ... 14th November, 1895
Gall, W. S., Duneaton, Glasgow Road, ... 16th December, 1903
Gellatly, James, Hillyland, ... 7th April, 1904
Gloag, Robert, 8 Hospital Street, ... 13th December, 1894
Graham, John T., M.D., Dunalastair, ... 10th December, 1891
Grant, Miss, 59 North Methven Street, ... 12th April, 1906
Gray, George, Bowerswell, ... 2nd February, 1882

Halley, Robert, Barossa Place, ... 16th January, 1896
Hamilton, R., Gleniffer Cottage, Dunkeld Road, ... 12th April, 1906
*Hay, Lieut.-Col. Drummond, Westwood, Kinfauns, ... 14th January, 1897
Hay, Miss Drummond, Seggieden, ... 14th December, 1899
Hay, H. M. Drummond, Finlay, Muir & Co., Colombo, Ceylon, ... 12th December, 1907
Henderson, H. Dalton, The Orchard, Glasgow Road, 14th January, 1904
Howie, Miss, 8 Moredun Terrace, ... 7th April, 1904
Humble, Miss Eleanor W., 32 Balhousie Street, ... 10th December, 1896
Hunt, Leigh, M.B., C.M., King Street, ... 2nd February, 1882

Hunter, Robert, St. John's, Glasgow Road, ... 9th December, 1909
Hutton, James, Secretary's Office, Inland Revenue, Somerset House, W.C., ... 12th January, 1911

Inglis, Robert, Kinnoull Street, ... 10th April, 1913

Jack, Ernest, C.A., Poplar Bank, Scone, ... 11th January, 1912
Jameson, Melville, Brompton Terrace, ... 7th January, 1869
Jamieson, Miss, Ardbeg, Glasgow Road, ... 3rd January, 1878
Jardine, John, Parkhead, Burghmuir, ... 9th February, 1905
Jarvie, John Stirling, Balhousie Terrace, ... 12th 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 Maggie, 20 King Street, ... 12th April, 1900
Kennedy, James, 19 Polwarth Gardens, Hyndland, Glasgow ... ... 1st May, 1884
Kidston, R., F.R.S., F.G.S., LL.D., 12 Clarendon Place, Stirling, ... 4th December, 1884
King, Mrs., 2 Blackfriars Street, ... 11th April, 1901
Kinloch, R., W.S., Clydesdale Bank, ... 18th December, 1890
Kinnear, James, St. Catherine's Villa, Friar Street, ... 8th April, 1909
Kippen, R. M., Solicitor, Tay Street, ... 2nd March, 1882
Knight, Rev. G. A. F., M.A., F.R.S.E., 9 St. Leonard's Bank, ... 12th December, 1901
Knight, Mrs., 9 St. Leonard's Bank, ... 7th April, 1904
Kyd, Miss L., Barossa Place, ... 10th March, 1904

Lambie, John, M.A., B.Sc., Elibank, Glasgow Road, 9th February, 1911
Landreth, Rev. P. R., Jock's Lodge, ... 12th January, 1899
Lawson, Robert, 4 Moncreiffe Terrace, ... 11th April, 1895
Leslie, Hugh, Strone, Brompton Terrace, ... 12th April, 1900
Low, Miss, Tay Street, ... 12th April, 1902
Lowson, D. S., M.A., The Pines, Balhousie, ... 1st April, 1886
Lyell, John, M.D., 15 Marshall Place, ... 13th December, 1900

Malloch, Gilbert, Almond Villa, Glasgow Road, ... 16th January, 1896
Malloch, Joseph N., Stormont Cottage, Bridgend, ... 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, D., Tay Street, ... 7th January, 1869
Marshall, James M'Lean, Bleaton Hallet, Blairgowrie, 10th March, 1910
Marshall, Thomas, The Store, Stanley, ... 1st October, 1868
Marshall, T. B., 52 Balhousie Street, ... 14th December, 1911
Martin, David, Strathearn Terrace, ... 10th April, 1913
Matthews, James R., Duncrub, Dunning, ... 13th April, 1911
Meldrum, R. H., Schoolhouse, Tibbermore, ... 1st May, 1884
Menzies, James, 2 Keir Villa, Strathmore Street, ... 12th March, 1896
Mercer, Major, Huntingtower, ... 8th December, 1904
Mercer, W., 95 High Street, ... 8th January, 1899
Miles, Miss M.L., L.L.A., 2 Laurel Bank, ... 14th December, 1899
Millais, Sir J., Bart., 38 Lower Belgrave Street, Eaton Square, London, ... 13th March, 1902

Millar, A. D., H.M.I.S., Maristuen, Crieff, ... 11th January, 1912
Miller, Alexander, Osborne Terrace, Craigie, ... 14th November, 1895
Miller, George A., W.S., Knowehead, ... 2nd December, 1886
Miller, J. G., Mayfield, ... 23rd March, 1893
Miln, D. N., Ingleside, Wilson Street, ... 16th January, 1896
Miln, Charles, Ingleside, Wilson Street, ... 13th April, 1911
Mitchell, R. M'Gregor, 42 George Street, ... 14th December, 1911
Moncrieff, John, Summerbank, ... 8th March, 1906
Moncrieff, Mrs., Summerbank, ... 8th March, 1906
Moncrieff, Thomas, Springland, ... 5th March, 1885
Moray, The Right Hon. the Earl of, Kinfauns Castle, ... 8th December, 1904
Morison, James, Hasland, Kinnoull, ... 7th February, 1884
Morison, Miss, Hasland, Kinnoull, ... 13th February, 1890
Morrison, W., Gowrie Street, Bridgend, ... 16th January, 1896
Muirhead, George, Muirhall Terrace, ... 14th November, 1895
Munro, James W., B.Sc., Aberdeen University, ... 13th April, 1911
Murray, David, 3 Craigie Crescent, ... 11th December, 1902
Murray, George J., Yewbank, Monifieth Road, Broughty Ferry, ... 10th February, 1910
Murray, The Hon. Miss Gladys Graham, Stenton, Dunkeld, 8th January, 1899

M'Ainsh, Rev. John, B.D., U.F. Manse, Strathbraan, Dunkeld, ... 12th January, 1899
M'Arthur, John, Gray Street, ... 7th February, 1884
M'Callum, W. B., 4 Brunswick Terrace, ... 14th January, 1909
M'Cash, W. F., Cornhill House, Burghmuir Road, ... 11th March, 1909
M'Cash, Mrs. W. F., Cornhill House, Burghmuir Road, 11th March, 1909
M'Donald, Miss Barbara, Castleview, Glasgow Road, 11th February, 1897
M'Dougall, Miss Jessie E., Eastertyre, Ballinluig, .. 13th December, 1906
M'Ewen, James, Craigie Bank, ... 7th April, 1892
M'Ewen, Colonel, Craigie Bank, ... 9th December, 1909
M'Farlane, Miss, 2 King's Place, ... 13th December, 1900
Macgregor, Atholl, Ardchoile, ... 7th December, 1882
MacGregor, Lady Helen, of Macgregor, Edenchip, Balquhidder, ... 8th December, 1904
MacGregor, Miss Murray, Barossa Place, ... 9th March, 1899
M'Gregor, Alexander, 71 High Street, ... 12th April, 1906
M'Gregor, John, Rosaire, 24 Strathmore Street, ... 4th March, 1886
M'Kay, A. T., 16 Barossa Place, ... 9th April, 1903
*M'Kendrick, Andrew, Livadia, Greece, ... 9th April, 1896
M'Kenzie, Alexander, Kinnoull Street, ... 14th April, 1898
Mackenzie, George A., Solicitor, George Street, ... 12th April, 1870
M'Lagan, John, Maxwelltown, Kinnoull, ... 11th January, 1912
M'Lagan, Miss B. C., 8 Moredun Square, Craigie, ... 11th April, 1907
M'Laren, Thomas, Redcliffe, Barnhill, ... 11th April, 1912
M'Laren, William, Architect, Balhousie, ... 7th February, 1878
M'Leod, Miss, Rose Terrace, ... 10th February, 1898
M'Leod, Nurse, Leith's Buildings, Dunkeld Road, ... 14th April, 1910
M'Nab, Duncan, ex-Lord Provost, High Street, ... 12th April, 1906
M'Nab, Miss, L.L.A., Fitzroy Terrace, ... 14th November, 1895
M'Nicoll, Robert, County Buildings, Tay Street, .. 12th December, 1907
Nairne, William, Cherrybank Public School, ... 9th April, 1903
Newlands, Miss Helen, Tayside, ... 10th January, 1901

Newlands, Mrs., Craigend Manse, ... 9th April, 1908
Newlands, Rev. T. S., B.D., Craigend Manse, ... 9th April, 1908
Nicol, A., Paradise Place, ... 12th November, 1895
Nicol, Edward, Paradise Place, ... 10th December, 1891
Nicolson, D. B., M.A., Westerfield, Viewlands Terrace, 12th December, 1912
Noad, W. Cranswick, Charlesfield, Gask, Auchterarder, 14th December, 1905

Pagan, Miss M. A., Dallerie, Crieff, ... 14th April, 1898
Paterson, William, Domus, Cherrybank, ... 14th December, 1899
Peddie, D., Ironmonger, Market Street, ... 1st May, 1873
Pinkerton, Miss Anne, Kincarrathie Crescent, ... 9th December, 1897
Plenderleith, Miss Wilna, 10 Rose Terrace, ... 14th December, 1905
Plumb, The Right Rev. Bishop, D.D., St. Ninian's House, 14th February, 1907
Proudfoot, James, Balhousie Street, ... 5th March, 1885
Pullar, A. E., Durn, ... 23rd November, 1883
Pullar, Mrs. A. E., Durn, ... 7th April, 1892
Pullar, Herbert S., Dunbarney Cottage, ... 5th May, 1887
Pullar, Mrs. H. S., Dunbarney Cottage, ... 11th February, 1904
Pullar, Laurence, Dunbarney House, ... 11th February, 1904
Pullar, Mrs. L., Dunbarney House, ... 11th February, 1904
Pullar, Rufus D., F.C.S., Brahan, ... 6th May, 1875
Pullar, Mrs. R. D., Brahan, ... 3rd March, 1887
Pullar, R. Morison, Brahan, ... 8th April, 1909
Pullar, Miss Mary, Marshall Place, ... 8th February, 1912

*Raffan, Miss Eliza, L.L.A., Randwick, Buckie, ... 13th December, 1900
Reid, Arthur S., M.A., F.G.S., &c., Trinity College, Glenalmond, ... 10th December. 1891
Richardson, James, 27 High Street, Blairgowrie, ... 11th April, 1901
Ritchie, J., LL.B., Solicitor, Rosemount Place, ... 12th January, 1893
Ritchie, Mrs., Rosemount Place, ... 10th January, 1895
Robb, Alexander, Tobacconist, High Street, ... 8th April, 1909
Robertson, Charles, 95 High Srreet, ... 14th April, 1878
Robertson, Dr. Robert, Errol ... ... 2nd May, 1867
Robertson, Miss Isabella, 2 Blackfriars Street, ... 11th April, 1901
Robertson, James, 4 Mansfield Place, ... 14th December, 1893
Robertson, Robert Hay, 22 High Street, ... 2nd March, 1882
Robertson, William, 16 King Street, ... 12th April, 1906
Rodger, Alex. M., Museum, Tay Street, ... 14th February, 1895
Ruggles Brise, Lady Dorothea, Blair Castle, Blair Atholl, 10th December, 1903
Rutherford, W., Pitcullen Terrace, ... 5th March, 1885

Scott, Frank, Jeannie Bank, Old Scone, ... 8th February, 1912
Scott, Miss Ina, Dunnottar, Crieff Road, ... 8th March, 1900
Scott, William M., 8 Hill Street, Coupar Angus, ... 12th December, 1901
Shepherd, Miss, Queen Street, ... 12th December, 1912
Shepherd, Miss M., Queen Street, ... 13th December, 1900
*Sievewright, Sir James, K.C.M.G., Tulliallan Castle, Clackmannan, ... 13th December, 1900
Smail, William, Norma Villa, Wilson Street, Craigie, 8th February, 1906
Smart, David, Rockbank, Kinnoull, ... 2nd May, 1878
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
Smythe, Col. D. M., Methven Castle, ...	13th April, 1882
Smyth, J. Ross, Laggan, Clyde Place.	9th March, 1905
Somerville, Duncan M. Y., M.A., D.Sc., St. Andrews, University, ...	9th February, 1905
*Somerville, Rev. J. E., B.D.—summer address, Castellar, Crieff; winter address, Villa Jeanne, Mentone,	10th December, 1896
Speedie, Alex., 48 Tay Street, ...	8th December, 1904
Steel, J. Sidney, 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, Robert, St. John Street, ...	12th January, 1899
Stewart, J. Kimberley, Edinburgh Road, ...	8th December, 1898
Stewart, Miss M. N., Caledonian Road Public School,	14th February, 1907
Stirling, Robert, M.D., F.R.C.S.E., 4 Atholl Place, ...	13th February, 1890
Strachan, Rev. J. M., B.D., Kilspindie Manse, ...	10th December, 1903
Sturrock, Dr. J. P., H.M. Prison, ...	9th December, 1909
Stuart, Dr. C. C., Woodside, Balhousie, ...	14th April, 1910
Sutherland, Donald, M.A., Schoolhouse, Scone, ...	11th December, 1902
Syme, Bruce, Muirton Bank, ...	10th January, 1901
Taylor, David, 40 Balhousie Street, ...	9th February, 1893
Thomas, John, 25 Barossa Place, ...	3rd November, 1870
Thomson, Andrew, M.A., D.Sc., F.R.S.E., Ardenlea, Pitcullen, ...	13th November, 1890
Thomson, Mrs., Ardenlea, Pitcullen, ...	8th January, 1903
Thomson, R. Gloag, Wellbank, Kinnoull, ...	9th January, 1902
Trotter, Alexander, M.B., C.M., Tay Street, ...	14th January, 1904
Turpie, James, Depute Town Clerk, City Chambers, ...	8th February, 1900
Tullibardine, The Right Hon. Marquis of, M.V.O., D.S.O., M.P., Dunkeld House, ...	13th April, 1911
Urquhart, A. R., M.D., F.R.C.P.E., Murray House,	14th May, 1882
Walker, Dugald, Balhousie Public School, ...	13th February, 1902
Watson, Robert, R. B., 11 Pitcullen Crescent, ...	10th December, 1903
Watson, W., Plumber, Caledonian Road, ...	10th January, 1895
Watt, John, M.A., Perth Academy, ...	7th April, 1904
Wells, William, 3 Scott Street, ...	10th April, 1913
White, J. Martin, Balruddery, near Dundee, ...	2nd March, 1882
White, Miss, Tay Street, ...	14th December, 1912
Whyte, A. F., M.P., House of Commons, London, ...	14th April, 1910
Wilson, D. J., J.P., 11 King's Place, ...	13th December, 1894
Wilson, Mrs. D. J., 11 King's Place, ...	9th March, 1899
Winter, James, Rosemount Place, ...	12th January, 1893
Winton, William, 12 Glover Street, ...	11th February, 1898
Wood, John, 52 Tay Street, ...	11th April, 1889
Wright, Robert, Balhousie Street, ...	4th March, 1886
Young, Rev. D. G., B.D., Moneydie, ...	12th December, 1901
Young, George C., M.A., Caledonian Road Public School,	10th December, 1903

Young, George P. K., Tay Street, ...	2nd May, 1872
Young, T. B., 8 Murray Street, ...	14th April, 1898
Young, W. Cochrane, Solicitor, St. John Street, ...	7th December, 1882

ASSOCIATE MEMBERS.

Innes, David, 20 Strathmore Street, ...	10th November, 1904
Rattray, J. P., 7 Raeburn Place, Craigie, ...	14th April, 1898
Simpson, W. L., Inchaffray Street, ...	10th November, 1904
Wylie, William, 17 Commercial Street, Bridgend, ...	12th March, 1896
Dow, Peter, 1 Viewfield Place, ...	8th February, 1912

BALANCE-SHEET OF THE PERTHSHIRE SOCIETY OF NATURAL SCIENCE for the Year ended 28th February, 1913.

INCOME.

Balance in Savings Bank, March, 1912,	£25 15 1		
Less due to Treasurer, ...	0 4 6		
		£25 10 7	
Subscriptions and Entrance Fees, ...	£74 6 0		
Life Member Subscriptions, ...	10 10 0		
Sale of Publications, &c., ...	1 7 2		
Interest on Savings Bank Account, ...	0 12 4	86 15 6	
Year's Receipts, ...	£87 19 6		
		£112 6 1	

EXPENDITURE.

Heating, Lighting, and Use of Rooms, ...			£20 0 0
Fire Insurance, ...			0 16 3
Printing, Stationery, &c., ...			25 18 8
Books, Magazines, and Binding, ...			14 4 9
Janitor, ...			5 4 0
Subscriptions to other Societies, ...			1 8 6
Repairs and Furnishings, ...			6 15 9
Postages and Petty Outlays, ...			11 13 7
Year's Payments, ...			£86 1 6
Balance in Savings Bank, March, 1913, ...	£24 13 2		
Balance in Treasurer's hands, ...	1 11 5		
		26 4 7	
			£112 6 1

PERTH, 13th March, 1913.—Examined, compared with the vouchers, and found correct.

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

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, PERTH, 1912.

MONTH.	BARO-MET'R	AIR TEMPERATURE.									HYGROMETER.			RAIN.				WIND DIRECTION.									REMARKS.
		Mean of				Absolute Maximum and Minimum.					Mean at 9 a.m. and 9 p.m.							Number of Observations at 9 a.m. and 9 p.m.									
	Mean at Sea Level and 32° Fahr. at 9 a.m. and 9 p.m.	Maximum (A).	Minimum (B).	Mean of A and B.	Difference from Average.	Maximum.	Day of Month	Minimum.	Day of Month.	Ground Frost, 32° and under.	Dry Bulb.	Wet Bulb.	Humidity.	Number of Days.	Difference from the Average.	Total Fall.	Difference from the Average.	Greatest Fall in 24 Hours.	N	N E	E	S E	S	S W	W	N W	Calm or Variable.	
	Inches.	°	°	°	°	°		°		Days	°	°	%			Inch's	Inches.	In. Date.									
JAN.	29·896	41·0	31·4	36·2	—1·0	54	1	15	30	17	35·1	33·6	85	12	—2	2·88	+0·36	80 8	12	9	6	6	5	6	8	5	5	Snow, 8, 24; Tay in Spate, 16, 17.
FEB.	29·572	43·8	32·7	38·3	—0·9	54	29	10	5	12	37·3	35·7	87	16	+3	2·55	+0·40	·40 18	6	6	10	2	6	7	6	7	8	Ice in Tay, 2, 9; Snow, 6.
MAR.	29·501	50·2	36·8	43·5	+3·6	60	25	26	16	8	41·4	39·3	84	21	+7	2·62	+0·25	·43 18	2	0	8	12	7	14	9	7	3	Thunder and Lightning, 27; Hail, 31.
APR.	30·104	58·3	37·1	47·7	+3·4	71	24	25	12	11	45·8	42·3	76	5	—7	0·22	—1·60	·09 4	4	7	10	4	2	18	7	6	2	Driest April for 30 years; Gale on 8.
MAY	29·929	61·2	41·8	51·5	+2·5	69	10	31	25	2	50·8	46·6	73	9	—4	1·29	—0·86	·56 8	1	13	12	3	4	14	7	5	3	Dry month.
JUNE	29·748	62·5	48·5	55·5	—0·1	72	23	36	17	..	54·1	51·4	81	25	+14	3·14	+1·18	·59 15	1	10	15	12	4	7	3	4	4	Thunder, 13, 26, 28.
JULY	29·927	68·0	50·6	59·3	+1·0	79	14	42	23	..	57·4	54·1	80	8	—6	1·99	—0·95	·57 25	4	4	9	14	3	19	1	8	0	Thunder and Lightning, 25, 28; Thunder, 27.
AUG.	29·664	61·2	46·2	53·7	—3·4	68	16	34	26	..	53·3	50·7	82	19	+3	3·82	+0·33	1·24 4	3	8	10	5	1	16	6	12	1	Thunder and Lightning, 4.
SEP.	30·157	59·7	42·9	51·3	—1·9	73	16	33	9, 12	3	49·5	46·9	82	7	—6	2·19	—0·04	·87 30	2	8	13	8	2	8	8	9	2	
OCT.	29·807	53·2	37·6	45·4	—0·8	67	13	28	22	8	43·7	41·7	85	15	0	3·24	+0·28	·82 30	3	6	6	5	3	19	5	8	7	
NOV.	29·836	47·7	35·2	41·5	+0·4	57	15	12	30	10	40·1	37·9	82	10	—5	2·05	—0·76	·97 24	8	4	4	0	5	18	6	13	2	Tay in Spate, 25; Rain below average; Gale, 26.
DEC.	29·570	45·9	34·1	40·0	+2·0	56	11, 14	16	1, 2, 3	14	40·1	38·1	84	25	+8	4·11	+1·08	·68 13	5	1	3	8	7	18	15	0	5	Snow, 3, 18; Spate, 14, 20 to 25; Flood 14·04 at Perth Bridge on 20; Gales, 2nd and 3rd week.
YEAR	**29·809**	..	..	**46·9**	**+·05**	**79**	..	**10**	..	**85**	..	..	**81**	**178**	**+10**	**30·10**	**—0·33**	**1·24**	**51**	**76**	**106**	**79**	**49**	**164**	**81**	**84**	**42**	
Highest	**30·594**	9 a.m	23rd April																								
Lowest	**28·308**	3 p.m.	16th Nov.																								

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

Height of Station above Sea Level = 85 feet.

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

REMARKS ON THE WEATHER AT PERTH,

1912.

Barometer.—The highest reading for the year, 30.594 inches, was at 9 a.m. on 3rd April; the lowest, 28.308 inches, occurred at 3 p.m. on 26th November. The latter reading only is remarkable.

Temperature.—On April 24th the maximum temperature was 71°. This temperature was only once attained at Perth in April, namely, in 1893. The mean temperature for the months February to July inclusive, and of November and December, were above the average.

Rainfall was below the normal in April, May, and November; the other months were more or less above. The rainfall in April measured .22 inches, the lowest April rainfall we have at Perth excepting April 1873, when .19 inches was recorded. The volume for the year was 30.10 inches.

Wind.—S.W. wind in early April; a gale on the 8th, between 4 and 6 p.m., did considerable damage in and around Perth to property and trees, and again from the same quarter round the 26th November; in December also, in the second and third weeks, S.W. gales were experienced.

River Tay was in spate on November 25th, when the gauge at the Perth Bridge registered 9.5 feet at 4 p.m. The river was in flood on the 14th and 20th of December; on the latter date 14.04 feet was registered, and the flood level was maintained for about 40 hours—an exceptionally long period. This level has not been attained since 7th February, 1894.

BAROMETER.

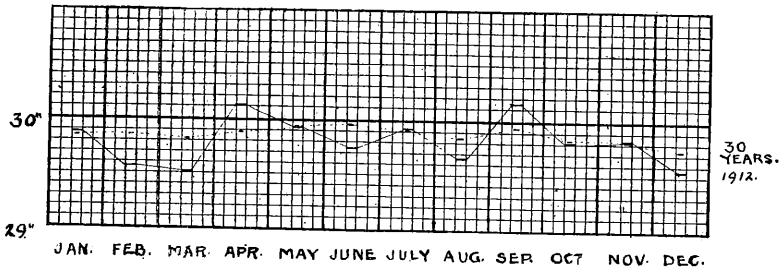


Plate 46.

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

RAINFALL.

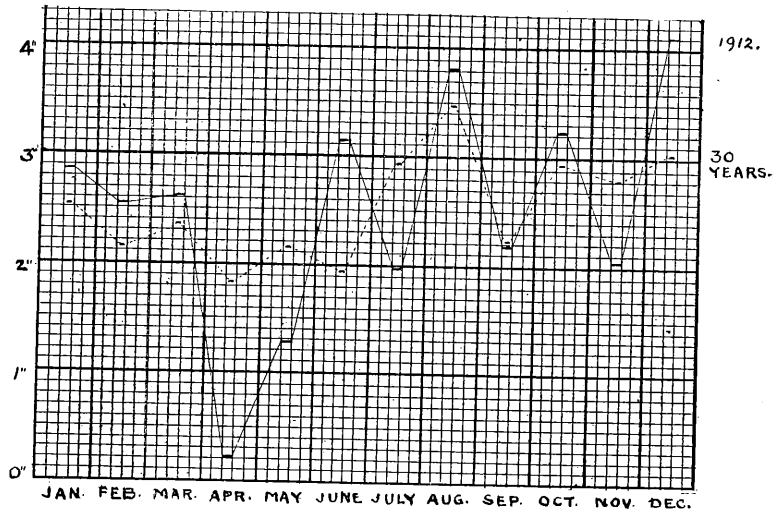


Plate 47.

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

TEMPERATURE.

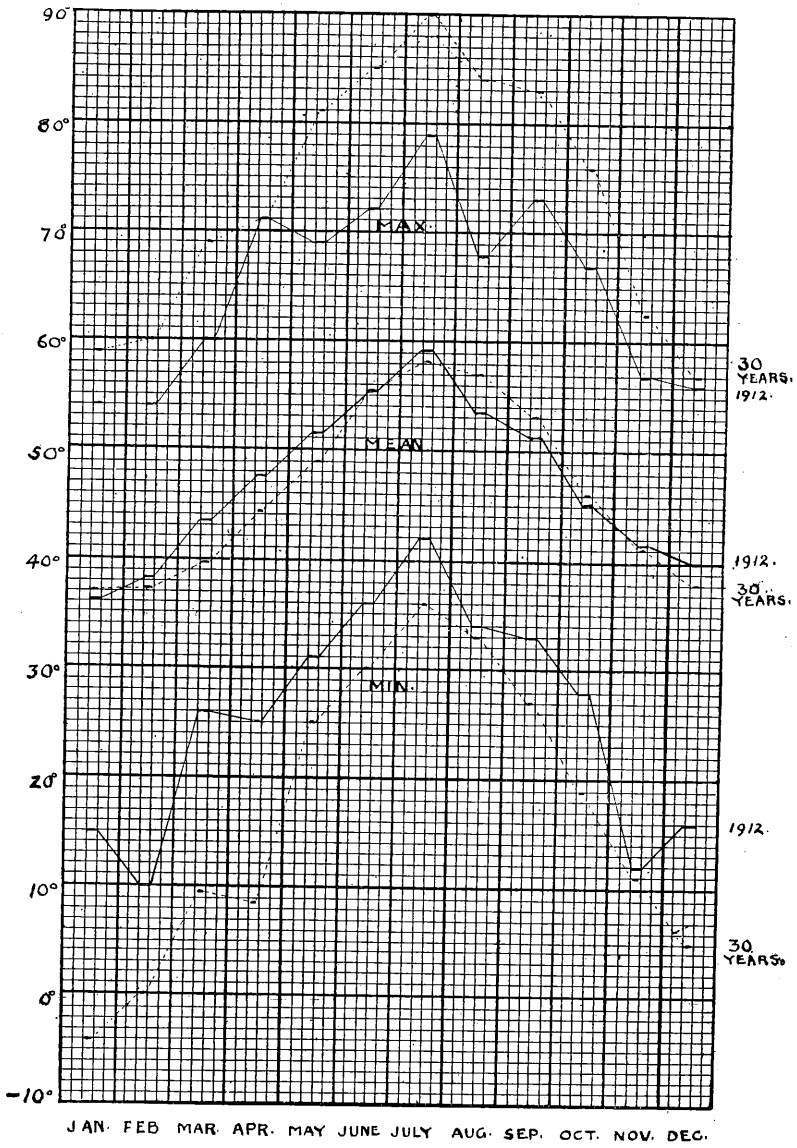


Plate 48.

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

METEOROLOGICAL OBSERVATIONS, PERTH.

MEAN DAILY VALUES and EXTREME READINGS of the Months and Years (1883 to 1912 inclusive).

30 YEARS.

MONTHS	BARO-METER.	THERMOMETERS.					HYGROMETER.			WINDS.									RAINS.	
	Mean at Sea-level and 32° F.	Highest	A. Mean of all Highest	Lowest.	B. Mean of all Lowest.	A. B. Mean Temp	Dry Bulb	Wet Bulb.	% Humid-ity.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calms or Vari-able.	Days.	Inches.
Jan.	29·866	59.0	42·5	−4·0	31·8	37·2	37·1	35·6	87	2	2	6	3	2	8	5	1	2	14·3	2·520
Feb.	29·862	60·0	43·5	0·0	31·3	37·4	36·6	35·1	86	2	2	6	3	2	7	3	1	2	12·7	2·150
March	29·809	69·0	46·8	9·5	33·0	39·9	39·1	37·2	85	4	3	6	3	2	7	3	1	2	14·2	2·370
April	29·885	71·0	52·8	8·5	35·9	44·3	43·7	40·9	79	2	3	8	4	1	6	3	1	2	11·6	1·820
May	29·935	81·0	58·7	25·0	39·3	49·0	49·4	46·1	78	2	2	9	4	3	6	2	1	2	13·0	2·149
June	29·970	85·0	64·8	30·0	46·5	55·6	55·2	51·6	77	1	2	8	4	3	6	3	1	2	10·6	1·960
July	29·905	88·0	67·1	36.0	49·5	58·3	57·7	54·5	80	1	3	5	4	3	7	5	1	2	14·5	2·940
Aug.	29·859	84·0	65·6	33·0	48·7	57·1	56·4	53·9	83	1	2	3	3	2	8	7	2	3	16·3	3·489
Sept.	29·941	83·0	61·5	27·0	45·0	53·2	52·2	50·0	85	1	2	6	3	3	7	4	2	2	13·4	2·230
Oct.	29·828	76·0	53·5	19·0	39·0	46·2	45·2	43·5	87	2	3	7	3	2	7	3	1	3	15·5	2·958
Nov.	29·838	62·5	47·2	11·0	35·1	41·1	40·6	39·0	87	2	2	6	3	3	7	3	1	3	15·2	2·810
Dec.	29·750	57·0	43·8	5·0	32·3	38·0	37·7	36·3	87	2	2	6	4	2	7	4	1	3	17·2	3·032
YEAR	29·869	88·0	54·0	−4·0	38·9	46·4	45·9	43·6	82	22	28	76	41	28	83	45	14	28	168·5	30·428