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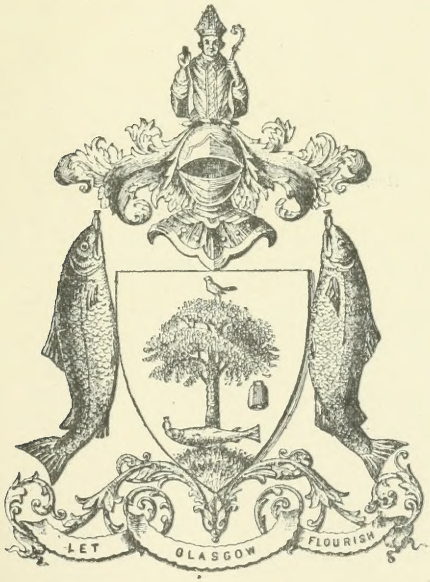
The Glasgow :: Naturalist

THE JOURNAL OF THE
NATURAL HISTORY SOCIETY OF GLASGOW

(Including the *Transactions* and *Proceedings* of the Society, Third Series).



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EDITED BY

D. A. BOYD AND JOHN PATERSON.

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The Glasgow Naturalist

The Journal of the NATURAL HISTORY SOCIETY OF GLASGOW

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Vol. II., No 1.] [November, 1909.

Notes on the Sedge-Warbler (*Acrocephalus phragmitis*) at Possil Marsh in 1908 and 1909.

By WILLIAM RENNIE.

[Read 26th October, 1909.]

ACCORDING to a note in the Glasgow *Evening Times* of June 19th, there seems to be a great scarcity of Sedge-Warblers at their usual haunts this year. Doubtless the severe weather we experienced in the spring of last year, when the Sedge-Warbler was due, was greatly to blame for the scarcity last season, and the decrease this year is the result. Although this bird may be scarce throughout the country, this year at Possil they are in greater numbers than in the previous year.

The Sedge-Warbler is well known not only from its voluminous song during morning and evening, but also from its restless habits. I find that especially on its arrival, it is one of the most difficult birds to follow, on account of its rapid flights in and out amongst the low growths of the willows or thick vegetation. I found that, by lying concealed near some favourite bush, or near the reeds frequented by the birds, I was always sure of seeing them closely, if I got to the marsh before sunrise. When discovered, all chance of a second interview at close quarters was gone. This shyness seems to last until the nesting takes place, when they appear more openly and fearlessly either on the lower branches of the willows or clinging to the tall reeds or equiseta, from which they pour forth their loud song. The song of the male is acknowledged as being amongst the best of those of our

aquatic Warblers. When disturbed in the open, Sedge-Warblers fly a short distance in a sort of lost or disabled condition, and before landing, either on a sedge or similar plant, they flutter over it for a little, then seeming to drop helplessly on to it, make for the main stem, and immediately begin to sing.

The situation of the nest seems to be a matter of dispute amongst ornithologists. Those that I have seen have always been built at some distance from the ground, with the exception of one, to be mentioned later. Both birds take their turn of sitting during incubation.

It is amusing to watch the Sedge-Warblers. In the early morning I have seen them sit on a reed or other tall plant, and dart off at any moth or fly that should be passing, returning again just like Flycatchers. I have seen them taking moths, flies, and aphids. Some seem to have quite a taste for the larvæ of the cuckoo-hopper. It is interesting to watch them picking it out from the spit, or searching the undersides of leaves for caterpillars. I have also seen them picking into the heart of the flowers of *Ranunculus lingua*, without in any way damaging the floral arrangements. Large patches of *Rumex obtusifolius*, at the marsh, were this year infested with Black Aphids and the larvæ of the Green Beetle (*Phædon tumidulus*). These were left severely alone.

The Sedge-Warbler is well known as a clever mimic of the notes of other birds. One morning in May I listened to one singing, which for a while uttered nothing but the notes of the Whitethroat.

Sedge-Warblers have been accused of being quarrelsome birds, not only amongst themselves, but with other small birds. Of this I cannot recollect ever having seen an instance, although naturally, during the breeding season it is not uncommon for one male to be seen driving away any other that may try to attract the attention of his partner. Then they may fight as viciously as Robins. Last year (1908) the Sedge-Warbler was first seen at Possil Marsh on 3rd May. Throughout the season the birds were very scarce, the largest number seen in one day being five, which was on the evening of June 16th. Out of about forty visits, from 17th May till 4th July inclusive, I saw the Sedge-Warbler about eighteen times, the last time being on 30th June, when it

was still in song. I may say that on nearly every occasion they were seen either in the early morning or in the evening, seldom during the day unless the weather was dull, although they were occasionally heard. I saw no young birds.

This year (1909) it made its first appearance on the 29th April, when several were noted in the early morning. On that day the southern slopes of the Campsie Hills held patches of snow, whilst, away in the distance, Ben Lomond and the other hills were completely covered. My next visit was on the morning of 5th May shortly after seven o'clock. There was a good touch of frost and the Sedge-Warblers were singing loudly. Search as I liked I could not find more than four. On returning on the 10th shortly after daybreak, I was able to count a dozen. During the week the weather had been very open. My next visit was on the 17th at daybreak a very cold morning. The song of the Sedge-Warbler seemed everywhere, and I counted about two dozen birds. By the 24th vegetation at the marsh had been growing rapidly for some time, and I now began to find it difficult to count the birds, as they had began to spread themselves over the marsh. I am sure that there were still about the same number. I was unable to visit the marsh again till the 4th July when I went at daybreak. This was a splendid morning with strong westerly winds. The only birds that I heard singing until the morning was well advanced were Sedge-Warblers, of which however I heard and saw very few. Visiting the marsh again at daybreak on the 11th, another fine morning, scarce a note was to be heard from any bird with the exception of one or two Sedge-Warblers. After a while I went on to Cadder, and returned to the marsh again about ten o'clock. By this time several Sedge-Warblers were about, and I saw for the first time a brood of young ones. I returned again on the following morning (12th) before daybreak. During the night the frost had been very keen and by sunrise a dense mist covered the marsh. This was one of the finest mornings I ever had for hearing the song of the Sedge-Warbler, although I was unable to see many of them. Judging from the volume of song the marsh seemed alive with them. After listening for a time I went on to Cadder, and returned again about nine o'clock. The mist had disappeared, and the sun was shining brightly. The great

volume of song had ceased, and I was only able to see a few birds. My next visit was on the afternoon of 17th. Strong winds were constant all day. On arrival (one o'clock) I heard no Sedge-Warblers, and on making a search amongst the willows I was only able to disturb one pair, which immediately began their scolding notes which they continued till I left them. I visited the marsh again on the evening of 20th, a very wet night, the wind (S.W.) at times being very strong. I had the same experience as on my last visit, namely, no birds were heard until I beat up the willows, when I again disturbed a pair which set up their scolding for some time. On the evening of 22nd (showery) I saw eight Sedge-Warblers. Their song now was very short, and consisted chiefly of their harsh notes. During the week the coarse rank grasses that grow between the marsh and the canal had gradually been getting cut down, and I found that on this day they were cut well into the reeds at the edge of the marsh, exposing to view a Sedge-Warbler's nest. Although it was flown. I saw one of the old birds back at it. I had known that there was a nest there, for its owners had supplied me with many an hour's entertainment in the early morning. The nest was still too far out for me to reach conveniently, but it was built into the reeds (*Typha latifolia*) about two feet from the water. Judging from its outward appearance it was a deep structure built of grass and other materials. Returning on the afternoon of 24th, a lovely day, with strong westerly winds, not a Sedge-Warbler was to be heard, let alone seen. The nest which I found on the 22nd had been completely removed. I was lying watching some Swifts, when my eye alighted on a small bird clinging to an equisetum, with a green caterpillar in its beak. I saw at once that it was a Sedge-Warbler. I watched it patiently for a while, and saw it fly into the roots of a willow at the edge of the water. A few harsh notes were uttered and it appeared again. Immediately after I saw its mate fly in from the other side, also with food, but it came out again without uttering a note. I went over to the willows to search for the nest, and was rewarded by finding it with three young, which left the nest when they found that they had been discovered. I paid particular attention to this nest. It was built amongst the roots of the willows, which were completely covered by

marsh vegetation. I would say that it was a ground nest. The nest had the appearance of being a depression amongst the dense vegetation, and was filled up with willow leaves and grass into a deep cup. The inside had a good layer of dry fine grass, and was finished off with a lining of hair, and contained no feathers. Having satisfied myself I withdrew. During the whole time the parent birds had kept up their scolding. Returning again in about an hour, I found the three young birds snugly in the nest again. On different occasions I took up a position amongst the same willows, close to the nest, but at no time could I say that the birds displayed any anxiety, or anything that would have led one to think they were near their nest. Returning on the evening of 31st (warm and sultry), not a Sedge-Warbler was heard. On searching amongst the willows I saw seven, some of them birds of the year. They scarcely uttered a note when disturbed, and seemed to prefer to rest. They were chiefly amongst the patches of reeds (*Phragmitis communis*), which I find to be a favourite place for them, especially on their arrival. I was unable to visit the marsh again till the evening of 20th August. I was only successful in seeing two amongst the reeds already referred to. The birds were silent. Returning again on the evening of 24th, a wet night, I heard the notes of the Sedge-Warbler amongst the reeds, and, after a long search, I found one bird lurking amongst the low growths of the willows. On the evening of 28th, when it was also wet, I saw one bird. Returning on the morning of 31st, which was clear and bright, two Sedge-Warblers were singing amongst the reeds. I have not been able to visit the marsh again since that date.

I have noticed on several occasions now that when the winds were strong the Sedge-Warblers at the marsh would be quiet, and on going on to Cadder where they are sheltered they would be singing merrily. I see that Miss Emma L. Turner makes the same statement in "Home Life of Marsh Birds," about the Sedge-Warblers being quiet during windy weather. This doubtless is apt to give one the impression when visiting such exposed places as the marsh in windy weather, that Sedge-Warblers are scarce or absent, when they can only be said to be lying low.

One thing in the economy of this bird has seemed strange to me, viz. :—"Why should it sing loudest when the weather is coldest?"

In concluding I feel that I cannot do better than quote Mr. H. Seebhom's words regarding morning observations, the value of which I have often proved in many instances besides that of the Sedge-Warbler.

"I was well rewarded for getting up so early. There can be no doubt that ornithological observations are much more easily made in the early hours of the morning immediately following sunrise, than at any other period of the day. It requires some courage to turn out ere the day has got properly aired, but an ornithologist is always well rewarded for his trouble. Birds are on the feed and can be easily approached and in spring they are in full song."

A Specimen of *Ligula simplicissima*, Rudolphi; with Notes on the Life-History of the *Ligulinæ*.

By J. F. Gemmill, M.A., M.D.

The *Ligulinæ* or "Strap-worms" do not seem to have been recorded from the West of Scotland, although in all probability they are of not infrequent occurrence. The following notes are given in the hope that they may lead to the acquisition of further data regarding the distribution of these interesting and important parasites.

The specimen, obtained by Mr. Thomas Anderson, Greenock, and sent to me for identification by Mr. Alexander Ross, F.E.I.S., was exhibited at the meeting of this Society on 25th May, 1909. Mr. Anderson's interesting account of the host and parasite is appended.§

Ligula is one of two genera (*Ligula* and *Schistocephalus*), constituting the small sub-family *Ligulinæ** within the very important family of the *Bothriocephalidæ*, a family which includes the largest of all the Cestode parasites of man.

Among the characters of the Bothriocephalidæ that should be mentioned here are the following:—the scolex is armed or unarmed, and is provided with two suckers which are usually small and shallow, but, sometimes by growth and fusion of their lips, become large and more or less united into one, while, on the

* Braun in Bronn's Klassen und Ordnungen IV., 1B., p. 1683, et passim.

other hand, they may be rudimentary, and replaced by a new terminal sucker on the front of the head; external segmentation is usually obvious, but may be absent; the opening of the uterus always lies towards the middle of one of the flat surfaces, while the male genital opening and that of the vagina are, in different genera, either on the same or on opposite flat surfaces, or on one or other of the edges.

In the sub-family of the Ligulinæ the scolex is unarmed, short, triangular, without distinct neck, and with small, poorly developed suckers. All the genital openings are on one of the flat surfaces.

The larvæ of the Ligulinæ are found within the peritoneal cavity of various fishes, and, when fully grown, contain the whole body, including the genital organs, of the adult worm already formed, and requiring only a very short stay in the final host to ensure full maturity.

The adult *Ligula* is segmented externally in its anterior part, but this external segmentation does not correspond with the internal serial succession of genital structures. The larvæ, of which our specimen is one, are described as showing no segmentation externally, and as being destitute of suckers. These larvæ live within the body cavity of the Cyprinoid fishes chiefly, and their final hosts are such water birds as the ducks, the gulls, and the waders, in the food canal of which they remain for a remarkably short time. Numerous species of Ligula have been described, but it is now considered that they are all referable to one single species named as in the title of this paper.*

Schistocephalus, the other genus mentioned as belonging to the sub-family Ligulinæ, has the following characters:—the scolex is cleft at its anterior end; the suckers are weakly developed; division into segments is complete; suckers and segmentation are already obvious in the larva; the larva lives in the body cavity of the stickleback; the final hosts are the same as for Ligula.

Life History of the Ligulinæ.

The fertilised eggs reach water along with the evacuations of the infected water birds. Here the eggs develope into embryos which are richly ciliated and provided with three pairs of tiny hooklets.† They leave the egg shell in about seven days, and

* Von Linstow in Zoolog. Anzeiger XXIV., p. 627.

† Willemoes Suhm in Zeitschrif. Wiss. Zool. XIX., p. 469.

swarm vigorously in the water. How they get into the body cavity of their intermediate hosts is not yet ascertained with certainty. No doubt the path is through the wall of the gut, and not through the skin or by way of the circulation. It has been affirmed* that the little embryos are swallowed directly by the fish, perforate the wall of the food canal, and reaching the body cavity, grow into larval Ligulæ without having been in any previous host. But it is not improbable that the embryos had first passed into and remained for a longer or shorter time in one or other of the small aquatic animals on which the fishes live. In any case the transition from the embryo to the young larva has not been observed, the youngest larvæ noted having already reached a length of a tenth of an inch.

The larvæ grow rapidly inside the body cavity of their host nourished by absorption of the body lymph. Some degree of chronic peritonitis is often set up, and thereby no doubt the lymph is rendered richer in nutritive materials. In course of time the host begins to show signs of disease. It gets thinner and may lose many of its scales. Its brightness of colour lessens, and it becomes sluggish and easily caught. Infected sticklebacks, when the parasite has reached full size, are described as struggling along near the surface of the water, gasping with forced respiratory effort, their bellies swollen up by the Ligula which may weigh more than the entire weight of its host. Now the little fishes fall an obvious and easy prey to water birds of all kinds. The parasite, swallowed whole with its host, becomes free within the food canal of the bird, developes or unfolds its suckers, and quickly ripens its sexual products, the ripening taking place first in the posterior part of the body, and progressing forwards towards the head. It is said that the production of ripe eggs may begin twenty-four hours after the larva has been swallowed, and that the average time required is from two and-a-half to four days. In a few days longer the whole process has been completed, and the remains of the parasite itself have been voided or digested. The rapid ripening within the food canal of the bird is due no doubt to the stimulus of warmth as well as to that of nutrition. Under experimental conditions Ligulæ have been brought to sexual maturity within the body cavity of the dog. On the other hand an attempt to induce this final stage in larvæ

* Donnadieu in Journal de l'Anatomie, 1877, p. 452-3.

kept in the intestinal contents of the duck at the body temperature of birds, is described as having failed.

During the final stage not very much nutritive material requires to be absorbed, since the larva had almost reached its full size within its earlier host. The total increase in weight is only about ten per cent. at this stage, and possibly a considerable part of this increase is due to the imbibition of water.

The parasites do not seem to have any particular seat of election within the food canal of the final host, but may be found anywhere from gullet to large intestine, and either free or loosely attached. In one host as many as a hundred and fifty specimens were counted, while in another the whole of the small intestine was crammed with Ligulæ to the thickness of one's thumb. They do not seem to do much harm to the host. Experimentally, a single duck fed on Ligulæ was estimated to have ripened fifty of them within a period of four weeks.

Should the larval Ligula be markedly immature when swallowed by the bird, it does not ripen within the food canal, but is either voided or digested.

It sometimes happens that full-grown larvæ, instead of waiting to be swallowed with the body of their host, find their way out of the body cavity by breaking through the abdominal wall usually near the vent, and, becoming free in the water, wriggle about vigorously for a time. Many thousands of such larvæ have been seen together in the water. Under favourable circumstances they are able to survive for six or eight days, but as a rule their free life is a short one. Being conspicuous and defenceless, they are eagerly devoured not only by water birds of all kinds, but also by the fishes themselves. In the former event, ripening of the eggs takes place, as has been already described, but in the latter the parasite dies, since it is unable to ripen within the food canal of fishes.

A marked feature in the internal structure of Ligula is the presence of a powerful musculature, both longitudinal and transverse. This cannot fail to be useful to the parasite (1) in enabling it to free itself from its fish host either in the water under the circumstances just described, or, as more commonly happens, within the food canal of the birds that feed on the infected fish; (2) in enabling it to maintain its position within

the food canal against peristaltic action, and against the flow of the intestinal contents. The suckers with which the adult parasite is provided are too weak to be efficient for this purpose, and, indeed, it has been mentioned, as above, that Ligulæ may be found within the gut quite unattached to the wall.

In many cases only a single parasite occurs within the body cavity of one host, but not infrequently four or five, and sometimes even as many as fifteen, large Ligulæ may occur together.

It would appear that a second infection can take place, quite tiny specimens being occasionally found along with others that are much larger, and evidently much older.

Ligulæ may survive the death of their fish-host for a considerable time. In the present instance, Mr. Anderson has noted a survival of fourteen hours, but in one experimental case the parasites remained alive for several weeks among rotting fish, the stench from which at last grew too much even for the enthusiastic investigator, so that he threw them out, Ligulæ and all, before the latter had actually died.

In certain localities the infection of fishes by the parasite reaches an almost epidemic character. Thus Duchamp* records that in the seven or eight years prior to 1876 the tench in certain lakes had been dying in hundreds of thousands, causing considerable financial loss, while in some years also the gudgeon were very commonly affected. It is stated that so frequent at one time was *Schistocephalus* in the sticklebacks of the waters round Berlin, that practically one out of every two of these fishes harboured the parasite.

As regards distribution, Ligula occurs chiefly among the Cyprinoid fishes, *e.g.*, the carp, the tench, the gudgeon, the minnow, the bleak, and the roach. It has also been recorded from the perch, the pike, the pike-perch, the cat-fish, the salmon, the trout, the lamprey, and some other fishes.† Schistocephalus, on the other hand, appears to be confined to the stickleback.

I cannot find any data regarding the occurrence of the Ligulinæ in the West of Scotland, except a note from Mr. J. M. B. Taylor, that several years ago he placed in the Paisley

* Quoted in Bronn, *l.c.*, p. 1049.

† Von. Linstow, Zoolog. Anzeiger. *l.c.*

Museum some parasitic worms from the abdominal cavity of sticklebacks caught in a pond at Lounsdale, Gleniffer, Renfrewshire. And in June of this year Mr. Taylor sent me a three-spined stickle with distended abdominal cavity, obtained recently from the Lounsdale pond. On examination I found the distention due to two specimens of the parasite peculiar to the stickleback, viz., *Schistocephalus dimorphus*, Creplin.

It may be mentioned that, among all the birds, those which obtain their food in the water are in general the most liable to Cestode infection, and it will readily be seen that the Ligulinæ are adapted particularly to have as their hosts the fishes and the water-birds. As the latter swallow their food whole, the parasite can afford to reach a size and degree of organisation in its earlier host that would be useless or harmful did it have to pass the ordeal of mastication. The high temperature of the bird hosts, and the rich nature of their food, will provide a powerful stimulus for the final stage of ripening of the parasite, while the habits of the birds will ensure for the fertilised eggs an excellent chance of reaching water in which they may develope, and in their turn become established as larvæ within the body cavity of fishes.

In the human subject, the occurrence of "strap-worms" in the connective tissue spaces, and in the serous cavities, is well known, and formerly these parasites were described as Ligulæ, but they are now referred to quite different genera. At the same time, since under experimental conditions a Ligula may reach maturity within the body cavity of the dog, the species can hardly be excluded from the list of possible human parasites.

In conclusion, it has to be stated that the specimen of Ligula exhibited to this Society differs from the typical larva at the end of its stay in the fish, in the following points—(1) Two small suckers can already be made out on the head; (2) there is already in the fore part of the body a considerable degree of external segmentation. About 40 small, but fairly regular notches, are present along each edge of the body in its anterior third. This region is also transversely wrinkled across the flat surfaces, but the wrinkles do not always correspond with the notching, nor are they always continuous across the whole breadth of the surfaces. The length of the spirit specimen is

four inches, the breadth a quarter of an inch, and the thickness a sixteenth. The specimen when obtained was broken into two parts, a large anterior and a small posterior one.

The two Schistocephali from the stickleback sent to me by Mr. Taylor (exhibited at this Society's meeting on 30th November, 1909), measure three-fifths of an inch in length, a quarter of an inch in greatest breadth, and a sixteenth in thickness. They are almost elliptical in shape when the flat surface is looked at, and they are definitely divided into rather more than eighty segments. The suckers, however, are not yet visible, and the anterior cleft is indistinct.

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§ The minnow, which was the host of the *Ligula simplicissima*, was taken from a small stream near Greenock on 22nd ult. [May, 1909], and kept in a large glass jar along with other two minnows taken at same time. It was puffed out at time of capture. The swelling was rather nearer the tail, and quite close to ventral surface; in fact, the fish had a comical, prism-like appearance. Three days before it died it sometimes made sudden darts round the jar as if pursued: at other times it appeared quite sluggish, and came near the surface of the water. When it took these fits I placed the jar under a tap, which seemed to settle it a little, and I was hoping that it would recover. It died on 8th inst.—16 days after capture. At first it was quite greedy, but not latterly. When placed in an earthenware basin daily, while the jar was being cleaned, it did not change colour so much, and became almost transparent like the others. When dead it lay at bottom of jar in usual position in life—dorsal surface upwards. I poured water into the jar to see if it would turn over, but it always settled in same position. The pectoral fins were at right angles to the body, which gave it the appearance of having died of shock. It was left 14 hours in the jar after death. On making a slight cut on ventral surface near the tail, the worm was found just under the skin; it was in two parts (at least, I do not think I cut it). The larger part expanded and contracted once or twice in a somewhat sluggish manner. When extended it was four inches long, and the minnow was only two inches. It was pure white, and rather flat. Roughly, the worm was about one-third the weight of the minnow.—Note from Mr. Thos. Anderson, Greenock.

Some Recent Additions to the Fresh-water Algæ of the Clyde Area.

By Robert Garry.

[Read 28th September, 1909.]

The Clyde area appears to be peculiarly rich in fresh-water algæ, and a number of observers, most of whom were connected with this society, have pretty thoroughly explored the whole district.

The results of their labours are to be found in the list of species of fresh-water algæ contained in the *Fauna and Flora of the Clyde Area* (1901).

In spite of the thorough nature of their work, a good many species yet remain to be recorded in this district.

Until recently observers were handicapped by the paucity and unsatisfactory nature of the literature on this branch of botany; but since the publication of the treatise on the *British Fresh-water Algæ* by G. S. West, M.A., F.L.S., the difficulty, so far as concerns the identification of the genera, no longer exists. As for the species it is quite another matter. There is no book at present that will enable an observer to recognise the species of all the algæ which he is likely to meet with, even in a very limited district. The great work of Dr. Cooke is now, to a large extent, out of date.

It is to be hoped that a work,—on the lines of the *British Desmidiaceæ* of the Messrs. West, at present being published by the Ray Society, but dealing with the British fresh-water algæ as a whole,—will be undertaken by these authors when their present task is accomplished.

The eight species of algæ referred to below have not previously been recorded for the Clyde area.

Mr. W. West, F.L.S., kindly identified them for me.

Bulbochæte mirabilis (Wittr.).—This alga was found in a marsh near the Mouse Water, Cleghorn. It occurred along with various species of Zygnæma, Mougeotia, Spirogyra, and Œdogonium.

Two species only of Bulbochæte are recorded in the *Fauna and Flora of Clyde*, 1901. Mr. Geo. Lunam and I have found that the genus is pretty widely distributed, but so far only one species new to the area has been identified.

Microthamnion Kutzingianum (Näg.).—This species was found in very small quantity in marshy ground on Ailsa Craig. It was found along with species of Microspora and Mougeotia.

Microspora floccosa (Vauch.).—The genus Microspora is widely distributed in the Clyde area, but only two out of the three common British species are recorded in the *Fauna and Flora of Clyde*. *Microspora floccosa* was obtained in ditches near Fence Bay, Fairlie. It is probably very widely distributed in the district.

Spirogyra bellis (Hassall).—This alga was collected from a ditch near Calder Glen, Lochwinnoch, and from Loch Libo. In the last-mentioned locality it was present in great abundance. In both cases it was in the vegetative stage. I have not yet succeeded in obtaining the plant in zygospore.

Spirogyra nitida (Dillw.).—This species was found in a marsh in North Dougalston Woods, near Milngavie, also in St. Germain's Loch, Bearsden, in both cases in the vegetative stage.

The Genus Spirogyra is well represented in the Clyde area, eleven out of the twenty British species being recorded for the district. It appears strange that there are no records of the occurrence of so widely distributed a species as *Spirogyra nitida*. *Spirogyra bellis* is a much rarer species.

Choaspis stictica (Eng. Bot.) O. Kunze.—In the genus Choaspis there is only one British species, and no records are given in the *Fauna and Flora of Clyde*. Specimens of the plant in the vegetative stage were obtained in April at Dunure (Ayr), while examples in Zygospore were got in Murroch Glen (Dumbarton), in September. In both cases the alga was found on wet rocks. It is easily distinguished from the other species of the Conjugatæ by its pale colour, and by the absence of the slimy outer coat.

Spirotænia condensata (Bréb.).—This is a widely distributed desmid, but so far there is no previous record of its occurrence in the Clyde area. Specimens were obtained from roadside ditches near Balmaha (Loch Lomond), and from ditches on the Golf Course, Milngavie.

Desmidium Swartzii (Ag.).—This desmid was obtained along with the last-mentioned species at Balmaha. It was also got in marshy ground near the Falls of Falloch, Glen Falloch. In both cases it was found in small quantity. It seems to be a comparatively rare species.

The Fresh-water Polyzoon *Cristatella mucedo* from Kilmacolm.

By W. Cameron Davidson.

[Read 28th September, 1909.]

On the 28th of August my brother brought me a small but healthy colony of *Cristatella mucedo* from a little moorland burn, and when I visited the spot a few days later, I was surprised to find that the bottom of the burn for a short stretch of three or four yards, was very thickly sprinkled with the colonies, small patches of stone being in places almost entirely covered by them.

The burn is quite small, being roughly only two or three feet across, and it flows at quite a moderate speed. It is subject to sudden spates, as it arises from a large marsh called "The Moss." The Cristatella occurred most plentifully just at the origin of the burn from the marsh, but there were occasional small colonies to be found on stones and weeds for about two hundred yards down the burn.

The majority of the colonies were found on stones, and generally on their upper surfaces, though occasionally underneath them, while a few were found on the stems and leaves of the water plants bordering the stream.

Most of the colonies are large, some being almost two inches long, and the individual zooids were always well expanded and contained a lot of food in their alimentary canals, except in the case of the older colonies, some of which were beginning to die down and disintegrate, as they normally do on the approach of winter. A conspicuous character of Cristatella—best seen in the older specimens—is the large number of "statoblasts," the curious asexual winter eggs which are developed from an internal bud. When the colony dies and breaks up, these float to the surface and adhere to weeds and stones by their projecting spines.

There are two main points in which Cristatella differs from nearly all other Polyzoa: the first is that the colony, as a whole,

has a very well marked power of movement, as it can move about an inch per day. I think the only other species of Polyzoa which has a distinct power of movement is *Lophopus crystallinus*, a specimen of which I got in Possil Marsh last Christmas. When scraped off a stone or twig the Cristatella colony will slowly coil up on itself like a caterpillar. The second difference is its preference for running water instead of slow streams or stagnant pools. This is well exemplified by my specimens, some colonies of which were living in rapid swirls of water.

On a New British Marine Amphipod.

By Alexander Patience.

[Read 26th October, 1909.]

The species about to be described was taken from the hairs on the sternum of the common lobster (*Astacus gammarus*, Linn.) by Mr. Richard Elmhirst, Director of the Marine Biological Station, Millport, during the late spring, and the interest attached to it lies probably not so much in any specific peculiarity as in the novelty of its habitat, and to the fact that the genus which embraced hitherto but a single species now opens its doors to give hospitality to a newcomer after a lapse of eighty years. The lobsters were taken in the ordinary lobster-creel, off the south-east coast of the Great Cumbrae, and the amphipods were found clinging to their host in the eleven specimens examined. Its congener, *Isæa montagui*, M. Edw., has been found only on the back and branchial chambers of *Maia squinado* (Herbst). That crab, however, has not been found in the West of Scotland seas. True, it is stated to have been dredged on the west side of Bute and also off Ardrossan, and a specimen was exhibited by Dr. Fleming to the Natural History Society of Glasgow in January, 1878, which was said to have been taken off Dunoon. Professor J. R. Henderson, however, remarks about these records—"From the fact that this crab is in Britain almost confined to the south

coast, it seems probable that some other species may have been mistaken—possibly *Lithodes maia.*"* I have but little doubt that this is the case, for, if it were a denizen of these seas, it is unlikely that it could have escaped the nets of the "Medusa" and "Garland," and latterly of the "Mermaid," which has been actively dredging in the Clyde during the past six or seven years.

Family Isæidæ.

1906. *Isæidæ*, Stebbing, Das Tierreich: Amphipoda gammaridea, Lieferung 21, p. 630.

In the above reference it is stated "peræopods, 3rd-5th, equal." A slight modification will however be necessary as the *third* peræopod of both species now included in the family is somewhat shorter than the succeeding two.

Genus Isæa, Milne-Edwards.

1830. *Isæa*, H. Milne-Edwards, Ann. Sci. Nat., Vol. 20, p. 380.
1862. *Isæa*, Bate, Cat. Amphi. Brit. Mus., p. 122, t. 22. F. 1.
1893. *Isæa*, A Delle Valle, F. Fl. Neapel, Vol. 20, p. 679.
1906. *Isæa*, Stebbing, Das Tierreich: Amphipoda Gammaridea, Lieferung 21, p. 630.
Isæa elmhirsti, sp. n. (preliminary description in "Glasgow Naturalist," Vol. I., Pt. 4, pp. 134-135, September, 1909).

I. elmhirsti, although showing a general resemblance to *I. montagui*, is, however, sharply separated from it in several important points of structure, and the differences between the two species may be better appreciated if set forth in parallel columns.

Regarding the structure generally, the body in *I. elmhirsti* is more compressed, and the antennæ are comparatively longer, while the peræopods are shorter and much less spinous than in *I. montagui*.

Isæa elmhirsti.	Isæa montagui.
Lateral lobes of head more acutely produced than in *I. montagui*.	

* *Trans. Nat. Hist. Soc., Glas.*, Vol. I. (N. Ser.), p. 327.

Eyes small, oval, very dark crimson, changing to black very shortly after immersion in formaline.

Antenna 2, slightly shorter than upper, ultimate joint of peduncle as long or slightly longer than penultimate, flagellum 9-jointed

Mandible, 3rd joint of palp much shorter than 2nd.

Gnathopod 2, ♂ 2nd joint more robust than in ♀ front margin double, the inner border produced forwards to a pointed process; hind margin of 6th joint much more than half the length of front, palm, in adult specimens, with five prominent teeth, four of which are denticulate. The ♀ with four teeth which are less prominent and none denticulate, the defining tooth supported by two stout spines.

Peræopods 1 and 2, palm of 6th joint only feebly spinous.

Peræopod 3, 2nd joint longer than broad, distal two-thirds of posterior margin obliquely straight, posterior lobe rounded, palm of 6th joint feebly spinous.

Peræopods 4 and 5, 2nd joint oblong-oval in form, posterior margin gently convex.

Eyes much larger than in *I. elmhirsti*, reniform, visual elements distinct, bright crimson, retaining colour long after immersion in formaline.

Antenna 2, ultimate joint of peduncle somewhat shorter than penultimate.

Mandible, 3rd joint of palp as long or nearly as long as 2nd.

Gnathopod 2, 6th joint ovate, the palm greatly oblique and waved; more densely setose than in *I. elmhirsti*: hind margin not more than half the length of front.

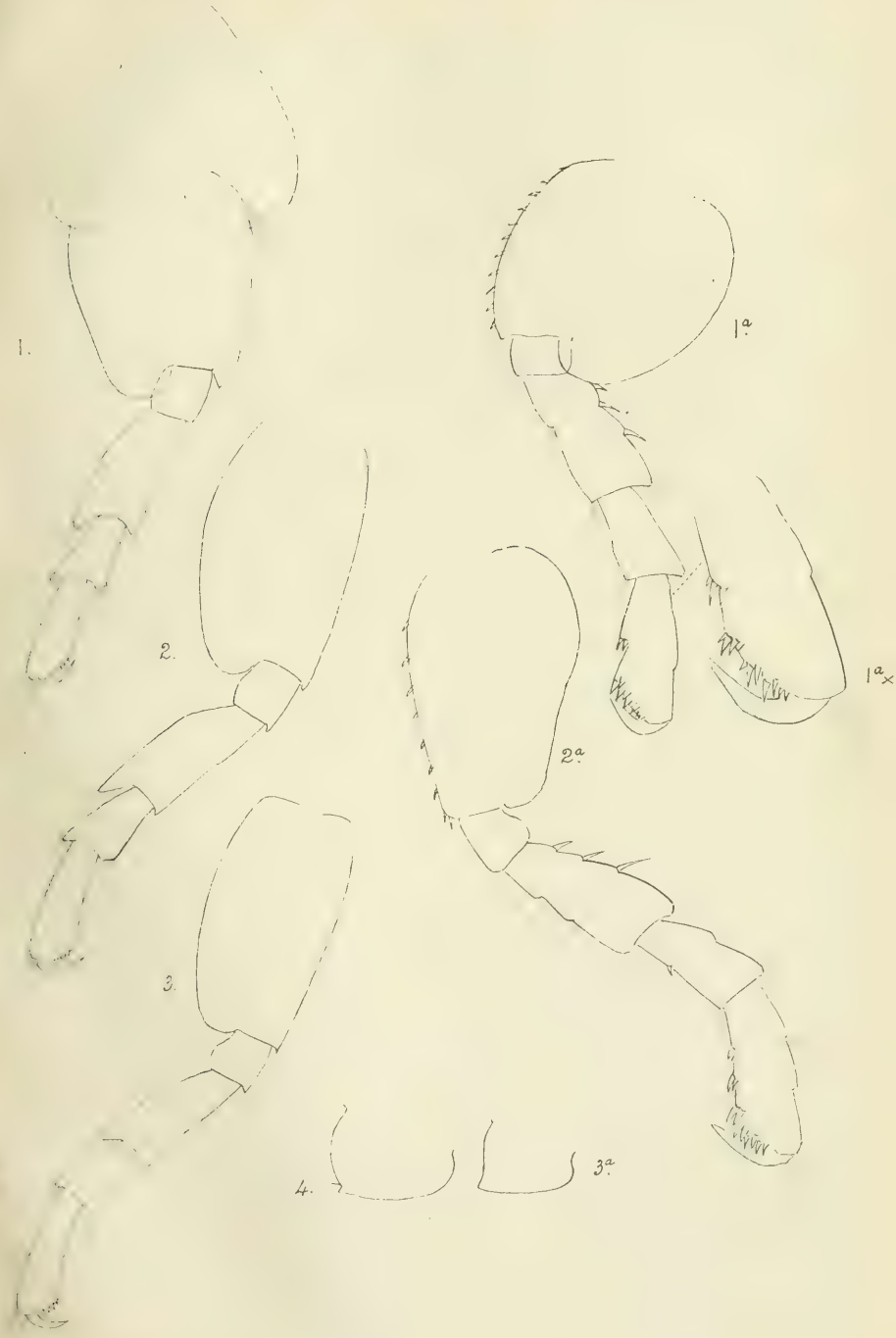
Peræopods 1 and 2, palm of 6th joint very strongly spinous.

Peræopod 3, 2nd joint as broad as long, both margins strongly convex, the anterior margin beset with about twelve strong spines, palm of 6th joint very strongly spinous.

Peræopods 4 and 5, 2nd joint broadest at about proximal third, distal half of posterior margin slightly insinuate.

ALEXANDER PATIENCE, del.

ISAEA.



ALEXANDER PATIENCE, del.

ISAEA.

Pleon Segment 3, lateral corner terminating in a blunt tooth, posterior edge evenly curved and smooth.

Pleon Segment 3, posterior edge waved.

Colour of the living animal, yellowish-brown, speckled with dark spots, which, on the body, have a dendritic appearance; the antennæ and last three joints of peræopods usually devoid of dark pigment.

Length of adult male and female, about 8 mm.

EXPLANATORY OF PLATE I.

1.—Cephalon and antennæ of *Isæa elmhirsti.*
2.—1st gnathopod of do.
3.—2nd gnathopod of do.
3ˣ.—Palm of 6th joint of 2nd gnathopod of do.
4.—1st peræopod of do.
5.—Mandible of do.
1ª.—Cephalon and antennæ of *Isæa montagui.*
2ª.—Last two joints of 2nd gnathopod of do.
Figs. 1-5 are from male specimen of *I. elmhirsti* measuring about 7.5 mm.
Figs. 1ª and 2ª are from female specimen of *I. montagui* measuring about 6 mm., and are magnified on a higher scale.

EXPLANATORY OF PLATE II.

1.—3rd peræopod of *I. elmhirsti.*
2.—4th do. do.
3.—5th do. do.
4.—Pleon-segment 3, do.
1ª.—3rd peræopod of *I. montagui.*
1ªx.—Last two joints of do. (more highly magnified).
2ª.—4th peræopod of do.
3ª.—Pleon-segment 3, do.
Figs. 1ª-2ª are magnified on a higher scale. Figs. 4 and 3ª are from smaller specimens.

Note.—Since the above was read before the Society Mr. Elmhirst has been able to send me specimens of *I. elmhirsti* which were taken from lobsters exposed for sale in a fishmonger's shop in St. Andrews on the east of Scotland, which had been recently caught off that coast. A careful comparison with West of Scotland specimens revealed no appreciable difference in structure nor in the type of coloration.

Notes on the Summer-Birds of Shiskin, Arran, 1909.

By T. Thornton Mackeith.

[Read 26th October, 1909.]

The summer of 1909 will long be remembered by most of us as one of the coldest we ever experienced. The month of June was for the most part dry, with bright sunshine, but bitterly cold winds prevailed most of the time, especially at nights. July, on the other hand, was a wet month, and also very cold. Such adverse conditions must in some measure account for the absence or relative scarcity of some of the smaller birds. Of the tits, for instance, only one was observed—the coal-tit—and only one bird at that. The willow-wren was little in evidence till the warm days arrived which ushered in August.

The most interesting feature of the year in the area under consideration was the great abundance of the grasshopper-warbler. Every hedgerow throughout the district contained a singer of its unmusical song. Doubtless there would be as many females as males, thus giving a very large total. The area to which these notes apply is within the following boundaries:—The Machrie Water on the north, to the Sliddery Water on the south; a line drawn between the sources of these two streams on the east, to Kilbrannan Sound on the west—in all, about eight or nine square miles. This area includes Machrie, Torbeg, Shedog, Blackwaterfoot, North and South Feorline, and Kilpatrick, which are all included in the general name "Shiskin." The greater part of this country is mountain and moor, the valleys alone being cultivated The exact period under observation is from May 29th till August 2nd, 1909. The total number of species in the following list is 88. Of these I personally observed 75. The notes upon the remainder were, in the main, supplied by Mr. M'Hardy, gamekeeper, Kilpatrick, whom I desire to thank for the kind suggestions and help received.

Species marked with an asterisk (*) I did not observe myself.

Missel-Thrush (*Turdus viscivorus*).—Is not by any means plentiful.

Song-Thrush (*T. musicus*).—Abundant, but not so much so as the following species.

Blackbird (*T. merula*).—Very abundant.

Ring-Ouzel (*T. torquatus*).—Once or twice seen near Corriecravie.

Wheatear (*Saxicola œnanthe*).—A fairly plentiful species. They became very conspicuous when the young began to fly.

Whinchat (*Pratincola rubetra*).—Only a few birds were seen.

Redbreast (*Erithacus rubecula*).—Common.

Whitethroat (*Sylvia cinerea*).—Fairly common.

Garden-Warbler (*Sylvia hortensis*).—Seen and heard several times.

Chiffchaff (*Phylloscopus rufus*).—Only heard in song once.

Willow-Wren (*P. trochilus*).—Only an odd bird was to be seen until August 1st, when they were abundant everywhere.

Sedge-Warbler (*Acrocephalus phragmitis*).—Only a few birds were heard singing.

Grasshopper-Warbler (*Locustella nævia*).—By far the most abundant warbler in the district. There must have been ten of these birds to one of any of the other warblers.

Hedge-Sparrow (*Accentor modularis*).—Common. Some of these birds were almost black—much darker in colour than I have ever seen them elsewhere.

Dipper (*Cinclus aquaticus*).—Not common, but was found on most of the larger streams.

Coal-Titmouse (*Parus ater*).—Only one bird was seen, in the plantation near the burying-ground.

Wren (*Troglodytes parvulus*).—Common.

Pied Wagtail (*Motacilla lugubris*).—Common.

Grey Wagtail (*M. melanope*).—Only a few were seen.

Tree-Pipit (*Anthus trivialis*).—Fairly common.

Meadow-Pipit (*A. pratensis*).—Not nearly so common as I have seen it inland.

Rock-Pipit (*A. obscurus*).—By far the most abundant bird along the shore.

Spotted Flycatcher (*Muscicapa grisola*).—Seen only once near Shedog.

Swallow (*Hirundo rustica*).—Common.

Martin (*Chelidon urbica*).— Relatively a scarce bird.

*Sand-Martin (*Cotile riparia*).—A nesting species.

Greenfinch (*Ligurinus chloris*).—Common.

House-Sparrow (*Passer domesticus*).—Common.

Tree-Sparrow (*P. montanus*).—Observed nesting in the ivy-covered cliffs south of Kilpatrick Point.

Chaffinch (*Fringilla cœlebs*).—Common.

*Twite (*Linota flavirostris*).—Said to nest on the moors.

Bullfinch (*Pyrrhula europæa*).—Seen several times. I was told by a local man that this bird is very abundant in winter.

Corn-Bunting (*Emberiza miliaria*).—Only seen once.

Yellow-Bunting (*E. citrinella*).—Very abundant. By far the commonest bird by the roadsides. I was told that this bird is absent in winter.

Starling (*Sturnus vulgaris*).—Common.

Jackdaw (*Corvus monedula*).—Abundant.

*Raven (*C. corax*).—Nests in area.

*Carrion-Crow (*C. corone*).—Nests in area.

*Hooded Crow (*C. cornix*).—Nests in area.

Rook (*C. frugilegus*).—Mostly seen inland.

Skylark (*Alauda arvensis*).—Fairly common.

Swift *Cypselus apus*).—Only seen once.

Nightjar (*Caprimulgus europæus*).—Heard at dusk in the first week of June. We heard it fairly regularly on till 11th July, which is the last record.

Cuckoo (*Cuculus canorus*).—Fairly common.

*Barn-Owl (*Strix flammea*).—Nests in area.

*Long-eared Owl (*Asio otus*).—Nests in area.

Short-eared Owl (*Asio accipitrinus*).—I must have been very near either the nest or young of this species, judging by the behaviour of the bird. It nests regularly in the area.

Tawny Owl (*Syrnium aluco*).—Heard several times.

*Hen-Harrier (*Circus cyaneus*).—Nests regularly in the area.

*Golden Eagle (*Aquila chrysaëtus*).—Nests in the area.

*Sparrow-Hawk (*Accipiter nisus*).—Nests annually.

*Peregrine Falcon (*Falco peregrinus*).—Nests amongst the hills.

*Merlin (*F. æsalon*).—Nests in area.

Kestrel *F. tinnunculus*).—Several were seen near Corriecravie. Nests.

Cormorant (*Phalacrocorax carbo*).—Regularly found along the shore.

Shag (*P. graculus*).—Also observed feeding by the shore.

Gannet (*Sula bassana*).—A common fisher in the Sound.

Common Heron (*Ardea cinerea*).—Common along the shore.

Common Sheld-duck (*Tadorna cornuta*).—An abundant species along the shore. I saw thirty adult birds in one flock, also three broods of young birds.

Mallard (*Anas boscas*).—Common.

Teal (*Querquedula crecca*).—Seen once.

Tufted Duck (*Fuligula cristata.*—Seen several times.

Red-breasted Merganser (*Mergus serrator*).—A few were seen.

Ring-Dove (*Columba palumbus*).—Fairly common.

Stock-Dove (*C. œnas*).—About thirty pairs were found nesting in the ivy-covered cliffs between Kilpatrick Point and Corriecravie.

Rock-Dove (*Columba livia*).—Abundant.

*Black Grouse (*Tetrao tetrix*).—Nests within the area.

Red Grouse (*Lagopus scoticus*).—Common.

Pheasant (*Phasianus colchicus*).—Only a few birds were seen, and these mostly males.

Common Partridge (*Perdix cinerea*).—Fairly common. Only one nest was found, containing twelve eggs.

Land-Rail (*Crex pratensis*).—The well-known "crake" of this bird was heard in the early days of June. Then it ceased. It was once more heard on July 16th. From that date onwards it never ceased. On 2nd August, the day we left Arran, I heard three birds at one time.

*Moorhen (*Gallinula chloropus*).—Fairly common.

Ringed Plover (*Egialitis hiaticula*).—Abundant. So far as I could judge laying was only beginning with this bird in early June.

Golden Plover (*Charadrius pluvialis*).—Seen, but still more frequently heard on the stretch of moorland lying between Shedog and Machrie.

Lapwing (*Vanellus vulgaris*).—Common.

Oyster-Catcher (*Hæmatopus ostralegus*).—Very common all round the shore. In all I must have found about thirty nests between Machrie and Shiddery. One nest, only, contained four eggs.

Woodcock (*Scolopax rusticula*).—Only a few were seen, four being seen at one time. It nests in the area.

Common Snipe (*Gallinago cœlestis*).—Fairly common in all suitable spots.

Common Sandpiper (*Totanus hypoleucus*).—Common as a nesting species all along the shore.

Common Redshank (*T. calidris*).—Two nests were found on the shore line, both of which were as open as any of the Oyster-catchers. All the nests I have found inland have been well concealed.

Common Curlew (*Numenius arquata*).—This is one of the commonest birds everywhere. Flocks of thirty and forty were frequently seen.

Common Tern (*Sterna fluviatilis*).—It is quite a common sight to see this graceful bird fishing close in to shore. One day I saw two adult birds with a young bird between them sitting on rock basking in the sun (August 1st.)

Black-Headed Gull (*Larus ridibundus*).—Very rarely met with during our stay.

Common Gull (*L. canus*).—The term "common" certainly applies to this species in the area under observation. Therein it is far and away the commonest gull. I found one nesting colony.

Herring Gull (*L. argentatus*).—Abundant.

Lesser Black-backed Gull (*L. fuscus*).—Common, but not so abundant as the preceding species.

Great Black-backed Gull (*L. marinus*).—Observed several times, mostly always in pairs.

Kittiwake (*Rissa tridactyla*). Abundant.

That the foregoing list is capable of expansion there can be no doubt. A more careful examination of the better wooded parts will almost certainly yield the great, blue and long tailed tits, while I am not reconciled to the total absence of the stonechat and reed-bunting.

Proceedings of the Society.

The first meeting of the fifty-ninth session of the Society took place on 28th September, 1909, Mr. John Paterson, President, in the chair.

Messrs. J. F. Scott, 6 Rupert Street, Hugh W. Wilson, 592 Pollokshaws Road, Wm. S. Kirkhope, 197 West Princes Street, Glasgow, and William M'Leod, Floyd Street, Coatbridge, were elected as ordinary members of the Society.

Excursions to Perceton (p. 27), Kelburne Castle (p. 28), Lee Castle, and Rowallan Castle were reported on.

Mr. John Cairns, Jr., exhibited *Hoheuria populnea*, A. Cann., var. *lanceolata*, from Kelburne Castle. This plant is particularly referred to in the report on the excursion to that place (p. 28).

Mr. Alex. Ross exhibited, on behalf of Mr. Alex. Stevenson, *Corallorhiza innata*, R. Br., which had been found growing on the moist grassy flats of Nobel's works at Ardeer, Ayrshire. This very rare species had only previously been found in the West of Scotland in another locality, also in Ayrshire.

Mr. W. Cameron Davidson exhibited living specimens of a fresh water polyzoon (*Cristatella mucedo*) from Kilmacolm, and read some notes on its occurrence and economy (p. 15).

Mr. Robert Dunlop showed *Asemum striatum*, L., a longicorn beetle from Shewalton (Ayr), an occurrence of some importance, as it has not been recorded for some years past. It has been found in various parts of Scotland, but is unknown in England and Ireland.

Mr. W. R. Baxter exhibited the following fungi from Brodick:—*Amanita muscarius*, A. *rubescens*, A. *vaginatus*, *Armillaria mellea*, *Clitocybe laccatus*, *Collybia laceratus*, *Pholiota curvipes*, *Flammula alnicola*, F. *sapineus*, *Stropharia æruginosus*, *Hypholoma sublateritius*, H. *capnoides*, H. *epixanthus*, H. *fasciculare*, *Panæolus campanulatus*, *Coprinus comatus*, *Paxillus involutus*, *Hygrophorus calyptræformis*, *Lactarius blennius*, L. *theiogalus*, L. *rufus*, L. *glyciosmus*, L. *volemus*, *Russula cyanoxantha*, *Cantharellus cibarius*, *Lentinus cochleatus*, *Boletus luridus*, *Polyporus betulinus*, P. *annosus*, *Clavaria cinerea*, C. *cristata*. These were identified and named by Mr. William

Stewart. *Panus torulosus*, also exhibited by Mr. Baxter, from Brodick, and identified by Dr. Plowright, is new to the Clyde area.

A living specimen of the German cockroach (*Phyllodromia germanica*, L.), a female with egg-purse attached, taken in a shop in Argyle Street, Glasgow, was shown by Mr. John E. Murphy. A few years ago this species was of somewhat rare occurrence, but now it may be found connected with certain industries almost over the whole city.

Mr. Robert Garry, B.Sc., read a paper on "Some recent Additions to the Fresh-water Algæ of the Clyde Area" (p. 13).

The Fifty-eighth Annual General Meeting of the Society took place at 207 Bath Street on 26th October, 1909, Mr. John Paterson, President, in the chair. The Honorary Secretary (Mr. A. Ross) read the report of the Council on the work of the Society during the preceding year, which showed that the membership of the Society was 245, made up as follows:—honorary members, 16; corresponding, 34; life, 17; annual, 178. In addition, there are 10 associates. During the session 16 ordinary members and one associate were admitted, and 13 members and 7 associates removed from the roll. The session covered by the report was very successful, the papers and exhibits submitted being numerous and important. Twelve excursions took place during the year, and the attendance was above the average of recent years. Considering the importance and interest of the contributions to the meetings it was thought the latter should have been better attended. The Honorary Treasurer (Mr. John Renwick) submitted his annual abstract statement of accounts for the past session, which was approved (page 32). A satisfactory report on the Society's Library which continues to be largely availed of, was made by the Honorary Librarian (Mr. James Mitchell), and Mr. D. A. Boyd, Honorary Editor of Transactions, submitted a report on the Society's publications. The closing part of the "New Series" of the Society's *Transaction and Proceedings* is expected to be issued in two or three months. The Society's publication has now been altered to a quarterly journal called "The Glasgow Naturalist," which has appeared regularly during the past year.

The election of office-bearers resulted in Mr. J. R. Thomson being appointed a vice-president, and Messrs. Thos. Anderson, Robert Garry, B.Sc., Alexander Patience, and Hugh W. Wilson members of council.

Messrs. James Jack and Joseph Somerville were reappointed as auditors.

Mr. D. Pearson, who had been connected with the Society for thirty years as an ordinary member, was elected as an honorary member, on the recommendation of the Council.

Messrs. A. Douglas M'Call, Carloch, Garelochhead, and William M. Pettigrew, 245 Saracen Street, Possilpark, were elected ordinary members of the Society.

Mr. W. R. Baxter showed fifty lantern slides from photographs of fungi *in situ*. This collection Mr. Baxter kindly presented to the society. The slides were greatly admired for their interest and technical excellence. Although the species represented were, for the most part familiar, it included the rare *Panus torulosus* before mentioned (p. 26) and *Exidia glandulosa* from Garelochhead, which is seldom met with in "Clyde." Mr. Alexander Patience read a paper "On a new British Marine Amphipod, *Isæa elmhirsti*" (p. 16). Mr. William Rennie read another—"Notes on the Sedge-Warbler (*Acrocephalus phragmitis*) at Possil Marsh, in 1908 and 1909 (p. 1), and Mr. T. Thornton MacKeith read one entitled "Notes on the Summer Birds of Shiskin, Arran" (p. 20).

EXCURSIONS.

Perceton, Irvine, 14th August, 1909.—Mr. Archibald Shanks, Conductor. A party, numbering a dozen, visited Perceton on the afternoon of this date. On a wall near Stane Castle *Asplenium Ruta-muraria* was abundant, and further on *Botrychium Lunaria* is known to occur on the roadside, but the vegetation was too dense at this advanced season to find it in passing. The gardener at Perceton kindly conducted the party over the charming gardens there. In a pond *Acorus Calamus* and *Typha latifolia* were observed. Mr. John Renwick measured a few of the notable trees on the estate as follows:—*Liriodendron*

Tulipifera near lodge, girth of trunk, 8 feet 3 inches at 1 foot 3 inches, increase in three years, 2·75 inches = ·91 inch per annum, divides into two stems at 2 feet, which measure respectively in circumference at 5 feet, 4 feet 4½ inches, and 4 feet 1½ inches, an increase in each stem of 1 inch = ·33 inch per annum; *Acer Pseudo-platanus* in a field, girth of trunk, 14 feet 6 inches at 4 feet 6 inches, bole 12 feet; *Robinia Pseudacacia*, bole 20 feet, girth of trunk, 5 feet 1¾ inches at 5 feet, increase in 3 years, ¾ inch = ·25 yearly; *Fraxinus excelsior*, a magnificent tree near some offices on the estate, with a bole of 12 feet and a girth of trunk of 15 feet 6½ inches at 5 feet; *Ulmus campestris* bole 30 feet, girth 10 feet at 5 feet, increase 3 inches in three years; another of this species, bole 24 feet, girth 11 feet 6 inches at 5 feet, increase in three years, 1 inch = ·33 inch yearly.

Kelburn Castle, Fairlie, 21st August, 1909.—Mr John Cairns, Conductor, Twenty-eight members and friends were present at this excursion. The weather was very fine, and a pleasant afternoon was spent in the Pleasure Grounds and Gardens, which are kept in very fine condition.

A large number of interesting trees and shrubs were noted, amongst which may be mentioned *Pinus insignis*, which has a girth of 11 feet 8½ inches at 4 feet. When last measured in 1890 it was 7 feet 10 inches, an increase of 3 feet 10½ inches. Specimens of this pine of a size like the present one are not at all common in our district. In Veitch's *Manual of the Coniferae* it is described under the name of *P. radiata*, and it is there stated that—"The value of *Pinus radiata* as a subject for British Arboriculture is restricted to the area which may be roughly defined to be that part of England south of the Thames and west of the Severn, Ireland, generally, and the south-western counties of Scotland. Within this area it is one of the stateliest and most ornamental of pines; beyond it, it is liable to be injured by frosts, and is often killed by them."

A specimen of *Cupressus macrocarpa* was measured, and found to be 9 feet 1½ inch at 2 feet 6 inches. It is a rapidly growing tree, and varies in habit from broadly pyramidal, with long spreading branches, to strictly fastigiate with erect branches. In its native habit, old trees become tabuliform, like the Cedar of Lebanon.

The following yews were also measured:—Yew, north tree of pair (male), 12 feet 4½ inches at 2 feet 6 inches; bole, 5½ feet. Yew, south tree of pair (female), 12 feet 1 inch at 2 feet 6 inches; bole, 7 feet. This pair is in the pleasaunce. Yew, near house, 10 feet 6½ inches at 2 feet 6 inches; bole, 13 feet.

A large number of silver-firs have been planted throughout the grounds, and in the glen the largest specimen measured is one near the monument—girth, 13 feet 3 inches at 5 feet.

Many large specimens of the New Zealand flax (*Phormium tenax*) were observed. This plant seems quite at home at Kelburne, and this summer has flowered in great profusion. A fine specimen of *Buddleia variabilis*, var. *Veitchi* in flower attracted attention. This is a recent introduction from China, and is a most handsome addition to our gardens. A larch tree in the pleasaunce near the house measured 10 feet 9½ inches at 6 feet 4 inches on W.S.W.

Lord Glasgow, during the time he was Governor-General of New Zealand, made a large collection of natural history and other objects, and on his return home he erected a museum for their reception. A short time was spent by the party making an inspection of the museum.

Close by the museum a small tree was in flower, the name of which was unknown to the gardener, but he knew it was a native of New Zealand. A specimen was sent to Kew, where it was identified as *Hoheria populnea* (A. Cann), var., *lanceolata*. An interesting description of this genus is given in the "*Plants of New Zealand*," by Laing & Blackwell. The varied names given by the Maoris in different districts to this plant are all said to spring from the same root. *Whau* signifies "wrapped about," "netted-like lace," and the tree is so called from the character of its inner bark. The settlers name it lace-bark, ribbon-wood, or thousand-jacket. This inner bark is remarkably tough, and is, therefore, often used for cordage. The Hoheria is one of the most beautiful of the small trees of the forest. It is covered in autumn with a sheet of white starry flowers, which are often developed in such profusion as entirely to conceal the leaves. There is a large number of recognised varieties, but, as Dr. Cockayne has shown, *Hoheria angustifolia*, at least, should be regarded as a distinct species. The Hoheria sometimes grows to

a height of 40 feet. The flowers are very beautiful, with snow-white petals, and numerous stamens. They are produced in fascicles in the axils of the leaves, sometimes only two or three together, and sometimes in bunches of twelve to twenty. The stamens are curiously arranged, being united, as in all the Malvaceæ, into a tube, but breaking apart again, lower still, into separate bundles, each of which contains five or six stamens. The fruit is dry, and the seed pendulous. The wood of the tree is white and very tough. It is occasionally used by cabinetmakers, and makes excellent firewood.

On the invitation of Lady Glasgow the party were privileged to view the pictures in the castle, where tea was also served.

Notes.

Short Sun-fish (*Orthagoriscus mola*) **in Ayrshire Waters.** — In the middle of October a short sun-fish, measuring four feet long by five feet three inches, and supposed to be about 2 cwts. in weight, was got in South Ayrshire Waters, as Mr. Andrew Berry of Lendalfoot informed me. A much larger one, taken off Greenock in 1881, is the only other Clyde record.—John Paterson.

The **Bar-tailed Godwit** (*Limosa lapponica*) **in East Renfrew.**—On 26th September, 1909, I saw a bar-tailed godwit at Waulkmill Glen Dam, where it remained for at least a week. This is an addition to the East Renfrew list of birds, but the record is perhaps more interesting on account of the extreme paucity of records of the occurrence of this species by inland waters in Scotland. Waulkmill Glen, with Ryatt Linn and Balgray Dams, comprise the Gorbals Water-works of the Glasgow Corporation. By these reservoirs I have observed nineteen species of Limicolæ during the last fifteen years. It would be interesting to know if this number is exceeded in any similar inland locality in Scotland.—John Robertson.

The Stock-Dove (*Columba œnas*) **at Blantyre.**—On 11th April, 1909, my dog put a stock-dove off her nest, which contained one egg. This was on the rocky bluff on which Blantyre

Priory stands. On 13th it contained two eggs. Between 13th and 25th I visited the nest about every alternate day, and the female became so tame that I could lift her off the eggs and again put her back. She showed no fear. A friend of mine, who knew the nest, was tempted on the 26th to lift the sitting bird, with the unfortunate result that it flew off, leaving its tail in his hand. This nest was forsaken. By 28th May, however, this pair had a nest with two eggs in an ivy-covered tree, about twelve feet from the ground. The tail of the hen-bird had also begun to grow. On 8th May two pairs had each two eggs in rabbit holes on the rocky bank of the Rotten Calder, near Calder Glen Mansion house. By 17th they were both harried, and about this date a local pot-hunter had four stock-doves, with some wood-pigeons, in his bag. On 15th June another nest in an ivy-covered tree overhanging the water contained two half-fledged young. As late as 27th September there was yet another nest, fifteen feet from the ground, in a situation similar to that last described, also containing two half-fledged young. Two nests were also reported to me on the Green Hall Estate, High Blantyre.

In the West Calder district of Midlothian, where my youth was spent, I well remember the finding of a nest, which I am now satisfied was a stock-dove's. This must have been twenty-two to twenty-three years ago. It contained two eggs, and was built under a whin-bush on the very edge of an old disused freestone quarry. Boy-like we took it for an owl's, and one of the eggs, which I still have, has a tracing of the word "owl" in red ink still visible.—Walter Stewart, Blantyre.

Evidently the penalty which Scottish ornithologists must pay for having overlooked this species is, that they will never now know what they would most like to, namely, the *extent* to which it has been overlooked, so that it would be well to abate exuberance about "extension of range," &c.—*Eds.*

ABSTRACT STATEMENT OF ACCOUNTS—SESSION 1908-1909.

1908.—Sept. 1.						
To Balance—Life Members' Fund—						
Debentures, -	£45	0	0			
In Bank, -	112	10	0			
			£157	10	0	
Ordinary Fund—						
In Bank, - - -			112	16	3	
					£270	6 3
1909.—Aug. 31.						
To 142 Ordinary Members' Subscriptions. @ 7s. 6d., - - - - - - -					53	5 0
,, 19 Members' Arrears, - - - - -					9	7 6
,, 9 Associates' Subscriptions, @ 5s., - -					2	5 0
,, Interest, - - - - - - - -					7	16 5
,, *Transactions* sold, - - - - - -					2	5 7
,, Mitchell Library, 2 years' *Transactions*, -					10	0 0
					£355	5 9

From the Balance of £108 4s. 3d. is to be deducted cost of *Transactions* for Three Sessions.

1909.—Aug. 31.						
By Rent and Attendance, - - - - -					£9	7 0
,, Postage, Stationery, &c., - - - -					15	1 0
,, Printing Circulars. - - - -					9	15 6
,, Printing *Transactions*, - - - -					42	4 8
,, Carriage on *Transactions*, - - - -					3	8 6
,, Lantern Expenses, - - - - -					0	10 0
,, Library—New Books, - - -			£4	7 9		
Insurance, - - -			0	12 0		
Binding, - - -			2	17 2		
Postage, Stationery, &c.,			0	6 11		
					8	3 10
,, Marine Biological Association, - - -					1	1 0
,, Balance—Life Members' Fund, Debentures of the Modern Permanent Building and Investment Society, Melbourne, - - -	£35	0 0				
,, In Bank, - - -	122	10 0				
			£157	10 0		
,, Balance, Ordinary Fund in Bank and on hand, - - - -			108	4 3		
					265	14 3
					£355	5 9

GLASGOW, 19*th October*, 1909.—We have examined the Accounts and compared same with relative Vouchers and Securities, and found them correct. Cash due by Treasurer, Fourteen pounds eighteen shillings and seven pence.

(Signed) JAMES JACK,
JOSEPH SOMMERVILLE. } *Auditors.*

The Glasgow Naturalist

The Journal of the NATURAL HISTORY SOCIETY OF GLASGOW

(Including the *Transactions* and *Proceedings* of the Society, Third Series).

Vol. II., No 2.] [February, 1910.

William Stewart.

THE intimation of the death of Mr. William Stewart, which took place at his residence in Hillhead on 8th January, 1910, must have come as a painful surprise to his fellow-members in our Society, as it was not known generally that he had been ill. He last appeared as an exhibitor at the meeting on 29th June, 1909, and three months later he named a collection of Fungi, exhibited by another member. It appears that about two months before his death he was seized with paralysis, which deprived him of the power of speech, but his faculties were otherwise mercifully spared to him to the last. He was interred in Woodside Cemetery, Paisley, and is survived by a son and daughter. Mr. Stewart was the son of Mr. John Stewart, property agent in Glasgow, and was born in this city—the eldest of fourteen children—seventy-six years ago. He was educated at the High School of Glasgow, and at his death was one of the surviving members of Dr. Low's class. His occupation of architect took him to Paisley, where he resided for several years after his marriage, but after the death of his wife he returned to Glasgow, and, for the long period of forty-five years that he remained a widower, he ceased to be a competitor for business, contenting himself with such commissions as came to him on personal grounds, and occupying himself with family business, church claims, and natural history investigation. Mr. Stewart was connected with Lansdowne U.F. Church, of which, since 1878, he had been an Elder, and had acted as Session-Clerk for thirteen years before his death. He was a Liberal in politics and a Temperance reformer. He took much pleasure in those "poetic pains which only poets know," and has left two volumes of poems unpublished.

Mr. Stewart was one of our most faithful friends and useful members. He served the Society, which he joined in 1879, as an auditor, as a member of council, and a vice-president. He was one of our most regular exhibitors at the meetings of the Society; frequently conducted excursions, particularly for the collection of fungi; and contributed several papers to our Transactions. To the "*Fauna, Flora, and Geology of Clyde*," published in connection with the meeting of the British Association in Glasgow in 1901, he contributed the lists of the larger fungi and ferns of this region.

The disappearance of Mr. Stewart from our ranks, means the passage of a patriarchal and picturesque figure, with which we have been long familiar. None claimed more respect than he for a gentle, useful, and dignified life. He is deeply regretted, and will be greatly missed.

List of the "Clyde" Copeognatha, or Psocidæ.

By James J. F. X. King, F.E.S.

[Read 30th November, 1909.]

The following list, which is the result of general collecting by my friend Mr. K. J. Morton, F.E.S., and myself, enumerates 21 species as occurring in the Clyde Valley, as against the 43 British species.

With more extended searching a few more species may be recorded, but they will not be many. The distribution of those at present recorded may be much added to, no doubt, as the localities which were worked have been limited.

Psocidæ.

Amphigerontia, Kolbe.

variegata, Latr.—Carluke.

fasciata, Fabr.—Bonhill; Luss; Ardentinny.

bifasciata, Latr.—Cleghorn; Cadder Wilderness; near Milngavie; Bonhill; Ardentinny.

Psocus, Latr.

sexpunctatus, Linn.—Cleghorn; Carluke; Gorge-of-Avon; near Milngavie; Bonhill.

nebulosus, Steph.—Cleghorn.

longicornis, Fabk.—Cleghorn.

Stenopsocus, Hagen.

immaculatus, Steph.—Carluke; Gorge-of-Avon; Dalry; West Kilbride.

Graphopsocus, Kolbe.

cruciatus, Linn.—Cleghorn; Carluke; Gorge-of-Avon; Dalry; West Kilbride.

Mesopsocidæ.

Philotarsus, Kolbe.

flaviceps, Steph.—Cleghorn; on the Clyde, near Carluke; Cadder Wilderness; near Milngavie; Bonhill; Dalry.

Elipsocus, Hagen.

hyalinus, Steph.—Cadder Wilderness; near Milngavie.

Westwoodi, M'Lach.—Cleghorn; Carluke; Cadder Wilderness; near Milngavie; Bridge-of-Weir; Ardentinny; Dalry; Troon; Brodick.

abietis, Kolbe.—Carluke.

Cæciliidæ.

Pterodela, Kolbe.

pedicularia, Linn.—Cleghorn; near Milngavie; Bonhill.

Peripsocus, Hagen.

phæopterus, Steph.—Cleghorn.

Cæcilius, Curt.

fuscopterus, Latr.—Cleghorn.

flavidus, Steph.—Cleghorn; Gorge-of-Avon; Cadder Wilderness; near Milngavie; Bonhill; Dalry.

Burmeisteri, Brauer.—Carluke.

perlatus, Kolbe.—Dalry.

Trichopsocus, Kolbe.

Dalei, M'Lach.—Botanic Gardens, Glasgow.

ATROPIDÆ.

Atropos, Leach.

pulsatoria, Linn.—In houses; common among Natural History collections, &c.

TROCTIDÆ.

Troctes, Burm.

divinatorius, Müll.—In houses; common among old books, &c.

List of Arran Hepaticæ.

By SYMERS M. MACVICAR.

[Read 26th November, 1909.]

As no account of the Arran hepatics appears to have been published, it may be as well to give a list of the species at present known from the island, as it will form a foundation for future work.

Only a small part of the island has been searched for this group of plants, and none of it at all minutely, except the Loch Ranza and Lamlash districts. The glens and higher ground of the Goatfell range—although the latter is, no doubt, in general barren—will be sure to yield some additional species of interest. Granite rocks are favourable habitats for some of the rarer *Marsupellæ*, etc., and about the base of the precipices facing north or east there should be sufficient wet ground for other alpine and subalpine species.

The warm, moist climate, with its absence of extremes of temperature, combined with the many shaded localities among rocks on the low ground, make the island, at least in its northern half, most suitable for hepatics, and especially for the rarer Atlantic species, many of which having already been found. None of the upper subalpine Atlantic species, forming the *Mastigophora* association, with the exception of *Herberta adunca*, have yet been

found, but it can hardly be doubted that some of them occur.

Very few Arran hepatics, collected by the older botanists, are to be found in the Edinburgh Herbarium; but William Gourlie (1815-56) and J. G. Lyon (1816-62?), who were both Glasgow botanists; R. M. Stark (1815-73), author of the *Popular History of British Mosses*, and Mr. Adamson, are represented by a few specimens. The last-named botanist, of whom I have not been able to find any particulars, discovered the rare *Pleuroclada albescens*, var. *islandica*, on Goatfell in 1840, this being its earliest record in Scotland, as well as its most southern locality in Britain.

In this paper I have confined the records to specimens which I have examined. The names of the recent collectors, with the abbreviations used, are Messrs. W. Campbell (Campb.), P. Ewing, F.L.S. (Ewing), James M'Andrew (M'And.), Miss K. B. Macvicar (Miss Macv.), and myself (Macv.). The first locality given for each species is the earliest record of which I have seen a specimen; the remainder are more or less arranged geographically. Although many of the more generally distributed species are given as first recorded by myself, they have, no doubt, been seen by others at an earlier date, but probably not collected. I have given the dates of records of the older botanists. The more recent visits were made by Mr. Campbell from 1896 onwards; Mr. Ewing, 1892, &c.; Mr. M'Andrew, 1909; Miss Macvicar, 1909; and myself, in 1904. The degree of frequency mentioned with Mr. M'Andrew's plants is taken from a list which he kindly made for me.

There are 99 species here given. In addition, there are four species, of which I have not seen specimens, which Mr. M'Andrew mentions in the list as seen by him, viz., *Marchantia polymorpha*, *Lophozia Flœrkii*, *L. gracilis*, and *Lophocolea heterophylla*. There are probably thirty to forty additional species which occur on the island. The species recorded for the Clyde Isles, vice-county 100, which are not given here, were found in Bute, mostly by Mr. Ewing, who has also found on that island many earlier records for the vice-county than those given below for Arran.

Reboulia hemisphærica (L.) Raddi. Loch Ranza, cfr., frequent (Macv.).

Conocephalum conicum (L.) Dum. Goatfell (Campb.); Corrie (Ewing); Loch Ranza, common (Macv.); Brodick (Miss Macv.); Whiting Bay (Miss Macv.).

Lunularia cruciata (L.) Dum. Brodick Castle Gardens (Miss Macv.).

Preissia quadrata (Scop.) Nees. Loch Ranza, rare (Macv.); plentiful about a mile south of Lamlash, cfr. (M'And.).

Aneura pinguis (L.) Dum. Loch Ranza, common (Macv.); Brodick (Miss Macv.).

A. multifida (L.) Dum. Brodick (Campb.); Loch Ranza (Campb.); do., common (Macv.); Corrie (Miss Macv.).

A. latifrons, Lindb. Peat moss near Loch Ranza (Macv.); Brodick, cfr. (Miss Macv.); Lamlash (M'And.).

Metzgeria furcata (L.) Lindb. Loch Ranza, uncommon (Macv.); Brodick (Miss Macv.); Lamlash, common (M'And.); Whiting Bay (Miss Macv.); Blackwaterfoot (Miss Macv.).

M. conjugata, Lindb. Cnocan Burn (Campb.); Loch Ranza, rare (Macv.); Benlister Glen (M'And.).

M. hamata, Lindb. Goatfell (Campb.); Loch Ranza, rare (Macv.); Benlister Glen (M'And.).

Pellia endiviæfolia (Dicks.) Dum. Loch Ranza (Macv.); Whiting Bay (Miss Macv.).

P. Neesiana (Gottsche) Limpr. Whiting Bay (Miss Macv.).

P. epiphylla (L.) Dum. Loch Ranza, very common (Macv.); Corrie, Brodick, Lamlash, Whiting Bay (Miss Macv.).

Blasia pusilla, L. Roadside between Brodick and Lamlash (Miss Macv.).

Gymnomitrium concinnatum (Lightf.) Corda. Caim na Caillach, cfr., alt. 1,100 feet, rare (Macv.).

G. crenulatum, Gottsche. Caim na Caillach, frequent, and descending to alt. 900 feet (Macv.).

Marsupella Funckii (Web. et Mohr) Dum. Loch Ranza, on disused roadside (Macv.); Lamlash (M'And.).

M. emarginata (Ehrh.) Dum. Loch Ranza, common (Macv.); Brodick (Miss Macv.); Lamlash, common (M'And.).

M. aquatica (Lindenb.) Schiffn. Arran (without nearer locality) (Ewing); Shant Hill (Campb.); Loch Ranza, common (Macv.); Benlister Glen (M'And.).

Nardia compressa (Hook) Gray. Goatfell, 1839 (Dickie

Herb.); Caim na Caillach, common, descending to alt. 400 feet (Macv.); Lamlash, not common (M'And.).

N. scalaris (Schrad.) Gray. Loch Ranza, very common (Macv.); Corrie (Miss Macv.); Brodick, several localities (Miss Macv.); Lamlash, common (M'And.); Whiting Bay (Miss Macv.); Blackwaterfoot (Miss Macv.).

N. hyalina (Lyell) Carr. Corrie (Ewing); Loch Ranza (Macv.); Whiting Bay (Miss Macv.).

N. obovata (Nees) Carr. Goatfell (Campb.); Loch Ranza, cfr. (Macv.).

Aplozia crenulata (Sm.) Dum. Lamlash, rare (M'And.).

Do. do. var. *gracillima* (Sm.) Loch Ranza, rare (Macv.); Brodick, cper. (Miss Macv.); Whiting Bay (Miss Macv.).

A. riparia (Tayl.) Dum. Corrie, cper. (Miss Macv.); Whiting Bay, cper. (Miss Macv.).

A. pumila (With.) Dum. Loch Ranza, cfr., rare (Macv.); "Birch Glen," Brodick, cper. (Miss Macv.).

Lophozia inflata (Huds.) Howe. Lamlash, cper., common (M'And.); Brodick (Miss Macv.).

L. Muelleri (Nees) Dum. Lamlash, rare (M'And.).

L. ventricosa (Dicks.) Dum. Corrie (Ewing); Loch Ranza, common (Macv.); Brodick (Miss Macv.).

L. ventricosa (Dicks.) Dum. Var. *porphyroleuca* (Nees) Loch Ranza (Macv.).

L. incisa (Schrad.) Dum. Loch Ranza, uncommon (Macv.); Lamlash, not common (M'And.); Brodick (Miss Macv.).

L. quinquedentata (Huds.) Cogn. Loch Ranza, uncommon (Macv.).

L. atlantica (Kaal.) Schiffn. Loch Ranza, very rare (Macv.).

Sphenolobus exsectæformis (Breidl.) Steph. Brodick (Miss Macv.).

Plagiochila punctata, Tayl. Loch Ranza, uncommon; Lamlash, frequent (M'And.).

P. spinulosa (Dicks.) Dum. Cnocan Burn (Campb.); Loch Ranza (Campb.); do., frequent (Macv); Lamlash, cper., frequent (M'And.); near Corrie (Miss Macv.).

P. asplenioides (L.) Dum. Loch Ranza, common (Macv.); Corrie, Brodick, and Whiting Bay (Miss Macv.); Lamlash, very common (M'And.).

P. asplenioides (L.) Dum. Var. *major* Nees. Loch Ranza (Macv.); Brodick (Miss Macv.); Whiting Bay (Miss Macv.).

Mylia Taylori (Hook.) Gray. Loch Ranza (Campb.); do., rather common on banks (Macv.); Lamlash, frequent (M'And.); Corrie (Miss Macv.).

M. anomala (Hook) Gray. Peat moss near Loch Ranza, common (Macv.); Lamlash, frequent (M'And.).

Lophocolea bidentata (L.) Dum. Loch Ranza, uncommon (Macv.); Corrie, Brodick, and Whiting Bay (Miss Macv.); Lamlash, common (M'And.).

L. cuspidata, Limpr. Loch Ranza, very common (Macv.); Corrie (Miss Macv.); Brodick, several localities (Miss Macv.); Whiting Bay (Miss Macv.).

L. spicata, Tayl. Loch Ranza, in a cave (Macv.).

Chiloscyphus polyanthus (L.) Corda. Loch Ranza (Macv.).

C. pallescens (Schrad.) Nees. Loch Ranza (Macv.); Lamlash (M'And.); Whiting Bay (Miss Macv.).

Harpanthus scutatus (Web. et Mohr) Spruce. Loch Ranza, on banks, rare (Macv.); Lamlash (M'And.).

Saccogyna viticulosa (Sm.) Dum. Arran, (without nearer locality), 1843 (Gourlie); Corrie (Ewing); Loch Ranza (Campb.); do., common (Macv.); Brodick (Miss Macv.); Lamlash, frequent (M'And.).

Cephalozia bicuspidata (L.) Dum. Loch Ranza, cfr., very common; Lamlash, very common (M'And.); Corrie, Brodick, and Whiting Bay (Miss Macv.).

C. connivens (Dicks.) Spruce. Peat moss near Loch Ranza (Macv.).

C. lunulæfolia, Dum. Loch Ranza, cfr., common (Macv.); near Corrie, cper. (Miss Macv.); Lamlash, uncommon (M'And.).

C. leucantha, Spruce. Near Loch Ranza, on peat, with *Lepidozia setacea* (Macv.).

C. curvifolia (Dicks.) Dum. Goatfell, on decaying wood (Ewing); Lamlash Hills, frequent on the moors (M'And.); near Lamlash, on decaying wood, cper. (Miss Macv.).

C. Francisci (Hook.) Dum. Glen Chalmadale, Loch Ranza, on side of roadside ditch, near the peat moss, with *C. bicuspidata* (Macv.).

Hygrobiella laxifolia (Hook.) Spruce. Loch Ranza, rare (Macv.); Lamlash, rare (M'And.).

Cephaloziella byssacea (Roth.) Warnst. Loch Ranza (Macv.).

Odontoschisma sphagni (Dicks.) Dum. Peat moss, near Loch Ranza, common (Macv.).

Adelanthus decipiens (Hook.) Mitt. Loch Ranza, among rocks above the village, very rare (Macv.).

Calypogeia Trichomanis (L.) Corda (*Kantia Trichomanis* (L.)). Loch Ranza, common (Macv.); Corrie (Miss Macv.); Brodick (Miss Macv.); Lamlash, very common (M'And.); Blackwaterfoot (Miss Macv.).

C. fissa (L.) Raddi (*K. Sprengelii* Pears.). Loch Ranza (Campb.); Brodick (Miss Macv.); Whiting Bay (Miss Macv.).

C. argata, Nees et Mont. Corrie (Ewing); Brodick (Campb.); Loch Ranza, rare (Macv.).

Bazzania trilobata (L.) Gray. Loch Ranza, rare (Macv.); Corrie (Miss Macv.); Lamlash, common (M'And).

B. tricrenata (Wahl.) Trevi. Arran (without nearer locality), 1845 (Stark); Loch Ranza (Campb.); do., uncommon (Macv.)

Pleuroclada albescens (Hook.), var. *islandica* (Nees). Goatfell, 1840 (Adamson in Dickie Herb.).

Lepidozia pinnata (Hook.) Dum. Loch Ranza, uncommon (Macv.); Lamlash, frequent on shore rocks (M'And.)

L. reptans (L.) Dum. Loch Ranza, cf., common (Macv.); Corrie (Miss Macv.); Brodick (Miss Macv.).

L. Pearsoni, Spruce. Loch Ranza, rare (Macv.).

L. trichoclados, C. Müll. Frib. Loch Ranza, uncommon (Macv.).

L. setacea (Web.) Mitt. Peat moss, near Loch Ranza, cper., common (Macv.); Lamlash, frequent (M'And.).

Blepharostoma trichophyllum (L.) Dum. Loch Ranza, rare (Macv.).

Anthelia julacea (L.) Dum. Arran (without nearer locality), 1855 (Howie); Loch Ranza, alt. 200 ft. (Macv.); Caim na Caillach, common (Macv.).

Herberta adunca (Dicks.) Gray. Arran (without nearer locality), 1845 (Stark).

Ptilidium ciliare (L.) Hampe. Caim na Caillach, alt. 1200 ft., very rare (Macv.).

Trichocolea tomentella (Ehrh.) Dum. Near Lamlash (W. Evans); do., common (M'And.); Whiting Bay (Miss Macv.); Goatfell (Campb.); Corrie road (Campb.); Loch Ranza, rather common (Macv.).

Diplophyllum albicans (L.) Dum. Corrie (Ewing); Loch Ranza, common on the low ground and on the hills (Macv.); Brodick, common (Miss Macv.); Lamlash, very abundant (M'And.); Whiting Bay (Miss Macv.); Blackwaterfoot (Miss Macv.).

Scapania compacta (Roth.) Dum. Loch Ranza (Macv.).

S. aspera, Bernet. Loch Ranza, among *Frullania*, rare (Macv.).

S. gracilis (Lindb.) Kaal. Corrie (Ewing); Brodick, cfr. (Campb.); Loch Ranza (Campb.); do., common (Macv.); Lamlash (M'And.).

S. gracilis (Lindb.) Kaal, var. *laxifolia*, Carr. Caim na Caillach (Macv.).

S. nemorosa (L.) Dum. Lamlash, rare (M'And.).

S. purpurascens (Hook.) Tayl. Goatfell, 1840 (Greville Herb.); do., 1896 (Campb.); Corrie (Ewing); Loch Ranza, common (Macv.); Brodick (Miss Macv.); Lamlash, frequent (M'And.); Whiting Bay (Miss Macv.).

S. undulata (L.) Dum. Goatfell, 1856 (Mr. Nichol); Brodick (Miss Macv.); Loch Ranza, common (Macv.).

S. irrigua (Nees) Dum. Corrie (Ewing); Loch Ranza, on side of ditch, rare (Macv.); roadside, between Brodick and Lamlash (Miss Macv.).

S. curta (Mart.) Dum. Loch Ranza, rare (Macv.); Whiting Bay (Miss Macv.).

S. umbrosa (Schrad.) Dum. Loch Ranza, frequent (Macv.); Lamlash (M'And.).

Radula aquilegia, Tayl. Loch Ranza, on wet rock, very rare (Macv.).

R. Lindbergii, Gottsche. Loch Ranza, very rare (Macv.).

R. complanata (L.) Dum. Loch Ranza, rare (Macv.); Brodick (Miss Macv.).

Pleurozia purpurea (Lightf.) Lindb. Near Loch Ranza (Campb.); do., common on the peat moss and Caim na Caillach (Macv.).

Madotheca lævigata (Schrad.) Dum. Goatfell (Campb.).

M. Thuja (Dicks.) Dum. Blackwaterfoot (Miss Macv.).

Colurolejeunea calyptrifolia (Hook.) Schiffn. Brodick, on fir trees, 1847 (Lyon); Loch Ranza, on a rock (Macv.).

Cololejeunea microscopica (Tayl.) Schiffn. Loch Ranza, frequent on rocks, rare on trees (Macv.).

Lejeunea cavifolia (Ehrh.) Lindb. Loch Ranza (Campb.); do., common (Macv.); Corrie, Brodick, and Whiting Bay (Miss Macv.); Lamlash, very common (M'And.).

L. patens, Lindb. Corrie (Ewing); Loch Ranza, uncommon (Macv.).

Microlejeunea ulicina (Tayl.) Evans. Brodick, on fir trees, 1847 (Lyon); Loch Ranza, on tree (Campb.); do., common on trees (Macv.); Lamlash, on tree, rare (M'And.).

Harpalejeunea ovata (Hook.) Schiffn. Loch Ranza, uncommon (Macv.).

Marchesinia Mackaii (Hook.) Gray. Lamlash, frequent on shore rocks (M'And.).

Jubula Hutchinsiæ (Hook.) Dum. Sandstone fissure between Brodick and Corrie, 1847 (Lyon); Loch Ranza (Macv.); Lamlash (M'And.).

Frullania Tamarisci (L.) Dum. Goatfell (Campb.); Loch Ranza (Campb.); do., common (Macv.); Corrie, Brodick, Whiting Bay, and Blackwaterfoot (Miss Macv.); Lamlash, common (M'And.).

F. fragilifolia, Tayl. Loch Ranza, on rocks, rare (Macv.); Lamlash, frequent on shore rocks (M'And.).

F. germana, Tayl. Loch Ranza, rare (Macv.).

F. dilatata (L.) Dum. Loch Ranza, common on trees (Macv.); Brodick (Miss Macv.); Whiting Bay (Miss Macv.).

On the Birds of the Glasgow District.

By John Paterson.

[Read 28th December, 1909.]

In 1876, Robert Gray contributed to the *Notes on the Fauna and Flora of the West of Scotland* (which was published in connection with the meeting of the British Association in Glasgow that year), an article "On the Birds of Glasgow and its Vicinity" (*loc. sit.*, pp. 9-16). Gray had a facile pen, and when

it is said that this article was characteristic of its author it will be understood that it has attractions beyond those that relate to the facts having been brought together therein for the first time. No subsequent attempt has been made in the intervening thirty-three years to give a connected sketch of the bird-life of Glasgow and its vicinity, and as the last two decades have been marked by a great amount of local activity, there is good reason for reviewing, in the light of recent research, a subject of which we owe the only connected account to Gray's article just mentioned. It is not a matter for regret that Gray accepted as a limit the ten miles radius in dealing with some species, and greatly exceeded that limit in the case of very many others. The further he extended his purview the better for his readers; but there is now no advantage to be gained by adopting a method quite excusable, and indeed acceptable, under the circumstances of the time in which he wrote, so it is proposed to confine the following notes to the ten miles radius. It will be remembered that, in 1901, we had another visit from the British Association, in connection with which, for the first time, a list of the birds of the whole of the Clyde area was published (*Fauna, Flora, and Geology of the Clyde Area* (1901), pp. 159-170).

Within the stretch of country embraced in the ten miles radius from Glasgow Cross there is much to attract birds, and they abound in consequence. The absence of the sea and of any scenery of savage grandeur are its chief defects—some marine species and others associated with our mountain fastnesses are naturally not to be looked for, unless in a rare case as stragglers. There is left, however, a great variety of surface, of physical feature, and of condition. Hills with grass and heather-lands at our northern and southern boundaries, a considerable extent of scattered woodland—very many lochs and dams presenting varied conditions—the Clyde flowing east to west through the middle of our district and of the city, receiving in its course the Kelvin and many smaller tributaries, some of them, like the various Calders (the North Calder, the South Calder, and the Rotten Calder), coming through picturesque and partly densely wooded glens and gorges—cultivated lands, haugh lands, and (near the city) waste lands—these are all to be reckoned as in

varying degree characteristic of that area within the ten miles radius which, for our present purpose, we consider to be the Glasgow district. The natural corollary of this interesting variety of aspect, surface, and condition, is that abundant bird-life which is the delight of the ornithologist.

Coming now to the species to be met with, the Mistle-Thrush is quite common. An early nester, it is only natural that it should be one of the first species to be seen moving in small parties before summer has departed, and it continues conspicuous in the autumn months on the grass lands near the city. The Song-Thrush is even more common in the nesting season, but disappears, comparatively speaking, for about two or three months in the dead of winter, especially when the conditions are hard, reappearing sometimes in fairly large parties in February. The Redwing, again, is a fairly stationary species throughout the period of its sojourn, for about five months. The Fieldfare is more irregular, unless, perhaps, on the uplands. Around the city it becomes scarcer for a month or two at the turn of the year, its numbers increasing with the advent of spring, and it is seen in large parties throughout April. The Blackbird is hardy, and is conspicuous by its numbers at the season when the Song-Thrush has become scarce. Though occurring on the Kilpatrick Hills and Campsie Fells in summer, the Ring-Ouzel is comparatively rare. It has occurred in Queen's Park at the April passage.

The Wheatear is well known in the district, and is regularly seen on waste ground round the city at the time of the spring and autumn passage. It nests occasionally in old quarries, and in summer is characteristic of the uplands. The Whinchat is as well known, and is more common in the nesting season than the last species on the low ground around the city, wherever rough patches occur. The Stonechat occurs, but it is unfamiliar. I have seen it in the north and north-west at Jellyhill, Milngavie, and the moor at the Bakers' Dam on the Kilpatrick Hills, and in the north-east at Robroyston and Glenboig.

The Redstart may be seen anywhere in the district, including Queen's Park and Camphill, at the spring and autumn passages. It is rare in summer on the left bank of the Clyde, but nests

in Cadder Wilderness, in the north of our district, and becomes a charactertistic species beyond Milngavie. The Black Redstart was observed in Great Western Road in November, 1905.* The Redbreast is common at all seasons. The Whitethroat is common in summer. Although the Lesser Whitethroat was mentioned by Gray as a "regular summer visitant" in his list (*ante*, p. 43), subsequent observation would have justified its exclusion at present † had one not turned up in August last near Cathcart Cemetery, as I was informed by Mr. John Robertson at the time. About this interesting occurrence—perhaps a casual one—there can be no doubt. The Blackcap comes regularly to Rouken Glen, and has been seen on the Cart, at Cathcart and Hawkhead, in recent years. The Garden-Warbler is more numerous, being familiar in suitable places on the left bank of the river, and on the north side I have heard it once at Cadder Wilderness, and seen it several times in the Mill Plantation in the same neighbourhood. The Goldcrest is common, sometimes appearing in Queen's Park. The Chiffchaff is not common within our limits, though it becomes characteristic south-west of our borders. It occurs sparingly about Giffnock, and I have heard it at Killermont.‡ The Willow-Wren is abundant, and deserves to be generally known, which it is not. The Wood-Wren is very much scarcer in the immediate neighbourhood of the city, although it occurs in some woods and glens. There is usually a pair or two in Cadder Wilderness, but I have seen it abundant there on one occasion, probably a late movement. The Sedge-Warbler in a normal year is very common. The Grasshopper-Warbler is very uncertain, although it has occurred in one year or another all round the city, even within the city boundary at Mount Florida. The Hedge-Sparrow is familiar on every roadway.

The Dipper is common on the clearer streams of the southern half of our district, and I have seen it during the past year at New Cathcart Bridge, on the Cart, and on the Clyde at

* *Trans. Nat. Hist. Soc., Glasgow* (N.S.), VIII., p. 106.

† See "Notes on the Lesser Whitethroat as a Clyde Species" (*Annals of Scot. Nat. Hist.*, 1899, pp. 210-214).

‡ See an article on the distribution of the Chiffchaff in "Clyde" in *Trans. Nat. Hist. Soc., Glasgow*, V. (N.S.), pp. 48-52.

Kenmuir. It is rare on the duller ditches and waters north-east of the city. It was familiar on the Kelvin in Gray's time. The Long-tailed Titmouse is not common, unless, perhaps, from Bardowie northwards. The Great Titmouse and Coal Titmouse are common, and I have seen the last-named searching the gable of a house in Battlefield, within the city boundary. The Marsh Titmouse has a puzzling distribution, occurring regularly at Bardowie and east thereof, at Stepps, and about Bishop Loch, on the right bank of the river. Meantime we know nothing about it in the north-western section of this district, but on the south side, from Paisley to Cathcart, and up to Uplawmoor, it has been frequently observed. This species is not mentioned in Gray's list (*ante*, p. 43). The Blue Titmouse is common, and I have seen it in recent years on a school railing at Mount Florida.

The Wren is common, and may be seen regularly in Queen's Park and Camphill.

The Tree-Creeper is just as frequent as in most districts, and has twice been noticed in Queen's Park in the last two decades.

The Pied Wagtail is common, and the White Wagtail a regular bird of passage, appearing within the city boundaries. This is another species not mentioned in Gray's list (*ante*, p. 43). The Grey Wagtail is not at all unfamiliar at Rouken Glen, and, in winter, about clay-holes near the city. The Blue-headed Wagtail has been seen on the river at Cambuslang at the spring passage,* and in early summer at Dalbeth, and I have hopes that, had we a good observer in that neighbourhood, where the Yellow Wagtail is common, we might know more about it. The Yellow Wagtail is quite familiar all round the city, extending to our limits on the south side of the river. The Tree-Pipit is common in summer, and we hardly lose sight of the Meadow-Pipit at any season.

The Great Grey Shrike has been taken with bird lime, near Paisley and Glasgow, and several have been recorded within our district, chiefly from Lanarkshire localities.

The Waxwing occurred in vast flocks at Hamilton in 1782.†

* *Annals of Scot. Nat. Hist.*, 1898, p. 79.

† *The Statistical Account of Lanarkshire*, 1841, p. 262.

In 1903 one was seen at Milton of Colquhoun, just beyond our western boundary, and about December, 1895, a small flock was seen at Mugdock.

The Spotted Flycatcher is fairly common in summer, and in autumn family parties are regularly seen in Queen's Park.

The Swallow, House-Martin, and Sand-Martin are common. The House-Martin formerly nested on the houses on the river-front,* and in my recollection in several places in Govanhill, now about twenty years ago.

The Greenfinch is common, and a flock appeared in hard weather, two years ago, in the harbour of Glasgow.† The Goldfinch, though to be reckoned a scarce bird, seems to be increasing about Giffnock. It is occasionally seen on waste ground in winter. The Siskin is even less known, although I have seen it once at Bardowie in recent years, and over twenty years since I came on a flock in April, on the river opposite Farme.‡ The House-Sparrow is abundant. The Chaffinch is probably next to it in point of numbers. It is, at any rate, more regularly seen all the year round than the Greenfinch.

The Brambling is occasionally seen in winter. In the winter of 1906-7 it was very common. I saw it within the city boundaries at Clincart Farm, in January, 1909.

The Linnet is not common, though frequently seen about Waulkmill Glen Dam in autumn, waste ground round the city in autumn and winter, and at Possil Marsh frequently.

The Mealy Redpole was frequently taken one winter near Paisley, according to the late Morris Young. The Lesser Redpole is fairly common locally. The Twite is occasionally seen near, and on a rare occasion on waste ground in the city. Its nest has been taken at the old Paisley Race-course, and on Gleniffer,§ and it occurs regularly on the moors at our southern limits. It is not mentioned in Gray's list (*ante*, p. 43). The Bullfinch is scarce, being chiefly seen in small numbers in places where it does not nest. The Crossbill, Gray said, was

* *Trans. Nat. Hist. Soc., Glasgow*, VI. (N.S.), pp. 188-9.

† *Annals Scot. Nat. Hist.*, 1907, p. 139.

‡ *Trans. Nat. Hist. Soc., Glasgow*, VII. (N.S.), pp. 63-4.

§ Paisley Nats. MS. List of Birds of Renfrewshire.

occasionally seen in passing flocks, and I have been told of one such at Hangingshaw, but that was twenty years ago.

The Corn-Bunting is frequent, especially north-east of the city. The Yellow-Bunting and Reed-Bunting are common. The Snow-Bunting is very irregular in its appearances, but may be seen on grass lands about the city occasionally. I have seen it in flocks of various size on Glasgow Green, in Queen's Park, and the Recreation Ground there, and in the Rangers' last football ground twice, there being 22,000 people present on one of these occasions. I have not seen it for ten years past, however, and have rarely heard of it in that time. In 1896, 1897, 1898, and 1899 it was familiar in and around the city.

The Starling is abundant, and has been so, in my recollection, for forty years. The late Dr. John Grieve, writing about 1843-5, said—"On the roofs of almost all the houses hereabouts, boxes are placed for them to build in"—which referred to north-east Glasgow. See "Extracts from an unpublished Ornithology of Glasgow," in the *Trans. Nat. Hist. Socy. of Glasgow*, Vol. VI. (N.S.) pp. 181-190. In my recollection of thirty to forty years ago, the same thing could be said of south-east Glasgow. The Rose-Coloured Starling has been shot on two occasions at least near the city, but these occurrences were over forty years ago.

The Chough was formerly a Campsie bird, but this locality, like all others inland in which it was found, has long since been deserted. The Jay is not mentioned in Gray's list. It has occurred recently at Glenorchard, and the late E. R. Alston says he got it from Bothwell,* and at the time he wrote (1875), it was still nesting at Hamilton (*loc. cit.*). It is said to have been not rare near Paisley at one time, and the same is probably true of Glasgow. Two occurrences are known in East Renfrewshire.† The late Morris Young told me that when he was young, it was current that at Crookston, fruit was netted on account of the Jay's depredations. The Magpie is common round Glasgow, but becomes scarcer in the localities where game is protected. The Jackdaw is not very common near the city, but on the

* *Scot. Naturalist*, III., p. 238.

† *Annals Scot. Nat. Hist.*, 1895, p. 225.

Kilpatrick Hills and in Cadzow Forest, and about Bothwell Castle and similar localities, it is abundant. A RAVEN was shot on Mr. Gilmour's Eaglesham property about thirty years ago,* and I have seen it at the Whangie in midwinter. It is only a straggler in the Glasgow district. Neither the CARRION nor the HOODED CROW is familiar hereabouts, although a few pairs of the former at anyrate may nest here and there in the wilder parts in the north, as it does in the south "in Mearns and Neilston parishes" (John Robertson). The ROOK, which formerly nested in trees in the Old College Green, and at the head of Queen Street and in Kelvingrove Park, has been driven further afield. It abounds near Glasgow.†

The SKYLARK is very common, coming right up to the city, or rather only retreating when its haunts are displaced by houses.

The SWIFT is common, and till the present year has continued to make it presence known where we are met here in Bath Street, by its screeching during the June meeting.

Though said to have nested formerly in Inchinnan, Linwood, and Paisley Moss Woods,‡ and to have been observed in Gray's time in Queen's Park on several occasions, we only know the NIGHTJAR as an irregular straggler in the district, though Mr. Archibald, the gardener at Bothwell Castle, told me in 1898, that it occurred there in summer. Like Gray in the south of the city, Mr. Frank M'Culloch has seen it within the civic boundaries to the north since Gray's time, but now many years ago.

The WRYNECK has occurred at Hamilton§ and Garnkirk.‖

The GREAT SPOTTED WOODPECKER is an occasional winter visitor—there is recent evidence of its occurrence at Glenorchard and Cadder.¶

The KINGFISHER is quite a familiar object to all observers in the district. Its numbers do not seem to vary much from year to year.

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* *Annals Scot. Nat. Hist.*, 1895, p. 226.

† See Mr. H. Boyd Watt's "A Census of Glasgow Rookeries," in *Trans. Nat. Hist. Soc., Glasgow*, VI. (N.S.), pp. 21-24.

‡ Paisley Nats. MS. List of Renfrewshire Birds.

§ *The Statistical Account of Lanarkshire*, 1841, p. 262.

‖ *Proc. Nat. Hist., Glasgow*, II., p. 179.

¶ *The Glasgow Naturalist*, I., pp. 99-100.

The Bee-Eater has been observed twice in the Paisley district.*

The Cuckoo is common.

Formerly the Barn-Owl was known in many places round about the city, but I have only heard of it at Cathcart and Milngavie in recent years. I have never seen it myself. The Long-Eared Owl is common. The Short-Eared Owl is sometimes met with by sportsmen on the moors, and about fifteen years ago I saw one in the flesh, a couple of hours after it had been shot by Mr. F. Burnett Dick at Possil Marsh. The Tawny Owl is not rare, being indeed only "a little less common than the Long-Eared Owl" (John Robertson). The Snowy Owl occurred at Pollokshields in 1863.† An example of the American form of the Hawk-Owl was got in the same year at Maryhill.‡

The Hen Harrier has been shot at Blythswood,§ and was observed by the late Dr. Grieve at Provan Mill in 1843.‖ The Buzzard was frequently trapped at Campsie in Gray's time, and eleven years ago one was obtained near Allander Toll, and a year later one at Cadder.

Rough-legged Buzzards have been obtained at Hamilton, Bishopbriggs, Auchineden, and Duntreath. The Golden-Eagle has been shot at Duncombe and the Meikle Bin within the past fourteen years, and there are occasional notices still of its appearance in winter towards our northern limits. Seventy years ago the White-Tailed Eagle was known as an occasional visitor to the Hamilton district.¶ The Sparrow-Hawk is common. The Kite was "often enough seen flying over our fields" in 1843, according to the late Dr. Grieve when writing of the district just north-east of the city.** The Honey Buzzard was obtained at Paisley in 1874.†† The Greenland Falcon has been shot at Dychmont.‡‡ The Peregrine Falcon was seen at

* Paisley Nats. MS. List of Renfrewshire Birds.

† *The Birds of the West of Scotland*, 1871, p. 262.

‡ *Loc. cit.*, p. 64.

§ Paisley Nats. MS. List of Renfrewshire Birds.

‖ *Trans. Nat. Hist. Soc., Glasgow*, VI. (N.S.), p. 143.

¶ *The Statistical Account of Lanarkshire*, 1871, p. 262.

** *Trans. Nat. Hist., Glasgow*, VI. (N.S.), pp. 182-3.

†† Paisley Nats. MS. List of Renfrewshire Birds.

‡‡ *The Birds of the West of Scotland*, p. 21.

Possil Marsh in 1908, and at Muirend, Cathcart, this year—two very interesting occurrences, as this noble bird has not been seen near Glasgow for many years. The MERLIN Gray was disposed to consider a winter resident in the city, and Mr. J. M'Naught Campbell told me he had seen one hawking along the northern boundary of Queen's Park in 1877. It is evidently still a visitor, as one was got on a lamp-post at the foot of James Street, Bridgeton, in November, 1902. The KESTREL is fairly common.

The CORMORANT was seen in Eaglesham in 1894,* about the same time at Possil Marsh by Mr. F. Burnett Dick, and more recently at Waulkmill Glen Dam and the Little Loch by Mr. John Robertson. The SHAG has occurred at Glanderston Dam.†

Within the past two decades HERONS have nested in small numbers at Craigallian, Erskine, and Johnstone Castle according to Mr. Hugh Boyd Watt's valuable list of Clyde Heronries,‡ and and an odd pair no doubt in other localities, as at Bishop Loch. I see it not infrequently all round the city. In 1895 I saw it twice within the city boundary at Mount Florida. The BITTERN has occurred at Linwood Moss, Hogganfield Loch, and Possil Marsh.

In June, 1892, six GANNETS were seen passing over Thornliebank§ by Mr. John Robertson, who tells me of an injured one captured in September, 1899, near Mearns.

"GREY GEESE" have been seen by others about Possil, and I saw a gaggle of 75 passing northwards at a low elevation over the marsh there on 3rd May, 1895, but could not make them out specifically. Small parties are seen from time to time in the district, but it is difficult to get exact information regarding the species. A BEAN GOOSE was seen at Bardowie in February, 1909.‖

Flocks of BARNACLE GEESE were seen at Eaglesham in 1882 and 1887.¶ BEWICK'S SWAN we now know as a regular winter visitor to Bishop Loch. It has been recorded from Hogganfield

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* *Annals Scot. Nat. Hist.*, 1895, p. 227.

† *Loc. cit.*, p. 227.

‡ *Trans. Nat. Hist. Soc., Glasgow*, V. (N.S.), pp. 378-98.

§ *Annals of Scot. Nat. Hist.*, 1895, p. 227.

‖ *Fide* Hugh W. Wilson.

¶ *Annals of Scot. Nat. Hist.*, 1895, p. 227.

and Possil. The Mute Swan is very familiar, and there is a large swannery at Hogganfield. Small flocks of the Common Sheld-Duck have been seen at Eaglesham, Balgray Dam, and Bishop Loch—at the latter two localities in recent years. The Mallard is a common bird. The Gadwall Gray could not include in his list, but it has occurred within the past six years at Eaglesham, Dougalston, and Bishop Loch. The Shoveller is now regularly seen at one season or another on many sheets of water round Glasgow, but is rarely seen in East Renfrew. A fair number must nest in the Bishop Loch district, where it is familiar at all seasons. Some nine occurrences of the Pintail within our limits are now known. The Teal is common. The Wigeon and Pochard are both regular and common winter visitors. The Tufted Duck has become a common nesting species since Gray's time apparently. The Scaup Duck is a most abundant species in Clyde estuarine waters and the late Col. H. M. Drummond Hay stated in the *Scottish Naturalist*, 1891, p. 70, that he had seen large flocks as high up as Bowling, which just brings it to our limits. Mr. Robert H. Read first announced it as a bird of the district, one having been sent to him for identification in November, 1890, which was shot on fresh water near Glasgow.* In 1896 a few were seen frequently at Balgray Dam in summer, and eight at Pilmuir Dam on 22nd August in the same year. One was again seen at Balgray in September, 1900, and some others are known to have occurred. The Goldeneye occurs in winter in small numbers. The Cart near Renfrew was formerly favoured with visits from the Goosander, which is regularly seen in Mearns, Eaglesham, and Neilston, in small numbers in winter. The Red-breasted Merganser is also said to have frequented the Cart near Renfrew in winter formerly. It has nowhere been seen near Glasgow by the present generation of ornithologists. The Ring-Dove is common. The Stock-Dove, unknown in Gray's time, and if present unsuspected, is now a nesting species on the Kilpatricks, at Glenorchard, Bothwell, Blantyre, and several places in East Renfrewshire.†

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* *Scottish Naturalist*, 1891, p. 39.

† *The Glasgow Naturalist*, Vol. I., pp. 101-10; *op. cit.*, Vol. II, pp. 30-1.

Pallas's Sand-Grouse appeared near Paisley in 1863*—one of the years in which this country was favoured with a large immigration of this wandering species. Examples of the Capercaillie have turned up at Paisley, Linwood, Milngavie, and Uddingston, and four appeared at Craigbarnet, Parish of Campsie, in 1897.

The Black Grouse occurs occasionally in strange places—Dumbarton Road, within the city boundaries, for instance. It is found in fair numbers on upland shootings within our limits. The Red Grouse is naturally associated with heather, and we usually find a pair, even on a small patch, near the city at a low elevation.

The Pheasant and Partridge are common. The Quail has occurred at Nether Pollok and near Paisley and Eaglesham.

The Corn-Crake is common. On 22nd November, 1904, one which I saw later in Queen's Park Police Office, was captured alive by a policeman by hand in Shawmoss Road. The Spotted Crake appeared at Possil, in September, 1899.† The Water-Rail has been long known to occur in suitable places throughout the district, and has been seen several times in Rouken Glen during the past year. The Moor Hen and Common Coot are common. The latter is very conspicuous on Possil Marsh and Hogganfield Loch.

The Dotterel has occurred at Govan and Possil Marsh, and in the spring of this year one was found at Bellshill, and exhibited here.‡ The Ringed Plover has been seen in spring and autumn in Mearns and Eaglesham. The Golden Plover attracts attention in flocks in autumn and winter, and nests on the higher grounds overlooking the city in summer, but is not an abundant bird at that season. The Grey Plover was seen in autumn at Balgray Dam in 1895,‖ and another on 14th September, 1901.¶ The Lapwing is common, and it is interesting to note that Mr. Robert H. Read has stated that "In autumn, quite close to Glasgow, I have counted

* *The Birds of the West of Scotland*, p. 239.
† *The Scottish Journal of Natural History*, Vol. I., p. 133.
‡ *The Glasgow Naturalist*, Vol. I., p. 135.
‖ *Annals Scot. Nat. Hist.*, 1896, p. 60.
¶ *Vide* John Robertson.

about 8,000 Peasweeps in one field."* Enormous flocks in winter were quite a feature of the district between Pollokshaws and Aikenhead twenty years ago. Since then there have been in that neighbourhood many changes unfavourable to the Lapwing, although it is still quite familiar. The Oyster Catcher, according to Gray, occasionally followed the river to Bothwell, but since his time the only one I have heard of within the city was seen in the Recreation Ground, Queen's Park, eight or ten years ago.† It is fairly often heard in passage in May, August, and September. The Black-Winged Stilt was frequently seen at Possil Marsh in 1867.‡ A Grey Phalarope was got at Craigend, Milngavie, in October or November, 1896, and exhibited to this Society. The Woodcock is not very familiar, although said to be nesting more frequently in the last year or two at Bothwell. In 1869 and 1896 Great Snipes were shot in Eaglesham, and one on the upland part of Upper Pollok estate, in September, 1901, by Mr. Walter J. Marshall, Crookfur, Mearns, who recorded it in *The Field*, and I could hardly be mistaken in one I saw at Williamwood last winter. Messrs. Ross and Rennie saw another at Frankfield within the past month. This species does not appear in Gray's sketch-paper (*ante*, p. 43). Two shot on 16th May, 1885, at Clydebank have been recorded by Mr. Wm. Evans.§ The Common Snipe and Jack Snipe are both well known. Gray said he had seen frozen-out Snipes in a grass field at the west end of the University Buildings. Twenty years ago and less, I used to see them regularly in ditches and about clay-pits at Hangingshaw, within the civic boundaries. The Dunlin is well known as a nesting species on Mearns Moor. I have seen it on the spring passage on the Clyde at Cambuslang, and at the autumn passage at Hogganfield and Bishop Loch, as well as regularly at Balgray.

The Little Stint was seen in September, 1905, at Balgray by Mr. John Robertson. This species is not mentioned by Gray in his list, nor is the Curlew-Sandpiper mentioned by him, but it has been seen since 1896 in several autumns, till the present one, in small numbers at Balgray. The Ruff, which Gray only

* *A Hand-book to the Birds of Great Britain*, Vol. III., p. 173.

† *Fide* Hugh W. Wilson.

‡ *The Birds of the West of Scotland*, p. 304.

§ *Proc. R. Phy. Soc., Edin.*, Vol. IX., pp. 184-6.

knew as an estuarine species, Mr. John Robertson thinks is now to be reckoned as an annual autumn visitor to Balgray, where eight have been seen in one day (29th September, 1901). The Common Sandpiper is common. The Green Sandpiper which has long been on the list for this district from its occurrence at Nether Pollok, recorded by Gray, has appeared in recent years at Milngavie, Hangingshaw, Rouken Glen, and Garscadden.* The Common Redshank is common, and is stated to have increased considerably in numbers at Blantyre; a view also held by Mr. Thornton M'Keith with regard to Loch Libo district, just beyond our borders. The Spotted Redshank, another species not known to occur when Gray wrote, appeared at Balgray in 1898,† 1899,‡ and again in 1909.§ The Greenshank, which Gray thought might nest on Mearns Moor, is now known to occur in East Renfrew regularly at the autumn passage and sometimes in winter. The Bar-tailed Godwit has not been known to occur within our limits till the autumn of this year, when one was seen for some time frequenting Waulkmill Glen Dam.‖ The Black-tailed Godwit is also new to our limits, being first observed in September, 1899, by Mr. John Robertson, at Balgray, and again in August this year at Waulkmill Glen Dam. I have recorded the occurrence of three birds of this species in summer plumage at Gad Loch, Lenzie, in May, 1907—the only appearance yet known at that season. The Curlew is characteristic of the higher ground within our limits, and is the species most regularly heard migrating over the city in spring and autumn. The Whimbrel has been heard in autumn in passage at Balgray Dam.¶

The Black Tern, which, when Gray wrote, he did not know to have occurred nearer than Loch Lomond, turned up in the year in which his list appeared, one being secured at Possil in October, 1876, and exhibited to this Society.** The Common Tern has nested on several occasions since 1902 at the Brother Loch,

* *Trans. Nat. Hist. Soc., Glasgow*, Vol. VIII. (N.S.), pp. 106-7.
† *Annals Scot. Nat. Hist.*, 1899, p. 52.
‡ *Loc. sit.*, 1900, pp. 51-2.
§ *The Glasgow Naturalist*, Vol. I., p. 146.
‖ *Loc. sit.*, Vol. II., p. 30.
¶ *Fide* John Robertson.
** *Proc. Nat. Hist. Soc., Glasgow*, Vol. III., p. 104.

and has been seen frequently at Milngavie, Possil, on the Clyde at Carmyle, and in East Renfrew in recent years. The Black-headed Gull is common at all seasons round Glasgow, and the great nesting colony at Harelaw maintains its position. The Common Gull is frequently seen in winter on the west side of the city, but gets scarcer as we proceed eastwards. Mr. Gray knew it to follow the river to Renfrew, and none since his time has seen it in any numbers in the Harbour of Glasgow, where the Herring Gull, and the Lesser Black-backed Gull (which are common in the district) are respectively winter and summer visitors in some numbers. Though the Herring Gull, as is here stated, is a winter visitor to the Harbour of Glasgow, it is seen in the district at other seasons. The appearances of the Lesser Black-backed Gull out of its season (summer) are, however, exceptional. Two Great Black-backed Gulls were seen at Balgray Dam, on 31st May, 1899, by Mr. Hugh Boyd Watt. The Kittiwake Gull is but a straggler in winter, and is also occasionally seen at the spring passage.

In 1859, according to Gray's list, many Razorbills and Guillemots were seen in the river at Renfrew. I have twice seen the former in the Harbour of Glasgow, and on 3rd April, 1909, one was picked up dead at Glenorchard.* During the irruption of Little Auks in 1894-1895, solitary birds of this species turned up at Garscube, Dennistoun, and Balgray Dam.† Of the Puffin, two stragglers are known to have occurred in East Renfrew.

The Black-throated Diver occurred at Balgray Dam, 20th December, 1907. The Red-throated Diver is recorded from Possil Marsh and the Glen Dam, East Renfrew, and, according to Gray, has occurred on other sheets of water within two or three miles of the city.

The Great-crested Grebe has become since Gray's time a well-known nesting species, and in the autumn of this year as many as twenty-three have been counted at Balgray in one day. These birds must have been moving at that season to other quarters as they do not nest at Balgray. A Red-necked Grebe,

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* *Fide* J. Bartholomew.

† *Trans. Nat. Hist. Soc., Glasgow*, Vol. IV. (N.S.), pp. 195-8.

shot on the Cart, was exhibited to this Society in February, 1894, and there are other old records. There is no positive evidence of the occurrence of the Slavonian Grebe. It is in Gray's list, but perhaps he had in mind occurrences beyond the limits we have imposed upon ourselves in making up this list. The Eared Grebe was seen this year at Bishop Loch.* It is not mentioned by Gray. The Little Grebe is common.

A Fork-tailed Petrel was found in Mearns in December, 1879, on the day of the Tay Bridge disaster. A Storm-Petrel is reported to have occurred at Motherwell in October, 1864.† A Manx Shearwater, found in Kelvingrove Park in August, 1896, is in the Museum there.

List of Birds of the Glasgow District (within the Ten-mile Radius).

In the following list of 179 species, forty-seven are distinguished by an asterisk. The species so marked either (1) do not appear in Gray's list, so often referred to in the preceding pages, or (2), although in the list, are stated to have occurred only beyond the ten-mile radius, or again (3), although included in Gray's little memoir, it does not appear that they are to be understood as having occurred within the limits which we have thought it desirable strictly to respect. Those who are interested in the subject, will not fall into the mistake of supposing that the forty-seven species under discussion are new to the district since Gray's time—indeed, several of the species were well known to him to have occurred, and their absence from his list must be attributed to haste, lack of revisal, or some other cause at which we can only guess.

Mistle-Thrush (*Turdus viscivorus*).
Song-Thrush (*T. musicus*).
Redwing (*T. iliacus*).
Fieldfare (*T. pilaris*).
Blackbird (*T. merula*).
Ring-Ouzel (*T. torquatus*).
Wheatear (*Saxicola œnanthe*).
Whinchat (*Pratincola rubetra*).
Stonechat (*P. rubicola*).
Redstart (*Ruticilla phœnicurus*).

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* *Fide* John Robertson and Hugh W. Wilson.
† *Proc. Roy. Phy. Soc., Edin.*, Vol. III., p. 208.

*Black Redstart (*R. titys*).
Redbreast (*Erithacus rubecula*).
Whitethroat (*Sylvia cinerea*).
Lesser Whitethroat (*S. curruca*).
Blackcap (*S. atricapilla*).
Garden-Warbler (*S. hortensis*).
Goldcrest (*Regulus cristatus*).
Chiffchaff (*Phylloscopus rufus*).
Willow-Wren (*P. trochilus*).
Wood-Wren (*P. sibilatrix*).
Sedge-Warbler (*Acrocephalus phragmitis*).
Grasshopper-Warbler (*Locustella nævia*).
Hedge-Sparrow (*Accentor modularis*).
Dipper (*Cinclus aquaticus*).
Long-tailed Titmouse (*Acredula caudata*).
Great Titmouse (*Parus major*).
Coal-Titmouse (*P. ater*).
*Marsh-Titmouse (*P. palustris*).
Blue Titmouse (*P. cæruleus*).
Wren (*Troglodytes parvulus*).
Tree-Creeper (*Certhia familiaris*).
Pied Wagtail (*Motacilla lugubris*).
*White Wagtail (*M. alba*).
Grey Wagtail (*M. melanope*).
*Blue-headed Wagtail (*M. flava*).
Yellow Wagtail (*M. raii*).
Tree-Pipit (*Anthus trivialis*).
Meadow-Pipit (*A. pratensis*).
Great Grey Shrike (*Lanius excubitor*).
Waxwing (*Ampelis garrulus*).
Spotted Flycatcher (*Muscicapa grisola*).
Swallow (*Hirundo rustica*).
House-Martin (*Chelidon urbica*).
Sand-Martin (*Cotile riparia*).
Greenfinch (*Ligurinus chloris*).
Goldfinch (*Carduelis elegans*).
Siskin (*C. spinus*).
House-Sparrow (*Passer domesticus*).
Chaffinch (*Fringilla cœlebs*).
*Brambling (*F. montifringilla*).
Linnet (*Linota cannabina*).
Mealy Redpoll (*L. linaria*).
Lesser Redpoll (*L. rufescens*).
*Twite (*L. flavirostris*).
*Bullfinch (*Pyrrhula europæa*).
Crossbill (*Loxia curvirostra*).
Corn-Bunting (*Emberiza miliaria*).
Yellow Bunting (*E. citrinella*).
Reed-Bunting (*E. schœniclus*).
Snow-Bunting (*Plectrophenax nivalis*).
Starling (*Sturnus vulgaris*).
Rose-coloured Starling (*Pastor roseus*).
Chough (*Pyrrhocorax graculus*).
*Jay (*Garrulus glandarius*).
Magpie (*Pica rustica*).
Jackdaw (*Corvus monedula*).
Raven (*C. corax*).
Carrion-Crow (*C. corone*).
Hooded Crow (*C. cornix*).
Rook (*C. frugilegus*).
Skylark (*Alauda arvensis*).
Swift (*Cypselus apus*).
Nightjar (*Caprimulgus europæus*).
*Wryneck (*Iynx torquilla*).
*Great Spotted Woodpecker (*Dendrocopus major*).
Kingfisher (*Alcedo ispida*).
Bee-Eater (*Merops apiaster*).
Cuckoo (*Cuculus canorus*).
Barn-Owl (*Strix flammea*).
*Long-eared Owl (*Asio otus*).
Short-eared Owl (*A. accipitrinus*).
Tawny Owl (*Syrnium aluco*).
Snowy Owl (*Nyctea scandiaca*).
American Hawk-Owl (*Surnia funerea*).
Hen-Harrier (*Circus cyaneus*).
Buzzard (*Buteo vulgaris*).
Rough-legged Buzzard (*B. lagopus*).
Golden Eagle (*Aquila chrysaëtus*).
White-tailed Eagle (*Haliaëtus albicilla*).
Sparrow-Hawk (*Accipiter nisus*).
*Kite (*Milvus ictinus*).
*Honey-Buzzard (*Pernis apivorus*).

*Greenland Falcon (*Falco candicans*).
Peregrine Falcon (*F. peregrinus*).
Merlin (*F. æsalon*).
Kestrel (*F. tinnunculus*).
*Cormorant (*Phalacrocorax carbo*).
*Shag (*P. graculus*).
*Gannet (*Sula bassana*).
Heron (*Ardea cinerea*).
Bittern (*Botaurus stellaris*).
Bean-Goose (*Anser segetum*).
Grey Geese (spp. ?).
Barnacle-Goose (*Bernicla leucopsis*).
*Bewick's Swan (*Cygnus bewicki*).
*Mute-Swan (*C. olor*).
Common Sheld-Duck (*Tadorna cornuta*).
Mallard (*Anas boscas*).
*Gadwall (*A. strepera*).
Shoveller (*Spatula clypeata*).
Pintail (*Dafila acuta*).
Teal (*Nettion crecca*).
Wigeon (*Mareca penelope*).
*Pochard (*Fuligula ferina*).
Tufted Duck (*F. cristata*).
*Scaup Duck (*F. marila*).
*Goldeneye (*Clangula glaucion*).
Goosander (*Mergus merganser*).
Red-breasted Merganser (*M. serrator*).
Ring-Dove (*Columba palumbus*).
*Stock-Dove (*C. œnas*).
*Pallas's Sand-Grouse (*Syrrhaptes paradoxus*).
Capercaillie (*Tetrao urogallus*).
Black Grouse (*T. tetrix*).
Red Grouse (*Lagopus scoticus*).
Pheasant (*Phasianus colchicus*).
Partridge (*Perdix cinerea*).
*Quail (*Coturnix communis*).
Corn-Crake (*Crex pratensis*).
*Spotted Crake (*Porzana maruetta*).
Water-Rail (*Rallus aquaticus*).
Moor-Hen (*Gallinula chloropus*).
Common Coot (*Fulica atra*).
Dotterel (*Eudromias morinellus*).
Ringed Plover (*Ægialitis hiaticola*).
Golden Plover (*Charadrius pluvialis*).
*Grey Plover (*Squatarola helvetica*).
Lapwing (*Vanellus vulgaris*).
Oyster-Catcher (*Hæmatopus ostralegus*).
Black-winged Stilt (*Himantopus candidus*).
*Grey Phalarope (*Phalaropus fulicarius*).
Woodcock (*Scolopax rusticula*).
*Great Snipe (*Gallinago major*).
Common Snipe (*G. cœlestis*).
Jack Snipe (*G. gallinula*).
Dunlin (*Tringa alpina*).
*Little Stint (*T. minuta*).
*Curlew-Sandpiper (*T. subarquata*).
*Ruff (*Machetes pugnax*).
Common Sandpiper (*Totanus hypoleucus*).
Green Sandpiper (*T. ochropus*).
Common Redshank (*T. calidris*).
*Spotted Redshank (*T. fuscus*).
Greenshank (*T. canescens*).
*Bar-tailed Godwit (*Limosa lapponica*).
*Black-tailed Godwit (*L. belgica*).
Curlew (*Numenius arquata*).
*Whimbrel (*N. phæopus*).
*Black Tern (*Hydrochelidon nigra*).
Common Tern (*Sterna fluviatilis*).
Black-headed Gull (*Larus ridibundus*).
Common Gull (*L. canus*).
Herring-Gull (*L. argentatus*).
Lesser Black-backed Gull (*L. fuscus*).
*Great Black-backed Gull (*L. marinus*).
*Kittiwake Gull (*Rissa tridactyla*).
Razorbill (*Alca torda*).
Guillemot (*Uria troile*).
*Little Auk (*Mergulus alle*).
*Puffin (*Fratercula arctica*).
*Black-throated Diver (*Colymbus arcticus*).
Red-throated Diver (*C. septentrionalis*).

Great-crested Grebe (*Podicipes cristatus*).
Red-necked Grebe (*P. griseigena*).
*Eared Grebe (*P. nigricollis*).
Little Grebe (*P. fluviatilis*).
*Storm-Petrel (*Procellaria pelagica*).
*Fork-tailed Petrel (*Oceanodroma leucorrhoa*).
*Manx Shearwater (*Puffinus anglorum*).

Aberdeen University Bird-migration Inquiry.

By W. Cameron Davidson.

[Read 28th December, 1909.]

The object of this inquiry, which will be continued for several years (1909-1915), is to arrive at some definite knowledge of the movements of some of our migratory birds. In most cases we have only vague knowledge of their routes when migrating. In some cases we do not know where the birds go to when they leave this country.

The marking of the birds is done by obtaining them either as young birds in the nest, or by careful trapping. They are then marked with light aluminium foot-rings, on which are stamped the words "Aberdeen University" and a number, and are set free. Care must be taken that only quite wild and uninjured birds are marked or the records will be abnormal. The rings are made very neat and light, and can in no way inconvenience the birds. An advertisement in suitable journals at home and abroad requests those who may shoot or capture a ringed bird to send the ring to Aberdeen University, with a note of the locality and date. This will be registered on a map and otherwise, and if returns are got for a sufficient percentage of the ringed birds, the desired knowledge should be gradually built up. The proportion of returns is sufficiently large to reward the work of marking. Twelve and even higher percentages have been obtained in Germany over a large series of experiments.

The method to be followed in this inquiry is of course only supplementary to others, such as the collection of data from lighthouses and lightships, but it is claimed for it that it is suited

to the study of certain points in connection with bird-migration which other methods leave almost untouched. Dealing as it does with the actual migrations of individual birds, instead of with general movements, it is expected to furnish valuable data with regard to routes—proof of the existence or otherwise of definite routes, and, if the former, particulars as to their nature and the extent to which they are adhered to. That such knowledge is necessary before the great fundamental problems of migration can be successfully approached should be obvious.

The method has been tested and has been found to work well and to yield results even more valuable than might have been expected. One of the oldest pieces of marking work is that carried on since 1891 on the Duke of Northumberland's estate at Alnwick, confined, however, to Woodcock. The most important, so far, is that which has been carried on very actively for half-a-dozen years from the Vogelwarte at Rossiten, on the Baltic coast of Germany. Of this Dr. Thienemann published a most important report this year in the *Journal für Ornithologie.* The chief work has been with Hooded Crows, and an almost complete account of the migrations of the members of this species passing Rossitten has now been worked out. White storks also have received much attention, and six returns have been got from various parts of Africa. The migrations of black-headed gulls, breeding at Rossitten, are also proving of interest. One of these birds was recently obtained in Norfolk. Much valuable work has also been done by H. C. C. Mortensen, of Viborg, Denmark, several of whose birds, chiefly teal, have been recovered in this country. The Hungarian Ornithological Department is now taking the matter up, while in this country it is now receiving much attention. Several persons, in addition to the Duke of Northumberland, have done good work on a small scale, but this spring a larger inquiry was set afoot at Aberdeen University, and it has been closely followed in the field by one in connection with the magazine *British Birds.*

It is the Aberdeen University Bird-migration Inquiry which I wish to recommend to Scottish naturalists. It is being managed from the Natural History Department of the University, under the supervision of Professor J. Arthur Thomson. It has the approval of many well-known

Scottish ornithologists, including Mr. W. Eagle Clarke and Mr. Wm. Evans. About a hundred persons have offered to help with the marking next season, and it is expected that some thousands of birds will be ringed. Any person interested is asked to apply for particulars and rings to the Secretary, Mr. A. Landsborough Thomson, at the University. All naturalists are asked to make sure that any Aberdeen-ringed birds that they hear of are notified to him.

Several hundred birds were marked last season by the co-operators in this inquiry, and a few returns have already been obtained. Of these the only one of note is that of a Wigeon *(Mareca penelope)*, "Aberdeen University, 2050," which was one of a brood of five marked by Mr. F. Gunnis, on Loch Brora, Sutherland, on June 19th, and was shot at Westpolder, Ubrum, Province of Groningen, North-Eastern Holland, on September 3rd. The bird had therefore travelled a distance of about 500 miles in a south-easterly direction, and had borne the ring for 2½ months.

Proceedings of the Society.

The third meeting of Session 1909-1910 took place on 30th November, 1909, Mr. John Paterson, President, in the chair.

Messrs. Archd. Macintyre, Ardenhurst, Hamilton, Stanley H. Miller, 12 Hamilton Park Terrace, Glasgow, and James G. Robertson, Lyndhurst, Glasgow Road, East Kilbride, were elected as Ordinary Members.

Mr. R. B. Johnstone sent a report of a joint-excursion with the Andersonian Naturalists' Society and Coatbridge Field Naturalists' Society to Drumpellier Glen for Fungi. The only species observed deserving notice was *Tremella tuberculariа*, Berk.

Mr. Peter M'Nair sent for exhibition from Kelvingrove Museum, Glasgow, *Polyporus lucidus*, Berkeley, found in a bog at Barah, Ballinamallard, Fermanagh, Ireland. Particular interest was added to this exhibit by *P. lucidus*, Fries, having been recently shown to members from Inchlonaig, Loch Lomond (*The Glasgow Naturalist*, Vol. I. p. 138). Writing about this Irish fungus Dr. C. B. Plowright says:—"The specimen of

"*Polyporus lucidus* from the peat bog in Ireland is very interest-
"ing, and corresponds closely with one from the Lincolnshire
"Fens, which is now in the Kew Museum. This is figured in
"Miller and Sketchly's book on the *Fenland, Past and Present*
"(1870, p. 318, fig. 17). Mr. W. G. Smith sketched and
"engraved this from the specimen at Kew to illustrate the
"article on Fenland Fungi. Originally named *Polyporus lucidus*
"by the Rev. M. J. Berkeley, it of course departs from the type
"with an excentric stem, but it is certainly the same fungus as
"the Kew plant. Mr. Berkeley's account of it is in the *Journal*
"*of the Linnean Society*, Vol. I. p. 52. As far as I know, these
"two specimens are the only ones extant."

Mr. James F. Gemmill, M.A., M.D., exhibited a parastic cestode, *Schistocephalus dimorphus*, Creplin, from Lounsdale Pond, Gleniffer (Renfrew) (see page 11). Dr. Gemmill also exhibited an apparatus he had designed for the automatic aeration of aquaria, &c. The essential features in its working were (1) a constant inflow of water into a closed chamber forces the contained air through the aerating nozzles; (2) the chamber is emptied from time to time by siphon action, air being allowed to replace the water siphoned off. Two varieties of the apparatus were exhibited, one for producing ordinary air-bubbles, and the other for giving very fine streams of bubbles under pressure. The aerator has been working with perfect regularity during the last eight months in the Embryology Laboratory at the University of Glasgow, and during the last three months at the Millport Marine Station.

Mr. James J. F. X. King, F.E.S., exhibited a type collection of the Clydesdale Copeognatha or Psocidæ, and read a list of the species known to occur in the Clyde area (see page 34).

Mr. Hugh W. Wilson exhibited, with the aid of the lantern, an extensive series of slides to illustrate an ornithologist's "Day in Bute." The slides, which were distinguished (apart from the interest of the subjects) by the high degree of technical excellence which we locally associate with Mr. Wilson's work, were greatly admired.

Mr. P. Ewing, F.L.S., exhibited for Mr. John Smith, Corresponding Member, *Juncus inflexus*, L. (*J. glaucus*, Sibth.), from an old quarry at Kirtlebridge. It is a common plant in Mid-Britain.

(CONTINUED.)

The Glasgow Naturalist

The Journal of the NATURAL HISTORY SOCIETY OF GLASGOW

(Including the *Transactions* and *Proceedings* of the Society, Third Series).

Vol. II., No 3.] [May, 1910.

Thomas Gray.

By JOSEPH SOMMERVILLE.

[Read 26th April, 1910.]

MANY of you will remember the late William Ferguson, of Kinmundy, reading a paper to the Society entitled "Reminiscences of the Early Days of the Natural History Society of Glasgow." It was read on the 27th November, 1902, and is now printed in Vol. VII. (N.S.), page 9, of the Society's *Transactions*.

In that paper he gives the names of twelve original members and amongst the twelve he includes Dr. Scouler, who had come from Dublin to read a paper at their second meeting; Dr. Scouler at that meeting was elected Honorary President.

The original members and the order in which they are given in the Minute Book are as follows:—William Gourlie, Wm. B. Lorrain, M.D., Thomas Gray, John Gray, Robert Gray, Archibald Gray, William Ferguson, Thomas Ferguson, William Keddie, James P. Fraser, and Hugh Colquhoun, M.D.

At the time Dr. Ferguson read his paper there were three of the original members still alive, himself, his brother Thomas, and Thomas Gray.

Notice has been taken of the following original members at the time of their decease:—To William Gourlie, the first President, there is an excellent tribute paid by James P. Fraser. This only appears in the Minute Book, there being no *Transactions* published at that time. William Gourlie died in 1856. There are notices in the *Transactions* of William Keddie, who died in 1877 (see Vol. I., page 223); of Dr. Colquhoun, who died in 1878 (see Vol. IV., page 7); of Robert Gray, who died in 1887 (see Vol. II., N.S., page 22); and of William Ferguson, who died in 1904 (see Vol. VII., N.S., page 300).

I can find no notice of the time of the death of Dr. Lorrain, except that he was dead prior to November, 1863; neither is there any notice of the deaths of John Gray, who died in 1878; Archibald Gray, who died in 1873; Thomas Ferguson, who died in 1907; or James Pinkerton Fraser. In the case of James P. Fraser it is surprising there is no notice of him, as he was certainly one of the leading men of the original group, was the first Secretary and Treasurer, and succeeded William Gourlie as President; he was also the first President of the Geological Society of Glasgow.

It now falls to us to chronicle the death of the last of the original members of this Society, Mr. Thomas Gray, who died on the 22nd January of this year, in his 90th year. Mr. Gray had enjoyed excellent health during his long life, and it was only three days before his death that it was found necessary, quite unexpectedly, to perform an operation. This, although successful at the time, proved too much for a man of his advanced years, and he succumbed to the effects of it, fortunately without suffering pain.

His father, Thomas Gray, resided in Monteith Row, and was a well-known citizen in the early part of the last century. He was a builder to trade, and enjoyed the distinction of being Deacon of the Incorporation of Masons. He was also a steward at the famous Peel Banquet in 1837, when Sir Robert Peel was installed Lord Rector of the University.

Mr. Gray was therefore a native of Glasgow, and was born on the 5th April, 1820; he was educated at the old Grammar School, now the High School. At the Grammar School his master was Dr. Lorrain, the father of Dr. W. B. Lorrain, who was another of the original members of this Society. Mr. Gray always entertained a high respect for his old Latin master, and was a life-long friend of his son. He also attended the University of Glasgow for two sessions.

Mr. Gray took an active part in the work of the Society in its early years. He was elected Vice-President on the 3rd February, 1852, an office which he held until July, 1854. His special branch of Natural History was conchology. On 4th November, 1851, he exhibited two species of fossil Terebratula from the chalk, both of which he stated he had cleaned out, but that he

could not discover any trace of that peculiar process so often figured in fossil specimens of that genus, denominated the "carriage spring." The specimens were very interesting, and had the appearance of being recent. On 3rd March, 1852, he read a paper on the *Strombus* in the Hunterian Museum, illustrated by a beautiful drawing in water colour, which he had prepared. It was proposed that this paper should be printed in full, with a lithographic drawing of the shell. This was never done by the Society, as it was found there were no funds to do it. On 5th July, 1853, he read a paper containing descriptions of two new species of shells belonging to the genera *Harpa* and *Mitra*, of Lamarck—*Harpa virginalis* and *Mitra albalineata*.

On 24th November, 1863, the Society held a conversazione and exhibition in the Queen's Rooms, and one of the features of the exhibition was the collection of foreign shells exhibited by Mr. Gray.

About the year 1853, Mr. Gray was asked to arrange and classify the collection of shells in the Hunterian Museum, and for his services was specially thanked by Principal Macfarlane. About the same time he delivered a series of lectures on conchology in the Andersonian University, which were well attended and much appreciated.

While quite a youth Mr. Gray was attracted by natural history pursuits, especially the study of conchology. He was a student and collector in other branches, forming at one time a fine collection of coins, and an exceedingly interesting collection of old and rare books, including several specimens from the press of Wynkyn de Worde (Caxton's foreman), but his collection of shells was always his favourite, and it was believed to be the finest private collection in Britain.

As you are all aware, he bequeathed his collection of shells to the Corporation of Glasgow, to be exhibited in Kelvingrove Museum, where it now is. Through the kindness of the Curator, Mr. Paton, we have the pleasure of seeing some of the gems of the collection, which are now on the table.

The terms of the bequest are characteristic of the donor, and are worth quoting:—

"I direct my Trustees to hand over to the Corporation of the City of Glasgow my collection of shells, together with the cabinets

(four in number) which contain them, and also the manuscript catalogue of them, in a small quarto volume, to be found in one of my bookcases. This collection, the '*recreatio mentis et oculi*' of the spare hours of a long and busy life, is, I have reason to believe, the finest and most complete of either public or private to be found in North Britain, and contains nearly seven thousand species from all parts of the globe, several of which are unique, many of considerable rarity, and all, with few exceptions, beautiful and perfect of their kind.

"It is my desire that for educational purposes the collection be arranged in a manner similar to that adopted by myself, each species having its label attached, and exposed to public view in table cases in one of the Natural History sections of the Museum at Kelvingrove."

The catalogue referred to was started by Mr. Gray when he was eighty-one years of age. It took him two years to finish it. The volume, written in his own hand-writing, with the most scrupulous care, was handed over to the Corporation along with the collection, and is a striking testimony both to Mr. Gray's energy and vitality, and to his devotion to his subject.

Mr. Gray took no part in public life, his nature being that of the student. He was a member—one of the first members—of Kelvinside United Free Church, and one of the now greatly-diminished members who came out at the Disruption. He was married, but left no family, and his wife predeceased him sixteen years ago.

Owing to his great age, Mr. Gray had outlived nearly all his contemporaries; indeed, to most members of the Society he will hardly be known even by name, but he has often expressed his pride in being one of its founders.

John Gray.

By Joseph Sommerville.

It may not be out of place to refer here to another of the original members of the Society of whose death I can find no notice, either in the Minutes or *Transactions* of the Society, namely, Mr. John Gray. Mr. John Gray was a younger brother

of Thomas Gray, his chief department of natural history was entomology, and he was also interested in numismatics, in which he was looked upon as an authority in Scotland.

At the meeting of 5th August, 1851, he read a paper: "On the Hydrocanthari of the West of Scotland;" and on 2nd September, 1851, he exhibited fine specimens of *Acanthocinus ædilis* and *Trechus fasciatus*, both rare beetles from the Black Forest, Perthshire.

On 2nd November, 1852, he exhibited specimens of *Drepania falcataria* and *Colias edusa*, the latter from Largs.

On 1st November, 1853, he exhibited a series of the more remarkable coleopterous insects from the East Indies, and also a curious type of crustacean from Ceylon; and on the same evening he read a paper: "On the progress of Entomological Science after the Dark Ages till the era of Linnæus." On 6th June, 1854, he read a paper: "On the formation of Minor Groups in the Annulosa."

He was elected Secretary to the Society on the 4th July, 1854, but he only held this office for a short time. He was elected Vice-president on 24th September, 1861. He will, however, be best remembered as the author of the Biography of David Ure, the author of the "History of Rutherglen and East Kilbride." This excellent little biography is dedicated to William Ferguson, F.L.S., F.G.S., Esquire, of Kinmundy. It was published in 1865.

Mr. John Gray died in 1878, at the comparatively early age of 50 years.

I am indebted to his son, Mr. Wm. R. J. Gray, of the firm of M'Kechnie & Gray, Writers, in this city, for most of the particulars which I have just read.

Summer Notes on the Birds of Garelochhead.

By W. R. Baxter.

[Read 22nd February, 1910.]

The following notes relate to the summers of 1908 and 1909, in both of which years I spent the month of June at Garelochhead, travelling to Glasgow daily, and also made one or

two Saturday afternoon visits to the district at other times during the spring and early summer. Except for the week-ends, which were largely devoted to photography, my opportunities for observation were restricted to the evenings, and an occasional hour or two in the early mornings. Principally on that account I confined myself almost entirely to the small area lying between Whistlefield and the Garelochhead Reservoir on the north, and, on the south, Faslane Bay on the east side, and Mambeg on the west side of the Gareloch ; a land area of about six square miles. On most of my rambles I had the companionship of Mr. A. Douglas M'Call, who is resident in Garelochhead, and takes a keen interest in the bird-life of the district, and to him I am indebted for information and assistance in many ways.

Taking the species observed in order, they were :—

Mistle-Thrush (*Turdus viscivorus*). Fairly common. I saw three nests in June, 1909, and was told of other three which I did not see.

Song-Thrush (*T. musicus*).—
Blackbird (*T. merula*).— } Abundant.

Ring-Ouzel (*T. torquatus*).—My only record of this species is hearing its wild song one June evening on the hill behind the water-works.

Wheatear (*Saxicola œnanthe*).—Scarce. Only one pair was seen in 1909, and none in the previous year.

Whinchat (*Pratincola rubetra*).—The commonest Chat in the district. There were about half-a-dozen pairs nesting in the rough ground on the hill-sides.

Stonechat (*P. rubicola*).—Less plentiful than the last species. Only two pairs were observed in 1908. One was haunting a corner of Lochan na Glas Loaigh, and appeared to be nesting among the long heather there. The other pair was in a small patch of whin-covered ground near the head of the Gareloch. In 1909 the Lochan pair was again seen at the old spot. In early June of the same year I saw a pair of birds with four young ones among the long heather on Carloch Hill, and another pair on whin-covered ground above Faslane.

Redstart (*Ruticilla phœnicurus*).—This is a common bird in the district. In June 1909 five nests were found and the whereabouts of a number of others located. This species

appeared to be well distributed from Garelochhead northwards along Loch Long and Loch Lomond side, and right up Glen Falloch. The ground is well suited to its nesting habits.

Robin (*Erithacus rubecula*).—Common; nesting all over the district.

Whitethroat (*Sylvia cinerea*).—Common. In June, 1908, five, and in June, 1909, nine nests were found, and there must have been many more, as every suitable bit of rough ground appeared to hold a pair of these birds.

Garden-Warbler (*S. hortensis*).—In 1908 I saw one nest with five eggs at Faslane, but did not find the birds back there in 1909. In the latter year I only once heard the song of the Garden-Warbler, and this time it was near Mambeg, on the opposite side of the Gareloch.

Goldcrest (*Regulus cristatus*).—Pretty generally distributed.

Willow-Wren (*Phylloscopus trochilus*).—Very common. I saw well over a dozen nests in each year, and did not specially search for them. The clutches varied from five to seven eggs, but in none of the nests under observation did more than six eggs hatch out, one egg in each clutch of seven being apparently infertile.

Wood-Wren (*P. sibilatrix*).—Almost, if not quite, as common as the last species. Every patch of woodland, no matter how small, held one or more pairs. The nest is more cunningly concealed than that of the Willow-Wren, and not nearly so many were found, the numbers being only four in 1908 and seven in 1909.

Grasshopper-Warbler (*Locustella nævia*).—I did not come across this species at all in 1908, but in 1909 there were at least four pairs nesting in the area. I often heard their unmusical whirring song when it was too dark to see the birds, but I only once had a good opportunity of observing a pair. This was on the 26th of June, an oppressively warm sultry afternoon. So long as I kept still, or moved very cautiously, the male, who was singing vigorously, took no notice of my presence, but allowed me to get within a few feet of him, near enough to distinguish the spots on the breast and the faint bars on the tail. He flitted restlessly from the top of one clump of bog-myrtle to another, delivering his song from each, his whole body quivering as he

sang. After a time he was joined by his mate, and both birds moved uneasily about, uttering a single weak alarm note. I have no doubt they had a nest near, but I did not succeed in finding it.

Hedge-Sparrow (*Accentor modularis*).—Nests commonly throughout the district.

Dipper (*Cinclus aquaticus*).—Frequents most of the streams. Each year I saw several nests which had been occupied earlier in the season.

Longtailed Titmouse (*Acredula caudata*).—I only saw two nests of this species, one of which was situated high up in a large oak tree overhanging the public road, but I had many opportunities of observing family parties flying about.

Great Titmouse (*Parus major*). — Fairly common. The favourite nesting sites were in holes in birch and ash stumps, but one pair chose an iron pump in a garden, which had been occupied by them for many years in succession.

Coal-Titmouse (*P. ater*).—The least common of the four Tits observed in the district. This bird was seldom seen, and only one nesting-place was known to me in 1908, and two in 1909.

Blue-Titmouse (*P. cæruleus*). — Common, and always in evidence. Half a dozen nests were known to me in each year. One pair nested in a small hole in a branch of a large ash tree. A pair of Tawny-Owls had their nest in a hollow in the same tree, and the Tits did not appear to be the least in awe of their large neighbours.

Wren (*Troglodytes parvulus*).—Very common.

Tree-Creeper (*Certhia familiaris*). — Generally distributed, and more often heard than seen. I knew of four nesting places in this small area, and am convinced that the species is much more common than it is usually supposed to be.

Pied Wagtail (*Motacilla lugubris*). } Both of these Wagtails
Grey Wagtail (*M. melanope*).— } nest in the district. The Grey is more frequently seen than the Pied, but neither can be called common.

Tree-Pipit (*Anthus trivialis*).—Three nests were found in 1908 and five in 1909. In nearly every case the nests were on the moorland, just outside the woods. One of the nests found last year contained four eggs of the Tree Pipit and one of the Cuckoo.

Meadow-Pipit (*A. pratensis*).—Common on the higher moors.

Rock-Pipit (*A. obscurus*).—This species was not observed on the Gareloch, but it is common along Loch Long side.

Spotted Flycatcher (*Muscicapa grisola*).—A common bird in the district. Seven nests were seen in 1908, and six in 1909. One was placed two feet from the ground in a wall by the side of the public road, and was so exposed that it could hardly escape the notice of any passer-by.

Swallow (*Hirundo rustica*).—
House-Martin (*Chelidon urbica*).— } Both common. The Martins nest plentifully under the eaves of houses all over the village.

Sand-Martin (*Cotile riparia*).—Occasionally seen. It nests in Glen Fruin, but I do not know of any nesting-place nearer to Garelochhead.

Greenfinch (*Ligurinus chloris*).—Only a single nest was seen in each season, but the bird was quite common.

House-Sparrow (*Passer domesticus*).—Abundant everywhere.

Chaffinch (*Fringilla cœlebs*).—Common. Many nests were found in each year.

Linnet (*Linota cannabina*).—Scarce. I seldom saw the bird, and only knew of one nest.

Lesser Redpoll (*L. rufescens*).—Much more frequently seen and heard than the Linnet. Two pairs nested at Faslane in 1909, both nests being high up in birch trees. One of these was built in a "witch's broom," and I am informed by several witnesses who watched the operation that three birds worked at its construction.

Bullfinch (*Pyrrhula europœa*).—I did not happen to see this species at all, but I was told of two instances of its having nested in gardens and I have seen eggs taken in the district.

Yellow Hammer (*Emberiza citrinella*).—This is the only Bunting observed in the area, and it is not very common.

Starling (*Sturnus vulgaris*).—Very common. It is rather a nuisance to pigeon fanciers, as it uses their dovecots for nesting purposes, ousting the legitimate occupants. In addition to many nests in the usual situations in holes in trees and buildings, several were found in the tops of high laurels in a garden. These nests were large untidy structures, composed of dirty straws from the stable heap, and lined with hay and hens' feathers. They

much resembled the nests which house sparrows build in similar situations, but were very much larger, and were open at the top.

Jay (*Garrulus glandarius*).—My only record of this species is seeing one bird on the road near Shandon. I have not heard of its having been found nesting in the area within recent years, but I am informed that it was once by no means rare as a nesting species, but has been practically exterminated by the gamekeepers. The same fate has overtaken its near relation, the Magpie (*Pica rustica*), which is said to have been numerous at one time, but of which I found no trace whatever.

Raven (*Corvus corax*).—A pair has nested regularly for many years at Finnart.

Carrion-Crow (*C. corone*).—} Both crows nest in the
Hooded-Crow (*C. cornix*).—} district, and are known, indiscriminately, as "hoodies" by the gamekeepers and shepherds, who consider them much too common. They nest in the gorge of the Garelochhead Burn, and in one or two other places near the village, and much more numerously in the wilder country along Loch Long side, between Coulport and Portincaple. One shepherd told me that he had destroyed five nests on his ground in the spring of 1909.

Rook (*C. frugilegus*).—There is no rookery in the area, but one or two pairs occasionally nest. In 1909 a single pair nested in a garden in the village.

Skylark (*Alauda arvensis*).—Fairly common on the pasture-land.

Swift (*Cypselus apus*).—About half-a-dozen pairs nest in the schoolhouse.

Nightjar (*Caprimulgus europæus*).—This species was only seen twice. One fine evening in June, 1908, I watched two birds hawking for insects over a grassfield on the shore, and on another occasion, in June, 1909, while returning homewards in the gloaming, I was accompanied part of the way down the hillside by a nightjar, which circled round me, snapping up the moths which I dislodged as I pushed my way through the bracken and heather.

Cuckoo (*Cuculus canorus*).—Fairly common, taking a prominent part in the bird music of the district.

Tawny Owl (*Syrnium aluco*).—This is the only owl about

which I have any certain information, although I am informed that the Barn-Owl (*Strix flammea*) also nests in the area. The Tawny Owl is by no means uncommon, and could be heard "hooting" every night. I knew four nesting places, one of which was a hole in the ground. This did not appear to be a rabbit hole, but was a short burrow about 3 feet deep, consisting of a passage 2 feet long, with a larger chamber at the back. It was not occupied when I saw it, but it contained a quantity of the owls' castings, and there were three owlets in the trees close at hand. The family of Tawny Owls with which I enjoyed the most intimate acquaintance occupied a hollow ash tree. Mr. Douglas M'Call, who has kept this nest under close observation for a number of years, informs me that the first egg is laid regularly on, or near, the 25th of March. In 1908 the birds suffered severe persecution at the hands of bird-nesting boys, four clutches of three eggs each having been taken in succession, after which no further attempt at nesting was made that season. In 1909 they were more successful, largely in consequence of the friendly assistance of Mr. M'Call, who made access to the nest more difficult by removing some of the lower branches of the tree and encircling the trunk with barbed wire. In spite of this, however, the first clutch was taken. The first egg was laid as usual on 25th March, and, when I visited the nest on 12th April, it contained three eggs, much incubated. I visited it again on 8th May, expecting to find young birds, but found only an empty hole. A second clutch was laid, this time consisting of four eggs. Unfortunately I have not the dates, but one egg must have been laid a considerable time after the others, because, when I examined them on 2nd June, three were "hard sat" and one was fresh. All four hatched out. The old birds, when returning to the nest, never alighted on the tree, but flew straight to the top of the nesting hole and tumbled into it in a comically-clumsy manner. The young birds were not sufficiently mature to sit for their photographs when I left Garelochhead, at the end of June, but I paid them another visit on 7th July along with Mr. M'Call, and took them from the nest for that purpose. The parent birds did not appreciate our attentions to their offspring, and while I was posing the youngsters on a branch I got a pretty hard knock on the head from one of the old birds, which swooped at me from behind and lifted off my cap in its talons.

Common Buzzard (*Buteo vulgaris*).—One pair nested in the area in 1909.

Sparrow-hawk (*Accipiter nisus*) nests in the district, but, thanks to the attentions of the gamekeepers, it is not common.

Kestrel (*Falco tinnunculus*) is frequently seen. It nests on Loch Long side, between Coulport and Portincaple, and also, I am informed, in the gorge of the Garelochhead burn, north of the railway viaduct.

Cormorant (*Phalacrocorax carbo*), } are occasional visitors to
Gannet (*Sula bassana*), } the loch.

Heron (*Ardea cinerea*) is commonly seen fishing at the head of the Gareloch, and also about the Lochan and reservoir, as is to be expected from the proximity of the heronry at Roseneath. It occasionally nests in the area, but I am not aware of any record of its having done so since 1905. Although this species usually nests in colonies, single nests are not infrequent, and I have records of several such having been found at various places on both sides of Loch Long, between Portincaple and Arrochar, during the past three or four years.

Mallard (*Anas boscas*).—One or two pairs nest in the neighbourhood of Lochan na Glas Loaigh, and also near the reservoir.

Teal (*Querquedula crecca*).—Not common. It is reported as nesting at the Lochan, and I saw a pair there in June, 1908, but I did not see it at all last year.

Red-breasted Merganser (*Mergus serrator*).—I knew one nest at the Lochan in 1909. It was situated among heather, about a yard from the water's edge, and was very well concealed. I was told that another pair had nested near Mambeg pier, but I have no satisfactory evidence of this. It is a fairly common species along Loch Long side, where I saw several broods each year.

Ring-dove (*Columba palumbus*) is the only dove nesting in the area, and is common.

Black Grouse (*Tetrao tetrix*).—Two nests were seen in 1909.

Red Grouse (*Lagopus scoticus*).—The moors are preserved, and are well stocked with this species.

Pheasant (*Phasianus colchicus*).—Common. I did not see any nests in the woods, where much of my time was spent, but found several on the hillsides among heather and grass.

Landrail (*Crex pratensis*).—One pair occupied a hayfield at Faslane. I did not hear its familiar "crake" anywhere else in the district.

Lapwing (*Vanellus vulgaris*).—Very common as a nesting species.

Oyster-Catcher (*Hæmatopus ostralegus*).—Occasionally seen on the shore, but does not appear to nest.

Woodcock (*Scolopax rusticula*).—Nests throughout the area. I heard of several nests each year on both sides of the loch, but was too late in visiting the district to see any of them. I saw a few young birds, however, and seldom passed through the plantations without putting up several old ones. They could be heard and seen in flight every evening about twilight.

Common Snipe (*Gallinago cœlestis*).—Nests commonly in the area.

Common Sandpiper (*Totanus hypoleucus*).—Common. Six nests were seen in June, 1909.

Redshank (*Totanus calidris*).—Fairly common. I saw about half-a-dozen pairs, two of them with young broods, and heard of several nests having been found earlier in the season.

Curlew (*Numenius arquata*).—A common nesting species.

Common Tern (*Sterna fluviatilis*).—
Black-headed Gull (*Larus ridibundus*).—
Common Gull (*L. canus*).—
Herring-Gull (*L. argentatus*).—
Lesser Black-backed Gull (*L. fuscus*).—
Razorbill (*Alca torda*).—
Guillemot (*Uria troile*).—
} All these species frequent the Gareloch, but none of them nests in the area.

On comparing my notes for 1908 and 1909 I find little difference between the two years. The numbers of each species were much the same in each season, and the number of nests actually recorded is not to be taken as an indication of comparative distribution. It may, however, be worth noting that in 1908 I had no indication whatever of the presence of the Grasshopper-Warbler, although I was working exactly the same ground where it was so much in evidence last year. It is possible that there was an unusual immigration of the species in 1909. On the 27th of May in that year I heard it at Ardlui and two places in Glen Falloch, and in the beginning of July I

found it at Tyndrum, and also at Loch Tulla, in the Black Mount Forest. In the last named locality it appeared to be abundant. Mr. Thornton MacKeith, in his paper on the birds of Shiskin (The Glasgow Naturalist, Vol. II., p. 20), made special reference to the commonness of the Grasshopper-Warbler in that district last year. I have myself during the last ten years or so found it in Arran, at Brodick and Loch Ranza, as well as at Shiskin, but at no time in anything like the extraordinary abundance recorded by Mr. MacKeith.

Another point which may be noted is the absence from the foregoing list of several species which one might have expected to find. Among those which I looked for, but failed to discover, are the Sedge-Warbler, Twite, Reed-Bunting, Stock-Dove, and Waterhen. The absence of these species cannot be accounted for by any lack of suitable habitat, and I do not think I would have overlooked them had they been present in the district.

List of Aquatic Coleoptera from the Monklands (Lanarkshire).

By Wm. J. M'Leod.

[Read 22nd February, 1910.]

The following list is the result of general collecting within the Monklands. The species are already recorded as occurring within the Clyde area, but, as the localities are all new, the list may prove useful as an addition to the distribution of the species. The district over which the captures were made ranges from Carmyle on the west to Whitcrigg on the east, and from Woodend Loch on the north to the Calder Water on the south—comprising the Parishes of Old and New Monkland. The work was undertaken at the instance of the Coatbridge Naturalists' Association, as a contribution towards a list of the fauna and flora of the Monkland Parishes being compiled by that society. The separate localities are appended in the list, and I have no doubt that, with a little more extended searching, a few more species of this group may be recorded for the district.

Mr. A. E. Newbery has kindly verified any doubtful species.

Fam. Haliplidae.

Brychius elevatus, *Panz.*—Clyde at Carmyle. Scarce.

Haliplus confinis, *Steph.*—In a pond at Whiterigg. Common.

H. flavicollis, *Sturm.*—In Woodend Loch, Coatbridge. Occasionally.

H. fulvus, *Fab.*—In lochs and ditches, Coatbridge. Common.

H. ruficollis, *De G.*— Do. do.

H. lineatocollis, *Marsh.*— Do. do.

Fam. Dytiscidae.

Deronectes assimilis, *Payk.*—Lochend, Coatbridge. Occasionally.

D. depressus, *Fab.*—Running water, Coatbridge, and Clyde at Carmyle. Occasionally.

D. duodecimpustulatus, *Fab.*—Clyde at Mount Vernon. Scarce.

Hydroporus rivalis, *Gyll.*—In streams, Coatbridge; Clyde; Mount Vernon. Common.

H. septentrionalis, *Gyll.*—Clyde; Mount Vernon. Scarce.

H. davisii, *Curt.*—In streams, Coatbridge; Calder Water. Occasionally.

H. gyllenhali, *Schiödte.*—Peaty pools, Coatbridge and Whiterigg. Common.

H. palustris, L.—Common all over district.

H. erythrocephalus, L.—Ponds, Coatbridge. Common.

H. memnonius, *Nic.*—Ponds, Coatbridge, and by shaking sphagnum. Occasionally.

H. pubescens, *Gyll.*—Ponds, Coatbridge and Whiterigg. Common.

H. planus, *Fab.*—Ponds, Coatbridge. Common.

H. ferrugineus, *Steph.*—In a ditch, Coatbridge. Rare.

Agabus guttatus, *Payk.*—In streams, Coatbridge. Occasionally.

A. paludosus, *Fab.*—In ditches, Coatbridge. Not common.

A. affinis, *Payk.*—Lochend, Coatbridge; and ponds, Whiterigg. Common.

A. congener, *Payk.*—Peaty pool, Whiterigg. Rare.

A. nebulosus, *Forst.*—Pond near Bishop Loch, and Coatbridge Common.

A. femoralis, *Payk.*—Bishop Loch. Scarce.
A. arcticus, *Payk.*—Peaty pools, Whiterigg. Common.
A. sturmii, *Gyll.*—Coatbridge. Common.
A. chalconotus, *Panz.*—Bishop Loch. Scarce.
A. bipustulatus, L.—Common all over the district.
Platambus maculatus, L.—In streams, Coatbridge, and Clyde at Carmyle. Common.
Ilybius fuliginosus, *Fab.*—In streams and ponds, Coatbridge Common.
I. ater, *De G.*—Lochend, Coatbridge. Common.
I. ænescens, *Thoms.*—Peaty pool, Whiterigg. Rare.
Rhantus exoletus, *Forst.*—Lochend, Coatbridge. Common.
R. bistriatus, *Berg.*—Coatbridge and Whiterigg. Scarce.
Colymbetes fuscus, L.—Lochs and ponds, Coatbridge. Common.
Dytiscus punctulatus, *Fab.*— Do. do.
D. marginalis, L.—Lochs and ponds, Coatbridge. Not so common as preceding species.
Acilius sulcatus, L., var. **sœticus,** *Curt.*—Ponds, Coatbridge and Whiterigg. Not common.
A. fasciatus, *De G.*—Ponds, Coatbridge and Whiterigg. Scarce.

On some Flowering Plants exhibited.

By Laurence Watt.

[Read 29th March, 1910.]

Ranunculus peltatus, Schrank, var. **truncatus,** Hiern.—From Dalmoak Burn. This burn flows into the River Leven near Dumbarton on its west side. This variety comes very near *floribundus,* Bab., for which I gathered it.

Astragalus danicus, Retz.—This species is found in various localities along the shores of the Moray Firth. This specimen was gathered on the braes near Whitehills, Banff. Though common on the east coast, it is a rare plant on the west.

Bupleurum rotundifolium, Linn.—Found on waste ground near Dumbarton Common. It is no doubt an introduction. It

is a rather curious looking umbellifer, and might easily be passed over. In the London Catalogue it is put down as being fairly well established, but not a native.

Matricaria suaveolens, Buchanan (**discordea,** D.C.).—This was growing along the sea shore for a distance of three miles (at least) near Port Gordon, Banffshire. From the way it was growing, it certainly looked at home. The plants are not large, ranging from four inches to one foot in height. A peculiarity in this species is the absence of the ray florets. In other species of the same genus, the ray florets are sometimes absent, but in this they are entirely so.

Azalea procumbens, Linn.—These plants were sent me by Mr. Burns, then schoolmaster at the Cabrach. He gathered them in June of last year on Cook's Cairn, a hill 2,700 feet in height, where, he says, it is very plentiful. The year previous it was found on Ben Rinnes, a hill about the same height, both in Banffshire. The range of this species is more extended than was generally supposed.

Juncus balticus, Willd.—This grows on a grassy flat near the mouth of the Spey, Morayshire, covered at intervals by the tide. This is the first locality in the north in which I seen this rare Juncus. I have a specimen of it from Barry Links, near Broughty Ferry. It has been gathered west of Aberdeen on the sandy shore.

Juncus supinus, Mœnch, var. **pygmæus,** Marssin.—Mr. A. Bennett says this is the most delicate form he has yet seen. This specimen was gathered in a pool near the River Deveron, Banff, and sent to me by Mr. Yates.

Scirpus pauciflorus, Lightf.—This I gathered near the shore at Whitehills, Banff, on the grassy flats, which are covered by the spring tides. Though fairly common this is the first record for Banffshire.

Carex incurva, Lightf., var. **erecta,** Lange.—This differs from the type by its smaller heads, which enables it to grow upright. The type has larger heads which bend the stem down. This was growing along with *Juncus balticus*, Willd., on a grassy flat near the mouth of the River Spey, in Morayshire. A speci-

men of this is in the Kew Herbarium, sent by the Rev. Mr. Gordon a number of years ago.

Carex aquatilis, Wahl., var. **virescens**, And.—I gathered this in Daimoak Burn, Dumbarton. The var. *minor*, Boott., used to grow near the side of the Clyde at Old Kilpatrick, but the changes that have taken place there have destroyed the locality and, of course, the plant also. This variety grows in deep water, and has a chance of remaining for some years yet. This is the only locality I have gathered it in in Dumbartonshire.

Carex distans, Linn., × **extensa**, Good.—Both species grow together on the sides of the tidal pools at Whitehills, Banffshire. The difference between this hybrid and the parent plant is that the former never has fruit while the parent plant fruits freely. The hybrid was fairly plentiful among the types of both.

Asplenium Adiantum-nigrum, Linn. — The specimen exhibited is from Ramshead Bridge, Glen Luss, Dumbartonshire. This fern, though common on trap rocks, I have never gathered or seen anywhere else till I got this growing freely on the side of Ramshead Bridge. The plants there are finer than ever I saw on the trap, and easier gathered. How has it got there? The trap rocks where it grows are ten or twelve miles from Ramshead Bridge.

Lastrea aristata, R. and B., var. **collina**, Bab.—This was gathered from the Ramshead Bridge also. A small variety, but bearing fruit freely.

Trifolium ochroleucon, Huds.—This species of trefoil was growing on waste ground near Dumbarton Common. I also gathered it on the border of a field near Yoker. The Rev. E. F. Linton says it is a much smaller plant than that found in the south of England.

Carex Goodenowii, Gay, var. **juncella**, Tr.—This was sent me by Mr. Yates, who gathered it at the Cabrach, Banffshire, at an elevation of 1,100 feet. It differs from the type in the long narrow leaves and smoother stem. I have not seen this form in Dumbartonshire.

I have to thank Mr. A. Bennett, F.L.S., for going over all the plants I have submitted to you.

Additions to the List of Clyde Coleoptera.

(*First Paper.*)

By Anderson Fergusson.

[Read 29th March, 1910.]

When the list of the Coleoptera of the Clyde faunal area was published in the handbook issued on the occasion of the visit of the British Association to Glasgow in 1901, an introduction was prepared dealing, *inter alia*, with the previous work which had been done in the group within the area. Owing to want of space, however, that introduction, in common with those to many of the other lists in the handbook, was very much cut down, and only so much of it as enabled the list to be understood was printed. This was rather unfortunate, as it appeared as if no recognition was being given to the work of the older Clyde coleopterists, although their records appeared in the body of the list. In bringing forward the following additions to the list of 1901, I accordingly take the opportunity of remedying the omission by giving a brief history of the work accomplished in the group prior to 1901.

In 1838 was published "Entomologia Edinensis" (Coleoptera), by James Wilson, F.R.S.E., and the Rev. James Duncan, the first and only volume of a series intended to give a descriptive account of the insects occurring in the neighbourhood of Edinburgh. Notwithstanding the limitation of the area covered, references to the occurrence of Coleoptera in other districts of Scotland were also noted, and in it are to be found what are probably the earliest records of Clyde Coleoptera, *e.g.*, *Carabus arvensis*, Hbst., from the Island of Arran, by Dr. Leach, and *C. glabratus*, Pk., and *Miscodera arctica*, Pk., from Ben Lomond; but the records in this work were apparently merely the result of casual visits by the recorders, as at that date there do not appear to have been any coleopterists resident in the area. The late Morris Young, F.E.S., Curator of Paisley Free Museum, was probably the naturalist in the area who investigated the group most thoroughly, and evidence of the valuable work he did is contained in his collection in Paisley Museum. Unfortunately,

owing to his specimens not being labelled, much information with regard to local Coleoptera that could have been obtained from his collection is lost. Luckily, however, records of a number of Mr. Young's more important captures appeared in the Catalogue of the Coleoptera of Scotland by Andrew Murray which was published in 1853, in the "Entomologist's Weekly Intelligencer" (1856-1861) and in the various volumes of the "Entomologist's Annual" (1855-1874); and all these records were used in the list of 1901.

Contemporary with the date of Mr. Young's first activity in the group, the late Mr. R. Hislop, who then resided in Glasgow, appears to have worked Lanarkshire and the district round Glasgow, and the records from these districts which appear in Murray's Catalogue, were obtained from Mr. Hislop, who, according to Murray, was aided in his investigations by Mr. John Gray* and Dr. Colquhoun. The late Mr. John Dunsmore, of Paisley, worked Renfrewshire along with Mr. Young, and I had to thank him for a great deal of information regarding the rarer beetles of that county. Mr. Dunsmore was responsible for the Clyde records contained in Dr. Sharp's Coleoptera of Scotland (*Scottish Naturalist*, 1872-1881), which is the standard list of Scottish Coleoptera. About forty years ago the Rev. J. E. Sommerville and Mr. T. G. Bishop, both of whom are still members of our Society, worked various localities in the area, particularly the Glasgow district, and from both these gentlemen I obtained lists of their principal captures. Their records of Glasgow beetles are particularly interesting from a historical point of view, as several of the localities where they used to take rare insects have now disappeared, owing to the great expansion of the city which has taken place within the last thirty or forty years. Mr. Bishop pointed out to me recently the site of an old quarry at Possilpark where he used to take *Trechus lapidosus*, Daws. The quarry has now been filled up and a wood-yard built upon it. I also understand that the spot at Tollcross where the rare *Pterostichus lepidus*, F., was taken by the older Glasgow entomologists has now been built upon.

Other observers whose captures are recorded in the entomo-

* A brief notice of Mr. John Gray's work as a member of the Society will be found at p. 68 of this number.

logical magazines during the fifties and sixties of last century were Mr. John Scott, who worked the district about Renfrew, the Rev. Hamlet Clarke, M.A., who collected water beetles in Bute, and Dr. David Sharp, who apparently collected about Garelochhead with the late Dr. Henderson of Glasgow. Dr. Henderson recorded a number of his Clyde captures in the second volume of the "Entomologist's Monthly Magazine," the most notable being *Omalium septentrionis*, Thoms., which was found by him for the first time in Britain in Arran, during August, 1864. In 1876, on the occasion of the visit of the British Association to Glasgow, the "Fauna and Flora of Glasgow and the West of Scotland" was issued, but in this volume no list of the Coleoptera of the district appeared, although a note was given of some of the rarer species then known to occur in the area. In more recent years Mr. T. R. Billups has recorded ("Entomologist," vol. XXVI., p. 654), Coleoptera captured in the South of Arran by Mr. A. B. Watson of Edinburgh, and Commander J. J. Walker has also a very useful paper in the "Entomologist's Monthly Magazine," (vol. VII., N.S., p. 110) on the Coleoptera taken by him in the Campbeltown district.

It will thus be seen that the beetles of the Clyde area have been well investigated during the last fifty or sixty years; but much of the work done was not available in 1901, owing to lapse of time and to the fact that very little had been put on record.

The present list of additions is the result of intermittent collecting during the nine years which have elapsed since the publication of the 1901 list, and if more time had been available for field work it would probably have been much longer. I have to thank Mr. A. A. Dalglish, F.E.S., for his kindness in placing at my disposal all the material collected by him, and also Mr. Frank Balfour-Browne, for permitting me to record the water beetles captured by him in various localities. To make the list comprehensive, I have included several additions which have been recorded since 1901 in the *Transactions* of this Society and elsewhere.

In dealing with an area so large as "Clyde" it is desirable to indicate as plainly as possible the distribution of each species throughout the district, and in the list of 1901 this was done

simply by giving the localities in which the insects had been taken, usually in their order from north to south. In fact, owing to the want of space it is doubtful if anything more could have been done in the way of indicating distribution in that list. It is quite apparent, however, that while the method adopted in 1901 was sufficient for entomologists who knew or had worked the district, it would not meet the requirements of specialists studying the problems of distribution. I accordingly think it would be more satisfactory to indicate prominently the county in which the localities are situated, and in the appended list I have adopted this system, which, I may state, is followed by Mr. Balfour-Browne in his excellent paper on "The Aquatic Coleoptera of the Solway District" (*Ann. Scot. Nat. Hist.*, 1909, p. 76). The name of the county in which a species occurs is given first in **heavy type**, followed as a rule by the actual locality in ordinary type.

I have to thank Dr. David Sharp M.A., F.R.S., Commander J. J. Walker, M.A., R.N., F.L.S., and Mr. Frank Balfour-Browne, M.A. (Oxon.), F.Z.S., for their kind assistance in verifying or identifying the insects collected by Mr. Dalglish and myself. The Rev. Alfred Thornley, M.A., F.L.S., has also given me help with some of the species from Bute, and I take this opportunity of acknowledging, more fully than I was permitted to do in the handbook, my great indebtedness to him for the assistance I received from him in connection with the 1901 list.

The arrangement followed is that of Beare and Donisthorpe's Catalogue, 1904.

Abbreviations used in the List.

A.S.N.H. = *The Annals of Scottish Natural History.*
A.A.D. = Andrew Adie Dalglish, F.E.S.
E.M.M. = *The Entomologists' Monthly Magazine.*
F.B.B. = Frank Balfour-Browne, M.A., F.Z.S.

Carabidæ.

Anchomenus atratus, *Duft.*—**Renfrew**, local, banks of Clyde below Erskine Ferry, February, 1901 (A.A.D., A.F.).

Bembidium obtusum. *Sturm.*—Banks of rivers and ponds, probably common, **Dumbarton**, Bowling: **Renfrew**, Bishopton; **Ayr**, Barr; **Clyde Islands**, Loch Fad, Bute (A.F.).

B. quadriguttatum, *F.*—Rare, **Ayr**, Fairlie, by Mr. John E. Murphy (one specimen exhibited at meeting of Society in June, 1908).

B. saxatile, *Gyll.*—**Ayr**, local, on coast, Barassie, May, 1901 (A.F.)

Haliplidæ.

Haliplus fluviatilis, *Aub.* **Lanark**, in flood refuse, Strathaven, August, 1900; **Ayr**, clinging to sticks in moving water, Irvine, July, 1900 (A.F.).

Dytiscidæ.

Hydroporus morio, *Dej.*—**Dumbarton**, Luss, Glen Sloy, July, 1905; Hillfoot, "several in a grassy ditch, a most unusual situation" (F.B.B.); **Stirling**, Strathblane district (F.B.B.); **Renfrew**, in mossy pools on hills, Greenock, February, 1910 (A.F.); **Ayr**, Beith and Lugton district (F.B.B.), Stevenston (A.F.); **Clyde Islands**, Arran (F.B.B.).

H. longulus, *Muls.*—**Dumbarton**, several in trickling stream, Luss, July, 1905 (F.B.B.); **Clyde Islands**, Arran, June, 1906 (F.B.B.).

H. melanarius, *Sturm.*—**Dumbarton**, high ground, Luss, July, 1905 (F.B.B.); **Renfrew**, in mossy pools on hills, Greenock, January, 1910 (A.F.); **Ayr**, Beith and Lugton district (F.B.B.); **Clyde Islands**, Arran (F.B.B.).

H. discretus, *Fair.*—**Lanark**, in ditches, Possil Marsh (A.F.), Carluke (F.B.B.); **Renfrew**, Giffnock, Lochwinnoch (F.B.B.), in mossy pools, Greenock (A.F.); **Ayr**, in pond, Dunure (A.F.); **Clyde Islands**, Arran (F.B.B).

Platambus maculatus, *L.* var. immaculatus, *Donis.*—**Dumbarton**, Loch Lomond, Luss, July, 1905 (F.B.B.).

Rhantus notatus, *Berg.*—**Ayr**, sparingly in pools at Stevenston, April, 1910 (A.F.).

Gyrinidæ.

Gyrinus elongatus, *Aub.*—**Lanark**, one specimen in Busby and East Kilbride district, September, 1909 (F.B.B.).

Hydrophilidæ.

Anacæna limbata, *F.*—**Dumbarton**, Milngavie Marshes, September, 1908 (F.B.B.); **Lanark**, Carluke (F.B.B.); **Renfrew**,

Giffnock (F.B.B.); **Ayr,** Beith and Lugton district (F.B.B.), Ayr (A.F.), but Mr. James Edwards has recently pointed out (E. M. M., XX. [N.S.], 169) that *A. ovalis*, Reiche, is mixed with *A. limbata* in our collections, and probably some of the above records may refer to the former species.

Laccobius alutaceus, *Th.* — In stagnant pools. **Lanark,** Busby, Carluke (F.B.B.); **Renfrew,** Giffnock, Lochwinnoch (F.B.B.); **Ayr,** Beith and Lugton district (F.B.B.); **Clyde Islands,** Loch Fad, Bute (A.F.).

Chætarthria seminulum, *Pk.*—**Ayr,** Beith and Lugton district (F.B.B.). It occurs in damp moss at edges of ponds or streams.

Helophorus viridicollis, *Steph.* var. strigifrons, *Th.*—**Lanark,** one specimen in ditch, Possil Marsh, March 1910. I also took a specimen in the same locality, which Mr. Balfour-Browne states is intermediate between the type and var. Strigifrons; **Renfrew** (F.B.B., A.S.N.H, 1909, 222).

H. affinis, *Marsh.* (griseus, *Th.*).—A single specimen taken by me in the area has been referred to this species by Commander Walker. Unfortunately I am unable to state where or how it was taken. There is no doubt of its being from Clyde.

H. brevipalpis, *Bed.*—Through a clerical error in the 1901 list, not corrected when the paper was in proof, this species was entered as H. brevicollis, *Th.* I now take the opportunity of correcting the error. H. brevicollis has not yet been recorded from Clyde.

Hydræna britteni, *Joy.*—**Ayr,** Beith and Lugton district (F.B.B.), one in a small burn, Knoweside, April 1909 (A.F.). Mr. Balfour-Browne has also taken it in **Renfrew** (A.S.N.H., 1909, 223).

Cercyon hæmorrhous, *Gyll.*—**Dumbarton,** in dung, Bowling (A.F.).

Staphylinidæ.

Aleochara bipunctata, *Ol.*—**Ayr,** in vegetable refuse, Barassie (A.F.).

Ischnoglossa corticina, *Er.*—**Lanark,** very local and scarce, under oak bark (A.F.).

Ocalea badia, *Er.*—**Renfrew,** rare, Johnstone, in or about decaying fungi (A.F.), but this does not appear to be the usual habitat of the species.

Chilopora longitarsis, *Er.*—**Lanark**, banks of Clyde, near Cambuslang (A.F.).

Homalota hygrotopora, *Kr.*—Muddy banks of rivers. **Lanark**, Clyde, near Cambuslang; **Ayr**, Irvine (A.F.).

H. elongatula, *Gr.*—**Dumbarton**, banks of a pond, Bowling (A.F.).

H. volans, *Scrib.*—**Dumbarton**, banks of pond, Bowling; **Ayr**, in similar situation, Ayr and Barr (A.F.).

H. clavipes, *Sharp.*—**Stirling**, Ben Lomond (Fowler, "British Coleoptera," II., 78). Omitted in error from the 1901 list.

H. vicina, *Steph.*—**Dumbarton**, banks of pond, Bowling; **Ayr**, amongst sea-weed, Troon, in moss, Barr (A.F.).

H. graminicola, *Gr.*—Common in wet places, **Dumbarton**, Milngavie (A.A.D.), Bowling (A.F.).

H. cuspidata, *Er.*—**Lanark**, very rare; it occurs under bark. Dr. Sharp informs me that he has no Scotch example, and I do not know of any previous record of the occurrence of the species in Scotland.

H. aquatica, *Th.*—**Renfrew**, in fungi, Lochwinnoch (A.F.).

H. æneicollis, *Sharp.*—In fungi. **Dumbarton**, Milngavie; **Renfrew**, Lochwinnoch (A.F.).

H. xanthoptera, *Steph.*—**Renfrew**, in fungi, Lochwinnoch (A.F.).

H. fungicola, *Th.*—**Renfrew**, in decaying fungi, Lochwinnoch (A.F.).

Gyrophlena nana, *Pk.*—**Renfrew**, in decaying fungi, Johnstone (A.F.).

G. minima, *Er.*—**Lanark**, very rare, one specimen at Cadder, in fungi (A.F.). The only previous Scotch record appears to be one specimen taken by Dr. Sharp in Solway in 1867 (Fowler, "British Coleoptera," II., 158).

G. lævipennis, *Kr.*—In decaying fungi, rare. **Dumbarton**, Milngavie, September, 1901; **Renfrew**, Lochwinnoch, September, 1901 (A.F.). The previous Scotch record rests on six specimens taken by Dr. Sharp on the Corstorphine hills, Forth district, in 1866 (Fowler, "British Coleoptera," II., 158).

Tachinus laticollis, *Gr.*—**Clyde Islands**, in flood refuse. Loch Fad, Bute, May, 1901 (A.F.).

Bolitobius exoletus, *Er.*—**Renfrew**, in decaying fungi, Johnstone, September, 1900 (A.F.).

B. PYGMÆUS, *F.*—In decaying fungi. **Lanark**, Possil; **Renfrew**, Lochwinnoch (A.F.).

QUEDIUS BOOPS, *Gr.*—**Ayr**, on shore, Troon; **Clyde Islands**, in flood refuse, Loch Fad, Bute (A.F.).

XANTHOLINUS OCHRACEUS, *Gyll.*—**Clyde Islands**, in flood refuse, Loch Fad, Bute (A.F.).

X. LONGIVENTRIS, *Heer.*—**Renfrew**, in flood refuse, Bishopton (A.F.).

LATHROBIUM LONGULUM, *Gr.*—**Renfrew**, in flood refuse, Bishopton, February, 1901 (A.F.).

STENUS GUTTULA, *Müll.*—**Ayr**, in wet place on shore, near Troon, May, 1901 (A.F.).

S. BINOTATUS, *Ljun.*—**Ayr**, in flood refuse, Irvine (A.F.).

S. LATIFRONS, *Er.*—**Renfrew**, Lochwinnoch, on banks of a burn (A.F.).

HAPLODERUS CÆLATUS, *Gr.*—**Ayr**, one specimen shaken out of grass, Knoweside, December, 1909 (A.F.).

ANCYROPHORUS OMALINUS, *Er.*—**Ayr**, banks of River Irvine (A.F.).

SYNTOMIUM ÆNEUM, *Müll.*—Under moss on trees. **Renfrew**, Johnstone (A.A.D.); **Ayr**, Knoweside, December, 1909 (A.F.).

DELIPHRUM CRENATUM, *Gr.*—Very local and scarce, **Dumbarton**, four specimens under bark of chips, near Helensburgh, September, 1907 (Dr. G. W. Chaster, E.M.M., XIX., N.S., 16); I have also taken it in **Lanark**.

OMALIUM PUSILLUM, *Gr.*—**Ayr**, in some numbers under fir bark, near Troon; I have also a single specimen from **Lanark**.

O. PUNCTIPENNE, *Th.*—I have a single specimen from **Lanark** which Dr. Sharp refers to this species. It occurs under the bark of deciduous trees.

O. MONILICORNE, *Gyll.*—**Lanark**, very local and scarce (A.F.).

O. HEERI, *Heer.*—A single specimen from **Lanark** referred to this form by Dr. Sharp. *Heeri* is catalogued as a variety of *O. vile*, but Dr. Sharp thinks it must be considered a distinct species. It is apparently very rare.

O. BREVICORNE, *Er.*—**Lanark**, very local and scarce, under bark (A.F.).

Silphidæ.

CHOLEVA WILKINI, *Spence.*—**Renfrew**, in decaying fungi, Johnstone, September, 1903 (A.F.).

Nitidulidæ.

Epuræa parvula, *Stm.*—**Lanark**, very rare. One about fungi on stump of tree (A.F.).

E. angustula, *Er.*—**Lanark**, very local and rare, under bark (A.F.).

Rhizophagus depressus, *F.*—**Ayr**, local and not very common under fir bark near Troon (A.F.).

Lathridiidæ.

Coninomus nodifer, *West.*—**Renfrew**, in rotten wood near Langbank, December, 1909 (A.F.).

Cryptophagidæ.

Cryptophagus pilosus, *Gyll.*—**Lanark**, in grass tufts, Possil; **Renfrew**, in vegetable refuse, Johnstone (A.F.).

Telephoridæ.

Ancistronycha abdominalis, *F.*—**Dumbarton**, very rare, one by beating trees at Arrochar, May, 1908 (A.A.D.).

Anobiidæ.

Priobium castaneum, *F.*—**Ayr**, in dead wood of hawthorn, Knoweside (A.F.).

Cerambycidæ.

Grammoptera tabacicolor, *D. G.*—**Lanark**, very rare, one specimen, Gorge of Avon (J. J. King, F.E.S., *Glasgow Naturalist*, Vol. I., p. 138).

Lamiidæ.

Leiopus nebulosus, *L.*—**Dumbarton**, one specimen from Inchcaillach, Loch Lomond (Mr. Alex. Ross, *Glasgow Naturalist*, Vol. I., p. 138); **Stirling**, one specimen from Blanefield district, by Mr. John E. Murphy (exhibited at meeting of Society in June, 1908).

Chrysomelidæ.

Longitarsus atricillus, *L.*—**Renfrew**, by sweeping, Sept., 1903, near Johnstone (A.F.).

Melandryidæ.

Clinocara undulata, *Kr.*—**Dumbarton**, very rare, in decaying wood, Dumfin (Mr. G. A. Hardy, *Glasgow Naturalist*, Vol. I., p. 58).

Anthicidæ.

Notoxus monoceros, *L.*—**Ayr**, one specimen by Mr. John E. Murphy at Monkton (exhibited at meeting of Society in June, 1908).

Scolytidæ.

Trypodendron domesticum, *L.*—**Lanark**, very local and scarce, boring in wood (A.F.).

Mycological Notes.

By D. A. Boyd.

[Read 26th April, 1910.]

Most of the following notes consist of additional records of species observed last year in localities visited at Excursions of this Society and of the North Ayrshire Field Club; but a few relate to records of species seen in other places, or to information derived from other sources.

Cystopus spinulosus, De Bary.—On *Cnicus palustris*; Kelburne; Dalmellington.

Plasmopara pygmæa (Ung.) Schröt.—On *Anemone nemorosa;* Dalry.

P. densa (Pers.) Schröt.—On *Rhinanthus Crista-galli;* Irvine.

Peronospora calotheca, De Bary.—On *Galium Aparine;* Ardrossan; Lochwinnoch.

P. viciæ (Berk.) De Bary.—On *Vicia sepium;* Kilbirnie. The conidiophores are produced in dense violet-grey tufts.

P. arenariæ (Berk.) Tul.—On *Arenaria peploides;* Stevenston. On some parts of the Ayrshire coast this parasite is very abundant over large patches of sea-purslane, where nearly every stem is attacked and rendered conspicuous, owing to the paleness of the affected leaves. These usually bear an abundant crop of conidiophores.

P. obovata, Bon.—On *Spergula arvensis;* Stevenston, Ayrshire; Glen Urquhart, Inverness-shire. In his "Revision of the Scotch Peronosporeæ,"* Professor Trail has observed that the oospores mostly occur in plants which show no conidia. The latter are often produced abundantly on conspicuously swollen and pale-coloured portions of the host-plant. Although reported from many Scottish localities, this species is not included in Mr. Massee's description of the British Phycomycetes †

P. trifoliorum, De Bary.—On *Trifolium pratense;* Perceton. The affected leaves become pale-coloured, aud the conidiophores are thinly scattered over the lower surface.

P. chrysosplenii, Fckl.—In *The Glasgow Naturalist*, Vol. I., p. 111, this species is incorrectly stated to be new to Britain. It has already been reported for the Forres district, where it was found many years ago by the late Rev. Dr. Keith, and is recorded and described by Professor Trail.‡ It is not, however, referred to as British by Mr. Massee.

P. urticæ (Lib.) De Bary.—On *Urtica dioica;* Helensburgh.

P. alta, Fckl.—On *Plantago major;* Dalry; Kilwinning; Dalmellington. Recorded in 1889 by Professor Trail§ for localities in Perthshire, Aberdeenshire, Argyllshire, and Orkney, but not included in Mr. Massee's work on the British species. It also appears to be frequent throughout Ayrshire, and is probably generally distributed, although liable to be overlooked. The affected leaves may be recognised by their paler colour and more erect habit of growth. The conidiophores are thinly scattered over the lower surface of these leaves.

Synchytrium stellariæ, Fckl.—On *Stellaria media;* Ardrossan; Dunagoil Bay.

S. taraxaci, De Bary and Wor.—On *Taraxacum officinale;* Irvine.

S. aureum, Schröt.—On *Plantago lanceolata;* Kingarth.

* *Scottish Naturalist*, Vol. III. (New Series), page 81.

† *British Fungi. Phycomycetes and Ustilagineæ* (1891).

‡ Trail, *l.c.*, pages 82, 84.

§ *Scottish Naturalist*, Vol. IV. (New Series), page 32.

S. mercurialis, Lib.—On *Mercurialis perennis;* Dalry; Kilbirnie; Lochwinnoch; Drumpellier.

Protomyces bellidis, Krieger.—On *Bellis perennis;* Ardrossan; Kilwinning.

P. pachydermus, Thüm.—On *Taraxacum officinale:* Kilwinning.

Ustilago caricis (Pers.) Winter.—In inflorescence of *Carex;* Dalmellington.

Tilletia decipiens (Pers.) Winter.—In ovaries of *Agrostis vulgaris;* Dunagoil; Holy Isle.

Uromyces limonii (D.C.) Winter.—As *Uredo*, on *Armeria maritima;* Dunagoil Bay; Lamlash.

U. polygoni (Pers.) Winter.—On *Polygonum aviculare;* Irvine.

U. behenis (D.C.) Winter.—On *Silene maritima;* Dunagoil Bay.

U. ficariæ (Schum.) Winter.—On *Ranunculus Ficaria;* Lochwinnoch.

Puccinia calthæ, Link.—On *Caltha palustris;* Dunagoil Bay.

P. obscura Schröt.—As *Æcidium*, on *Bellis perennis;* Stevenston.

P. bunii (D.C.) Winter.—On *Conopodium denudatum:* Kilmacolm; Devol's Glen.

P. malvacearum, Mont.—On *Althæa rosea;* Perceton.

Pseudopeziza repanda (Fr.) Karst.—On *Galium saxatile;* Lochwinnoch.

Ephelina radicalis (Cke.) Mass.—On dead stem of *Rhinanthus crista-galli;* Kilwinning.

Lasiobolus equinus (Müll.) Karst.—On cow-dung; Dalmellington.

Geoglossum difforme, Fr.—On the ground amongst grass; Ardeer sands.

Lophodermium cladophilum (Lév.) Rehm.—On dead twigs of *Vaccinium Myrtillus;* Kilmacolm; Devol's Glen.

Leptosphæria acuta (Moug.) Karst.—On dead stems of *Urtica dioica;* Kilmacolm.

Venturia myrtilli, Cooke.—On dead leaves of *Vaccinium Myrtillus;* Devol's Glen.

V. alchemillæ (Grev.) B. & Br.—On living *Alchemilla vulgaris;* Kelburne; Irvine.

Asterina veronicæ (Lib.) Cke.—On living *Veronica officinalis;* Dunlop; Kilmacolm.

Phyllosticta forsythiæ, Sacc.—On *Forsythia suspensa;* Kelburne.

Ph. syringæ, West.—On *Syringa vulgaris;* Largs; West Kilbride; Ardrossan. New to Clyde Area.

Ph. mercurialis, Desm.—On *Mercurialis perennis;* Largs; Dalry; Drumpellier.

Asteroma ulmi, Klotzsch.—On living leaves of *Ulmus;* Largs.

Coniothyrium Boydeanum, A.L.Sm.—On dead twigs of *Fuchsia;* Ardrossan; Lamlash.

Ascochyta philadelphi, Sacc. & Speg.—On living leaves of *Philadelphus coronarius;* Kelburne; Dalry.

Septoria rosæ, Desm.—On living rose-leaves; Dalry.

S. hydrocotyles, Desm.—On *Hydrocotyle vulgaris;* Dunagoil Bay.

Phleospora aceris (Lib.) Sacc.—On living leaves of *Acer Pseudoplatanus;* Kelburne.

Melasmia salicina, Lév.—On living leaves of *Salix repens;* Ardeer Sands, Stevenston. New to Clyde Area.

Actinothyrium graminis, Kunze.—On dead culms and leaves of *Molinia cærulea;* West Kilbride; Ardrossan. New to Clyde Area.

Glœosporium fagi, Desm. & Rob.—On fading leaves of *Fagus sylvatica;* Stevenston.

G. salicis, West.—On living leaves of *Salix;* Stevenston.

Melanconium hederæ, Preuss.—On dead twigs of *Hedera Helix;* Perceton.

Marssonia populi (Lib.) Sacc.—On living leaves of *Populus;* Ardrossan.

M. potentillæ (Desm.) Sacc.—On *Potentilla Anserina;* Irvine.

Steganosporium piriforme (Hoffm.) Corda.—On dead bark of *Acer Pseudo-platanus;* Perceton.

Diplocladium penicillioides, Sacc.—On decaying *Polyporus;* Dalry; West Kilbride. New to Clyde Area.

Ramularia violæ, Trail.—On *Viola Riviniana;* Largs. On *V. tricolor;* Ardrossan.

R. urticæ, Cés.—On *Urtica dioica;* Largs.

Hormiscium splendens (Cke.) Sacc.—On bark of *Acer Pseudoplatanus;* Perceton.

Zygodesmus fuscus, Corda.—On rotten bark; Drumpellier.

Fusicladium dendriticum, Fckl.—On living leaves of *Pyrus Malus;* Perceton.

Polythrincium trifolii, Kze. & Schm. — On living leaves of *Trifolium repens;* Irvine.

Isaria farinosa (Dicks.) Fr.—On a dead lepidopterous pupa; Drumpellier.

Illosporium roseum, Mart.—On *Parmelia saxatilis;* Kingarth.

Proceedings of the Society.

(*Continued from p.* 64.)

Lanark. Ayr, and Cantyre are the only vice-counties Mr. Ewing had seen *Juncus inflexus*, L. (*J. glaucus*, Sibth) from, but it is recorded from all counties including and South of Perth. It is easily known by its deep striæ, jointed pith, and glaucus appearance. Mr. Ewing also exhibited *Calamintha Acinos*, Clairv., sent by Dr. Gilmour, Port Ellen, Islay, which is new to that region, though recorded from Ayr and Lanark under *C. arvensis*, Lam. Dr. Gilmour also sent *Carex pendula*, Huds., also new to South Ebudes, and formerly recorded only from Ayr, Renfrew, Lanark, and Stirling. Mr. Ewing further exhibited *Lathyrus Aphaca*, Linn., from the banks of Clyde, near Newton (Lanarkshire) which, has formerly been recorded from Ayr and Renfrew.

A paper entitled "List of Arran Hepaticæ" by Mr. Symers M. Macvicar was held as read (page 36).

There was communicated by Mr. J. Ballantyne, for Mr. W. J. Miller, Rothesay, a paper entitled "Notes on the Similarity of Results from the chance grouping of Black and White Balls taken in pairs with similar quantities of Hybrid Peas."

"A List of the Clyde Tenthredinidæ (Hymenoptera)" by Mr. J. R. Malloch was communicated by Mr. Alex. Ross, Hon. Secretary.

The fourth meeting of session 1909-10 took place on 28th December, 1909, Mr. John Paterson, President, in the chair.

Messrs. James Clark, M.A., D.Sc., A.R.C.S., Rector of Kilmarnock Academy, and R. Elmhirst, F.L.S., Superintendent, Marine Station, Millport, were elected as Ordinary Members.

Mr. John Robertson exhibited, on behalf of Mr. George W. Campbell, Coatbridge, the hoopoe (*Upupa epops*), from near Leadhills, which is recorded in these pages (Vol. I., page 145).

(CONTINUED.)

The Glasgow Naturalist

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Remarks upon the Zoological Collection of the University of Glasgow, made on the occasion of the visit by the Natural History Society, on March 12, 1910.

By J. GRAHAM KERR, *Honorary Curator.*

The main functions served by Museums of Zoology may be said to be three in number—(1) they serve as a means of popular instruction, by the exhibition of specimens of animals of local or general interest, mounted and displayed so as to prove attractive and interesting to the ordinary visitor; (2) they serve for the instruction of the scientific student of Zoology; and (3) they serve as storehouses in which are preserved specimens and collections of scientific value, arranged in such a manner as to combine the maximum of safety with the maximum of accessibility to the specialist who desires to study them. In carrying out the development of a museum, the Curator has naturally to consider these three functions in correlation with local conditions. Unless he has unlimited means at his disposal it is bad policy for him to try to develop the museum equally along all three lines—it is preferable to specialise along one line or other.

In the case of our own University Museum, we have to bear in mind the existing municipal museums, the chief function of which is popular instruction.

It is clearly advisable to avoid, as much as possible, any clashing between the activities of the University and the town museums, and this is facilitated as regards (1) and (2) by the conditioning factors. On the one hand the large expenditure involved in the purchase, upkeep, and proper exhibition of

stuffed specimens of the skins of the larger animals makes it impossible for a hard-up University Museum to undertake this duty, except at the expense of its more important functions, while on the other hand a purely scientific teaching collection can only be organised, carried out, and kept up-to-date by a staff of scientific experts, who are kept, by teaching or research, in the closest touch with contemporary advances in the subject.

The functions, then, of a University Museum of Zoology such as ours may be taken as being more particularly those defined under (2) and (3). In practice we devote the exhibition space almost entirely to (2), *i.e.*, to series of specimens and preparations for the instruction of students of Zoology—the store collections being kept in cabinets and cupboards, where they will be protected from the harmful influences of light.

The general scheme of arrangement of the exhibition space is designed to be as follows:—

The large and somewhat awkward glass cases along the south side of the museum, with the intervening table cases, it is intended to devote to the preparations illustrative of the anatomical and other characters of the main groups of the animal kingdom. The corresponding cases on the north side will be devoted to the British, and especially local fauna. The floor space in the middle will serve for the accommodation of specimens too large for the cases, and also for special cases illustrative of general zoological principles.

As regards the exhibits in the rearranged portions of the museum, there are two features which will strike the visitor as peculiar. One is the general use of black as a background, the other is the inconspicuous nature of the labelling. In regard to both of these points I have for long held strong views. Nine out of every ten zoological specimens are in my opinion shown to best advantage against an absolutely black background, and we therefore make this the standard background in the zoological section of the museum. Absolutely dull black paint or black cloth is used, while, where the area to be covered is relatively small, so that the expense is not prohibitive, use is made of black velvet. Those who look at Mr. Staig's beautiful exhibits, illustrative of protective resemblance, etc., will agree with me that there is much to be said for the black background. As

regards the matter of labels—there is no question that, judged from the standpoint of mere artistic effect, nothing can be more offensive than huge rectangles of white, bearing legends in black, and forming the most conspicuous objects in a museum case. It is clear that, from the point of view of artistic effect, the label should be as inconspicuous as possible.

Of course, in a popular museum it is necessary to label on a comparatively extensive scale. An ideal popular Natural History Museum should be like a fascinating book, copiously illustrated, on Natural History. The letterpress would be represented by the full explanatory labels, while in place of the illustrations would be the actual specimens. The seductive influence which a popular museum should exercise over those who visit it, attracting attention and awakening interest in minds where no such interest before existed, depends to a great extent upon the fulness and the interest of the explanatory labels, and such labels will necessarily occupy a large amount of space. In a purely scientific teaching collection, on the other hand, labelling may easily be carried to excess. The specimens in such a collection serve to illustrate the teaching of the school, teaching which in a live school is, both as regards lectures and text books, undergoing constant change from year to year, synchronously with the advance of the subject, and explanatory labels which go into minute detail are liable soon to become in parts out of date. Further, I am one of those who believe that the beneficial effect of intellectual work depends to some extent upon the effort and concentration which it involves. An elaborate preparation, elaborately labelled so as to remove all difficulties in the way of its interpretation, is apt to leave behind it a mental impression characterised mainly by its fleeting character; while the same preparation, deprived of its labels and worried over with the help of a text book or lecture notes, becomes impressed upon the mind in such a way as to remain vivid for years. As a rule, then, except in exhibits of a semi-popular character, we do not attempt any elaborate and lengthy labels. We try to arrange that the specimen is the really conspicuous object, while the label is there and easily seen if looked for.

In the arrangement of the teaching collections progress is being made, though, on account of the smallness of the staff, it is necessarily slow. A zoological collection is greatly handicapped by the elaborate nature of the preparative processes to which the specimens have often to be subjected. Several weeks may often have to be expended upon a single preparation before it is ready to take its place upon the shelves. The groups upon which most work has been done are the Sponges, Coelenterates, Fishes, Amphibians, and Reptiles, and in each of these, specimens of much interest will be observed.

The third function to which I alluded is that of providing safe storage for specimens which are of scientific value, though they may not be of marked interest except to the specialist in their particular group. Amongst such specimens, the most important are, of course, *type* specimens, upon which the original description of the species is based. Personally, I have for long agreed with those who hold that type specimens should be concentrated, so far as possible, in the National Museums of the various countries. A type specimen is, by the nature of the case, unique. It cannot be replaced, and it should be kept under conditions of the greatest safety, conditions which it is often practically impossible to achieve, except in the National Museum. Further, the people who really use type specimens are the systematists, and it would be of immense advantage to them if all the types of a particular country were concentrated in its National Museum. Unfortunately, in actual practice other considerations than those of the benefit of science —such as the great though not definable monetary value of type specimens—come into play, and there are large numbers of type specimens in local museums and private collections. In our University collections we have a number of important type specimens belonging to the original Hunterian Collection, and one of my first pieces of work after my appointment was to endeavour to determine which of these types still exist. Though, as in the case of other collections of similar age, some of the types have disappeared, it is gratifying to note that a large proportion are still in existence. Of these, by far the greater number are insect types, described by J. C. Fabricius. Fabricius worked through William Hunter's collection of insects, identi-

fying and labelling the specimens, and in many cases describing new species from the Hunterian specimens.

The Hunterian Collection of Insects is housed in five cabinets, and I have judged it best to leave them absolutely uninterfered with, except for the addition of insecticide to each drawer. What makes interference or rearrangement particularly undesirable is that the labels are not actually attached to the specimens, but only pinned to the bottom of the drawer immediately above the corresponding specimen. There is evidence of rearrangement of the specimens in some of the drawers, and a few specimens are clearly interlopers, but the bulk of the collection, happily, remains untampered with.

Next in importance after the Fabrician types of insects comes a series of corals, including the types of species described by Ellis. These specimens, 21 in number, are contained in a table-case by themselves.

Finally, before leaving these type specimens of historical interest, I should mention the specimen of stalked crinoid (*Pentacrinus asterias*, L.), upon which Ellis based his description in Phil. Trans., 1762 (*Encrinus stellato ramoso-dichotomo stipite pentagono equisetiforme.*)

This specimen was one of the two first-found specimens of recent stalked crinoids, the other specimen going to Paris, where it was described by Guettard under the rather misleading title of *Palma marina.*

In concluding these few remarks, it is only right to point out that, in carrying out the various improvements in regard to the zoological collections, a large proportion of the labour has fallen to the Assistant Curator in Zoology, Mr. R. A. Staig, and to his patient effort and remarkable technical skill are due a large number of the beautiful preparations which are to be seen in the teaching collection. Beautiful examples of his work are also to be seen, *e.g.*, in such cases as those illustrating Protective Resemblance, Economic Zoology, and Insect Life-histories.

List of Species of insects described by J. C. Fabricius from Specimens in Dr. Hunter's Collection.

The Hunterian Collection of Insects is arranged in the order given in Fabricius' *Species insectorum*, and I have retained

that order, so far as concerns the genera, in the following list. The nomenclature is that of Fabricius, and no attempt has been made to add modern synonyms. In cases where I find the specimens still in existence I indicate the fact, and I have included specimens upon which Fabricius based his description, even in cases when the *species* is a pre-Fabrician one. I have endeavoured to get the drawers of the cabinets, which were much mixed up, back into their original order, but I have scrupulously refrained from interfering with the arrangement of the contents of the individual drawers.

I make no pretence of completeness in the following list. My main object in publishing it is to draw the attention of entomologists to the large number of presumable Fabrician types which still exist in the Hunterian Collection.

The name given is a copy from the label in cases where the specimens still exist. In such cases the reference to page and number is in nearly all cases to the "*Species insectorum*," 1781. Other works referred to are *Systema entomologiæ*, 1775; *Genera insectorum*, [1776]; *Mantissa insectorum*, 1787; and *Entomologia Systematica*, 1792-1798.

Scarabaeus aenobarbus, Fabr., p. 10, No. 32; *syst. ent.*, p. 10. One specimen.

S. enema, *mant. ins.*, p. 4.

S. hastatus, Fabr., p. 6, No. 11. One specimen.

S. eurytus, *syst. ent.*, p. 7; *sp. ins. I.*, p. 7. (=*S. aenobarbus*, *q.v.*)

S. fricator, Fabr., Mss.; *mant. ins.*, p. 15. Two specimens.

S. goliatus, Fabr., Mss.; *syst. ent.*, p. 13. Two specimens. Fabricius' description based on Hunterian specimens. Description in *ent. syst.* does not agree with earlier one.

S. quadrispinosus, *sp. ins. I.*, p. 11.

S. lar, Fabr., Mss.; *mant. ins.*, p. 13. Two specimens.

S. miliaris, *syst. ent.*, p. 817.

S. pactolus, Fabr., Mss.; *mant. ins.*, p. 12. Two specimens.

S. splendidulus, Fabr., p. 23, No. 100; *sp. ins. I.*, p. 23. Two specimens.

S. smaragdulus, Fabr., p. 34, No. 127; *sp. ins. I.*, p. 34. One specimen.

Trox horridus, Fabr., p. 34, No. 3; *syst. ent.*, p. 818. Three specimens.

Melolontha innuba, Fabr., Mss.; *mant. ins.*, p. 22. Two specimens.

M. proboscidea, *syst. ent.*, p. 818; *sp. ins. I.*, p. 44.

M. vitis, Fabr., p. 41, No. 34; *syst. ent.*, p. 37. Two specimens.

Trichius viridulus, Fabr., p. 49, No. 7; *syst. ent.*, p. 820. Two specimens. The insect so labelled does not agree with the description. Label probably transposed.

T. punctatus, Fabr., Mss. Two specimens.

Cetonia erdenta, Fabr., Mss. One specimen.

C. cruenta, Fabr., Mss. One specimen.

C. haemorrhoidalis, Fabr., p. 58, No. 49; *syst. ent.*, p. 819; *sp. ins. I.*, p. 59. Three specimens.

C. 4 punctata, *mant. ins.*, p. 27. One specimen so labelled, which, however, does not agree with Fabricius' description. The label is not in the usual handwriting.

C. rufipes, Fabr., Mss.; *mant. ins.*, p. 27. One specimen, (?) metatype. Description in *Mantissa* said to be from Lund collection.

C. smaragdula, Fabr., p. 53, No. 14; *syst. ent.*, p. 45. One specimen.

C. tristis, Fabr., p. 53, No. 13; *syst. ent.*, p. 45. Two specimens.

Dermestes felinus, Fabr., Mss.; *mant. ins.*, p. 34. Two specimens, (?) metatypes. Description in *Mantissa* said to be from Banksian specimen.

Tritoma vittata, *mant. ins.*, p. 44.

Hispa serrata, Fabr., Mss.; *mant. ins.*, p. 48. One specimen.

Silpha surinamensis, Fabr., p. 85, No. 1; *syst. ent.*, p. 72. Two specimens.

Coccinella abbreviata, Fabr., Mss.; *mant. ins.*, p. 54. Three specimens, ? metatypes. Description in *Mantissa* said to be from Blagden's specimen.

C. biguttata, Fabr., Mss., *mant. ins.*, p. 59. One specimen.

C. ursina, Fabr., Mss.; *mant. ins.*, p. 61. One specimen.

Cassida discoides, Fabr., p. 114, No. 34; *syst. ent.*, p. 93; *sp. ins.*, p. 114, No. 44. One specimen. (Another specimen in the next row, labelled simply "Hab. in Brasilia," appears to be really the type, the specimen or the labels probably having been transposed.)

C. 11-punctata, Fabr., p. 110, No. 20; *sp. ins. I.*, p. 110. One specimen.

C. 4-pustulata, *sp. ins. I.*, p. 111.

C. 16-pustulata, Fabr., p. 115, No. 47; *sp. ins. I.*, p. 115. One specimen.

Chrysomela clavata, Fabr.; Mss., *mant. ins.*, p. 67. Two specimens.

C. anglica, *sp. ins. I.*, p. 135.

C. 10-maculata, Fabr., p. 131, No. 85; *syst. ent.*, p. 105. One specimen.

C. equestris, *mant. ins.*, p. 76.

C. flavicornis, Fabr., Mss., *mant. ins.*, p. 73. Three specimens, (?) metatypes. Description in *Mantissa* apparently from v. Rohr's collection.

C. histris, Fabr., Mss. Two specimens.

C. ignita, Fabr., Mss., *mant. ins.*, p. 68. Two specimens.

C. morio, Fabr., Mss. Two specimens.

C. nigripes, Fabr., p. 133, No. 98; *sp. ins. I.*, p, 133. Two specimens.

Cryptocephalus cinctus, Fabr., Mss.; *mant. ins.*, p. 82. One specimen.

C. lar, Fabr., Mss.; *mant. ins.*, p. 80. One specimen.

C. notatus, Fabr., Mss.; *mant. ins.*, p. 83. One specimen.

Crioceris picta, Fabr., Mss.; *mant. ins.*, p. 87. One specimen.

C. venustus, Fabr., Mss.; *mant. ins.*, p. 79. One specimen.

Altica nigripes, *syst. ent.*, p. 113.

A. anglica, *syst. ent.*, p. 114.

Cistela pallida, Fabr., p. 148, No. 11; *syst. ent.*, p. 117. Two specimens, one bad.

Erotylus histrio, Fabr., Mss.; *mant. ins.*, p. 91. Two specimens.

E. nebulosus, Fabr., p. 158, No. 10. One specimen.

E. punctatissimus, Fabr., p. 157, No. 5; *syst. ent.*, p. 123. One specimen.

E. reticulatus, *mant. ins.*, p. 91.

Lagria marginata, Fabr., p. 159, No. 5; *sp. ins. I.*, p. 159. One specimen, bad.

Curculio aeneus, Fabr., p. 131, No. 22; *syst. ent.*, p. 131; *sp. ins. I.*, p. 166. One specimen.

C. bicolor, Fabr., p. 166, No. 25; *syst. ent.*, p. 131. Three specimens, one imperfect.

C. biguttatus, Fabr., p. 164, No. 17; *syst. ent.*, p. 130. Two specimens.
C. cinereus, Fabr., Mss. Two specimens.
C. cyanipes, Fabr., Mss.; *mant. ins.*, p. 113. Three specimens.
C. gibber, *mant. ins.*, p. 112.
C. jamaicensis, Fabr., p. 173, No. 73. One specimen.
C. lacteus, *sp. ins. I.*, p. 185.
C. marginatus, Fabr., p. 185, No. 131; *syst. ent.*, p. 145.
C. niveus, Fabr., Mss.; *mant. ins.*, p. 111. Two specimens.
C. s(p)inipes, Fabr., p. 174, No. 76. Two specimens.
C. 6-guttatus, Fabr., p. 176, No. 87; *syst. ent.*, p. 138.
C. 3-fasciatus, *mant. ins.*, p. 105.
C. 6-vittatus, Oliv. One specimen.
Prionus canaliculatus, Fabr., Mss.; *mant. ins.*, p. 130. Two specimens.
P. nitidus, *mant. ins.*, p. 128.
Cerambyx dimidiatus, *mant. ins.*, p. 133.
C. ebulinus, *mant. ins.*, p. 132.
C. hebraicus, Fabr., p. 210, No. 5; *C. hebraeus*, *sp. ins. I.*, p. 210. One specimen.
C. morio, *mant. ins.*, p. 133.
C. rufipes, Fabr., Mss.; *mant. ins.*, p. 133. One specimen.
C. scorpio, Fabr., p. 210, No. 6. Two specimens.
C. striatus, *mant. ins.*, p. 133.
C. suturalis, Fabr., p. 212, No. 16. One specimen.
C. tuberculatus, Fabr., Mss.; *mant. ins.*, p. 131. One specimen.
Lamia molator, Fabr., Mss.; *mant. ins.*, p. 137. One specimen.
L. nobilis, Fabr., Mss.; *mant. ins.*, p. 138. One specimen.
Stenocorus cyaneus, Fabr., Mss.; p. 226, No. 2; *syst. ent.*, p. 823. Two specimens.
Saperda candida, Fabr., Mss.; *mant. ins.*, p. 147. One specimen.
Callidium aeneum, Fabr., Mss.; *mant. ins.*, p. 151. Two specimens
C. angulatum, Fabr., Mss.; *syst. ent.*, p. 192; *sp. ins. I.*, p. 241. Specimens not with others.
C. cantharinus, Fabr., Mss. One specimen.
C. picipes, Fabr., Mss.; *mant. ins.*, p. 157. Two specimens, one broken.
Leptura emarginata, Fabr., Mss. One specimen.
Lampyris cincta, Fabr., Mss. One specimen.

Pyrochroa flabellata, Fabr., Mss. One specimen.

Cantharis viridescens, Fabr., Mss. Two specimens.

Elater fascicularis, Fabr., Mss. : *mant. ins.*, p. 171. One specimen.

E. virens, Fabr., Mss. ; *mant. ins.*, p. 172. Two specimens.

Buprestis aurata, Fabr., Mss. ; *mant. ins.*, p. 178. One specimen.

B. blanda, *sp. ins. I.*, p. 276. One specimen.

B. canaliculata, Fabr , Mss. ; *mant. ins.*, p. 181. One specimen, (?) metatype. Description in *Mantissa* apparently from Banksian specimen.

B. corrusca, Fabr., Mss. ; *mant. ins.*, p. 176. One specimen, (?) metatype. Description in *Mantissa* apparently from Banksian specimen.

B. cyanipes, Fabr., Mss. ; *mant. ins.*, p. 178. Two specimens. (Mr. C. O. Waterhouse informs me that *Polycasta resplendens*, Thomson, is clearly the same insect ; also that the smaller of the two specimens is that figured by Olivier.)

B. dorsata, Fabr., Mss. ; *mant. ins.*, p. 179. One specimen.

B. fasciata, Fabr., Mss. ; *mant. ins.*, p. 177. Two specimens.

B. meditabunda, Fabr., Mss. ; *mant. ins.*, p. 183. One specimen

B. ruficollis, Fabr., Mss. ; *mant. ins* , p. 184. Two specimens.

B. 3-punctata, Fabr., Mss. ; *mant. ins.*, p. 179. One specimen.

Clerus bifasciatus, Fabr., Mss. One specimen.

Cicindela biramosa, Fabr., p. 286, No. 16 ; *mant. ins.*, p. 186. One specimen.

C. 8-guttata, Fabr., Mss. ; *mant. ins.*, p. 187. Four specimens.

Dytiscus fasciatus, Fabr., p. 293, No. 7 ; *syst. ent.*, p. 825. Two specimens.

D. vittatus, Fabr., p. 293, No. 10 ; *syst. ent.*, p. 825. Two specimens, one headless.

Carabus elevatus, Fabr., Mss. ; *mant. ins.*, p. 198. Two specimens.

C. pallipes, Fabr., Mss. ; *mant. ins.*, p. 202. Two specimens.

C. rufescens, Fabr., p. 312, No. 73 ; *syst. ent.*, p. 247. Two specimens, one headless.

C. ruficollis, Fabr., Mss. ; *mant ins.*, p. 203. One specimen.

C. truncatellus, Fabr., Mss. : *mant. ins.*, p. 206. Three specimens.

C. turcicus, Fabr., Mss. ; *mant. ins.*, p. 203. One specimen.

C. unicolor, Fabr., Mss. ; *mant. ins.*, p. 198. One specimen.

Scarites depressus, Fabr., Mss. ; *mant. ins.*, p. 206. One specimen.

S. marginatus, Fabr., Mss.; *mant. ins.*, p. 206. One specimen.

Pimelia gibba, Fabr., Mss.; *mant. ins.*, p. 207. One specimen.

Lytta atrata, Fabr., p. 329, No. 7; *syst. ent.*, p. 260. Four specimens.

L. vittata, Fabr., p. 329, No. 6; *syst. ent.*, p. 260. Three specimens.

Mylabris 4-punctatus, Fabr., Mss.; *mant. ins.*, p. 217. Two specimens, (?) metatypes. Description in *Mantissa* said to be from Banksian specimen.

Mordella 6-maculata, Fabr., p. 332, No. 4; *syst. ent.*, p. 263. Two specimens.

Blatta cincta, Fabr., Mss.; *mant. ins.*, p. 226. Two specimens.

Mantis bidens, Fabr., p. 350, No. 24; *syst. ent.*, p. 277. Two specimens.

M. bispinosa, Fabr., p. 346, No. 5; *syst. ent.*, p. 274. Two specimens.

M. filiformis, Fabr., Mss.; *mant. ins.*, p. 227. One specimen.

M. hyalina, Fabr., p. 349, No. 22; *syst. ent.*, p. 277; Degler's *sp.* A bare pin accompanies the label.

Locusta camellifolia ("Canallifolia" on label), Fabr., p. 356, No. 4; *syst. ent.*, p. 283. One specimen.

L. perspicillata, Fabr., p. 357, No. 7; *syst. ent.*, p. 283. One specimen, label has been moved.

L. specularis, Fabr., p. 357, No. 11; *syst. ent.*, p. 284. One specimen. Label moved: spelt "spicularis."

[The three preceding species are in a drawer which has obviously undergone rearrangement.]

Hemerobius maculatus, Fabr., Mss.; *mant. ins.*, p. 247. One specimen, body broken off; (?) metatype. Description in *Mantissa* said to be from Banksian specimen.

Myrmeleon punctata, Fabr., Mss.; *mant. ins.*, p. 249. Two specimens, (?) metatypes. Description in *Mantissa* said to be from Banksian specimen.

Ichneumon pedator, *syst. ent.*, p. 828; *sp. ins. I.*, p. 429.

Libellula versicolor, Fabr., p. 523, No. 22; *syst. ent.*, p. 423. One specimen.

Papilio amaryllis, *ent. syst. III.*, p. 189.

P. astyanax, Fabr., p. 7, No. 27; *syst. ent.*, p. 447. Two specimens.

P. **baldus**, Fabr., p. 68, No. 306; *syst. ent.*, p. 829. One specimen, imperfect.

P. **brontes** (= P. **ammon**), Fabr., Mss.; *mant. ins. II.*, p. 87.

P. **chalcas**, Fabr., p. 18, No. 70 (= *P. palamedes*, Drury); *syst. ent.*, p. 453. Two specimens.

P. **cochrus**, Fabr., Mss.; *mant. ins.*, p. 25. Cochrus looks like "Cochreae" on label, but the specimen is clearly the type of *P. cochrus*. One specimen.

P. **corydon**, Fabr., p. 134, No. 616; *syst. ent.* p. 533. Two specimens.

P. **dorcas**, Fabr., p. 97, No. 424; *syst. ent.*, p. 508. Two specimens.

P. **cochreae**, Fabr., Mss. One specimen? See *P. cochrus*.

P. **egaea**, Fabr., p. 79, No. 351; *syst. ent.*, p. 496. Two specimens.

P. **eribotes**, Fabr., p. 60, No. 267; *syst. ent.*, p. 484. Three specimens.

P. **erippus**, Fabr., Mss.; *mant. ins.*, p. 27. Three specimens.

P. **erithonius**, Fabr., Mss.; *mant. ins.*, p. 11. Butler says type of *P. eupalus* in Bank's collection. Are they really the same?

P. **eurytus**, Fabr., p. 65, No. 291; *syst. ent.*, p. 487. Two specimens. Three specimens thus labelled, two together are clearly the types.

P. **gnoma**, Fabr., p. 50, No. 217; *syst. ent.*, p. 828. One specimen.

P. **gripus**, Fabr., p. 58, No. 225; *syst. ent.*, p. 829. One specimen. Label spelt "*gripeus*."

P. **ialus**, Fabr., Mss. One specimen.

P. **janassia**, *mant. ins.*, p. 49; *ent. syst. III.*, p. 121.

P. **lidea**, Fabr., Mss. Two specimens, bad.

P. **maenas**, Fabr., Mss.; *mant. ins.*, p. 90. Two specimens.

P. **maerula**, Fabr., p. 51, No. 222; *syst. ent.*, p. 479. Two specimens.

P. **mantus**, Fabr., Mss.; *mant. ins.*, p. 78. Two specimens.

P. **menatus**, Fabr., Mss. One specimen.

P. **morna**, *syst. ent.*, p. 500; *sp. ins. II.*, p. 85.

P. **morvus**, Fabr., p. 61, No. 270; *syst. ent.*, p. 484. One specimen, bad.

P. nothus, Fabr., Mss.; *mant. ins.*, p. 88. One specimen.

P. orion, Fabr., p. 62, No. 274; *sp. ins. II.*, p. 62. *Aganisthos odius*, Fabr.; Butler, p. 54. Two specimens.

P. orion, Fabr., p. 132, No. 605. Two specimens. A specimen of *P. arion* in the same drawer is also labelled "*P. orion*," Fabr., p. 62, No. 274.

P. palamedes, Fabr., p. 18, No. 73; *syst. ent.*, p. 454. Two specimens.

P. pegala, Fabr., p. 76, No. 338; *syst. ent.*, p. 494. Two specimens.

P. peranthus, Fabr., Mss. One specimen.

P. perion, Fabr., Mss.; *mant. ins.*, p. 68. Three specimens.

P. phocion, Fabr.; *ent. syst. III.*, p. 335 (= *P. coridon*, q.v.).

P. policenes, Fabr., Mss. See *P. pompilius*.

P. pompilius, Fabr.; *mant. ins. II.*, p. 8. Two specimens, labelled "*P. policenes*, Fabr., Mss."

P. proterpia, Fabr., p. 50, No. 215; *syst. ent.*, p. 478. One specimen.

P. salus, Fabr., Mss.; *ent. syst. III.*, p. 342. One specimen.

P. sebaldus, Fabr., Mss.; *mant. ins.*, p. 89. Two specimens.

P. serina, Fabr., p. 80, No. 352; *syst. ent.*, p. 497. Two specimens.

P. susanna, *mant. ins.*, p. 16; *ent. syst. III.*, p. 178.

P. thais, Fabr., Mss.; *mant. ins.*, p. 64. One specimen.

P. thersites, Fabr., p. 18, No. 68; *syst. ent.*, p. 453. (= ♂ of *P. acamus*, Fabr. See Butler, p. 246.) Specimen.

P. thymetus, Fabr., Mss.; *mant. ins. II.*, p. 30. Two specimens.

P. timon, Fabr., Mss.; *mant. ins. II.*, p. 65. One specimen.

P. troglodyta, Fabr., p. 87, No. 384; *syst. ent.*, p. 502. Two specimens.

P. ursula, Fabr.; *ent. syst. III.*, p. 82 = *P. astyanax, q.v.*

P. zangis, Fabr., p. 65, No. 290; *syst. ent.*, p. 486. Two specimens.

Sphinx alope, Fabr., Mss. Two specimens.

S. penaeus, Fabr., Mss.; *mant. ins.*, p. 93. Two specimens. In another drawer (22) a different insect so labelled.

Sesia 8-maculata, Fabr., p. 68; *syst. ent.*, p. 830; *sp. ins. II.*, p. 155. One specimen.

Zygaena butus, *mant. ins.*, p. 105.

Z. flabellicornis, Fabr.; *syst. ent.*, p. 831; *sp. ins. II.*, p. 163.

Z 8-maculata, Fabr., Mss.; *mant. ins.*, p. 106. One specimen. Label not in usual handwriting.

Z. maja, Fabr., Mss.; *mant. ins.* p. 106. Two specimens, bad.

Z. pylotis, Fabr., Mss. Loose label.

Bombyx armida, Fabr., Mss. Three specimens. These do not agree with description of *B. armida*, Fabr.; *ent. syst. III.*, p. 415, No. 29. On the other hand they agree with the description of *B. cassandra*. Apparently Fabricius transferred the name *armida* to a species described from v. Rohr's collection and gave the Hunterian specimens the new name *cassandra*.

B. astraea, Fabr. Two specimens. Name not published.

B. aurotus, Fabr., Mss.; *mant. ins.*, p. 108. One specimen.

B. cassandra, *mant. ins.*, p. 111. The types of this species are apparently the three specimens labelled *B. armida*, q.v.

B. deflorata, *syst. ent.*, p. 582; *sp. ins. II.*, p. 199. The type of this species are apparently two specimens labelled *B. mainlaria*, Fabr., Mss.

B. festiva, Fabr., p. 194, No. 109; *syst. ent.*, p. 579. Two specimens.

B. io, Fabr., p. 173, No. 28; *syst. ent.*, p. 560. Two specimens, bad condition.

B. mainlaria, Fabr., Mss. Two specimens. This appears to be the species afterwards published as *B. deflorata*, *q.v.*

B. ocularia, Fabr., p. 177, No. 44; *syst. ent.*, p. 564. Two specimens, one imperfect.

B. proserpina, Fabr., p. 173, No. 31; *syst. ent.*, p. 561. Two specimens, poor condition.

B. stigma, Fabr., p. 176, No. 40; *syst. ent.*, p. 563. Two specimens.

B. vitatta, Fabr., Mss.; *mant. ins.*, p. 127. One specimen.

Noctua delia, Fabr., Mss. Two specimens.

N. marginata, Fabr., p. 216, No. 40; *syst. ent.*, p. 597. (= *N. marginella*, Fabr.; *ent. syst. III.*, pt. 2, 29.) Two specimens.

Membracis bonasia, Fabr., p. 318, No. 13; *syst. ent.*, p. 677. Two specimens.

M. hastata, Fabr., Mss.; *mant. ins.*, p. 263. Two specimens.

Cercopis marginata, *mant. ins.*, p. 273.

C. schach, Fabr., Mss.; *mant. ins.*, p. 274. One specimen.

Cimex 6-punctatus, Fabr., p. 338, No. 7; *sp. ins. II.*, p. 339. One specimen.

C. trilineatus, Fabr., p. 341, No. 14; *sp. ins. II.*, p. 341. Two specimens.

Reduvius hamatus, *sp. ins. II.*, p. 381.

List of specimens of Corals described by Ellis, and now in the University collection.

Of the Ellis corals several are clearly identifiable with the specimens figured in Ellis and Solander's Natural History of Zoophytes. Doubtless a large proportion of the others are also Type specimens, though it is difficult to be certain of their identity with the specimens figured, owing in some cases to the specimens being broken and in others to the want of accuracy in detail in the figures. It is greatly to be hoped that the Ellis collection of corals, like the Fabrician collection of insects, will before long receive the study it deserves from some competent specialist.

Madrepora anthophyllites, E. & S.

M. angulosa (var. γ), E. & S. Figured specimen pl. 34.

M. carduus, E. & S.

M. areolata, E. & S.

M. ramea, L.

M. phrygia, E. & S. Type, figured plate 48, fig. 2.

M. daedalea, E. & S. Type, figured pl. 46.

M. rotulosa, E. & S. Type, figured pl. 55.

M. annularis, E. & S. Type, figured pl. 53, fig. 1.

M. abdita, E. & S. Type (?) figured pl. 50, fig. 2.

M. tibicina (?) E. & S. Specimen which may be the species figured on plate 32, fig. 1.

M. aspera, E. & S. Type (?) figured pl. 39.

M. ampliata, E. & S.

M. cinerascens, E. & S. Type, figured pl. 43.

M. pileus, E. & S. Specimen (?) figured pl. 45.

M. faveolata, E. & S.

M. muricata, E. & S.

M. undata, E. & S. (?) Pieces of specimen figured pl. 40.

M. foliosa, Pallas, E. & S.

Heliopora caerulea (E. & S.).

On the Sycamores in the Clyde Drainage Area.

By John Renwick.

[Read 28th June, 1910.]

The annexed table gives measurements made by Mr. Richard M'Kay and myself of Sycamores (*Acer Pseudoplatanus Linn.*) in the Clyde drainage area. Of 77 trees, 24 are situated in Ayr, 17 in Dumbarton, 16 in Lanark, 16 in Renfrew, 2 in Argyll, 1 in Bute, 1 in Stirling.

The records for the last three counties are few, and pretty certainly not what they might be. Only part of Stirling is included in the area under consideration.

In girth of trunk, 27 are above 14 feet, 35 between 14 feet and 11 feet, and 15 under 11 feet. The tree with the greatest girth, 19 feet 11 inches at 4 feet 6 inches, is one near the West Lodge of Erskine House, Renfrew. It stands a little above the edge of the 25 feet raised beach, on whinstone. It divides at 7 feet into two large stems, and has a height of 77 feet. In the same county at Loganswraes is a very fine full-foliaged tree, with a girth of 18 feet 9 inches at 3 feet 6 inches, a short bole of 5 feet, a height of 83 feet, and a spread of 92½ feet. Ayrshire has four Sycamores with girths of over 17 feet—two at Glendoune, near Girvan, respectively 18 feet 8 inches at 3 feet 6 inches, bole 5½ feet, and 17 feet 4 inches at base, bole 4 feet; one at the old castle of Rowallan, 300 feet above sea level, with a girth of 17 feet 9½ inches at 3 feet, bole 4 feet; and one at Auchencruive, on the River Ayr, girth 17 feet 7 inches at 3 feet 3 inches, bole 4 feet.

We have taken the heights of only 25 Sycamores. The highest is in the grounds of Erskine House, and reaches 94 feet, with a bole of 35 feet, a spread of 85 feet, and a girth of 15 feet 9½ inches at 6 feet. It is one of the finest Sycamores in the district. Two at the old castle of Mains, near Milngavie, Dumbarton, are 87 feet high, and have also long trunks, the one 32 feet, the other 22 feet. A very finely-proportioned tree on the banks of the Clyde at Westburn, Cambuslang, Lanark, has a height of 85 feet, bole 12 feet, spread 87 feet, girth 16 feet 9½ inches at 5 feet.

This symmetrical tree, which is the subject of a plate in the first volume of the *Annals of the Andersonian Naturalists' Society*, is being fast killed by the smoke of the district.

Of the rest, eight are between 80 and 85 feet, and six between 70 and 80 feet.

The tree with the greatest diameter of spread—97½ feet—is at Bishopton House, Renfrew, on the steep slope forming the old sea cliff bounding the 25 feet raised beach. It has a height of 80 feet, bole 14 feet, girth 15 feet 8¼ inches at 7 feet 6 inches. It is figured by Strutt, in his *Sylva Scotica*, 1830, and described as a stately, wide-spreading tree, with a girth at the ground of 20 feet—evidently an exaggeration. According to local tradition, John Knox preached under its branches in 1556, when he visited his friend the Earl of Glencairn, the owner of the neighbouring estate of Finlayston. He dispensed the sacrament at Finlayston House, and an old yew-tree, still carefully guarded there, is pointed out as one under which he preached. So far as I can find, history has no record of a visit to Bishopton House. It is quite probable that the tradition has been transferred from the original tree to a worthy successor. At Caprington Castle, near Kilmarnock, Ayr, is a very fine tree, with a spread of 96½ feet in one direction, and 95 feet at right angles, girth 14 feet 10½ inches at 3 feet 6 inches, bole 7½ feet, height 67 feet. Next come the much taller Loganswraes tree, with a spread in three directions of 92½ feet, 91 feet, 88 feet; the Westburn one, 87 feet; and the tall one at Erskine, 85½ feet. The celebrated "Dule-tree" at Cassillis House, Ayr, has a spread of 81 feet, but is only 56 feet high, girth 14 feet 4¾ inches at 5 feet, bole 8½ feet. It is probably the best known of any, through its association with the tradition of the hanging of Johnnie Faa and fourteen of his followers, for running away with a Countess of Cassillis. This event is alleged to have happened in 1643, but Paterson, in his *History of Ayrshire*, Vol. II., page 258, shows that it could not have occurred at that date, but it may have taken place about a century earlier. "Every baronial residence had its dule-tree. . . . Under its branches the members of the

baron's family congregated on occasions of particular lamentation to give expression to their feelings. When David, first Earl of Cassillis, fell at the battle of Flodden in 1513, his fate was deplored for many days by his friends and adherents under the dule-tree in front of Cassillis House.* Gilbert, the second Earl, was assassinated in 1527. "For this deed the Kennedys exacted a stern vengeance, which they swore a solemn oath to take under the dule-tree."† The present dule-tree is said to have borne the name for two centuries.

Mr. R. Hutchison, in the *Transactions of the Highland and Agricultural Society* for 1880, page 156, states that there were then two dule-trees, Sycamores, at Blairquhan, Ayr, "the largest of which is 72 feet in height and 17 feet 8 inches in circumference at 10 feet from the ground. The other is somewhat smaller in dimensions. The date on the old escutcheon on the adjoining courtyard is 1573, to which period, probably, the planting of these trees may be referred." The Rev. Roderick Lawson, of Maybole, in September, 1896, mentions the dule-tree at Blairquhan as a "plane," 15 feet 10 inches in girth (apparently at 5 feet), with the "branches sadly torn." Evidently this is the smaller of the two spoken of by Mr. Hutchison, and we may have here an illustration of how a name and a tradition are transferred from an older to a younger tree. The Auchendrane dule-tree, at Newark Castle, was an Ash. At Cadder House, Lanark, is a decayed Sycamore, 12 feet 5 inches at 3 feet 6 inches, bole 10 feet, known as "the Gallows tree." The upper parts of the stem are bare, and part of the bole is also without bark. In front of Murdostoun House, Lanark, is the wreck of an old Sycamore known as "Cromwell's tree," which would be a fine tree at its best. In "Old and Remarkable Trees," in the *Highland and Agricultural Society Transactions*, its dimensions about 1863 are given as 14 feet 7 inches in girth, but at how far up is not stated; height 65 feet, spread 75 feet. Only a bare stump of 14 feet is now left. At the narrowest point, 3 feet 8 inches up, the girth this year was 14 feet 8½ inches, and a

* Paterson, *Hist. of Ayrshire*, II., 350.
† Robertson, *Ayrshire Families.*

part of the decayed trunk had fallen off. A young shoot growing out of the stem had unfortunately been blown over. If Cromwell saw this tree it would be on 1st May, 1651, on his return to Edinburgh from his second visit to Glasgow. He went by Auchtermuir, and visited the house of Allertoun (Allentoun), an estate a little farther up the North Calder Water than Murdostoun. When this Society visited Rowallan in 1909 the proprietor, A. Cameron Corbett, Esq., M.P., took us to a Sycamore known as "the marriage tree," said to mark the spot where Jean, born 1678, daughter and heiress of the last Sir William Mure of Rowallan, was married to William Fairlie of Bruntsfield. A note by the editor, William Muir, of "*The Historie and Descent of the House of Rowallane*," published 1825, states—"the ceremony was performed by a curate, in the fields, about a quarter of a mile from the House of Rowallan, at a tree still called the marriage tree, which stands on the top of a steep bank above that part of the stream (Carmel Water) called 'Janet's Kirn.'" The tree now girths 9 feet 4 inches at 5 feet, and is surrounded by a thick growth of other trees and brushwood.

The average annual rate of growth in girth varies very much, being evidently affected by the age, the kind of trunk, soil, surroundings, exposure, condition, &c. A young tree at "The Hollies," Dunoon, whose age, according to the late Provost James Clark of Paisley, was 37 years when I measured it with him, had a girth of 4 feet at 3 feet up, giving a rate of increase of 1·30 inch yearly. It has a bole of 10 feet, and is situated on the slope of the old sea cliff. Another Sycamore, with a bole of 6 feet, girthed 4 feet 9½ inches at 3 feet. Provost Clark stated that it was several years older than the other tree. The average rate would thus seem to be about the same. Trees with short boles, even when of large girth, show a high rate, *e.g.*:—

	Yearly Rate.	Bole.	Girth.
Rowallan, - -	·96 inch.	4 feet.	17 feet 9½ inches.
Castlemilk, - -	·80 ,,	5 ,,	—
Loganswraes, -	·68 ,,	5 ,,	17 feet 11½ inches.
Strathleven, -	·67 ,,	9 ,,	—
Cadzow, - -	·58 ,,	8 ,,	—
Erskine, - -	·56 ,,	7 ,,	19 feet 11 inches.

In these cases, especially in the Rowallan tree, much of the great increase must be due to the growth of the swelling base and branches; but as we have always taken the measurements at the narrowest part of the trunk, this element is reduced as much as possible. Of the Loganswraes tree, I received from the late Prof. Thomas King a note of a measurement 15 feet 3 inches, taken in 1841 by Mr. J. R. Notman. Comparing it and those taken by us in 1889 and 1910, it appears that the rate for 48 years between 1841 and 1899 is ·68 inch yearly, and for 21 years between 1899 and 1910 is ·45 inch yearly, showing a decreasing rate as the age increases. Speaking generally, it may be said from the figures in the table that a girth increase of above $\frac{1}{2}$ inch a year is large, from ·50 to ·41 inch good, ·38 to ·25 inch fair, while from ·18 to ·07 inch seems to indicate that the trees are in poor condition. The two trees at the old Castle of Mains, both 87 feet high, have been measured at intervals of 2, 8, and 7 years. One has shown a steady increase of $\frac{1}{4}$ inch yearly, the other of $\frac{1}{2}$, $\frac{3}{8}$, $\frac{1}{4}$ inch. The former has a longer trunk and a smaller girth, but possibly the trees are about the same age.

A list of old and remarkable trees in Scotland appeared in the *Highland and Agricultural Society's Transactions* for 1864 and 1865. Of 11 Sycamores belonging to this district, 4 occur in our table, namely, 1 each at Cassillis, Houston, Rossdhu, and Murdostoun. In the same Society's *Transactions* for 1880 Mr. R. Hutchison had a valuable paper "On the Old and Remarkable Sycamores in Scotland." His list included 22 trees in Argyll, Ayr, Dumbarton, and Renfrew. Seven of these are in our table, 3 at Cassillis, 2 at Rossdhu, 1 each at Houston and Camiseskan; and possibly other three, 2 at Glendoune, and 1 at Loudoun, but the various dimensions do not quite agree. In the former list a Sycamore is recorded at the Glebe, Old Kilpatrick, 70 feet high, 10 feet bole, 36 feet spread, 17 feet girth, but at what distance from ground is not stated. Mr. John Bruce, in his *History of the Parish of Kilpatrick*, writes:—"During the building of the present church [1812] the congregation met frequently under the now

magnificent plane-tree on the glebe in front of the manse." In Mr. Hutchison's list a very handsome specimen is recorded at Hawkhead, with a girth of 17 feet 4 inches at 5 feet, bole 15 feet, height 80 feet, spread 70 feet. In *The Trees of Great Britain and Ireland*, by Messrs. Elwes and Henry, the only Sycamore mentioned in our district, other than those at Erskine, Loganswraes, and Bishopton, is a fine one at Inveraray Castle, about 100 feet high, with a bole of about 35 feet, but its girth in 1906 was only 12 feet 2 inches.

Although the Sycamore or Great Maple is not a native of Scotland, it grows very well here. Mr. Elwes writes:—"The Sycamore or Plane, as it is commonly called in Scotland, . . . seems to reach its greatest size or perfection in the colder hilly parts of England and Scotland, where nearly all the finest specimens we know of are to be found." Even in the Cotswold Hills "there are none quite equal to some trees in Scotland." Dr. John Walker, Professor of Natural History in the University of Edinburgh, who died in 1803, says of it in his *Economical History of the Hebrides and Highlands of Scotland*:—"When it was first introduced is uncertain, but it seems not only to have been planted, but to have been propagated by seeds and suckers for several generations before any other forest tree was introduced into Scotland." . . . "The Elder and the Plane [as he called it] appear to have been the only two barren trees planted in Scotland till toward the middle of the seventeenth century." In his *Essays on Natural History* he states:—"The first barren trees planted in Scotland were those of exotic growth, such as the Plane, Elder, Beech, Chesnut, Lime, and Pitch and Silver Fir. These at the time were planted in gardens rather from curiosity or for ornament than for use. We have no planted Oak, Ash, Elm, or Fir of such an old date, as the country was then full of natural woods composed of those trees, and little demand for them." He records a Plane at Calder House, Midlothian, girth, in 1799, 17 feet 7 inches at 4 feet, trunk 12 feet, known to have been planted before the Reformation, and supposed to be not less than 300 years old. This would take us back to the end of the fifteenth century. At Newbattle,

he says, were many Planes planted before the Reformation. The one with the greatest appearance of antiquity, and seemingly still sound, was probably planted before 1530. It was the largest tree of the kind about the place, and measured on 6th July, 1789, 18 feet 7 inches at 4 feet. On 4th July, 1896, this Society visited Newbattle, and saw the ruins of what is evidently this tree. It was a stump about 18 feet high, and girthed 21 feet 3½ inches at the narrowest point 4 feet up. Other large Sycamores there had a girth of trunk in 1896 of 18 feet 7½ inches at 5 feet, and 15 feet 1½ inches at 5 feet. What Loudon—*Arboretum et Fruticetum Britannicum* (1836)—considered "perhaps the oldest Sycamore in Scotland, and which appears to be at the same time the largest tree of the kind in Britain, is that at Kippenross in Perthshire." "It appears . . . that this tree went by the name of the big tree in Kippenross in the time of Charles II." [1660-1685]. Hunter, in *Woods, &c., of Perthshire*, gives the measurements in 1841 as—girth 19 feet 6 inches at the narrowest part of the trunk, height 100 feet, spread 114 feet, and states that, according to old estate papers, it was 440 years old. This takes the date of its planting back to the beginning of the fifteenth century. Ramsay of Ochtertyre, in his *Scotland and Scotsmen of the 18th Century* (Vol. II., page 122), states that Kippenross, in the beginning of the 15th century, was the seat of the Kinrosses. "The old trees, which have all along been the glory of the place, were in all probability of their planting." Prior to 1749, "there were three things remarkable for size about Kippenross, viz., the laird, the great plane-tree, and a bottle which was occasionally brought into the room by two men on a barrow." . . . "The age of the great tree is uncertain, but in 1740 a widow Gillespie, who had lived all her life about the place, said she remembered no odds on it for more than 70 years, though she was sensible of an alteration upon most of the other trees." Hunter states that Mr. Ramsay's record of its girth in 1800 was 18 feet at narrowest, so that it had apparently increased 18 inches in 41 years, a yearly average of ·44 inch, which is very large for an ancient tree.

In conclusion, I may note other three large Sycamores which we have measured outside the Clyde area. At Tyninghame, Haddington, on the occasion of the Society's excursion in September, 1896, girth 20 feet 5½ inches at 3 feet; at Kinniel House, Linlithgow, June, 1899, girth 20 feet 3½ inches at 2 feet 8 inches, bole 5¼ feet; at Birnam, July, 1899, girth 20 feet at 5 feet, bole 16 feet. This last tree is locally regarded as "maybe one thousand years old!"

Table of Measurements of Sycamores in Clyde Drainage-Area.

By John Renwick and Richard M'Kay.

(*a*) Date of earliest measurement. (*b*) Date of latest measurement. (*c*) Average yearly rate of girth increase.

ARGYLLSHIRE.

LOCALITY.	Date (*a*).	Girth.	At	Date (*b*).	Girth.	Increase in Girth.			Bole.	Height.	Spread.	Date of Height and Spread.
		Ft. In.	Ft. In.		Ft. In.	In.	Years.	Rate per ann. (*c*). In.	Ft.	Ft.	Feet.	
Dunoon, - - -	8/1905	4 0	3 0	37 years old	...	48	37	1·30	10	...	...	...
Do., - - -	8/1905	4 9½	3 0	...	...	...	...	...	...	...	...	...

AYRSHIRE.

Auchans, - -	Spring, 1879	*12 10	5 0	11/1903	*14 8½	22·5	25	·89	18	*70	*80	1903
Auchencruive, - -	9/1905	17 5	3 3	4/1910	†17 7	2·	4	·50	4	...	...	...
Do., - - -	8/1898	12 0½	5 0	4/1910	†12 4½	4·	11	·36	25	...	...	...
Do., - - -	9/1905	11 7½	5 0	4/1910	†12 0	4·5	4	1·12	32	...	...	...
Blair House, - -	4/1895	12 6½	6 9	4/1901	12 9	2·5	6	·41	9	...	...	...
Do., - - -	4/1895	11 3	5 9	4/1901	11 5½	2·5	6	·41	14	...	...	...

Caprington Castle,	Spring, 1879	*14	8	5	0	7/1903	15	5½	9·5	24·8	·38	7½	...	...	...
				3	6	7/1903	14	10½	...	...	...	...	67	96½ × 95	..
Cassillis House (the Dule Tree),	1/1906	14	3	5	0	3/1910	14	4¾	1·75	4	·44	8½	56	81	1910
	About 1879	‡13	3	5	0	...	...		13·75	30	·46	...	...	...	...
Do.,	1/1906	12	2½	5	0	3/1910	12	3½	1·00	4	·25	17	72	...	1906
	About 1879	‡11	10	5	0	...	...		5·50	30	·18	...	...	...	...
Do.,	1/1906	11	0½	5	0	3/1910	11	1½	1·00	4	·25	22	...	...	...
	About 1879	‡10	2	5	0	...	...		11·50	30	·38	...	...	...	...
Doonside, - - -	10/1899	11	3	5	0	4/1906	11	5	2·	6	·33	25	...	...	...
Eglinton Castle, Deer Park.	9/1896	13	2½	5	0	...	...		...	...	..	10	...	...	...
Do., Sourlie, - -	6/1904	12	1¾	4	4	3/1910	12	3½	1·75	5·7	·31	5¾	72	...	1910
Do., Corshill Gates,	9/1889	8	7	4	8	2/1910	9	2½	7·50	20	·38	10	58	...	1899
Do., do., -	9/1889	4	11	4	3	2/1910	5	4½	5·50	20	·28	31	50	...	1899
Glendoune, - - -	7/1898	18	8	3	6	..	...		...	...	...	5½	...	...	...
Do., - - -	7/1898	17	4	base		...	...		...	...	...	4	...	...	...
Loudoun Castle, Howletburn,	4/1899	13	1½	6	0	7/1908	13	8	6·50	9·7	·67	35	§70	...	1910

TABLE OF MEASUREMENTS OF SYCAMORES IN CLYDE DRAINAGE-AREA—*Continued.*

AYRSHIRE.

LOCALITY.	Date (*a*).	Girth.	At	Date (*b*).	Girth.	Increase in Girth.		Rate per ann. (*c*).	Bole.	Height.	Spread.	Date of Height and Spread.
		Ft. In.	Ft. In.		Ft. In.	In.	Years.	In.	Ft.	Ft.	Feet.	
Perceton House, - -	8/1906	14 9	5 0	...	...	...	...	...	12	...	...	...
Rowallan Castle, - -	9/1895	16 8	3 0	9/1909	17 9½	13·5	14	·96	4	...	...	...
Do. ("Marriage-tree"),	9/1909	9 4	5 0	...	...	...	...	...	...	...	...	...
Sornbeg, - - -	1904	*11 9½	5 0	...	...	...	...	...	7½	...	60	...
Stair House, - -	8/1892	14 6½	4 6	...	...	...	...	...	...	...	...	...
Thornton House, -	1/1904	10 11	5 0	...	...	...	...	...	13	...	74	...

* *Fide* Rev. Dr. D. Landsborough. † *Fide* Mr. George Leven. ‡ R. Hutchison in Highland and Agr. Soc. Trans., 1880. § *Fide* Mr. John Gloag.

BUTE.

Kames, - - -	1878	*11 1½	3 0	8/1898	11 8	6·50	20	·32	22	*84	*51	1878

* *Fide* Mr. James Kay.

DUMBARTONSHIRE.

Auchentorlie House, -	4/1909	16 11½	3 8	...	...	...	...	...	3¾	...	...	...
Bonhill Place, - -	3/1900	12 0½	5 0	...	...	...	...	...	11	...	...	...

Camiseskan. - -	9/1900	14	2¾	5	0	6/1910	14	5½	2·75	9·4	·30	14	82	...	1910
Do., - - -	6/1910	12	1½	5	0	...	...		...	...	...	16	...	...	...
Cochno, - - -	5/1909	9	3¾	5	0	...	...		...	...	...	20	...	...	...
Craigton, - - -	3/1899	13	5½	4	5	3/1900	13	6¼	·75	1	·75	11	62	...	...
Mains, - - - -	4/1893	14	10½	6	1	4/1910	15	3	4·5	17	·26	12	...	...	...
Do., - - - -	4/1893	11	5½	4	8	4/1910	11	11	5·5	17	·32	22	87	...	1910
Do., - - - -	4/1893	10	11	5	0	4/1910	11	3¼	4·25	17	·25	32	87	...	1910
Renton (Smollett's tree),	3/1900	12	2½	9	0	...	...		...	...	...	16	...	...	...
Rosneath, - - -	4/1895	13	5	4	9	6/1908	13	11½	6·5	13·4	·49	12	..	...	...
Rossdhu, - - -	6/1905	14	2½	3	8	...	...		...	...	...	16	...	...	...
Do., - - - {	8/1898	15	1½	6	6	burnt	...		...	...	...	...	...	...	...
	1796	13	6	3	0	1879	17	0	42	83	·50	20	85	...	1879
Strathleven, - -	3/1895	12	11	3	0	3/1909	13	8½	9·5	14	·67	9	...	...	...
Do., - -	3/1895	12	2	4	7	...	...		...	...	...	...	...	...	...
Do., - -	3/1909	11	9	3	6	...	...		...	...	...	12	...	...	...
Do., - -	3/1909	10	3	5	0	...	...		...	...	...	30	...	...	...

TABLE OF MEASUREMENTS OF SYCAMORES IN CLYDE DRAINAGE-AREA—*Continued.*

LANARKSHIRE.

LOCALITY.	Date (*a*).	Girth.	At	Date (*b*).	Girth.	Increase in Girth.			Bole.	Height.	Spread.	Date of Height and Spread.
		Ft. In.	Ft. In.		Ft. In.	In.	Years.	Rate per ann. (*c*). In.	Ft.	Ft.	Feet.	
Barncluith, - - -	5/1898	15 7	4 8	10/1903	15 9½	2·50	6	·42	9	...	...	...
Bothwell Castle.* -	4/1898	8 8½	4 0	...	...	...	...	...	...	...	...	...
Cadder House, - -	3/1910	12 5	3 6	...	"The Gallows Tree"—decayed				10	...	...	..
Do., - -	2/1899	11 5½	5 0	3/1910	11 6¼	·75	11	·07	35	83	...	1899
Do., - -	2/1899	10 5	5 0	3/1910	10 7	2·00	11	·18	24	80	...	1899
Cadzow, - - -	4/1901	13 9½	4 9	4/1907	14 1	3·50	6	·58	8	...	...	...
Cambuslang, - -	3/1888	16 2	5 0	12/1898	16 9½	7·50	11	·68	12	85	87	1898
Cambusnethan House,*	6/1909	7 5	5 0	...	...	...	...	...	15	...	...	...
Castlemilk, - - -	5/1893	10 10	3 3	6/1904	11 7	9·	11·3	·80	5	...	...	...
Daldowie, - - -	3/1899	12 11¾	4 5	2/1909	13 1	1·25	10	·13	7	... Decaying in 1909		
Garnkirk House, - -	6/1894	14 11½	1 6	...	...	...	...	...	3	...	...	...
Garrion Tower, - -	5/1903	13 11	5 0	...	...	...	...	...	16	...	...	...
Lee Castle, - - -	6/1890	13 10	5 3	9/1909	14 7½	9·50	19·7	·48	...	...	...	...

Do.,	6/1890	13	7	5	0	...		...	...	...	...	...	...	...	...
Murdostoun House,†	9/1893	14	8	3	8	1/1910	14	8½	...	...	...	14	‡65	‡75	abt. 1863
Do.,	9/1893	11	2	3	5	1/1910	11	3½	1·50	16	·09	20	...	...	...

[a] *Var. variegata.* † "Cromwell's Tree," a wreck in 1910. ‡ Old and remarkable trees. Highland and Agr. Soc. Trans.

RENFREWSHIRE.

Ardgowan House,	4/1894	14	5½	4	0	9/1908	14	10	4·5	15	·30	6	...	...	...
Do.,	5/1889	13	0	4	4	5/1904	14	1	13·	15	·86	10	...	66	1904
Bishopton House,	2/1895	15	5½	7	7	3/1910	15	8¼	2·75	15	·18	14	†80	‡97½	†1905 ‡1887
Bishopton,*	2/1895	9	10½	5	0	3/1910	10	3¾	5·25	15	·35	16	61	...	1896
Blythswood House,	3/1894	13	3¾	5	4	12/1899	13	6¾	3·	6	·50	20	81	...	1899
Craigends,	11/1899	12	5	5	0	3/1896	12	6¾	1·75	6	·29	..	...	...	...
Darnley,	9/1893	10	3	5	8	4/1910	10	6½	3·50	16	·22	40	58	73	1898
Erskine House,	2/1887	18	10	4	7	3/1910	19	11	13·	23	·56	7	77	...	1910
Do.,	2/1893	15	3½	6	0	3/1910	15	9½	6·	17	·35	20	94	85½	1903
Hawkhead,	9/1906	11	0½	5	0	...		...	...	..	...	11	...	...	...
Houston,	11/1899	16	5	5	0	...		...	..	...	...	12	†45	†74	abt. 1863
Langbank,	2/1895	13	8½	7	0	..		...	...	...	.	...	...	...	...

TABLE OF MEASUREMENTS OF SYCAMORES IN CLYDE DRAINAGE-AREA—*Continued.*

RENFREWSHIRE.

LOCALITY.	Date (*a*).	Girth.	At	Date (*b*).	Girth.	Increase in Girth.		Rate per ann. (*c*).	Bole.	Height.	Spread.	Date of Height and Spread.
		Ft. In.	Ft. In.		Ft. In.	In.	Years.	In.	Ft.	Ft.	Feet.	
Loganswraes, - -	4/1889	17 11½	3 6	4/1910	18 9	9·50	21	·45	5	83	92½ × 91	1910
	5/1841	‡15 3	...	4/1889	17 11½	32·50	48	·68	...	...	...	...
	1841	...	...	1910	...	42·	69	·61	...	...	...	...
Pollok House, - -	10/1899	10 11	5 0	8/1904	11 0½	1·50	5	·30	10	...	...	...
Do., - -	10/1899	10 10	5 0	8/1904	10 11	1·00	5	·20	20	...	...	...
Do., - -	10/1899	9 7	5 0	8/1904	9 9¾	2·75	5	·55	27	72	...	1899

* Struck by lightning about 1875. † Old and remarkable trees in Highland and Agr. Soc. Trans. ‡ *Vide* J. R. Notman, per Prof. T. King.

STIRLINGSHIRE.

Buchanan Castle, -	9/1909	12 7	7 3	...	...	...	...	...	20	...	...	...
	...	18 1	1 0	...	...	...	...	...	...	...	...	...

The Return of Summer-Birds to the "Clyde" Area in 1910.

By John Paterson.

Notwithstanding a somewhat inclement and boisterous April, the spring-migration season of 1910 proved a fairly normal one, till towards the end of that month at any rate. If we take as illustrations two common species, the Swallow and Willow-wren, we find that the former was widely reported by the middle of April, and the latter had reappeared in many of its old haunts in the third week of the month. There were, as frequently happens, some precocious appearances, and, in the present case, these may safely be attributed to the fact that the month of March was distinguished by bright and warm sunshine.

List of Arrivals of Summer-Birds in the Order of their Appearance in 1910.

Lesser Black-backed Gull (*Larus fuscus*), Kilmacolm, 18th March (M'Keith); Cardross, 19th; Dalbeth, 20th.

Yellow Wagtail (*Motacilla raii*), Dalbeth, 20th March (1) (Paterson, Ross, and Rennie); Beith, 19th April (Craig); Dalry, 20th (Shanks); Beith again, 21st, about a dozen, all males.

Chiffchaff (*Phylloscopus rufus*), Skelmorlie (Ayrshire), 28th March (1) (R. Oswald Blyth), but not heard again till 25th April. On 28th March, the writer was at Auchendrane and Cassillis, in Ayrshire, but failed to find it, although the conditions for observation were very favourable. First heard at Dalry, 25th April (Shanks).

White Wagtail (*Motacilla alba*), Clyde at Cambuslang (2), above Carmyle (3), both on 31st March (Ross); Beith, 3rd April (Craig).

Wheatear (*Saxicola œnanthe*), Girvan, 27th March (Paterson, Ross, and Rennie) (2), but it had been seen in that neighbourhood some days earlier according to Mr. Gib Graham, Girvan; Possil Marsh, a pair, 3rd April (Rennie); Kinnelhead (in Annandale), 6th (Bartholomew).

Swallow (*Hirundo rustica*), Possil Marsh, 3rd April (2) (Rennie); Lamlash, 11th (Fullarton); Dalmuir, 14th (3) (Rennie); Dalry, 14th (Shanks); Beith, 14th, about a dozen, the males singing in concert—numbers there on 21st (Craig); Glenorchard, 14th (Bartholomew).

House-Martin (*Chelidon urbica*), Lamlash, 11th April (Fullarton); Kilmacolm, 17th (M'Keith).

Sand-Martin (*Cotile riparia*), Beith, 14th April (Craig), about a dozen; Kelvin at Summerston, 17th (2) (Rennie); Dalry, 19th (Shanks).

Common Sand-piper (*Totanus hypoleucus*), Beith, 14th April (Craig); Kelvin, above stepping stones (2), on 17th (Paterson and Ross); Carmichael, 18th (Gibson); general on 24th.

Ring-Ouzel (*Turdus torquatus*), Carmichael, 16th April (Gibson).

Cuckoo (*Cuculus canorus*), Kilmacolm, 17th April, and again on 20th (M'Keith); Glenorchard, 8th May (Bartholomew).

Willow-Wren (*Phylloscopus trochilus*), Fairlie (Robertson), and Cadder (Paterson), one in each case in full song, 19th April; Possil (2) and Lambhill (several) (Rennie), on 21st, and one male at Beith same day (Craig); Rouken Glen, 22nd; Garelochhead, 23rd and 24th (Baxter); and Strathblane on latter date (Galloway and Cummings), and several in Cadder (Paterson).

Corncrake (*Crex pratensis*), Dalry, 22nd April (Shanks); Kelvin at Cadder, 1st May (Rennie); Glenorchard, 3rd (Bartholomew).

Tree-Pipit (*Anthus trivialis*), Cadder, 1st May, seven in song (Rennie).

Common Whitethroat (*Sylvia cinerea*), Braidwood, 7th May (1) (Paterson).

Sedge-Warbler (*Acrocephalus phragmitis*), Possil, 10th May (3) (Rennie).

The Swift, Wood-Wren, Whinchat, Redstart, Spotted Fly-catcher, and others were not reported till very late. The list, as far as it goes, is very full, and all those who have assisted are cordially thanked for co-operating. It should be borne in mind that long-continued inclemency in the weather is unfavourable to observation, and is only one of the perturbants that students

have to contend with. This may not account for the late records of species which are always at the tail of the procession, as, while those that came early were no doubt led on by a brilliant March, those due late may well have been deterred by an April about which perhaps the less said the better.

Note on *Bathysiphon filiformis*—Sars, in Clyde.

By MRS. DAVID ROBERTSON.

[Read 28th June, 1910.]

THE specimen now exhibited was among some of the last dredgings by the late Dr. Robertson, off Wemyss Bay, which had not been examined. As far as I know it is new to Britain. Dr. Brady in his report of the voyage of H.M.S. "Challenger" says—"The test of *Bathysiphon filiformis* consists of a very long narrow tube, varying in thickness from end to end, though sometimes tapering very slightly, generally a good deal curved or bent, and usually white in colour, or nearly so. . . . *Bathysiphon filiformis* is a rare species, and has only been met with at one Challenger locality, Station 195, off Banda, Amboyna, 1,425 fathoms. It appears to be plentiful in the Hardanger Fiord (M. Sars, G. O. Sars, Norman), and occurs in deep water in the Bay of Biscay. (Norman, de Folin)." CHALLENGER REPORT—ZOOLOGY, Vol. IX., *Foramenifera*, p. 248, Pl. XXVI., Figs. 15-20.

Proceedings of the Society.

(*Continued from p.* 96.)

The President showed eggs of the Bee-eater (*Merops apiaster*) and of the Italian sparrow (*Passer italiæ*), which he had received from Mr. Robert H. Read, Corresponding Member, who had got them in Corsica during the past summer.

Mr. Henry M'Culloch exhibited a male Greenland falcon (*Falco candicans*) got from the Hebrides recently.

Among some ornithological specimens kindly sent by Mr. Charles Kirk was the head of a pheasant (*Phasianus colchicus*), with a remarkable malformation, the upper mandible having formed a large hole and penetrated the lower one.

Mr. John Robertson contributed a lantern-exhibit of the nests of waders and water birds, and gave many interesting particulars regarding the habits of the species dealt with.

Mr. W. Cameron Davidson read a paper entitled "Aberdeen University: Bird Migration Inquiry" (page 61).

The President (Mr. John Paterson) read a paper "On the Birds of the Glasgow District" (page 43).

The fifth meeting of Session 1909-10 took place on 25th January, 1910, Mr. John Paterson, President, in the chair.

Before constituting the meeting the President made appropriate reference to the loss the Society had sustained in the death of Mr. William Stewart, a former Vice-President, who had been an active member during the thirty years of his connection with the Society (page 33).

Mr. W. Pettigrew showed a series of autochrome lantern slides illustrating topographical and botanical subjects, which excited great interest.

Mr. J. Ballantyne read a paper entitled "Rambles in Bute," which was fully illustrated by a series of lantern slides.

The sixth meeting of Session 1909-1910 took place on 22nd February, 1910, in the Society's Rooms, Mr. John Paterson, President, in the chair.

Mr. Herbert D. Shields exhibited pellets of the Tawny Owl (*Syrnium aluco*), the Herring-Gull (*Larus argentatus*), and the Rook (*Corvus frugilegus*), some as picked up and others mounted to show the remains contained in them. The owl's pellets contained feathers, remains of beetles, mandibles and bones of birds, jaws of a mouse, and numerous small bones of mice and rats. One of the Herring-Gull pellets from Ailsa Craig showed various small bones, probably of birds, some feathers, remains of at least eight earwigs, and some hard gristly matter. There was no trace of

fish-bones, and only two tiny pieces of egg-shell. Another Herring-Gull pellet contained fragments of egg-shells of the Guillemot and Razorbill, small stones, part of a crab's claw, and some grass. The pellets of the Rook showed husks of grain, and in one of them traces of egg-shell and some small stones.

Mr. W. J. M'Leod exhibited some aquatic Coleoptera from the Monklands district, and read a paper on the occurrence of the species in the district named (p. 78).

Dr. Thos. B. Henderson exhibited two specimens of the Gecko (*Tarentola delalandii*, Gray), got among bananas which had probably been imported from the Canary Islands. Dr. Henderson described the structure, habits, and distribution of the species.

Mr. Anderson Fergusson exhibited the following rare species of Coleoptera taken in the "Clyde" area:—*Chlænius nigricornis*, F., one specimen taken by Mr. A. A. Dalglish at Loch Fad, Bute, in May, 1901; *Brychius elevatus*, Panz., from River Irvine, clinging to a stick; *Hydroporus ferrugineus*, Steph., Loch Fad, Bute, taken by Mr. Fergusson in May, 1901; *H. obsoletus*, Aubé, Loch Fad, Bute, May 1901, and Knoweside, South Ayrshire, September 1908, both by Mr. Fergusson; *Agabus chalconotus*, Panz., got in numbers in pools in hills behind Greenock, January, 1901; *Agathidium nigripenne*, Kug., Cadder, Lanarkshire, April, 1909, one specimen about fungi on bark.

Mr. James Mitchell, on behalf of Mr. Thos. F. Glen, Durban, a former member of the Society, exhibited mounted heads of a number of Antelopes.

Geopyxis coccinea (Scop.), Mass., from West Kilbride, was exhibited by Mr. D. A. Boyd.

Mr. W. R. Baxter read a paper entitled "Summer Notes on the Birds of Garelochhead" (p. 69).

Mr. Robert Dunlop made some remarks on a fine series of lantern slides illustrating the physical features of the South Island of New Zealand.

On the invitation of Professor J. Graham Kerr, a special meeting was held in the Natural History Class Room of the University of Glasgow, on 17th March, 1910, Mr. John Paterson, President, in the chair.

Professor Graham Kerr made some remarks on the Zoological

collection of the University (which appear at p. 97), and thereafter conducted those present over the Museum, pointing out the most interesting groups, to which he made appropriate reference.

The seventh meeting of Session 1909-1910 took place on 29th March, 1910, in the Society's Rooms, Mr. John Paterson, President, in the chair.

The following gentlemen were elected ordinary members of the Society:—Messrs. Robert Francis Graham, Skipness, Argyleshire; John Gillies, Normandale, Castle Douglas; John Gloag, Howletburn, Galston; and John Main, F.G.S., 24 Marlborough Avenue, Partick.

Mr. Laurence Watt exhibited a number of flowering plants and made remarks thereon (page 80).

Mr. W. R. Baxter exhibited a second series of lantern-slides from photographs of birds'-nests taken at Garelochhead.

Mr. Anderson Fergusson read a paper entitled, "Additions to the List of Clyde Coleoptera" (page 83).

Dr. Robert Brown, F.L.S., Hon. Secretary, read a paper on "Zermatt and its Flora," and exhibited a number of the rarer species found during many visits to the district. A short description was given of this popular Alpine centre and of its special physical features, to which the variety of its Alpine flora is to be attributed.

The eighth meeting of Session 1909-1910 was held on 26th April, 1910, in the Society's Rooms, Mr. John Paterson, President, in the chair.

Before the formal business the President made appropriate reference to the loss which the Society had just sustained through the sudden death on the previous day of Mr.

GEORGE RUSSELL,

at his residence, Tollcross House. Mr. Russell joined the Society in 1888, and from that date until a few years ago he was a regular exhibitor of plants, chiefly exotics, at its meetings. Mr. Russell presented the rare combination of being a good botanist as well as a practical gardener, and his frequent appearances at the

Society's meetings were always welcome. The graces of his character endeared him to his fellow-members, and he will be much regretted by those who were privileged to know him.

Mr. Joseph Sommerville read memorial notices of Thomas Gray (p. 65) and John Gray (p. 68). Through the kindness of Mr. James Paton, F.L.S., Mr. Sommerville was able to exhibit some rarities from the great collection of shells recently bequeathed by Mr. Thomas Gray to the Corporation of Glasgow, for exhibition in Kelvingrove Museum.

Mr. Anderson Fergusson exhibited a collection of Coleoptera, taken in the Clyde area, and not formerly recorded.

Mr. John Muir, a former member of the Society, sent for exhibition a fine collection of dried plants from a Cypress swamp in Alabama.

Mr. J. W. Reoch contributed a lantern exhibit on "Views of Scottish Mountain Scenery," which was much appreciated.

The President (Mr. John Paterson) read a preliminary note on the appearance of our summer birds in 1910 (p. 127). Some mycological notes were submitted by Mr. D. A. Boyd (p. 92).

A "List of Species of Insects, described by J. C. Fabricius, from specimens in Dr. Hunter's Collection," and a "List of Corals, described by Ellis, and now in the Collection of the University of Glasgow," both by Professor J. Graham Kerr, were held as read, and appear at pp. 97 111.

The annual "Meteorological Notes and Remarks upon the Weather during 1909, with its general effects upon Vegetation," by Mr. James Whitton, Superintendent of Parks, Glasgow, was submitted.

In comparing the records for 1909 with those for the previous year, the rainfall which amounted to 38·26 inches was 4·68 inches greater than in 1908. The wettest months were January and October, both being equal with 5·39 inches. The driest month was September, with only 1·59 inches of rainfall. The range of atmospheric pressure was much greater than in the previous year. The lowest readings were 28·30 inches on 6th October and 3rd December, and the highest 30·40 inches on 4th January and 13th February. The average temperature for the year was lower than in 1908.

The weather conditions in 1909, only resemble those in 1908 in respect of the prevalence of easterly winds. The rainfall, as above stated, was heavier, and the frosts more frequent and intense. There was an absence of bright sunshine, and consequently less warmth.

There was a wonderfully fine display of bloom on most species of trees and shrubs, many being above the average. The flowering season was prolonged on account of the coolness of the atmosphere, and seed production was rather above the average. Mr. Whitton's prophecy of a brilliant display of blossom in 1909 (*The Glasgow Naturalist*, I., p. 137) was justified. In many places elm trees in 1909 seeded so heavily that their growth was weakened. The prospect of a bright display in 1910 is a poor one.

The ninth meeting of Session 1909-10 took place in the Society's Rooms on 31st May, 1910, Mr John Paterson, President, in the chair.

Mr. David Bruce, exhibited two ruddy sheld-ducks (♂ + ♀) (*Tadorna casarca*), shot near Sarsclet, Caithness, on 27th June, 1910.

Mr. Anderson Fergusson exhibited a coleopteron (*Cryptomorpha desjardinsi*, Guér.), introduced into this country with bananas. The specimen exhibited was found in a house in Glasgow, on 23rd March, 1905. This species does not appear to have been recorded from any other Scottish town, but it has occurred at Winlaton-on-Tyne, London, Barton-on Sea, and Sandown, Isle of Wight. It is a small species, and has probably been overlooked.

The President (Mr. John Paterson) exhibibited *Pyrus torminalis*, Ehrh., from Rickmansworth Park, Herts., where there are two notably large trees. This attractive species is quite unknown here, as is practically *Pyrus Sorbus*, a specimen of which, from Auchendrane (Ayr), was exhibited by Mr. John Renwick.

Mr. John R. Lee exhibited *Mnium riparium*, Mitt., from Blantyre Priory (Lanark). This species is an addition to the moss-flora of "Clyde." In the recently published *Census Catalogue of British Mosses*, issued by the Moss Exchange Club, it is only recorded from vice-county No. 88, Mid-Perth. It

closely resembles and may be mistaken for *Mnium serratum*.

Mr. Peter Ewing, F.L.S., exhibited, with the aid of the lantern, a collection of photographs of Alpine plants *in situ*.

Mr. James Clark, M.A., D.Sc., A.R.C.S., gave a very interesting address on "The Systematic Study of a County Fauna," in which he narrated his experience in working up the fauna of Cornwall during the nine years he was Principal of the Central Technical Schools at Truro.

The tenth meeting of Session 1909-10 was held on 28th June, 1910, in the Society's Rooms, Mr. John Paterson, President, in the chair.

Mr. William M'Cutcheon, Goulburn, Saltcoats, was elected as an ordinary member,

Reports of excursions to Bute (p. 140), Balmaha (p. 138), Carnwath (p. 139), and Stonebyres Estate were read.

Mrs. David Robertson sent for exhibition *Bathysiphon filiformis*, Sars, new to Britain (p. 129).

The luminous moss *Schistostega osmundacea*, Mohr., which had been gathered at Carron Glen, was exhibited by Mr. J. G. Robertson, and the habit and structure of the moss were described by Mr. J. R Lee.

Mr. John Renwick exhibited, on behalf of Mr. A. Gilchrist, *Vicia Orobus*, DC., and *Juniperus communis*, Linn., both from Stey Amry, New Cumnock.

An albino otter (*Lutra vulgaris*), from Islay, was exhibited by Mr. Frank M'Culloch—the second that had come in the course of his experience to Mr. M'Culloch for preservation.

Mr. John Robertson showed eggs of the linnet, twite, and lesser redpole, with the purpose of directing attention to the close resemblance that the eggs of those finches bore to each other.

Mr. A. Hill showed a strikingly fasciated Pyrethrum.

Mr. John Renwick read a paper "On the Sycamores in the Clyde Drainage-Area" (p. 112).

The President (Mr. John Paterson) gave an account of a visit he paid in May to the Bird-Sanctuary in the Brent Valley, near London.

Excursions.

Cassillis and Auchendrane, 26th March, 1910.—The first excursion of the season took place on the Spring Holiday, when the grounds of Cassilis House and of Auchendrane House, in Ayrshire, were visited by a party, seven in number. Mr. John Renwick was conductor.

Cassillis House is finely situated on a high bank overlooking the River Doon. Near the house stands the "dule tree," for particulars of which see page 113. Near the "dule tree" are other two Sycamores (*Acer Pseudoplatanus*), with longer boles, but not so thick; taller, but not such wide-spreading trees—one, with girth 12 ft. 3½ ins., bole 17 ft., height 72 ft.; another, with girth 11 ft. 1½ ins., bole 22 ft. At the gamekeeper's house is a good Scots Fir, girth 12 ft. at 5 ft. bole. About half-a-mile to the S.E. of the house are "certain little romantic, rocky, green hills" (*Burns*), whose name is known wherever the wandering Scot is found—Cassillis Downans, mentioned in Burns's "Hallowe'en." The top of the highest and largest hill has been occupied as a fort, the remains of which are well seen. On a slightly lower eminence are traces of a smaller fort. There are other four forts in this parish. The name "downans" or "dunans" seems to be simply the Gaelic *dun* (a hill, a hill-fort), *dunan* (a hillock, or fortlet), anglicised into "downans" or "dunans," plural. They are supposed by some to be Danish, by others to be British, but they may be attributable to earlier inhabitants, and the traditions about the fairies reminiscent by the conquering Celtic race of a non-Aryan people, of smaller stature, whom they drove out, and whose last stand was made in these forts. The name of the farm at the northern base of the Downans, Dunree = *dunrigh* (the king's fort), suggests that this may have been the residence of the chief and the fort longest and most obstinately defended by the earlier race, whose sallies by night were more deeply impressed upon the memories of the invaders. Thus the traditions were attached to Cassillis Downans. The name "Cassillis" may be derived from these forts or castles.

From Cassillis the route was taken to Auchendrane. We were met by Mr. John Johnstone, the forester, who, as usual, guided us to the various interesting trees with which Auchendrane is well stocked. The beautiful Birch (*Betula verrucosa*) in front of the

house appears to be growing in girth at a slower rate than formerly. At 5 feet from the ground it measures 11 feet $2\frac{1}{4}$ inches, an increase of $13\frac{1}{4}$ inches in 14 years, showing an average of ·95 inches yearly for the last 14 years, against 1·57 inches for the first 77 years of its life. At 5 feet above the mound which surrounds it the girth is 10 feet 7 inches, an increase of ten inches in 14 years—average, ·71 inches, against 1·52 inches for the previous 77 years.

The largest of the row of six Silver Firs (*Picea pectinata*) ("Union trees"), planted 1707, girths 16 feet $7\frac{1}{2}$ inches at 5 feet, an increase of $14\frac{1}{2}$ inches in 14 years, average 1·03 inches, which is larger than the average, ·98 inches, for the previous 188 years.

The remarkable specimen of the True Service-tree or Sorb (*Pyrus Sorbus*), girths 5 feet 8 inches at 5 feet, an increase of 2 inches since July, 1906.

The fine Western Arbor Vitæ (*Thuia occidentalis*) girths 7 feet, an increase of 9 inches in 14 years.

An Atlantic Cedar (*Cedrus atlantica*) is 5 feet $5\frac{3}{4}$ inches at 5 feet 3 inches, an increase of 8 inches since 1902.

A Deodar (*Cedrus deodara*), girths 5 feet $5\frac{1}{4}$ inches at 5 feet 2 inches.

An Elm which girths 11 feet $8\frac{3}{4}$ inches at 5 feet, is apparently *Ulmus campestris* of authors, possibly *Ulmus glabra*.

On the trunk of a gean-tree on the slopes of Cassillis Downans a common Bat (*Vesperugo pipistrellus*) was observed. A snap-shot was taken by Mr. George Herriot, while Mr. Robert M'Lean brought his stand-camera to bear, but the Bat, which showed signs of being stimulated by the bright sun (it was just after noon), flew off before Mr. M'Lean was ready with his apparatus. The Bat flew about for perhaps five minutes, when through the branches of the tree a Kestrel (*Falco tinnunculus*) was observed, about ten yards beyond the tree. Its sinister motive in approaching so near was soon manifest. For a few moments only (during which the Bat and Kestrel engrossed excited attention) the two objects engaged in what was for the Bat a dance of death, as it suddenly disappeared from sight, being seized in the talons of the Kestrel. The members of our party were very lucky to be the witnesses of this striking occurrence. The Kestrel feeds largely on small mammals, but opportunities of catching a small mammal

at flight must be very few, as it is doubtful if ever before in this country such an incident has been witnessed. Mr. J. H. Gurney, who, like his father before him, has been all his life deeply interested in the study of raptorial birds, writes that he never heard of such a thing, and wished he had been one of our party.

Mains, 2nd April, 1910.—The second excursion this year was to Mains, near Milngavie. Mr. John Renwick, Conductor. Five of six trees measured in April, 1893, were seen on this occasion. For particulars regarding the large Sycamores on the estate, reference may be made to Mr. John Renwick's paper on this tree (pp. 112-126).

A Beech (*Fagus sylvatica*) to the north of the house, girths 13 feet $8\frac{1}{4}$ inches at 4 feet 10 inches, increase $11\frac{3}{4}$ inches in 17 years, average ·69 inches. A Hornbeam (*Carpinus Betulus*) 8 feet $5\frac{3}{4}$ inches, bole 13 feet, increase $5\frac{3}{4}$ inches in 17 years, average ·34 inches annually.

To the east of the house is an old avenue, principally of Oaks (*Quercus Robur*), the third tree on the left seems to be the largest, it girths 10 feet $4\frac{3}{4}$ inches at 5 feet, bole 13 feet, height 71 feet. A Sweet Chestnut (*Castanea sativa*) nearer the house girths 11 feet $5\frac{1}{2}$ inches at 5 feet on E., has a trunk of 10 feet which hangs over to the west, and twists against the sun. A Wych Elm (*Ulmus montana*) to N.E. of house girths 10 feet 6 inches at 5 feet on N.E., bole 28 feet. A Deodar (*Cedrus deodara*) near bowling green, 5 feet $4\frac{1}{2}$ inches at 5 feet next house, bole 30 feet. A Cedar of Lebanon (*C. libani*) to S.E. of house, girths 6 feet $3\frac{3}{4}$ inches at 5 feet next house, has a bole of 27 feet.

To the north of the house are three fine Turkey Oaks (*Quercus Cerris*). The one nearest the house has a long straight trunk and girths 4 feet 11 inches at 5 feet next house. One further east, and on opposite side of road, girths 5 feet 10 inches at 5 feet on N., one still further east girths 6 feet $5\frac{1}{2}$ inches at 5 feet. The predominant tree is the Beech.

Balmaha, Loch Lomond, May 28th, 1910.—Mr. John R. Lee was conductor. A party of ten members of the Society took part in this excursion. The weather was very fine, but the temperature was rather high, rendering much exertion rather fatiguing; and the members contented themselves with a quiet ramble along the road through the famous Pass of Balmaha in

the direction of Rowardennan. The district being well known as a happy hunting-ground for the entomologist, a considerable time was spent by those on the look-out for insects in the marshy meadows by the roadside about a mile north of the pier, whilst the botanical members of the party pushed forward to the woods and shore about half-a-mile further on. Mr. Ross reports that a considerable number of species of flies were collected, many of which have not yet been examined; but amongst the Tipulidæ the following were noted:—*Dolichopeza sylvicola*, Curt.; *Tipula obsoleta*, Mg.; *T. longicornis*, Schum.; *T. variipennis*, Mg.; *T. plumbea*, F.; *T. lateralis*, Mg.; *T. gigantea*, Schrk.; *T. lutescens*, F.; *Dixa maculata*, Mg.; *Ptychoptera contaminata*, Mg.; *Limnobia nebeculosa*, Mg.; *Rhipidia maculata*, Mg.; *Empeda nubila*, Schum.; *Goniomyia tenella*, Mg.; *Rhypholophus nodulosus*, Mg.; *Erioptera tænionota*, Mg.; *Limnophila Meigenii*, Ver.; *L. lineolella*, Ver.; *L. ferruginea*, Mg.; *Ula pilosa*, Schum.; *Amalopis immaculata*, Mg.; *A. littoralis*, Mg. Nothing of special interest falls to be recorded in the botanical department. A search was made for mosses, especially in the woods along the roadside about a mile and a half above Balmaha; and one or two specimens of *Bryum roseum*, Schreb. (previously reported from this locality) were seen. The only other species worthy of note was *Hedwigia ciliata*, Ehrh., found growing on the rocks near the shore of the loch in some quantity.

Carnwath, 4th June, 1910.—This excursion was arranged jointly with the Edinburgh Field Naturalists' and Microscopical Society, under the leadership of Mr. E. Denson, and was attended by a numerous party, including about fourteen representatives of our society. After leaving the railway station, the site of the ruined castle of Cowthally was inspected. In the peat moss adjacent to the castle several notable plants were observed. A fine patch of the moss, *Tetraplodon mnioides*, B. & S., growing on sheep's bones, was discovered by Mr. P. Ewing, F.L.S., while various microfungi were also noted by Mr. D. A. Boyd. Among the latter were *Sclerotinia Curreyana* (Berk.), Karst., which occurred as *Sclerotium roseum*, Kneiff, in dead culms of rushes; and *Lophodermium oxycocci* (Fr.) Karst., which grew on dead leaves of cranberry. Numerous bushes of the tea-leaved willow (*Salix phylicifolia*, L.) were observed in

marshy ground bordering on the White Loch. Among other cryptogams noted in the neighbourhood of Carnwath were *Brachythecium albicans*, B. & S., common around the sand-pits; *Plasmopara nivea* (Ung.), Schröt., on leaves of *Anthriscus sylvestris*; *Peronospora ficariæ* Ful., on *Ranunculus repens*; *P. viciæ* (Berk.), De Bary, on *Lathyrus pratensis*; *Puccinia bunii* (D.C.), Wint., on *Conopodium denudatum*; and *Glœosporium paradoxum*, De Not., on dead leaves of *Hedera Helix*, along with *Trochila craterium*, Fr., its ascigerous form. Towards Carnwath village, *Cerastium arvense*, L., a very rare plant in Clydesdale, occurred as a wayside weed. Attention was directed to an artificial mound seen on the left just before the village is entered, which is supposed by some to date from the days of Bruce, and to have been constructed by Sir John Somerville as a rampart for resisting an invasion by the English, situated a short distance further is Carnwath House, the property of Sir Simon Macdonald Lockhart, Bart., of Lee, which contains a small room wherein is inscription to the effect that Prince Charles Edward remained two entire days in that apartment while on his retreat from Derby to Culloden, in the year 1746. Through the kindness of Sir Simon, the party had an opportunity of inspecting the interior of the Lockhart Aisle, contiguous to the parish church. The aisle, which dates from the fourteenth century, is the place of interment of several members of the families of Somerville and Dalzell, as also, from the latter half of the seventeenth century, of their successors, the Lockharts. It has recently been restored, and is furnished with a beautiful window of stained glass After examining the Old Market Cross of Carnwath, the party had tea together in the Market Inn Hotel, and walked to Carstairs Junction. The sketch of heather overlooked by Cowthally Castle was most attractive to the ornithologists from the presence there of many waders as the common snipe (*Gallinago cœlestis*), golden plover (*Charadrius pluvialis*), lapwing (*Vanellus vulgaris*), dunlin (*Tringa alpina*), redshank (*Totanus calidris*), and common curlew (*Numenius arquata*). At the White Loch a drake tufted duck (*Fuligula cristata*) was seen.

West Coast of Bute, 2nd June, 1910 (Victoria Day—joint with the Andersonian Naturalists' Society).—Mr. John Robertson, Conductor. A party of nineteen, including one lady, took seats in the brake at Rothesay for the drive over to Scalpsie Bay.

Driving along with Loch Fad and the wooded heights beyond on our right, Loch Ascog on our left, the grand hills of Arran in front, and an almost cloudless sky above, the conditions were such at to satisfy the most ardent lover of nature and the open air. Arriving at Scalpsie Bay, we took our way leisurely by the shore round Ardscalpsie Point to St. Ninian's Bay. Here we followed the road back to Rothesay by Greenan Loch, reaching the county town up to scheduled time. About fifty species of birds were observed, none of them, however, uncommon for Bute. Photographs were taken of nests and eggs of the ringed plover (*Ægialitis hiaticola*), oyster catcher (*Hæmatopus ostralegus*), and common gull (*Larus canus*). Quite a large variety of plants was observed on this excursion, among the more interesting were: — *Ranunculus Lenormandi*, *Vicia sativa*, *Sherardia arvensis*, *Valerianella olitoria*, *Hypericum humifusum*, *H. elodes*, *Pinguicula lusitanica*, *Peplis portula*, *Samolus Valerandi*. The fresh-water algæ were specially interesting; Messrs. Garry and Lunam got some nitella infested with *Coleochæte nitellarum*. This alga lives under the cuticle of nitella, and in the specimens collected abundant oogonea were present. A zygnema with very gelatinous walls (probably *Z. anomalum*) was plentiful— some of it in conjugation. *Bumilleria pumila* and *Binuclearia tatrana* were fairly abundant. The four species are new to "Clyde."

Amongst the Mosses noted were *Tortula ruraliformis* (Besch.), Dixon; *Mnium subglobosum*, B. & S., with withered remains of capsules; *Brachythecium albicans*, B. & S. Numerous Microfungi were observed, and among the species observed were Plasmopara densa (Pers.), Schröt., on *Rhinanthus Crista-galli;* Peronospora alsinearum, Casp., on *Cerastium triviale;* P. effusa (Grev.), Rabh., on *Atriplex;* Uromyces limonii (D.C.), Wint., as Æcidium and Uredo on *Armeria;* Puccinia anthoxanthi, Fckl., as Uredo on *Anthoxanthum;* P. glomerata, Grev., on *Senecio Jacobæa;* Melampsora cerastii (Pers.), Wint., as Uredo on *Cerastium triviale;* Lophodermium juniperinum (Fr.), De Not., on dead leaves of *Juniperus;* Pseudophacidium Smithianum, Boud., on dead leaves of *Empetrum nigrum;* Orbilia marina (Phil.), Boyd, on dead fronds of *Fucus vesiculosus;* Mycosphærella ascophylli, Cotton, on living receptacles of *Ascophyllum nodosum*.

Notes.

Dotterel (*Eudromias morinellus*), **in Bute.**—On 15th May, 1910, along with Mr. Robert S. Wilson, I saw a Dotterel at Kilchattan Bay, Bute, frequenting a bare field which was being prepared for turnip seed. The bird was not wild, and allowed us to watch it from a comparatively short distance as long as we wished. It had not assumed full summer plumage, as the white band across the chest was so inconspicuous as to appear to be absent. This species has not previously been recorded from the Island of Bute.—John Robertson.

Ruff (*Machetes pugnax*) **in East Renfrew.**—On 14th August, 1910, I saw a Ruff and a Reeve at Waulkmillglen Dam, and a Ruff at Balgray Dam. On the 21st August, at the former place, there was still one bird of this species, but of which sex I was unable to determine.—John Robertson.

Spotted Redshank (*Totanus fuscus*) **in East Renfrew, in summer and autumn, 1910.**—On 26th June, 1910, I was rather surprised to hear the characteristic note of the Spotted Redshank at Waulkmill Glen Dam, and, getting my glass on the bird, I found it was in complete dusky plumage. It apparently did not remain long in the neighbourhood, as I saw no more of this species till the autumn migration had set in. At the same place, on 14th August, I saw one bird in fairly grey plumage, and again on 21st August what seemed to be the same individual. On 27th August I saw three birds, 4th September three, 11th September two, and 18th September one. These were all in various stages of changing plumage. One of the three on 27th August was busy catching small fish, in search of which it waded into the water. At each capture it brought its victim ashore, gave it two or three taps, and swallowed it.—John Robertson.

The Great Spotted Woodpecker (*Dendrocopus major*) **near Glasgow and in Ayrshire.**—At the meeting of the Society on 27th April, 1909, I exhibited branches of willows from Glenorchard, billed and bored by (it was presumed) the great spotted woodpecker, and stated that willows similarly treated had been familiar to me for some time in Cadder Wilderness (*Glas.*

Naturalist, i., p. 99). On 17th April this year, with Mr. A. Ross, I was examining the willows in Cadder again. There was striking evidence of quite recent visits on this occasion, and a little later in the day we had the satisfaction of seeing this woodpecker in the Wilderness. On communicating the fact to Mr. James Bartholomew he wrote, *inter alia*, that—"The "woodpecker has visited some willows in a wood on Glen-"orchard twice this year, during the week ending 22nd "January, and during the week ending 19th March. It "seemed to have found more larvæ in March, as the billings "were much more numerous than in January. . . . I may "say that it is only on these willows that I have seen any "evidence of a woodpecker's billings." In Cadder Wilderness willows are chiefly attacked, evidently for Sesia larvæ. Next to the willows, pines have received attention, and in a conspicuously less degree, beeches. I am indebted to Mr. Gib. Graham, Girvan, for informing me that one was identified on 25th January, 1910, at Meadowmain Wood, Dailly, in the Girvan Valley.—John Paterson.

Sparrow Hawk (*Accipiter nisus*) **in Glasgow.**—About four o'clock in the afternoon, one day last winter, while speaking to a lorryman in Milton Street, Port-Dundas, I was surprised to see a sparrow-hawk seize and carry off a sparrow from the street, at a distance of only three or four yards from where I was standing. —Stanley H. Miller.

The Stock-Dove (*Columba œnas*) **in the Clyde Area.**—With reference to the above subject the following may prove of interest. Recently, in course of conversation with a forester who has been for over thirty years on the Aikenhead Estate, Cathcart, we were informed that it was only three years ago that he had first observed the stock-dove there. This would be in 1907, the year in which it was first seen at Netherlee, a little further up the river Cart (*Glasgow Naturalist*, vol. i., page 108). Mr. W. R. Baxter, in his notes on "The Birds of Garelochhead" (*op. cit.*, vol. ii., page 78), states that he had searched unsuccessfully for this species in that district; but, on 28th May, 1910, he and one of the writers observed a pair of stock-doves on the Gareloch-

head Burn, where, it transpired later, a nest of this bird had been taken earlier in the season. Regarding the editorial remarks appended to Mr. Walter Stewart's note (*G.N.*, vol. ii., page 30), the known history of this dove, in our opinion, does not warrant such a definite statement as to its having been overlooked; and, until the editors see their way to put before the readers of the *Glasgow Naturalist* the evidence upon which their statement is based, their advice about extension of range, &c., will be accepted with reserve.—Robert W. S. Wilson, Hugh W. Wilson.

Fossombronia Dumortieri (*Hüb. et Genth.*) **in Dumbartonshire.**—On 29th June last I found this hepatic growing in considerable abundance on the margin of Lochan Ghlas Laoigh, between Coulport and Garelochhead, Dumbartonshire. Living plants given to Mr. Macvicar for determination produced "fruit," thus enabling him to identify them with certainty. Unfortunately the record, which is an interesting addition to the flora of Clyde and the West Highlands, was not in time for inclusion in his "Distribution of Hepaticæ in Scotland" just published by the Botanical Society of Edinburgh.—William Evans, Edinburgh, 7th September, 1910.

Habrodon Notarisii, Schp.—On 3rd September last, at an excursion of the North Ayrshire Field Club to the policies at Kelburne Castle, Largs, I found this moss growing sparingly on a trunk of Great Maple (*Acer Pseudo-platanus*), in association with *Neckera*, *Hypnum*, &c. It has already been recorded for Ayrshire, specimens having been obtained by me in the parish of West Kilbride many years ago and submitted to Dr. R. Braithwaite, F.L.S., for verification. The following is its ascertained distribution throughout the Clyde Area:—

AYR.—West Kilbride; Largs (D. A. B., 1910).
DUNBARTON.—Rossdhu (Wilkie, 1896); Rosneath (D. A. B., 1908).
CLYDE ISLES.—Island of Bute (D. A. B., 1906).

In the various localities where I have observed it, the habitat was the same as is above mentioned.—D. A. Boyd.

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