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WANTED—THE NATURAL HISTORY SOCIETY OF SCOTLAND.

By James W. H. Trail, M.A., M.D., F.R.S.

The time is long past since it was possible for any one to claim that he took all knowledge for his province; and societies, like individuals, have had to restrict their scope to ever-narrowing fields as knowledge has grown and deepened. Some have applied themselves to the investigation of a single science or portion of a science; while others, with wider range of subjects, have limited their action within a definite, it may be a relatively small geographical area. More and more has it become evident that concentration in a definite field is a condition necessary to the production of work of permanent value, and that for all but a gifted few that field must not be wide.

But while the subdivision of labour is necessary, and has brought with it very great increase in knowledge in almost every field of study, it has also brought very serious loss and danger. The many workers toil on within their narrowing limitations; and however precious the ore they seek, they tend to shut themselves off from the wider vision

and to lose knowledge of and sympathy with the work of others, and the sense of proportion that should make their own work sane and true. Even within the narrow limits of the special study the work fails, crushed under the accumulations of materials that will not be fitted into a coherent scheme, or defective through the difficulty of ascertaining what has been already published on the same subject. There have been, and there are, numerous societies in Scotland whose object has been to add to what was already known of the natural history of the country ; and outside the work of the societies there have been issued numerous books and papers in journals, forming a mass of information of large amount and of much worth, if only it could be made readily accessible. But much of it is buried almost beyond reach, and a relatively small part alone can be made full use of. The influence of this literature as a whole on the study of the natural history of Scotland is hurtful rather than helpful while it cannot be properly utilised, as the vague knowledge of its existence tends to disguise how very much remains to be done, and the effort to search out the records consumes much time that can ill be spared.

The societies that existed in Scotland a century ago included inquiries into the natural history only as a part of their proceedings ; yet the small number of publications issued in any form made it comparatively easy to follow all that was being done. But for many years it has been almost impossible to ascertain all that has been issued. Many societies have been formed, most of them strictly limited in their scope, either to certain counties or districts, or to certain subjects. Among the most successful are those that restrict their publications strictly within the limits indicated by their names ; and numerous valuable contributions have been issued by these societies. But for the most part these publications are issued only to the members of each society, or in exchange with other societies, and this makes it almost impossible for a worker to have access to some of these publications. When we turn to the papers issued in journals the practical difficulty is hardly less ; for we find them scattered through numerous publications, each usually

limited to one science, or even to a much narrower field; and no one can hope to keep account of these papers by one's own watchfulness. Still more difficult is it not to overlook what appears in separate form, or in local works, guidebooks, travels, sometimes in foreign languages, and in ways that are very apt to escape notice.

As the years pass, many contributions, while still of great value, become forgotten, especially if issued in a local publication. Their subjects are investigated again, under the supposition that they have not been previously approached, and much labour is wasted that might have been saved had the earlier work not been forgotten; or after completion of the work anew the earlier paper is found, and the second proves to have been needless, and is thereupon withdrawn. Every worker knows how large a part of the time that should be available for extending knowledge is spent in seeking to find out what had already been published on the subject under investigation, and must have longed for an accurate and full subject-index to the field of investigation. This heavy burden on scientific work grows more exigent year by year, and threatens to preclude advance, if the inquiry must be made anew by each individual. There is urgent need to free research from such burdens as far as that is possible. If relief is not given by efficient indexing research will build itself into its own tomb; and its very earnestness and productiveness will only cause it to be crushed by its own products the more speedily.

It may be thought that to advocate the formation of another natural history society is only to add to the burdens already so oppressive. That might be so if it were on the lines of those already existing; but the society of which there is need should not be on these lines. Its aims should be to supplement and strengthen the work of all societies and individuals that seek in any way to extend what is known of the natural history of Scotland; in no way to diminish or to interfere with their usefulness or freedom, but to aid them by bringing within the reach of all a knowledge of what has been gained in the past and is being done at the present time; to show what is known and what gaps

exist ; and thus to suggest where labour can be most usefully and profitably applied to extend what is known, within the limits of place and time in which each works.

Scotland is exceedingly well defined as a natural area for investigation, since even its southern frontier, by which alone it is in contact with any other land-surface, is clearly marked throughout most of its length by the Cheviot hills. Its surface is much diversified ; and the numerous islands along its west and north coasts offer problems of an interesting and important kind in their relation to the origins of fauna and flora, and to the evolution of new types by isolation. But while these conditions appear so favourable to the pursuance of a systematic investigation of the natural history of the country as a whole, no organisation has been formed with that aim—a strange and unfavourable contrast to what exists in various parts of continental Europe, often where only political instead of natural limits mark out the countries. Finland, Switzerland, Bavaria, and Brandenburg afford examples of admirable work of the kind in question.

It is more than time that steps were taken to provide for a careful and thorough investigation of the natural history of Scotland as a whole, to take up work of a kind that no existing society attempts to discharge, and to supplement the individualism of the workers, and even of the numerous societies, by the common efforts of all to the same end, by means that shall make the work of each known to all to whom it can be helpful.

Such an aim can be fulfilled only by co-operation. There is much need for the formation of a new society whose one end should be the investigation of the natural history of Scotland. That "Natural history" should be interpreted in the old, wide sense, to include all that falls under physiography and geology, as well as zoology and botany. Anthropology should not be excluded, although, for the sake of convenience, it would be represented probably by physical and prehistoric aspects rather than by its other sides. Geology has already been the care of the Geological Survey ; the Ordnance Survey has given excellent maps of the present configuration of the country ; and the

climate is the object of continued observation and records by the meteorologists. In so far as all these have national support for their study, there is less need to make other provision for them; yet even in these there are side issues that call for inquiry; and there is room for extension of the information acquired into forms that would bring it more directly before those likely to be interested in such things.

It is, however, in the sciences of botany, zoology, and anthropology that the want of co-operation and co-ordination is most evident and the urgent need of action is most felt. Much has been done in the study of the flora and fauna, and, especially in recent years, of the origin of the human population of Scotland; but that work has been done in an isolated way by individual workers or by local societies. It has rarely been done with reference to the whole country, or as part of a general scheme. Much of what has been done has been made known only to members of the local society, or at least to few others; and in a short time much excellent work is forgotten, buried in publications that can scarcely be procured or seen even for reference. What has been put on record is most difficult of access, and much of it has appeared under conditions that tend to its being overlooked or out of reach of many to whom it would be of great value. Some parts of the work have been repeated needlessly, while very much remains untouched or nearly so; and there is at present no means of readily learning what has been done, and what awaits investigation. The need of a guide is urgent; but the guide must be one accepted as authoritative, not apt to be overlooked or forgotten, and readily accessible to all whenever required.

The preparation of such a guide and its publication would be of great and immediate service; but the labour is too great to be accomplished except by co-operation. There is great need to supplement and extend the more or less isolated efforts of the past by a definite scheme or survey in which these efforts should have their due recognition and be preserved from loss. But such a survey should be extended to the whole of Scotland and its islands, and

should indicate what has been already accomplished, suggest researches that should be undertaken, and advise as to methods and sources of information, where such advice would be likely to attract or be useful to new workers or to aid those already in the field.

There is no likelihood that a Biological survey of Scotland will be placed on a similar basis with the Geological survey as a national undertaking. It must depend on the voluntary support of such as think that the survey should be made, and that what extends our knowledge of our country ought to be made known. A survey of the natural history of a country to be efficient must, like other surveys, be the working out of a co-ordinated scheme, prepared after due consideration, and with full knowledge of the scope of the work and of the means available. The researches that have been made on the natural history of Scotland have for the most part related to some limited district, or to the distribution of some group (vascular plants, mosses and liverworts, fungi, seaweeds, and desmids among plants, and lepidoptera, beetles, etc., among animals) throughout the country. No general scheme for such a survey has ever been prepared. Indeed, there has been no organisation with authority to do so, since each society's efforts have been rightly directed to its own field, and each individual's to one or to a few groups. But the time is more than come for the preparation of a scheme for a survey of the whole natural history of Scotland, in which existing societies and individuals will find the true place for their work and inspiration and assistance for more strenuous efforts. In a well-devised scheme no existing organisation or research should be interfered with or discouraged. The new should supplement and not supersede the old.

No existing organisation can with advantage undertake a national survey of the kind required. That will require a new society, formed for the promotion of whatever will advance that aim—THE NATURAL HISTORY SOCIETY OF SCOTLAND in the fullest sense of the name.

The work to be done by such a society, and the relations between it and those at present existing have been already

referred to, but a more definite and systematised statement with regard to them and to the organisation and means that may be employed may not be out of place.

Aims of the Society.—To carry out a *full* survey of the Natural History of Scotland in the widest sense, in so far as not already provided for (*e.g.* by the Geological and Ordnance Surveys), and to promote all that tends towards that end, especially by co-ordinating and rendering more accessible all information that bears on it.

Relations to other Societies with similar aims and to individual research.—Mutually helpful, supplementing and in no way interfering with or superseding each other.

Work of the Society.—(1) To procure and publish guides to all the information contained in published books and journals, such guides to contain lists of the various items classified by subjects, by localities, and by authors, with a brief indication of the contents and where each paper may be found; (2) To issue for each year a classified index of new papers relating to the natural history of Scotland, whether contained in the publications of the various local societies, of societies outside Scotland, in journals or in books touching on or devoted to any part of the society's field of work; thus a far wider circulation would be secured from the first for all information of real value; it would be more widely helpful, and would be less likely to be forgotten afterwards; (3) To include with this index short statements of published researches elsewhere that throw light on the natural history of Scotland, and that may suggest lines of inquiry that should be followed up in this country, or that suggest or describe new methods of study that might be usefully applied here; (4) To prepare and issue a reasoned scheme of investigation for the whole of Scotland, indicating what has been or is being accomplished, and what most evidently awaits investigation as regards either districts or subjects, and to secure advice for those seeking it on any matter, especially by the appointment of referees willing to name specimens submitted to them; (5) To assist in the preparation and issue of monographs on such divisions of the whole scheme as might be judged ready for publication, whether these be large or small parts of the whole; (6) To assist in

the preparation and issue of maps or of other means by which distribution in Scotland of animals, plants, minerals, etc., may be graphically and effectively shown, and their past history in the country and their relations to man traced. While these are some of the more important lines of work that should be undertaken by the society, its usefulness will certainly extend in other directions also. Meetings for the reading of papers should not be included in its sphere of activity, its function being to supply information in print, but not to provide opportunities for verbal discussion.

Constitution of the Society.—A large membership is very desirable, to permit of a considerable circulation of the reports and other publications at a relatively low expense, and also to supply a larger number of active workers in various departments. The organisation of the work should be entrusted to a committee elected by the society. The work of the secretary would probably be sufficient after a time to require the services of a skilled paid official, who should be responsible for the preparation of the annual reports of current literature, and for the issue of all other publications, under the directions of the committee. Voluntary assistance should be of great use towards the preparation of the much-needed subject-index to past literature. Those engaged in any special research have usually to prepare such an index for personal use in the special field, and could give valuable aid by contributing the index in each case; but to carry through the formation of the index as a whole the past literature should be searched systematically. Large aid could be given towards this if a list of periodicals and other literature in want of examination were prepared and circulated, with a request for volunteers to look through such of the work as they could conveniently undertake to prepare separate slips of the various articles or notices in—such slips to be sent to the secretary, who should classify the information supplied in them according to the scheme approved by the committee. It would make information obtained in this way more useful if the slips were of uniform size and design, to be obtained from the secretary by any one signifying the willingness and intention to examine and

send in the slips for a given part of the literature. The preparation of monographs suitable for publication on any part of the field must be done by those whose study the groups have been; but the co-operation of specialists may be relied upon for this part of the work.

To permit of the issue of such monographs, with the requisite maps, of the index to the past literature and of the annual reports, and possibly of a journal on a fairly adequate scale, will require financial support from a pretty large number of members, if, as is much to be desired, the subscription be not more than ten shillings a year; for it is much to be wished that the help afforded by such publications should reach all to whom it would be of service, many of whom could not afford to pay a large subscription.

But if developed, as the work of the society should be, into a national survey, there is reason to hope that it would commend itself to those who could and would give it financial support that would permit of its being carried on with success.

In conclusion, may I ask that the question of organising such a survey be considered, neither overlooking nor exaggerating the difficulties and labour involved. The need of some such organisation has been keenly felt by the Editors of this magazine, and also doubtless by many others, who may have been deterred by the apparent greatness of the task. Co-operation and co-ordination of the efforts already employed would make a successful commencement of the work possible without delay.

Discussion will be welcomed, whether of details towards carrying out the scheme, or of obstacles that would oppose it, for it is well to know the difficulties to be overcome. It would be helpful if those that approve generally of the proposals would indicate their approval through this journal or to myself.

University of Aberdeen.

WHALING IN SCOTLAND.

By R. C. Haldane, F.S.A. (Scot.).

Plate I.

The season of 1906 has been a productive one and presents features of great interest. The results have been—

	B. musculus.	*B. sibbaldii.*	*B. borealis.*	*Megaptera.*	*Sperm.*	*B. biscayensis.*
Norrona Co.	40	...	37	...	...	...
Shetland Co.	31	...	16	...	...	...
Alexandra Co.	49	...	72	...	...	...
Olna Co.	178	1	137	3	...	...
Buneveneader Co.	19	53	64	2	1	6
	317	54	326	5	1	6

and one Bottle-nose whale (*Hyperoodon*) brought in at Olna.

The large number of *B. borealis* killed this year is very remarkable, also the six Right Atlantic Whales, *Balæna biscayensis.*

Balænoptera sibbaldii (Blue Whale).

The particulars of these whales are given below :—

	No. of Bulls.	Average Length.		No. of Cows.	Average Length.	
		ft.	ins.		ft.	ins.
Buneveneader .	35	70	0	18	72	7
Olna . . .	1	62	0	...	...	

Last year, 1905, Buneveneader had

	18	70	2	13	71	6

This year there were bulls of 82, 80, 79, 76, and 73 feet, and cows of 83, 82, 78, 78, 76, 76, and 74 feet long. The Shetland whales of this species never seem to be large. Hjort gives the length of these whales as "up to 85 feet." The migration of these whales seems to be about longitude 10° W., passing between Iceland and Faroe and then spreading East and West. They are fairly abundant west of St. Kilda, but rare in Shetland waters. On 19th July one of these Blue Whales had a fœtus 22 feet long, "but the latter was not full grown yet." On 1st August another was got 18 feet long not developed enough for birth. These two cases show how large the young Blue Whales are at birth.

BALÆNOPTERA MUSCULUS.

STATION.	Number of Bulls killed.	Average Length.	Number of Cows killed.	Average Length.	Proportion of Bulls per cent.	Proportion of Cows per cent.
		ft. ins.		ft. ins.		
Norrona . . .	20	59 0	20	61 5	50.0	50.0
Shetland . .	18	58 5	13	58 7	58.0	42.0
Alexandra . .	21	60 9	28	61 8	42.8	57.1
Olna . . .	84	57 7	94	58 1	47.1	52.8
Buneveneader .	10	56 8	12	56 1	47.3	52.6
	153	58 6	167	59 2	49.1	50.9

For comparison I add the table from my paper in the July "Annals."

Norrona . . .	42	61 3	31	61 9	57.5	42.4
Shetland . .	24	62 6	24	65 1	50.0	50.0
Alexandra . .	56	60 9	31	64 7	64.3	35.6
Olna . . .	81	58 2	83	58 4	49.3	50.6
Buneveneader .	45	60 7	33	60 2	57.6	42.3
	248	60 5	202	62 0	55.7	44.1

The first thing to notice is that these whales are much fewer than last year, their size smaller, and cows are more numerous than bulls. The reason of the first is from the invasion of *B. borealis*, which comes nearer land than the Finner, and the latter will not associate with the former. Occasionally a small Finner will be found near them, but the adult Finner keeps away from *B. borealis*. One captain of a whaler told me there was a regular belt of water (in which there were plenty of herrings) between the two whales. The *B. borealis* left about 18th July, and then Finners came back. I attribute the smaller size to differences in the measurement. Hjort gives the size of *B. musculus* as "60-65 feet, seldom over 70 feet." Why the proportion of the sexes has changed I can only say that I do not know. In 1904 there were, out of 226 Finner whales, 60 per cent of bulls and 40 per cent of cows. It is not that whales are getting fewer, for the captain of a steamer coming from Iceland told me that for some 40 miles between Iceland and Faroe he passed thousands of Finner whales; he said they were blowing all round the ship as far as he could see. Whaling was just about over at the time. I tried to get the proportion of the sexes from fœtuses. Out of 19, 11 were bulls and 8 cows, or about 58 bulls per cent, but the number is too small for much use.

I counted the baleen plates in a large Finner 71 feet long. I took the right side to show the difference in colour. The first anterior 170 plates were yellow, and the 207 posterior plates were grey; total, 377 plates. The number of plates varies with the individual whale.

The farther north these, or any other, whales are killed, the thicker is the blubber. The last season, 1906, was cold and inclement, and it seemed to me that the blubber was thicker than formerly.

At Norrona station one Finner had herrings inside, and at the Alexandra station ten had fed on herrings. The latter part of July is the time when these whales first begin to eat herrings; in August they are more frequently found with herrings.

Balænoptera borealis (Seihval). Plate I.

I have just stated that these whales came in vast numbers this year. In 1904 the four Shetland stations had only five of these whales. In 1905 the number went up to thirty-two, of which the Olna station had twenty-seven and the Alexandra none. 1906 showed the extraordinary number of 262. It was not only off the Shetland coast where they were, but off Harris they seemed just as plentiful. Once off the coast of Finmark there was a similar invasion, when Finner whales kept away; the following year they were gone. To those who are interested in the migration of fish and other denizens of the sea this will be noteworthy. These whales feed on much the same food as *B. sibbaldii* and do not eat fish. Hjort gives the length as from 40 to 50 feet. I counted 290 plates of baleen in one individual. The particulars of these whales given below may be of interest :—

Station.	Number of Bulls killed.	Average Length.	Number of Cows killed.	Average Length.	Proportion of Bulls per cent.	Proportion of Cows per cent.
		ft. ins.		ft. ins.		
Norrona . .	22	39 8	15	39 2	59.5	40.5
Shetland . .	7	43 4	9	46 0	43.7	56.3
Alexandra . .	25	41 0	47	41 5	34.7	65.3
Olna . . .	76	42 6	61	42 0	55.4	44.5
Buneveneader .	43	36-48	25	36-48	63.2	36.8
	173	41 7	157	42 2	51.3	48.7

In the above average lengths I have not included the return from Buneveneader station. A note from the manager says : "From 13th June to 6th of July 62 Seihval were killed near St. Kilda; 22 of these were female, but no fœtus; dimensions, 36 to 48 feet and from 14-20 (girth). A storm came and brought them away (6th July), so none were to be seen on the fishing grounds after that."

The last paragraph is very interesting; the whales, curious, changeful creatures, went off on account of a storm. In Shetland we had fine weather at the time and they stayed on for another twelve days and left us on the 18th July. We had a storm on the 19th, few were seen after that. I particularly wanted a small fœtus

BALÆNOPTERA BOREALIS: DORSAL ASPECT.

BALÆNOPTERA BOREALIS: VENTRAL ASPECT.

Whaling in Scotland.—P. 12.

of *B. borealis* for the University Museum of Zoology, Cambridge, but during the month they were near us the fœtuses were all too large. In this they seem different from *B. musculus*, the fœtuses of which vary greatly in size.

The baleen of the Seihval is fringed with soft silky hair of a dirty white colour. It is valuable, the present market price being £75 to £100 a ton. That from *B. musculus* being £27 : 10s. The smaller size of the Seihval makes it less valuable than the Finner, probably two Seihvals are equal in value to one Finner. In one thing it is superior: the beef is excellent, like veal, and cooked as veal cutlets one can hardly tell the difference, only the whale is richer.

The same hairs occur on the jaws in both *B. musculus* and *borealis*. *B. borealis* has a peculiar parasite attached to the stomach, I was told, but it may have been taken from the intestine near the stomach, small red and white objects like tiny sausages. These Dr. Harmer considers are *Echinorhynchus turbinella*, and there is also *Echinorhynchus porrigens*, Rudolphi. One whale had received an injury to the snout, the end of which had been battered in, but had healed, leaving a concavity. In this were some barnacles, *Conchoderma aurita*; they were growing close to and among the coarse hairs which grow at the end of the upper jaw.

The following are the lengths of the biggest of these whales killed, in feet:—

Norrona	Bulls	45, 45, 42, 42,	Cows	47, 45, 45, 44
Shetland	,,	47, 46, 45, 44,	,,	47, 47, 47, 46
Alexandra	,,	46, 47, 46, 44,	,,	48, 46, 46, 46
Olna	,,	56, 50, 50, 50,	,,	57, 52, 52, 50

The last station got some whales of unusual length.

Balæna biscayensis [= *B. australis*]

The Buneveneader station was the only one to get any of the Atlantic Right whales. Four bulls and two cows. The length and then the girth is given—

Bulls . .	37 × 23, 51 × 40, 48 × 38, 52 × 39
Cows . .	48 × 37, 52 × 39

Hjort gives the length as up to 50 feet, and the whalebone from 5 to 7 feet.

The whalebone of the above is given as from 2 to 8 feet in length, and is valuable. These whales are called Nordcaper in Norway. The only other specimen I have heard of was got in 1903 by a Faroe whaler 50 miles west of Shetland; so far as I know no more have been got near Shetland than this one, unless the Faroe whalers have got any, for they often "fish" in Shetland waters.

Megaptera longimana (Humpback Knol)

The Olna station got 2 bulls, 42 and 41 feet, and 1 cow of 43 feet. Buneveneader station, 2 bulls, both 32 feet, the girth of which is given as 20 and 21 feet.

These whales live on shrimps and are of a very savage nature. They are by no means common. I have records of only seventeen having been killed in Shetland in four years.

Physeter macrocephalus (Sperm Whale)

The one got off the Flannen Islands by the Buneveneader Company was a large bull 68 feet long, the girth is given at 33 feet. I regret not having been informed as to the contents of the stomach, they are such omnivorous creatures.

Hyperoödon diodon [=*H. rostratum*] (Bottle-nose)

There are plenty of these whales round Shetland, but they are not fired at by the whalers on account of their small size. The one killed at Olna was a bull of 26½ feet. Hjort gives the length at 20 to 25 feet. The oil is as valuable as sperm oil. In Norway this is a separate fishery conducted in sailing craft with small harpoons.

A Norwegian gentleman suggests a reason for the grooves in the thorax of the Balænophoræ and Megaptera. In Norway they have grooves in the ski to give a better grip of the snow and to make them go faster. It is possible that these whales have grooves to enable them to travel faster through the water.[1]

The herring fishermen and curers are making a great outcry about whaling ruining the herring fishing. It is difficult to reconcile this statement with the fact that the last three years have been the finest herring years on record :—

1903	309,909	crans.
1904	543,240	„
1905	645,834	„
1906	455,000	„

[1] I suggested the same in different terms, viz. that these grooves are "sluices" to allow the resisting water to pass ; and that if no such grooves existed on the under surfaces of the animals, the resistance to their progress, as bottom-feeders, would affect the quantities of their food, and prevent it reaching their mouths, the weight of water being diverted to either side ; besides the great pressure also would affect the progress of the huge animals through the water. Perhaps additional probability may be lent to the theory here advanced by quite recent discoveries made in ship-building by Mr. William Peterson of Newcastle, which is thus described :—"His design is for a groove of about 3 feet from edge to edge, and a foot in depth, to run from the bows alongside a ship. In this hollow, it is claimed, the spiral energy of the waves cast up when the bow cleaves the water, etc.," causes increased speed with less coal or driving power. Has Mr. William Peterson thus taken the lesson from Nature !? J. A. H.-B.

It is true that the West Coast fishing was a failure this year, but this has happened long before whaling began, and is probably due to the cold for the first six months of this year.

Government has been asked to stop whaling entirely, but as more than half the capital in the four whaling stations is British, this could not be done without paying compensation. Even if it were done, what would be the result? Whalers from Faroe would take the places of the existing whale steamers. Floating factories would anchor, and after flensing the carcases would let them drift. Affairs would be far worse than at present, and there would be no remedy without altering International law.

Lochend, Shetland.

ON THE OCCURRENCE OF THE SIBERIAN CHIFF-CHAFF (*PHYLLOSCOPUS TRISTIS*) IN SCOTLAND: A NEW BIRD TO THE BRITISH FAUNA.

By Wm. Eagle Clarke, F.R.S.E., F.L.S.

In October 1902 I received from the Sule Skerry lighthouse, a lonely rock-station situated out in the Atlantic and some 33 miles west of Orkney, an example of a *Phylloscopus*, which had been captured at the lantern a short time previously, namely on the night of September 23. In order to preserve this specimen until such time as it was possible to despatch it to the mainland, the bird had been immersed in methylated spirit, and reached me in a sodden state. On examination I found that it was a Chiff-Chaff, but its condition did not then allow me to detect the differences between the European and Asiatic species. Fortunately, however, I had the specimen preserved, and having recently received a Chiff-Chaff from Fair Isle I was led to examine my lighthouse and other material relating to the genus. I then found that my old friend of 1902 was not the British and ordinary European species, but the bird known as the Siberian Chiff-Chaff, the *Phylloscopus tristis* of Blyth. This was an interesting discovery, for the species has not been detected in Western Europe, not even on that wonderful island, Heligoland, which has furnished so many surprises for ornithologists

especially those who are interested in the phenomenon of bird migration.

This new British bird is a summer visitor to North-eastern Europe, and finds its western limit in the valley of the River Petchora, where it was discovered by Messrs. Harvie-Brown and Seebohm during their notable investigations into the ornis of that little-known region. Eastwards, the last-named naturalist found it nesting in the valley of the Yenesei, and it also occurs in summer in the highlands of Kashmir. In winter it is widely distributed over India, being only absent from the southern portion of the peninsula. The only record known to me for Europe, beyond the Petchora and Eastern Russia, is one for the river Po in Italy, as mentioned by Eduardo in "Avicula" (ii. 1-2) in 1898.

In plumage *Phylloscopus tristis* resembles our Chiff-Chaff, *P. rufus*, but is browner above; has the under parts buff, paler on the chin, throat, and abdomen; and the bill and legs darker, the latter being blackish brown. It differs also from the Common Chiff-Chaff in its song, which is loud but not musical.

Its nest was found by Seebohm on the lower Yenesei. One which he describes was placed in the branches of an alder about 4 feet from the ground, and was semidomed, composed of grass, and lined with grouse feathers. The eggs are white, spotted with dark purple, and are large for the size of the bird.

The Royal Scottish Museum, Edinburgh.

NOTES ON THE BIRDS SEEN IN THE OUTER HEBRIDES DURING THE SPRING OF 1906.

By Norman B. Kinnear, M.B.O.U.

During last spring I spent some six weeks in the Outer Hebrides, starting at Barra and working north to Stornoway. For part of the time I was fortunate in having my friend Mr. P. H. Bahr for a companion, and my only regret is that he was not able to continue with me for the whole trip. The principal object of our visit was to see certain species

which had recently been reported in these pages as breeding in the Outer Hebrides, and at the same time to obtain some photographs of birds and their nests. We were exceptionally fortunate, and Bahr obtained some splendid photographs of old birds on their nests and with their young. To the different proprietors we wish to acknowledge our thanks for their kindness in giving us permission to visit the various islands, and we are also indebted to their keepers, who afforded us great assistance.

Among the birds given in the following list, the Coal Titmouse, Spotted Flycatcher, and Crane are new to the Outer Hebrides; and the Missel-Thrush and Golden-crested Wren have not been recorded before during the breeding season. The Heron also is an addition to the list of breeding species. By finding the nests of the Shoveller, Scaup, and Tufted Duck we were able to confirm the previous record in the "Annals" of these species breeding in the Outer Hebrides.

Missel-Thrush, *Turdus viscivorus*, Linnæus.—The breeding of this species may now be regarded as established. I saw a Missel-Thrush in the Castle grounds at Stornoway on 2nd July, and a few days later, on the 7th, I came across three, two old ones and a young one, which had evidently been bred in the district. In all probability the pair of birds seen in the Castle grounds by Dr. Mackenzie on 26th April 1902 ("Annals," 1902, p. 138) bred there, and were not just passing migrants, as suggested by Mr. Harvie-Brown. The woods round the Castle are of considerable extent, and it is not always easy to find the Missel-Thrushes, so that may account for Mr. Harvie-Brown not seeing the birds during his visit.

Song Thrush, *Turdus musicus*, Linnæus.—We found the Song Thrush fairly plentiful in all the islands, but their chief stronghold is in the woods round Stornoway. It is found at a considerable height on the bleak hillsides, and I saw one singing on Eval, in North Uist, at about 800 feet, and another on the Cleisham in Harris at 600 feet. We were much struck by the dark colour of all the Song Thrushes we saw in Barra and the Uists. Near Stornoway I saw both light and dark examples, but I am not sure that the former were not young birds.

Blackbird, *Turdus merula*, Linnæus.—In Barra we saw a single male at North Bay and another in a small plantation on the

east side of the island. We only came across one in South Uist, and that was a male in the garden at Grogary Lodge. I saw a pair, and found a nest, in a garden near Loch Maddy, North Uist. Round Stornoway the Blackbird is nearly as common as the Song Thrush.

Whinchat, *Pratincola rubetra* (Linnæus).—We did not come across the Whinchat in either Barra, the Uists, or Benbecula. In Lewis I saw a pair near Loch Tholta Bhredein, some five miles to the south-west of Stornoway, and there are several pairs breeding in the Castle grounds near that town.

Stonechat, *Pratincola rubicola* (Linnæus).—This species does not seem to have been found breeding in Barra. On 18th May we saw a single male by the side of Traig Mhoir, and on the 22nd a male and two females among the heather at the foot of Ben Erival. The first bird seen may possibly have been a passing migrant, but I do not think the other three were, as two of them, a pair, kept flying about as if they had a nest, though we failed to find one. In South Uist we saw a male near Daliburgh on 1st June, and in Benbecula two pairs at the foot of Rueval. The Stonechat is not uncommon in North Uist, and I also saw it in Harris and Lewis.

Redbreast, *Erithacus rubecula* (Linnæus).—We saw two Robins in Barra during the last week of May; it has bred there since 1892. Round Stornoway it is very abundant.

Whitethroat, *Sylvia cinerea* (Bechstein).—A single bird, seen in a small plantation on the east side of Barra, was the only example of this species we came across in the Outer Hebrides.

Golden-crested Wren, *Regulus cristatus*, K. L. Koch.—A few pairs of Golden-crested Wrens bred in the woods round the Castle at Stornoway, and I several times fell in with family parties of old and young birds. Mr. D. Mackenzie tells me this species is plentiful at Stornoway in the autumn, but I do not think it has been recorded before during the breeding season.

Hedge Sparrow, *Accentor modularis* (Linnæus).—In Barra we came across a pair at North Bay, and a single bird amongst some trees near Traig Mhoir. Dr. M'Rury does not seem to have met with this species in South Uist, but we saw one in the garden at Grogary Lodge, and another among some long heather near the head of Loch Skiport. It is common in the Castle grounds at Stornoway.

Coal Titmouse, *Parus britannicus*, Sharpe and Dresser.—In October 1904 Mr. D. Mackenzie, Stornoway, saw a small flock of Coal Tits on a tree in front of Mhorsgail Lodge, Lewis. He ran into the lodge for a gun to shoot a specimen, but the Tits

had gone by the time he returned. Mr. Mackenzie is a native of Sutherland, and is well acquainted with the Coal Tit there, so I think there is no doubt about the identification. During the first week of July I frequently came across family parties of Coal Tits in the woods round Stornoway Castle, which had evidently been bred there, but it cannot be said to be an abundant species.

White Wagtail, *Motacilla alba*, Linnæus.—This species was fairly numerous on migration in Barra from the 18th, the day we landed, to the 22nd of May.

Spotted Flycatcher, *Muscicapa grisola*, Linnæus.—On 7th July I saw a single bird at the back of the Castle gardens, Stornoway. It appeared from its actions to have young or a nest near, but I was unable to find either or see a second bird.

Swallow, *Hirundo rustica*, Linnæus.—We saw three Swallows at the back of Ben Scurrival, Barra, on 22nd May. Mr. D. Mackenzie, Stornoway, tells me that about fifteen years ago the coachman at the Castle asked him to come and see a pair of birds which were nesting at the stables, as he did not know what they were. Mr. Mackenzie found that they were a pair of Swallows, but he has not seen any nesting there since.

Sand Martin, *Chelidon riparia* (Linnæus).—One seen at Rueless, on the east side of Barra, on 24th May.

Greenfinch, *Ligurinus chloris*, Linnæus.—No mention of this species at Stornoway is made in Mr. Harvie Brown's supplement to the "Fauna of the Outer Hebrides," but from all I was able to learn it must have been a breeding species there for some time. It is not yet really abundant, but I saw a few both old and young birds in the Castle grounds.

House Sparrow, *Passer domesticus*, Linnæus.—The House Sparrow in the Outer Hebrides seems still to be confined to Castlebay, Barra; Tarbert, Harris; and Stornoway, Lewis.

Tree Sparrow, *Passer montanus* (Linnæus).—We only saw the Tree Sparrow in Barra at Eoligary, where there is a long-established colony. On the west side of North Uist I came across six Tree Sparrows by the roadside near Balmartin. They were all old birds, but though I watched them for some time I was unable to ascertain whether they were nesting. At Stornoway I found a small colony of six pairs breeding in the Castle grounds. The nests were in Spruce trees, and in three of them the lower part was made of dried grass, and the upper, the domed part, of green moss.

(*To be continued.*)

BIRD-LIFE AS OBSERVED AT SKERRYVORE LIGHTHOUSE.

By James Tomison, Principal Light-Keeper.

Skerryvore Lighthouse is situated on a small reef in North Lat. 56° 19′ 22″ and West Long. 7° 6′ 32″; 11 nautical miles W.S.W. $\frac{1}{4}$ W. of the island of Tiree, the nearest land; 33 miles S. $\frac{1}{4}$ E. of Barrahead, the southernmost point of the Outer Hebrides; 30 miles W. of Iona; and 50 miles from the nearest point of the mainland of Scotland. From Hynish Point in Tiree to the Mackenzie Rock—3 miles W.S.W. of Skerryvore—there is a continuation of "foul" ground consisting of small rocks, some above sea-level, others covered at high water, and others constantly under water, but near enough the surface to be a source of the greatest danger to the mariner who unwittingly comes in their vicinity. There is thus stretching right out in the Atlantic, in the fairway of all shipping passing through the Outer Minch, as dangerous a line of reefs and shoals as can be found anywhere round our coasts. The Skerryvore, or Big Skerry, was selected as the most suitable on which to erect a lighthouse, owing to it being always above water, and being of some considerable extent, affording fair facilities for landing. The superficial area of this rock at low water is about 300 sq. ft., and less than half that size at high water. The rock itself consists of quartz, felspar, hornblende, and mica, and is extremely hard, so that where it is polished by the action of the sea it is quite smooth and slippery, and landing on it has been described as "like climbing up the neck of a bottle." A trap rock in the form of a dyke of basalt intersects the strata, and lies almost due North and South, being continuous until lost in the sea at either end, a distance of 150 feet. The building of the lighthouse was begun in 1838, and after six years of arduous labour was completed, and the light first exhibited on 1st Feb. 1844. It has now withstood the force of the Atlantic storms and billows for over sixty years, and to-day shows not the slightest signs of decay.

From an ornithological point of view it is a place of

considerable interest, standing as it does right in the track of the migration stream passing between the Inner and the Outer Isles. Since being appointed there in August 1903, I have kept notes of all feathered visitors that have come under my notice, and at the request of the Editors I have prepared this contribution regarding them.

We have no birds that may be classified as residents, for the simple fact that there is no place to reside on. A few are seen about more or less the whole year round, but the great bulk of our visitors are birds of passage calling on their way North and South. During migration the number of visitors depends a good deal on weather conditions. It is pretty well known now by all students of bird-migration that the beams of light issuing from the lantern of a lighthouse attract the passing flocks, and this especially is the case when the atmosphere is hazy, and when there is a night of "sma'" rain or Scotch mist. This condition of weather undoubtedly makes the beams more conspicuous and attractive. The night must also be quite dark. Moonlight is a most unfortunate time for the observer who is anxious to witness a rush, for I never yet saw a bird on the windows when the moon reigned on high. Also if the atmosphere is very clear, no matter how dark it may be, the passing crowds pass on without a pause. But in spring or autumn, if the wind is easterly, and the horizon hazy, hazy enough to obscure a light about eight or ten miles distant, and if a large crowd of birds happens to be passing, the scene witnessed from the balcony of the tower is really worthy of being termed one of Nature's wonderful sights. Hundreds of birds are flying about in all directions, crossing and recrossing one another's flight, but never coming into collision, all seemingly of the opinion that the only way of escape out of the confusion into which they have got is through the windows of the lantern. In ordinary clear weather they pass at a great height, so high as to be invisible to the naked eye. This was very forcibly brought under my notice this year in September and November. On 27th Sept., a clear quiet day, I distinctly heard the cry of Redwings high overhead, but could see no birds. I happened to have the telescope in my hand, and at once levelled it

in the direction of the sound, when I distinctly saw a considerable flock passing in a southerly direction. After following their flight till lost sight of, I searched the northern sky for some time, and was rewarded for my trouble by seeing another flock coming direct from Barrahead. When passing the rock they slightly altered their course, and disappeared, going due South. Again on 10th Nov. I heard the sound of Redwings, and got sight of one flock travelling in exactly the same direction. This was all I was able to see, but nearly every day in November when the weather was moderate I could hear them passing. On rare occasions a straggler rested on the rock during daylight. This autumn I have seen more migrants than in any former season. On 17th July a flock of twenty-five Turnstones were seen flying around the rock without resting, and after having a good look round departed in the direction of the coast of Ireland. On 20th Aug. Wheatears first made their appearance, and from then onwards we had a few visitors every day till the end of September. White Wagtails were also fairly numerous. But the first great rush of the season took place on the night of 20th to 21st Sept. For some days previous the weather was very mild and quiet, a little hazy, wind S.E., barometer high—30.20 to 30.30, temperature 58° to 60°. About 8 P.M. on the 20th a few Meadow Pipits and Wheatears were noticed on the lantern, and at 10 P.M. the Meadow Pipits were flying round in thousands. Standing on the balcony watching them, one could almost imagine there was a heavy fall of snow, the flakes abnormally big. Thousands were flitting about; hundreds were striking against the dome and windows; hundreds were sitting dazed and stupid on the trimming-paths; and scores falling to the rock below, some instantaneously killed, others seriously injured, falling helplessly into the sea. This continued till dawn, when all that were still uninjured disappeared. The weather all night was delightful; wind S.E., light breeze, haze dense enough to make Dhuheartach Light—18 miles distant—very indistinct (in clear weather it shows very clearly). Along with the Pipits were a number of Wheatears, one Starling, one Ring Ouzel, two Jack Snipe, a few White Wagtails, one

Thrush, and one Yellow-Browed Warbler. Redshanks and Golden Plovers were heard but not seen.

On 21st Oct. there was a great rush of Redwings, Fieldfares Blackbirds, and Thrushes, with a few Starlings. The wind was S.E., strong breeze, almost a gale, haze and rain. From 7 P.M. till dawn the following morning their numbers were far in excess of anything seen here for years. They were striking the windows constantly, and the number killed that night was almost beyond calculation. As the wind was strong, nearly every one as it struck was carried away, falling in the sea, a small percentage only falling and remaining on the balcony. Yet in the morning we picked up ninety-eight dead on the gallery. Watching them from the lee side of the lantern, from 10 P.M. to midnight there seemed a constant fall of dead and maimed. The only way I can give an idea of the number of fatalities is this: from the focus of the light till all was lost in darkness, a distance of 20 to 30 ft. down, the eye could always detect three falling, sometimes more, but I consider this a fair average Were I to go more minutely into this I might lay myself open to criticism, and some might be inclined to doubt my statements. Sometimes we use the terms hundreds and thousands without thinking what these figures mean, but on this occasion when I say thousands were killed I do not exaggerate in the slightest. Unfortunately, that night there was a very heavy sea washing right over the rock, so that not a single specimen was left around the base of the tower. Taking the strength of the wind into consideration, and from observation, I am inclined to say that the number falling on the balcony formed about 1 per cent of the death-roll. The rush consisted mainly of Fieldfares and Redwings, with a few Thrushes, Blackbirds, and Starlings. The following night, though the weather conditions were the same, only about a dozen were seen.

Another great rush took place on 10th Nov.—wind S.E., fresh breeze, rain—but on this occasion very few were killed. They were first observed at 10 P.M., and by midnight vast crowds were circling round, consisting chiefly of Fieldfares and Redwings, a few Thrushes and Blackbirds, and one Starling. Whether these birds come down by the Outer Islands, or are blown out of their course by easterly winds,

is difficult to say. From what I have seen I am satisfied there is a stream coming down outside and passing this place on their way South. This is very distinctly seen in the case of the sea birds—Guillemots and Razorbills. In August I have watched them for days coming from Barrahead in flocks of from twenty to fifty, and when passing the tower altered their course to a direction that would fetch the north coast of Ireland.

I will now give a list of birds seen at Skerryvore, with some notes of their occurrence.

THRUSH, *Turdus musicus.*—A visitor on migration. Never very numerous. Generally in company with Redwings and Fieldfares; more common in autumn than spring.

REDWING, *Turdus iliacus.*—A regular spring and autumn visitor, sometimes in great numbers. The earliest record of their appearance in autumn was on 27th Sept. this year. As a rule they are not seen till the 8th or 10th Oct., but weather conditions may have something to do with this. The main body seems to pass South in October and the first half of November, but stragglers are not uncommon till the end of November. In spring so far I have never observed any great rush.

FIELDFARE, *Turdus pilaris.*—Not plentiful in spring, but always common in October and November, generally arriving about ten days to a fortnight after first appearance of Redwings. Rarely seen after end of November.

BLACKBIRD, *Turdus merula.*—Fairly common in March and April, and again in October and November, for the most part in company with Redwings and Fieldfares.

RING OUZEL, *Turdus torquatus.*—An occasional visitor in spring and autumn.

WHEATEAR, *Saxicola œnanthe.*—Always seen in spring and autumn, sometimes in considerable numbers. Earliest occurrence in spring, 26th March 1906. In the Fall the date of arrival varies from 15th to 20th Aug., and on through August and September they are almost daily visitors. I have noticed four or five about the rock a whole day, departing before sunset, and the following day fresh arrivals took their place. When the weather is clear none are seen on the lantern at night, and as they make no particular cry when on the passage, it is not easy to detect their occurrence unless they rest on the rock. In hazy weather numbers are seen at night, but never in a great rush.

Redstart, *Ruticilla phœnicurus*.—A rare visitor. Two were seen on the rock at 2 P.M. on 6th Oct. 1903; wind S.E., fresh breeze. Both were secured. Another was killed on the lantern on the night of 21st Sept. 1906; wind S.E., fresh breeze, haze.

Robin, *Erithacus rubecula*.—Very rarely seen. Two on the rock on 10th April 1906.

Goldcrest, *Regulus cristatus*.—Once seen, on 24th March 1904, when about sixty made their appearance on the lantern at 10 P.M., and remained fluttering about all night. Wind S.E., light breeze, haze.

Yellow-browed Warbler, *Phylloscopus superciliosus*.—One was captured on the night of the 20th Sept. 1906, or, to be more particular, at 2 A.M. of 21st. On the same night there was a great rush of Pipits, Wheatears, White Wagtails, and amongst the dead on the trimming-path this rare and interesting visitor was found. It was identified by Mr. Eagle Clarke.

White Wagtail, *Motacilla alba*.—A common visitor in August and September, in company with Pipits and Wheatears, but often seen during the day, two or three at a time, without any other species along with them.

Pied Wagtail, *Motacilla lugubris*.—Seen on the rock on 1st Sept. 1906, at 10 A.M.

Meadow Pipit, *Anthus pratensis*.—Common in spring and autumn, sometimes a few remaining a day or two on the rock when the weather is moderate. The biggest rush seen was on 20th to 21st Sept., when they were about the lantern all night in large numbers.

Rock Pipit, *Anthus obscurus*.—Has been recognised on several occasions.

Pied Fly-catcher, *Muscicapa atricapilla*.—One specimen got on 21st Sept. 1906.

Swallow, *Hirundo rustica*.—A summer visitor, generally in May and June, when one or two stray out in this direction. When they do favour us with a visit it is usually an afternoon call, and more than once I have seen one come in at the door and take up its quarters for the night on a coil of rope.

Green Finch, *Ligurinus chloris*.—Three were found dead at the foot of the tower on the morning of 3rd Nov. 1906. Wind all the previous night S.E., light breeze, haze. A few Redwings were seen and heard, but none on the lantern. This is the only record of this species.

Hawfinch, *Coccothraustes vulgaris*.—One found dead at foot of tower, 28th April 1904. Wind S., strong breeze. Rain the

previous night. One caught on lantern on 11th Nov. 1906, at 11.30 P.M. Wind fresh breeze, clear. This was the only bird seen that night.

HOUSE SPARROW, *Passer domesticus.*—A rare visitor in summer for a few hours, probably wandering from Tiree.

BRAMBLING, *Fringilla montifringilla.*—A rare visitor. One caught in October 1905, and kept in a cage till April following, when it accidentally escaped. One on lantern on 10th Nov. 1906.

COMMON BUNTING, *Emberiza miliaria.*—Has been seen in spring and autumn.

SNOW BUNTING, *Plectrophenax nivalis.*—This species always calls on the passage South and North, sometimes in flocks of twenty to thirty, often seen only through the day, but when weather conditions are suitable they are also attracted by the light at night. They are more often seen in September and October than in spring, but, wonderful to say, though other migrants have been more than ordinarily numerous, not a single member of this species has been seen this autumn. It would be interesting to learn if they have failed to visit other localities on this route.

STARLING, *Sturnus vulgaris.*—An erratic and irregular visitor. Frequent on migration, and in summer a flock of half-a-dozen or so often come out from the direction of Tiree, occasionally remaining overnight, roosting on the dome of the lantern.

ROOK, *Corvus frugilegus.*—One solitary individual arrived on the rock on the afternoon of 6th April 1906, and spent the night in one of the windows of the tower.

SKYLARK, *Alauda arvensis.*—Is only a visitor on migration. Earliest seen in spring, 21st Feb. 1905, when three were seen flying round the rock. In March 1905 flocks of from ten to twenty passed North, generally resting for half-an-hour on some outlying rock. The dates on which they were seen were 8th, wind N.E., fresh breeze, clear; 18th, wind S., strong breeze, rain; 25th, wind S.E., fresh breeze, clear. A straggler is not uncommon during summer. In autumn they begin to make their appearance towards the end of August, and are mostly seen on the lantern in company with Wheatears and Pipits. In September, October, and November, when there is a rush of other birds, we can always depend on seeing one or two Larks, and now and again a solitary specimen will appear on the windows, spending the night making fruitless endeavours to get inside, only departing on the approach of daylight.

SWIFT, *Cypselus apus.*—Has been seen every year in August, passing South.

Long-Eared Owl, *Asio otus.*—One seen resting on the rock on 12th Nov. 1906.

Peregrine Falcon, *Falco peregrinus.*—One captured on the lantern on 26th Sept. 1903.

Merlin, *Falco æsalon.*—An occasional visitor in September.

Cormorant, *Phalacrocorax carbo.*—Always present around the rock from August till February or March. When the breeding season comes round they all leave, but it is not uncommon to see one on a fishing expedition during the spring and summer. During stormy weather, when the Atlantic billows are having some gentle exercise, and covering all reefs and rocks to a depth of from 20 to 50 feet, the Cormorants disappear for a time, but whenever the weather improves they return at once. They do most of their fishing quite close to the rock, where the water is shallow, and apparently make a good living, at least one would infer so when they spend the winter in such a locality.

Shag, *Phalacrocorax graculus.*—What has been written about the Cormorant applies also to the Shags, only the latter are to be seen in greater numbers and do not seem to be so afraid of man's presence, since they rest very frequently on the lighthouse rock, and more than once have tried to take up their quarters for the night in the windows, a proceeding always decidedly objected to by the lightkeepers. The Cormorant never comes near the tower.

Gannet, *Sula bassana.*—The Solan is to be seen practically all the year round. Towards the end of November and in December one is rarely seen, but in January a few are daily seen, gradually increasing in numbers as the season advances. The numerous shoals in the vicinity are swarming with fish, and hospitably entertain passing Solans. We must admit that Nature never makes mistakes, but when I see these birds feeding I cannot help feeling that there is something wrong when they require so much food: it seems a waste of good material. I have carefully watched them, singling out one bird, and have seen it make 25 dives in 30 mins., every time, as far as I could judge, securing its prey, and each fish would weigh from 4 to 6 oz. This goes on the whole day long, from an hour before sunrise to an hour after sunset. I have seen them fishing on a clear night, diving from a height of 20 or 30 ft., one hour after sunset. The Cormorant and Shag bring their captures to the surface before swallowing; the Solan swallows its catch under water. Only once have I seen the fish in its bill above water, and this was when, instead of diving, it merely skimmed through the surface amongst a shoal of podleys. After paying

careful attention to their habits it is easy to form a conclusion whether a dive has been successful or not. If nothing is caught the bird on emerging from the water immediately takes to flight, so quickly, in fact, that the observer feels inclined to think that there is a small display of temper, whereas when successful a short time is spent on the surface before flight, the bird giving itself a general shake up and dipping its bill once or twice in the water. The Solan always falls on its prey from a great height in the air, in my opinion the height above water depends on the depth of the fish under water, probably the greater height giving it more impetus to reach a greater depth. I have often seen one alter its mind when half-way between the starting-point of its fall and the water, and continue its flight, the cause of this being that the fish had moved out of line of original aim. Though it does not dive from the surface like other sea birds after its prey, it can do so all right. Frequently, when fishing close to the rock, I have seen them during a heavy sea, on coming to the surface, dive to avoid a broken billow. In doing this they do not dive like the Shag, but disappear like the Northern Diver, and on coming up on the other side of the billow take to flight at once.

Heron, *Ardea cinerea.*—The Heron is a casual visitor, sometimes flying past without resting, and on other occasions spending an hour on an outlying reef. I have detected them coming out here from Tiree, and altering their course to due South when near the lighthouse. This was in August. I never saw them in spring. At Earraid, on the S.W. of Mull, one has nested and reared its young these past three years, always in the same spot—a ledge on one of the higher cliffs of the island.

Eider, *Somateria mollissima.*—May be called a regular winter resident, arriving in September and remaining till March, living at sea in all weathers, and only landing on the rock on a fine day for a few hours.

Corn Crake, *Crex pratensis.*—Has been seen twice on the rock—14th Sept. 1904 and 12th Sept. 1906.

Golden Plover, *Charadrius pluvialis.*—Is always seen and heard on migration, but more often in the autumn than spring. This year in October and November two or three were seen nearly every day arriving from the North, and after a short rest continuing their flight in a southerly direction.

Lapwing, *Vanellus vulgaris.*—Is only an occasional visitor, seen on both migrations.

Turnstone, *Strepsilas interpres.*—A regular winter resident. About five or six are always on the rock from August to April feeding amongst the seaweed when the tide is out. They are so

accustomed to seeing us about that they are quite tame, and seem to have no great fear of mankind. Along with them from a dozen to twenty Purple Sandpipers (*Tringa striata*) are constantly on the rock. I have never yet been able to decide what they do, or where they go during a gale. Very often the whole rock is constantly under water for days, but no matter how quickly the sea may fall, as soon as there is a part left uncovered, we can rely on seeing a few Turnstones and Purple Sandpipers. Both leave in April about the same time; the Turnstone is the first to return.

Snipe, *Gallinago cœlestis.*—Has been got dead on the lantern on frequent occasions in autumn.

Jack Snipe, *Gallinago gallinula.*—Two were got dead on the lantern on 20th Sept. 1906.

Sanderling, *Calidris arenaria.*—Seen pretty regularly in September.

Common Sandpiper, *Totanus hypoleucus.*—Two seen in August this year flying about the rock.

Redshank, *Totanus calidris.*—More often heard than seen on migration. I have never yet known one to strike the lantern. In summer a straggler calls and spends an hour or two on the rocks.

Curlew, *Numenius arquata.*—Is a regular spring and autumn migrant, seen in flocks of from three to twenty. Never seen resting.

Whimbrel, *Numenius phæopus.*—Often seen in May and August, two or three calling and resting for a short time.

Arctic Tern, *Sterna macrura.*—Seen in June and July in quest of food. I have often seen them with a small fish in their bills passing at full speed for Tiree, having got this fish a long way to the westward of the rock. We also daily see them fishing close to the tower, and when successful they at once start for home with their catch. Towards the end of July they are accompanied by their young, who rest on the rock whilst the parents fish for them.

Little Gull, *Larus minutus.*—Once seen here, 24th Sept. 1903, at 6 P.M.; wind S.E., strong breeze. It was flying about the rock, but did not alight. It came sometimes within six feet of where I was standing, and I am perfectly satisfied of its identity.

Sabine's Gull, *Xena sabinii.*—Seen flying about the tower for a short time, January 1905.

Black-headed Gull, *Larus ridibundus.*—A rare visitor in summer.

Herring Gull, *Larus argentatus.*—Seen all the year round, sometimes in great flocks. From six to a dozen are rarely ever absent, summer or winter.

Lesser Blackback Gull, *Larus fuscus.*—A summer visitor in June, July, and August.

Great Blackbacked Gull, *Larus marinus.*—Two or three are constantly here.

Glacous Gull, *Larus glaucus.*—One or two immature birds periodically seen in November, December, and January. The latest occurrence was on 3rd April 1904.

Kittiwake, *Rissa tridactyla.*—A few may be termed resident all the year round; but in August especially enormous flocks are seen at sea, and very often covering every available piece of rock.

Arctic Skua, *Stercorarius crepidatus.*—Often seen in summer.

Razorbill, *Alca torda.*—A regular migrant in both seasons, and also seen fishing in the vicinity in summer.

Guillemot, *Uria troile.*—Vast flocks seen passing on migration, especially in August.

Black Guillemot, *Uria grylle.*—A few spend the winter in the near vicinity of the rock, but never land.

Puffin, *Fratercula arctica.*—Very rarely seen.

Little Auk, *Mergus alle.*—Small flocks are periodically seen in winter, generally in January.

Fulmar, *Fulmarus glacialis.*—I have never seen this species from the rock, but when on board the steamer a few miles from it in summer I have never failed to see a few flying about.

Manx Shearwater, *Puffinus anglorum.*—Always numerous in spring and summer. Seen on wing all around the rock, sometimes one or two, and occasionally scores. On 6th April 1905, when on board the *Hesperus* between Dhuheartach Lighthouse and Iona, I saw them in hundreds. The sea all the way in—about 15 miles—was covered with them, and crowds were on wing all around us. I never before or since saw such numbers of them.

Storm Petrel, *Procellaria pelagica.*—Seen occasionally near the rock towards the end of August and in September at twilight on a dark gloomy afternoon. Have got a few specimens on the lantern.

The Northern Diver is represented by two and sometimes three specimens, arriving in November, and remaining till April, always feeding in close vicinity to the rock. They will at times disappear for a week, and I have more than once seen them on the wing coming out from Tiree, circling round the rock, and settling down a short distance out. On the rock at low water there is a long narrow pool, 20 ft. long, 3 ft. broad, and 4 ft. deep, and the rock all around it, about 3 ft. above water edge, the water escaping at one end amongst loose rocks. On the

21st March last I noticed a bird in this pool, and found that it was a diver that had got left by the tide, and was unable to get out, as there was no room for it to stretch its wings. I spent over an hour watching it, admiring its expertness in the water, and amused at its clumsy attempts to climb up the rocks. When swimming under water it never made the slightest movement with its wings, the propelling power being done with its feet alone, and both feet were without exception used simultaneously, not alternately as we see surface swimming birds usually doing. And what amazed me most of all was the great rate at which it could travel. Of course it was frightened, but allowing for that the speed was extraordinary, for when doing its best the eye could hardly detect anything but a streak from one end of the pool to the other. I took it out of the water, and set it down on the rock. There a more helpless creature one could hardly imagine. In the end I let it flounder into the sea, when it disappeared like magic, and came to the surface more than half-a-mile out.

Skerryvore Lighthouse.

ON THE SCOTTISH SPECIES OF *OXYURA* (*PROCTOTRYPIDÆ*).—Part I.

By P. Cameron.

Some time ago I sent to the Abbé J. J. Kieffer the collection of *Oxyura* I collected during the period I resided in Scotland, to aid him in his monograph of the European species for André's "Spécies des Hyménoptères." As the collection contained an exceptionally large number of undescribed species, besides known species unrecorded for the British Isles, and as M. Kieffer in his work does not give the particular localities where the species were captured, I have thought it desirable to draw up a complete catalogue of the collection with the localities where the species were taken.

Very little attention has been given to the *Oxyura* in this country. The late A. H. Haliday and Francis Walker recorded a few Scottish species, and a small number of species have been noted from Scotland in more recent years. In 1873 the Rev. T. A. Marshall published "A Catalogue of British Hymenoptera; Oxyura" (Entomological Society of London) in which 373 were recorded. As 142 species

of these were Walkerian species of *Scelionidæ*, etc., the list, so far as these are concerned, cannot be regarded as a critical one. The following illustration will show how largely M. Kieffer has increased our knowledge of these minute insects. In Marshall's catalogue are recorded 15 British species of *Anteon*, mostly described by Walker; in the present list 47 species of that genus are recorded from Scotland.

Not much is known about the natural history of the *Bethylidæ* and the *Dryininæ*. Species of the former group have been reared from Lepidopterous, Coleopterous, and Dipterous larvæ, and some species have been taken in ants' nests. The *Dryininæ*, so far as we know, are parasites on *Homoptera* (*Typhlocyba*, etc.). *Aphelopus melaleucus* has been reared by Giard in France from *Typhlocyba hippocastani* and *T. Douglasi*. The species in Scotland appear chiefly in June. Many species of *Oxyura* may, however, be found in the autumn in fungi.

In the following lists the species recorded in Marshall's catalogue are marked thus *.

BETHYLIDÆ.

By recent authors, following the example of Haliday, this group is referred to the Aculeate division of the Hymenoptera.

Bethylus, Latr., *sec.* Kieffer.

1. *mandibularis*, Kieffer, Clober.
*2. *fulvicornis*, Curtis., Bishopton.
*3. *fuscicornis*, Walker, *sec.* Kief., Tollcross, Claddich, Loch Awe, Mull. This species has been taken in the Sierra Nevada, Spain, by Dr. D. Sharp, F.R.S.

PROCTOTRYPIDÆ.

Dryininæ.

Anteon, Jurine.

1. *Cameroni*, Kief., Thornhill.
2. *fusciformis*, K., Dumfries.
3. *flavicornis*, K., Dalry, Ayrshire, Sutherlandshire.
4. *procericornis*, K., Mugdock, Eccles, Dumfriesshire, Bonar Bridge, Sutherlandshire.
5. *vitellineipes*, K., Clydesdale.
6. *melanocera*, K., Mugdock.

7. *hyalinipennis*, K., Carribber Glen, Manuel, Dalry.
8. *imberbis*, K., Rannoch.
9. *divisus*, K., Mugdock, Dumfries.
10. *flavinervis*, K., Dumfries.
11. *nigricornis*, K., Eccles.
12. *filicornis*, K., Sutherlandshire.
13. *divisus*, K., Clober Moor.
14. *nigroclavatus*, K., Cadder, Kilsyth, Mull.
15. *vulgaris*, K., Kenmuir on the Clyde, Cadder, Dumfries, Sutherlandshire, Glen Lyon, Mull.
    var. *trivialis*, K., Claddich.
16. *brevicollis*, K., Thornhill, Cadder, Bonar Bridge.
17. *parvicollis*, K., Cadder.
18. *xanthostigma*, K., Dumfries.
19. *scoticus*, K., Sutherlandshire.
20. *curvatus*, K., Bonar Bridge.
21. *trivialis*, K., var. *flaviscapus*, K., Claddich.
22. *æqualis*, K., Glen Lyon.
23. *pyrenaicus*, K., Clober, Bonar Bridge.
24. *integer*, K., Cadder, Mugdock, Bonar Bridge.
25. *indivisus*, K., Bishopton, Thornhill, Dumfries.
26. *crenulatus*, K., Bonar Bridge.
27. *minutellus*, K., Kenmuir, Dumfries.
28. *vicinus*, K., Manuel, Dumfries.
29. *arcuatus*, K., Eccles, Thornhill.
30. *flavitarsis*, K., Clober.
31. *subapterus*, K., Aviemore (Champion).
32. *fuscoclavatus*, K., Kenmuir, Cadder, Thornhill.
33. *rectus*, K., Cadder, Possil Marsh, Bishopton, Dumfries, Bonar Bridge.
34. *declivis*, K., Clober Moor.
35. *triareolatus*, K., Bonar Bridge.
36. *pallidicornis*, K., Clober.
37. *gracilicollis*, K., Possil Marsh.
38. *fractinervis*, K., Clober.
39. *curvinervis*, K., Bonar Bridge.
*40. *azorus*, Walker, Clydesdale.
41. *divisus*, K., Dumfries, Mugdock.
42. *parvulus*, K., Dumfries.
43. *triangularis*, K., Bonar Bridge.
44. *indivisus*, K., Thornhill, Dumfries.
45. *neglectus*, K., Clydesdale.
46. *nitidus*, K., Clydesdale.
47. *pallidinervis*, K., Mugdock.

LABEO, Hal.

*1. *excisus*, Westw., Bishopton.

Aphelopus, Dal.

*1. *melaleucus*, Dal. Type form; Cadder, Clober, Kenmuir, Dumfries, Bonar Bridge; var. *atratus*, Dal., Dumfries, Bonar Bridge; var. *nigriceps*, K., Claddich, Dumfries, Cadder; var. *carinatus*, K., Cadder.

I have taken *Anteon succineipes*, K. near Gloucester, and *A. nitidus*, K. in Dunham Park, Cheshire.

(*To be continued.*)

New Mills, by Stockport.

SOME SCOTTISH IXODIDÆ (TICKS).

By William Evans, F.R.S.E.

Having recently had occasion to pay a little attention to the parasitic Acarina known as Ticks, occurring in Scotland, it may interest some of the readers of the "Annals" to learn what species I have so far found. I therefore subjoin the short list. Dates and other facts bearing on the life-history of the species are purposely given in some detail. Several other species are recorded from England, and one or two of them may be expected to occur north of the Border. Ticks are not prepossessing creatures, but they are deeply interesting all the same, and their intimate connection with certain diseases in domestic animals has brought them into prominence. During recent years they have been the subject of a number of important papers, including the valuable series by Prof. G. Neumann of Toulouse, published in the "Memoires de la Société Zoologique de France," 1896-1902, under the title 'Révision de la famille des Ixodidés,' and in the "Archives de Parasitologie," 1902-1906, in the form of 'Notes sur les Ixodidés.' Attention may also be directed to Salmon and Stiles' treatise on 'The Cattle Ticks of the United States,' in the 17th "Annual Report of the Bureau of Animal Industry," for 1900, and to E. G. Wheler's useful paper on 'British Ticks,' in the "Journal of Agricultural Science," 1906.

My best thanks are due to Prof. Neumann, who has kindly examined specimens of each species, and confirmed

my identifications. To Dr. J. H. Ashworth I am indebted for a sight of some of the foreign literature.

Ixodes ricinus (L.)[1]—Locally common on cattle, sheep, and deer. In the immediate neighbourhood of Edinburgh it appears to be scarce at the present time. Shepherds and others to whom I have spoken about it, say they seldom see it except on animals that have recently been brought from other parts of the country. A case in point occurred in October 1905, when several were found at a dairy in the vicinity on a newly bought in cow. On 21st September 1906, I observed numbers on cows grazing on a moor south of Callander. They were mostly affixed to the udders and adjacent parts of the legs of the animals. Of four good-sized females (length 6 to 7 mm.) secured for examination, it was found that three had the much smaller male (length just over 2 mm.) attached to the ventral surface as figured by Wheler. We have here a date for the coming together of the sexes, a point on which Wheler is silent. In August 1906 several nymphs were got on the head of a Red Deer from Argyllshire. In April 1894, near Oban, I found a large replete female under a stone in a slight recess at the base of a rock, where sheep were in the habit of sheltering; and in April 1902 another—this time a "fasting" one—under a stone near Aberfoyle. On 19th September 1905 an adult male was found on the underside of a piece of bark lying on the ground at the top of Finlarig Wood near Killin. Mr. A. E. Shipley has shown me a few larvæ and nymphs taken from a Red Grouse last summer. In the North of England, according to Wheler, this species is known as the "Grass-tick."

Ixodes hexagonus, Leach.—This species is attached chiefly to Carnivores. Two forms occur, the type and the variety *inchoatus*, Neumann. Of the former, I have a distended female which I took off a Polecat (*Mustela putorius*) killed in Ross-shire towards the end of January 1906, and half a dozen larvæ from a hedgehog (*Erinaceus europæus*) captured near Edinburgh in June.

The variety, or subspecies, *I. h. inchoatus* is a common pest on dogs in many parts of the country, and well deserves the name of "dog-tick." Shepherds' dogs, especially young collies, on the Pentlands and Moorfoot districts are much infested with it, and I have had no difficulty in obtaining any number of specimens. Sporting-dogs, by being better attended to, are freer from them. So far as I have seen, the parts of the host usually selected for attachment are the neck, fore part of the back, and down the sides behind the fore-legs. The following records are given chiefly for the sake of the dates:—April 1905, one (♀) on retriever, Dalkeith; 3rd

[1] This name is now used in preference to *I. reduvius*.

March 1906, several nymphs and half a dozen females, not much distended, from collie, Crosswood, Pentland Hills; 10th March, two females, considerably distended, from young collie, Swanston; September 1905 and September 1906, nymphs (a few) and females, in various stages of distention, common on young collies at Bavelaw. The male I have not yet met with; it should be looked for in the kennels or houses in which the dogs are kept, for apparently it is not its habit to seek the female on the host or to accompany her thither. The fasting periods of this tick are no doubt spent in chinks and other places of concealment about the homes of its hosts. I expect male ticks feed little, if at all, after reaching maturity. In 1849 Dr. G. Johnston of Berwick gave to the dog-tick of the Eastern Borders the name *Ixodes canisuga* ("Proc. Berw. Nat. Club," vol. ii. p. 371), a fact which has been overlooked by subsequent writers; but his description is, I daresay, scarcely precise enough to warrant the adoption of this name for the subspecies.

Ixodes tenuirostris, Neum.—The only example of this species I have seen is a fully distended nymph, which I found crawling on a Water Vole (*Arvicola amphibius*, var. *ater*) from Drumlithie, Kincardineshire, 30th October 1905. I am not aware of any previous record for Scotland. In England it has been taken from the Field Vole and the Bank Vole.

Ixodes putus (Cambr.) = *I. borealis*, Kram. and Neum.—In the "Annals" for April 1906 (p. 85) I recorded and figured this tick from St. Kilda, specimens (adult females and nymphs) having been handed to me by Mr. James Waterston, who collected them there in the summer of 1905, from Puffins and Fulmars, and on the ledges frequented by these birds. Almost simultaneously it was recorded from the Hebrides by Mr. Wheler ("British Ticks," in "Journ. Agric. Sci.," p. 416). Since I recorded the St. Kilda specimens, the Rev. O. P. Cambridge has submitted a type of his Kerguelen tick to Prof. Neumann, who informs me it is a nymph, and confirms him in his former determination that the southern and northern forms are of the same species. I do not think it necessary to use the subgeneric name *Ceratixodes*, and Neumann himself drops it in his letters to me.

Ixodes sp. ?—A tick which I have been unable to identify with any described species, and of which I have sent specimens to Prof. Neumann for his opinion, occurs on Cormorants (*Phalacrocorax carbo*) frequenting the Firth of Forth. On the head of a dead immature Cormorant got on the beach near North Berwick in October last, I found the remains of several examples, and from the heads of two of these birds, shot in the same locality on 17th November and kindly sent to me by Mr. W. Ingles, a score of living larvæ, nymphs, and adult females (the largest 8 mm. in length) were obtained. The back of the bird's head seems to

be the part usually selected for attachment. The adult examples were of a pale bluish grey colour, but all have become reddish after being a week or two in spirits.

Since the above was put in type, I have received a note from Prof. Neumann saying my Cormorant tick appears to him to be a new species, that which it comes nearest being *Ix. eudyptidis*, Mask. It will be described soon.

EDINBURGH.

ALIEN PLANTS.

By JAMES FRASER.

DURING the year 1906 the following "alien" or "introduced" plants were observed by Mr. James M'Andrew and myself, a few of them not in the immediate vicinity of Edinburgh, whence the change of title from that of my previous lists which appeared in the "Annals of Scot. Nat. Hist." for April 1904, 1905, and 1906.

In this list the locality is mentioned by name instead of by a number; and, as before, the relative abundance of each species in its locality is represented by the Greek letters thus:—α = once found; β = twice or thrice, but rare; γ = neither rare nor frequent; δ = frequent; ϵ = abundant.

Under each Natural Order the names of the species are arranged alphabetically, and those not previously found in Britain are distinguished by a star *in front* of the name.

RANUNCULACEÆ.

Adonis autumnalis, *L.* Leith, α.
Delphinium Ajacis, *L.* Leith, α.
*D. hybridum, *Steph.* Leith, β.
*D. pubescens, *DC.* Leith, α.
Eranthis hyemalis, *Salisb.* Monimail, Fife, γ.
Ranunculus trilobus, *Desf.* Leith and Slateford, δ.

PAPAVERACEÆ.

Glaucium corniculatum, *Curt. var.* rubrum. Leith, γ.

FUMARIACEÆ.

Fumaria Boræi, *Jord.* Leith, β.
F. densiflora, *DC.* Leith, γ.
F. officinalis, *L.* Leith, ϵ.

CRUCIFERÆ.

Arabis albida, *Stev.* Slateford, β.
Alyssum incanum, *L. var.* viride, *Tausch.* Leith, α.
Brassica dissecta, *Boiss.* Leith, α.
Carrichtera Vella, *DC.* Leith and Slateford, α.
Conringia austriaca, *Sweet.* Slateford, α.
Iberis amara, *L.* Leith, α.
Lepidium incisum, *Roth.* Leith, β.
Hesperis laciniata, *All.* Leith, α.

CARYOPHYLLEÆ.

Gypsophila paniculata, *L.* Leith, α.
Holosteum umbellatum, *L.* Leith, α.
Saponaria officinalis, *L.* Inverkeithing, Fife, δ.
Silene Armeria, *L.* Leith, β.
S. conica, *L.* Leith, β.
S. Muscipula, *L.* Leith and Slateford, δ.
S. rubella, *L.* Leith, β.
S. gallica, *var.* anglica, *L.* Leith, γ.
S. gallica, *var.* quinquevulnera, *L.* Leith, γ.
*Velezia rigida, *L.* Leith, α.

PORTULACEÆ.

*Claytonia virginica, *L.* Near Aberdour, Fife, β.

MALVACEÆ.

Lavatera punctata, *All.* Leith, β.
Malva borealis, *Wallm.* Leith, β.
M. moschata, *L.* Morningside, Edinburgh, α.

LINEÆ.

Linum angustifolium, *Huds.* Leith, α.

GERANIACEÆ.

*Geranium reflexum, *L* Ratho, δ.
G. pusillum, *Burm. f.* Slateford, β.
Limnanthes Douglasii, *R.Br.* Leith, α.
Oxalis corniculata, *L.* Slateford, γ.

AMPELIDEÆ.

Vitis vinifera, *L.* Slateford, β.

LEGUMINOSÆ.

*Astragalus sesameus, *L.* Leith and Slateford, γ.
Galega officinalis, *L.* Leith, α.
Medicago disciformis, *DC.* Leith, β.
M. sphærocarpa, *Bert.* Leith and Slateford, δ.
M. tornata, *Willd.* Leith, γ.
M. turbinata, *Willd.* Leith, β.
*Melilotus infesta, *Guss.* Leith, γ.
Onobrychis Caput-galli, *Lam.* Leith, α.
Ononis mitissima, *L.* Leith, α.
Ornithopus perpusillus, *L.* Leith, α.
*Trifolium hirtum, *All.* Leith, α.
*T. involucratum, *Ortega.* Slateford, α.
*T. mutabile, *Portenschl.* Leith, α.
*T. nigrescens, *Viv.* Leith, α.
*T. purpureum, *Lois.* Leith, β.
T. subterraneum, *L.* Esk Mouth, α.
T. suffocatum, *L.* Leith, γ.
Trigonella arabica, *Del.* Leith and Slateford, β.
T. besseriana, *Ser.* Leith, β.
*T. crassipes, *Boiss.* Leith, α.
T. gladiata, *Stev.* Leith, β.
T. laciniata, *L.* Leith, α.
Vicia pannonica, *Crantz.* Leith and Slateford, β.

SAXIFRAGEÆ.

Saxifraga tridactylites, *L.* Elie, Fife, γ.

CRASSULACEÆ.

Sedum album, *L. var.* micranthum, *Bast.* Blackford Hill, ε.
S. Telephium, *L. var.* Fabaria, *H. C. Wats.* Morenish, Perthshire, ε.

ONAGRARIEÆ.

Œnothera purpurea, *Curt.* Leith, β.
O. tenella, *Cav.* Slateford, β.

CUCURBITACEÆ.

*Ecballium Elaterium, *A. Rich.* Gorgie, α.

UMBELLIFERÆ.

Archangelica officinalis, *Hoffm.* Longniddry, ε.
Astrantia major, *L.* Carribber Glen, β.
Caucalis arvensis, *Huds.* Leith, β.
*Chærophyllum nodosum, *Lam.* Leith, α.
Scandix australis, *L.* Slateford, γ.

CAPRIFOLIACEÆ.

Sambucus Ebulus, *L.* Inverkeithing, Fife, ϵ.

RUBIACEÆ.

*Crucianella angustifolia, *L.* Leith, β.

VALERIANEÆ.

*Fedia Cornucopiæ, *Gærtn.* Leith, β.
Valerianella eriocarpa, *Desv.* Leith and Slateford, β.
V. rimosa, *Bast.* Leith, β.

DIPSACEÆ.

Scabiosa maritima, *L.* Leith, β.

COMPOSITÆ.

Achillea nobilis, *L.* Slateford, α.
Anthemis mixta, *L.* Slateford, γ.
Arctium tomentosum, *Lam.* Slateford, γ.
*Artemisia longifolia, *Nutt.* Leith, α.
*A. sericea, *Weber.* Leith, γ.
Carduus nigrescens, *Vill.* Slateford, β ?.
Centaurea solstitialis, *L. var.* Adami, *W.* Leith, α.
Lactuca Scariola, *L.* Leith, α.
*Lasthenia glabrata, *Lindl.* Slateford, β.
Onopordon illyricum, *L.* Slateford, β ?.
O. tauricum, *Willd.* Leith and Slateford, γ.
Picris (Helminthia) echioides, *L.* Leith and Slateford, β.
Solidago lanceolata, *L.* Craigmillar Quarry, β.
Xanthium strumarium, *L.* Leith, γ.
Xeranthemum annuum, *L.* Leith, α.

CAMPANULACEÆ.

Specularia pentagonia, *A. DC.* Leith, β.

POLEMONIACEÆ.

Gilia capitata, *Sims.* Slateford, β.

BORAGINEÆ.

Alkanna lutea, *A.DC.* Leith, α.
Amsinckia angustifolia, *Lehm.* Leith, β.
Anchusa undulata, *L.* Leith, α.
Echium violaceum, *L.* Leith, α.
Lithospermum arvense, *L. var.* medium [Chev.]. Slateford, δ.
*Nonnea alba, *DC.* Leith, α.

CONVOLVULACEÆ.

*Convolvulus althæoides, *L.* Leith, *β.*

SOLANACEÆ.

Lycium chinense, *Mill.* Elie and Inverkeithing, Fife, γ.
Physalis Alkekengi, *L.* Leith, δ (seedlings).
Solanum villosum, *Lam.* Leith, α ?.

SCROPHULARINEÆ.

Mimulus Langsdorfii, *Donn. var.* guttatus, *DC.* Near Gorebridge, ε.
Veronica acinifolia, *L.* Slateford, γ.
V. triphyllos, *L.* Slateford, δ.

LABIATÆ.

*Lallemantia iberica, *Fisch.* and *Mey.* Slateford, γ.
Lamium maculatum, *var.* lævigatum, *L.* Gilmerton, δ
Mentha alopecuroides, *Hull.* Near Killin, δ.
Origanum vulgare, *var.* virens, *G. and G.* (non *Hoffm.*). Railway Bank, Trinity, γ.
Stachys arvensis, *L.* Rosyth, Fife, γ.
Salvia —— ? Leith, α.

AMARANTHACEÆ.

Amaranthus Blitum, *L.* Leith, α.
*A. spinosus, *L.* Leith, γ.

POLYGONACEÆ.

Rumex alpinus, *L.* Lawers, Perthshire, γ.

EUPHORBIACEÆ.

*Euphorbia falcata, *L.* Slateford, *β.*
*E. taurinensis, *All.* Slateford, *β.*
Ricinus communis, *L.* Leith, δ (seedlings).

HYDROCHARIDEÆ.

Stratiotes aloides, *L.* Blackhall Pond, γ.

LILIACEÆ.

Ornithogalum umbellatum, *L.* Near Kirkliston, γ.

GRAMINEÆ.

*Agrostis elegans, *Thore.* Leith, α.
Apera intermedia, *Hackel.* Leith, α.
Bromus commutatus, *Schrader.* Leith and Slateford, γ.
B. commutatus *var.* pubescens. Leith, α.
B. erectus, *Huds. var.* villosus, *Bab.* Leith, α.
*B. divaricatus, *Rhode.* Leith and Slateford, δ.
B. madritensis, *L. var.* rigidus, *Roth.* Slateford, β.
B. secalinus, *L. var.* velutinus (*Schrad.*). Kinghorn, Fife, α; Leith, β.
Cynodon Dactylon, *Pers.* Leith, β.
Kœleria phleoides, *Pers. forma.* Leith, α.
Panicum glabrum, *Gaud.* Leith, γ.
Phalaris brachystachys, *Link.* Near Joppa, α ?.
P. intermedia, *Bosc.* Leith, α.
*P. tuberosa, *L.* Slateford, α.
*Poa persica, *Trin.* Leith, α.
Triticum cylindricum, *Ces. var.* ——? Leith and Slateford, γ.

I have once more to express my gratitude to Professor Hackel for his kindness in again identifying several of the grasses—*Poa persica*, Trin., *Kœleria phleoides*, Pers., and *Phalaris intermedia*, Bosc.—and to A. O. Hume, Esq., C.B., F.L.S., for much valuable direct and indirect assistance in determining and verifying a number of others. I have also to record my indebtedness to A. B. Jackson, Esq., who was the first to find *Apera intermedia*, Hackel, in Britain (Leicestershire) about two years ago, and who very kindly verified my specimen of that plant by comparing it with his one.

Leith, *December* 1906.

WEST HIGHLAND MOSSES AND PROBLEMS THEY SUGGEST.

By James Stirton, M.D., F.L.S.

Last year, during the months of July and August and part of September, at Arisaig on the West Coast, several important mosses were found, and the distribution of others of scarcely less significance showed peculiarities of an almost unique character.

The most important is the beautiful and remarkable *Myurium Hebridarum* (Sch.)—remarkable as regards its area of growth and spread. It was found about 5 miles

south-west of Arisaig in a station of very restricted area, close to the sea, its usual habitat. This is the second station for the moss on the mainland of Scotland. The first was discovered some years ago by Dr. Macvicar at a station similarly situated to the present one, and only several miles to the east of it. These are the only known stations diverging a little from the main line of growth. There is possibly another near Loch Coruisk in Skye, although the rock formation there would seem to favour this slighter lateral extension. As is now well known, its area is confined to the ridge in the sea extending from the Faroe Islands down to St. Helena. I have the moss from the Butt of Lewis down the whole chain of islands of the Outer Hebrides to Barra, where, in places, it grows very luxuriantly. I have it also from the Azores, and it has been reported from the Canaries and St. Helena, but from nowhere else in the world. Now the plant has never been found in fruit, and the only other means of spread, apart from the natural extension of the tufts, is through buds, which are only very occasionally seen, extruding a little beyond the general surface of the compact masses; but these, from their size, can only be carried short distances by winds, and even then it is more than doubtful whether they can serve for purposes of propagation, inasmuch as no radicles have ever been seen on them. Radicles are necessary for the development of buds, and such are abundantly supplied to the detached buds in the species of the genus *Campylopus*, which never fruit—a genus well represented in these same islands.

In my opinion all this argues strongly in favour of a continued land-surface, such as has been indicated as the continent of Atlantis.

The question of the length of time necessary for so great extensions in range as are implied in such slow growths and spread opens up a wide field for speculation—a speculation of rather an alluring nature in these days of sweeping generalisations.

The next moss in importance is *Hedwigidium imberbe* (Sm.), inasmuch as the present station is the second for Scotland, and not more than eight such are known throughout the world. This moss was discovered within restricted

and well-defined limits, on a mountain 2 miles east of Arisaig—a nameless mountain of an elevation of not more than 1500 feet. Bartholomew's map on a scale of 2 miles to the inch scarcely, or at least doubtfully, indicates it. I applied for information to several of the older inhabitants without eliciting anything definite as to its name. At length the Rev. J. Chisholm, of St. Mary's, Arisaig, a good Gaelic scholar, promised to investigate the matter. In a day or two a card was handed in, on which were written two words, "Sithean Mor." The next step was their pronunciation. An appeal to the Rev. D. M'Lean resulted in words as near the pronunciation as possible, "Shean Mor," with the addition by way of translation, "The larger height of the Fairies."

The moss second in the order of discovery is *Dicranum Fergussoni*. In this instance the specimens show a greater degree of development than those of any other known locality. The more typical show serratures on the upper half of the margin of the leaf, sharply defined, as well as prominent pellucid serratures on the back of the nerve, at times as high as .008 mm. The red tomentum is also, in two instances, as well marked as in *D. Mühlenbeckii* (Sch.), a moss not hitherto detected in Britain; indeed the whole stems, from base to apex, are shrouded in these felt-like masses. The areolation is besides different from that of *D. Scottianum*, inasmuch as the upper cells are oval and much larger, viz. .012-.018 by .007-.01 mm. Rather abundant throughout the district, but barren. This moss is clearly in process of evolution and differentiation from *D. Scottianum*, and accordingly ought to be closely observed.

I have now four stations for this moss; but the specimens from Arisaig show a much greater divergence from the original type than those of any of the others. All this implies that I have no belief in the fixity of species; I mean, of course, in the sense that all freaks and variations on the part of nature quickly revert to the unalterable type, and that there can be no departures from that type such as may lead ultimately to diverse types in the course of time and amid changes of surroundings, etc. All such changes are much more frequently seen in plants of simpler organisations, and especially in genera which propagate, for much the greater

part, by other means than spores properly so called. Long observations, extending back for nearly forty years, have only served to strengthen this belief. At any rate, such a condition of mind has this advantage, that it often gives an increased spur to research. I am glad to observe that other botanists are acting under the same conviction, even if they do not openly profess it.

Lastly, there is certainly a much greater distinction between this moss and *D. Scottianum* than between *Campylopus setifolius* and *C. Shawii.*

ADDITIONS FOR 1906 TO CENSUS OF SCOTTISH HEPATICÆ.

By Symers M. Macvicar.

Since the "Additions" were published in the "Annals," 1905, p. 108, the Moss Exchange Club has issued a "Census Catalogue of British Hepatics," in which is incorporated all the Scottish records of which I have examined specimens up to nearly the close of 1905. The records for Scotland, additional to those in the "Annals," amounted to 140. These included two species new to the Scottish flora, *Riccia crystallina* and *Prionolobus Massalongi.* The former was discovered by Mr. M'Andrew, and almost simultaneously by Mr. W. Evans, in reservoirs on the Pentland Hills. A few days later it was also found in Fife by Mr. Aimer. The old records for this species in Scotland must be referred to *R. glauca* and *R. sorocarpa.* The *Prionolobus* was found by the late John Sim in Kincardineshire in 187(7?).

The present paper contains 125 records of specimens examined, most of them having been found in 1906. They include three additions to the Scottish flora, *Lophozia badensis* (Gottsche) Schffn. *Prionolobus striatulus* (C. Jens.) Schffn., and *Cephaloziella Limprichtii* Warnst. The *Lophozia* has been a much confused species. I found it in my herbarium, under the name *L. turbinata,* from four localities in Scotland, the earliest specimen having been gathered on Mochra Hill, Ayrshire, by Mr. P. Ewing, in January 1883. The distinctive

characters of *L. badensis* and *L. turbinata* will be found in Lindb. and Arnell's *Musc. Asiae bor.* p. 46. The *Prionolobus* was found by the writer among Sphagnum on Lousie Wood Law, Elvanfoot; it is an addition to the Britannic flora. This species is described and figured by C. Jensen in *Revue Bryologique*, 1904, p. 25. The *Cephaloziella* is closely allied to *Ceph. myriantha.* The locality where it was found is at the side of a footpath on Kirkton farm at the base of Tinto. A translation of the original description of the species will be found in *Journ. Bot.*, 1905, p. 186. Other interesting species given below are *Anthelia julacea* and *Hygrobiella laxifolia* from Ayrshire, *Gymnomitrium adustum* and *Hygrob. laxifolia* from Lanarkshire, *Pallavicinia Flotowiana* and *Madotheca Thuja* from Haddingtonshire, *Lophozia atlantica* from Arran, *Sphenolobus Pearsoni* from Mull, and *Anastrepta orcadensis* from its original locality, Ward Hill, Hoy, Orkney, where it was discovered by Hooker in 1808.

72. Dumfries.

Cephaloziella byssacea, *Miss K. B. Macvicar.*

75. Ayr.

(*C. Scott.*)

Lophozia Mülleri.
Hygrobiella laxifolia.
Bazzania tricrenata.
Lophozia badensis, *P. Ewing.*
Anthelia julacea, *G. West.*
Ptilidium ciliare.
Trichocolea tomentella.
Scapania irrigua.

76. Renfrew.

Riccia Lescuriana, *P. Ewing.*
Lophozia excisa, *S. M. Macvicar.*

77. Lanark.

(*S. M. Macvicar.*)

Aneura latifrons.
Metzgeria conjugata.
Pellia Neesiana.
Gymnomitrium adustum, *var.* olivacea.
Marsupella emarginata.
Nardia hyalina.
Aplozia crenulata.
A. pumila.
Lophozia Mülleri, *var.* bantriensis.
L. excisa, *var.* Limprichtii.
L. barbata.
Cephalozia connivens.
C. leucantha.
Hygrobiella laxifolia.
Prionolobus striatulus.

Cephaloziella Limprichtii.
Odontoschisma Sphagni.
Kantia Sprengelii.
Kantia arguta.
Blepharostoma trichophyllum.
Scapania compacta.
S. subalpina.
S. irrigua.

78. PEEBLES.

(*W. Evans.*)

Riccia glauca.
R. sorocarpa.
Fossombronia Wondraczekii.
Cephaloziella bifida.

(*S. M. Macvicar.*)

Aneura multifida.
Nardia obovata.
Lophozia bicrenata.
L. excisa.
L. quinquedentata.
L. barbata.
Sphenolobus exsectæformis.
Cephalozia leucantha.
Cephaloziella byssacea.
Kantia arguta.
Scapania compacta.
S. nemorosa.
S. irrigua.
S. curta.
Lophozia incisa.

82. HADDINGTON.

(*J. M'Andrew.*)

Pallavicinia Flotowiana.
Lophozia Mülleri, *var.* bantriensis.
L. bicrenata.
L. quinquedentata.
Lophozia gracilis.
Chiloscyphus pallescens.
Cephaloziella bifida.
Madotheca Thuja.

83. EDINBURGH.

Riccia glauca, R. Lescuriana } *W. Evans.*
Lophozia badensis, *J. M'Andrew.*

84. LINLITHGOW.

(*J. M'Andrew.*)

Aneura latifrons.
Marsupella emarginata.
Aplozia pumila.
Lophozia bicrenata.
Ptilidium ciliare.
Scapania undulata.

(*W. Evans.*)

Lophozia Floerkii, *var.* Baueriana.
Scapania nemorosa.

85. FIFE.

Lophozia badensis, Cephaloziella myriantha } *W. Evans.*
Scapania nemorosa, *J. M'Andrew.*

86. STIRLING.

Sphenolobus minutus, Lepidozia trichoclados } *J. M'Andrew.*

95. Elgin.

Lophozia Mülleri, *A. Croall.*

96. Easterness.

(*Miss K. B. Macvicar.*)

Nardia obovata.
Aplozia riparia.
A. pumila.
Chiloscyphus polyanthos.
Madotheca rivularis.

98. Argyll.

Marsupella erythrorhiza, M. Jörgensenii } *S. M. Macvicar.*

99. Dumbarton.

(*S. M. Macvicar.*)

Marsupella Pearsoni.
Cephaloziella byssacea.
Odontoschisma denudatum, *var.* elongatum.
Lepidozia Pearsoni.
Microlejeunea ulicina.

100. Clyde Isles.

Lophozia atlantica, Cephaloziella byssacea } *S. M. Macvicar.*

103. Mid Ebudes.

(*D. Kennedy.*)

Marsupella Pearsoni.
M. aquatica.
Aplozia crenulata.
Sphenolobus Pearsoni.
Anastrepta orcadensis.
Cephalozia leucantha.
Hygrobiella laxifolia.
Lepidozia Pearsoni.
L. trichoclados.
Anthelia julacea.
Radula aquilegia.

106. East Ross.

Eremonotus myriocarpus, Cephaloziella byssacea } *W. West.*
Lophozia badensis, *Miss K. B. Macvicar.*

111. Orkney.

(*D. Lillie.*)

Metzgeria furcata.
M. conjugata.
Gymnomitrium crenulatum.
Marsupella aquatica.
Lophozia quinquedentata.
Anastrepta orcadensis.
Plagiochila spinulosa.
Lophocolea cuspidata.
Eremonotus myriocarpus.
Cephaloziella myriantha.
Bazzania triangularis.
Lepidozia reptans.
L. Pearsoni.
Radula Lindbergii.

112. SHETLAND.

Cephaloziella bifida, Lejeunea cavifolia — *J. Sim.*
Marsupella Pearsoni, Nardia compressa — *W. H. Beeby.*
Sphenolobus exsectæformis, Scapania compacta — Fair Isle. *Miss M. Skene.*

INVERMOIDART, ACHARACLE, ARGYLLSHIRE.

ZOOLOGICAL NOTES.

Lesser Shrew on Ailsa Craig.—For some time a Shrew has been known to inhabit Ailsa Craig, but the species had not been determined, though it was thought most probably to be the Lesser Shrew (*Sorex pygmæus*). Through the kindness of Mr. Thomson, the principal lightkeeper on Ailsa Craig, I have received a single specimen, which turns out to be *Sorex pygmæus*, as was expected. This is the only specimen Mr. Thomson was able to catch, though he has been trying for some time; and in his letter which came with the specimen he says, "These little animals seem to be dying out here; at one time they used to be plentiful enough."—NORMAN B. KINNEAR, Edinburgh.

Common Shrew at Dunnet Head.—The Common Shrew (*Sorex araneus*) has already been recorded as common in Caithness, but perhaps it is worth while mentioning that I trapped a single example on Dunnet Hill last October. It is thus interesting to note that while the Common Shrew is found in the very north of the mainland, as Dunnet Hill is about one and a half miles off the most northerly point, yet it does not extend across the Pentland Firth, the Lesser Shrew (*Sorex pygmæus*) being the only species of Shrew known with certainty to occur in Orkney.—NORMAN B. KINNEAR, Edinburgh.

Wild Cats in N.-W. Highlands and Skye.—My friend, Mr. Osgood H. Mackenzie of Inverewe, Poolewe, West Ross-shire, writing to me under date of 14th November 1906, says: "My stalker has trapped two half-sized Wild Cats, quite pure bred, we believe. They were not injured. Wild Cats are on the increase here owing to no trapping in forests."—J. A. HARVIE-BROWN.

Bird Notes from Shetland.—At 10.15 P.M. on 14th September I heard a considerable number of Terns calling, passing overhead, and apparently going in a southerly direction; and others were heard again on the 20th calling overhead, 10 P.M., and also going south.

On 3rd and 4th October a Swallow was seen at Bressay.

On the 7th a Bullfinch, presumably belonging to the large

northern species (*P. major*), was seen at Lerwick; and a large flock of Bramblings, hundreds of them, appeared at Sound. And on the 9th between twenty and thirty Swallows were observed at Lerwick; also Blackbirds, Twites, Greenfinches, Chaffinches, and Redstarts.

A Nightjar was found dead floating in the harbour at Lerwick on 20th October. It was badly damaged, having apparently come in contact with some object during flight.

There was a rush of birds at Lerwick from the 5th to the 10th of October of a very unusual and extensive kind. It was not confined to a small space, but extended from the north to the south end of the town, the birds, judging from the sound, apparently travelling from an easterly to a southerly or south-westerly direction. I heard them passing overhead from 7.30 till after 10 P.M., and, judging from the frequency of the calls, the birds must have been in countless numbers. Unfortunately, owing to the darkness it was impossible to see them, but I drew the attention of a number of people to the migration. I was able to recognise the call of the Redwing.

The Bullfinch referred to on 7th October was apparently attracted by the light, and came to a window of a house at the Hillhead, Lerwick. The bird was captured alive and put in a cage, under the impression that it had escaped. Another, a female, came to our dining-room between 9 and 10 P.M. on 11th October. My sister (who saw the Bullfinches last winter) heard it, and lifted up the blind and got a good view of it sitting on the sill.—JOHN S. TULLOCH, Lerwick.

Bird Notes from North Shetland for 1906.—SNOWY OWL (*Nyctea scandiaca*).—One shot on 30th January. SPOTTED FLYCATCHER (*Muscicapa grisola*).—Two seen on 10th April. A rare bird of passage in Unst. CRANE (*Grus cinerea*).—One seen on 16th May. BUFFON'S SKUA (*Stercorarius parasiticus*).—One on 30th May. The second I have seen during eight years of observation. BLUETHROAT (*Cyanecula suecica*).—One seen on 25th September; two on the following day. GREAT TITMOUSE (*Parus major*).—One killed on 16th October; came into the house through an open window. Single birds also seen on the 17th and 21st. CORNCRAKE (*Crex pratensis*).—A male killed on 18th October. NORTHERN BULLFINCH (*Pyrrhula major*).—Many seen on 4th November.—T. EDMONSTON SAXBY, Baltasound, Unst.

Albino Brambling in Fife.—On the 11th of December we saw a most beautiful Albino Brambling (*Fringilla montifringilla*). It was sitting in the trees on Lahill Avenue, with a large flock of ordinary Bramblings. It was pure white on the crown of the head, tail, primaries, and scapulars, and whitish on the back and rump. The breast was a pale plum colour shading off into white, and on the sides of the head, nape, and secondaries there was some brown. It flew and behaved in all ways as an ordinary Brambling, of which

we have an unusual amount this winter.—Evelyn V. Baxter and Leonora Jeffrey Rintoul, Colinsburgh, Fife.

Yellow-browed Warbler at Skerryvore Lighthouse.—A Yellow-browed Warbler (*Phylloscopus superciliosus*) was captured on the morning of the 21st September at 2.30 A.M. At 8 P.M. the previous night a few Meadow Pipits made their appearance, gradually increasing in numbers till 10 P.M., when they were to be seen in hundreds, resting on and flying about the lantern. At 11 P.M. one young Ring Ouzel killed itself, that being the only one seen. One Thrush was seen, also several White Wagtails; and Redshanks and Golden Plovers flying about most of the night. Two Jack Snipe were found dead at the foot of the Tower in the morning. The wind was S.E. all night, and had been blowing moderately from E. and S.E. for three days previous. It was what might be called a lovely night, wind light airs, horizon hazy, but overhead the stars were shining fairly bright. The haze was just dense enough to make the beams of light from the lantern very distinct. The Yellow-browed Warbler struck against the glass at 2.30 A.M., and was picked up dead. No other warblers were seen that night. Mr. Eagle Clarke has kindly examined the specimen, and confirms my identification.—James Tomison, Skerryvore Lighthouse.

Migration of the Redbreasted Flycatcher (*Muscicapa parva*).—As showing the extent which a migratory movement often covers, it may be of interest to record that on 20th September, the day on which the Redbreasted Flycatchers were seen on Fair Island by Mr. Eagle Clarke, as mentioned by him in his interesting note, p. 236, one was shot in Norfolk, and on 18th September two more, which I have examined and find to be young birds. At the same time several Arctic Bluethroats were seen, another species also met with by Mr. Clarke on this northern island, which seems so favoured by migrants.—J. H. Gurney, Keswick, Norfolk.

[Another Redbreasted Flycatcher was obtained at Fair Isle on 4th October.—W. E. C.]

Rose-coloured Pastors in Foula.—On the 28th of October five or six rose-coloured Pastors (*Pastor roseus*) appeared in the garden of the Congregational Manse at Foula, Shetland, one of them being a fine adult male. A southerly wind prevailed at the time of their visit.—Wm. Robertson, The Manse, Foula.

[This bird has on several occasions visited Shetland, but never before to our knowledge in the numbers indicated.—Eds.]

Capercaillie in Midlothian.—My friend J. S. Tait of Bavelaw tells me that his keeper reported to him that two Capercaillie had been seen in the woods there in the beginning of August. Mr. Tait himself, in September, flushed the two birds, and saw them quite clearly. Sir Thomas Gibson Carmichael writes that these two

have been also seen on his property. He says, in a letter to Mr. Tait, that his keeper could have shot them several times, but knew that Sir Thomas would not wish it. "He saw one this morning quite close to him" (November 6, 1906). I know that the Capercaillie had appeared in Fife, but this appearance of the bird to the south of the Forth is new to me. I believe that the two birds seen were both males.—H. N. Bonar, Saltoun, Pencaitland.

[Mr. William Evans tells us he has six records of Capercaillies in Midlothian, including one shot in Bavelaw fir-wood nearly twenty years ago.—Eds.]

Capercaillie in Dumfriesshire.—A friend of mine who is personally acquainted with the appearance of Capercaillie (*Tetrao urogallus*) in Perthshire, when out shooting on the hills to the N.N.W. of this county in November 1905, saw one cock and two hen Capercaillie, just after a fall of snow. He tried to stalk them, but they got up when out of shot, and flew off in a northerly direction. This is I believe the furthest south that these birds have been recorded—the previous most southerly point being Tarbolton Moss, in Ayrshire, of which occurrence I informed you, on p. 116, No. 58, of the "Annals of Scot. Nat. Hist."—Hugh S. Gladstone, Thornhill, Dumfriesshire.

Capercaillies in Moray.—It is interesting to record that Capercaillies (*Tetrao urogallus*) have now got up here, Elgin. Last year there were certainly none; but in the beginning of October one of my keepers said he had seen a hen on the Binn Hill. I said it must have been a Grey Hen. Afterwards, when looking for Woodcock on the hill, we saw two cocks and a hen. The Binn Hill is a wooded hill about 400 feet high, facing the sea. It is covered with trees, mostly Scotch fir, some larch and spruce. The different portions vary from 20 feet to 40 feet in height. Between it and the sea there is a waste of stones separating belts of Scotch firs about 40 feet high, with heather, juniper, and bracken underneath; and this was where we saw the birds. Altogether, I should say, there are between four and five hundred acres of wood. I have made inquiries among the neighbouring keepers, and hear that in the Gordon Castle woods there are now, they think, about thirty Capercaillies, and these are believed to have arrived last year. Last week a cock was killed at Pluscarden, on the other side of Elgin, and there are two more (♂ and ♀) left.—James Davidson, Elgin.

Grey-Lag Goose in Ayrshire.—A Grey-Lag Goose (*Anser cinereus*), a young male, was shot near the Black Rocks, south of Fairlie, on the evening of 13th November 1906, by Mr. Knox Whyte. There was another bird in its company at the time. There are a few old records of this species having been observed in the Clyde Area, but the above appears to be the first specimen obtained. —Robert Wilson, Glasgow.

Dotterel at the Flannan Islands.—In September last I received, in the flesh, a specimen of the Dotterel (*Eudromias morinellus*), a bird-of-the-year, from Eilean Mòr, Flannan Isles. The occurrence of this species in this remote locality is of considerable interest to those who concern themselves with the migratory movements of birds, for this species has not hitherto been detected in the Outer Hebrides, of which the Flannans are far western outliers.—Wm. Eagle Clarke.

Mortality among Guillemots and Razorbills.—Since the end of July there has been one of the mysterious epidemics (?) running its course amongst the Solway Guillemots, and, to a lesser extent, amongst the Razorbills too. Old and young have been equally affected, and many of the latter were mere chicks. All along the tide mark from about Auchencairn eastwards defunct individuals have been strewn in very large numbers, and up till mid-September this fatality seems to have been continuous. Since then it hardly appears to have been so bad. Such epidemics amongst these rock-birds have occurred occasionally, one of the most fatal having taken place in 1869. Some authorities attribute this widespread destruction of the birds to destitution following upon tempestuous weather; others to starvation owing to absence of their food over the banks where they dive for it; while most seem to favour the disease theory. It seems strange that no precise observations upon the cause of the mortality seem to have been made. All the birds that I handled in August and September, cast ashore as described, were extremely emaciated, but in fine condition as to plumage. Their stomachs were always empty. Some few I caught ashore in a helpless condition. Many were noticed close inshore, within a stone's throw of the edge, and this was a most unusual place for these birds, in such shallow water as our firth.—Robert Service, Maxwelltown.

Fulmar nesting at Dunnet Head.—From Mr. Harvie-Brown's note in the October number of the "Annals" it might be supposed that last year was the first time the Fulmar (*Fulmarus glacialis*) had nested at Dunnet Head. That is not the case, as I was told by one of the lightkeepers, Mr. H. Laidlaw, when there last October, that the Fulmar had bred since 1900. At first there were only two pairs nesting, but now they have increased to three colonies, with from ten to twelve pairs in each.—Norman B. Kinnear, Edinburgh.

Müller's Topknot captured in the Sound of Mull.—A specimen of Müller's Topknot (*Zeugopterus punctatus*) was captured on 7th September last in a wire fish trap on the coast of Morven in the Sound of Mull, nearly opposite Tobermory. I believe it to be the third specimen caught during the past fifteen years—one off Ardnamurchan Coast at Kilchoan, and two off Drimnin shore.—A. Burn-Murdoch, Edinburgh.

Chrysops sepulcralis, *F.*, Therioplectes montanus, *Mg.*, and other Tabanidæ at Aberfoyle (Forth).—On 30th June 1905, a bright, warm summer day, *Tabanidæ* were very plentiful in a meadow near Aberfoyle. Flies were not the special object of my pursuit at the time, but the "clegs" forced themselves on my notice, and I captured a number. On examining them later I found three species of *Chrysops* represented, namely, *C. cæcutiens*, *C. relicta*, and half a dozen specimens (♀ ♀) of what I made out to be the rare *C. sepulcralis*, F., a determination in which Mr. Verrall, to whom I submitted a specimen, concurred. *Therioplectes* was represented by *T. solstitialis*, and a darker species, an example (♀) of which Mr. Verrall returned to me with the name *T. montanus*, var. Of several *Tabanus sudeticus* seen, one only allowed itself to be netted. Females of the ubiquitous *Hæmatopota pluvialis* were, of course, abundant, but only one male was got.—William Evans, Edinburgh.

Lepidoptera from West Ross-shire, etc.—The following is a list of Butterflies and Moths taken by me this year at Swordale, and which, according to Barrett's "British Lepidoptera," have either not been found so far north before, or in East Ross:—

Chrysophanus phlæas, L.; *Cœnonympha pamphilus*, L.; *Demas coryli*, L.; *Pœcilocampa populi*, L.; *Trichiura cratægi*, L.; *Cerura furcula*, L.; *Notodonta dictæa*, L.; *N. ziczac*, L.; *N. dromedarius*, L.; *Pterostoma palpina*, L.; *Thyatira batis*, L.; *Asphalia flavicornis*, L.; *Acronycta rumicis*, L.; *Triphæna janthina*, Esp.; *Noctua neglecta*, Hb.; *Polia chi*, L.; *Miselia oxyacanthæ*, L.; *Miana strigilis*, Clerck; *Panolis piniperda*, Panz.; *Xanthia cerago*, Schiff.; *Plusia bractea*, Fab.; *P. pulchrina*, Haw.; *Euclidia mi*, Clerck; *Hypena proboscidalis*, L.; *Rumia cratægata*, L.; *Cabera pusaria*, L.; *C. exanthemaria*, L.; *Fidonia carbonaria*, L.; *Numeria pulveraria*, L.; *Selenia illunaria*, Hb.; *Metrocampa margaritata*, L.; *Ellopia fasciaria*, L.; *Biston betularius*, L.; *Phigalia pilosaria*, Schiff; *Lomaspilis marginata*, L.; *Anticlea badiata*, Schiff; *A. derivata*, Schiff; *Coremia multistrigaria*, Haw.; *Emmelesia alchemillata*, L.; *Cidaria psittacata*, Schiff; *C. miata*, L.; *C. corylata*, Thnbg.; *C. suffumata*, Schiff; *C. silaceata*, Schiff; *C. prunata*, L.; *C. fulvata*, Först.; *Thera firmata*, Hb.; *T. variata*, Schiff; *Hypsipetes ruberata*, Frr.; *H. impluviata*, Schiff; *Oporabia dilutata*, Schiff; *Carsia imbutata*, Hb.; *Eubolia palumbaria*, Schiff; *Eupithecia lariciata*, Frr.

At the end of September I found the following species at Dornoch, Sutherland:—*Platypteryx lacertinaria*, L.; *Hadena pisi*, L.; and also obtained larvæ of: *Cidaria corylata*, Thnbg.; *Cabera exanthemaria*, L. (2); *Platypteryx lacertinaria*, L. (1, off birch); *Cymatophhora duplaris*, L.; *Notodonta dromedarius*, L.; *Hadena pisi*, L. (2); *Rumia cratægata*, L. (2); *Lomaspilis marginata*, L. (a few, very young); and *Eupithecia lariciata*, Frr. (from larch and Scotch fir).—Dorothy Jackson, Swordale, Evanton, Ross-shire.

Chærocampa celerio, *L.*, **at Galashiels.**—It may be of interest to note that a fine specimen of the above species of Hawk-Moth was taken in the town of Galashiels in the month of October this year. The species always appears to be uncertain and irregular in its appearance, and in Scotland has only occurred in the Moray area and the south, as stated in Barrett's work, vol. ii. p. 55. The present example found its way into the collection of the South of Scotland Entomological Society, but through the good offices of the Secretary, Mr. John Clapperton, it has been presented by them to the Royal Scottish Museum.—Percy H. Grimshaw, Edinburgh.

BOTANICAL NOTES AND NEWS.

Carex muricata, *Linn.*, **in North Aberdeen.**—Among plants collected in the neighbourhood of Banff during the autumn of this year (1906) by Mr. William G. Craib, a student in the University of Aberdeen, were several local and scarce species. Among them was an example of the above sedge, gathered in the parish of King Edward. This is its first record for the vice-county of North Aberdeen (92), though known from the neighbouring vice-counties. It is very local and nowhere common in the north-east of Scotland. —J. W. H. Trail.

The Disappearance of British Plants.—In the "Journal of the Royal Horticultural Society," in December 1906, appeared an excellent address on this subject (reproduced in great part in the "Journal of Botany," 1906, pp. 414-422), well deserving to be read and thought over. To those familiar with the flora of a town and its vicinity the local disappearance of species is only too evident; yet Prof. Boulger found himself unable to name a single species that had disappeared wholly in recent times from the British Islands, while recalling the extinction of *Calamagrostis neglecta*, var. *borealis*, from its single locality, a marsh near Loch Tay in Mid Perth, recorded by Mr. Druce. The editor of the "Journal of Botany" adds *Erythrea latifolia*, no longer found on the Lancashire sandhills, its former sole British habitat. Others are, if not extinct, perilously near that fate in Britain, and stand in need of protection. Only a few are in serious danger from the covetousness of botanists, the more serious risks arising from industrial and urban operations, amusements such as golf, and the collection of wild plants for sale by tradesmen.

Botanical Nomenclature.—The unavoidable difficulties in the determination of the correct names of plants are sufficient in themselves to test the perseverance of the student, and to bring despair to the less sanguine. When to these are added the more irritating troubles caused by the diversity of names applied to the species, and by the changes of names rendered so frequent by the researches

into priority within recent years, the effect is to repel too many from the study of plant-life, and to rouse an earnest wish to have the nomenclature at least relieved from the burden of uncertainty in its use. Its aim is to aid research, not to leave obstacles in the way. It is largely based on convention, and the most useful agreement is that which codifies the methods and results shown by experience to be of most value. A great advance in this direction was made by the last International Botanical Congress, which met at Vienna. Two volumes have been recently issued as a record of the meeting, and in one of these is a statement of the code recommended for the regulation of botanical nomenclature. The code is also issued separately, and as an appendix to the November and December numbers of the "Journal of Botany." A list of generic names that should, for good reasons, be retained, though not entitled to be so by mere priority, will commend itself to many botanists.

Some Plants which spread from my Garden.—It may be of a little interest to give a short account of some of the plants which spread from the garden of this farm, Hillocks of Terpersie, in the parish of Tullynessle, near Alford, in Aberdeenshire, at nearly 900 feet above the sea-level, on the south side of the Coreen Hills.

The Great Mullein (*Verbascum Thapsus*) sometimes appears in the fields, but rarely survives its first season, though in October of this year I found a plant in flower on three-year-old lea, beside a decayed stem of the last year's growth. The Milk Thistle (*Mariana lactea*) and the Welted Thistle (*Carduus crispus*) also show themselves near the garden, and even some distance from it, but they only occasionally succeed in flowering. The Common Comfrey (*Symphytum officinale*) appears near the steading, and the Bloody-veined Dock (*Rumex sanguineus*) appears here and there in the fields, but seldom reaches a height of 1½ feet. Peppermint (*Mentha piperita*), Marjoram (*Origanum vulgare*), and Common Balm (*Melissa officinalis*) extend only a little way from the garden. White Deadnettle (*Lamium album*) and Spotted Deadnettle (*L. maculatum*) also spread from it, as do, among weeds of this genus, the Henbit Deadnettle (*L. amplexicaule*), and Red Deadnettle (*L. purpureum*). The Leopard's Bane (*Doronicum Pardalianches*) grows here and there on the fields. The Burdock (*Arctium Lappa*) occurs in the shelter of the garden, and occasionally spreads on to the fields, and on gravel a considerable distance down a stream. Good King Henry (*Chenopodium Bonus-Henricus*) extends beyond the garden, and the Common Cowslip (*Primula veris*) has been met with by me on pasture fields. I have also seen small plants of Meadow Rue (*Thalictrum*), Lark-spur (*Delphinium*), Columbine (*Aquilegia*), Monkshood (*Aconitum*), Lily of the Valley (*Convallaria majalis*), Common Solomon's Seal (*Polygonatum multiflorum*, Snowdrop (*Galanthus nivalis*), species of *Allium* and *Crocus*, outside the garden, either through seeds or

by young plants, but they rarely succeed. Still less successful are *Dielytra spectabilis*, *Atropa Belladonna*, and *Lythrum virgatum*, portions of which from the gardens when thrown on the top-dressing heap are carried out to the fields, but soon die off. I have also seen one or two small plants of *Morina longifolia* on the fields, but whether from seed or outcast I have not been able to satisfy myself.

W. Wilson.

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—October-December 1906.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable, and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

Hoopoe in Orkney. H. W. Robinson. *The Field*, 24th November 1906, p. 908.—Example picked up dead near the Loch of Harray, near Stromness, on 16th November.

Spotted Crake in Lewis. Arthur W. Rowlands. *The Field*, 10th November 1906, p. 822.—Specimen shot at Stornoway on 15th October.

Loch Broom Sea Monster. *Zoologist*, October 1906, pp. 396-398.—Notes by Messrs. J. Murie and J. A. Harvie-Brown, expressing the opinion that the monster in question was a Basking Shark (Selache maxima).

A Molluscan Visit to Some of the Inner Hebrides (Islay, Coll, Tiree, and Iona). By Rev. G. A. Frank Knight, M.A., F.R.S.E. *Trans. Perthshire Soc. Nat. Sci.*, vol. iv., pt. iii., 1906, pp. 135-161.

Empis hyalipennis, Fln., in Dumbartonshire. J. R. Malloch. *Ent. Mo. Mag.*, November 1906, p. 257.—Four specimens taken on 25th August in Murroch Glen, near Bonhill.

On a few Tachinidæ and their Hosts. By Claude Morley, F.E.S. *Entomologist*, December 1906, pp. 270-274.—Tachina larvarum, L., reared from Galashiels specimens of Macrothylacia rubi by Mr. Haggart.

Polietes hirticrura, Meade. By James Waterston, *Ent. Mo. Mag.*, December 1906, pp. 269-270.—The female (hitherto unknown) described from a specimen taken in Glen Ashdale, near Whiting Bay, Arran.

On the British Species of Phora (Part I.). (Continued.) By Dr. John H. Wood. *Ent. Mo. Mag.*, November and December 1906, pp. 262-266.—P. opaca and fennica recorded from Bonhill (Malloch), and P. femorata from Nairn (Yerbury) and Bonhill (Malloch).

Phora cubitalis, Beck., a Species new to the British List. J. R. Malloch. *Ent. Mo. Mag.*, October 1906, p. 233.—Over thirty specimens taken in July at Bonhill, Dumbartonshire.

Phora sordida, Zett., in Dumbartonshire. J. R. Malloch. *Ent. Mo. Mag.*, December 1906, p. 276.—Several specimens taken near Bonhill on 22nd September.

Coleoptera in Inverness-shire. James E. Black. *Ent. Record*, December 1906, pp. 321-322.—Thirty-four species recorded as taken at Newtonmore in the month of June.

Note on Scydmænidæ and Pselaphidæ from the Northumberland and Durham District. R. S. Bagnall. *Ent. Record*, December 1906, p. 326.—This note also refers to a specimen of Euplectus piceus taken in Glen Ashdale, Arran, in July.

Carida affinis, Payk., a Beetle new to Britain. D. Sharp. *Ent. Mo. Mag.*, October 1906, p. 220.—Several specimens found by Mr. C. G. Lamb and Col. Yerbury in Strathspey in July.

Otiorrhynchus morio, F., v. ebeninus, Gyll., in Sutherland. J. Kidson Taylor. *Ent. Mo. Mag.*, December 1906, p. 272.—A single specimen taken near Lochinvar in June 1901.

Entomological Notes on the past Season. By Percy C. Reid, F.E.S. *Ent. Record*, December 1906, pp. 301-302.—Fourteen species of Lepidoptera recorded from Kinloch Rannoch, and three other species recorded as taken in Scotland in October.

Collective Inquiry as to Progressive Melanism in Lepidoptera. Summary of evidence prepared by L. Doncaster, M.A. (continued). *Ent. Record*, 15th October 1906, pp. 248-254. —Numerous Scottish forms are alluded to in this useful paper.

Acherontia atropos in Roxburghshire. B. Weddell. *Entomologist*, November 1906, p. 261.—Specimen captured at Newtown St. Boswells on 8th October.

Aculeate Hymenoptera at St. Fillans and the Braes of Balquhidder, Perthshire. G. A. James Rothney. *Ent. Mo. Mag.*, November 1906, p. 257.—A list of twenty-two species given, taken between 5th July and 3rd August.

Crabro carbonarius, etc., in the South of Scotland. William Evans. *Ent. Mo. Mag.*, October 1906, p. 232.—In this note Scottish localities are given for the above species and also C. aphidum, C. capitosus, and Andrena ruficrus.

Triænodes reuteri, M'Lach., a Species of Trichoptera new to Britain. By K. J. Morton, F.E.S. *Ent. Mo. Mag.*, December 1906, pp. 270-271.—Several specimens taken by Mr. W. Evans on 7th July at the River Laggan (Forth) near Aberfoyle, and again on the 14th of the same month by Messrs. Evans and Morton.

A Catalogue of Land, Fresh-Water, and Marine Crustacea found in the Basin of the River Forth and its Estuary. By Thomas Scott, LL.D., F.L.S. *Proc. Roy. Phys. Soc. Edin.*, vol. xvi., No. 7, 1906. In this, the second part of the paper, the Ostracoda, Copepoda, and Cirripedia are dealt with.

On New and Rare British Mites of the Family Oribatidæ. C. Warburton and N. D. F. Pearce. *Proc. Zool. Soc. Lond.*, 1905, vol. ii. (published April 1906), pp. 564-569), pls. 19, 20.—Of the eleven species recorded in this paper, seven are described as new to science. The type of Nothrus crinitus, sp. nov., was taken at Lochgelly, Fife, in May 1905, by W. Evans.

BOTANY.

The Disappearance of British Plants. By G. S. Boulger, F.L.S. *Journ. Bot.*, 1906, pp. 414-422.—This is a reprint of a paper in the *Journ. Roy. Hortic. Soc.*, December 1905.

Meeting of the Scottish Alpine Botanical Club, 1905, at Killin. By Alexander Cowan. *Trans. Bot. Soc. Edin.*, xxiii., 1906, pp. 165-167.—*Cystopteris montana* found on Meall nan Tarmachan.

The Extra-Tropical Trees of Arran. By Rev. David Landsborough, LL.D. *Trans. Bot. Soc. Edin.*, xxiii. 1906, pp. 136-157.—A very valuable contribution to the records of the growth in the open air in Arran, and at Kinloch Hourn in West Inverness, of many woody plants from warm climates, the dimensions being given. A list is added of twenty-three species of *Bambusaceæ* growing at Achnashie in Argyll.

Note on a rare British Fern, Cystopteris fragilis, var. sempervirens. By William Young. *Proc. Bot. Soc. Edin.*, xxiii., 1906, pp. 192-194.—Found in Corrie Ceann-mor, S. Aberdeenshire, in July 1904.

Note on Rhacomitium ramulosum. By William Young. *Proc. Bot. Soc. Edin.*, xxiii., 1906, pp. 190-191.—Found on Craig Mhor, in Mid Perth, in June 1898, but recently determined.

British Coenogoniaceæ. By A. Lorrain Smith, F.L.S. *Journ. Bot.*, 1906, pp. 266-268.—Calls attention to *Racodium*

rupestre or *Byssus nigra* as including two forms, the one of which incloses filaments of *Cladophora*, while the other incloses cells of *Chroolepus aureus*; and records the latter type as found in Dumfriesshire.

BOOK NOTICES.

The Eggs of the Birds of Europe. By H. E. Dresser, F.L.S., F.Z.S., etc. London: The Author, 110 Cannon Street, E.C. Price 10s. 6d. per Part.

Since our notice on the appearance of the first number of this highly important and beautiful work, several parts have been issued; and we are now able to form a more deliberate opinion as to its merits, that is to say of its artistic merits, for the value of its letterpress was assured by the high scientific status of the author. It is a source of great satisfaction to us to offer our sincere congratulations to Mr. Dresser on the marked success he has achieved in the matter of his plates. We confess we were at first sceptical as to whether the three-colour process was suitable for the reproduction of portraits of such difficult subjects as birds' eggs are so well known to be. Now we are more than pleased to pronounce that his plates are surprisingly excellent. Indeed, so realistic do the eggs appear that one has the feeling that it were possible to pick up each of them from the plate: the unfortunate flatness which has hitherto been so manifest even in the best productions having been entirely overcome. It is an immense advantage too, as we have already pointed out in our previous notice, that we have now for the first time a great work on bird's eggs in which absolutely reliable portraits of specially selected specimens are afforded, in the place of the interpretations of artists, who have for the most part failed to produce satisfactory likenesses.

Mr. Dresser has been successful in securing the co-operation of a number of naturalist-photographers, who have supplied him with pictures of the nests and eggs, many of them rare and difficult to obtain, and these add much to the attractiveness of his pages.

In all, six parts of this work have been issued. These contain 29 plates, whereon are depicted many hundreds of specimens, showing the range of variation in the eggs of over 170 species.

A Fauna of the Tay Basin and Strathmore. By J. A. Harvie-Brown. Edinburgh: David Douglas, 1906. Price 30s. net.

The object of this notice is to draw the attention of our readers to the fact that Mr. Harvie-Brown has again rendered British naturalists indebted to him for another great contribution to our knowledge of the Vertebrate Fauna of Scotland. The book in this instance deals with one of the most interesting, beautiful, and highly

diversified areas in Great Britain. So diversified, indeed, is "Tay," that it may safely be said that in spite of this valuable contribution to our knowledge, much necessarily remains to be accomplished ere the fauna of the innumerable mountains, moorlands, woods, and lochs of the fair county of Perth, which forms the greater part of the Basin, are worked out with the thoroughness they so well deserve.

Mr. Harvie-Brown, however, affords us much information about the mammals, birds, reptiles, and amphibians of this singularly attractive area; also a full description of its physical features, and his views on a number of problems relating to the distribution of life therein. The fauna of the Tay area is, as we should expect, a rich one. It comprises 43 mammals, 236 birds, 3 reptiles, and 4 amphibians.

The volume contains in all 463 pages; and there are 21 full-page plates, a number of text illustrations, and 5 maps.

W. E. C.

The Cambridge Natural History, Vol. I. Protozoa, by Prof. Marcus Hartog, D.Sc.; Porifera (Sponges), by Igerna B. J. Sollas, B.Sc.; Coelenterata and Ctenophora, by Prof. S. J. Hickson, F.R.S.; Echinodermata, by Prof. S. W. MacBride, F.R.S. London: Macmillan and Co. Ltd., 1906.

This outstanding "Natural History" is now nearing completion, and the appearance of the present volume, occupying as it does the first place in order in the series, has naturally been looked forward to with some impatience. Its issue at this late date, instead of at the beginning of the enterprise, has, however, been a distinct advantage, in that it has enabled the authors to take cognisance of recent important researches in their respective subjects. The volume, which is a bulky one, extending to close on 700 pages, is in every way a worthy companion to its forerunners.

In a series of well-written chapters, occupying 160 pages—none too many—Dr. Hartog deals with the Protozoa, starting with an examination of "the structure and behaviour of protoplasm and of the cell as an introduction to the detailed study of the Protozoa, or, better still, Protista, the lowest types of living beings, and of animals at large."

The classification of the Protozoa is admittedly a matter of great difficulty, and that adopted by the author is probably as good as could at present be devised. In the succeeding section, to which 78 pages are devoted, Miss Sollas gives a clear and well-arranged account of the Porifera or Sponges, in which is included a key to British genera. Prof. Hickson's treatment, extending over 180 pages, of the Phyla Coelenterata and Ctenophora—for to this rank does he raise the latter—strikes us as particularly good from whatever point it is regarded. And the same has to be said of Prof. MacBride's account of the Echinodermata, which occupies 197 pages. In both the systematic part can be highly commended. The Sea-

cucumbers, we observe, are placed beside the Sea-urchins in the sub-Phylum Eleutherozoa; and most of the British species of Echinoderm, it should be said, are mentioned in their proper places.

The volume is, like the rest of the series, well illustrated, a number of the figures being original. W. E.

The Recreations of a Naturalist. By James Edmund Harting. With Eighty-one Illustrations. London: T. Fisher Unwin, 1906.

Mr. Harting, who is so well and so favourably known to all field-naturalists, has for many years past contributed articles of considerable interest to zoologists and sportsmen to various magazines, through whose pages they are scattered far and wide, both as regards place and time. These, over forty in number and covering a remarkable variety of subjects, are now garnered and form a handsome volume, which will be welcome to zoologists, especially to those who have had the advantage of their author's friendship. The articles, which are written in an attractive style, include many that have been seldom, if ever, treated upon from Mr. Harting's standpoint, and the information he affords and his critical remarks thereon are extremely useful and acceptable.

The book is nicely got up and well illustrated, and the frontispiece is an excellent portrait of the author with one of his favourite falcons on his wrist.

Entomology, with special reference to its Biological and Economic Aspects. By Justus Watson Folsom, Sc.D. (Harvard). London: Rebman Limited, 1906. 8vo. Pp. 485 and 5 Plates (one coloured). 14s. net.

The author of this new work on Insects is to be heartily congratulated on having produced a most excellent handbook on entirely new lines. The whole treatment of the subject is most lucid and refreshing, masterly and entertaining. We have seldom seen the innumerable facts relating to entomological matters presented in a more attractive form, and the book is eminently readable and suggestive from beginning to end. For an example of the lucidity of style in dealing with a difficult subject we need only refer the reader to the account given on pp. 103-109 of the Sounds of Insects and Hearing. The illustrations, of which there are some 300, are exceedingly well executed and happily chosen, a large number of them being original. Plates I. and II. are novel and of much interest, showing the successive stages in the pupation and emergence of the imago of the well-known Milkweed Butterfly, *Anosia plexippus*. We notice, by the way, a slip on p. 18, in estimating the number of described species of Coleoptera as 18,000—this figure only representing about one-fifth of the actual number at present known.

The book is divided into thirteen chapters, commencing with

three dealing with classification, anatomy, physiology, and development; then follow seven treating of aquatic forms, colour, origin of adaptations, the relations of insects to plants, animals, and other insects; then one on insect behaviour, one on distribution, and a concluding chapter on insects in relation to man. Not the least useful feature of the volume is a very full classified bibliography, giving (upon a rough estimate) about 1000 titles.

In conclusion, we can honestly recommend Dr. Folsom's work as one of the best general introductions to the science that has appeared in recent years. The price is exceedingly moderate.

P. H. G.

British Flowering Plants. By W. F. Kirby, F.L.S., F.E.S. London: Sidney Appleton, 1906. With 120 Coloured Plates and 119 Illustrations in the text. 5s.

How to Find and Name Wild Flowers. By Thomas Fox, F.L.S. London: Cassell and Company, 1906. Illustrated by the Author. 2s.

These two works represent different types of the efforts so frequent on the part of publishers to meet the growing interest in and love for Nature. The desire to know more about the universe, and especially about the living beings that dwell around one's home, can only add to the richness and enjoyment of life; but without a guide progress is slow and uncertain. Books written by those that possess the required knowledge along with the power of clear exposition are the best substitutes for the living voice and guidance of the enthusiastic teacher; and their usefulness is greatly increased by well-selected illustrations. Among the difficulties of the beginner not the least are those to be overcome in learning the names of plants and animals; and the books that have been issued as guides through the maze of difficulties are already many, yet have not solved the problems, if one may judge from the everflowing streams of new efforts. The two under review are not likely to stop that flow or to meet the needs of beginners, although both can claim the merit of being very low-priced for the work involved in their production.

"British Flowering Plants" is scarcely an accurate title for a book that in its 120 coloured "plates" includes over 20 per cent of species not native in the British Isles. The descriptions rarely give real guidance likely to help a beginner in doubt as to the characters of a genus or family, or as to the methods or aims of classification; but there are notes on the properties and uses of some of the plants that may arouse interest, and numerous references to the insects that feed on the various plants give the work an individuality among such books.

"How to Find and Name Wild Flowers" must have cost its author much labour, but we fear the usefulness to the beginner will not be as great as he hopes. A classification based on the months

of flowering, the colours of petals, and the size of flowers must bristle with difficulties, and it has the defect of separating widely plants that should be kept together. Tested by the characters given, a large proportion of the plants could not be referred to their genera, and some not even to their families. There are conveniences in the use of a more or less arbitrary method of working out the name of an unknown specimen, but the Linnean classification is very much simpler and more precise than any other that has been proposed for this end. It is not likely to be superseded by this new method. Mr. Fox is evidently a supporter of the use of English names for all flowering plants in our flora. But, after all, are such names as "Umbelliferous Jagged Chickweed," "Yellow Alpine Whitlow Grass," "Austere Strawberry Tree," "Remote-flowered Sea-lavender," "Small Eight-stamened Waterwort," "Sweet William Catchfly," and "Cow Herb" popular names in any sense or more easy to remember than the scientific names, which are free from ambiguity and known to botanists of all countries? Where genuine popular names, in common use, exist, by all means use them in works for English-speaking readers wherever their use does not endanger clearness and accuracy. But to strain this desire for English names to the point of translating a scientific name into equally unfamiliar English is surely a mistake. Exception might be taken to various statements, such as leaves of Bog Myrtle "2-3 inches" long, *Campanula glomerata* beginning to flower in August, stem of "*Comarum palustre*" "bent down"; but it is unnecessary to go into details. Part II. of the book gives a list of the greater number of British native and alien flowering plants, in their systematic order, with brief characters of the families and larger divisions. In this list the scientific names are used. References are given from the descriptions in Part I. to this list, and *vice versa*. For each species in the list an abstract of the distribution in Great Britain is given, the extremes being named and the number of "counties" from which the plant has been recorded; but the total number of "counties" is given as 118 instead of the commonly received 112. Several excellent photographs of common plants are scattered through the book.

I GO A-WALKING THROUGH THE WOODS AND O'ER THE MOOR. With Illustrations from Photographs. By Charles Reid, Wishaw. Edinburgh: T. N. Foulis, 1907. 2s. 6d. net.

This is the third of the series submitted to us for notice, and, like its precursors, it is an excellent little book of its kind. Mr. Reid's pictures of mammals, old and young; birds and their nests; and country scenes, are very charming, and have been beautifully reproduced, while the accompanying letterpress is appropriate. In spite of much that has been done on similar lines, these pictures, seventy in number, hold their own and compare favourably with any we have seen.

Lagenorhynchus albirostris.

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WHITE-BEAKED DOLPHIN, *LAGENORHYNCHUS ALBIROSTRIS*, IN THE FIRTH OF FORTH.

By Bruce Campbell.

Plate II.

A fine specimen of this uncommon Cetacean was captured off Cramond on the 26th of March. I had the pleasure of examining and photographing it on the following day, and found it to be an adult male measuring 8 feet 8.5 inches on the straight. Its stomach contained the bones of fishes and the claws and the legs of Hermit Crab (*Pagurus bernhardus*).

This species is new, so far as is known, to the fauna of the Firth of Forth, but examples have been obtained in the North Sea just to the north and south of the mouth of the Firth, namely at the Bell Rock and off Berwick. Though this species was described in 1846 from an English specimen captured off Yarmouth, it was not until 1879 that it was detected in Scottish seas, but since that date several have been obtained on both the east and west coasts of Scotland. The White-beaked Dolphin is a native of the North Atlantic from Davis Straits south-eastwards to the British and Irish coasts, the North Sea and the Baltic.

As its name implies, this Dolphin has the tip of its beak and lips, and also the under parts, creamy white; while the colour of the upper surface is deep purplish black. In this example the beak slips were mottled with grey, and there were greyish patches above the flippers and on the back between the dorsal fin and the tail.

This latest Scottish example has been presented to the Royal Scottish Museum by its captor, Mr. William Lumley, of Cramond.

The following are the dimensions of this specimen :—

	Feet.	Inches.
Extreme length	8	8.5
Depth in front of dorsal fin	2	3
Width across tail	2	8.5
Height of dorsal fin (on curve)	2	5
Length of anterior edge of flipper	1	9.5
Mouth slit		11.5
Angle of mouth to eye		2.5
Blow-hole to tip of beak	1	2.5
Tip of beak to dorsal fin	3	10
Diameter of blow-hole		1.75

EDINBURGH.

THE BIRDS OF FAIR ISLE.—II. THE RESULTS OF OBSERVATIONS MADE DURING THE YEAR 1906.

By WM. EAGLE CLARKE, F.R.S.E., F.L.S.

MY previous communication[1] on the birds of Fair Isle was based upon observations and inquiries made during a visit to the island in the autumn of 1905. In that contribution I was able to enumerate one hundred species as comprising its known avifauna. Throughout the whole of the following year, 1906, the investigations were vigorously carried on, with the gratifying result that considerable additions

[1] 'The Birds of Fair Isle, Native and Migratory,' "Ann. Scot. Nat. Hist.," 1906, pp. 4-24, 69-80.

were made to our knowledge of the ornis of this interesting and remote island.

Along with Mr. Norman B. Kinnear, I again spent several weeks at Fair Isle in the past autumn. During this sojourn we observed nearly one hundred species and many thousands of individuals, the vast majority of which were on their passage southwards to more or less distant winter haunts.

A more important contribution, however, is that furnished by my valued correspondent, Mr. George Stout. This enthusiastic and capable observer deserves special mention and thanks for the conscientious and accurate manner in which he has carried out my instructions and wishes. Mr. J. W. Anderson has also helped with observations and specimens, and deserves mention.

The Fair Isle record for 1906 is a remarkable one, and affords material for a study in bird-migration which I hope shortly to be able to prepare. The aim of the present paper is to afford additional information on the species already treated of, and to enumerate, with particulars of their occurrence, the birds—no less than forty-three in number—which have been added to the fauna of the isle during the past year.

The Fair Isle avifauna as at present known comprises 143 species. Of these 32 are natives, being either residents or summer visitors. The rest are visitors during the periods of their spring and autumn passages, most of them being regular in their appearance, while a few must be accounted rare not only in Fair Isle, but elsewhere in Britain.

Among the more interesting and rare birds occurring in 1906, mention may be made of the Red-rumped Swallow, new to fauna of the British Isles ; and of the Reed Warbler and the Scarlet Grosbeak, both of which are additions to the fauna of Scotland. The Greater Redpoll, Woodlark, Shore Lark, Sedge Warbler, and Red-breasted Flycatcher have not hitherto been known to occur in the Shetlands, of which Fair Isle is accounted an integral, though outlying, part. Others, such as the Little Bunting, Ortolan Bunting, Northern Bullfinch, and Yellow-browed Warbler, are decidedly rare as British birds ; while the Lapp Bunting, Yellow Wagtail, Tree Pipit, Creeper, Red-backed Shrike,

Lesser Whitethroat, Chiff-Chaff, Bluethroat, Stonechat, Spotted and Pied Flycatchers, Shelduck, Green Sandpiper, and Pomatorhine Skua, are reckoned as quite uncommon as visitors to the northern isles.

The occurrences of rare birds have always had a peculiar charm for British ornithologists, but to the student of bird-migration their irregular, and in some instances erratic appearances, are not helpful in connection with his researches; indeed they are often distracting, and present problems which admit of no satisfactory explanation.

Though the period (the whole of September and the first week of October) covered by our 1906 visit coincided as to date with that of 1905, yet quite a number of migrants came under notice during the past autumn which were not observed by us in the previous year. On the other hand, only one of the birds of passage of 1905, the Ruff, was not detected in 1906.

It has been suggested to me that Fair Isle must possess some peculiar and special advantages over other northern islands, and thus render it much visited by migratory birds. In my opinion such is not the case. It has, however, decided advantages for the *observer*. The secret, if secret it be, of its superiority as our observing station over the Isles of the Orkney and Shetland groups, lies in its detached position and its small size. This results in (1) some concentration at Fair Isle, whereas the isles of both the groups named are many, large, and not far apart, and thus the migrants visiting them are widely and thinly scattered; while (2) its small size renders it possible to ascertain, with some degree of completeness, what species are present each day. In this latter respect, however, even Fair Isle, with its two and a half miles of varied surface, is too extensive for a couple of observers, and there were days on which feathered visitors were abundant when we were conscious that, in spite of our utmost endeavours, we had missed many birds.

The experience gained during many holidays devoted to bird watching has convinced me that, with all our great army of trained observers, we in Britain see only an infinitesimal number of the migrants which visit our shores: far fewer than is

generally supposed, and this is especially the case on the mainland. Thus the Lapland Bunting, which was so numerous at the Flannans and at Suleskerry in the autumn of 1904, and at Fair Isle in 1905 and 1906, entirely escaped notice elsewhere in Scotland; and the Yellow-browed Warbler which was observed at Fair Isle in 1905 and again in 1906 (when it was not uncommon, and was also captured at Skerryvore), has never been detected on the mainland of Scotland. On reaching the mainland the migrants, especially the passerines, become widely scattered over the country where cover abounds, and thus the vast majority of them escape notice.

Specimens of all the birds mentioned, or about to be mentioned, have been presented to the Royal Scottish Museum.

It is again my pleasant duty to express our gratitude to John Bruce, Esq., of Sumburgh, and to the Commissioners of Northern Lighthouses, for the privileges they so graciously granted us; and to Mr. Dick Peddie for his kind and valued co-operation. Our acknowledgments are also due to Mr. and Mrs. Wallace for their great kindness during our residence in the Skadan Lighthouse, and to our many good friends among the natives, who allowed us to visit their crofts, the great resort of the small migratory birds.

In the following list the species that are numbered are additions to the one hundred recorded in my first contribution. Certain other birds are treated of, and concerning these the information now given is supplementary to the data of 1905, and throws additional light on them as Fair Island species.

CHAFFINCH, *Fringilla cœlebs.* — This migratory visitor was observed in the autumn of 1906 in much greater abundance than it did at same season of the previous year. They arrived during the last week of September in fair numbers, but were much more numerous during October, and a few remained throughout the winter. It is, as we should expect, a bird of double passage at Fair Isle, and was observed on its spring journey northwards on several days about mid-April.

101. LINNET, *Acanthis cannabina.*—An adult male, obtained on 18th April, is the only bird of this species which has, as yet, come under observation. There is also little information regarding this bird as a Shetland species.

102. Mealy Redpoll, *Acanthis linaria*.—A small party appeared on the Island in May, one of which, a typical example of this species, was forwarded to me. A few appeared in January of the present year. Several Redpolls were seen by us late in September, but as they were very wild we failed to secure specimens.

Greater Redpoll, *Acanthis rostrata*.—In the "Annals" for 1906 (p. 17) I alluded to the abundance of a form of Redpoll which did not seem to belong to the well-known Mealy species (*A. linaria*), and whose particular identity I reserved for further consideration. Since then I have had an opportunity of comparing these specimens with the fine series of Mealy Redpolls in Mr. Rothschild's great collection at Tring, and have satisfied myself that they belong to the form described by Coues as *Ægiothus rostratus*, which is considered by some authorities to be the young of *A. hornemanni* (several adults of which species were present at the same time), whose young have not, I believe, been described by those who recognise these two forms as distinct. As a visitor to Scotland, *A. rostrata* has only hitherto been recorded for the Island of Barra, Outer Hebrides, where my friend Mr. W. L. MacGillivray has several times obtained it.

The Greater Redpoll, as it is termed by the American ornithologists, is a native of Greenland; but in the winter visits Labrador, and the N.E. of Canada and the United States.

Northern Bullfinch, *Pyrrhula major*.—This is, no doubt, the species or race treated of in my former contribution under the name of *P. europea*, the common Bullfinch. A few birds of both sexes of this fine northern bird appeared in November, but only remained a few days on the island.

This Bullfinch was only added to the fauna of Scotland last year on the strength of Shetland and Fair Isle records ("Annals," 1906, p. 115).

103. Scarlet Grosbeak, *Carpodacus erythrinus*.—This is new to the Scottish fauna. A bird of the year, in its inconspicuous dull green plumage, was shot from a patch of potatoes on 3rd October. The nearest native haunts of this rare straggler to Britain are Finland and the eastern countries bordering the Baltic, whence its range extends to Kamtschatka. Its previous visits to our isles, so far as they have come under observation, are only two in number, both to southern counties in England.

104. Reed Bunting, *Emberiza schœniclus*.—During the last week of May and early days of June several of these birds visited

the island, haunting the margins of ditches. A few again appeared late in September, and throughout October it was frequent and occasionally fairly numerous. The last was observed on 20th November. Since this species is probably a bird of double passage in Fair Isle, it seems strange that in Shetland it is only known as a rare casual visitor: one which has been observed on four occasions, according to recorded information.

Little Bunting, *Emberiza pusilla.*—An adult female was shot on 3rd October. It was fortunately detected among a vast number of Twites which were seeking shelter and food in the stubbles. On 2nd October 1905 one was observed close to where this specimen was obtained, as already recorded in the pages of the "Annals." There are only three records of the occurrence of this bird in Scotland, all of them for the northern isles; and it has been equally rare in its visits, so far as we know of them, to England.

105. Yellow Bunting, *Emberiza citrinella.*—One example only came under notice in spring; but in autumn it was occasionally numerous, and a few remained the winter. Saxby saw this bird several times in Unst, and Mr. T. Henderson, jun., tells us that it occurs in Dunrossness on migration; otherwise there is little information regarding this bird for Shetland.

106. Ortolan Bunting, *Emberiza hortulana.*—This species is only to be regarded as an occasional visitor to Fair Isle during the seasons of passage. Quite a number appeared on the island during the last days of May, and a bird of the year was captured on 18th September. There is only one previous record, I believe, of the occurrence of the Ortolan Bunting in Shetland, namely, that of one adult male at Spiggie, Dunrossness, on 30th April 1898. It has rarely been recorded for Scotland, namely, near Aberdeen in 1863, and at the Isle of May in 1888.

Lapland Bunting, *Calcarius lapponicus.*—The first arrivals were observed on 8th September, or one day later than last year. They were not so numerous as in 1905, but were nevertheless seen almost daily after the date named. This bird does not appear to winter in the island; but the return movement north was witnessed in May, when a few arrived and were duly chronicled.

107. Woodlark, *Alauda arborea.*—A few appeared during the early days of November, and remained on the island until the middle of December. The occurrence of this species at this remote northern station is somewhat remarkable, and it

will be interesting to know if its visits are repeated. In summer its range extends to the southern portion of Scandinavia, but its lines of flight to reach these nesting haunts do not appear to lie along any section of the British shores. The specimens sent me from Fair Isle are the only satisfactory proof we have of the occurrence of this species in Scotland.

108. Shore Lark, *Otocorys alpestris*.—A small number of Shore Larks arrived on the island towards the end of October, and remained until mid-December, after which date they were not observed. The most seen on any occasion was seven.

This species has not hitherto been detected in Shetland, and hence may be regarded as an addition to the fauna of the archipelago, though doubtless it has often visited the islands on its somewhat irregular though numerous visits to the coasts of Britain.

109. Pied Wagtail, *Motacilla lugubris*. — A few appeared on passage in April and May, sometimes in company with *M. alba*. No birds of this species were observed during September 1905 and 1906, when the White Wagtail was one of the commonest birds of passage throughout the month.

110. Yellow Wagtail, *Motacilla rayi*.—On 8th May an adult male was captured, and forwarded to me in the flesh for identification, by Mr. J. W. Anderson. The occurrence of this species at Fair Isle is interesting, but can only be regarded as exceptional, since Scandinavia and the rest of Northern Europe lie far beyond the bird's summer home. Saxby, however, in his "Birds of Shetland" (p. 84), tells us that it is a rare straggler to Unst, and that, so far as he was able to ascertain, it appeared in the late summer and early autumn. He remarks that he several times saw it feeding among cattle.

Tree Pipit, *Anthus trivialis*.—This has proved to be a bird of double passage. It was not at all uncommon during May, and again in September, while stragglers occurred well on into October. On some days it was quite numerous, both in spring and autumn. This species, no doubt, escaped our notice in 1905, when only one specimen was obtained. Previous to our visits this bird had no place in the Shetland avifauna.

111. Creeper, *Certhia familiaris*.—On 27th December a male was found in an exhausted condition and allowed itself to be captured by the hand. This bird has been compared with the extensive series of Creepers in Mr. Rothschild's collection, and found to belong to the Continental and not to the British race. It must have been blown across the

waters of the North Sea by the fierce gales which prevailed just prior to its appearance.

There are two previous records of the occurrence of Creepers in Shetland, namely, one in Unst in 1859, and a male at Bressay on 12th October 1882.

A knowledge of racial forms is of the greatest possible service to those interested in bird migration, for it is of the utmost importance to know whence our bird visitors have come. This information is to be found in Dr. Hartert's "Die Vögel der paläarktischen Fauna," a most useful book now in the course of publication. It is to be hoped that the author will give us an English version, some day, for the benefit of those who do not read German.

112. Red-Backed Shrike, *Lanius collurio*.—Several appeared on passage late in May and in early June. One of these was observed feeding on a Rock Pipit (*Anthus obscurus*) which it had just captured. A short time afterwards an examination of the victim's remains revealed the fact that not a scrap of flesh remained upon its bones. It has not, to our knowledge, been detected in autumn. The only Shetland records are those of Saxby, who saw one in October 1866, and a female accompanied by three young birds in June 1870.

Common Whitethroat, *Sylvia cinerea*.—Fairly frequent on passage in May and early June and again in September, but only observed in small numbers. In September 1905 a single bird only came under notice. It appears to have been observed on a few occasions only in the more northern isles, *i.e.*, in the Shetland group proper.

113. Lesser Whitethroat, *Sylvia curruca*.—During the spring and autumn migratory movements of 1906, this bird, hitherto regarded as a somewhat uncommon visitor to Scotland, occurred frequently, and occasionally in some abundance. It was observed on three dates in May, when it was not uncommon; and one remained on the island until 18th June, and was heard in full song. In September Mr. Kinnear and I saw it on nine days, and sometimes several were seen on the same date. The last came under our notice on 4th October, the day we left the island. The only previous records for the occurrence of this species in Shetland are those of Saxby, who mentions, in his delightful book, "The Birds of Shetland," that he met with this species on three occasions.

114. Chiff-Chaff, *Phylloscopus rufus*.—The passage movements of this little Leaf-warbler very largely escape notice; prob-

ably because it is then silent, or nearly so, and hence does not proclaim itself and is consequently overlooked. A male specimen was obtained on 10th October 1906, and duly forwarded to me.

So far as I have been able to ascertain, this is the first specimen that has ever been *obtained* in any of the Isles of the Shetland group. Saxby, however, mentions it as occurring very rarely at about the same times of the year as the Willow-warbler.

YELLOW-BROWED WARBLER, *Phylloscopus superciliosus.*—During our 1905 visit we accounted ourselves fortunate when we obtained a single specimen—the second Scottish—of this interesting little migrant. In the autumn of 1906 no less than six of these birds came under our observation during the latter half of September and the early days of October, and, no doubt, several others escaped notice. They all frequented the plots of potatoes and turnips, and were extremely shy and restless, and hence very difficult to approach.

115. SEDGE WARBLER, *Acrocephalus phragmitis.*—This was another bird of double passage in 1906. It was not uncommon during the second, third, and fourth weeks of May; but only twice came under our notice in the autumn, namely, in the latter half of September, when single birds were seen. This bird has not hitherto, strange to say, been recorded for any of the Islands of the Shetland group; and yet, as it is a summer visitor to Norway, where it reaches a high northern latitude, it most probably occurs annually on passage in our northern Isles, as indeed the Fair Isle record for 1906 indicates.

116. REED WARBLER, *Acrocephalus streperus.*—The only Reed Warbler known to have occurred in Scotland was shot from among some potatoes on 24th September—a day on which Pied Flycatchers, Redstarts, Redwings, Thrushes, Tree Pipits, Chaffinches, Jack Snipe, and other migrants, were present in numbers. This species is unknown in Norway, but is found as far north as the south of Sweden. The occurrence of this bird at Fair Isle presents one of those enigmas, already alluded to, with which the study of bird migration is so much beset.

REDBREAST, *Erithacus rubecula.*—This is chiefly a bird of double passage, but a small number pass the winter in the island. Only a few appeared in September, but in October and November its visits were frequent, and it was occasionally observed in considerable numbers. Several remained through the winter of 1906-7.

On the spring passage it was not much observed, but individuals were seen in March, April, and May on their way northwards. The birds obtained at Fair Isle all belonged to the Continental race, which is characterised by having a much paler breast than the native British bird. All these immigrants were remarkably wild. The Redbreast has usually been considered a very uncommon bird in the Shetlands.

Arctic Bluethroat, *Cyanecula suecica*.—This species, which has hitherto been regarded as an extremely rare visitor to Scotland, again appeared at Fair Isle in the autumn of 1906. On 20th September and the following days no less than twelve of these birds, adults of both sexes and young, were seen, and it is certain that a number of others escaped notice. Their chief haunts during their visit were the faces of the great cliffs which flank the geos on the west side of the island, where insect life was abundant owing to the genial influence of the sun, to which they are exposed. In such retreats as these it was most difficult to discover them. Others frequented the cover afforded by the patches of potatoes and bracken. These birds reminded us much of the Redbreast in their actions and attitudes. Some of the adults still retained their beautiful frontlets, while in others they were partially hidden by the more sombre winter dress.

117. Redstart, *Ruticilla phœnicurus*.—Though not observed by us in the autumn of 1905, the Redstart proved to be quite common on its southerly passage from the middle of September to the end of that month in 1906, and stragglers occurred down to late in October. It was almost as frequent and abundant on the northerly passage in the second, third, and fourth weeks of May. During their visits to Fair Isle, these birds, like the last, were most abundant on the gaunt precipitous faces of the geos, and much less frequent on the stone walls and among the cover afforded by the crofted portion of the island.

118. Whinchat, *Pratincola rubetra*.—This is another bird of double passage whose autumn southerly flight escaped notice during our first visit. During May both males and females were observed on their northward passage on eight different days; and in September we saw it also on eight occasions. On some days small numbers were seen both in spring and autumn, and the bird was probably fairly numerous. The Whinchat has only been detected in Shetland on very few occasions, and is accounted as a rare visitor to the group.

119. Stonechat, *Pratincola rubicola*.—A bird of double passage, though certainly not numerous. In 1906 it appeared in

April and a few were seen at intervals throughout that month. On September a single bird only came under notice. The occurrence of this bird at Fair Isle is interesting since there appears to be only one previous instance of the visits of the Stonechat to the Shetland group; and as it is not a native of Scandinavia, the bird must be regarded as a casual straggler only to our Northern Isles.

120. Hedge Accentor, *Accentor modularis*.—In 1906 this species was observed both on the spring and autumn passage, but only very small numbers came under notice at both seasons. It does not appear to pass the winter on the island. There seem to be only three records for this species as a visitor to Shetland, all relating to single birds, but as the Hedge Sparrow is a migratory species in Scandinavia its visits are, perhaps, more frequent than is expected, and the Fair Isle observations indicate that such is the case.

121. Spotted Flycatcher, *Muscicapa grisola*.—Several appeared on their way north from late in May to beyond the middle of June; but on the return journey southward only one came under our notice, namely, on 15th September. This bird, according to published records, has seldom been observed in the Shetlands.

122. Pied Flycatcher, *Muscicapa atricapilla*.—Though this species did not come under our notice in the autumn of 1905, yet it was fairly common, passing at intervals and usually in small parties, in September 1906. A number of these visitors were males, but all were in the greenish grey plumage of autumn. During their short sojourn on this treeless and shrubless isle, these Flycatchers chiefly frequented the steep cliffs on the west side, which the sun rendered especially genial, and where also insect life was abundant: advantages which most of the insectivorous birds among the migrants were not slow to take advantage of.

This species has rarely been recorded for Shetland.

123. Red-breasted Flycatcher, *Muscicapa parva*.—The occurrence of this Central European summer bird at Fair Isle in some numbers in the autumn of 1906 was one of those pleasant surprises which sometimes fall to the lot of the observer of bird migration. On 20th September three or four were seen, and an adult female and a young male were secured; and on the following day several others were observed. It is probable that on both these dates this bird was present in fair numbers, for those seen frequented the great range of lofty cliffs which flanks the entire west side

of the island, and it was most difficult to detect them. In these singular haunts they were busily engaged in the pursuit of insects, which were evidently abundant on the faces of the lichen-clad perpendicular rocks. When thus employed they were very sprightly in their actions, and we noticed that they had a habit of erecting their tails to a remarkable degree—indeed, until they were almost parallel with their backs. Occasionally they quitted the cliffs and alighted on the fences or on rocks near their summit; but at all times and everywhere they displayed extreme shyness and wariness, and were practically unapproachable. On the days named these birds appeared synchronously with the Arctic Bluethroats, Redbreasts, Redstarts, Bramblings, Redwings, Goldcrests, Yellow-browed Warblers, and other northern migrants; and it seems to me highly probable that these Flycatchers reached the island in their company.

On 4th October there was another considerable arrival of immigrants, and among them was a bird of the year of this species.

There is only one previous record for the occurrence of this little Flycatcher in Scotland, namely, at the Monach Isle, Outer Hebrides, on 22nd October 1893.

124. Swallow, *Hirundo rustica.*—A few were seen on the spring passage northward during May and June; but only a single example was detected returning in the autumn. Several were seen, on rare occasions, in the summer of 1906, but the species does not nest on the island.

125. Red-rumped Swallow, *Hirundo rufula.*—The occurrence of this southern straggler, the first that is known to have reached the shores of Britain, on the 2nd of June 1906, has already been recorded in the pages of this magazine ("Annals," 1906, p. 205).

126. House-Martin, *Chelidon urbica.*—In spring this species is much more abundant as a passing migrant than the Swallow, but it has not yet been detected as an autumn visitor on its return southern flight.

127. Sand-Martin, *Cotile riparia.*—Several were seen late in May, and others late in June; but none were observed as visitors during the autumn. It appears to be a rare bird in the Shetland group. That it should be so is interesting and significant, for the species has a high northern range in Scandinavia, and hence might naturally be expected to occur regularly, and in some numbers, in the Archipelago, while on its spring and autumn migratory journeys.

128. Swift, *Cypselus apus.*—One or two were seen at intervals from 31st May to 27th July. On 6th July six were seen. It would seem as if these were non-breeding birds which had pushed their way thus far north but had not proceeded to the summer haunts of the species in Scandinavia. It appears to be very irregular in its visits to Shetland.

Wryneck, *Iynx torquilla.*—On the 3rd of September one was observed on some wooden fencing on the west side of the island. We did not meet with this species in the flesh on our previous visit.

Cuckoo, *Cuculus canorus.*—In 1906, the Cuckoo appeared on both the spring and autumn passages. It occurred in May and early June on its northward journey, and was observed again early in September on its return southward. Three was the largest number seen on any occasion.

This species does not appear to be regarded as a regular visitor, according to present knowledge, to the Shetland Islands.

129. Short-eared Owl, *Asio accipitrinus.*—From the latter days of October until the second week of November this common migratory Owl was seen at intervals, but only in small numbers.

130. Whooper, *Cygnus musicus.*—Swans on passage are recorded for both spring and autumn. The head of one obtained was that of a Whooper in immature plumage.

131. White-fronted Goose, *Anser albifrons.*—For a wing of this Goose I am indebted to Mr. J. W. Anderson, who obtained the bird in the autumn of 1905. It is regarded as an occasional visitor to Shetland, but I expect it occurs there regularly on migration.

132. Shelduck, *Tadorna cornuta.*—A young bird appeared at the island late in May; and during October a few, once as many as eight, were seen on several occasions. It is considered rare in Shetland, but the group, including Fair Isle, may be visited by migrants to and from Northern Europe.

133. Scaup, *Fuligula marila.*—A few were seen on several occasions during the first half of November. The Fair Isle waters, however, offer no suitable feeding grounds for this diving duck, and hence it does not come much under notice.

134. Velvet Scoter, *Œdemia fusca.*—An adult female was washed up on 1st December. This species has seldom been recorded for Shetland, but it is probable that the bird has escaped notice, for comparatively little attention has been

paid to the islands during the periods of migration, except by Saxby in Unst.

135. Turtle Dove, *Turtur turtur.*—An immature bird appeared on 25th September, and was observed feeding on some bare stony ground much frequented by migratory parties of Golden Plover. Young birds are not infrequent in Shetland as casual visitors during the period of the autumn passage.

136. Water Rail, *Rallus aquaticus.*—We saw one by the side of a burn on 28th September, and several were observed in October, November, and December.

137. Great Snipe, *Gallinago major.*—One rose at our feet, out of some rough grass, on the south end of the island on 5th September.

Little Stint, *Tringa minuta.*—As this is a somewhat rare, or, perhaps, to speak more correctly, an overlooked, species on migration in Shetland, it may be well to state that a single bird was obtained on 14th August. One was seen by us in September 1905.

Green Sandpiper, *Totanus ochropus.*—A Green Sandpiper, perhaps the same individual, was seen on several occasions between 7th and 14th September. Our observations for the previous season related to the first known occurrence of this species in any of the northern islands. We were gratified to renew its acquaintance at Fair Isle in 1906, since it confirmed the opinions we then expressed regarding its visits there being probably not unusual.

138. Common Tern, *Sterna fluviatilis.*

139. Arctic Tern, *Sterna macrura.*—Neither of these species have hitherto been identified as visitors to the island, and our introduction to them was a rather remarkable one. At 10.30 on the night of 11th September our attention was drawn, by their loud cries, to a number of birds flying round the lantern of the Skadan Lighthouse. On going out to investigate we found a number of Terns careering noisily around the light. We at once ascended to the gallery, where we succeeded in capturing a number of examples as they struck against the windows, and these included representatives of both species. The birds remained flying in the rays until 2 A.M., when the dismal and terrifying shrieks of the foghorn scared them from the mystifying and dangerous influences of the light. On this night the beams from the lantern were particularly brilliant, owing to the alternating drizzle and heavy rain which prevailed. Three Herons were also attracted to the lantern, and while we stood on

the gallery they came quite close up, and once or twice were within an ace of striking the glass. Several Wheatears and White Wagtails also appeared, on this, the only night on which the weather conditions were favourable for the display of the decoying powers of the lantern.

On the two following days a number of Terns were present off the south end of the island; and on the night of the 20th, at 9 P.M., a party again appeared on migration in the vicinity of the lighthouse, but as the night was clear they did not approach the lantern, and only announced their presence through their cries.

The Common Tern has only recently been added to native birds of Shetland.

140. Iceland Gull, *Larus leucopterus*.—One was seen on 10th December, and so well described that I have little hesitation in accepting the record. This is another species about which we have, as yet, little information relating to its visits to Shetland. I have reason, however, to believe that it is not very rare at Fair Isle during the winter months.

141. Pomatorhine Skua, *Stercorarius pomatorhinus*.—An immature female was obtained on 27th November. This, strange to say, appears to be only the fourth known occurrence of this bird for Shetland, and yet one would expect that it must regularly visit the seas of the group on its passages between its summer and winter haunts.

142. Red-throated Diver, *Colymbus septentrionalis*.—One seen on 10th September is the only example that has, as yet, been observed at Fair Isle. It seems remarkable that this species, which breeds in Shetland, as well as in Northern Europe, should not have been noticed on any other occasion.

143. Manx Shearwater, *Puffinus anglorum*.—A few were seen late in May, during June, and early in July. I should not be surprised if the "Lingy Bird," as the Fair Islanders call this species, bred in small numbers on the island.

Fulmar Petrel, *Fulmarus glacialis*.—We observed several Fulmars hovering around and alighting on the cliffs at one of their breeding stations on the 2nd of September, but all appear to have departed on the 9th, for after that date we saw them no more. It does not appear to leave its native haunts for a protracted period, but like other species of rock-breeding sea-fowl returns early in the year to its nesting-places. Mr. George Stout informs me that in 1907 the first of these birds returned on 17th January and took up their residence on the cliffs and stacks.

NOTES ON THE BIRDS SEEN IN THE OUTER HEBRIDES DURING THE SPRING OF 1906.

By Norman B. Kinnear, M.B.O.U.

(*Continued from p.* 19.)

Crossbill, *Loxia curvirostris*, Linnæus.—Dr. Mackenzie, Stornoway, tells me that in 1895, the year in which Dr. M'Rury came across the Crossbills in Barra, he saw a flock of seven in his garden in Stornoway on 8th July, and that they remained about the district for nearly three weeks.

Hooded Crow, *Corvus cornix*, Linnæus.—One of the North Uist keepers showed me three Hoodies' eggs which he had taken from a nest, after shooting the female bird as she flew off. The eggs were of a beautiful pale blue without any spots.

Cuckoo, *Cuculus canorus*, Linnæus.—Both in North Uist and The Lews I was told that the Cuckoo was scarcer than usual this year.

Short-eared Owl, *Asio accipitrinus* (Pallàs).—We only came across one or two Short-eared Owls in the whole of the Outer Hebrides, and these were in South Uist.

Hen Harrier, *Circus cyaneus* (Linnæus).—We twice saw a Hen Harrier in Barra, but it probably had come from South Uist, where there still are a few. In North Uist I saw one example, and was told that a few pairs nest there annually. In both these islands the Hen Harrier is now carefully protected.

Heron, *Ardea cinerea*, Linnæus.—We saw two Herons in Barra near Eoligary, and in the Uists and Benbecula this species was frequently seen. Mr. D. Mackenzie, Stornoway, informed me that Herons had bred for the last two or three years on the west side of The Lews near the Harris march. On writing to the keeper there, I learned that the first pair bred there in 1902, behind a Rowan tree on the face of a cliff overhanging a sea loch. In 1903 there was again a single nest in the same place, but it was disturbed by boys, and next year the birds nested in company with another pair in a fresh place further inland. Another pair joined the small colony in 1905, and last year there were again three nests in the same place.

Grey Lag Goose, *Anser cinereus*, Meyer.—The Grey Lag still nests in The Uists and Benbecula. In South Uist there has been a decided increase since the "Vertebrate Fauna of the Outer Hebrides" was written.

Pink-footed Goose, *Anser brachyrhynchus*, Baillon.—Bahr put up a single bird near Eoligary, Barra, in the end of May. Mr. W. L. MacGillivray told us he had seen two there for some time.

Bernacle Goose, *Bernicla leucopsis*, Bechstein.—We saw one on Fiaray, a small island off the north end of Barra, in the end of May. Probably it was a pricked bird.

Whooper Swan, *Cygnus musicus*, Bechstein.—On 1st June we saw nine wild Swans on a small loch in South Uist. We took them to be Whoopers, but as they were a good distance off, and we were going in the opposite direction, we put off trying to identify them till our return in the afternoon, by which time they had departed. An angler fishing on a loch a little further north told us that the Swans passed over his head in the afternoon, flying in a northerly direction.

Shoveller, *Anas clypeata* (Linnæus).—This species has already been recorded as breeding in the Outer Hebrides south of the Sound of Harris. We found one nest and saw several pairs of birds.

Pintail, *Dafila acuta* (Linnæus).—A single drake Pintail was seen on a loch in one of the islands in the beginning of June, but we did not see any signs of a female or a nest.

Teal, *Nettion crecca* (Linnæus).—The Teal now breeds plentifully in The Uists and Benbecula. We did not come across this species in Barra.

Wigeon, *Mareca penelope* (Linnæus).—Several times we saw a pair of Wigeon during June, but we failed to make certain whether they were nesting.

Scaup, *Fuligula marila* (Linnæus).—We are glad to be able to confirm the record in the "Annals" of this species breeding in the "Outer Hebrides." We found a nest on a small island in Loch . The first time we landed on the island a female Scaup flew off from a tussock of grass a few feet away and alighted on the water close by. On going to the tussock we found a nest alongside, containing nine eggs and a quantity of down mixed with bits of dried grass. Without disturbing the nest, we left the island and returned in about an hour. This time the duck flew off before we stepped on to the island, and on examining the nest again we found the eggs carefully covered with down, so probably the duck had been watching our approach and getting prepared. Alongside the present nest were the remains of a last year's nest, but whether it had also been a Scaup's or not it is impossible to say. There were no other nests on the island.

Tufted Duck, *Fuligula cristata* (Leach).—The Tufted Duck breeds in the same islands as the Shoveller, and we found it to be rather more numerous than that species.

Golden-eye, *Clangula glaucion* (Linnæus).—I saw a single female Golden-eye in Loch Maddy in June.

Long-tailed Duck, *Harelda glacialis* (Linnæus).—We saw a very interesting freshly killed specimen shot at North Bay, Barra, on 17th May. It was rather backward, for it had only just begun to change from winter to summer plumage.

Eider Duck, *Somateria mollissima* (Linnæus).—Very few Eiders, if any, nest on the fresh-water lochs in South Uist or Benbecula, but in North Uist a fair number do so. I saw a female Eider of a pale fawn colour in Loch Maddy.

Goosander, *Mergus merganser*, Linnæus.—I saw a male in the Sound of Fuday off Barra on 22nd May. This species is of rare occurrence in the Outer Hebrides.

Wood Pigeon, *Columba palumbus*, Linnæus.—On 8th June one was shot at Grogarry, South Uist, by the head gamekeeper. The Wood Pigeon has occurred only a few times in the Uists and Barra.

Red Grouse, *Lagopus scoticus*, Latham.—The Grouse in the Outer Hebrides sit very close. We did not see a single bird in Barra, only their marks, but in the other islands we were more fortunate. The Barra Grouse is very dark in colour, and so also, I believe, are specimens from the Uists and Benbecula; but in The Lews they are the reverse, and I was much struck by their light colour. Both Mr. D. Mackenzie and D. Graham, the head keeper at Lewis Castle, consider the Grouse of The Lews to be much lighter than the ordinary run of birds from Sutherland and West Ross-shire, which parts of the mainland they are well acquainted with.

Ptarmigan, *Lagopus mutus* (Montin).—On the evening of 1st June, near a large loch in the southern end of South Uist, a strange bird got up some distance in front of us. Bahr at once said, "That is a Ptarmigan." On following it up, the bird rose wild, but watching it carefully with our glasses as it flew across the loch, we made certain that it was a Ptarmigan. A few days later we again saw the bird about the same place, and this time were able to have a good look at it on the ground, and make absolutely certain as to its identity. By the side of a loch, practically at sea-level, is about the last place one would expect to see a Ptarmigan, and I think the only explanation is that it must have come from the Harris or the Skye hills, which are the nearest on which Ptarmigan are found. During

the preceding week the wind had been northerly. The Ptarmigan used to be found in South Uist, and John MacGillivray, writing in 1841, mentions that it is found on Ben More and Hecla in that island. More recently, in 1900, one or more were seen on Hecla by an old shepherd, Archie Macdonald by name.

Landrail, *Crex pratensis*, Bechstein.—While cycling past a loch in South Uist we saw a Corncrake running along in the water at the edge of a loch being mobbed by Common Gulls. It eventually made its escape into some thick heather. I was told that the Corncrake was scarcer than usual round Stornoway this year.

Water Hen, *Gallinula chloropus* (Linnæus).—We did not see many Water Hens in the Uists, and certainly it must be shyer than on the mainland, if it is really common.

Crane, *Grus communis*, Bechstein.—Mr. D. Mackenzie tells me that on 14th May a Crane was shot near Stornoway. It had been seen in the district for about a week or ten days before it was killed. This bird is not known to have occurred before in the Outer Hebrides.

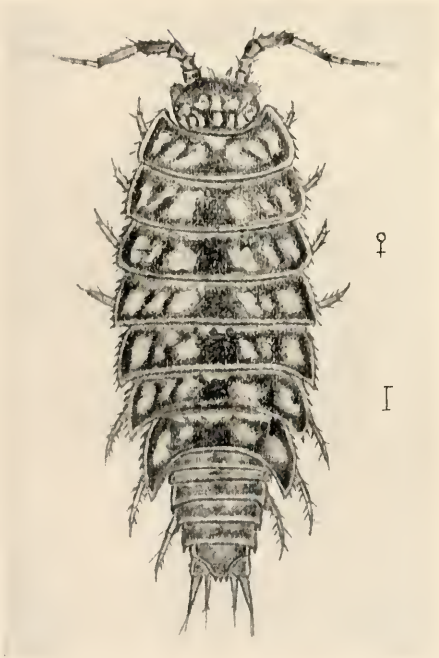
Turnstone, *Strepsilas interpres* (Linnæus).—We saw several Turnstones in full summer plumage on a small island off the north end of Barra on 26th May.

Red-necked Phalarope, *Phalaropus hyperboreus* (Linnæus).—This bird is strictly protected. I tried to watch a bird into its nest, but found it quite impossible, as it crept about in the grass, more like a mouse than a bird.

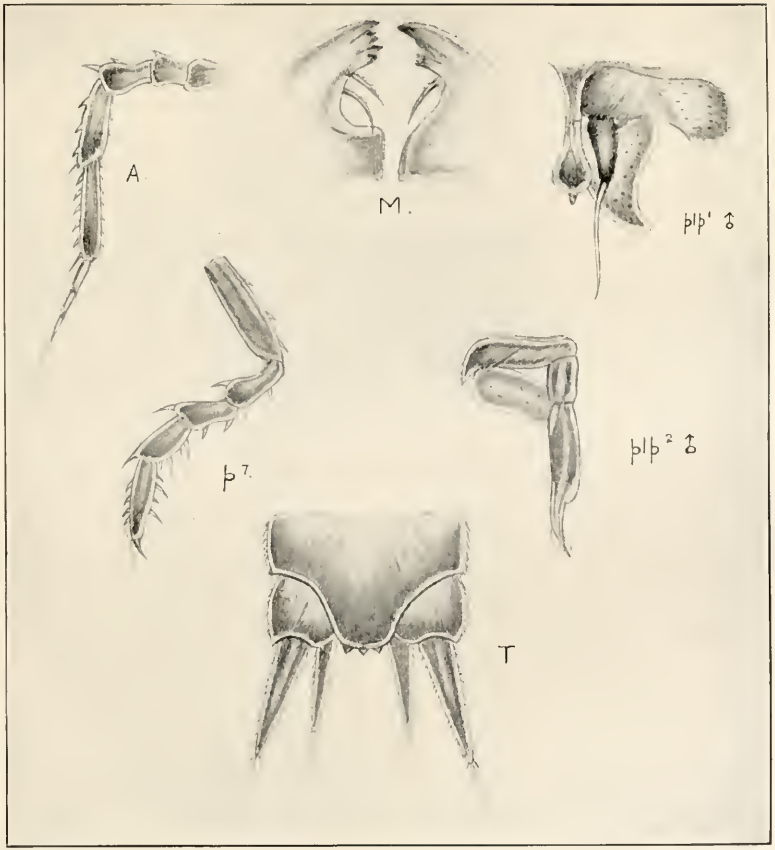
Dunlin, *Tringa alpina*, Linnæus.—The Dunlin does not seem to breed regularly in Barra. Mr. W. L. MacGillivray has only seen two nests, and these were on an island a little to the north of the main island. Round Loch Hallan, in South Uist, we saw a great many Dunlin flying about in twos and threes during the last few days of May. These must have been chiefly migrants, as a day or two later only about a quarter of the number were to be seen.

Purple Sandpiper, *Tringa striata*, Linnæus.—We observed half a dozen Purple Sandpipers on the same island off Barra where we saw the Turnstones. They appeared to be in full summer plumage.

Sanderling, *Calidris arenaria* (Linnæus).—We saw a small flock on the shore on the west side of South Uist in June, and Bahr saw either the same flock or another in Benbecula a few days later.



Alex. Patience, del.



Alex. Patience, del.

Redshank, *Totanus calidris* (Linnæus).—We saw a single bird in South Uist in the beginning of June, and another near Loch Maddy, North Uist, a little later in the same month.

Whimbrel, *Numenius phæopus* (Linnæus).—When we first landed in Barra on 18th May there were quite a number of Whimbrel on the west side of the island. They gradually passed away northwards, and on 26th May, our last day on the island, we only saw two or three. On the 31st of May we saw three on the north side of the Sound of Barra.

Common Tern, *Sterna fluviatilis*, Naumann.—A single example, seen by Bahr in Loch Boisdale harbour, was the only Common Tern we saw throughout the Outer Hebrides.

Lesser Tern, *Sterna minuta*, Linnæus.—Mr. W. L. MacGillivray told us that the Lesser Terns first appeared in Barra in the summer of 1901, and nested there in 1902 and 1903, but since then they have not returned. We visited one other Hebridean nesting locality, but only saw about six pairs of these birds.

Ivory-Gull, *Pagophila eburnea* (Phipps).—Dr. Mackenzie, North Uist, told me on 28th June that he had lately seen an Ivory-Gull on his farm of Scolpig in that island. He said there was no doubt about the identification as he was quite close to the bird.

Fulmar, *Fulmarus glacialis* (Linnæus).—The principal lightkeeper at Barra Head informs me that he saw the first pair of Fulmars there in 1899, but it was not till 1902 that he actually saw eggs, though he adds that they may have nested there before that date without his knowing. There are from eight to twelve pairs breeding there now.

Edinburgh.

ON A NEW BRITISH TERRESTRIAL ISOPOD.

By Alexander Patience.

TRICHONISCIDÆ.

Genus Trichoniscus, Brandt, 1833.

Trichoniscus spinosus, n. sp. (Plate III.).

Description of Species.—Body oblong-oval in form, about two and a half times as long as broad. Dorsal face convex and closely covered with small spines directed backwards.

Cephalon with front obtusely rounded, lateral lobes moderately produced and bearing one or two small spines on the outer edge. Lateral parts of the segments of mesosome edged with small appressed spines, the three posterior segments having the corners recurved and acuminate. Metasome occupies about one-fourth of the length of body, the terminal expansion of the last segment being obtusely rounded at the tip and armed with from two to five triangularly-shaped spines. Antennulæ with the last joint longer than the second and bearing from four to six sensory filaments. Antennæ about one-third the length of body, spinulose, and the flagellum composed of three articulations. Eyes consist of three visual elements embedded in dark pigment. Left mandible with two, right with one, penicil behind the cutting part. Last pair of legs in both sexes of the same structure, the last joint having on the outer edge three or four short but fairly prominent spines. Inner ramus of first pair of pleopoda of male not greatly produced, the tip of the last joint reaching to the middle of the distal joint of second pair; the last joint of very delicate structure, needle-shaped and about twice the length of first. Inner ramus of second pair biarticulate, the last joint about three times the length of first, abruptly contracted at about two-thirds towards the distal end and terminating in a spear-like point. Uropoda with the outer ramus about twice the length of basal part, the inner ramus being narrower and shorter. Colour dark reddish brown, marbled with white. Length of adult female 3.5 mm.

Remarks.—This species bears some resemblance to *Trichoniscus stebbingi*, Patience, in the general form of the body; in the type of coloration; in the structure of the first pair of pleopoda of the male, and in the shape of the last segment of the metasome. The telson, however, in *T. spinosus* is more obtusely rounded at the tip than in the above-named species, and in this respect connects *T. stebbingi* with the other British species of *Trichoniscus*, where the tip of the last segment of the metasome is truncate. Again, the last joint of the inner ramus of the first pair of pleopoda of the male is slightly longer and comparatively more slender than in *T. stebbingi*, while the colour arrangement on the

dorsal face presents a more definite pattern. The antennæ, legs, and uropoda, which in *T. spinosus* are coloured, are in *T. stebbingi* generally devoid of pigment.

Occurrence.—I discovered this pretty little species recently (Feb. 6, 1907) in a greenhouse in Springburn Public Park, Glasgow, living in company with *T. stebbingi*, *T. pusillus*, Brandt, *T. roseus* (Koch) and *Haplophthalmus danicus*, Budde-Lund. All these species were bearing ova. I have not yet found it outside the greenhouse mentioned above, but as I first met with the closely allied species, *T. stebbingi*, in the open country, I have no reason to doubt that *T. spinosus* will yet be discovered in quite open situations.

I have drawn attention recently in two papers, relating to the distribution of the terrestrial isopods within the Clyde faunal-area, to the fact that my examination of a large number of hothouses throughout the area showed that the members of the *Trichoniscidæ* do not seem to have any marked preference for these places, although the food there is both choice and abundant. Evidently the most important and indispensable condition to their existence is a fairly abundant and steady supply of moisture, and where I have met with these species inhabiting greenhouses, this condition of things usually obtained. Many species, however, belonging to the *Oniscidæ*, do not seem to be affected in the same manner, *e.g.* I have found *Porcellio scaber*, Latr., *P. dilatatus*, Brandt, *Metoponorthus pruinosus* (Brandt), and *Cylisticus convexus* (De Geer), living in hundreds in tomato-houses in widely separated parts of the Clyde faunal-area, where they seemed to enjoy the almost tropical heat which usually prevails.

The members of the *Trichoniscidæ* are evidently a hardy race. Bate and Westwood refer to Kinahan as having found *T. vividus* (Koch) quite active mid snow. The same remark may be equally well applied to many more members of the family, for I have found during the past winter (1) *T. pygmæus*, G. O. Sars, and *T. roseus* living quite actively in a garden at Dullatur, Dumbartonshire, underneath old logs which were covered with snow and ice, and (2) *T. pusillus* and *H. danicus* in several places near Lanark, under the bark of fallen trees, where the interstices had become filled up with ice.

T. spinosus like *T. stebbingi* is active in its movements and runs with agility when alarmed.

Explanation of Plate.

♀ Female specimen of *Trichoniscus spinosus*, about 3.3 mm.
M. Mandibles.
A. Antenna.
p. 7 One of the seventh pair of legs.
plp[1] ♂ One of the first pair of pleopoda of male.
plp[2] ♂ One of the second pair of pleopoda of male.
T. Last segment of metasome with the uropoda.

A CONTRIBUTION TOWARDS A KNOWLEDGE OF THE SCOTTISH *CRYPTINÆ* (*ICHNEUMONIDÆ*).

By P. Cameron.

In this paper I have only enumerated the species I have collected myself, and in my own collection. It cannot therefore be regarded, in any respect, as a complete catalogue of the species inhabiting Scotland; but the 113 species enumerated may be looked upon as fairly illustrating the *Cryptinæ* of the country. The species were examined some years ago by the late Mr. John B. Bridgman of Norwich and, more recently, by Mr. Claude Morley, the author of a work on the British *Cryptinæ*.

Judging by my collection the tribe *Cryptini* (which contains some of the largest species) appears to be poorly represented in Scotland, although common in more southern districts.

I have followed the generic arrangement of Prof. Schmiedeknecht in his Opuscula Ichneumonologica.

STILPINI.

Exolytus, Foer.

1. *lævigatus*, Gr., Lambhill, near Glasgow, Dumfries, Sutherlandshire.
2. *splendens*, Gr., Glen Lyon, Kingussie.
3. *scrutator*, Hal., Clyde near Cambuslang, Bishopton, Blair Athol.

ATRACTODES, Gr.

1. *bicolor*, Gr., Bishopton.
2. *gilvipes*, Holmg., Cadder, Thornhill, Bishopton, Cambuslang, Kenmuir, Kilsyth, Rannoch, Loch Awe, Glenelg, Kingussie. Sutherlandshire.
3. *gravidus*, Gr., Dalry, Arran.
4. *exilis*, Curt., Glen Lyon, Rannoch, Bonar Bridge, Altnaharra.
5. *albovinctus*, Curt., Thornhill.

MESATRACODES, Morl.

1. *propreator*, Hal., Lambhill, near Glasgow, Cadder, Loch Awe.

ASYNCRITA, Foer.

1. *foveolata*, Gr. = *cultellator*, Curt., Cadder.

POLYRHEMBIA, Foer.

1. *tenebricosa*, Gr. = *vestalis*, Curt., Cadder, Milngavie, Kelvinside, Cambuslang, Kilsyth, Strathblane, Cannisburn, Kenmuir, Gleniffer, Glen Lyon, Rannoch, Loch Awe, Ben Lawers, on flowers at about 3000 feet, Kingussie, Glenelg, Sutherlandshire.

STILPNUS, Gr.

1. *gagates*, Gr., Clober, Kenmuir, Bishopton, Possil Marsh.
2. *deplanatus*, Gr., Sutherlandshire, Cadder.
3. *dryadum*, Curt., Clober. Rare.
4. *pavoniæ*, Gr., Cadder. Rare.

Obs.—*A. gilvipes* and *P. tenebricosa* are among the commonest and most widely spread of the Scotch Ichneumonidæ.

PEZOMACHINI.

PEZOMACHUS, Gr.

1. *festinans*, F., Carmyle.
2. *anthracinus*, F., Dumfries, Castlecary, Clober, Cadder, near Cambuslang, Kingussie, Sutherlandshire. I have a specimen from Alsasua, Spain, given me by Dr. D. Sharp, F.R.S.
3. *nigritus*, F., Clober, bred from Spider's eggs, Kingussie.
4. *timidus*, F., Bothwell.
5. *acarorum*, L., Eccles, Kelvindale, Paisley.
6. *carnifex*, F., Cadder, Mugdock, Clober, Kilsyth, Bishopton, Rannoch.
7. *ochraceus*, F., Cadder.
8. *corruptor*, F., Cadder, Glenelg.

9. *intermedius*, F., Ballantrae, Gleniffer, Cambuslang, Bishopton, Mugdock, Rannoch, Kingussie.
10. *modestus*, F., Manuel, Kenmuir, Mugdock.
11. *comes*, F., Eccles, Thornhill, Cadder.
12. *bicolor*, Gr., Eccles, Cadder.
13. *fraudulentus*, Gr., Cadder, Bute.
14. *attentus*, F., Cadder, Manuel.
15. *micrurus*, F., Cadder.
16. *instabilis*, F., Thornhill, Cadder, Rannoch.
17. *costatus*, Bridg., Bishopton.
18. *palpator*, Gr., Cadder.
19. *linearis*, F., Dumfries, Ballantrae.
20. *indigator*, F., Bishopton.
21. *fasciatus*, F., Gleniffer, Kenmuir, Cambuslang, Clober, Paisley, Manuel, Claddich, Loch Awe, Rannoch, Sutherlandshire. Bred from a Spider's egg-bag.

P. Carnifex, *fasciatus*, and *anthracinus* are the three commonest species.

PEZOLOCHUS, Foer.

1. *rufipes*, F., Galloway, Dumfries, Mugdock, Bishopton. I have an example from Malta given me by Mr. J. J. Walker.

ORESBIUS, Marshall.

1. *castaneus*, Marsh. Top of Gyrvil, Rannoch (over 3000 feet), and of Goatfell, Arran.

THAUMATSTYPUS, Foer.

1. *Billupsi*, Bridg., Cadder.

HEMITELLINI.

CREMNODES, Foer.

1. *atricapillus*, Gr., Mugdock. Bred from dipterous leaf-miner of Primrose.

Cremnodus is regarded by Prof. Schmiedeknecht as identical with *Hemitelles*. Cf. Opus. Ichn., 871.

HEMITELES, Gr.

1. *fulvipes*, Gr., Mugdock. Bred from the cocoons of *Apanteles sericeus*, the parasite of *Thera juniperana*.
2. *submarginatus*, Bridg., Claddich, Loch Awe, Arran.
3. *marginatus*, Bridg., Cadder.
4. *cingulator*, Gr., Glen Lyon, Kingussie.

5. *bicolorinus*, Gr., Cadder, Rannoch, Beauly, Kingussie.
6. *ridibundus*, Gr., Clyde near Cambuslang.
7. *areator*, Cadder, Mugdock, Paisley, Dalry. Bred from galls of *Nematus gallicola*, West.
8. *rufocinctus*, Gr., Cadder.
9. *tenebrosus*, Gr., Rannoch.
10. *pictipes*, Gr., Glenelg.
11. *castaneus*, Tasch., Dalry.
12. *melanarius*, Gr., Glenelg.
13. *varitarsis*, Gr., Possil Marsh.
14. *levigatus*, Rutz., Cadder.
15. *biannulatus*, Gr., Cadder.
16. *subannulatus*, Bridg., Possil Marsh.
17. *floricolator*, Gr., Clober.
18. *tristator*, Gr., Mugdock.
19. *politus*, Bridg., Kingussie, Braemar.
20. *necator*, Gr., Bonar Bridge, Cadder.
21. *incisus*, Bridg., Cadder, Kilsyth, Strathblane, Bishopton. Bred from *Nematus viridis*.
22. *similis*, Gmel., Kenmuir, Rannoch, Glenelg.
23. *subzonatus*, Bridg., Gleniffer, Cadder, Kingussie.
24. *hemipterus*, F., Cadder.
25. *Bridgmani*, Schm. = *Theroscopus niger*, Bridg., Kingussie. Many of the species of *Hemiteles* are hyperparasites, *i.e.* parasites on other Ichneumons.

PHYGADEUONINI.

Cratocryptus, Thoms.

1. *anatorius*, Gr., Cadder.
2. *parvulus*, Gr., Cadder, Bishopton, Rannoch, Sutherlandshire.

Plectocryptus, Thoms.

1. *digitatus*, Gmel., Kingussie.

Stenocryptus, Thoms.

1. *nigriventris*, Thoms., Kingussie.
2. *oviventris*, Gr., Clyde near Cambuslang, Rannoch.
3. *brevicornis*, Tasch., Cadder.

Microcryptus, Thoms.

1. *leucostictus*, Gr., Cadder.
2. *abdominator*, Gr., Cadder, Kenmuir, Clober, Rannoch, Kingussie.
3. *scoticus*, Marshall, Rannoch.

4. *cretatus*, Gr., Dumfries.
5. *sericans*, Gr., Bonar Bridge.
6. *erythrinus*, Gr., Possil Marsh.
7. *bifrons*, Gmel., Glen Lyon, Kingussie.
8. *nigrocinctus*, Gr., Clyde near Newton, Cadder, Thornhill.
9. *brachypterus*, Gr., Cadder.
10. *micropterus*, Gr., Possil Marsh.

HEMICRYPTUS, Kriech.

1. *labralis*, Gr., Clyde opposite Kenmuir, Cadder, Sutherlandshire.
2. *galactinus*, Gr., Clyde opposite Kenmuir.

ACANTHOCRYPTUS, Thoms.

1. *nigricollis*, Thoms., Clyde opposite Kenmuir, Dalry.
2. *quadrispinus*, Gr., Dalry.

STYLOCRYPTUS, Thoms.[1]

1. *profligator*, Gr., Rannoch.
2. *suffolciensis*, Morl., Clyde opposite Kenmuir.
3. *erythrogaster*, Kenmuir, Clober, Rannoch.
*4. *brevis*, Gr., Kenmuir, Rannoch.
5. *glyphicremis*, Foer. Cf. Schmiedeknecht, Opus. Ich., 658.

PHYGADEUON, Gr.

1. *vagans*, Gr., Cadder, Paisley, Clyde opposite Carmyle, Rannoch, Kingussie, Loch Awe, Sutherlandshire.
2. *variabilis*, Gr., Possil Marsh, Cadder, Kenmuir, Blantyre, Rannoch, Glen Lyon, Kingussie, Glenelg, Bonar Bridge.
3. *dumetorum*, Gr., Cadder, Clober, Mugdock, Blantyre, Stirling, Kingussie, Sutherlandshire.
4. *flavimanus*, Gr., Cadder, ex *Emphytus serotinus*.
5. *exiguus*, Gr., Beauly.
6. *fumator*, Gr., Possil Marsh, Cadder, Clober, Kenmuir, Clyde opposite Carmyle, Gleniffer, Stirling, Strathblane, Dalry, Craig Dubh, near Kingussie, 2000 feet; top of Ben Clibrich, Sutherlandshire.
7. *inflatus*, Thoms., Cadder, Gleniffer, Bishopton, Carmyle, Blantyre, Stirling, Loch Awe, Rannoch, Glenelg. Parasitic on *Emphytus serotinus*.
8. *scaposis*, Thoms., Clober, Cadder, Dalry, Sutherlandshire.
9. *rotundipennis*, Thoms., Cadder, Kilsyth.
10. *dimidiatus*, Thoms., Possil Marsh, Mugdock Moor, Bishopton, Rannoch.

[1] The generic location of the species marked * is not clear to me.

11. *mixtus*, Bridg., Stirling.
12. *ambiguus*, Gr., Glenelg.
13. *tarsatus*, Bridg., Arran.

ISCHNOCRYPTUS, Kriech.

1. *hercynicus*, Gr., Blantyre.
*2. *pellucidator*, Gr., Kingussie, Sutherlandshire.

LEPTOCRYPTUS, Thoms., ? PANARGYROPS.

1. *æreus*, Gr., Cadder.
*2. *tenuis*, Gr., Glenelg, Kingussie.
*3. *tenerrimus*, Gr., Cadder, Gleniffer.

CRYPTINI.

CRYPTUS, F.

1. *sponsor*, F., Sutherlandshire.
2. *obscurus*, Gr., Rannoch, Kingussie, Glenelg, Altnaharra.

SPILOCRYPTUS, Thoms.

1. *incubator*, Sturm., Clober.
2. *cimbicis*, Tschek, Claddich, Loch Awe, Rannoch, Cadder. Bred from *Trichiosoma lucorum*.

IDIOLISPA, Foer.

1. *analis*, Gr., Braemar (F. G. Binnie).

GONIOCRYPTUS, Thoms.

1. *titillator*, Gr., Stirling, Rannoch, Kingussie.

HABROCRYPTUS, Thoms.

1. *assertorius*, F., Possil Marsh. Rare.

SOME RHIZOPODS AND HELIOZOA OF THE FORTH AREA.

By JAMES MURRAY.

THIS short list of Sarcodina has been compiled almost entirely from material supplied to me by Mr. W. Evans. While examining the Sphagnum and other mosses which he sent to me from time to time during the year 1905, chiefly

with an eye to the Rotifers and Tardigrada (see published lists), I noticed incidentally any Sarcodina which I could identify. Those are chiefly the common and easy species. Drawings of some of the more difficult species were sent to Dr. Penard, who named them ; and Dr. Penard himself has since examined for Mr. Evans a sample of Sphagnum from the Forth Area, and supplied notes of species which do not come within my limited knowledge. Mr. Cash has also examined moss sent by Mr. Evans, and given a list of many interesting species. Dr. Penard's and Mr. Cash's lists are being published by Mr. Evans in the "Proceedings of the Royal Physical Society." The sole reason for publishing this very incomplete and unauthoritative list is that a number of the common species which I observed did not happen to occur in the moss sent to those specialists, or at any rate were not noted by them, and that it supplies additional localities for many of the others.

Beyond the species found in the moss collected by Mr. Evans I have only added some half-dozen species collected by the Lake Survey in Loch Vennachar in the year 1902, as there were no other records of most of them from the Forth Area.

CLASS SARCODINA.

Sub-Class Lobosa.

Order Amœbæa.

Amœba terricola, Greeff.—Hopetoun Woods, June 1906.

Order Testacea.

Difflugia piriformis, Perty.—Bavelaw Moss, Roslin, Marl Pit near Davidson's Mains, Gullane Links, Winchburgh, Largo Links, Aberfoyle.

D. capreolata, Penard.—Aberfoyle.

D. bacillifera, Penard.—Loch Vennachar (1902).

D. acuminata, Ehr., and var. *inflata*, Penard.—Bavelaw Moss.

D. globulosa, Duj.—Bavelaw, Aberfoyle.

D. constricta, Ehr.—Duddingston Loch, Roslin, Loch Leven, Doune, Aberfoyle.

D. arcula, Leidy.—Aberfoyle.

Centropyxis aculeata, Stein.—Davidson's Mains, Lothian Burn, Bavelaw, Hopetoun, Gullane, Largo, Ochils behind Dollar, Aberfoyle.

Pontigulasia bigibbosa, Penard.—Aberfoyle.

Lecquereusia spiralis (Ehr.).—Loch Vennachar (1902).

L. modesta, Rhumb.—Loch Vennachar (1902).

Hyalosphenia papilio, Leidy.—Bavelaw, Aberfoyle.

H. elegans, Leidy.—Thornton (Fife), Aberfoyle.

Nebela collaris, Leidy.—Duddingston Loch, Lothian Burn, Bavelaw, Gullane, Hopetoun, Thornton, Aberfoyle.

N. bohemica, Taranek.—Roslin, Aberfoyle.

N. tubulosa, Penard.—Near Doune.

N. lageniformis, Penard.—Bavelaw, Gullane.

N. carinata, Leidy.—Bavelaw, Aberfoyle.

N. marginata, Penard.—Aberfoyle.

N. flabellulum, Leidy.—Bavelaw, Star Moss near Markinch, Aberfoyle.

N. bursella, Vedj.—Aberfoyle.

N. militaris, Penard.—Aberfoyle.

N. crenulata, Penard.—Lothian Burn, Gullane.

Quadrula symmetrica, F. E. Schultze.—Ochils near Dollar, Hopetoun.

Heleopera petricola, Leidy.—Upper Elf Loch, Lothian Burn, Kirknewton, Thornton, Aberfoyle.

Var. *amethystea*, Penard.—From all the same localities as the type, except Elf Loch.

H. cyclostoma, Penard.—Luffness Marsh, July 1906.

Arcella vulgaris, Ehr.—Duddingston, Bavelaw, Gullane, Largo, Markinch, Ochils, Aberfoyle.

A. discoides, Ehr.—Upper Elf Loch, Bavelaw, Thornton, Markinch, Ochils, Aberfoyle.

A. artocrea, Leidy (=*catinus*, Pen., and *vulgaris*, var. *compressa*, Cash).—Aberfoyle.

Sub-Class Filosa.

Order Monostomina.

Cyphoderia ampulla (Ehr.).—Duddingston, Lothian Burn, Bavelaw, Gullane, Winchburgh, Ochils, Aberfoyle.

Euglypha alveolata, Duj.—Loch Vennachar.

E. ciliata (Ehr.).—Roslin, Hopetoun, Thornton, Doune, Aberfoyle.

E. brachiata, Leidy.—Loch Vennachar.

Placocysta spinosa, Leidy.—Thornton, Aberfoyle.

Assulina seminulum (Ehr.).—Bavelaw, Leadburn, Aberfoyle.

A. minor, Penard.—Leadburn, Aberfoyle.

Trinema enchelys (Ehr.).—Aberfoyle, Loch Vennachar.

Sub-Class Heliozoa.

Order Aphrothoraca.

Actinophrys sol, Ehr.—Bavelaw, Loch Leven.

Actinosphærium eichhorni, Ehr.—Nether Habbies Howe (Pentlands), Aberfoyle.

Order Chalarothoraca.

Acanthocystis turfacea, Carter.—Loch Vennachar.

NOTES ON THE FLORA OF BERWICKSHIRE.

By G. Claridge Druce, M.A., F.L.S.

In August of 1906 I spent a few days in the bracing air of Berwickshire, and had the advantage of the company of my friend Mr. A. H. Evans, the well-known ornithologist, whose knowledge of the botany of the plants of his native district is very thorough. In "Topographical Botany" the records are unusually free from personal vouchers, so that I venture to give a list of the more important species which were noticed by me during my visit, and have added a few which Mr. Evans or Mr. Ferguson of Duns also communicated to me.

The occurrence of *Agrimonia agrimonoides* in such a natural-looking situation is remarkable, nor could I obtain a clue to its introduction. The most interesting find probably was that of the hybrid orchis, which I had not observed hitherto in Britain. Our search in Gordon bog for the *Utricularia* which has been called *Bremii* was unsuccessful, only *U. minor* being observed, but the bog has suffered much recently from drainage.

P Signifies personal voucher. * New record. † Introduced species.

* Ranunculus peltatus, *Schrank*, var. *truncatus* (Hiern).—Coldingham Loch.

P R. Lingua, *L.*—Duns.

* R. Steveni, *Andrz.*—Duns.

* Caltha radicans, *Forst.*—Coldingham, on the margins of the loch in some plenty.

Fumaria Boræi, *Jord.*—Near Gordon.

P Coronopus procumbens, *Gil.*—Duns.

P Cochlearia officinalis, *L.*—Berwick, Tweedside.

P Cardamine flexuosa, *With.*—Duns.

P Cakile maritima, *Scop.*—Berwick coast.

P Helianthemum Chamæcistus, *Mill.*—St. Abbs.

P Viola lutea, *Huds.*—A very beautiful form with large flowers of deep yellow with upper petals purple, in fields near Gordon.

* V. segetalis, *Jord.*—Near Duns.

Polygala serpyllacea, *Weihe.*—Gordon, etc.

P Silene maritima, *With.*—St. Abbs.

P Dianthus deltoides, *L.*—Berwickshire, A. H. Evans.

Saponaria officinalis, *L.*

* Lychnis alba × dioica.—Duns.

P L. alba, *Mill.*—Duns.

* Spergula sativa, *Boenn.*—Duns.

P Arenaria peploides, *L.*—Near Berwick.

* Spergularia media (*L.*) (*S. marginata*, Syme).—Near Berwick.

P S. marina, *Mert* and *Koch.*—Near Berwick.

P Arenaria verna, *L.*—St. Abbs.

P Stellaria palustris, *Retz.*—Gordon Bog.

P Cerastium semidecandrum, *L.*—St. Abbs.

P Millegrana Radiola, *Druce.*—Saughton Leas.

P Sagina nodosa, *Fenzl.*—Coldingham.

† Linum usitatissimum, *L.*—Duns.

P Malva rotundifolia, *L.*—Near Berwick.

M. moschata, *L.*—Duns.

P Geranium pratense, *L.*—Near Duns.

P Trifolium procumbens, *L.*, var. *majus*, Koch.—Duns.

* T. arvense, *L.*—Lamberton, A. H. Evans.

P Astragalus glycyphyllus, *L.*—Lamberton, A. H. Evans.

* Vicia angustifolia, *L.*—Near Gordon. This removes the query to record in "Top. Bot."

* V. lathyroides, *L.*—St. Abbs, A. H. Evans.
* V. Orobus, *DC.*—Grant's House, A. H. Evans.
P Prunus Padus, *L.*—Duns.
P Geum intermedium, *Ehrh.*—Duns.
P G. rivale, *L.*—Duns.
P Potentilla palustris, *Scop.*—Gordon.
* Rubus Selmeri, *Lindeb.*—Duns.
R. dasyphyllus, *Rogers.*—Duns.
R. Radula, *Weihe.*—agg. Duns.
* Rosa Eglanteria, *L.*—Near Coldingham.
* R. glauca, *Vill.*—Duns.
* R. coriifolia, *Fries.*—Duns.
* R. dumalis, *Bechst.*—Duns.
* R. dumetorum, *Thuill.*—Duns.
P Alchemilla vulgaris, *L.*, var. *filicaulis* (Buser), var. *alpestris* (Schmidt).—Duns.
* Agrimonia agrimonioides, *L.*—Quite naturalised in a wood near Duns; showed me by Mr. Ferguson.
P Epilobium angustifolium, *L.*—John's House.
* E. obscurum, *Schreb.*—Duns.
E. montanum, *L.*—A curious form with very pale flowers of a different tint from the normal, with much of the appearance of *roseum*, grows on walls in Duns.
P Hippuris vulgaris, *L.*—Gordon.
* Myriophyllum spicatum, *L.*—Duns, Coldingham.
* Callitriche hamulata, *Kuetz.*—Duns.
P Parnassia palustris, *L.*—Gordon.
Ribes nigrum, *L.*—Duns.
R. rubrum, *L.*—Duns.
R. Grossularia, *L.*—Duns.
P Œnanthe crocata, *L.*
† Carum Petroselinum, *Benth.* and *Hook.*—Quite naturalised at Burnmouth.
P Ligusticum scoticum, *L.*—St. Abbs.
P Viburnum Opulus, *L.*—Duns.
* Galium Witheringii, *Sm.*—Coldingham.
P G. boreale, *L.*—A. H. Evans.
P Valeriana dioica, *L.*—Langton Leas.
P Taraxacum palustre, *DC.*—Langton Leas.
* Arctium intermedium, *Lange.*—Duns.
A. minus, *Bernh.*—Duns.

P Tragopogon pratense, *L.*—By the Tweed.
† Silybum Marianum, *Gaertn.*—Duns.
P Carduus tenuiflorus, *Curt.*—Berwick.
P C. crispus, *L.*—Duns.
P Campanula latifolia, *L.*—Duns.
P Vaccinium Vitis-idæa, *L.*—Langton Leas.
* Pyrola minor, *L.*—Near Langton Leas, Mr. Ferguson.
P Veronica didyma, *Ten.*—Duns.
P V. Buxbaumii, *Ten.*—Duns.
P V. montana, *L.*—Duns.
Rhinanthus Crista-galli, *L.*—Duns.
* R. stenophyllus, *Schur.*—Duns.
* Euphrasia brevipila, *Burnat.*—Langton.
* E. nemorosa, *H. Mart.*—Duns.
* E. curta, *Fries.*—St. Abbs.
* E. gracilis, *Fries.*—Langton.
* E. Rostkoviana, *Hayne.*—Gordon.
P Lathræa Squamaria, *L.*—Paxton, A. H. Evans.
P Mentha piperita, *L.*, var. *officinalis.*—St. Abbs, Gordon.
P M. longifolia, *Huds.*—Duns, in some plenty by a stream side.
P Clinopodium vulgare, *L.*—Duns.
* Galeopsis bifida, *Boenn.*—Duns.
G. speciosa, *Mill.*—Gordon.
* Thymus Chamædrys, *Fries.*—Duns.
P Stachys ambigua, *Sm.*—John's House.
P Salvia Verbenaca, *L.*—Berwick.
† Anchusa sempervirens, *L.*—Quite naturalised to the east of Duns by the roadside.
P Pinguicula vulgaris, *L.*—Langton Leas.
P Littorella uniflora, *Asch.*—Coldingham Loch.
Chenopodium album, *L.*, var. *candicans* (Lam.), and var. *viride*, *L.*—Duns.
P Atriplex hastata, *L.*—Duns.
P Rumex Hydrolapatheum, *Huds.*—By the Eden, near Gordon.
* Polygonum Bistorta, *L.*—Berwick.
P Empetrum nigrum, *L.*—Langton Leas.
† Euphorbia exigua, *L.*—Duns.
Quercus Robur, *L.* (pedunculata).—Duns.
* Q. fœmina, *Mill* (*sessiliflora*, Sal.).—Duns.
Betula alba, *L.*—Langton.
B. pubescens, *Ehrh.*—Gordon.

† Populus alba, *L.*—Duns.

P Juniperus communis, *L.*—Grant's House.

P Goodyera repens, *R. Br.*—Near Langton, Mr. Ferguson.

P Listera cordata, *R. Br.*—Langton Leas.

* Orchis maculata, *L.*, var. *ericetorum* (Linton).—Langton.

* Orchis maculata, var. *ericetorum* × *Habenaria conopsea*.—This interesting hybrid was found by Mr. Evans and myself in a marshy spot on the east side of Langton Leas, and was a good intermediate. The perfume of *conopsea* was retained, but the facies of the spike was rather that of *maculata*.

† Habenaria bifolia, *R.Br.*—Gordon bog.

P H. viridis, *R.Br.*—Near Duns, Mr. Ferguson.

P Neottia Nidus-avis, *Scop.*—Near Duns, Mr. Ferguson.

P Scilla verna, *L.*—St. Abbs.

P Allium Scorodoprasum, *L.*—Showed to me by Mr. A. H. Evans on the banks of the Whitadder, in considerable plenty.

P A. vineale, *L.*—With the foregoing.

Potamogeton filiformis, *Nolte*.—Still abundant at Coldingham.

P P. crispus, *L.*—Duns.

P P. polygonifolius, *Pour.*—Langton.

† Acorus Calamus, *L.*—Duns, in the castle lake, doubtless planted.

† Typha angustifolia, *L.*—With the above, and probably introduced.

Sparganium minimum, *Fries*.—Gordon.

P Juncus Gerardi, *Lois.*—Near Berwick.

* J. bufonius, *L.*, var. *fasciculatus*, Koch.—By the Tweed.

P Schœnus nigricans, *L.*—Gordon.

P Scirpus maritimus, *L.*—By the Tweed.

P S. sylvaticus, *L.*—A. H. Evans.

P Carex canescens, *L.*—Gordon.

P C. disticha, *Huds.*—St. Abbs.

P C. paniculata, *L.*, var. *simplicior*, And.—Gordon.

* C. flava, *L.*—Gordon.

P C. extensa, *Good.*—Fast Castle.

P C. pendula, *Huds.*—Lamberton, A. H. Evans.

P C. acutiformis, *Ehrh.*—Duns.

P C. riparia, *Curt.*—Whitadder.

P Milium effusum, *L.*—Peasdene, A. H. Evans.

* Agrostis canina, *L.*—Gordon.

* Phragmites communis, *Trin.*, var. *uniflora*, Bor.—Gordon.

P Avena pubescens, *Huds.*—Greenland.

* Arrhenatherum avenaceum, var. *tuberosum* (Gilib.).—Duns.

P Glyceria plicata, *Fries.*—Coldingham.
P G. maritima, *M.* and *K.*—Tweedside.
* G. distans, *Wahl.*—By the Tweed, about two miles above Berwick; scarce.
* Poa nemoralis, *L.*—Duns.
P Briza media, *L.*—Duns.
P Festuca rubra, *L.*—Duns, etc.
P Agropyron caninum, *Beauv.*—Duns.
A. repens, *Beauv.*, var. *barbatum.*—Duns.
P Hordeum murinum, *L.*—Duns, by the Tweed.
P Cystopteris fragilis, *Bernh.*—Duns.
P Polystichum angulare, *Presl.*—Peasdale, A. H. Evans.
P Asplenium marinum, *L.*—Fast Castle.
P Phyllitis Scolopendrium, *Greene.*—Duns.
P Botrichium Lunaria, *Sw.*—Gordon.
P Selaginella selaginoides, *Link.*—Langton.
P Equisetum sylvaticum, *L.*—Gordon.
Lastrea spinulosa, *Presl.*—Duns.
Agrostis alba, *L.*, *var. *stolonifera* (L.)—Duns.
*var. *gigantea*, Meyer.—Duns.
Poa pratensis, *L.*, var. *subcœrulea* (Sm.).—St. Abbs.
Chara fragilis, *Desv.*—Duns.
C. aspera, *Willd.*—Coldingham.

Oxford.

TRITICUM PEREGRINUM, HACKEL. A NEW SPECIES FOUND AS AN ALIEN NEAR EDINBURGH.

By James Fraser.

Last year, in each of two places, near Edinburgh, I found a single plant of a Triticum which evidently belonged to the sub-genus Ægilops, and at once suggested *Ægilops mutica*, Boiss. On comparing it with the latter, however, and with every other species of Triticum in the Herbarium of the Edinburgh Botanic Gardens, which, by the courtesy of Professor J. Bayley Balfour, F.R.S., I was permitted to do, it was at once seen that it corresponded with none of them. Specimens were sent to Professor Hackel, who, with charac-

teristic kindness at once replied that after careful study he could not identify it with any described plant, and that he considered it to be a new species of Triticum of unknown habitat, but almost certainly of oriental origin.

In both the places, though five miles apart, where this plant occurred, the conditions are somewhat similar: one place is a derelict poultry farm where grain-refuse from distilleries is thrown, yielding a luxuriant crop of hundreds of foreign plants; the other is a stretch of uneven waste ground, whose hollows are being filled up with sweepings from the holds of grain-ships and with other refuse. In both these places the plant was growing in association with *Triticum crassum*, Aitchis. and Hemsley, a native of Central Asia; *Phleum græcum*, Boiss. and Heldr.; *Phleum asperum*, Jacq.; *Apera intermedia*, Hackel, whose only known habitat is Asia Minor; and the three well-known species of Ægilops.

The following diagnosis by Professor Hackel is published in Scotland at his request, as he desired it to appear in connection with the observations of Mr. James M'Andrew and myself on alien plants here:—

"*Triticum* (sub.-gen. *Ægilops*) *peregrinum*, Hackel, nov. spec.—Annuum. Culmi graciles, circ. 35 cm. alti, apice longe nudi, glaberrimi. Vaginæ ventricosæ, ore plus minus fimbriatæ, ceterum glaberrimæ. Ligula brevissima, truncata. Laminæ anguste lineares (6-8 cm. longæ, 2-7 mm. latæ), acutæ, utrinque pilis mollibus patentibus plus minus conspersæ. Spica brevis (3-6 cm. lg., 6-8 mm. diam.) sursum attenuata, e spiculis fertilibus 4-5 constans, adjectis in basi spiculis sterilibus 3 parvis v. minutis, rhacheos articuli subcurvati sursum modice dilatati dorso complanati, ventre concavi, plus minus scabri, spicula adjacente plus minusve breviores. Spiculæ fertiles ovato-oblongæ (circ. 12 mm. lg., 4 mm. lt.), 4-floræ, floribus 2 inferioribus fertilibus, superioribus sterilibus, decrescentibus, viridulæ. Glumæ steriles subæquales, $\frac{2}{3}$-$\frac{3}{7}$ spiculæ æquantes, obovato-oblongæ, circ. 7 mm. lg., sinuato-bidentatæ, dentibus triangularibus acutis v. acutiusculis in spicula terminali interdum (altero v. ambis) in aristam brevem latiusculam productis, inter dentes interdum denticulum minutum exhibentes, dorso elevato 7-nervis,

nervis aculeolato-scaberrimis. Glumæ fertiles oblongæ, retusæ, bidentatæ, dente altero nervum medium excipiente plerumque in mucronulum crassum obtusiusculum producto, altero depresso-triangulari, interdum tertio rotundato aucto, ceterum muticæ, 5-nerves, tota superficie minute scabro-punctatæ. Palea glumam fertilem aequans, oblonga, obtuse bidentata, carinis setuloso-ciliolata. Lodiculæ ciliatæ. Ovarium apice hispidulum. Spica cum omnibus spiculis fertilibus demum caduca, spiculis sterilibus in culmo manentibus.

Patria ignota, introductam in Scotia prope Edinburgh (Slateford et Leith Docks), invenit J. Fraser.

Affinis *Tritico mutico* (*Ægilopi muticæ*, Boiss.) quod differt a nostro spica elongata gracili multispiculata, internodiis spicula adjacente longioribus, spiculis minoribus angustioribus, oblongis, glumis sterilibus vix dimidiam spiculam æquantibus apice dilatatis obscure sinuato-denticulatis, glumis fertilibus obtusissimis subintegris."

LEITH, *March* 1907.

BUTOMUS UMBELLATUS, L., IN CAITHNESS.

By ARTHUR BENNETT.

MR. R. BAIN of Wick, in a letter recently sent me, tells me he has seen three specimens of Butomus on the north side of the Wick river, and a botanical friend informs him that he has "seen it in the same place a good many years ago." Mr. Bain adds, "I am a good deal surprised that your friend Mr. Grant has not reported it." I am not, because it may be it flowered only occasionally. It is one of those semi-aquatic species that are very uncertain in flowering.

Of course, with such a paucity of specimens we cannot say much; but there is no reason why the species should not be a native of Scotland. The late Dr. B. White in his Flora of Perth considered it a native, and also in letters to myself when discussing the grade of various species.

In Sweden it is general in the provinces of Skane, Halland, Sodermarland, Upland, and Nerike, and occurs in twelve other provinces north to Jemtland about 64° N.

latitude.[1] Indicated in S. Norway; it occurs in Finland in eleven provinces north to Kemi in lat. 65° 30″ (Cashen 1793, Brenner 1870).[2] In Russia in Livonia and Petropoli (St. Petersburg), etc. Thus its distribution lends itself to being native in Scotland, though the greater severity of the winters in 64° N. lat. does not count altogether, as the fall of snow is greater, and this tends to the preservation of plants that without it even in the south of England die in winter. I am not advocating that Butomus is native in Caithness; but how do such plants become introduced (unless planted)? The appearance of semi-aquatic plants in quarries, gravel pits, railway cuttings, is very curious, as they surely do not occur in horse fodder, and at least in many examples of Dutch and Belgium packed goods I never detected any of these species. An entomological friend (Mr. Thurnel) tells me that when he finds in isolated gravel pits *Scirpus palustris*, L., he is almost sure to find a species of moth (*Bactra furfurana*, Haw.) whose larva feeds in the stems. If it is difficult to account for the appearance of the Scirpus, it seems much more so with the moth. It is easy to account for the introduction of many aliens, and of many species native in the south but not in the north, but semi-aquatics seem to present more difficulty even than aquatics.

CROYDON.

POTAMOGETON UNDULATUS, WOLFGANG, IN SCOTLAND.

By ARTHUR BENNETT.

THIS plant, which is generally considered as a hybrid (*Potamogeton prælongus* × *crispus*), was reported as a British plant by Mr. Fryer[3] and by myself;[4] but Mr. Baagoe of Naersted, Denmark, showed[5] that the British plant must be referred to *P. perfoliatus* × *crispus*. To this Mr. Fryer has given the name × *P. Cooperi*, and the plate quoted below and description refer to this and not to Wolfgang's plant.

[1] Berlin: Skand, Halfön 113, 1875. [2] Hjelt: Fl. Fennica 1, 513, 1895.
[3] "Journ. of Botany," t. 313, p. 289 (1891).
[4] "Irish Naturalist," p. 124 (1894). [5] "Bot. Iiddsk," xxi. p. 221 (1897).

I am now able to report the true plant from Scotland, whence it was sent me by Mr. Kidston, whose label is as below :—

"*Potamogeton prælongus*, Wulf. Kildean. River Forth near Stirling. Sept. 10, 1894. Stirlingshire."

The false report of the plant before, naturally made one very cautious as to a second one, and it was not till recently that, on a careful comparison of Mr. Kidston's specimens with types gathered by Wolfgang and Besser in Lithuania, and Caspary in Prussia, which I possess, they were found to be identical. The Scotch specimens are absolutely sterile (in my specimens), the flowers that remain unopened, though most had fallen off; if anything they are rather more towards *prælongus*, while Caspary's are more towards *crispus*, Wolfgang's original specimens being exactly intermediate. It differs from *prælongus* by being sterile, the apex of the leaves scarcely cucullate, and by the stem being compressed; from *crispus* by the non-serrated edge of the leaves, the greater number of nerves, with more numerous cross veins; from *perfoliatus* by possessing numerous bast-bundles in the bark, and by differences in the axial cylinders. I give the original description, etc.—

POTAMOGETON UNDULATUS, *Wolfg.* (Besser *in litt.*), in Roem. and Schul., "Sys. Veg. Mant." iii. 361 (1827).
P. CRISPUS, *f. Eichwald*, "Nat. Skizz.-Lithauen," etc., 105 (1830).
P. CRISPUS, *var.*, LEDEBOUR, "Fl. Ross." iv. 29 (1853).
P. CRISPA × PRÆLONGUS, *Caspary* in "P. Oe. G. Konigl." v. 18, 99 (1877).
P. DECIPIENS, *Nolte*, teste *Schmalhausen*, ex. Nyman. "Consp. Fl. Europ." supp. 287 (1890).
P. CRISPUS, *L.*, *Richter*, "Fl. Europ." i. 14 (1890).
P. PRÆLONGUS × CRISPUS, *Asch. and Graeb.* "Syn. Fl. Mitt.europ." i. 338 (1897).
RAUNKIÆR, *Danske*, Blomsterpl. 105 (1895).

"Caule compresso, sulco utrinque longitudinali fluctanti, inferne ramosa; foliis omnibus submersis, membranaceis, integerrimis, alternis, oblongo-ovalis, lanceolatis, rotundato-

obtusis, apice planis amplexicaulibus ; stipulis truncatis, complanitis, caule adpressis, Wolfg. Ms. No. 22. Besser *in litt.*

"Differt a *P. crispo* foliis longioribus, majoribus integerrimis nec crispatis, nec serrulatis, colore atroviride, et venis non convergentibus, sed transversim reticulato-strictis, Wolf.

"In specim. nostro flores desunt, folia 4-5 poll. $\frac{1}{2}$-$\frac{1}{3}$ poll. lata, majora quam in crispo, quidquam undulata, 5-7-nervia, nervis 3 fortioribus. Maxime sane affinio P. crispo." Roem. et Sch. *l.c.*

The distribution of the plant is—

Denmark.	River Gudenaa. Jylland! Baagoe.
	Nilso-Ribe. Jylland! „
	Vigersdal. Sjaelland! „
Lithuania.	In fluvio Wahu, Wilna, Besser! and Wolfgang!
W. Prussia.	Dlugi See, Kreis Kartham, Caspary! Glembohi See.
E. Prussia.	Berent. Neustadt. Schwetz. Neidenburg and Allenstein.
Sch. Holstein.	Ascherson and Graebner, *l.c.*, but not mentioned by Prahl., "Krit. Fl. Holst.-Sch." 1890.

The finest specimens I have seen are those in the herbarium of M. Casimir de Candolle, gathered by Besser.

I may say that Mr. Baagoe's excellent paper is in English as well as Danish.

POTAMOGETON MACVICARII, MIHI, *P. PRÆLONGUS* × *P. POLYGONIFOLIUS*, A NEW HYBRID.

By Arthur Bennett.

In the year 1897 Mr. Symers M. Macvicar sent me a series of gatherings of *Potamogeton* specimens from the West of Scotland (Moidart, etc., in Argyllshire). Among them were specimens from Ardnamurchan named—

"*P. prælongus* (leaves hooded when fresh). 25.8.1897."

On these special specimens I seem to have made no remark, at that time accepting the name without comment.

In August 1906 Dr. Graebner of Berlin paid me a visit in connection with his work on the genus for Engler's "Natürl. Pflanzenfamilien"; and as a result I have gone carefully over many hundred specimens both of British and foreign examples to assist him in his work. On this sheet of specimens coming under examination, I at once saw they differed from *prælongus* in many ways. To examine at once my series from all over its area of distribution was a natural result, with the conclusion that there was nothing among them similar. Turning to Mr. Macvicar's letter accompanying the specimens, he writes, "I send you a long narrow-leaved *P. prælongus* from Ardnamurchan. It is the longest-leaved form I have seen." In this same letter, speaking of the loch in which the specimens were gathered, he remarks, "The only other *Potamogetons* in the loch which could be seen were *P. natans* and *P. polygonifolius*, but of course there may be others."

Consulting many Continental and British floras, I can find no reference to any other condition in the species than "semiamplexicaul leaves" (Fries[1] remarks "Folia semper semiamplexicantia, nulla petiolata, basi subovata"); except that Chamisso, in Linn. 2, p. 192 (1827), in the description says, "ex ovato sensim attenuata."

In the original description of the species by Wulfen[2] he says, "Fol. . . ., omnino sessilia ex ovata semiamplexicauli basi," and, later on, adds, "sed sessilia."

Mr. Macvicar has lately kindly sent me his collection of specimens of the genus for Moidart, etc., and among them are specimens of *polygonifolius* with submersed elongate leaves very like some of the young growths of the present plant. I may here say how necessary it is to study this genus in all its aspects, especially the young spring and autumnal growths; Mr. Fryer, who has done this more than any other botanist, has shown how needful it is to the full understanding of the many and difficult problems the genus

[1] "Nov. Fl. Suec." 42 (1828).

[2] F. X. Wulfen. 'Plant. nov. descriptiones,' in Rœmer's "Arch. für die Botanik." iii. 331 (1805).

involves. No herbarium specimens can answer the queries (unless specially collected) like the growing plants. Fortunately Mr. Macvicar's specimens of this plant show well the varying stages of growth, and it is these young growths that at once show the specimens cannot be *prælongus* "pure and simple."

It may be urged (and rightly) "but how do you know how these species differ among themselves; may not these specimens be only an extreme form of the species?" In answer to this I may say I had *prælongus* growing for eight years in my garden; it was watched week by week (along with *alpinus* and *Griffithii*), and I never saw anything approaching to these specimens.

P. prælongus in its usual form occurs in many lochs in Moidart, "Lochs Bealachna, Garisha," etc.; and the specimens are in no way different to others from its area of distribution.

Hab.—Loch-na-Craig-dhui, Ardnamurchan, and Loch Dow, Moidart, Argyllshire. This first loch has a stream running through it from Loch Sligneach, and discharges its waters by the Allt Eas-an-Taileia into Kentra Bay.

Differs from *prælongus* (to which it is most nearly related) by the leaves being distinctly tapered into the footstalk, and in the young growths with a distinct petiole, the stipules much less persistent (even in the young growths), in the young leaves never hooded at the apex (and not always so in the mature growth), or even if slightly so, *not* splitting as they so often do in *prælongus*, and in the structure of the venation of the leaves, which is between *prælongus* and *polygonifolius*. In the young state the aspect of the leaves is very like the submerged elongated leaves of *polygonifolius*, except that the apex is rounded, instead of pointed (or subacute).

None of the specimens have flowers or fruits.

Taking a series of leaves and comparing them with those of *prælongus*, they show as under:—

× *P. Macvicarii.*	*P. prælongus.*
3 principal nerves.	3 principal nerves.
8 lesser do.	11 lesser do.

GOOSEBERRY-MILDEWS

By James W. H. Trail, A.M., M.D., F.R.S.

The leaves of Gooseberries have long been known to be liable to the attack of a mildew, which covers them with a thin pale grey web of slender interwoven tubular cells, which draw their nourishment from the leaf by means of suckers pushed into the cells of the surface on which they grow. On the web after a time appear small balls, changing from yellow to dark brown. Each of these bears around it a circle of from 10 to 15 appendages as long as the diameter of the ball, in the form of stiff brown tubular cells, which end in repeatedly bifurcated pale tips imbedded among the web. The balls inclose in each from 4 to 8 asci, each containing about 4 ascospores. This fungus, *Microsphæra Grossulariæ*, Lev., has been found throughout Europe, in Northern Asia and in North America, and in colonies elsewhere, to which it has been carried. It is often exceedingly prevalent, especially in autumn. It has been recorded from many localities in Scotland, in all parts of the country. But though so common, and certainly weakening the plants to some extent, it does not appear to injure the fruit to any serious extent. But since 1834 another mildew has been observed in North America on the fruits of various species of *Ribes*, and is known by the name of *Sphærotheca Mors-uvæ* (Schw.) Berk. Originally found on *R. Uva-crispa*, it has since been found on several other species, including the gooseberry. It has extended its range widely in the United States and in Canada, and is dreaded as a dangerous scourge of the gooseberry. In 1900 it was observed, for the first time to the east of the Atlantic Ocean, in three gardens in the north-east of Ireland. Attention was called to its occurrence there, and to the danger of its becoming epidemic in Europe, by Mr. E. S. Salmon, F.L.S., in the "Journal of the Royal Horticultural Society," a full description and figures being given to allow of the recognition of the fungus and the destruction of infected bushes with the least possible delay.

It was found in central Russia in 1901, on bushes sent from St. Petersburg and Riga two years previously. In

Sweden also it was found in 1901, on bushes received in 1900 from a nursery in Denmark. In Ireland it has, since 1900, been observed throughout County Down, and in localities scattered through the whole eastern half of the island. So in Russia it has been found widely scattered, Finland showing it in several localities on imported bushes. It has also appeared in eastern Germany, in a number of places in Denmark, and in one in southern Norway, on bushes imported from Denmark. In almost all these localities there is evidence of importation of gooseberry bushes a year or two before the fungus appeared; and in some cases it was ascertained that they had been brought from North America, where the disease prevails. In October 1906 Mr. Salmon detected the fungus in a garden in Worcester, England, on bushes recently imported from the Continent, and at once made the fact known, and urged the necessity of endeavouring to prevent the spread of the injury by compulsory and thorough destruction of the affected plants. Mr. George Massee, having visited the infected area, came to the conclusion from information obtained there that the fungus had been growing on gooseberry bushes in that locality for a number of years, and that its effects in England were likely to be less harmful than in the United States, and were in fact of no very serious import. In opposition to these views Mr. Salmon urges that the evidence is strongly in favour of the recent introduction of the fungus into Europe from America; that the assertion of the existence of the fungus in Worcestershire a number of years ago is based on the confounding the effects of injuries done to young twigs by aphides with those due to the fungus; and that the evidence of such experts as Professor J. Eriksson in Sweden goes to prove that the range of the fungus is extending very rapidly on the Continent, and that it has been necessary to uproot and burn all affected plants. In Sweden the importation of gooseberry plants has been prohibited since 1905. As yet this fungus has not been observed anywhere in Scotland, but it is most unlikely that we shall remain free of the pest; and, in view of the experience elsewhere, it is much to be desired that it should be recognised at once, and measures taken to destroy it before it can get

a hold and become dispersed over the country. In the United States of America good results have been found to follow spraying the bushes with a solution of sulphide of potassium, in the proportion of $\frac{1}{2}$ oz. in one gallon of water; but this treatment has not been found equally beneficial in Europe; and it is therefore not recommended as a trustworthy safeguard.

The fungus is most conspicuous when it attacks the berries, usually more severely on one side than on the other, causing the fruit to become distorted from the attacked spots ceasing to grow. At first the spots are pale, being covered with a web of fungus-tubes, which becomes powdery from the separation of the reproductive cells or conidia. Gradually the web thickens, becomes rusty brown, and may be peeled off the surface of the fruit. On the web there may be found small black balls (perithecia), each bearing near its base a number of long *unbranched* tubular cells or appendages, entangled among the tubes of the web. Each perithecium contains *only one ascus*, in which lie eight elliptical ascospores.

The fungus also grows on the young twigs and leaves, usually making its first appearance on the terminal buds while these are opening, and in severe attacks destroying these parts, covering them with a growth similar to that on the fruits.

ZOOLOGICAL NOTES.

Martens in N.-W. Highlands and Skye.—Mr. John Smith, forty years head-keeper of shootings in Sutherlandshire, reports to me, under date of 11th December 1906, that "he was informed that two Martens had recently been obtained, and that a litter of them was seen last summer, so it appears they are not all dead yet. I am of opinion they must have come up from the shore."

The above localities are in Sutherland and N.-W. Highlands. I have before pointed out the recurrence of abnormal seasons of plenty in several species of animals. The above appears to bear out my remarks. But now we must also take into consideration the great increase of protection given to many animals, by the extension of deer forests, now almost continuous along our western sea-board and across Scotland.

Beside those above recorded in Assynt, I am likewise informed of at least four others obtained at Inverpolly by the keeper there. My informants are my cousin Chas. Blunt, who resides at Baden, Tarbert, and Mr. Jas. S. Henderson, Ullapool. One was obtained by Mr. Henderson himself on the 22nd January, and the others were obtained about the same time.—J. A. Harvie-Brown, Dunipace.

Common Seal in the Tay.—A Seal (*P. vitulina*) was captured in the Tay, near Stanley, above Perth, 21st January. The specimen was a male, very fat and in plump condition, and is probably the same individual which has been seen from time to time near Perth during the past four or five weeks.—Alex. M. Rodger, Perth.

Bird Notes from the Solway District.—The Lesser Redpoll (*Linota rufescens*), a New Trait.—For the last month or more I have been interested in noting a new habit on the part of the Lesser Redpoll. A small party of over a dozen of these Redpolls have been located in our nursery grounds since about November. In December several large beds were sown with seed of the Common Birch (*Betula alba*). Following the usual practice in nurseries, this seed is very lightly, or scarcely at all, covered with soil, so that it practically lies on the surface. Recently some of the Redpolls found this out, and first one pair only, subsequently the whole party, have since been busy when the surface of the soil became dry, which, however, it has only seldom been. I am describing this new habit of eating sown seed on the part of the Lesser Redpoll merely as a student of birds and not as a nurseryman, otherwise I should have had to point out a very obvious remedy! But for all the little damage this small party have been doing, I have not molested them. It is quite another thing when, later in the season, hosts of Greenfinches, Chaffinches, and Sparrows descend upon the sown pine seeds. Great Grey Shrike (*Lanius excubitor*).—Mr. Norman Menzies of Newtonairds sent me a fine young male Shrike on 28th December last. It had been shot on the previous day by Mr. Menzies. The bird was of the typical double-spotted form. This species, formerly of regular annual winter occurrence here, has now become decidedly scarce, the last I heard of having been got seven years ago. Greater Spotted Woodpecker (*Dendrocopus major*).—It is not yet too late to put on record a rather remarkable occurrence of this species in two localities in Solway, a notice of which I have purposely refrained from mentioning earlier. During the months of February, March, and April, some strange sounds were heard in the woods of Southwick and in Kirkcudbrightshire, and caused a considerable amount of talk and speculation, no one, except some interested parties who were early initiated into the mystery, being able to account for them. During the same period an exactly similar

occurrence took place at Closeburn, in Dumfriesshire, some thirty miles distant. In both cases the sounds ceased in May, and although a pair of birds was undoubtedly present at each locality, no nest was discovered to my knowledge, nor indeed any signs of their having nested. So far, nothing has been seen of the birds up till date of writing. Smew (*Mergus albellus*).—A finely plumaged young female was sent to me on 2nd January 1907. It had been shot at Kirkconnell by Mr. Robert Maxwell Witham. There was another bird of the same species in its company when first seen on the salt merse lands of Kirkconnell. My last record of a local Smew is one taken on the neighbouring estate of Shambellie during the arctic weather of February 1895. Green Sandpiper (*Totanus ochropus*.—This species I was very pleased to see again, the last occurrence here to my knowledge being 26 years old. Mr. Paterson Jun. of Broomlands shot a pretty female specimen on his shooting at Locharbriggs, Dumfriesshire, on the afternoon of 29th December 1906. It seems strange that the Green Sandpiper should not turn up, because some half-century or more ago (*vide* Sir Wm. Jardine) it seems to have been quite a familiar species in Dumfriesshire. Fork-Tailed Petrels (*Procellaria leucorrhoa*).—In November we had a severe NNW. gale, one of the kind that brings to Nithsdale and Annandale squall after squall, heavy with rain-clouds that hold salt spray which leaves on trees and hedges a coating of salt that is often quite visible, and may always be tasted if touched with a moist finger-tip. When a storm of this type happens in November we invariably hear of Petrels being brought along with it, and flung exhausted across the country. This particular gale was no exception, for a Fork-Tailed Petrel was picked up at Dunscore on the morning of 18th November. It was caged, but died shortly after, as well it might, for its captor offered it canary-seed as food. Another one was found alive in Lochar Moss, and within a couple of miles a third was picked up dead. Two days afterwards a fourth was got at Castlemilk near Lockerbie.—Robert Service, Maxwelltown.

Bird Notes from Thornhill, Dumfriesshire.—Great Grey Shrike (*Lanius excubitor*).—A female was shot at Newtonairds, Dumfriesshire, on 26th December 1906. Presumably blown in by north-easterly gales then raging. Green Sandpiper (*Totanus ochropus*).—Shot near Dumfries on same date, under similar conditions. Snipe (*Gallinago cœlestis*).—With white secondaries, scapulars, and a sprinkling of white feathers on body. Shot four miles west of Thornhill, Dumfriesshire, on 7th November 1906. Water Rail (*Rallus aquaticus*).—Shot four miles west of Thornhill, Dumfriesshire, on 7th November 1906. This is the first time, as far as I can ascertain, that this bird has been seen in this locality.—Hugh S. Gladstone, Thornhill.

Marked Starlings.—Mr. R. Tomlinson of Musselburgh has asked me to notify in "The Annals," that he has attached tabs to the legs of a number of Starlings. The tabs in question are, "as far as he found it possible and practicable," attached to the left legs of the birds.

Should any of these liberated birds come under the notice of our readers, or otherwise attract attention, we would be obliged if such occurrences were communicated to "The Annals." The birds liberated are numbered on a metal ring as follows, and were liberated on the dates given :—

1906.			
December	11.	Nos.	61, 63, 18, 30, 36, 38.
,,	13.	,,	67, 61, 2, 31, 22.
,,	14.	,,	34, 42, 49, 45, 29, 13, 12, 17.
,,	15.	,,	47, 34, 50, 9.
,,	17.	,,	19, 71, 63, 66, 54, 7, 10, 52, 69.
,,	20.	,,	40, 46, 57.
,,	21.	,,	59, 55, 35.
,,	23.	,,	44, 54, 46, 11.
,,	27.	,,	3, 6, 39, 68, 25, 37, 19, 23, 36.
,,	28.	,,	65, 33, 15, 65, 43, 40, 51.
1907			
January	22.	,,	6, 9, 52, 64, 48, 14, 27.
,,	23.	,,	37, 27, 5, 62.
,,	25.	,,	24, 41, 58, 4, 52.
,,	29.	,,	31, 64, 38, plain ring, no number.
,,	30.	,,	53, 29, 1, 30, 4.
,,	31.	,,	67, 2, 21.
February	1.	,,	69, 10.
,,	4.	,,	59.
,,	5.	,,	16, 70, 50 60, 39, 43.
,,	6.	,,	23, 64, 55, 49, 72, 25, 28, 60, 70, 7.
,,	7.	,,	33.
,,	8.	,,	24, 44, 45, 56.
,,	10.	,,	16, 14, 20, 26, 42.

J. A. Harvie-Brown, Dunipace.

Bramblings in West Ross-shire.—I shot a pair of Bramblings here to-day in the garden, a male and a female, and I think it is not a usual visitor here. The last time they were noticed was in January 1899 by my sister, but there were only one or two to be seen then. To-day I saw six pairs altogether, which have apparently been driven here by the storm. They are being added to the Braemore collection, as we have not a specimen there.—Alan A. Fowler, Inverbroom, Ross-shire.

Rustic Bunting in Aberdeenshire.—On 9th April 1905, I received from Learney, Torphins, a pair of Rustic Buntings (*Emberiza rustica*).—The birds were all but spoiled, having been dead, I should think, a fortnight. They were dried up, but by careful handling and softening in spirits I managed to skin and stuff them, not quite what

I should like them to have been, but very fair birds under the circumstances.—E. T. Clarke, Cheltenham.

[This bird was recorded for the first time for Scotland in "The Annals" for 1906 (p. 138). The above occurrence, however, takes precedence as regards date of capture.—Eds.]

Nesting of the Snow Bunting in Aberdeenshire.—Last season I received from Rathen in the above county a clutch of four eggs of the above-named species. They were sent to me as Snow Birds, which is, I suppose, a local name for them.—E. T. Clarke, Cheltenham.

Great Grey Shrike in Mull.—On 20th January, as I was returning from a short walk, I was struck with an unusual commotion among chaffinches and a few other small birds in the shrubbery in front of my house. As there was no cat about I proceeded to make inquiry as to the cause of the hubbub, when out from a laurel flew a light grey bird about the size of a thrush, and perched on the branch of a tree. I had no difficulty in deciding that the bird was a Great Grey Shrike (*Lanius excubitor*). I got a momentary glance of what must have been the same bird two days previously as it flew out of a rough bramble-covered thicket.—D. Macdonald, Mull.

Snowy Owl in Perthshire.—Two Snowy Owls (*Nyctea scandiaca*) were killed about 40 years ago on the Duke of Atholl's estate, Blair Atholl, and were preserved by my grandfather. One is now in the possession of Mr. Monsey of Bleak House, Cheltenham.—E. T. Clarke, Cheltenham.

Pintail in Forth Area.—Mr. W. Hannay, the gamekeeper upon Denovan Shootings, brought to me an immature ♂ Pintail (*Dafila acuta*) in a very interesting plumage. It was shot by him whilst waiting at "flight" for ducks on Stumpig Moss (Stirlingshire) on 22nd December. It had alighted, and had been sitting there some time, as he shot it on the rise and not "flighting in."

The apparent rapidity with which wild ducks, of various species, "take up house" in this country, after first records of nesting, is a point well worthy of notice. There are few exceptions, I think, which can be quoted, where actual habitation and continuous nesting, in this class of birds, have not followed rapidly upon all authenticated records of "first nesting." At least, I do not recall any exceptions to the rule. Attention drawn to any exceptions will be acceptable.

The only other instance of the occurrence in winter of this duck in this district was also a male, shot by myself on the Water of Bonny, and I think it was recorded at the time in the "Zoologist," early in the seventies or in the sixties.

The nesting of the Pintail in South of Shetland, on the

authority of Mr. Henderson of Spiggie, has already been recorded in "The Annals," and feathers of the young (♀ birds) in his possession have been sent to me.—J. A. Harvie-Brown, Dunipace.

Occurrence of the American Wigeon in Benbecula, Outer Hebrides.—The following note is sent in response to the Editor's request for information regarding the capture of the American Wigeon (*Mareca americana*). When we arrived at Greagorry, we found everything under snow and practically all the fresh-water lochs frozen up. On 3rd January we tried some of the salt-water lochs for Wigeon, etc. On one of these, Ob Suille, about a mile east of Greagorry, we found about thirty Wigeon. Of these we shot two as they passed out to sea. Our shots disturbed a solitary Brent, which flew up to the top of the loch. We then sent the men round to flush the Goose or anything else that might have remained, while we guarded the outlet. The men flushed the Wigeon in one of the small bays of the south side, and it flew towards me, lighting again after flying about 200 yards, and swam towards or past me, feeding from time to time. When abreast of me I stood up, it rose, and I shot it. Unfortunately it was not killed and my spaniel pulled most of the tail out in retrieving it. It was a male of the year, I fancy, but, if so, in very fine plumage.—Edward M. Corbett, Greagorry, Benbecula.

[This rare visitor has been obtained on one or two occasions in England, but this is the first authentic record of its capture in Scotland. The bird has been presented to the Natural History Museum, South Kensington.—Eds.]

Velvet Scoter at Barra, Outer Hebrides.—An adult female Velvet Scoter (*Œdemia fusca*) was found dead a few yards above high-water mark at Eoligary on the 25th of November last. It is the first I have known to occur in the Island of Barra; but I have a male in my collection obtained in South Harris in the spring of 1896.—Wm. L. MacGillivray, Barra.

Capercaillie in the South of Scotland.—Mr. Gladstone notes the appearance of Capercaillie (*Tetrao urogallus*) in Dumfriesshire as marking the southernmost limit of their occurrence in Scotland. We in Wigtownshire are considerably farther south than Thornhill (as I write I am actually farther south than Durham). In 1873 or 1874 two Capercaillie hens were shot in this county, one on the estate of Barnbarroch and one on that of Penninghame. The appearance of this strong-flying bird may be expected, I fancy, in any district where there is suitable woodland more frequently in the future as the stock increases in Central Scotland.—Herbert Maxwell, Monreith.

Capercaillie and Willow Grouse in Moray.—In reference to the article in the January number of "The Annals" on the above

subject, it may be interesting to know that, some ten years ago, the Duke of Richmond turned out two cocks and some hen Capercaillies (*Tetrao urogallus*) at Gordon Castle. In 1898-9, at least two cocks and three hens arrived here, a few miles up the Spey, and this present season I have had upwards of 12 nests hatched out. This will easily account for these birds in the district from Keith to Forres, and no doubt they will continue to extend their range as long as they find woods suitable and quiet.

I am now trying to acclimatise Norwegian Rype or Willow Grouse (*Lagopus lagopus*), which, if successful, may possibly cross with our red grouse, and in any case be an addition to the moor-edge bird life.

I have had two unusual visitors here this winter. A Great Grey Shrike (*Lanius excubitor*) and a Little Auk (*Mergulus alle*) blown in with the heavy storm, about twelve miles from the coast. W. Steuart Menzies, Craig Ellachie.

Hen Capercaillie in full Male Plumage.—A hen Capercaillie (*Tetrao urogallus*) was shot at Torphins, North Aberdeenshire, in January 1906, and was obtained from Messrs. Allan and Son, Sauchiehall Street, Glasgow. I sent the bird to the "Field" office for inspection, and a short article appeared in the columns of that paper by J. E. Harting. I believe Mr. Harvie-Brown has quoted two in partly assumed plumage, but the plumage in this case was complete, looking like a miniature cock.—E. T. Clarke, Cheltenham.

Quail in Fife.—Mr. Skinner, taxidermist, Kirkcaldy, tells me that two Quails (*Coturnix coturnix*) were taken in Fife last summer, one near Freuchie, and one near Inverkeilor.—Leonora Jeffrey Rintoul, Largo.

[One was shot at Whitburgh, East Lothian, on 6th October.—Eds.]

Rush of Golden Plover in Tiree.—It will perhaps interest you to hear that from the 19th to the 23rd of December, there were thousands of Golden Plover (*Charadrius pluvialis*) passing south over the island. Such a big southerly migration of these birds at that date is unprecedented so far as I know. The southerly movements of this bird usually end towards the close of November, but in open seasons a great many stay all the winter with us. On the 24th frost set in, and on the 26th, 27th, and 28th we had a tremendous snowstorm with a heavy gale from the north which drove all the Golden Plover off the island. I am of opinion that the Golden Plover knew that the storm was coming, and hence the heavy migration southwards.—Peter Anderson, Tiree.

Grey Plover, Woodcock, and Great Crested Grebe in Shetland in Winter.—It may interest you to know that a few Grey Plover (*Squatarola helvetica*) have been in this neighbourhood since October

last. I saw one of them on 23rd February. In my experience it is very unusual for Grey Plover to winter here. We have also had a considerable number of Woodcock (*Scolopax rusticula*) throughout the winter. A Great Crested Grebe (*Podicipes cristatus*), the first I have ever seen here, was obtained on 11th January.—THOMAS HENDERSON Jun., Spiggie.

Supposed Occurrence of the Yellow-shanked Sandpiper near Hawick.—In the "Scotsman" for 14th October 1906, it is recorded that a pair of these birds was shot near Hawick about the end of July. One of them was fortunately preserved, and was submitted to me some time ago for my opinion as to its identification. I found it to be a young Redshank in first plumage. As no further communication has been made to the press regarding it, I have deemed it desirable to publish this note on the subject.—WM. EAGLE CLARKE, Edinburgh.

Fulmar Petrels at Dunnet Head, Caithness.—Mr. N. Kinnear having kindly drawn my attention to the Fulmar Petrels (*Fulmarus glacialis*) nesting at Dunnet Head, Caithness, I have thought it worth while to ascertain particulars, and place the complete facts on record, so far as I have been able to attain them.

The following account of their advent and recurrence is supplied by Mr. Laidlaw, at my request, through my good friend Mr. Lewis Dunbar of Thurso. Mr. Laidlaw writes:—"The first time I observed the Fulmars here was in May 1900. They may have been here before and I not see them. I could only see three birds there. They were below the Lighthouse. In February 1901 I saw them again, and counted ten birds that time, and every year they have increased in number. They first came below the Lighthouse. I saw them in no other place until the year 1904, when I noticed some on the east side of the Head—about half a mile. I saw two pairs that same year; and last year (1906) there was one pair about three miles on the Thurso side of the Head. They have been gradually increasing in numbers year by year: as nearly as I can count, there were fifteen pairs below the Lighthouse—nine pairs on the east side and six pairs on the west side. That is within the number, as it is impossible to get the correct number when some are flying about. I can't tell the exact date or the month that they come, or in what numbers. What more information you would like I would be glad to give you if I can."

The above precise account from the resident lighthouse-keeper is of interest now, and may prove of greater interest in the chronological history of the species, and its marvellous dispersal, at some future time. From personal observation of the whole cliff-faces of the promontory, I may, I think, venture to predict a great future for "Fulmardom" in the Pentland Area of Scotland, upon these

Dunnet Head precipices. How much farther south the birds may yet occupy, I will not at present venture to say. Mr. Kearton and Mr. W. L. Dunbar saw a pair of these birds hovering about Holborn Head on 1st June 1905, but whether they were nesting it was impossible to say. The ledges of the cliffs at Holborn Head dip towards the sea, and consequently afford less holding-ground for rock birds and their eggs than the cliffs of Dunnet.—J. A. Harvie-Brown.

The Wood-Wasp (*Sirex gigas*).—The late summer of 1906 was remarkable in the extreme south-west of Scotland for an unusual number of that fine insect the so-called Wood-Wasp (*Sirex gigas*). Needless to say, it is not a wasp, nor in any way related to wasps, its affinities being with the saw-flies and ichneumon flies. Foresters need apprehend no mischief to growing trees from the presence of these flies, as they deposit their eggs only in dying or felled trees; but carpenters have reason to complain of the tunnels made in timber by the larvæ, and considerable alarm is said to have been caused sometimes by the emergence of numbers of hornet-like creatures from the foreign timber in newly built houses.

I saw a female Wood-wasp in August last, quite dead, having driven her ovipositor into a larch pole in a paling and failed to withdraw it.—Herbert Maxwell.

Lepidoptera of East Ross-shire: a Correction.—By an unfortunate slip, Miss Dorothy Jackson's notes on the Lepidoptera of East Ross-shire were attributed to the western section of the county in the January number of "The Annals" (p. 54). Only one species (*Euclidia mi*) was taken in West Ross-shire.

Phoxichilidium femoratum (*Rathke*) **from the Firth of Forth.**—Having submitted to Prof. Carpenter a pair of Pycnogonids, found under a stone between tide-marks at North Berwick, in January 1896, he informs me that they belong to the species *Phoxichilidium femoratum* (Rathke), which, so far as I know, has not previously been recorded from the Firth of Forth, though known from other parts of the east coast of Scotland.—William Evans, Edinburgh.

Præmachilis hibernica, *Carpenter*, **in Scotland.**—A most interesting discovery has recently been made by my friend Prof. G. H. Carpenter of Dublin, namely that the Thysanuran which in Ireland has been regarded as *Machilis polypoda* (L.) is not that insect, but a new species which he has just described under the name of *Præmachilis hibernica* (see *Irish Naturalist*, 1907, pp. 54-56). On hearing of this discovery I resubmitted to Prof. Carpenter some specimens (from Arthur's Seat, February 1896, and Bridge of Allan, February 1898) recorded by us as *Machilis polypoda* in our joint paper on the Collembola and Thysanura of the Edinburgh district,

1899; and he finds they all undoubtedly belong to the new species, *P. hibernica*. The interesting question now arises, have we *M. polypoda* in Scotland?—William Evans, Edinburgh.

Some Pezomachi and other Cryptinæ from "Forth."—During last year Mr. Claude Morley, F.E.S., kindly examined a number of my *Ichneumonidæ*, and reported among them the following *Cryptinæ*:—

Atractodes bicolor, Grav.—♀ Gullane Links, 9/96.

A. vestalis, Hal.—♀ ♀ Luffness Links, 7/98 and 8/04; ♂ ♀ Largo Links, 6/04; ♂ Currie, 6/06.

Stilpnus deplanatus, Gr.—♀, Kilconquhar Loch, 8/04.

Pezomachus acarorum, L.—Huntlaw, near Pencaitland, 5/06. My *Pezomachi* are all ♀ ♀ and apterous.

P. anthracinus, Först.—West end of Loch Leven, 7/06.

P. attentus Först.—Forest Mill, Clackmannan, 7/01; coast, Dunbar, 3/05.

P. fasciatus, Först.—Aberlady, 9/93 and 8/96; Thornton, Fife, 8/98.

P. festinans, Gr.—Thornton, 8/98; Glenfarg, 9/99.

P. fraudulentus, Först.—Wemyss Woods, Thornton, 8/04.

P. impotens, Först.—One, not quite typical, Aberlady, 9/93.

P. instabilis, Först.—Near Dunfermline, 10/97; Oakley, 8/98.

P. intermedius, Först.—Harburn, 10/95; Balerno, 3/05; Gifford, 4/05.

P. kiesenwetteri, var. *bellicosus*, Först.—Elie, 7/05.

P. modestus, Först.—One under stone, Hillend, near Edinburgh, 3/99.

P. ochraceus, Först.—East bank of Avon, near Inveravon, 2/03; Abbey Craig, near Stirling, 4/06.

Hemiteles areator, Panz.—♀ near Dunfermline, 10/97.

H. necator, Gr.—♀ Near Drumshoreland, 8/06.

H. varicornis, Gr.—♀ Bavelaw, 3/05.

Microcryptus abdominator, Gr.—♂ ♂ Cullalo, Fife, 7/04, and Dirleton, 6/06.

M. bifrons, Gr.—♀ ♀ Kirknewton, 5/01, and Boness, 6/01.

M. nigrocinctus, Gr.—♂ Kirknewton, 7/00; ♀ ♀ in grass tufts, Kirknewton and Hillend, 1/02.

Phygadenon fumator, Gr.—♂ ♂ Gullane, 7/98, and Currie, 6/06.

P. inflatus, Thoms.—♀ Charlestown, Fife, 7/04; ♂ near Carlops, 8/04.

P. vagabundus, Gr.—♀ ♀ Kirknewton, 7/95, and Swanston, 8/00; ♂ Drumshoreland, 7/04.

P. variabilis, Gr.—♂ ♂ Aberlady, 8/04; Humbie, E. L., 7/04; Currie, 6/06.

Pycnocryptus peregrinator, L.—♀ St. Davids, Fife, 6/00.

Cryptus albatorius.—♂ ♂ Currie and Dirleton, 6/06.

C. obscurus, Gr.—♀ Saltoun, E. L., 7/04.

C. tarsoleucus, Schr.—♀ Kinghorn, 5/00.

Spilocryptus abbreviator, Fab. (= *Pez. hopei*, Gr.).— ♀ near Balerno, 9/05.
Goniocryptus titillator, Gr.— ♂ ♂ Saltoun, E. L., 7/04.

WILLIAM EVANS, Edinburgh.

BOTANICAL NOTES AND NEWS.

List of British Seed-plants and Ferns.—This will be welcomed by British botanists, whose thanks will be given to the authors, Mr. James Britten and Dr. A. B. Rendle, and to the Trustees of the British Museum, under whose authority it has just been issued as one of the official publications from the Department of Botany, at the very low price of fourpence. In the preface it is explained that the list has been compiled in accordance with the International Rules of Botanical Nomenclature, adopted by a large majority at the Botanical Congress at Vienna in 1905. One of these rules embodied the usage of zoologists that the *earliest specific name* must stand, no matter under what genus the plant was first described in a recognisable manner. Adherence to this rule entails some alterations of name, though frequently these are returns to names familiar a good many years ago to British botanists. The authors have done a good deal more than merely compile the "List," having made use of the admirable library of the Department to refer to the original description of each species and thus ensure accuracy. Varieties have not been included, nor have critical forms of *Rubus*, *Hieracium*, *Euphrasia*, and *Salix*, the other genera and species being accepted as limited in the 9th edition of Babington's "Manual," but the nomenclature is correlated for Bentham's "Handbook," ed. 6, 1892, and Hooker's "Student's Flora," ed. 3, 1884. Of evident aliens only those thoroughly naturalised are named, in italics. At the end of the List follows an arrangement of the families according to recent views of their affinity. A commentary explaining all changes of nomenclature rendered necessary is given in the "Journal of Botany" for March (pp. 99-108). Although finality in nomenclature can hardly be regarded as attained, yet this may be accepted as representing a great step on the way to a more satisfactory solution of the difficulties.

New Species of Lichen, Aspicilia Lilliei, *B. de Lesd.*—Ecosse; Caithness, Ousdale supra saxa granitica. Leg. Rev. D. Lillie, 1905. Crusta tartarea, circa .5 mm. crassa, rimoso-areolata, alba, intus flavida, K— C— KC—. Apothecia minuta, atra, in areolis immersa, rotundo-deformia, vel lirelliformia. Epith. olivaceum, hypoth. incoloratum, paraphyses gelatinoso-concretæ, asci anguste clavati. Sporæ 4-6, ellipsoideæ, 13-15μ lat., 5-6 crass. Gelat. hym. I. intense cærulescit. Cette espèce a tout à fait l'aspect de *l'Aspicilia*

calcarea dont elle diffère par son thalle jauni intérieurement, et par ses spores ("Bulletin de la Société Botan. de France," vi. 1906, p. 515).

Hieracium nigrescens, Willd., *var.* commutatum, *Lindeb.*, etc., on Ben Heasgarnich, Mid Perth.—I gathered the hawkweed which the Rev. W. R. Linton thinks is probably the above variety, on the eastern slopes of Ben Heasgarnich in August last, where I also found *H. cerintheforme*, Backh.; *H. gracilentum*, Backh.; *H. Sommerfeltii*, Lindeb.; and *H. sarcophyllum*, var. *expallidiforme*, Dahlst., as well as *Salix Arbuscula* and *S. Myrsinites*. I also gathered *Carex canescens*, *var. *fallax*, F. Kurs.; *C. alpina* at nearly 3000 feet, *C. atrofusca* in quantity and good condition, and *C. tellulata*, Good, var. *grypus*.—G. C. Druce.

Altitudinal Range of Utricularia minor.—On 20th August 1905 I found this plant in a wet spot at about 2250 ft. above sea-level on the south side of the Tarmachans, near Killin, Perthshire. The moss *Hypnum trifarium* was growing beside it.—William Evans.

[This is, so far as I am aware, a very considerable extension of the altitudinal range of *U. minor* for Scotland, the highest previous record that I have met with being 1500 ft., in pools north-west of Loch Ericht, with *U. intermedia*, found by H. N. Dixon in 1883, see "Journ. Bot.," 1894, p. 88.—J. W. H. T.]

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—January-March 1907.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable, and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

Winter Whitening in a Brown Hare. R. L. *The Field*, 2nd February 1907, p. 183.—This note refers to a specimen obtained at Carradale, Argyllshire, in which the head exhibits light areas, some almost pure white and others a mixture of white and brown hairs, forming a series of symmetrically arranged patches on both sides. The specimen is now in the Natural History Museum, South Kensington.

The Occurrence of Risso's Dolphin, Grampus griseus, Cuv., in the Forth. By James Eggleton. *Trans. Nat. Hist. Soc. Glasgow*, vol. vii. (N.S.), part iii. pp. 253-257 (February 1907).—This paper refers principally to a specimen captured near the Inchbrake Light, off Kincardine, on 15th October 1904. A brief history of this mammal as a British species is also given.

The Hooded and Carrion Crows in Scotland. D. A. M. *The Field*, 9th February 1907, p. 215.—A short paragraph giving particulars of distribution in various parts of the country.

Greenland Falcon in Lewis. R. *The Field*, 23rd February 1907, p. 307.—Specimen seen at Scaliscro on 21st January.

Greenland Falcon in Argyllshire. Austin Mackenzie. *The Field*, 26th January 1907, p. 149.—One seen, but the exact locality not specified.

Ribbon Fish in Orkney. H. W. Robinson. *The Field*, 16th March 1907, p. 445.—Specimen washed ashore at Whitemill, Burness, Sanday. It measured 13 feet in length, 2 inches across, and about 8 inches in depth.

On the Occurrence of Conodonts in the Arenig-Llandeilo Formations of the Southern Uplands of Scotland. By John Smith. *Trans. Nat. Hist. Soc. Glasgow*, vol. vii. (N.S.), part iii. pp. 235-252, pls. v.-ix. (February 1907).—Several new species are described and figured.

Galashiels and District: A Guide to the existing Fauna. *Proc. Berwickshire Nat. Club*, vol. xix., No. ii. pp. 179-203. —This paper consists of—(1) General Remarks, by William Shaw; (2) List of Coleoptera captured by J. M. Whitehead and others; and (3) List of Land and Freshwater Mollusca found by J. Roseburgh. At the beginning of the paper is also given a List of Butterflies and a List of Moths found in the district.

Monograph of the Land and Freshwater Mollusca of the British Isles. By John W. Taylor. Parts 13 and 14, published 16th February 1907.—As usual, full details of distribution in Scotland are given under each species.

Scottish Lepidoptera in 1906. By A. E. Gibbs, F.L.S. *Entomologist*, March 1907, pp. 55-58.—A summary of the species collected by Mr. L. G. Esson in Perthshire, Aberdeenshire, and Elginshire.

Lepidoptera of East Sutherland. By M. A. Rollason. *Entomologist*, February 1907, pp. 40-41.—A list of ninety-three species taken during 1906 within a ten-mile radius of Golspie. The larvæ of five species are also mentioned.

Retrospect of a Coleopterist for 1906. By Prof. T. Hudson Beare, B.Sc., F.R.S.E., F.E.S. *Ent. Record*, February 1907, pp. 29-33.—Several Scottish records, all previously published, are referred to.

Psychodidæ in Dumbartonshire in 1906. By J. R. Malloch. *Ent. Mo. Mag.*, February 1907, p. 43.—Twenty species recorded, all identified by the Rev. A. E. Eaton.

The Grouse-Fly, Ornithomyia lagopodis, sp. n. By D. Sharp, M.A., F.R.S. *Ent. Mo. Mag.*, March 1897, pp. 58-60.—This interesting new species is described from specimens captured in the northern half of Scotland.

A New British Flea. By the Hon. N. Charles Rothschild, M.A., F.L.S. *Ent. Mo. Mag.*, January 1907, p. 11.—A single specimen of a flea new to science, and named Ceratophyllus borealis, taken by Mr. Norman H. Joy on the Island of St. Kilda in July last, and probably found in the nest of a gannet.

Dragon-Fly Seasons of 1905 and 1906. By W. J. Lucas, B.A., F.E.S. *Entomologist*, February 1907, pp. 30-33.—Somatochlora arctica and Æschna cærulea taken by Mr. K. J. Morton at Rannoch.

Anurida maritima, Guer., and its Enemies. By Richard S. Bagnall. *Ent. Record*, March 1907, p. 71.—Found in July 1906, on the shores of Ayrshire, Arran, the Cumbraes, and the Kyles of Bute.

A Contribution to the Hydrachnid Fauna of Scotland. By Wm. Williamson. *Trans. Edinburgh Field Nat. and Micro. Soc.*, vol. v., part iv., pp. 239-242 (1906).—A list given of thirty species, collected chiefly in the neighbourhood of Edinburgh, Glasgow, and West Kilbride.

Notes on New and Rare Copepoda from the Scottish Seas. By Thomas Scott, LL.D. *24th Ann. Rept. Fishery Board for Scotland*, 1905, part iii., pp. 275-280, pl. xiv.—Three species are dealt with, one of which is new to science and called Amphiascus catharinæ.

The Encystment of Macrobiotus. By James Murray. *Zoologist*, January 1907, pp. 4-11 and figs. 1-5.—This paper includes the description of a new species illustrated in the figures and called M. dispar. Specimens were found in a pond at Nerston, near Glasgow, in Loch Tay, in a pond near Shetland, and in the Shetland Isles.

BOTANY.

On the Histology of Plant-galls: I. Xestophanes Tormentillæ. By R. A. Robertson (*Proc. Scot. Microsc. Soc.*, 1906, iv. pp. 136-141).

Flora of Cairnie Parish. By Peter Stuart, M.A., being pp. 191-198 in *The Parish of Cairnie* (Aberdeenshire), by James Pirie (Banff, 1906); an enumeration of species noted by Mr. Stuart as observed in the parish.

Notes on the "List of British Seed-plants and Ferns." By James Britten, F.L.S., and A. B. Rendle, D.Sc., F.L.S. (*Journ.*

Bot., 1907, pp. 99-108), being an explanatory commentary on the more important alterations in nomenclature made in the List by these authors, just published by the Trustees of the British Museum.

Hieracium Notes. By Rev. Augustin Ley, M.A. (*Journ. Bot.*, 1907, pp. 108-112). Enumerates and describes Scandinavian forms recently detected in Britain. Among these is *H. pinnatifidum*, Lönnr., from 89 and 96.

Notes on Limonium. By C. E. Salmon, F.L.S. (*Journ. Bot.*, 1907, pp. 24-25). Treats of *L. binervosum* (= *L. occidentale* = *Statice Dodartii*, Bab.), and records var. *humile* from near Cramond (83, Midlothian) in 1842, as well as from Mull of Galloway.

New and Rare British Hepaticæ. By Symers M. Macvicar (*Journ. Bot.*, 1907, pp. 63-66). Of references to Scottish plants are a disentangling of *Lophozia badensis*, (Gottsche) Schiffn., from *L. turbinata* (Raddi), (with records for *L. badensis* from counties Ayr, Edinburgh, Fife, and East Ross), and a record of *Prionolobus striatulus*, (C. Jens.) Schiffner, from Lousie-wood Law, in Lanark, new to Scotland.

Aspicilia Lilliei, n.sp., and Rhizocarpon Lotum, Stitz., in Scotland. By M. Bouly de Lesdain (*Bull. Soc. Bot. France*, 1906, pp. 515-517). Found by Rev. D. Lillie in Caithness, in 1905.

BOOK NOTICES.

Ootheca Wolleyana; an illustrated Catalogue of the Collection of Birds' Eggs formed by the late John Wolley, M.A., F.Z.S. Edited by Alfred Newton. Part IV. Alcæ–Anseres: with Supplement and Appendix. London: R. H. Porter. Price 25s. net.

We cordially congratulate Prof. Newton on the completion of his great tribute to the memory of the late John Wolley. The collection which it describes so well not only includes the historical one formed by Mr. Wolley, but also that amassed with great and unremitting care during the past sixty years or more by Prof. Newton himself. Some idea of the extent of these combined cabinets may be gathered from the fact that their history and description occupies no less than 1289 pages of letterpress and forms two handsome volumes. This magnificent collection, we are glad to learn, has been presented by Prof. Newton to the Cambridge University, in whose Museum of Zoology it finds a most appropriate resting-place. Like its predecessors, this final Part deals with a number of species

around whose nesting haunts and eggs little or nothing was known when Wolley embarked upon his adventurous and arduous expeditions to northern Europe in search of reliable information regarding them. Fortunately, and thanks to his enthusiasm and indomitable industry, many triumphs were achieved, and these are related in the "Ootheca" in the delightfully simple words in which he recorded them in his field-books ere the flush of success had passed away. Those who have not made a study of the literature relating to the nidification of our British birds are unaware how much John Wolley contributed towards the making of the history of quite a remarkable number of our rarer and more interesting species. It is a book whose freshness will never fade, while its historical associations will secure for it a permanent place among the classics of ornithological literature.

A series of appendices are devoted to reprints of Mr. Wolley's other contributions to Natural History. These are of an interesting and varied nature, and many of them relate to Scottish subjects.

The Aquatic Birds of Great Britain and Ireland. By Charles J. Patten, M.A., M.D., Sc.D. With many illustrations. London: R. H. Porter, 1906. Price 30s. net.

Prof. Patten has good claims to be the author of such a work as the one under notice. He has devoted over twenty years to the study of his subject, and being a field observer of the best type has made himself familiar with most of the species either in their native swamps and marshes, or on our shores and mud-flats during the periods of passage or in winter. The first-hand information thus acquired has enabled him to add to our knowledge and to introduce into his book that strong personal element which never fails to be appreciated, and which renders such works of special value and, needless to say, adds immensely to their attractiveness.

The species dealt with in this volume, which contains over 600 pages, are the Cormorants, Gannet, Herons, Ducks, Geese, Pigeons, Game-birds, Rails, Crakes, Bustards, Plovers, Snipe, Gulls, Terns, Skuas, Guillemots, etc., and Petrels. It will be noted, however, that a few of the groups included are eminently terrestrial, but Prof. Patten pleads that it is inadvisable, from the systematic standpoint, to omit the species which happen to resort to dry situations: a plea which hardly applies to whole Orders such as the pigeons, for instance. An excellent feature of the book is the systematic arrangement of its subject matter, which renders it possible to at once find the precise information wanted concerning any species. Thus we have for each species and under definite headings, sections devoted to food, flight, voice, geographical distribution, descriptive characters (including all stages of plumage), and average dimensions. The book throughout bears evidence of having been prepared with the greatest care; it affords much original and interesting information, and is an

excellent up-to-date manual on the British aquatic birds, native and migratory. It contains many excellent illustrations, of which 56 are full-page and 68 are text figures, a goodly number of which are original, and all are acceptable and worthy of reproduction.

A Natural History of the British Butterflies. Vol. i. By J. W. Tutt, F.E.S. London: Elliot Stock, 66 Paternoster Row, E.C. Price 21s. net.

With astonishing rapidity and unflagging industry Mr. Tutt has again issued one of his important volumes on British Lepidoptera. We were partly prepared for the appearance of the one now under consideration, since it consists of the first twenty parts of the work announced under the above title, which has been appearing regularly for some months. No one foresaw, however, not even the author himself (as he frankly confesses), that the account of the Rhopalocera would run to such a length. With 470 pages in the volume and only ten species dealt with, it strikes one that surely everything has been said about the creatures that need be. The only fear is whether some of the details given are not really *de trop*. For instance, does it serve any useful purpose to give a list, extending over half-a-dozen closely printed pages, of the times of appearance of the Small Copper? However, the author may have his reasons for entering into such minute detail, and, at any rate, the possession of such a volume renders all other works superfluous, excepting, of course, such as are embellished with fine coloured plates.

The introductory chapters are particularly interesting, and full of information such as might be difficult to find elsewhere. These preliminary chapters are fourteen in number, four of which deal with egg-laying, egg-structure, and the photographing and collecting of eggs, while the structure (external and internal) and habits of larvæ furnish material for other seven which run to over sixty pages. The species treated of in Part II. (the bulk of the volume) are the eight "Skippers" and the two "Coppers," and it must be somewhat alarming to the young amateur to find so many of them under new and unfamiliar generic names. However, our indefatigable and always careful author has gone fully into questions of classification and nomenclature, and before his special knowledge in such matters we can only bow the head in silent acquiescence.

The serious student of Lepidoptera in Scotland will find the present volume, like its predecessors, absolutely indispensable. The twenty excellent photographic plates help materially to render the book attractive as well as useful. Got up in the same style as the previous four volumes, the text is so closely printed that the pages have a somewhat forbidding aspect. When one commences to read, however, this feeling soon passes away, especially in the introductory chapters, and the reader commences instead to admire the energy and enterprise of the author.

We understand that the second volume, on Butterflies, will be published in twenty parts at one shilling each net. This method of publication should enable any one at all interested in the subject to procure the work without feeling the expense. P. H. G.

The British Tunicates; an unfinished Monograph by the late Joshua Alder and the late Albany Hancock, F.L.S. Edited by John Hopkinson, F.L.S., F.G.S., Secretary of the Ray Society. Vol. ii. With lives of the Authors by Canon A. M. Norman and the late Dennis Embleton. London: Ray Society, 1907.

Never in the whole course of its long career of usefulness has the Ray Society been doing better work for British Naturalists than during recent years. Through its benign agency a number of singularly valuable and much-needed monographs have been issued, which, in all probability, would not otherwise have seen the light on account of the expense involved in their production. The volume for 1907 is the second of the unfinished work on British Tunicates by two great masters on the subject, both, alas, no longer with us, but concerning whom biographies are furnished by contributors most competent to write them. The volume is illustrated by thirty plates, chiefly coloured, and has been edited by Mr. John Hopkinson, to whom we offer our congratulations on the excellence of this latest production of the Ray Society.

Illustrated Handbook to the Perthshire Natural History Museum, and a brief Guide to the Animals, Plants, and Rocks of the County. By Alex. M. Rodger, Curator. Second edition. Perth: The Society, 1906. Price 3d.

This is an excellent little guide to the collections of the Perth Museum, which is one of the best arranged local institutions of its kind in Great Britain. It treats mainly of the fine series of specimens illustrating the Fauna, Flora, and Geology of the extensive and varied surface of the County of Perth; affording in a series of annotated lists much information in brief on the Perthshire mammals, birds, reptiles, amphibians, fishes, plants, trees, fungi, etc.; and also an enumeration of the rocks and minerals. Another section is devoted to the Index and Type Collections, concerning which it gives reliable and appropriate information for the use of the visitor to the general collections to be seen in the Museum. It is a neat and well-illustrated Handbook, and reflects great credit on the Curator, Mr. Alexander M. Rodger; and the Society is to be congratulated on its all-round excellence, and its usefulness not only in the Museum, but outside of it.

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IN MEMORIAM: ALFRED NEWTON.

With Portrait.

The death of such a distinguished naturalist as Professor Newton demands some notice in the pages of this magazine. With him ornithological science has lost its brightest ornament, and the zoological editors of "The Annals" a very old and greatly revered friend.

Alfred Newton, the fifth son of William Newton, Esq., of Elveden Hall, Suffolk, was born on the 11th of June 1829, and died at Cambridge on the 7th of June 1907, and had thus nearly completed the seventy-eighth year of his age.

Professor Newton was perhaps best known to British naturalists as the editor of volumes i. and ii. of "Yarrell's Birds": masterly productions, through which the literature of the ornithology of our islands was raised to its highest level, both in its scholarly and scientific aspects. His greatest work, however, was "The Dictionary of Birds,"—a volume which is a perfect mine of ornithological wealth, culled from marvellously wide sources, and illumined by original contributions of the greatest value. Another important work, and the last completed, was the "Ootheca Wolleyana," recently noticed in these pages. The papers which stand to his credit are many and important, and it is impossible to enumerate them here.

In 1866 he was appointed Professor of Zoology and Comparative Anatomy in the University of Cambridge (a post which he held to his death), and he was a Fellow of Magdalene College. He was editor of the second series of "The Ibis"; was chairman, for twenty years, of the British Association Committee on the Migration of Birds; and had filled the important offices of Vice-President of the Royal and Zoological Societies. In recognition of his services to science he received one of the Royal Medals of the Royal Society, and the Gold Medal of the Linnean Society.

No other British naturalist has ever done so much to foster the study of his favourite science, ornithology, as Alfred Newton. The position he held for so many years in his University afforded him great opportunities, and these, coupled with his singularly attractive and inspiring personality, made him the central figure and guiding spirit of a large and enthusiastic band of bird-men. The death of such a man is an irreparable loss to natural science, and creates a void in a host of friendships that will never be filled.

Obituary.

On 5th June died Alexander Somerville, B.Sc., one of the most keenly interested students of the natural history of Scotland, especially of its vascular plants, as the pages of this journal have frequently testified. His constant readiness to place his knowledge and help at the service of others, and his kindly nature, were such as to make his death a grief to his numerous friends. We hope to give a sketch of his services to Scottish botany in our next issue.

REPORT ON SCOTTISH ORNITHOLOGY FOR 1906.

By John Paterson.

In the annals of Scottish ornithology, the year 1906 is somewhat memorable for various reasons. Like its predecessor it owes some of its ornithological distinction to the

information which has resulted from Mr. Eagle Clarke's investigation of the avi-fauna of Fair Isle, especially at the period of the autumn passage. No particular reference can be made here to the details of this inquiry, as they have already appeared in full in an earlier number of this year's "Annals" (pp. 66-80). But the report would be incomplete without references to the important results obtained, and they are consequently briefly mentioned in their natural place under species.

During the spring passage the comparatively favourable conditions which obtained till mid-April were then interrupted by a period of cold and wet weather, which unhappily continued until the end of May. As a result of this unfavourable change at a critical period for the appearance of one of the most satisfactory to observe of all our visitors—the Willow-Wren, we find its appearance in numbers later by a week or ten days than in the two preceding years.

The phenomena of the autumn passage would alone lend the year distinction however. The first great rush of the season was on the 20th and 21st September, when thousands of Meadow Pipits appeared at Skerryvore with a S.E. wind, and among other species a Yellow-browed Warbler. This synchronised to a day with the appearance of the Red-breasted Flycatchers, Arctic Bluethroats, and Yellow-browed Warblers at the Fair Isle, but the movement does not seem to have been observed on our coasts generally. Between 5th and 10th October a rush of a "very unusual and extensive kind" was noted at Lerwick, the call of the Redwing being distinguishable,—and this species supplies the dominant note of the great October movement of 1906. It was by the 10th October numerous at Spiggie, in numbers all over the island at the Pentland Skerries, while a flock is reported on the same date at Sule Skerry. This movement seems to have been confined to the extreme northern group of localities, but a different story falls to be told of that which took place ten days later. On the 19th October "very large numbers" are reported from Kirkliston, on the 20th "immense flocks" at Spiggie, and on the 21st at the Bell Rock, thousands are reported, many being killed; a

"rush" at the lantern at Sule Skerry; a "great rush" at Skerryvore, the "numbers were far in excess of anything seen here for years": 98 birds of this and other species being picked up on the gallery of the lantern next morning (p. 23), while at Mull 100 are noted as arriving—all on 21st October, and like the previous movement with a S.E. wind. On the 22nd, at Pentland Skerries a "great rush" of Fieldfares, Redwings, etc. The influence of this extraordinary inrush was felt throughout the winter. To it is probably to be attributed the fact of the Redwing being "more abundant than usual" this winter at Kirkliston, of the "large flocks here this winter" recorded from Newburn, and of the fact that the writer has never in his experience in the Glasgow district seen so many Redwings as during the winter of 1906-7. To give a concrete illustration of this I may say that in an equal number of excursions for observation in the winters of 1905-6 and 1906-7, I find five entries of Redwings in the former to sixteen in the latter. From Carmichael, the Rev. J. D. W. Gibson writes —"We had an unusual number of Redwings with us this autumn. Some seasons this species is very rare on migration here. Both Fieldfares and they have been in large flocks." Later Mr. Gibson writes—"This species [Redwing] was very abundant in November, and it is not usual to find any so late here."

Another distinction of the last quarter of 1906 was the appearance in unusual numbers, and so far as "Clyde" is concerned at any rate, of unprecedented numbers of the Brambling. Fife correspondents write—"There have been larger flocks about here during December than we have ever seen before." At Kirkliston they have been "unusually numerous this winter." In Mull, where they arrived on 18th October, they "betook themselves to Aros beech woods," where 500 or so remained till 30th December when they left." Though much larger flocks have occurred in "Solway" in some other years, Mr. Service has never known them so "generally diffused." At Carmichael in Lanarkshire, they were in enormous flocks, and the Rev. Mr. Gibson writes— "I should say there are more of this species than of any other with us at present." Curiously the lighthouse

returns throw no light on the great immigration of this species.

The last distinction of the interesting quarter which closed 1906, was the great movement connected with the outbreak of boreal conditions on the afternoon of Christmas day, which has been dealt with for English and Irish localities in the pages of the "Zoologist" in January, February, March, and April of this year. Referring to his experience at Fairlie, Ayrshire, Mr. Robert Wilson writes of the 26th December thus :—"At Brigaird Point, from daybreak until well on in the forenoon, a great movement took place—Starlings and Skylarks in thousands, great numbers of Chaffinches, Redwings, and Fieldfares, many Ring-Doves and a few Stock-Doves, and one Kestrel, all flying in little trips low over the ground, and coming out from the land along the ridge of the Spit and disappearing over the water due west. Many Common Snipe along the shore line, one Jack Snipe, Golden Plovers abundant. Hundreds of Wigeon and a good many Mallards flighting over the Black Rock after sundown, making but poor headway against the bitter blast." This narrative may be followed appropriately by this note under 3rd January 1907, in the Schedule from Douglashead Lighthouse, Isle of Man :—"Great number of Meadow-Pipits and Wrens found dead amongst the rocks where they had taken shelter from the snow-storm."

Cordial thanks are given to the numerous correspondents through whose kind co-operation it has been possible to make this report. The compiler hopes that the good work will continue to receive their support and that this national undertaking may improve with the flux of time.

TURDUS VISCIVORUS (Mistle-Thrush).—In song, Glasgow, 28th January; Mull, 20th February; Edinburgh, 21st; Kirkliston, 26th. Nest in crevice of stone quarry close to ground at Kirkliston. Its breeding in the Outer Hebrides may now be considered established (p. 17). Passing south, in Mull on 5th August, 10th September (large numbers), and 26th (7). In song again, Edinburgh, 23rd December.

T. MUSICUS (Song-Thrush).—In song, in Mull, 5th January; Kirkliston, 23rd. Reappears Caldwell (Renfrew), 29th January, and returns to Carmichael (Lanark), 6th February. Nest of

Blackbird with four Song-Thrush's eggs at Beith. Nest very shallow and out of order. Singing on Eval, North Uist, at about 800 feet, and Mr. Kinnear was much struck with dark coloration of all seen in Barra and the Uists (p. 17). Last in song, Kirkliston, 6th July. Sings again, 16th September, and intermittently in many localities till 20th December. All over the island at Pentland Skerries on 10th October, when there was another movement, 2nd to 10th November.

T. ILIACUS (Redwing).—Last seen mainland in spring, in several localities, 2nd to 4th April. In autumn, first at Pentland Skerries, 16th September (1); many passing Skerryvore, 27th; Mainland appearances, 4th October, Glasgow and Kirkliston; 6th, Beith (Ayr). For remarkable immigration on 21st October, and abundance during winter on mainland, see introduction. Dates of chief movements, 10th and 21st October, and 10th November.

T. PILARIS (Fieldfare).—Last mainland observations in spring, 1st to 6th May, exactly a month later than preceding species. First autumn appearances, 8th to 10th October, Sule Skerry and Spiggie, Shetland. On the mainland, 13th October, Burntisland; 18th, Mull; 19th, Caldwell. Greatest movement of immigration, 21st to 22nd October (see introduction). Abundant all winter throughout parts of mainland whence observations come.

T. MERULA (Blackbird).—No important movement whatever recorded. Singing in Edinburgh district in the end of January and continued till 8th July.

T. TORQUATUS (Ring-Ouzel).—Mull, 4th April; Beattock, 10th. Mull, 30th June, begin to gather and all local birds away a month later. Nine on Ben Ledi on 22nd September (W. Evans). Between 7th October and 4th November a few at Sule Skerry, Pentland Skerries, and Bell Rock.

SAXICOLA DESERTI (Desert Wheatear).—One sent in the flesh from Pentland Skerries, secured 26th May.

S. ŒNANTHE (Wheatear).—24th March, Lendalfoot (Ayr); 26th, Skerryvore; 1st April, North Berwick; 2nd, Beith and Crail; 5th, Swordale, E. Ross; 6th, Broughton, Beattock, and Mull. Spring passage reported at lighthouses till 26th May. 5th June, Eden, Fife, one (♂) with white head. In autumn, 20th August, Skerryvore, and daily a few till end of September. Latest mainland occurrences, 10 and 11th October, Crail.

PRATINCOLA RUBETRA (Whinchat).—1st May, Drumeldrie (Fife), and Broughton (Peebles); 2nd, Mull; 5th, Bute; 18th, Carmichael (Lanark). In May at the Fair Isle on eight occasions, and the same number of times in September (p. 75).

P. RUBICOLA (Stonechat).—Fair Isle, a few throughout April and one in September (pp. 75, 76).

RUTICILLA PHŒNICURUS (Redstart).—April 20th, Coldstream (♂); 28th North Berwick; 1st May, Beattock; 2nd, Lendalfoot (♂); 6th, Mull; 8th, Burntisland. May 25th, at Luss, Loch Lomond, two nests with six fresh eggs each. At North Ronaldshay, 16th September (3); Pentland Skerries, 19th; Skerryvore, 21st (1); Pentland Skerries, 5th October; Lerwick, 9th (several). From middle to end of September quite common in Fair Isle and stragglers till late October. Almost as frequent and abundant there in May after the first week (p. 75).

CYANECULA SUECICA (Bluethroat).—On Fair Isle on 20th September and following days, a dozen seen, others no doubt escaping notice (p. 75). Unst, 25th September (1); 26th (2), (p. 58).

ERITHACUS RUBECULA (Redbreast).—A straggler at the Fair Isle in September, it was occasionally seen in considerable numbers in October and November. Not much observed in the spring (pp. 74, 75). Numerous at Spiggie (Shetland) on 23rd October; a number at Pentland Skerries on 2nd November; a few during the day with snow on 30th December at same place.

SYLVIA CINEREA (Whitethroat).—6th May, first observed at Cadder, near Glasgow. Reported from five localities between 11th and 16th. Laying at Kirkliston on 27th May, it was last in song there on 23rd July. Several at Saltoun, 13th September.

S. CURRUCA (Lesser Whitethroat).—Not uncommon on three days in May at Fair Isle, and one remained till 18th June. Seen there nine days in September, and the last on 4th October, the day Mr. Clarke left the island (p. 73). This is an interesting series of observations on a most elusive Scottish species.

S. ATRICAPILLA (Blackcap).—At Kirkliston on 15th May. On 24th August at Bell Rock (1); 5th October, Spiggie (Shetland) (1); 12th Pentland Skerries (1); 23rd Spiggie, several.

S. HORTENSIS (Garden-Warbler).—At Eaglescarnie, Haddington, 2nd May (H. N. Bonar). Kirkliston, 13th, and Rouken Glen, Glasgow, 16th. Last in song on 11th July at Kirkliston. On 5th October one shot at Pentland Skerries and sent in the flesh, and on 8th October a number there.

REGULUS CRISTATUS (Golden-crested Wren).—In song in Mull on 20th February. Nest on a cypress about 3 inches from the trunk at Beith, the closest to the trunk Mr. Craig has seen it in his long experience. Pretty generally observed from the 1st till the 21st of October from the Bell Rock to Spiggie (Shetland).

Phylloscopus superciliosus (Yellow-browed Warbler).—In the second half of September and early days of October, six at the Fair Isle (p. 74), and on 21st September one at Skerryvore (p. 51).

P. rufus (Chiffchaff).—At Lendalfoot (Ayr), 4th April; Beith (Ayr), 15th; Coldstream, 18th (H. N. Bonar). At Whittingehame, 5th June (H. N. Bonar). At the Bell Rock one killed 28th August, and one on 10th October at Fair Isle (p. 74).

P. trochilus (Willow-Wren).—Lendalfoot, 5th April; Carmyle, near Glasgow, 13th, and Kirkliston same date. First recorded as abundant on 28th on the Cart near Glasgow, and at Edinburgh on 1st May full numbers. Singing softly at Pencaitland on 11th September, it is last recorded for the mainland on the 18th at Gilston, Colinsburgh.

P. sibilatrix (Wood-Wren).—On 4th May appears at Burntisland; 7th, Roslin Glen, several (Evans); 8th, Kirkliston; 12th, Mull, but Mr. M'Donald writes that in a given area in Aros Woods there, but two pairs occurred where twenty could have been marked in former years. There was a small addition to the nesting birds there, however, early in June.

Acrocephalus streperus (Reed-Warbler).—The first Scottish example was shot on the Fair Isle on 24th September (p. 74).

A. phragmitis (Sedge-Warbler).—Several appeared at the Bell Rock on 12th May, two being killed. It is reported as occurring at Kirkliston on 13th, and was laying there on 2nd June. Last in song at Glen Dam (E. Renfrew) on 28th July, and Kirkliston on 1st August. Last seen on the mainland at the Lake of Menteith (Binnie) on 12th September, in which month there were two occurrences in the latter half at the Fair Isle, where it was not uncommon from the second week till the end of May (p. 74).

Cinclus aquaticus (Dipper).—In Mull begins on 1st March repairing nest which has been used for the past eight years. The nest is a formidable affair now. Two broods were reared, and the autumnal song began on 22nd August. At Alyth (Perth), on 23rd March, has young birds (Dr. Dewar). Returned to winter quarters at Caldwell (Renfrew) on 26th September.

Certhia familiaris (Tree-Creeper).—On 19th May, in Bute, a nest with six fresh eggs (R. Wilson). One of the Continental race found exhausted at the Fair Isle on 27th December (p. 72).

Motacilla lugubris (Pied Wagtail).—On 4th March returned to Caldwell, and on 22nd to West Calder. A dozen at North Ronaldshay on 24th, and on 26th, a pair by the river, inland

at Swordale, East Ross. On the 26th April, Mr. Robert Wilson saw over forty roosting in reeds at the Little Loch (E. Renfrew). At Beith, a Blackbird's nest of the year with three Pied Wagtails' eggs was found, of course the Wagtail lined the nest to fit itself. No important movements reported in autumn, and none observed on Fair Isle on September 1905 or 1906 (p. 72).

M. ALBA (White Wagtail).—Beginning at Beith on 8th April, this species is observed on the west coast in Mull, Barra, and the Flannans, up till 3rd June, at last-named locality. The other spring records are April and May, at the Fair Isle (p. 72); a few pairs at Dornoch Firth on 22nd May, and two seen at Sule Skerry on 9th. In autumn a dozen are reported from Sule Skerry on 30th August. It was one of the commonest birds of passage on the Fair Isle in September as in 1905 (p. 72), and was numerous at Spiggie (Shetland) on 14th.

M. MELANOPE (Grey Wagtail).—Returned to Caldwell on 5th March; Kirkliston, 13th; and Mull, 31st, where a few remained till 31st December. Young away at the Rouken Glen, Glasgow, on 16th May.

M. RAII (Yellow Wagtail).—Appeared first in Clyde at Beith, 15th April. A male was captured at the Fair Isle on 8th May—an exceptional occurrence (p. 72).

ANTHUS TRIVIALIS (Tree-Pipit).—At Kirkliston, 24th April; Mull, 26th; Caldwell, 30th; Cadder, near Glasgow, 6th May, many. Last in song at Kirkliston, 16th July.

A. PRATENSIS (Meadow-Pipit).—Returned to Carmichael (Lanark), 19th March; Mull, 21st, on the moors but not numerous yet; Mearns Moor (E. Renfrew), returned, 25th. On 2nd June, Mr J. Craig writes from Beith, that he found a Meadow-Pipit's nest with two eggs and a Cuckoo's egg, but they were cold. He visited the nest a week later, but it was forsaken as the eggs were still cold—probably the full clutch had been laid before the Cuckoo deposited her egg, and she reduced the number to two which caused the Pipit to forsake. This, Mr. Craig, who has very great experience, never knew a Pipit to do before, and thinks it must have been a young bird. On 20th and 21st September at Skerryvore there was a great rush of Meadow-Pipits with a S.E. wind—thousands being observed (see introduction).

LANIUS EXCUBITOR (Great Grey Shrike).—One seen at Unst on 24th October, and on 27th December at Newtonairds (Dumfries), a young male of the double-spotted form (p. 112).

L. COLLURIO (Red-backed Shrike).—Several late in May and early in June at Fair Isle (p. 73).

MUSCICAPA ATRICAPILLA (Pied Flycatcher).—One at Scoughall, east of North Berwick, on 8th May (W. Evans). Another at Skerryvore on 21st September, in which month at Fair Isle small parties were passing at intervals (p. 76).

M. GRISOLA (Spotted Flycatcher).—Two are reported from Unst on 10th April, by T. Edmonston Saxby (p. 50), an extraordinary date for a species that is pretty free from any vagaries in the way of early occurrences. The next date is just at the time it is expected, 10th May, Dunbar, thereafter follow, 14th, Kirkliston, 18th, Carmichael. Several appeared at Fair Isle from late May till beyond mid-June, but only one in autumn, on 15th September (p. 76). It was laying at Kirkliston on 6th June. From 28th July till end of August it was abundant at Colinsburgh, and is last recorded for the mainland in East Ross on 13th September.

M. PARVA (Red-breasted Flycatcher).—Three or four observed on 20th and 21st September at Fair Isle, and another there on 4th October (pp. 76, 77).

HIRUNDO RUSTICA (Swallow).—Beith, 6th April; Carmyle (Glasgow), 13th; Lendalfoot, 18th; Carmichael, 20th; Kirkliston, 21st; Blackford Hill, two on 6th May, "seems late in arriving in the district this spring (W. Evans); Edinburgh, 7th May, "now in full numbers" (Binnie); Mull, 26th May, "remarkable absence of species." In autumn reported from nine mainland localities in October, and on 22nd November, near Cockenzie, one was observed (W. Evans).

H. RUFULA (Red-rumped Swallow).—One at Fair Isle on 2nd June ("Annals," 1906, p. 205).

CHELIDON URBICA (House Martin).—On 16th April one at Colinsburgh flying north; appears Kirkliston 24th; 6th May, Mull; same date Canty Bay Hotel near North Berwick, where numbers breed annually, first two pairs appeared (W. Evans); May 8th, Largo, several. In Mull nesting abnormally late, young of first and only brood leave nest on 8th August. At Aberlady on 29th September, young still in nest. Last observation Crail, 16th October (2).

COTILE RIPARIA (Sand-Martin). On 3rd April at Burntisland; 12th at Beith, and same day at Dunbar, one (Evans); 13th, Elie, four (Evans); 13th, Cambuslang; 18th, Coldstream, several. Last seen Largo Bay, 18th September, with other species.

Ligurinus chloris (Greenfinch).—Earliest nesting reported Colinsburgh, 27th April, three eggs. Last nesting 26th August, Kirkliston. Last in song 19th August, Edinburgh. Must have been breeding for some time at Stornoway where Kinnear observed a few in the Castle grounds (p. 19). From 10th November till 8th December at Mull, almost solely confined their attention to seeds of the Burdock (*Arctium Lappa*), and was the only species so doing. Previous to this with Twites at seeds of Knapweed (*Centaurea nigra*). A few remained in Mull till 31st December. At Stobcross Quay in Glasgow Harbour on 28th December, a flock of 40/50 suddenly appeared on the deck of the Anchor Line Co.'s S.S. *Persia*. This was during the hard spell which began on Christmas day (see introduction).

Coccothraustes vulgaris (Hawfinch).—One caught at Skerryvore on 11th November.

Carduelis elegans (Goldfinch).—One at Cow Parsnip (*Heracleum Sphondylium*) in Mains Woods, Giffnock, East Renfrew, on 11th November (R. Wilson). Information about this bird as a Scottish species is desirable. The paucity of observations that comes is remarkable, now that we have so many interested observers.

C. spinus (Siskin).—Small flock resident during January at Carmichael (Lanark). Crail, 17th February, one. Swordale (E. Ross), 3rd March, several.

Passer montanus (Tree-Sparrow).—Nesting colony discovered in South Bute by John Robertson ("Annals," 1906, p. 237). On 14th July there, six or seven pairs seen by Robert Wilson, who found four nests with young and two with fresh eggs. At Kirkliston, 18th May, a full clutch partly incubated—three pairs nesting (*l.c.* p. 185). Half-a-dozen observed near Balmartin in North Uist. A colony of six pairs nests in the Castle grounds, Stornoway (p. 19). Nesting in the Columban ruins, Iona, with the House-Sparrow on 20th June. This, however, is an old station.

Fringilla cœlebs (Chaffinch).—On half-a-dozen dates between 23rd January and 12th February parties at the Flannans of from seven to thirty birds. At Kirkliston on 18th February in song, which it attempts at Garscadden, Glasgow, on same date unsuccessfully. Last in song 9th July, Kirkliston. Between 3rd and 16th October it is reported five times from the Bell Rock and Pentland Skerries. This was the month in which it was most abundant at Fair Isle (p. 69). There is no other reference to it from August till December in the schedules, etc., received.

F. MONTIFRINGILLA (Brambling).—Curiously the only light thrown on the appearance of this species in autumn are the records of "hundreds" at Sound, Shetland, 7th October, and of varying numbers, but only once of a large flock at the Pentland Skerries between that date and the 16th of same month. Nor can these trivial movements be connected with the great immigration to "Forth" and "Clyde" which took place apparently unobserved. Supplementing the observations already made in the introduction (*q.v.*), it may be said that from the Clyde above Lanark, through the Glasgow district, and on to the Gareloch and Bute and South Ayrshire they have been traced. Where in former years they were unknown they have become familiar, and where they were recognised as regular visitors, as at Carmichael, they have been in unprecedented numbers. So abundant was the beech-mast at Carmichael that they refused grain laid on the ground where they fed. The last of them had not left the Glasgow district on the 21st of April, and the Gareloch on 24th April 1907. On 11th December at Largs, one, pure white on crown of head, primaries, and scapulars. Whitish on back and rump. Breast pale plum colour, shading off to white. A little brown on the sides of the head, nape, and secondaries. On 5th January 1907 a cream-coloured one at Carmichael.

[It occurred in great numbers at Fair Isle from September 19 to end of October.—W. E. C.]

L. LINARIA (Mealy Redpoll).—A small party appeared on Fair Isle in May (p. 70).

L. RUFESCENS (Lesser Redpoll).—Bute, 19th May, a nest with four slightly incubated eggs, which is early (Wilson).

L. FLAVIROSTRIS (Twite).—In Bute on 19th May, a nest with six eggs on the point of hatching (Wilson).

PYRRHULA MAJOR (Northern Bullfinch).—One presumed to be this species on 7th, and another on 11th October at Lerwick (pp. 49, 50). Many (♂ and ♀) seen Unst, 4th November (p. 50). A few of both sexes in November for a few days on Fair Isle (p. 70).

CARPODACUS ERYTHRINUS (Scarlet Grosbeak).—One shot on Fair Isle on 3rd October, an addition to the Scottish Fauna (p. 70).

EMBERIZA MILIARIA (Corn Bunting).—At Whalsay, 8th February, a mixed flock. In N.W. Mull a passing migrant (1) on 2nd May. Last in song, 12th August, Edinburgh. At Fife Ness crowds sheltering on the lee side of turnip leaves on 15th October. At Lendalfoot (So. Ayr) about a hundred for a week "a very unusual sight here" (Chas. Berry).

E. CITRINELLA (Yellow Bunting).—At Kirkliston. Sings on 18th February. Last nest there 24th August and last in song 28th.

Only once observed in spring at Fair Isle, but occasionally numerous in autumn and a few remained for the winter (p. 71).

E. HORTULANA (Ortolan Bunting).—Quite a number during the last days of May, and one on 18th September at Fair Isle (p. 71).

E. PUSILLA (Little Bunting).—An adult female shot at Fair Isle on 3rd October (p. 71).

E. SCHŒNICLUS (Reed-Bunting).—At Kirkliston, nest in middle of hedgerow and another in barley field each some distance from water. Glen Dam, E. Renfrew, last in song 28th July. During last days of May and early June several at Fair Isle where it occurred from late September till 20th November (pp. 70, 71).

PLECTROPHENAX NIVALIS (Snow-Bunting).—In first half of year widely reported, except in south-west where only one bird (Cardross, 13th February) seen. First autumn appearance at Spiggie, Shetland, a flock on 8th October. A clutch from Rathen, Aberdeenshire, taken this season ("Annals," p. 115).

CALCARIUS LAPPONICUS (Lapland Bunting).—A few on Fair Isle in May, returned on 8th September, and seen almost daily after that date (p. 71).

STURNUS VULGARIS (Starling).—Lighthouse observation on this species quite trifling this year. At Glenorchard, Glasgow, most of the Starlings which roosted during the winter left in the first week of February. On 11th November at Drumpellier (Lanark) "the trees and lift were black with starlings. The trees with their visitors looked as if the foliage had suddenly appeared again. Not an inch seemed without its bird, while vast flocks circled around. Sudden movements would take place and a black mass would burst from a tree, thin out like dust and disappear from that tree's neighbourhood. It brought to mind what I had once seen at the blowing up of a land-mine" (Alex. Ross).

PASTOR ROSEUS (Rose-coloured Starling).—At Foula, Shetland, on 28th October, 5/6, one a fine ad. ♂ (p. 51).

PICA RUSTICA (Magpie).—In East Renfrew on 4th November a flock of ten and another of eleven (Rennie).

CORVUS MONEDULA (Jackdaw).—At Crosswood Reservoir, West Calder, four arrived 1st March, on 29th it was building at Kirkliston, and on 2nd April at Edinburgh, but it was just beginning to lay on 1st May at Cleghorn Woods, Lanark.

C. CORONE (Carrion-Crow).—Building at Kirkliston on 9th April. On 8th May in Fife, one killed a young Mistle-Thrush and carried it off to its nest.

C. CORNIX (Hooded Crow).—At the Flannans in twos or threes between 22nd January and 5th April. At Pentland Skerries

on 21st October a flock of thirty or forty. On 3rd November at the Bell Rock, several flying westward.

C. FRUGILEGUS (Rook).—On 21st January enormous gathering at Balgray, E. Renfrew. Clearing out old nest at Edinburgh on 4th February, building at Kirkliston, 22nd, and young out of nest there, 2nd May. A Lugton keeper estimates his loss in nests of Pheasant's eggs this season, owing to Rook's depredations, at fifty.

ALAUDA ARVENSIS (Skylark).—Singing at North Ronaldshay, where they had their first flock (20) for a long time on 18th February. On this date, also singing at Garscadden, Glasgow. In Edinburgh singing three days earlier. Reappears at Caldwell (E. Renfrew) on 4th March. On 27th May, at Edinburgh, young fully fledged and last in song there, 6th July. In the autumn, first movement recorded 19th and 20th September. Mull, passing south, flying high. Big accession to numbers at Kirkliston this month. In various localities, in song between 30th September and 4th November.

A. ARBOREA (Wood-Lark).—A few early in November at the Fair Isle, which remained till mid-December (p. 71).

OTOCORYS ALPESTRIS (Shore-Lark).—A small number at Fair Isle from the end of October till mid-December (p. 72).

CYPSELUS APUS (Swift).—Kirkliston, 4th May; Camphill, Glasgow (2); Giffnock (1); Blackford Hill, a dozen (Evans); North Berwick, all on 6th May. Largo, two flying north, and Forfar, several seen on 7th. On 20th a dozen passing north at Mull. Passing south again in Mull, 26th July till 1st August. Last record Kirkliston, 25th August.

CAPRIMULGUS EUROPÆUS (Nightjar).—On 26th May at Pentland Skerries remains found of a bird seen flying about middle of April. On October 2nd one seen at Pentland Skerries, and on 20th one found dead in the harbour at Lerwick.

IYNX TORQUILLA (Wryneck).—One at the Fair Isle on 3rd September (p. 78).

DENDROCOPUS MAJOR (Great Spotted Woodpecker).—From February till May at Southwick (Kirkcudbright) and at Closeburn (Dumfries), a pair at each but no nest found (pp. 112-113).

ALCEDO ISPIDA (Kingfisher).—On the Clyde near Glasgow, nest ready for eggs 13th April.

CORACIAS GARRULUS (Roller).—At Balnacoil on the Brora, Sutherland, one on 28th May ("Annals," 1906, p. 185).

UPUPA EPOPS (Hoopoe).—One picked up dead at Loch of Harray, near Stromness, on 16th November (The *Field*, 24th November 1906, p. 908).

Cuculus canorus (Cuckoo).—29th April, North Berwick; 30th, Caldwell and Broughton; 4th May, Beattock, Carmichael, and West Calder; 5th, Torduff, Pentland Hills (Evans), Bute and Inverbroom; 6th, Teasses and Lahill in Fife, Swordale (E. Ross), and Mull; July 3rd, calling half-an-hour at Caldwell. Said to be scarcer this year in North Uist and Lewis (p. 81). At Pentland Skerries, 7th November, one.

Strix flammea (White or Barn Owl).—27th July, returns to nesting-place (Edinburgh).

A. accipitrinus (Short-eared Owl).—Kinnear only saw one or two in the Outer Hebrides, and these were in South Uist (p. 81). 19th September, Dunnet (1); 8th October, Spiggie (Shetland), (1); 22nd October, Bell Rock, one caught in Tower window, Pentland Skerries same date (1); 23rd, Spiggie (1). In small numbers end October till second week November at Fair Isle (p. 78).

Nyctea scandiaca (Snowy Owl).—30th January, Unst, one shot (p. 50); 6th and 7th May, Flannans (1).

Circus cyaneus (Hen Harrier).—Twice seen in Barra and seen in North Uist where a few pairs said to nest (p. 81).

Buteo lagopus (Rough-legged Buzzard).—10th November or about that date, one killed in Gorebridge district (Evans). 16th November, one (♀) in Caithness.

Pernis apivorus (Honey-Buzzard).—One shot at Largo on 21st May ("Annals," 1906, p. 186).

Falco candicans (Greenland Falcon).—26th May, Barra, one shot ("Annals," 1906, p. 237).

F. islandus (Iceland Falcon).—Eye Peninsula, Lewis, 28th February, one obtained ("Annals," 1906, p. 185).

(*To be continued.*)

THE SPRING RETURN OF THE WOODCOCKS IN FORTH AND CLYDE.

By J. A. Harvie-Brown.

The return of the Woodcocks and the passing of the spring migration of these birds has always been a prominent feature in the central districts of Scotland, which lie between the Firths of Forth and Clyde; nearly always remarkable

for its punctual occurrence during the first ten to fourteen days of March. They are not shot now as formerly; and, indeed, I am one of those who are of the opinion that the well-known and vast increase, which has taken place in their numbers as a nesting species all over Scotland of late years, has been greatly due to this change in action by our best sportsmen.

It always seems desirable to carefully record such appearances of this interesting game-bird, and let me give such particulars as I can of the return of the Woodcocks in the spring of the present year, 1907, as instanced by information I have received from the extensive Woodcock covers of Touch, near Stirling, and elsewhere.

Mr. Simpson, head-keeper, at Touch, informs me that "The Woodcocks were seen on the 10th March (1907) to the number of perhaps 200 to 300." On the 10th snow lay on the ground to a uniform depth of some $2\frac{1}{2}$ inches. The keepers at Touch were tracking foxes at the time the flight of Woodcocks was met with. Mr. Simpson continues, "It is about eight or nine years ago that I saw anything like the above, and it was, if I remember aright, in the first week in March; and they only stayed one day, and the weather was open and fine at that time.[1] Also, 1900 was a good season—*i.e.*, shooting season. I saw in October, in the high wood of Touch, in about twenty acres, over 100.

"When we were shooting this year (1906), on the 4th December we killed thirty-one Woodcock. They just come in for a day or two, though we also have a good few all the year round; and I have seen young on the 20th April well fledged. I got three this year in one day with only one leg each. They might have been shot off, or the birds snared, and the wire have cut them through, or someone might have put rings on too tight when young."

In intimate connection with the above information, I may add the following:—On the 5th December 1907, when shooting our covers here at Dunipace, which covers face the south (Touch covers face the north and east), our party saw, at least, twenty birds; and of those driven out of

[1] 1895 was a year disastrous in the annals of the Woodcock population in the north and west of Scotland.

cover seven were shot by the 'guns' outside. As sportsmen know, two 'guns,' walking quietly with a spaniel, would probably have accounted for a good many more. Our cover seldom holds so many Woodcock per acre as equally adapted covers which face the north and east. Torwood covers, where I have seen thirty-five and thirty-eight shot in a day, face north and east, and so, as seen above, do the covers of Touch, which are the Woodcocks' favourite holds. Again on the following Saturday (15th December) thirty-eight[1] were shot on Mugdock ground, in the south-west of the county, and on Torwood, above mentioned, thirty-two; and I have other returns to show the inrush, and probably continued residence for ten days or more, of the autumn flights of Woodcock in Central Scotland in 1906.

In the history of the bird in this district I can go back to 1865, when I found my first Woodcock's nest, duly recorded at the time in the pages of the "Zoologist."

The date of these eggs was 25th April, but they were very hard set. I have already related elsewhere the late hatching off of Woodcock in our covers here in 1902; and, on that occasion, I accounted for the lateness, and for the abnormal numbers nesting on our ground of both Woodcocks and Snipe, by the sudden and great cold snap of 2nd and 3rd May, which recorded 17° of frost over a great part of the North of Scotland; and the succeeding north-east blizzard of wind and sleet and snow, which continued well into June, with little or no change in direction. As I have also related, the large number of young Snipes hatched on our ground at that late date in May, about the 10th May 1902, perished, and were found in numbers dead within a few feet of the empty shells. Now, I think there can be scarcely any reasonable doubt that both these large accessions of Snipe and Woodcock in Central Scotland in the late nesting season of 1902 (and again, almost similarly, in 1904) were directly due to the first layings having been destroyed on the morning of that phenomenal exposition by King Frost, viz. on the morning of the 3rd May, over a large extent of their northern breeding range in Scotland, and a consequent crushing down of the Snipe and Woodcock population after that event; or otherwise,

[1] The usual average at Mugdock for a whole season is about that figure.

check had been applied to the productiveness even of the first laying of these Snipe and Woodcocks' eggs, and their season abruptly (3rd May) put off. That is a point for the physiologists to decide, and scarcely affects the chapter in the life-history of the Woodcock which I am desirous of trying to elucidate.

Returning to the subject of the return of the Woodcocks in spring, it is worthy of passing remark, that, however regularly, and however abundant the birds may appear in Central Scotland early in March, no such great wave of flight appears to take place to the east of the narrow winding tideway of the Forth, or rather I should say, no such phenomenon has as yet been recorded, nor have I ever succeeded in obtaining records or statistics of any such return from anywhere in Fife south of the Ochils, and we have some good observers living along that line, *i.e.* south of the Ochils from near Alloa to the East Neuk. Nevertheless, on occasions of phenomenal returns, I have had abundant proof of their enhanced numbers or sudden appearances from most covers between this place and the south side of the river Forth, on Polmaise, Dunmore, and Airth Castle grounds, and on the flat moss, which is partly upon Dunmore, Airth, and Kinnaird.

Now, the area within which the return of the Woodcock is known and spoken of as a well-known annual phenomenon of migration, I beg to define as stretching between the upper estuaries of Clyde and Forth (spring return), or Forth and Clyde (autumn), and including in breadth from the southern boundaries of the watersheds of Tay with Forth, and the southern boundary of Forth, so far as the area is included between the Firths of Forth and Clyde (of the rest of the Forth area I do not speak here). The expression, "return of the Woodcocks," so far as I am aware, was originally and solely used in that so-defined district. It may have been, and may now be, used elsewhere; but I have known of it in Forth and Central Forth as long as I can remember, and heard it so spoken of by our fathers. But I do not recollect hearing it used anywhere else in Scotland until perhaps occasionally much more recently.

Now, of the further extension of the migrations, spring

and autumn, of the Woodcock to the west, in contradistinction to its extensions as recorded to the east (*vide antea*), we have abundance of evidence; but perhaps no one has paid such complete and thorough attention to this part of our inquiry, and as regards its increase and extension as a nesting species, as Mr. R. M. Buchanan of Fairholm, Giffnock, Renfrewshire, whose careful and excellent accumulations of statistics and ingeniously marked mapping of the Clyde area, north of the firth, we hope to reproduce in reduced form at some future time.

Now, all the above may at this time form one chapter only in the completed history of the distribution, dispersal, and migrations of the species in Britain.

But, to complete such a history, it would be necessary to analyse all the records as far back as the history of the species in Britain can take us; and these brought down to date for every county or every definable natural area from as early a period as possible. That done, then it would be desirable to continue the inquiry upon more elaborated lines, and to see whether the results fit in with our previous knowledge and these said analyses, or in what respects they differ.

Then the present contribution and its significance might merely occupy one small paragraph, or one portion of a whole chapter, if properly condensed.

Here lies work for those who do not consider that our knowledge of this species is yet completed. And in this work lies a suggestion of similar endeavour as regards the distribution, dispersal, and migrations of every species known in the country, whether resident or migrant, whether breeding or merely passing portions of their lives in this country.

This knowledge of species, if acquired in any country which is included within the range of all seasons of each species, in time could scarcely fail to illuminate the still brooding darkness which surrounds these several natural phenomena. Future means towards advancing the information may be found in marking (or labelling) birds caught for the purpose, and released, so that the individuals may be recognisable whenever they may a second time be met with.

Something has been attempted on these lines already

but would have to be done upon a much more extensive scale if reasonable expectation of success is to follow, and some systematic plan be followed universally.

Much has been done, but much more remains to be undertaken, and it must be by combined and widespread endeavour, to be successful.[1]

In reference to the date mentioned in the text above, viz. the 10th March, it is interesting to note that "G. L." in "The Field" (of May 25, 1907, pp. 863-4), gives details of the migration of the birds as observed by him in Jutland, distinguishing the area there of the principal movements between the 7th March and the 14th, and again other later flights. It appears to the present writer that these Jutland notes have direct bearing upon the subject of this paper.

THE BLACK SEA-BREAM (*CANTHARUS CANTHARUS* (L.) = *CANTHARUS LINEATUS* (MONT.)), IN THE FIRTH OF FORTH.

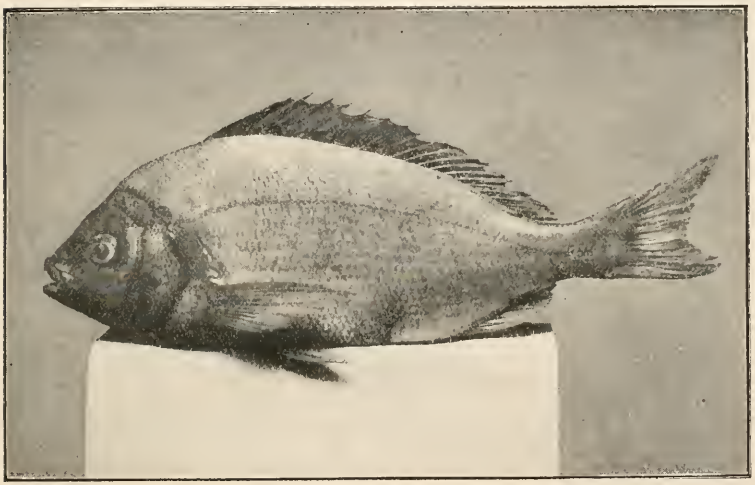
By William Evans, F.R.S.E.

On 13th April last (1907) a strange fish was captured in the salmon-nets at the Aberlady end of Gosford Bay on the south side of the Firth of Forth. It was taken to my friend Mr. James Lamb, Aberlady, who at once sent me word, enclosing a rough drawing of the fish, and asking what I thought it would be. The sketch clearly indicated a Sea-Bream of some kind; and as the members of that group are all uncommon in the Firth, I asked Mr. Lamb to send me the fish for examination, which he most kindly did. On its arrival I was pleased to see that it was a Bream, and a closer examination of its characters left no doubt that it was a fine example of the *Cantharus lineatus* of Montagu, known on the English coasts as the "Black Sea-Bream" or "Old Wife." The total length of the fish was about 17½ ins., and

[1] But the foundations have been laid down, and the first endeavour ought to be to collate all previous data and result, then start afresh.

its greatest depth about $5\frac{1}{2}$ inches; so that it was clearly a full-grown specimen. Its general colour was silvery-grey, darker above and paler beneath, very much the same as in a salmon.

The species is not included in Parnell's well-known Essay on the Fishes of the Firth of Forth, published in 1837; but in Günther's Catalogue of the Fishes in the British Museum, a specimen—from the Parnell collection—from the Firth of Forth, is mentioned. When at the British Museum a few weeks ago, Mr. Eagle Clarke had, through the courtesy of Mr. Boulenger, an opportunity of



seeing this specimen, which he tells me is labelled simply "Firth of Forth; presented by Dr. R. Parnell, January 4, 1839." It is about 15 ins. in length, and I think we may assume that it was captured in 1838. The example I now have the pleasure of recording would thus appear to be but the second that has been obtained in the Firth, and the first to which a precise locality and date can be assigned.

The species, which is abundant in the Mediterranean and adjacent parts of the North Atlantic, occurs, according to Day's "British Fishes," not infrequently along the west and south coasts of England, but becomes rare in the North Sea, where it has, however, been met with off the north of

Scotland (Banffshire coast, *T. Edward*), and the south of Norway. Prof. F. A. Smitt, in his "History of Scandinavian Fishes" (1893), p. 55, writes of it as follows:—"From its proper home, the Mediterranean and the Atlantic between the Canary Islands and England, the Black Sea-Bream has several times wandered north and been met with on the south coast of Norway, up to Trondhjem Fjord. On only one single occasion, however, has it been found in Swedish waters. . . . It is extremely improbable that it propagates its species north of England, as only full-grown specimens, and never small fry, have been taken there. . . . Its flesh is generally little esteemed, but in the north of France it is considered fairly good."

The present specimen, it should be stated, has been presented to the Royal Scottish Museum, Edinburgh. A photograph of it, taken by my son, W. E. Evans, is here reproduced.

ON THE DIPTERA OF ST. KILDA.

By Percy H. Grimshaw, F.E.S.

I am indebted to my friend the Rev. James Waterston, B.D., B.Sc., for the privilege of examining a very fine collection of Diptera made by him in the island of St. Kilda during the months of June and July 1905. As considerably over one thousand specimens were taken with discrimination and carefully pinned by Mr. Waterston, it may fairly be claimed that the present collection is a representative one, and that the following list gives a tolerably good idea of the actual Dipterous fauna of this small and remote, but none the less interesting portion of the British Isles. Although I have been able to clearly distinguish 119 species, yet a number of these have baffled any attempt on my part to identify them specifically. It is possible that some of those still unnamed may be new to science, while the most interesting of those satisfactorily determined include such species as *Diamesa tonsa*, Hal. (probably never seen since the type was described fifty years ago), *Rhamphomyia fumipennis*, Zett.

(a rare species), *Tachypeza nervosa*, Mg., and *Lonchoptera trilineata*, Zett. (both new to Britain), *Cœnosia geniculata*, Fln. (rare), and *C. albicornis*, Mg. (new to Britain). All the specimens are in beautiful condition, and it is a pleasure to add that with characteristic generosity Mr. Waterston is presenting a selection of them to the Royal Scottish Museum.

In the following list a few notes of interest have been added by Mr. Waterston. These are placed within square brackets, and have the initials J. W. appended.

Family MYCETOPHILIDÆ.

1. SCIARA *sp.*—1 ♀ belonging to the section IIa. 1c. of Winnertz' monograph.
2. SCIARA *sp.*—1 headless ♂, with yellowish halteres, pitchy legs and shining black thorax.
3. BOLETINA *sp.*—2 ♂ ♂ and 1 ♀.
4. BOLETINA *sp.*—Three specimens of a smaller species than No. 3.
5. LASIOSOMA HIRTUM, *Mg.*—1 ♂.
6. SCIOPHILA *sp.*—1 ♂.
7. MACROCERA FASCIATA, *Mg.*—1 ♂.

Family BIBIONIDÆ.

8. SCATOPSE NOTATA, *Linn.*—Four specimens.
9. DILOPHUS FEBRILIS, *Linn.*—6 ♂ ♂.

Family CHIRONOMIDÆ.

10. ORTHOCLADIUS ? SORDIDELLUS, *Zett.*—4 ♂ ♂ and 4 ♀ ♀ of what I believe to be this species.
11. ORTHOCLADIUS *sp.*—1 ♀ of a species coming near *variabilis*, Staeg., but I cannot exactly identify it.
12. TANYTARSUS TENUIS, *Mg.*—1 ♂ and 2 ♀ ♀ of this elegant and delicate species.
13. TANYTARSUS *sp.*—2 ♂ ♂, possibly *vernus*, Mg.
14. METRIOCNEMUS FUSCIPES, *Mg.*—2 ♂ ♂ and 1 ♀.
15. DIAMESA TONSA, *Hal.*—A single ♂ belonging to this genus agrees pretty well with Haliday's description of *tonsa* in

Walker's "Ins. Brit." vol. iii. p. 195. The peculiar genitalia appear to mark off this species from its allies, as well as the remarkable antennæ, which are figured in Walker's work. Unfortunately Haliday's type cannot be found in the collection at Dublin, and I believe the St. Kilda specimen is the first obtained since.

16. Ceratopogon flavipes, *Mg.*—5 ♂♂ and 21 ♀♀. The colour of the legs varies, in some specimens being almost entirely pitchy or blackish.

17. Ceratopogon *sp.*—2 ♀♀ of a species with hairy wings.

Family LIMNOBIIDÆ.

18. Limnobia nubeculosa, *Mg.*—2 ♂♂.

19. Dicranomyia mitis, *Mg.*—2 ♂♂ and 1 ♀.

20. Goniomyia tenella, *Mg.*—8 ♂♂ and 7 ♀♀, one pair being *in cop.*

21. Rhypholophus nodulosus, *Mcq.* 1 ♂ and 1 ♀.

22. Erioptera fuscipennis, *Mg.*—6 ♂♂ and 1 ♀.

23. Erioptera trivialis, *Mg.*—1 ♀.

24. Limnophila meigenii, *Verr.*—5 ♂♂.

Family TIPULIDÆ.

25. Tipula ? confusa, *Wlp.*—2 ♂♂.

26. Tipula ? marmorata, *Mg.*—1 ♂ and 2 ♀♀.

27. Tipula oleracea, *Linn.*—4 ♂♂ and 1 ♀.

28. Tipula *sp.*—1 ♂ near *flavolineata*, Mg.?

29. Tipula *sp.*—1 ♀ near *vernalis* Mg.?

Family TABANIDÆ.

30. Haematopota pluvialis, *Linn.*—3 ♂♂ and 5 ♀♀. [During the last week of my stay this was a pest. J. W.]

Family EMPIDÆ.

31. Rhamphomyia fumipennis, *Zett.*—1 ♂ and 2 ♀♀ of this fine and rare species. At first sight rather like *sulcata*, Fln., but easily distinguished by its blackish halteres. Previously recorded as British only from Muchalls (Aberdeenshire) and Rannoch (Perthshire).

32. Empis stercorea, *Linn.*—1 ♀.

33. Empis *sp.*—1 ♂ and 2 ♀♀ of a small shining black species with simply ciliated dark legs.

34. Hilara *sp.*—15 ♂♂ and 9 ♀♀ of a species belonging to the *chorica* group, but I cannot determine it with certainty.

35. Clinocera fontinalis, *Hal.*—2 ♂♂ and 5 ♀♀. [On surface of water in the "Well of Virtues," West Bay.—J. W.]

36. Hemerodromia precatoria, *Fln.*—4 ♂♂ and 14 ♀♀.

37. Tachypeza nervosa, *Mg.*—1 ♀ and 2 ♂♂. Although not recorded as British I can come to no other conclusion than that the St. Kilda specimens represent the true *nervosa* of Meigen. I have also seen specimens of the same species from Aberfoyle taken by Mr. A. E. J. Carter.

38. Tachydromia compta, *Wlk.*—4 ♀♀.

39. Tachydromia *sp.*—1 ♂ and 5 ♀♀ like *cursitans*, Fab., but the abdomen has no grey side-spots.

Family DOLICHOPODIDÆ.

40. Dolichopus atratus, *Mg.*—16 ♂♂ and 15 ♀♀. [Abundant everywhere, especially in marsh. J. W.]

41. Dolichopus plumipes, *Scop.*—41 ♂♂ and 24 ♀♀. [Abundant everywhere, especially in marsh. J. W.]

42. Dolichopus griseipennis, *Stann.*—16 ♂♂ and 12 ♀♀. [Abundant, but chiefly in marsh. Later in appearance than the other two species of the genus. J. W.]

43. Syntormon pallipes, *Fab.*—2 ♂♂ and 2 ♀♀.

44. Campsicnemus *sp.*—1 ♀.

45. Sympycnus annulipes, *Mg.*—14 ♂♂ and 15 ♀♀.

46. ? Schoenophilus *sp.*—Two specimens of a tiny species which appears to belong to this genus, but it is not *versutus*, Wlk.

47. Represented by five specimens which I am unable to determine.

Family LONCHOPTERIDÆ.

48. Lonchoptera trilineata, *Zett.*—6 ♂♂ and 10 ♀♀. These agree fairly well with Zetterstedt's description, and I cannot make them fit with any other species, in spite of the fact that *trilineata* is not on the British list.

Family SYRPHIDÆ.

49. Liogaster metallina, *Fab.*—6 ♂ ♂ and 2 ♀ ♀. [Common in and near marsh by sweeping. J. W.]

50. Platychirus manicatus, *Mg.*—6 ♂ ♂ and 2 ♀ ♀. [Very common in north of island, a few in cultivated area in south. J. W.]

51. Platychirus clypeatus, *Mg.*—11 ♂ ♂ and 9 ♀ ♀. [Abundant in marsh in south of island, a few on the cliff ledge in north. J. W.]

52. Melanostoma mellinum, *Linn.*—A single ♂ with dark abdomen totally devoid of spots and the legs much darker than the typical form. [In marsh. J. W.]

53. Ascia podagrica, *Fab.*—4 ♂ ♂ and 17 ♀ ♀. [Somewhat large specimens, but antennæ and cross-vein obscuration typical. J. W.]

54. Eristalis arbustorum, *Linn.*—19 ♂ ♂ and 16 ♀ ♀. [Common, latterly abundant. In cultivated area only, and there chiefly on flowers of Marigold. J. W.]

55. Helophilus pendulus, *Linn.*—3 ♂ ♂ and ♀ ♀. [Seen only on two days in the month, first one then a dozen, on Marigold. J. W.]

56. Syritta pipiens, *Linn.*—4 ♂ ♂. [Generally distributed. In cultivated area and on cliff edges; never in numbers. J. W.]

Family TACHINIDÆ.

57. Siphona geniculata, *Deg.*—4 ♂ ♂.

58. Cynomyia mortuorum, *Linn.*—4 ♂ ♂ and ♀ ♀. [Abundant especially on north slope. Has a curious habit of settling on grass. J. W.]

59. A specimen which I cannot identify, coming somewhere near *Brachycoma*.

Family MUSCIDÆ.

60. Myiospila meditabunda, *Fab.*—1 ♂ and 4 ♀ ♀. [Swarming in marsh. J. W.]

61. Calliphora erythrocephala, *Mg.* — 1 ♂ and 3 ♀ ♀. [Common. J. W.]

Family ANTHOMYIIDÆ.

62. HYETODESIA INCANA, *Wied.*—13 ♂♂ and 2 ♀♀. [Swarming in marsh. J. W.]

63. HYETODESIA OBSCURATA, *Mg.*—18 ♂♂.

64. HYETODESIA LONGIPES, *Zett.*—15 ♂♂ and 4 ♀♀. [Common. Scattered specimens in cultivated area, common in marsh. J. W.]

65. HYETODESIA *sp.*—1 ♀ not determined, with black legs, striped thorax, and yellowish cinereous indefinitely tessellated abdomen.

66. SPILOGASTER DUPLICATA, *Mg.*—1 ♂ and 10 ♀♀.

67. LIMNOPHORA SOLITARIA, *Zett.*—15 ♂♂ and 11 ♀♀. [Always near water. Common in burn in glen; swarming in marsh. Has the habit of settling on stones. J. W.]

68. HYDROTÆA DENTIPES, *Fab.*—10 ♂♂ and 5 ♀♀. [Common in cultivated area and in marsh. J. W.]

69. ANTHOMYIA RADICUM, *Linn.*—2 ♂♂.

70. PHORBIA FLOCCOSA, *Mcq.*—4 ♂♂.

71. PHORBIA PUDICA, *Rnd.*—4 ♂♂.

72. PHORBIA *sp.*—52 ♂♂ of a species which may be *ignota*, Rnd., or something near.

73. PHORBIA *sp.*—8 ♂♂.

74. PHORBIA *sp.*—2 ♂♂. (Also 14 ♀♀ of the genus *Phorbia* not identified).

75. PEGOMYIA BICOLOR, *Wied.*—7 ♂♂ and 4 ♀♀.

76. HOMALOMYIA CANICULARIS, *Linn.*—1 ♂

77. HOMALOMYIA SERENA, *Fln.*—34 ♂♂ and 14 ♀♀.

78. AZELIA ZETTERSTEDTI, *Rnd.*—1 ♂.

79. AZELIA CILIPES, *Hal.*—1 ♂.

80. CŒLOMYIA MOLLISSIMA, *Hal.*—18 ♂♂ and 18 ♀♀. [Noted in hundreds on a hot day towards the end of June. On *Ranunculus acris* flowers, not elsewhere. J. W.]

81. CŒNOSIA GENICULATA, *Fln.*—7 ♂♂ of this rare and interesting species.

82. CŒNOSIA ALBICORNIS, *Mg.*—15 ♂♂ of this species (which is new to Britain) correspond exactly with the descriptions given by Meigen and Schiner.

83. CŒNOSIA *sp.*—10 ♀♀ undetermined. All the femora are dark and the tibiæ light.

Family CORDYLURIDÆ.

84. Scatophaga stercoraria, *Linn.*—4 ♂ ♂ and 4 ♀ ♀. [Very common everywhere except on exposed rocky heights. J. W.]

85. Scatophaga merdaria, *Fab.*—5 ♂ ♂ and 2 ♀ ♀ of this doubtfully distinct form.

86. Scatophaga squalida, *Mg.*—7 ♂ ♂ and 6 ♀ ♀. [Common with *S. stercoraria*. J. W.]

87. Scatophaga litorea, *Mg.*—5 ♂ ♂ and 12 ♀ ♀. [On the lower part of the island. J. W.]

Family HELOMYZIDÆ.

88. Blepharoptera modesta, *Mg.*—1 ♂ and 1 ♀.

89. Blepharoptera *sp.*—1 ♀ near *flavicornis*, Lw.

90. Blepharoptera *sp.*—4 ♂ ♂ and 2 ♀ ♀ undetermined.

Family SCIOMYZIDÆ.

91. Elgiva albiseta, *Scop.*—4 ♂ ♂ and 2 ♀ ♀. [Common in marsh. J. W.]

Family SEPSIDÆ.

92. Nemopoda cylindrica, *Fab.*—2 ♂ ♂ and 2 ♀ ♀.

93. Themira putris, *Linn.*—5 ♂ ♂ and 3 ♀ ♀.

Family PIOPHILIDÆ.

94-95. Piophila *spp.*—23 specimens belonging to this genus represent, I believe, two distinct species, but I cannot satisfactorily identify them. One has a black epistome and the other a yellow one.

Family EPHYDRIDÆ.

96. Notiphila uliginosa, *Hal.*—9 ♂ ♂ and 14 ♀ ♀.

97. Hydrellia griseola, *Fln.*—39 specimens, sex not determined.

98. Hydrellia nigripes, *Zett.*—1 ♂.

99. Hydrellia ranunculi, *Hal.*—4 ♂ ♂ and 3 ♀ ♀.

100. Scatella stagnalis, *Fln.*—3 specimens.

Family DROSOPHILIDÆ.

101. Scaptomyza graminum, *Fln.*—4 specimens.

102. Drosophila *sp.*—1 specimen.

Family OPOMYZIDÆ.

103. Balioptera combinata, *Linn.*—1 ♀.

Family CHLOROPIDÆ.

104. Oscinis pusilla, *Mg.*—4 specimens.

105. Centor cereris, *Fln.*—1 specimen.

106. Chlorops *sp.*—3 specimens.

Family AGROMYZIDÆ.

107. Schœnomyza litorella, *Fln.*—9 ♂♂ and 27 ♀♀. Some of the ♀♀ show three shining black fasciæ on the abdomen where the posterior edge of a segment slides under the anterior edge of the succeeding one. The question has occurred to me whether Meigen's *fasciata* is not founded on specimens in this condition. So far as I can see there is no other difference between the two species.

108. Ceratomyza denticornis, *Panz.*—13 specimens.

109. Agromyza nigripes, *Mg.*—1 specimen.

110-112. Phytomyza *spp.*—6 specimens representing at least 3 species.

Family BORBORIDÆ.

113. Borborus nitidus, *Mg.*—1 ♂ and 1 ♀.

114. Borborus geniculatus, *Mcq.*—1 ♂.

115. Borborus ? vitripennis, *Mg.*—1 ♀.

116. Limosina sylvatica, *Mg.*—4 ♂♂ and 5 ♀♀.

117. Limosina fontinalis, *Fin.*—3 specimens.

118. Limosina crassimana, *Hal.*—3 specimens.

119. Limosina *sp.*—1 specimen.

Note.

Since the above paper was in type I have received some notes from Mr. Waterston regarding the capture of certain of the Diptera, also in reference to the weather conditions, methods of collecting, and other information of some interest. His remarks are incorporated in the following paragraph.

The specimens were taken on Hirta, the main island of a group of four which are collectively called St. Kilda. The other three are known as Boreray, Soay, and Dun. Mr. Waterston's stay on the island extended from 17th June to 17th July inclusive, and from information since received it appears that the weather conditions were unusually favourable for insect life. The Diptera formed by far the largest part of the insect fauna noted. In one little patch—the marsh—they rose in swarms on hot days. In the evenings collecting was done by sweeping, and on one occasion over 2000 specimens were obtained in a quarter of an hour. On some days hardly anything new was added to the previous captures, as Mr. Waterston made it a rule that if he recognised a species he took as little of it as possible. Some species, however, occurred with persistent regularity, and consequently the rule was occasionally broken unconsciously. Under these circumstances it is, therefore, important to note that the number of specimens of a species in the collection is no clue to the frequency of its occurrence on the island. The occurrence of *Cœlomyia mollissima* is of particular interest. It was only seen on a single day on a ledge about 100 feet from the top of the cliff and 400 feet from sea-level. This ledge was covered with a good layer of blackish earth enriched by droppings of puffins and other organic debris. The place was moist, had a luxurious vegetation, and in June and July the heat was great in the forenoon. *C. mollissima* occurred on every buttercup, and the point of interest was that, as this fly usually frequents moist woods, it occurred here on St. Kilda only on the one spot where the conditions were similar.

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ON THE SCOTTISH SPECIES OF *OXYURA* (*PROCTOTRYPIDÆ*).—Part II.[1]

By P. Cameron.

Scelioninae.

The species of this group are parasitic in the eggs of other insects. Says Dr. Ashmead of them in his "Monograph of the North American Proctotrypidæ," p. 137, "This group is probably the most extensive in the whole family, and of the

[1] Part i., *antea*, p. 34.

greatest economic importance, all the species comprising it being strictly egg parasites, scarcely a single order of insects being free from their attack." Most of them are of very minute size. Marshall records 61 British species, mostly described by F. Walker.

Teleasini.

Teleas, Lat.

1. *coriaceus*, K. Bonar Bridge.

Hoplogyron, Ashm.

1. *cursor*, K., Thornhill, April, in sphagnum.
2. *nigerrimus*, K., Clober.
*3. *timarte*, Wlk., Bute in June.
4. *bacilliger*, K., Ben Clibrich, Sutherlandshire; Manuel.
5. *rufonotus*, K., Thornhill, in haystalk; Manuel.
6. *micropterus*, K., Eccles, in haystack.
7. *levigena*, K., New Galloway.
*8. *mermerus*, Wlk., Bonar Bridge, Dumfries, New Galloway.
*9. *ægele*, Wlk., Bonar Bridge.
10. *antennalis*, K., Clydesdale.
11. *striatigena*, K., Bishopton, Dalmally.
12. *agilis*, K., Eccles.
13. *carinifrons*, K., Eccles, in haystack; Bonar Bridge.
14. *punctatifrons*, K., Claddich.
15. *fimbriatus*, K., Clydesdale.
16. *Cameroni*, K., Dumfries, New Galloway.

Gyron, Hal.

*1. *misellus*, Hal., Eccles.

Ceraphroninæ.

A very extensive group, and, as most of the species are parasites on aphidæ, of great utility to the farmer and gardener.

Megaspilini.

Lagynodes, Foer.

*1. *pallidus*, Boh., Ballantrae.
2. *reflexus*, Ruthe, Mugdock.
3. *rufescens*, Ruthe, Clober, Dumfries, Manuel, Sutherlandshire. I have this species from the London district and from Scarborough (D. Sharp).

Aphanogmus, Thoms.

1. *furcatus*, K., Mugdock.

Megaspilus, West.

*1. *dux*, Curt. Clydesdale.
2. *rufimanus*, K., Kingussie.
*3. *punctulatus*, Cam. Tr. Ent. Soc. 1881, 557, Dalry, Ayrshire.
*4. *Mullensis*, Cam. *l.c.* 558, Ben More, Mull, 2000 feet.

Conostigmus, K.

1. *Carpenterei*, K., hills near Stirling.
2. *nigriventris*, K., Clydesdale.
3. *subfilicornis*, K., Galloway, Bishopton, Eccles, Dumfries, Strathblane.

I took this species near Gloucester, and Mr. C. G. Champion gave me a specimen from Lee and Houndslow in the London district.

*4. *rufipes*, Nees, Manuel.
5. *dubiosus*, K., Clober, Thornhill.
6. *fasciatipennis*, K., Clydesdale.
7. *planifrons*, K., Ballantrae.
8. *lucidus*, K., Bishopton.
9. *lentus*, K., Dumfries.
10. *versicolor*, K., Clober, Mugdock, Kilpatrick Hills, Dalmally, Claddich. Probably a common and widely distributed species.

[*lineatifrons*, K., I have this species from the Manchester district, and *C. humilis*, K., from Dunham Park, Cheshire.]

11. *punctifrons*, K., Claddich.
12. *inconstans*, K., Bishopton. Also from Houndslow, Surrey (C. G. Champion).

C. inconstans, K., var. *pennatus*, K., has been taken by Mr. Champion at Lee, Surrey.

13. *levifrons*, K., Mugdock.
14. *apterus*, K., Clydesdale.
15. *clavicornis*, K., Manuel.
16. *basalis*, K., Clyde near Newton.
17. *britannicus*, K., Mugdock.
18. *brachypterus*, K., Clober.
19. *rhopalophorus*, K., Clydesdale.
20. *rufescens*, K., Clyde near Cambuslang.
21. *ruficollis*, K., Clober Moor.
22. *scabriventris*, K., Clober, Dalry, Colvend.

I took *C. testaceipes*, K., in Cheshire; Mr. Champion captured *C. crassinervis*, K., at Box Hill, and *C. leptothorax*, K., at Caldon, Surrey, all three being additions to the British Fauna.

What may be an undescribed species of *Conostigmus* was taken by me at Claddich.

Lygocerus, Foer.

1. *subquadratus*, K., Clober.
2. *breadalbanensis* (Cam.), K., Ben Lawers in July at a height of about 3900 feet.
3. *aphidivorus*, K., Kelvinside, Mull. Bred from an Aphis on Southernwood (Artemesia) in my garden at Whitle, Derbyshire.
4. *rectangularis*, K., Manual, Dumfries. Bred from Rose-aphis in June at New Galloway.
5. *semiramosus*, K., Cadder.
6. *fusciventris*, K., Mugdock.
7. *bicolor*, K., New Galloway. Also a specimen taken at Ben Lawers, along with *L. breadalbanensis*.
8. *rufiventris*, K., Clydesdale.
9. *frenalis*, K., Loch Libo.
10. *sordidipes*, K., Bonar Bridge; *L. Cameroni*, K., was taken by my old friend, F. G. Binnie, at Tadcaster, Yorkshire.

Trichosteresis, Foer.

*1. *glabra*, Boh., Cadder, Bishopton. I have also taken it near Gloucester.
2. *punctatipennis*, K., Clober.

Ceraphron, Jur.

Marshall, in his Entomological Society's Catalogue, records 8 British species of this genus, and in "The Entomologists' Annual," 1874, p. 146, he records an additional species, *C. scutellaris*, Thoms., from England, I presume, but no locality is given. It is noteworthy that of his 9 species, 7 of them are Scandinavian species described by C. G. Thomson. It might have been expected that some of Thomson's species would have been taken by me. As a matter of fact the 6 species I have captured are undescribed.

1. *Cameroni*, K., Eccles, Thornhill, in haystack. September.
2. *spinifer*, K., Eccles, Moffat. May.
3. *noticus*, K., Clyde, near Cambuslang.
4. *armatus*, K., Manuel. August.
5. *nigraticeps*, K., Cockerloy Hill, Linlithgow, August; Clober.
6. *nigrelliceps*, K., Eccles. September.

THE FALSE-SCORPIONS OF THE WEST OF SCOTLAND.

By Robert Godfrey.

The following list of False-scorpions known to occur in the West of Scotland is given in the hope that it may rouse the interest of other naturalists in this little-studied group. It contains seven species, in comparison with eight known from the East coast. Of the seven, three have not yet been taken in the Eastern division of Scotland, and two of these are new to the Scottish list. The list has, however, some very conspicuous omissions :—*Cheiridium museorum* (Leach), *e.g.*, ought to be as common here as in the East of Scotland, though it has so far eluded my search in haylofts and other likely places ; *Chelifer rufeolus*, Simon, ought also to be discovered in old byres and barns ; and, during the months of August and September, *Chelifer nodosus*, Schrank, should be occasionally at least seen clinging to the legs of flies on our window panes. Then, again, *Chelifer cimicoides*, F., and other species which live under the bark of old trees in England, should yet be found in similar situations in the S.W. of Scotland. Careful search would, I have no doubt, soon raise our list to nearly double its present number.

Chelifer dubius (*Cambridge*).—Two individuals, found in company with *Ideoroncus cambridgii* and *Chthonius rayi*, were taken by Mr. Robert Whyte on a piece of driftwood near Balmacara House, Ross-shire, on August 27, 1906. *Ch. dubius* makes a nest for moulting purposes only. The adults do not hibernate inside nests, nor does the female make any nest for the purposes of reproduction, but simply carries her embryonic mass about with her attached to the under surface of her hind-body.

Chelifer cancroides (*Linn.*).—This species was added to the Scottish list on April 2, 1907, on the strength of a single specimen found among hayseed in a Glasgow stable. Later search, however, revealed a large colony living in the joints of old harness buried in the hayseed. On April 29, Robert

Whyte and I obtained the moulting nests of the species between the tightly-sewn pieces of harness leather.

Ideoroncus cambridgii (*L. Koch*).—Though as yet undetected on the East coast, this is a widely distributed species on the West, ranging from Balmacara, Ross-shire, through Argyll and Ayr, to the Solway Firth. It occurs on several of the islands, as on the Maiden Island and Kerrera at Oban, and on the Rough Island in the Solway; abounds on natural ground near the sea, and ranges inland to Ben Cruachan and the western shore of Loch Awe. In spite of its abundance, nothing is yet known concerning its reproductive habits, and no evidence is yet forthcoming of any nest-building habits in this species.

Obisium maritimum, *Leach.*—The only Scottish locality for this species yet known is at the head of Loch Fyne, near Shirvan, where it was discovered by Mr. Henry Drummond Simpson and myself in September 1904. It lives under stones below high-water mark, and constructs nests for moulting and for reproduction.

Obisium muscorum, *Leach.*—Universally distributed from Strome Ferry and the hills of Skye to the Solway Firth. I have personally taken it in Ross, Skye, Argyll, and small islands off-shore, Dumbarton, Lanark, Renfrew, Ayr, and Kirkcudbright.

This species, like the two species of Chthonius hereafter mentioned, constructs nests for the various purposes of moulting, hibernating, and reproduction.

Chthonius tetrachelatus (*Preyss*).—Next to *O. muscorum* the present species is probably the most widely-distributed of our Scottish False-scorpions. In the western counties, it has been taken in Argyll, Renfrew, Ayr, and Kirkcudbright. Besides haunting natural hillsides, this species occurs about farm-steadings, and is frequently to be obtained about empty flower-pots and old bricks in conservatories. My observations on the nest-building habits of this species were first carried out in Ayr and Argyll.

Chthonius rayi, *L. Koch.*—The most northerly haunt known for this species in Scotland is at Balmacara, West Ross, where Messrs Whyte and I took about two hundred specimens in the autumn of 1906. It is recorded from Oban by Mr. Evans, and was taken near Dalbeattie by Mr. Aird Whyte in January 1907.

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ON THE FLORA OF SHETLAND.

By William H. Beeby, F.L.S.

Since my last article on this subject ("Annals," January, 1892), many visits have been made to the islands, but naturally there has not been so much to record as during the earlier years of the work. Moreover, the habit of returning several times to the same place, for the purpose of elucidating some doubtful point, does not tend to produce the greatest number of new records. A considerable amount of matter has, however, accumulated, and it seems desirable that it should now be published.

In the interval a new edition (1903)[1] of Edmondston's "Flora" has been issued under the editorship of Mr. C. F. Argyll Saxby, a nephew of the author. It is difficult to know how to describe this work, which is neither a simple reprint, nor a new edition brought up to date. It comprises most of the species recorded in the original work, and the arrangement and nomenclature are modernised. Many of the records and remarks of the present writer are incorporated, but not those of the earlier observers, Tate, Craig-Christie, etc.; so that a number of more or less common plants are, in consequence, absent from its pages. Certain plants recorded by Edmondston in his "Flora" are also omitted, apparently quite at haphazard. Thus, on the one hand, we note the exclusion of, for example, *Daucus Carota*, which really was an erroneous record, although the plant still flourishes in the Shetland of "Topographical Botany"; while, on the other hand, Mr. Saxby excludes *Ranunculus Ficaria*, *Sinapis arvensis*, *Silene acaulis*, *Arctium*, *Aira præcox*, and others, all of which are recorded by Edmondston, and all of which really do occur; the last in particular being one of the most prevalent plants. There are three or four new records which will require confirmation. Mrs. Jessie M. E. Saxby, a sister of the author, contributes a brief but interesting biography of the youthful botanist, whose short life came to so tragic a close but ten months after the

[1] Oliphant, Anderson and Ferrier. Price 2s.

publication of his "Flora," and while he was still only in his twenty-first year. The book is well printed, and is withal so light and portable, that it is regrettable that it should not be a more reliable guide to the Flora of the islands.

One or two mistakes have crept into Mr. Bennett's supplement to "Topographical Botany"; and, as the practice with regard to Shetland plants is, "once a record, always a record," it may be well to dispose of them before they have become established on the permanent list. I do not deal with some instances of what I regard as omissions, and confine myself to the other side of the question:—"*Viola lutea*, Beeby (?)." I think this should read "Beeby spec. (?)," which is not quite the same thing. Certainly a little doubt was felt about some of my Unst gatherings in 1886 or 1887, but the plants were referred without hesitation to *V. tricolor* by Professor Babington, and I have not seen any reason to doubt the correctness of his determination. "*Carduus nutans*, Evans." This was but a single specimen on the beach, "very likely from the rubbish of boats" (A. H. E. *in litt.*). This record appeared to me so unlikely when first published, that I wrote to Mr. Evans for details, with the above result. "*Scirpus acicularis*, Beeby." This was an error of mine, and was subsequently withdrawn ("Journ. Bot." 1894, p. 87). Mr. Bennett wrote recently that he had unfortunately omitted to take note of the correction, hence the record. Besides these, there are "*Mentha arvensis*, all except 71"; and "*Alnus glutinosa*, all except 111." What is the authority for the occurrence of these two plants? Shetland is not credited with them in Professor Trail's "Additions," and I have been unable to trace any record of their being found.

Concerning the forms of *Ranunculus acris* named below, I must call to mind that in "Scot. Nat.," January 1891, I wrote of *R. Steveni*, and of the burnside form (presumably intending *R. vulgatus*), that "cultivation of the two states indicates that the differences between them are due to situation alone." I cannot now recall the experiment; but I was then living in London, and my plants grown at Reigate were about that time removed to my late mother's new garden at Worplesdon. There may have been some

mixture of roots; but in any case recent observations lead me to think that the statement quoted above is incorrect.

In the following list all new records since my last paper are marked with an asterisk, although some of them have already been recorded, of course without locality, in the supplement to "Top. Botany." Other abbreviations are :—

D = Dunrossness.
N = Northmaven.
S = Sandsting and Aithsting.
U = Unst.
L = Neighbourhood of Lerwick.
Conf. = Confirmation of previously unconfirmed record.

In order to prevent misunderstanding, it must be observed that the term *form*, when used by Rouy and Foucaud, Alfred Fryer, and, I believe, the late F. Townsend, indicates a grade *superior* to the variety; intermediate, that is, to the variety and sub-species.

Ranunculus Drouetii, F. Schultz.—This must replace my previous record of *R. trichophyllus*, made in error. Messrs. H. and J. Groves write, "In spite of the dark colour, we should refer this to *R. Drouetii*, rather than to *R. trichophyllus*." Occurs both in Kirkiegarth Loch and Bardaster Loch, Walls; by the shallow stony shores the plant forms small tufts a few inches high, but in deep water the stems are two feet long, or so. Both states flower under water.

R. acris, L.—The following short account is founded mainly on Mr. Rouy's determinations of some of my plants sent to him by Mr. F. Townsend. As Rouy and Foucaud sometimes use the same name both for a sub-species and also for a form of that sub-species, I have written the aggregate names, as of Rouy and Foucaud, to avoid misunderstanding.

Sub-sp. I. *R. Borœanus*, Rouy and F., form *R. rectus*, Bor. D. Quendale Sands, L. Scalloway, N. Hillswick, Ollaberry (R.), U. Baltasound.

Sub. var. *pumilus*, Rouy and F.—Rocks by the Loch of Lumbister, Yell (R.). I now doubt whether the type *R. Borœanus*, Jord., occurs.

Sub-sp. II. *R. Steveni*, Andrz.—D. near Skelberry, L. Bressay; pastures by Asta and Tingwall Lochs. N. Ollaberry (R.).

Sub-sp. III. *R. Friesianus*, Rouy and F., form *R. vulgatus*, Jord. D. near Spiggie, L. Burn between Lerwick and Grimista. N. Estwick Burn, Ollaberry (R.); form *R. Friesianus*, Jord.—N. By the Gluss Burn, near Ollaberry (R.).

Those named by M. Rouy are marked (R.). I have only given a few of the known localities. Sub-sp. I. is common on the lower hill slopes and on low ground, generally where the soil is light and dryish. Sub-sp. II. affects natural pasture and meadow lands at low elevations; it has a tendency to be gregarious, but does not form such dense masses as the next. It is local, but fairly common. Sub-sp. III. frequents the banks of the lowland burns, and frequently forms dense masses a yard in length. The three sub-species appear to me to be fairly separable, and to differ both in habit and in habitat, in leaf characters and in root characters. The distinctions founded on the beak of the fruit have not, so far, appeared to me so reliable.

Cochlearia micacea, Marshall.—U. Baltasound, W. A. Shoolbred (Marshall in "Journ. Bot." 1895). I have also gathered it on the Hill of Hamar.

Subularia aquatica, L.—S. This proves to be common; but as most of the lochs have gradually shelving bottoms, and the plant does not grow where there is a possibility of drought, it is only seen on wading out some distance.

Cardamine hirsuta, L.—S. Rocks by the Vaara Burn, by Burga Water, and rocks west above Hamari Water.—Conf.

**Elatine hexandra*, DC.—S. A few scraps floating in Kirkiegarth Loch, Walls, amid a mass of derelict *Callitriche*. I could not find the plant growing, but the loch contains so much decomposed peat in a state of suspension that it is often impossible to see the bottom. The pieces found bore a few half-ripe capsules.

Hypericum pulchrum, L.—S. A curious colour variation occurred on the hills above the Lochs of Hostigates. The flowers were cream-coloured, or rather just the colour known to artists as Naples yellow. In consequence of this change in the body colour of the petals, the red splashes on their underside were pure lake, instead of the usual rather orange red.

**Erodium cicutarium*, L'Hér.—D. ". . . Sandwick Parish. . . . The soil sandy, produces plenty of *Geranium cicutarium*, not observable anywhere else, either here or in Orkney." Low's "Tour" (1774). Sandy ground near the sea, Levenwick. The two places lie a few miles apart on the opposite sides of

Channer Wick, so that the discovery of the plant at Levenwick practically confirms Low's record.

**Oxalis Acetosella*, L.—N. Abundant in a ravine on the Björgs of Skelberry, alt. c. 500 feet.

Vicia sepium, L.—S. Holm in Burga Water, and on various other holms in the neighbourhood of Walls and Clousta. The one or two plants recorded from Tingwall owed their immunity to the fact that they grew in the midst of a mass of *Lathyrus pratensis*, a plant which for some reason is avoided by the sheep.

Alchemilla vulgaris, L.—All the plants so far collected belong to *A. filicaulis*, Buser. The plant recorded as *A. vulgaris*, var. *subsericea*, K., is referred *A. filicaulis*, var. *vestita*, Buser.

A. conjuncta, Bab.—The Queen's Hotel, Baltasound, lies some way back from the road, and it was only on paying a visit there in 1898 that I saw this plant in the garden. It occurred in some plenty, scattered indiscriminately over the small lawn and flower beds, most or all of the plants being evidently self-sown. I could only learn that the plant was there when the hotel was built. Prior to its erection, the site was occupied by a store kept by one Thomson, then dead. I had visited this store in 1886 and 1887 but on both occasions, unfortunately, after dark. Mr. Thomson's family had left Shetland, but I learnt from Mrs. Hunter of Ernsdale that Thomson was much given to horticulture, and "was always bringing things into his garden." Last year I heard that the family had returned to Shetland, and I wrote and elicited the following information :— (1) That the *Alchemilla* was not given to them by Edmondston, who, I thought, might have had roots sent to him; (2) that most of their plants were grown from seeds obtained from an Edinburgh florist; but (3) that there were also in their garden some native Shetland plants originally got at Sandwick in Unst. This seemed a possible clue to a native habitat for this most illusive of British plants, and although I was not staying in Unst last year I made a special trip to Baltasound in order to investigate. Sandwick is, as its name implies, a sandy bay; two burns run down into it, and I thoroughly examined one without result. The other looked quite similar through the glass, but there was not time to search it. The ground did not look at all likely, still the plant may occur somewhere in the neighbourhood. I have given full details so that any botanist visiting Unst and feeling disposed to follow up the search may know where to start. If lodgings can be got, sojourn should be made at Uyeasound, as this is quite near to the ground to be worked.

Rubus saxatilis, L.—S. This flowers rather frequently on the sea-bank; a few ripe fruits were seen on the south side of Clousta Voe.

Rosa glauca, Vill.—All old gatherings of *Rosa* as well as several new ones were referred to this by Prof. Crépin. The record of *R. dumalis* is therefore cancelled.

Pyrus Aucuparia, Ehrh.—S. Seen for the first time with flowers and fruit on the holm in Hamari Water.

**Peucedanum Ostruthium*, Koch.—S. A large patch within the enclosure of the croft of Setter near Walls; origin unknown. Called locally "Alexanders," a name for which I imagine some ill-informed tourist is responsible. An ancient Roman Catholic burial-ground lies near the croft, so that the introduction of the plant may date from monkish times.

Centaurea Cyanus, L.—D. A few plants in a cornfield at Levenwick, probably sown with the crop.—Conf.

Hieracia.—These will be dealt with on a future occasion, meanwhile the following are the principal additions:—The plant recorded as *H. truncatum* is now named *H. dovrense*, var. *H. ethlandiæ*, Hanb., but I have since found *H. truncatum*, Lindeb.; **H. flocculosum*, Backh.; **H. duriceps*, Hanb.; **H. stictophyllum*, Dahlst.; and **H. strictum*, Fries.

**Taraxacum spectabile*, Dahlst.—Mr. C. H. Ostenfeld considers this the same as the Faroe plant, and to be referable to this species or to be very close to it. The plant is particularly frequent in S., where it occurs commonly by the stony shores of lochs, burnsides, etc., while it sometimes grows rather high up on the hills, among rocks and heather, but in the higher parts it rarely flowers. I have never seen it on cultivated land. Also occurs in U., N., and Yell. I have had this in cultivation since 1901. It does not begin to flower until the third or fourth week in May, and the flowering season is short, lasting but about three weeks. The plants formerly referred to as *T. palustre* belong here. The Shetland plant usually has the leaves marbled with purplish-chocolate, after the manner of some of the *Hieracia*.

**Crepis virens*, L.—N. Quite naturalised and in some plenty on grassy banks within the enclosure of St. Magnus Hotel, Hillswick, likely introduced during building operations.

Campanula rotundifolia, L.—D. Moor between Skelberry and Boddam. A large patch in one place, only a few plants showing flower. I could not see it elsewhere on the moor.—Conf.

(*To be continued.*)

APERA INTERMEDIA AS AN ALIEN IN BRITAIN.

By A. Bruce Jackson.

This interesting grass was first collected in England by my friend Dr. W. A. Vice, who found it associated with other aliens of Eastern origin on waste ground at Blaby Mill, Leicestershire, in June 1903. A specimen was subsequently sent to the herbarium of the Leicester Literary and Philosophical Society, where I found it wrongly labelled *Polypogon monspeliensis*. I submitted an example to Dr. Hackel, who identified it with an undescribed species, *Apera intermedia*, Hackel, collected several years ago by Dr. Zederbauer on the Erdchias-Dagh, a volcano in Asia Minor. A note embodying this information appeared in "Journ. Bot.," 1904, p. 348.

In 1906 Mr. James Fraser gathered, with other aliens, at Leith docks near Edinburgh, a grass which I identified as *Apera intermedia* from comparison with the Blaby specimen. Its occurrence in Scotland was recorded by Mr. Fraser in his paper on Scottish aliens ("Ann. Scot. Nat. Hist." 1907, p. 42).

Last autumn I submitted a portion of a Leith specimen to Prof. Hackel, who wrote as follows :—

The Apera contained in your letter is really *A. intermedia*, Hack., though in one point it is less characteristic than the specimen from Blaby you sent formerly. The sterile glumes of true *intermedia* have somewhat elongated points (like small bristles), those of the Leith specimen are pointed but not bristle bearing. *A. intermedia* is somewhat intermediate between *A. Spica-venti* and *A. interrupta*, but nearer to the latter. The chief differences are :—

Apera interrupta, Beauv.	*Apera intermedia*, Hack.
Panicula interrupta ; rami primarii plerumque breviores quam internodia, inter verticillos, raro eos æquantes.	Panicula æqualis ; rami primarii racheos internodia superantes.
Glumæ steriles acutæ, muticæ.	Glumæ steriles (saltem superior) in setulam brevissimam abeuntes.
Gluma fertilis callo brevissime barbulato, arista eam 5-6plo superante terminata.	Gluma fertilis callo glabro, arista eam 3-4plo superante terminata.
Antheræ .4-.5 mm. longæ.	Antheræ 1.5 mm. longæ (quam gluma fertilis 2 mm. longa parum breviores).

Apera intermedia has just been described by Dr. Hackel in "Annalen de Naturhist. Hofmus. Wien," xx. p. 430 (1907.).

At present it is known only from the three localities mentioned, and is not included in Dunn's "Alien Flora."

KEW, 23*rd May*, 1907.

NEW AND RARE MOSSES FROM THE WEST OF SCOTLAND.

BY JAMES STIRTON, M.D., F.L.S.

I HAVE, in the first place, to record the discovery of fruiting specimens of *Ulota phyllantha* and *Scotica* from three localities in the neighbourhood of Arisaig. How many capsules of each have been secured cannot be reckoned at present—certainly twenty in the aggregate. As is well-known, *U. phyllantha* is found in great profusion in the west of Scotland, including the Outer Hebrides, where trees can be got to grow, also in Wales and Ireland, Western and Northern Europe, and throughout extensive tracts in Canada and North America; and yet I should say not more than a dozen capsules have ever been found, and not more than half that number in good condition. As in other instances, fruit has been found only where *U. Bruchii* in a fertile state grew intermingled with it. The fruit of *U. Bruchii* was ripe in September, but the capsules of the other two must have ripened three months previously. What influence the antheridia of *U. Bruchii* could have had in fructifying the other two it is impossible to say, but the probability is that there was a determining influence of some sort.

The fruit of *U. Scotica* is the longer of the two, and the long, slender neck runs far down the seta. In one instance of *U. Scotica* eight pale pinkish, short, broad teeth were seen, with eight shorter cilia between; the teeth were also seen to split into two distinct parts.

I have not yet ventured to separate the two kinds of capsules from the mixed tufts, for the reason that the fructified stems have leaves, for the most part, with only

rudimentary propagula ; accordingly the minute structure of the leaf requires examination for adequate determination.

Along the main road at Arisaig grows a *Grimmia* on stones which, in wet weather, has a peculiar glossy or silky sheen, such as I have not seen in any other species of this perplexing genus. The flat tufts are often extended continuously from two to six inches, but the strange peculiarity about it is its rapidity of growth. I have watched a tuft of *Grimmia Stirtoni* (Sch.), near Killin, from year to year for the purpose of getting fruit, showing scarcely any difference in the size of the button-like patches. On the contrary, this moss, during three months, often extended from two inches to nearly four, and what is more, minute new patches became quickly visible in the near neighbourhood. Moreover, in 1904 this moss could be detected for not more than half a mile, while in 1906 it could be traced for nearly double that distance. It never fruits. By what means was it propagated so quickly? This puzzled me, until in the beginning of September, during rainy weather, propagula were seen in abundance at the apices of stems, and generally attached to leaves near their bases as well as to the stems themselves. These propagula are quite unique in character. They are globular, yellow, then reddish-brown, simple, or at times 1-septate, with granular contents, in clusters or in short chains, and large, .03-.038 mm. diam. A question arises whence the origin of this moss, or, rather, whence the origin of these germinating cells. This question is rendered more difficult of solution from the fact that the moss grows nowhere else in the district, and I have not observed it in any of my rambles elsewhere.

Grimmia polita.—Tufts extended, of a yellowish green colour, stems strong, simple, or not infrequently somewhat fastigiately branched above : leaf a little crisped when dry, laxly spreading when wet, or cohering in little bundles during wet weather, ovate lanceolate acuminate, terminating in a long, nearly smooth hair ; nerve strong, .065 mm. broad near base, scarcely narrowing upwards for more than the lower half, turning red, of rather dense structure within, but on the very prominent convex back a row of close cells,

evidently a continuation of the paginal cells, as chlorophyll was detected in them, another central row of larger cells, and in front, irregularly placed smaller cells; central basal cells of the leaf long, narrow, granular, .038-.055 by .005-.008 mm.; outwards broader and shorter, with three to five short perpendicular rows, at basal margin of nearly hyaline, oblong cells, about .032 by .01 mm.; upwards, cells gradually denser, until they are ultimately quite opaque and densely granular, variable in shape and larger than usual .008-.011 mm. diam.; margin recurved for nearly two-thirds up from base, and what is unusual, more broadly recurved in the middle than below; pagina unistratose below, soon one marginal transverse couple of cells seen, then two such, and near apex very often three close couples seen. Accordingly all the cells except those of the small basal marginal group are more or less densely granular; besides, in wet weather, minute points, like stereïds, are seen everywhere between and even on the cells.

This moss is evidently allied to *G. trichophylla* (Grev.), but is quite distinct from it; besides, the latter, which fruits freely, was not detected in the district. Indeed, this part of the West Coast is rather deficient in species of this genus.

At Glenfinnan, a railway station half-way between Arisaig and Fort-William, was discovered a peculiar little moss,—

Oligotrichum exiguum. In lax tufts, green above, red below; stems simple, very slender, slightly undulating, from a quarter to half-an-inch long; pale, then red; leaves laxly disposed around stem, incurved when dry, still a little incurved when wet, upper green, lower red, slightly sheathing, oblong, apex deeply cucullate with the nerve bent nearly at right angles, rendered sharpish by means of a longish apical cell; nerve in lowest fourth free of lamellæ; above with from six to eight or nine lamellæ, long, slender, composed of from seven to ten bluntly quadrate cells in single series, apical cell a little longer; lamellæ nearly as broad as the breadth of pagina of either side, nerve imperfectly or interruptedly (two to three) lamellate above; cells at central base oblong, .02 by .011 mm., only a few such, the rest, upwards, nearly bluntly square, but variable,

.012-.018 mm. across, somewhat smaller near apex ; pagina unistratose, nonpapillose ; margin entire but incurved above, with one or two teeth near apex. Barren.

There is another *Oligotrichum* from Connel Ferry, with stems from a half to one inch in height, but these stems, instead of being simple, as they are usually, have two to five fastigiate branches arising from a common stock situated about half way up the stems. The apex of the leaf is, besides, slightly incurved.

Let this form meanwhile be called *O. hercynicum*, var. *fastigiatum.*

There grows on a wide but rather shallow basin opening on the sea to the north of Arisaig a minute moss in very dense, and, in two instances, very wide continuous flat tufts, from five to eight inches in diameter. As many as six separate patches have been noticed, those farthest apart not more than two miles from each other. As I cannot identify this moss with any other, and as, moreover, it is very constant to its characters, I think it right to describe it, although it is barren.

Pohlia tenerrima.—In very dense, generally large tufts of a beautiful green colour above, pale or pale yellow below ; stems a quarter to one-third of an inch long, generally simple, rarely divided, very slender ; leaves laxly disposed around the stem, very tender as well as small, on an average .7 by .27 mm. at greatest breadth, erecto-patent when moist, straight and more upright when dry, but pagina shrivelling somewhat, ovate-lanceolate scarcely acuminate ; nerve slender, pale then yellowish above, .04 mm. wide near base, tapering, and either very slightly excurrent or vanishing in the acute apex, where it is rather indefinite ; margin plane, entire or faintly serrated near apex ; cells at central base narrowly oblong, .028-.04 by .008-.011 mm., outwards shorter, and at margin with one or two rows of quadrate cells, .013-.018 by .01-.012 mm., upwards, cells narrower and rhomboid, .027-.032 by .007 mm. On peaty soil mixed with sand.

The areolation points to association with *Pohlia.* The leaves are wonderfully uniform in size and shape throughout the whole series of tufts, and only show a little smaller and

shorter near base of stem, but lengthen very little towards its summit. The stems, although slender, are tenacious, as the older may be traced continuously down through the soil to a depth of half an inch.

Barbula limosella. Tufts very compact, often extended, forming patches of a vivid green colour above, reddish below, as well as radiculose; stems very slender, simple for much the greater part, occasionally bifurcate, one-third of an inch long or less; leaves curled and crisped when dry, widely spreading when moist, with the upper fourth strongly recurved or squarrose, especially the short, extended part of nerve; base hyaline as in *B. limosa*; upper cells large, distinct, hexagonal, or merely rounded, .009-.014 mm. across, without papillæ; indeed scarcely any papillæ detected throughout the leaf, which has a blunt apex, as in *Trich. brachydontium*, and pagina frequently ending abruptly and unequally, but the nerve in this is certainly extended. At the mouth of the basin, near Arisaig, on muddy soil mixed with sand, a little within high-water mark of spring tides.

In this broad, shallow basin, through which a sluggish stream meanders, and which opens out like a trumpet on the sea, where its breadth is two miles, are found five mosses belonging to a closely allied group, viz., *Barbula tortuosa*; a large form of *B. nitida*, as well as its usual condition; *B. limosa* ("Annals," April 1905), and *B. limosella*; lastly, *B. exiquella*, referred to below. The upper cells of *B. limosa* are obscure from the presence of papillæ, and minute, .005-8 mm. across. Accordingly the upper cells of *B. limosella* are nearly four times as large as those of *B. limosa*. *B. limosella* is the most slender of the four as well as the most compactly tufted.

Schistidium nodulosum.—Laxly tufted, of a dark green above, reddish below; stems simple or dichotomously branched, about half an inch in length; leaves rather closely arranged, imbricated when dry, spreading a little when wet, ovate lanceolate slightly acuminate, contracted at base; nerve strong, thick, bulging much behind, reddish at base, .06 mm. broad, slightly broader above, and near apex still .045 mm. broad, strongly nodulose behind and at sides, nodules .004-6 mm. high, rounded at apex, sparsely nodulose

behind, also on margin near apex, as well as on the lower part of the hyaline hair, which is besides crisped or spirally twisted throughout, and nearly half the length of pagina; margin strongly recurved near base, almost spirally so for two-thirds upwards, plane thereafter; cells at central base bluntly oblong, separate, .024-.04 by .007-9 mm., outwards shorter and slightly constricted with three or four marginal rows of roundish or irregular cells, .01-.013 by .007-9 mm., upwards at first slightly constricted, then roundish, separate, .006-9 mm. across; pagina below thin, thicker upwards, unistratose at first, then on margin one transverse couple of cells, soon two such, and farther up often three, with not infrequently one detached couple nearer nerve. Arisaig and on Ben Lawers, 1867. Barren in both instances. I described in the "Annals" for April, 1900, a corresponding nodular condition of *Schist. maritimum*, but the other peculiarities in the present moss warrant, in my opinion, specific distinction.

Throughout a series of years I have picked up from time to time a moss, on open moors more especially, which I had rather rashly identified with *Breutelia arcuata*. Last year the two were found in close proximity, when the contrast between the two was rendered much more manifest. In the absence of fruit I have, meanwhile at least, inserted the present one under the genus *Bartramia*.

Bartramia subvirella.—In extended rather dense patches of a yellowish-green colour; stems for the greater part dichotomously branched with not infrequently very short branchlets near the apex; leaves closely arranged round stems, slightly spreading and straight both in a wet and dry state, not clasping (as in *Breutelia*), rather broadly and roundly ovate-lanceolate, shortly acuminate, only slightly sulcate near base, plane and smooth above, thin and translucent, very fragile in upper fourth; nerve narrow, .04 mm. near base, tapering and vanishing considerably below apex, margin rather broadly reflexed in lower half, serrate throughout, but more sharply so above; central basal cells much shorter and a little broader than those of *Breutelia*, bluntly cylindrical, hyaline, .025-.035 by .005-.0065 mm., becoming narrower and longer upwards, .032-.045 by .004-5 mm., with

papillæ at the lower extremities of cells ; at alar base a longish group of bluntly oblong cells, coloured red below, .016-.025 by .01-.013 mm. It is not necessary to indicate further the differences between the two mosses, as they are manifest enough.

The next moss has been familiar to me for several years, more especially in the neighbourhood of Glasgow. It was got throughout November of last year in perfect fruit. It differs from *Hypnum cupressiforme* in several important particulars.

Hypnum teichophilum.—Tufts large, dark-green, prostrate; stems stout, irregularly branched ; leaves large, not divaricately arranged on stem, but regularly imbricated on its upper aspect and falcate downward, convex, somewhat decurrent on stem ; margin plane except in lowest fifth, where it is often seen slightly reflexed, entire except in uppermost fourth, where it is slightly serrulated, nerveless, or obsoletely 2-nerved just at base ; alar basal spaces well defined, nearly square or slightly oblong, composed of five to eight perpendicular rows, each having five to seven or eight cells, cells square (or slightly oblong), with thickish walls, becoming reddish, but contents remaining colourless or only very sparingly granular, .018-.027 by .014-.021 mm. ; cell above long, narrowly acicular with sharply-pointed extremities, .06-.085 by .003-.0045 mm., a little broader near base ; capsule on a long, reddish, strong seta, oblong, curved, brown ; lid large, conical, terminating in a slender, shortish acumen. Accordingly this moss differs from any form of *H. cupressiforme* in its cell formation, both alar and general, in the disposition of the leaves round the stem, in the seta, capsule and lid.

Dr. Braithwaite, in his work on British mosses, states that the alar cells in *H. cupressiforme* are typically square in shape. Such is not the case. They are small, oval, and, in much the larger proportion, reddish-yellow as well as darkly granular.

There is still another moss scattered here and there throughout the district of Arisaig, in crevices of rocks, but, in two instances, on stones slightly covered with earth. It is near *Dicranum montanum*, but differs in the habitat, in

the leaves not being papillose, and in their apices quite entire and much narrower, etc.

Dicranum leiophyllum. Tufts large, rather lax, of a dark-green colour above, brown beneath, slightly radiculose ; stems simple or bifurcate, about half an inch or more long ; leaves ovate lanceolate, narrowly subulate, much curled when dry, laxly spreading when moist, slightly clasping the stems where they are broader, but rather quickly narrowing into the long subulate upper portion, which is quite entire and a little rounded at apex, but narrow, about .03 mm. broad, not papillose, margin plane, entire, but a little incurved upwards ; nerve, .065-.085 mm. broad near base, tapering and vanishing below apex ; auricles well developed, cells large, colourless at first, then with thick, brownish walls, oblong or oblongo-hexagonal, .03-.045 by .013-.018 mm., central basal cells granular, narrow, cylindrical, .04-.06 by .0045-.006 mm., outwards shorter, broader until near margin, much the same as those just above, upwards gradually shortening into the dense, distinctly separate, opaque, quadrate or rounded, granular cells above, .007-.01 mm. across, but near margin always smaller (.005-.008 mm.) than cells found quite at apex ; seta (often two from one perichætium), pale, then reddish, long, strong ; capsule erect, oblong, brown ; teeth dicranoid but broken ; lid (in young capsules) long, subulate above, not much shorter than capsule. The fruit is either that of the previous year, or too young for examination.

The upper cells of the leaf have a distinct resemblance to those of *Amphoridium Mougeotii* in their peculiar opacity, in being faintly striated longitudinally, and in showing slender connecting tubes with neighbouring cells, especially in a vertical direction.

I have seen the same peculiarities in several other mosses but more particularly in *Bartramia Oederi* (Sw.).

Trichostomum episemum. Tufts rather dense, having much the appearance of those of *Tr. brachydontium* ; stems strong, about one inch in length, leaves oblong, reflexed when wet, obtuse and rounded at the apex as in *Tr. litorale* ; nerve strong, pale then red, .085-.1 mm. broad near base, tapering and excurrent in a short stump, margin plane, crenulated above from projecting cells as well as papillose ;

cells at base large, oblongo-hexagonal, with thin walls, but merely oblong nearer the margin, all hyaline, .04-.06 by .01-.013 mm., above, at first shorter and oblong, passing gradually into the obscure, large, upper, generally hexagonal, but often bluntly quadrate cells, .009-.014 mm. diam., densely and minutely papillose back and front. Connel Ferry, 1905.

According to the description by Dr. Braithwaite, vol. i. pp. 243, 246, this cannot be either *T. angustifolium* or *T. lutescens* (Lindb.).

In 1903, Mr. D. Haggart sent me from Glen Lochy, Killin, a *Rhacomitrium* which, owing to the papillosity of the leaves, and long teeth of the peristome, nearly as long as the capsule, was referred to *R. canescens*. The leaves, however, are quite muticous, and even slightly rounded as well as slightly hollow at apex. But what is most remarkable is the areolation of the leaf, which is that of *R. heterostichum*, viz., in upper half the cells are green-chlorophyllose, at first short and constricted in the middle, while nearer the apex they are quadrate, .007-.01 mm. across.

I think it right to call attention to this moss. Meanwhile, it may be named *R. consocians*.

Another *Rhacomitrium* has similar peculiarities. It resembles in habit what I have described, in the "Annals" for April 1902, as *R. amblyphyllum*. The two have in common blunt apices to the leaves, where the breadth at the junction of hair with pagina varies from .12 to .25 mm., but in this the areolation is entirely that of *R. microcarpum*, inasmuch as the cells near and at apex are sinuose, .014-.025 by .005-7 mm. Let this be named *R. divergens*.

This moss has been discovered in many places in the West of Scotland and Western Islands.

As I have said in a previous paper, I am anxious to call attention to such peculiarities of structure, inasmuch as they seem to indicate departures from the usual conditions of organisation, which may have important bearings on the life-history of the plants themselves.

The genera which I have studied more closely as showing stronger tendencies to such departures from the normal, are —*Campylopus*, *Dicranum*, *Grimmia*, and the near ally of the last, *Rhacomitrium*.

There was also found south of Arisaig on open moors, generally near rivulets, but not in woods, *Hypnum corrugatulum*, described in the "Annals" for April 1897, under *H. triquetrum*. On two occasions small quantities of *Barbula exigucila*, also described in the "Annals" for April 1897, were picked up; but, as in Orkney, only young setæ were seen. In my older collections made during the *sixties* on the Breadalbane Ranges, I have come across *Barbula icmadophila* (Sch.) from near the base of King's Seat, Killin, and *Hypnum canariense* at the base of Ben Lawers, near the Inn.

ZOOLOGICAL NOTES.

A Novel Method of Skinning Birds and Mammals.—When I was resident at Quendale, Dunrossness, Shetland, a small boy, a native, showed me the trick he had of skinning Snow-Buntings, which were caught with *sieve-traps* in large numbers and used as food. A small incision was made at the occiput, and a straw-stem inserted as a blow-pipe, and the whole skin of the bird was thus completely loosened. This plan was perfectly successful, so long, of course, as the skin was in no other place broken or perforated. Remembering the above, we experimented here with a Pipistrelle Bat, and a proper blow-pipe, with perfect success. The whole skin of the body was easily separated from the flesh, and even the leathery wings were expanded between the dorsal and ventral surfaces. The toughest part to separate by the impelled air was that part of the skin between the shoulder blades. I cannot imagine a more perfect way for separating the skin from the flesh of small mammals and birds, so long as the skin is uninjured and perfect. I do not know whether this method is generally known to collectors or not, but I cannot recollect ever having seen it mentioned in a book; so I have thought it worth making note of, in our present number of the "Annals," as it may prove an aid to those who are at present studying or collecting our smaller mammals, as well as to our bird-collectors at home or abroad. Of course, after this operation a larger slit has to be made and the further divestment performed, and the body removed.—J. A. Harvie-Brown.

A Litter of Male Foxes.—A Fox's den was found here about the middle of May, containing eight cubs, every one of which was a male. I have never heard of a similar occurrence, and I do not think it can be at all common.—Francis G. Gunnis, Brora, Sutherland.

The Hawfinch in East Lothian.—On 25th April 1907, one of my foresters picked up a dead adult male Hawfinch (*Coccothraustes vulgaris*) close to the foot of a spruce near the lake at Smeaton-Hepburn. The bird being strange to him, he gave it to my boy, who in turn brought it to me for identification. The bird had evidently been dead a few days and the breast was slightly eaten, fortunately the skin was in a sufficiently good condition to be capable of being preserved. The occasions on which the Hawfinch has been found in East Lothian are few: so far as I have been able to ascertain there is no certain record of their having been seen alive in the county. Mr. W. Evans, to whom I wrote, kindly replied that in the autumn of 1904 a keeper at Luffness stated to him that he had seen a pair in the woods there. This identification may or may not have been correct; that they should not have been seen alive, is no more than one would expect, taking into consideration their undoubted rarity, and the extraordinary facility possessed by them of avoiding the human eye. Turnbull, in his "Birds of East Lothian," says, "rare, mostly seen in winter"; in this connection I may mention that I have a specimen probably obtained by my father in the county, but so far no record of its origin has been found. Mr. Tunnard tells me that, in addition to the female found starved in Tynninghame gardens during the third week of February 1904 (and recorded), there is a male in the museum there, obtained, he thinks, in the eighties, and recorded. I have not had an opportunity of finding this notice. The foregoing notes and records seem to complete the history of the Hawfinch in East Lothian so far as known.

With regard to other parts of Scotland the records though few, as Mr. Eagle Clarke writes me, include an adult and a young bird at Arniston, and an undoubted egg from Fife; he also mentions having received a notice of a male obtained in the Upper Forth district during March this year. That there is a record of the steady extension of the Hawfinch's breeding area northward from its haunts in the south of England is undoubted, and I am reasonably certain, considering April is the birds' breeding month, that both the Smeaton bird, and that in the Upper Forth district, would have had nests, had not an evil fate overtaken them. Mr. Eagle Clarke is of opinion that the Hawfinch is undoubtedly establishing itself in Scotland.

Lord Lilford, in his "British Birds," mentions that in summer the Hawfinch frequents and shows a marked preference for the yew tree, which is also a favourite nesting-place; it is perhaps worth recording that the spruce tree (a bare pole) at the foot of which the bird was found is surrounded by old yews, and forms the commencement of an old yew walk, so I have hopes that it may yet be my fortune to find a nest.—Archibald Buchan-Hepburn.

Hawfinch in Upper Forth District.—On 18th March last, Mr. Simpson, gamekeeper at Touch, Stirlingshire, shot a Hawfinch, which has been preserved and presented to the museum of the Smith Institute at Stirling.—J. A. Harvie-Brown.

Great Spotted Woodpecker in "Forth and Tay."—I have evidence of the Great Spotted Woodpecker (*Dendrocopus major*) appearing and remaining to nest in several new localities in Scotland, namely, in Stirlingshire and Perthshire. Two pairs have been observed in one locality in the former county. My friend, Mr. J. G. B. Henderson of Nether Parkley, Linlithgow, adds yet another locality for the advance of the Great Spotted Woodpecker in Scotland, viz., as follows:—"At least one bird has been in the neighbourhood of Dupplin (Tay) this spring. The keeper has known of it for some time, and my friend, Mr. Seton M. Thompson, saw it on the 24th of May.—J. A. Harvie-Brown.

Probable Occurrence of the Great Spotted Woodpecker in the Loch Awe District.—Last year a proprietor on the shores of Loch Awe noticed that a Woodpecker (*Dendrocopus major*) had most evidently been at work boring in a Wellingtonia in his grounds. The bird was never observed, but this year they have again begun in the same tree. My informant, who was lately there, saw the tree, with several circular holes about one and a half or two inches in diameter, not quite through the bark, some apparently freshly chipped and with white splashes of excrement around them. Another visitor who was lately there said that he had recently seen just the same thing on the shores of Loch Fyne. Although the bird has not yet been seen, I presume that there can be little doubt but that it is the work of the Great Spotted Woodpecker, and is interesting in view of the recent reports of its nesting in other parts of the county.—Chas. H. Alston, Letterawe, Loch Awe.

Wanted: Notes on the Osprey.—I have for many years back been engaged in collecting information on the Osprey's haunts in Scotland, with a view to publication, and shall be obliged to our readers for any items they may be able to afford me.—J. A. Harvie-Brown, Dunipace, Larbert.

Garganey in Shetland.—You will no doubt be interested to hear that I was fortunate enough to obtain on 14th April, a very good specimen of the Garganey (*Querquedula circia*), a male; also two Brent geese out of a flock of eight. I have never come across the Garganey before. No other rarities to report so far, though I am hoping ere long some will turn up.—T. Edmondston Saxby, Baltasound, Shetland.

Pintail in Clyde Area.—With reference to Mr. Harvie-Brown's note in the "Annals of Scottish Natural History" on "Pintail in Forth Area" it may be of interest to note that I saw a

Pintail Duck (*Dafila acuta*) which was shot on 9th January 1903 near the river Kelvin at Balmore in Stirlingshire. Although this is in "Clyde" area it is not so very far distant from the part of Forth of which Mr. Harvie-Brown speaks.—Jas. Bartholomew, Kinnelhead, Beattock.

Smew (*Mergus albellus*) in "Forth."—On 8th January last an immature Smew, which I had the pleasure of receiving in the flesh, was shot by one of the Dunbar gunners near the mouth of the Belhaven burn. On examination I found it to be a male. The specimen was exhibited by me at a meeting of the Royal Physical Society on 28th January. I also received, through the kindness of Mr. D. Bruce, an Eared or Black-necked Grebe (*Podicipes nigricollis*), male, killed on 3rd January on the coast about two miles south of Dunbar.—William Evans, Edinburgh.

Swans in the Outer Hebrides.—In the April "Annals," Mr. Kinnear records having seen a flock of Whooper Swans (*Cygnus musicus*) in the Outer Hebrides on 1st June 1906, a rather surprising date. I dare say Mr. Kinnear is not aware that small flocks of Mute Swans are quite common in the islands, and they come and go during summer between Barra and Tiree.—Peter Anderson, Tiree.

Food of the Wood Pigeon.—Mr. Simpson, gamekeeper, at Touch, Stirlingshire, informs me that the crop of a Wood Pigeon (*Columba palumbus*), which he shot on the 11th April, was full of little grey slugs. This I think is unusual.—J. A. Harvie-Brown.

Pied Flycatcher in Kirkcudbrightshire.—Hitherto all the references to the occurrence of this beautiful and interesting bird as a local species have been in the Dumfriesshire portion of Solway. It now gives me very great pleasure indeed to record its presence and nesting in Kirkcudbrightshire. An explicit statement of locality will not be made in the meantime, as I am disgusted to find that the "collector" has at last reached this district.

The discovery is not mine, but was made by a friend whose name is also not to be mentioned, as it would surely indicate a locality. My friend, having seen the birds and found their nest, took me to the spot on the 6th June current, where I had the supreme satisfaction of putting my eye to the aperture in a tree trunk and seeing the hen bird not four inches away. We saw an egg peeping out from beneath her, but did not disturb her further. While we were "keeking in," the cock (which, however, we had already thoroughly examined with the glasses) came on a branch not more than four feet above our heads and sat there with a beautiful air of assumed indifference. The hole in the bole of the tree is quite a small one, and there is not much room for the sitting bird inside. The nest is about five feet from ground level. It is believed there

are some other Pied Flycatchers not far off, and I may be able to say more of them by and by. This makes the third Solway nest of the species that I have personally examined, and in addition thereto I once met with a brood of fledglings. All the localities for these four instances are rather widely scattered.—ROBERT SERVICE, Maxwelltown, Dumfries.

Shetland Garden Warbler.—J. C. Grierson, Esq., sent, for identification and record, a specimen of the Garden Warbler. It was found dead in the *greenhouse tank* the day before, *i.e.* 9th June 1907. The locality is at Mr. Greirson's house Helendall, Lerwick. —J. A. HARVIE-BROWN.

Winter Movements of Woodcock.—The shoreward migration of Woodcocks was very pronounced in December when the first universal fall of snow took place there. Mr. Jas. Davidson saw very few there till the 2nd week in December. Down to the 1st February in all 150 were shot on Innes property, but the keepers only shot on Saturdays to supply six cock pheasants per week to order. Our great flights here—Central Scotland—were 1st to 15th December. They were first known to have dropped in here on 27th and 28th November. There were big bags made on 1st December—Mugdoch, 38 on that day. The second portion, or indeed second flight, came in about ten days later, and on the 15th December 33 were killed in Torwood. On this ground on the 1st December over 20 were seen and 7 shot, which is almost I think a record in autumn flight, though I have seen many more in a day about the 12th March.—J. A. HARVIE-BROWN, Dunipace.

Birds recently added to the Perth Museum.—The following interesting specimens, among others, collected in and around Arbroath by Dr. T. F. and Dr. W. S. Dewar, have been presented to the Perthshire Natural History Museum, in Perth,—Fulmar Petrel, Montagu's Harrier, Golden Oriole, Wryneck, Red-legged Partridge, Black-tailed Godwit, also a Black Rat. The kindness of the Messrs. Dewars is much appreciated by the Museum Committee. A female Bittern (*Botaurus stellaris*) was taken in a very exhausted condition, near a stream, not far from Carnoustie, on 21st January. The bird died and is now in the Perth Museum.—ALEX. M. RODGER, Perth Museum.

Black-tailed Godwit (*Limosa belgica*) in Lanarkshire.—There is but one record of the occurrence of the Black-tailed Godwit in Clyde during the spring, one having been shot on Loch Lomond as long ago as May 1851, by the late Sir Geo. Hector Leith Buchanan, Bart. of Ross Priory. This bird, in the bay dress of summer, I saw in the collection of rare local birds at Ross Priory a few years ago. This year on the 4th May I visited Gad Loch, Lanarkshire, near Lenzie, with Messrs. A. Ross, A. M'Leod, and

R. Henderson, to gather information relating to the appearance of our summer visitors and birds of passage. We were delighted to make there the acquaintance of the Black-tailed Godwit in brilliant summer dress, strongly contrasting with the fresh green of the grass. In flight they presented a remarkable appearance owing to their high coloration and purity of the white on the wings and its extent on the rump against the deep black of the tail. There were three birds, but they disappeared over night.—JOHN PATERSON, Glasgow.

Tufted Duck (*Fuligula cristata*) in West Lothian.—On the 7th June last I found a Tufted Duck's nest for the first time in this county: this was on an island in a small loch, and contained a clutch of nine eggs. On the loch itself were several other ducks of the same species. On later inquiry I was informed that the "Goldeneye"—as the Tufted Duck is named locally—bred on this loch last year (1906), which was the first occasion to the knowledge of the keepers on the estate on which it had done so.—S. E. BROCK, Kirkliston.

Lesser White-throat (*Sylvia curruca*) nesting in "Tay."—On the afternoon of 26th May, I sat reading in my little town garden. That garden is within the Burgh of Forfar, but on the fringe of the populous part; and, owing to the fact that the plants in which I am particularly interested are all microscopic, it is, to say truth, in a sad tangle of weeds and herbage; most of all is this the case in an odd acute-angled corner occupied by a score of neglected gooseberry bushes. Now as I read, the interesting and suspicious movements of a little bird among these bushes attracted my attention. By the use of a field-glass I saw that it was a White-throat. As I watched, it made many journeys to and fro so that I was able to fix the scene of its operations to a nicety; and lo, when I went in among the tangled undergrowth to corroborate, there was the nest in process of construction in the gooseberry bush, somewhat hidden by herbage and about 16 inches from the ground. I did not visit it again till 30th May. On that day I found the nest apparently completed, but, to my surprise, by no means like a typical or well-built White-throat's nest; considerably less neat and delicate, indeed. When I returned on Sunday, 2nd June, there were three eggs, but they were *not* White-throat's eggs. When I went to inspect the nest on Monday, 3rd June, a fourth egg was there. The bird is so stealthy in its movements that is not easy to see; but the result of several recent glances have confirmed my original view that it was a White-throat. To-day, I have solved the difficulty by taking an egg and examining it carefully: it is a typical egg of the Lesser White-throat, whose nesting in North-eastern Scotland has hitherto been a matter of considerable doubt.—THOMAS F. DEWAR, Forfar.

Note on the Breeding of the Snow-Bunting in Buchan.—I see in the April "Annals" the record of the nesting of the Snow-Bunting

at Rathen, Aberdeenshire. I fear there is some mistake. Rathen parish is in the north-east corner of Buchan, a district I know well. A part of the parish borders the sea at Inverallochy for a little distance. The parish is wholly under cultivation and below 200 feet elevation above sea-level; very much of it under 100 feet elevation; only in the south-west of the parish does the land rise abruptly to 700 feet to form the hill of Mormond. No one would expect for a moment to find the Snow-Bunting breeding in such a district, and I suspect the eggs are varieties of the common Bunting, *Emberiza miliaria*—a characteristically abundant bird of the district. I may add it is comparatively easy to become possessed of Snow-Bunting's eggs in Buchan. Buchan seamen, fishing in the Arctic Regions, are in the habit of bringing home Arctic eggs, and I never received any Arctic eggs without those of the Snow-Bunting being amongst them. I have received 50 on a single piece of thread from a Peterhead seaman, and I have seen in a labourer's home the kitchen window festooned with Little Auk's eggs.—William Serle, The Manse, Duddingston.

Gemmous Dragonet (*Callionymus lyra*) in Shetland Seas.—There was captured on a sea-line, about a mile off Boddom, on the south-east coast of the mainland, in April last, a male specimen of this brilliantly-coloured fish. Not having seen one like it before, I sent it to Mr. Eagle Clarke for identification; and he also informs me that there appears to be no previous record for this species in the Shetland seas, but that its occurrence is not surprising, since it has been obtained in Scandinavian waters, and is not very uncommon on the coasts of the Scottish mainland.—T. Henderson, Jun., Dunrossness, Shetland.

Early Appearance of Eristalis tenax, *L.*, in the Forth District.—Whilst at Gullane on Saturday, 23rd March, about 2.30 p.m. I found three female specimens of *Eristalis tenax*, L., which were kindly identified by Mr. Grimshaw. As the date is very early for these flies, he has asked me to give particulars of their capture. They were on the sand at the mouth of a small damp cave situated about two and one-third miles north-eastward along the coast from Gullane, at a place marked on the Ordnance Map as "Hanging rocks." The wings of a fourth specimen were lying on the sand near the three I procured. The mouth of the cave faces almost due north, and being about half-way down the cliff, the sun's rays would be completely excluded.—R. D. R. Troup, Edinburgh.

[Verrall, in his "British Flies," says of this species, "my dates extend from 14th February to 22nd November, but I expect it may occur at any time."—P. H. G.]

BOTANICAL NOTES AND NEWS.

The Plants of the Flannan Islands.—In the "Annals" No. 55, 187, 1905, Dr. Trail enumerates the specimens brought by Mr. Eagle Clarke from these islands.

The following additional species were gathered by Mr. W. J. Gibson on Eilean Mòr in July 1899. They were kindly sent to me by Mr. A. Somerville, with a request to name them and return to Mr. Gibson.

They add nine species to the thirteen given by Dr. Trail, viz.:—

Lychnis Flos-cuculi, L.

Cerastium tetrandum, Curt.

C. glomeratum, Thuill.

Sagina maritima, Don.

Spergularia neglecta, Syme.

Plantago maritima, L., var. *minor*, Hook and Arn.

Atriplex hastata, L.

Rumex Acetosa, L. "Tufts of this were growing beside the Puffins' burrows and nowhere else. 'Martin Martin, Gent.,' who visited the Western islands about 1695, says that the Fulmars (*Fulmarus glacialis*) of St. Kilda eat it. If the Puffins do so also, it forms a good illustration of how plants are spread by birds" (W. G. *in litt.*). The Rev. N. Mackenzie, in "Notes on the Birds of St. Kilda,"[1] does not mention that they eat the sorrel, but remarks, "but prefers those places where there are steep grassy slopes with tufts of earth or sorrel," *i.e.* to make their nests.

Poa annua, L.

Festuca rubra, L.

Of *Matricaria inodora*, L., M. Gibson remarks, "Growing in great profusion on upper slopes of cliffs. The Chamomile odour was very pronounced in the fresh plants." This is rather surprising as Mr. Gibson's specimens are *inodora*, not *Chamomilla*.

Armeria maritima, "The leaves of this seem to form the greater part of the short close sward" (W. G. *in litt.*). Mr. Gibson,[2] speaking of Eilean Mòr, remarks—"The top slopes considerably to the south-west, and is covered with a close mat of short grass, decorated with sea-pinks and diminutive buttercups and ragged-robins."

Accounts of the birds (with photos of Eilean Mòr), by Mr. Eagle Clarke, will be found in the "Annals" for 1905, pp. 8, 80, and 243; of the Diptera, p. 218; Coleoptera, p. 20, and Spiders, p. 120.—ARTHUR BENNETT, Croydon.

[1] "Ann. Scot. Nat. Hist." 78 (1905).

[2] In "Chambers's Journal," ii. 796 (1899).

The May issue of the "Journal of Botany" is of peculiar interest to lovers of the British flora because of its containing an exceptional number of papers of importance in their bearing on its study. They are on "Three interesting Ascomycetes," by W. B. Grove, B.A.; "Forms of Potamogeton new to Britain," by Arthur Bennett; "A Synopsis of the Orders, Genera, and Species of Mycetozoa," by A. and G. Lister; and on "British Roses of the Mollis-Tomentosa Group," by Rev. Augustine Ley, M.A.

New Records of Plants in South Aberdeenshire.—In September of 1906 we found the following plants, new to South Aberdeen (v.c. 92), while collecting within a few miles of Aberdeen itself:—

Ranunculus circinatus, Sibth., at the Loch of Skene.

Nasturtium palustre, DC., at Grandholm Mills on Donside, where it had been known to a retired mill-worker, named Thompson, for some years.

Potentilla argentea, L., as a casual on the roadside at Balmoral.

Scutellaria galericulata, L., from the Loch of Park.

We have also seen *Euphorbia Cyparissias*, L., specimen, which had been growing as a garden weed at West Cults.—A. C. Macrae, Macgregor Skene.

Origin of the Blue Lupine (*Lupinus nootkatensis*, Donn) as a Denizen by the Dee.—As mentioned in a note in this Journal, (1900, p. 128), the earliest example of this Lupine known to me to have been gathered in Scotland is a fragment in the Kew Herbarium, bearing the label "*L. polyphyllus*, ? naturalised on the banks of the Dee near Aboyne, August 1862," gathered by the Rev. M. J. Berkeley. The Lupine forms so conspicuous a feature along the Dee, for most of its course, and has produced so great effects on the native vegetation, and even on the course of the river, that I have sought to ascertain how and when it was introduced into the valley. About a week ago a former student, Dr. Duncan Mackintosh, now in medical practice at Aboyne, mentioned to me that he had been told by an old man, who had been employed in the gardens at Balmoral when Her Majesty, the late Queen Victoria, purchased the old castle and estate as a residence, that the Lupine was one of the first plants brought from the south, and had not been seen, at least on upper Deeside, before, and that from the plants grown at Balmoral seeds had been carried into the river, and had sprung up along the river banks and spread by seeds quickly. As Balmoral was purchased by Her Majesty in 1847, and was used as a residence at once, this makes it probable that the Lupine was introduced before 1850, and had sprung up from seeds carried down river as far as Aboyne before 1861. It now looks as much at home on the more recently formed shingles as any natives.—James W. H. Trail.

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—April-June 1907.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable, and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

The Mammals of the Edinburgh or Forth Area. Supplementary Notes. By William Evans, F.R.S.E., *Proc. Roy. Phys. Soc. Edin.* vol. xvi. No. 8 (May 1907), pp. 387-405.—Brings the total number of species now known to have occurred in the area up to fifty.

Scottish and Norwegian Red Deer. R. L. *The Field*, 15th June 1907, p. 1015.—Refers to a paper by Dr. Leonard Stejneger, in a recent issue of the Smithsonian Miscellaneous Contributions, dealing with the racial differences between the Red Deer of western Norway and those of Sweden. According to this author, the former are inseparable from those of Scotland, and thus furnish evidence in favour of a late land connection between the two countries in question.

Raven and Ring Ousel near Glasgow. D. A. M., *The Field*, 8th June 1907, p. 957.—Specimen of the former seen flying high (and croaking) within one mile of Glasgow, and the latter heard in May singing within two miles of the city.

Early Nest of the Dipper. T. Thornton MacKeith, *Zoologist*, April 1907, p. 151.—Records the commencement of a nest at Uplawmoor, Renfrewshire, on 15th February, the fourth egg being laid on 16th March.—The same observer (*Zoologist*, June 1907, p. 235) took a clutch of five Dipper's eggs in the same locality on 14th April, and on 30th April found five freshly laid eggs in the identical nest.

Landrail killed by Telegraph Wire. A. Crawshay, *The Field*, 27th April 1907, p. 689. The incident occurred at New Cumnock on 22nd April, an early date for the arrival of this species.

Migration of Wild Swans. H. W. Robinson, *The Field*, 27th April 1907, p. 689.—Large flights observed passing over Graemsay, Orkneys, on 15th April.

On Melanotus rufipes, Herbst., and M. castanipes, Payk. E. A. Newberry, *Ent. Mo. Mag.*, June 1907, p. 123.—A short

article relative to the distinctness of these two species, and based partially on an examination of specimens taken at Rannoch.

Notes on the Genus Gonatopus (Dryininæ). A. J. Chitty, *Ent. Record*, April 1907, pp. 79-82.—Scottish localities are referred to.

Notes on Diptera in Scotland, 1906. A. E. J. Carter, *Ent. Mo. Mag.*, May 1907, pp. 110-112.—A long list of species, taken at Polton, Musselburgh, and Aberfoyle.

Diptera in Dumbartonshire in 1906. J. R. Malloch, *Ent. Mo. Mag.*, April 1907, pp. 86-87.—A list of 82 species taken chiefly at Bonhill.

The Myriapods (Centipedes and Millipedes) of the Forth Area. William Evans, F.R.S.E., *Proc. Roy. Phys. Soc. Edin.*, vol. xvi. No. 8 (May 1907), pp. 405-414.—Notes on 17 species, specimens of nearly all of which were determined for the author by Mr. Pocock.

BOTANY.

A Further Contribution to the Fresh-water Plankton of the Scottish Lochs, by W. West and G. S. West, *Trans. Roy. Soc. Edin.*, xli. 1906, pp. 477-518, 7 plates.

Notes on the Formation and Flora of a Shingle Island in the River Orchy, Dalmally, Argyll. By Beatrice Sprague, *Trans. Edinb. Field Nat. and Micr. Soc.*, v. 1906, pp. 290-315, 3 maps.

Notes on British Rubi. By Edward Gilbert, M.D., *Journ. Bot.* 1907, pp. 129-135.

British Roses of the Mollis-Tomentosa Group. By Rev. Augustine Ley, *Journ. Bot.*, 1907, pp. 200-210.—A discussion of the forms, which are ranked under 18 'species.' Each is defined, and its distribution in Britain, as known to the author, is indicated.

Forms of Potamogeton new to Britain. By Arthur Bennett, *Journ. Bot.*, 1907, pp. 172-176.—An important contribution to the history of the genus in Britain. Several of the forms are from Scotland.

Synopsis of the Orders, Genera, and Species of Mycetozoa. By A. and G. Lister, *Journ. Bot.* 1907, pp. 176-197.—A very valuable abstract of the most distinctive features of the group in all grades of classification down to species.

BOOK NOTICES.

The British Warblers: A History, with Problems of their Lives. By H. Eliot Howard, F.Z.S., M.B.O.U. Illustrated by Henrich Gronvöld. London, R. H. Porter, 1907. Part I. price 21s. net.

Among the sciences, the literature of ornithology stands unsurpassed for the beauty of its works, and the book under notice will certainly be second to none. The Warblers form one of the most attractive groups among our native birds, and are well worthy of having an exhaustive monograph devoted to the delineation of their graceful forms and their engaging and interesting life-histories. Mr. Howard's book promises to furnish this in a manner which is in all respects worthy of his feathered favourites. The coloured portraits of both birds and eggs are of extreme beauty and excellence, and are decidedly the best we have ever seen; while the series of photogravure pictures illustrating courting attitudes, from drawings by the author, are, we believe, unique. The strong point of the letterpress is its originality. Mr. Howard has watched his subjects with remarkable zeal and affords us some of the best peeps into the least observed phases of their life-histories that have ever been given us. He deals too with many of the problems raised in a pleasing and philosophic manner; and the descriptions of his bird-watchings are graphic and devoid of those wearisome details which characterise the essays of some recent writers. The text, too, is admirably arranged, and one can find at once any item of information, whether it relates to description of plumage, geographical distribution, or habits.

The work is to be completed in 8 parts. Part I. contains 24 pages of letterpress, and deals with the Sedge Warbler and the Grasshopper Warbler. It contains 4 coloured and 10 photogravure plates, and two maps showing the approximate distribution of the birds during summer and winter.

Bird-Life of the Borders on Moorland and Sea, with Faunal Notes extending over Forty Years. By Abel Chapman, F.Z.S. etc. With coloured maps, and numerous illustrations. London, Gurney and Jackson, 1907. 14s. net.

This is a second edition of what was deservedly *the* bird-book of the year 1889. Written by one possessed of an intimate knowledge of his subject and an attractive pen, and a first-rate ornithologist to boot, the edition soon became exhausted and the book has been very scarce for many years. The work was certainly well worthy of being reprinted, but fortunately more than this has been accomplished, for Mr. Chapman has been induced to practically

rewrite and much enlarge the book; and he has added several plates to his series of original and vigorous pen-and-ink sketches—pictures that will be much appreciated by those familiar with bird-life in the open. There is no better book of its kind, and to Scottish naturalists it will be especially acceptable since it deals with the bird-life of the Cheviots, the moorlands of the Border, and the adjacent seaboard. In its new form it will be welcome even to those who possess the original edition.

We have only one fault to find with the author, namely, that he has not brought his chapters on migration up to the level of modern knowledge, and hence some of his statements are now known not to hold good. The book forms a handsome and well-printed volume of 458 pages, and the reproductions of the plates are excellent.

European Animals: their Geological History and Geographical Distribution. By R. F. Scharff, Ph.D., B.Sc. London: Archibald Constable and Co., Ltd., 1907. 7s. 6d. net.

This book has strong claims on British naturalists, since a considerable portion of it is devoted to the history of the animals of our islands past and present—a subject of the greatest importance to all who are genuinely interested in our insular fauna. Scottish naturalists will find a chapter devoted to the animal life of their country, which is compared with that of both England and Ireland; and its associations with Iceland on the one hand and Scandinavia on the other are fully discussed. Other chapters, in like manner, deal with the distribution of animals in other European countries. Many very intricate and difficult problems naturally present themselves for solution in dealing with such subjects, and these are treated fully and fairly; and although we do not always agree with the deductions which Dr. Scharff draws from the facts presented, yet his conclusions are always worthy of careful consideration. The book is replete with useful facts gleaned from many sources, and dealing with all classes of animals; those species which bear evidence of great importance are depicted along with their geographical distribution on a series of maps. The book is one which should certainly be in the hands of all British zoologists, not only on account of the elaborate manner in which it treats of the history of our fauna, but also as a book of reference dealing with the past and present distribution of European animals generally. It is a well got up volume, and is remarkably reasonable in price.

Yours faithfully
A. Somerville.

The Annals
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THE LATE ALEXANDER SOMERVILLE, B.Sc.

With Portrait.

Alexander Somerville was born in Glasgow in 1842, his father being the well-known and revered missionary Dr. A. N. Somerville, who was for many years minister of the Anderston Free Church in Glasgow, previous to his missionary services. Mr. A. Somerville was educated in Glasgow, first at the Academy and then for three years at the University. Entering on business, he went to Calcutta, where he spent fifteen years. Owing to ill-health he returned to Scotland, and resumed tastes and pursuits that had been interrupted by want of leisure during the intervening years. Returning to the University of Glasgow, he entered on the curriculum in Science and graduated B.Sc. As a boy he had been interested in entomology; and natural history on all its sides attracted him greatly, his studies being chiefly directed for several years to the Mollusca, and afterwards to the vascular plants of the British Islands. In both fields his efforts were unwearied and successful, and the results were most freely placed at the service of others. Numerous communications were made by him to scientific periodicals, especially to the publications of the Glasgow Natural History Society, of which he was a strong supporter, being its President for some years. An enthusiast himself, his zeal communicated

itself to others; and he was never happier than when able to assist a fellow-worker.

He diligently explored the western shores of Scotland for Mollusca, dredging the seas and lochs, and keeping most careful records of the results in manuscripts now in the possession of his nephew, the Rev. G. A. Frank Knight. They give the localities explored, the depths in fathoms, the numbers of the species and varieties in each haul of the dredge, distinguishing the dead from the living specimens. They show that in this thorough way he had investigated the whole of the Clyde area and almost the whole West Coast up to the Butt of Lewis and Loch Broom. These records have remained unpublished; but Mr. Knight is engaged in preparing reports on them which will make available to conchologists the stores of information amassed by Mr. Somerville. His knowledge of critical species was such that he was one of three referees appointed by the Conchological Society of Great Britain and Ireland for Marine Mollusca. He was for a number of years on the Council of the Society, and for three years was its President. In 1886 he issued a List of the British Brachiopoda and Marine Mollusca, which was recognised as the standard until the appearance in 1900 of the Conchological Society's official list.

For many years he was a strong supporter of the marine station at Millport, and did much to obtain means for its equipment and to extend its usefulness. The topographical distribution of Scottish plants was of great and continued interest to him, and was investigated with care like that bestowed on the Mollusca. Though chiefly carried on in the West of Scotland, his researches extended to other regions also, *e.g.* to Orkney, where he spent some weeks a few years ago investigating the flora. Ever ready to spend time and labour in assisting others, he went to districts, such as Linlithgow, about which information was desirable, and communicated the results of his visits most freely, as is often evidenced by the pages of this and of other scientific journals. He contributed articles to the "Journal of the Conchological Society," the "Transactions of the Glasgow Natural History Society," and other scientific papers; but his scientific services are not less evident in

the frequent acknowledgments in the publications of other workers of assistance and information supplied by him. Since 1881 he was a Fellow of the Linnean Society. He was much interested in the Scottish Antarctic Expedition, and was ready to lend a helping hand to whatever could promote natural science.

Nor was he less disposed to assist in social work and philanthropic efforts at home and abroad. His personal character won him the esteem and affection of those that had the privilege of his acquaintance. Of late years his health rendered him unable to undertake the expeditions of former years in search of shells and plants; and for some months he often suffered severe pain; but his interest in the familiar studies remained keen, as did also his pleasure in the progress made by others. He died in his house in Glasgow on 5th June 1907. He was twice married; and is survived by a widow, two sons, and four daughters.

His memory will remain with his friends as that of a zealous and earnest seeker after truth, a successful student of biological science, and an unselfish and lovable man.

REPORT ON SCOTTISH ORNITHOLOGY FOR 1906.

By John Paterson.

(*Continued from p.* 143.)

Falco æsalon (Merlin).—Observed at the Flannans, 9th and 29th April and 13th and 14th May. At Pentland Skerries on 10th August, two chased over the island by Terns. At Sule Skerry, 16th September (1); 21st (4).

Sula bassana (Gannet).—Seen frequently all January at the Bell Rock. On 2nd May, diving among shoal of young Coal-fish 5 yards off Tobermory pier. On 9th August, flocks passing S. at Bell Rock. .

Ardea cinerea (Common Heron).—At North Ronaldshay, 7th January, two from the S. rested for a few minutes and then went N. Small colony (three nests) west side of The Lews (p. 81). On 25th July, five flying across the island at Noup

Head in a S.E. direction. At Kelburne Castle (Ayr), young still in nests on 16th September. On the following day, at Spiggie, Shetland (13). One at Pentland Skerries on 9th October; "not often seen here." Another same locality next day.

Anser cinereus (Grey-Lag Goose).—More numerous than usual towards end of February in North Uist ("Annals," 1906, p. 114). Inverbroom, 14th May, "wild geese" (sp. ?) went N. Decidedly increased as a nesting species in South Uist since the "Outer Hebrides" volume of the Scottish Fauna series appeared (p. 81). Introduced half-wild birds now nesting in "Tay" ("Annals," 1906, p. 237). On 4th October, at Spiggie, Shetland, eight flying about loch for some days. Between 6th and 13th October, "wild geese" (sp. ?) seen daily passing S. at Inverbroom. At Burntisland, on 10th October, small flock "wild geese" (sp. ?) passing S.; 12th, at same place, large flocks passing S. At Sule Skerry "geese" (sp. ?) (7), passing E. to W. At Fairlie (Ayr), on 13th November, a young male Grey-Lag shot (p. 52).

A. segetum (Bean Goose).—One shot at Pentland Skerries on 3rd November.

A. brachyrhynchus (Pink-footed Goose).—Geese, probably "pink-footed," flying round Forfar in the night of 21st October. The same incident reported from Arbroath on the same night—"Geese flying in the fog all the night through." On 10th November, Mr. Wm. Evans saw several hundreds in the Aberlady district. They seemed to Mr. Evans more abundant than usual that autumn. On the 14th November, a very large flock of geese flying over Montrose basin, probably "Pink-footed."

Bernicla leucopsis (Barnacle-Goose).—In North Uist, in February, more than usually numerous ("Annals," 1906, p. 114). Twelve at the Flannans on 26th March, and about a hundred on 1st May.

B. brenta (Brent Goose).—At Fairlie (Ayr), on 27th January (50); 24th February (about 60). At Lingay, North Uist, flock of 160 on rough wild days ("Annals," 1906, p. 114). On 4th October, at Loch Ard-na-laird, Grimersta, Lewis (11).

Cygnus musicus (Whooper Swan).—At the Fair Isle, in spring and autumn, a head obtained belonging to this species (p. 78). At Lerwick, 11th April, five "Swans" (sp. ?) flying N. At Unst, 12th, flocks of six and nine "Whoopers," evidently very tired, flying very low. In South Uist, on 1st June, nine, which flew N.; believed to be "Whoopers" (p. 82). 13th October, at Spiggie, Shetland, one Whooper; 14th, three Whoopers; 20th, eight Swans (sp. ?) on Loch.

C. BEWICKI (Bewick's Swan).—On 7th February, at North Uist (3); 1st March (4) ("Annals," 1906, p. 114). The following record referring to Bishop Loch (Lanark) is supplied by Mr. Alex. Ross. On 5th January (2); 7th (4 ad. 3 *juv.*); 14th (8 ad. 3 *juv.*); 18th February, still there; 25th, "gone." Reappeared 4th November (1); 24th (3); 9th December, thirteen, which had been frozen out and driven off when the Loch revisited 1st January 1907. On 31st December, Mr. Ross and the writer saw thirteen flying and calling in a snowfall, proceeding W. to E. along the Forth and Clyde Canal at Glasgow. An hour later Mr. M'Keith, Caldwell, 12 miles S. of Glasgow, saw thirteen flying S.W. into Ayrshire. On same date Mr. John Robertson saw four in Bute.

TADORNA CORNUTA (Common Sheld-Duck).—Common and increasing in N. Uist in February (p. 114). Becoming more numerous at Fairlie (Ayr) 24th February. At Bishop Loch, east of Glasgow, on 29th April, four, migrating of course. In Fife, young hatched out by 18th June. In October, three at Sule Skerry on 12th, five flying S.E. at the Pentland Skerries on 24th, and at the Fair Isle a few on several occasions this month, once as many as eight (p. 78).

ANAS BOSCAS (Mallard).—"Nothing like so numerous as usual" at North Uist in February (p. 114). In Bute, on 15th April, a nest with ten eggs.

A. STREPERA (Gadwall).—Brood reared near Broughton, Peebles (*The Field*, 28th July 1906, p. 196). One shot early in August in "Tay" out of what appeared a family party ("Annals," 1906, p. 238).

SPATULA CLYPEATA (Shoveller).—On 25th March, at Gad Loch, Lenzie (3); 21st April, Harelaw Dam (1); 6th May, Possil Marsh, a pair; 20th, Hogganfield, a pair; 9th June, Possil Marsh (again), a pair—all near Glasgow. The Shoveller is "a late nester." It would be interesting to have some data for Scotland on this point. In the autumn, two at Kilconquhar on 8th August, four at Hogganfield on 6th September, and eleven at Bishop Loch on 4th November.

DAFILA ACUTA (Pintail).—Early in August a bird of the year shot out of what appeared a family party ("Annals," 1906, p. 238). On the Eden, 12th September (1). On 22nd December, immature ♂ shot at Stumpig Moss (Stirling) (p. 115).

NETTION CRECCA (Teal).—Nothing like so numerous as usual in North Uist in February (p. 114). "Now breeds plentifully" in the Uists and Benbecula (p. 82).

Mareca penelope (Wigeon).—A few at Swordale (E. Ross) on 5th May—the last seen. The last pair goes almost simultaneously from Mull (6th May). The others had left last-named locality before 26th April. Reappeared at Swordale on 10th September, and was plentiful at Spiggie, Dunrossness, Shetland, on 27th. Appeared at Fairlie (Ayr) on 25th September.

Fuligula ferina (Pochard).—Two at the Glen Dam (E. Renfrew) 28th July. At Loch Libo (E. Renfrew) on 9th December (71).

F. cristata (Tufted Duck).—Many on the Glen Dam (E. Renfrew) on 28th July.

F. marila (Scaup Duck).—At Swordale (E. Ross) the last lot for the season seen on 26th March. Confirmed as a breeding species in the outer Hebrides (p. 82). At Swordale, on 14th November, 2 ♂, 1 ♀. A few on several occasions in first half of November in Fair Isle (p. 78).

Clangula glaucion (Golden-eye).—More numerous than usual in N. Uist in February ("Annals," 1906, p. 114). On Mishnish Loch, Mull, seven on 25th April. One (♀) in Loch Maddy in June (p. 83). On 26th August one at Balgray Dam (E. Renfrew). First seen at Kirkliston, 19th October.

Harelda glacialis (Long-tailed Duck).—On 12th March, flock at Bell Rock—last seen there (a pair) on 11th April. A good many at Balcomie (Crail) on 24th. At Balcomie, on 6th October, small parties kept arriving from the north, some passing; on 8th more arrivals, and on 14th flocks passing between 10 A.M. and 1 P.M., one party which alighted consisted of nine drakes in full white winter plumage and one in dark plumage with a white crest.

Somateria mollissima (Common Eider Duck).—Small numbers at the Flannans between 23rd January and 9th April. On 5th June nests with five and three eggs respectively in Fife. On 20th June with young off Coll. Fair number breed at N. Uist, ♀ of a pale fawn colour seen in Loch Maddy (p. 83). In autumn first seen at Bell Rock on 17th September.

S. spectabilis (King Eider).—On island of Graemsay, Orkney, ad. ♀ shot on 21st February ("Annals," 1906, p. 116). One observed by Alex. Ross near Kintra at the south of Laggan Bay, Islay, on 25th July.

Œdemia fusca (Velvet-Scoter).—Enormous flocks ("thousands") at Largo Bay on 6th June. "Have records of this and the common species all through the year" (Leonora J. Rintoul and Evelyn V. Baxter). An ad. (♀) found dead at Eoligary, Barra, on 25th November (p. 116). Another ad. (♀) washed up on 1st December at the Fair Isle.

Œ. PERSPICILLATA (Surf-Scoter).—At Stromness, 14th to 21st December, an ad. ♂ ("Annals," 1906, p. 117).

MERGUS MERGANSER (Goosander).—At Kirk o' Muir, Carronside, in February, an ad. (♂) ("Annals," 1906, p. 117). One (♂) off Barra on 22nd May, "a rare occurrence in the Outer Hebrides" (p. 83). One on the loch at Spiggie on 7th October.

M. SERRATOR (Red-breasted Merganser).—About thirty at Swordale on 6th February. One at Balcomie (Crail) on 24th April. On 25th May, at Luss (Loch Lomond), with young on the water and nest with nine fresh eggs. On 11th July, at Swordale, one (♀) with twenty-six young in her company. Two on the Eden (Fife) on 10th August.

M. ALBELLUS (Smew).—One, shot at Kirkconnel, reached Mr. Service on 2nd January, 1907 (p. 113). Seen several times in the Sound of Harris in February, but no males (p. 114).

COLUMBA PALUMBUS (Ring-Dove).—One found dead at the Flannans on 14th May. On 8th June one shot at Grogary, "only a few occur in the Uists and Barra" (p. 83).

C. ŒNAS (Stock-Dove).—Three nests with eggs on 15th April in Bute, one set hard incubated, and on 14th July, in same locality, two nests with fresh eggs. Four Stock-doves observed in Cleghorn Woods, Lanark, on 1st May.

C. LIVIA (Rock-Dove).—On 15th April in Bute two nests with young, one lot fourteen days old.

TURTUR COMMUNIS (Turtle-Dove).—An immature bird on 25th September at the Fair Isle (p. 79).

SYRRHAPTES PARADOXUS (Pallas's Sand-Grouse).—A flock of six seen on some "well-known links" in East Lothian (*The Field*, 2nd June, 1906, p. 901). [A very doubtful record.—EDS.]

TETRAO UROGALLUS (Capercaillie).—Hen shot at Torphins (Aberdeen) (p. 117). August-November, two at Bavelaw, Midlothian (pp. 51-52). On the Binn Hill, near Elgin, in October, two ♂ and one ♀; at Gordon Castle Woods about thirty, and at Pluscarden towards the end of the year one (♂) killed, "and there are two more (♂ and ♀) left" (p. 52).

T. TETRIX (Black Grouse).—Hybrid with Pheasant, shot at Barcaple (Kirkcudbright) January 1906 (Bull. B. O. Club, 1906, p. 54, "Annals," 1906, p. 239).

LAGOPUS SCOTICUS (Red Grouse).—Young seen on 18th May at Crosswood, W. Calder. Kinnear notes Barra birds very dark, but found the Lews birds so light that he was much struck with them (p. 83). In N. Uist, a few, decreasing (p. 114).

L. MUTUS (Ptarmigan).—One practically at sea-level in South Uist on 1st June (p. 83).

PHASIANUS COLCHICUS (Pheasant).—Near Edinburgh on 29th April nest with fourteen eggs (Binnie).

PERDIX CINEREA (Partridge).—At Kirkliston lays on 26th April. At Gilston (Fife) on 3rd June nest and sixteen eggs.

COTURNIX COMMUNIS (Quail).—This species was heard during July calling in the fields adjoining the links at Balcomie (Crail) by the writer. Two were taken in Fife during the summer, one at Freuchie and the other at Inverkeilor (p. 117). One got at Sandside, Reay, on 30th September.

CREX PRATENSIS (Corn-crake).—There are usually reports of the appearance of this species in April from several localities, but this year the earliest reports are Burntisland and Lennoxlove (Haddington) 1st May. Kinnear was told that it was scarcer than usual round Stornoway this year (p. 84). Still calling at Crossmyloof (Glasgow) and Fairlie (Ayr) on 6th August. One shot at Lahill (Fife) on 26th September, and one killed 18th October at Unst (p. 50).

PORZANA MARUETTA (Spotted Crake).—One shot at Stornoway on 15th October (*The Field*, 10th November 1906, p. 822).

RALLUS AQUATICUS (Water-Rail).—One seen in N. Uist on 6th February ("Annals," 1906, p. 114). Young one unable to fly in Tiree in August (*l.c.* p. 237). At the Pentland Skerries on 9th October and 12th. Two at Spiggie on 17th. In the Fair Isle observed from 28th September till December (p. 79).

GRUS COMMUNIS (Crane).—One shot near Stornoway on the 14th May (p. 84), and another observed two days later in North Shetland (p. 50).

EUDROMIAS MORINELLUS (Dotterel).—A bird of the year received in the flesh in September from the Flannans (p. 53).

ÆGIALITIS HIATICOLA (Ringed Plover).—Three newly hatched young on 7th August, in Fife. "No nests this year [Fife] with over three eggs and several birds sitting on two."

CHARADRIUS PLUVIALIS (Golden Plover).—One black-breasted at Cardross, 13th February. At Swordale a pair returned to Moor on 19th March and reported on Mearns Moor (E. Renfrew) on 25th. In the last named locality had eggs by 22nd April, well incubated, and on 29th observed one "on her nest, her neck was stretched full out, and her head rested on the ground while the wings were slightly extended" (Robert Wilson). In October and November at Skerryvore a few—two or three daily from the north, proceeding S. after

a rest. A conspicuous feature of the fields around Glasgow until after the snow on 13th December, when it practically disappeared, any that were left clearing out after the snow-storm on Christmas night. An unprecedented rush of thousands took place over Tiree from the 19th to the 23rd. They proceeded southward anticipating the great snow-storm of 26th to 28th (p. 117).

Squatarola helvetica (Grey Plover).—One on the Tyne estuary on 12th May (W. Evans); a few wintered at Spiggie (Shetland), which is very unusual (p. 117). In E. Ross (Swordale) from 19th September till 20th November, there being "a good many" on 20th October. In East Fife from 10th August (7) and 18th (14) till 9th October in small numbers. In Ayrshire at Girvan on 23rd September (1), and at Fairlie 6th September (1), 6th October (1), 1st November (2).

Vanellus vulgaris (Lapwing).—Returned to Carmichael (Lanark) 6th February, spring call at Kirkliston 22nd, and near Glasgow 28th. Returned to Crosswood, West Calder, 3rd March (5); Swordale, 4th (a few); Mearns Moor, 25th. First nest Swordale, 4th April; Kirkliston, 13th; at Tentsmuir on 16th June, "still has eggs." In autumn, 24th September, at Pentland Skerries, a flock passing S.E. being the first seen for six weeks. Swarming along three miles of shore at Fairlie (Ayr) 6th October, but very scarce by the 19th, when not more than fifty seen all afternoon. About a hundred pass south at Spiggie on 11th October. After the snow which fell in the Glasgow district on 13th December they practically disappeared.

Strepsilas interpres (Turnstone).—At the Bell Rock on 13th April (3); Whitberry Point, near Dunbar, ten "beauties" on 12th May (W. Evans). Fairly numerous in Bute on 19th May. On 17th July Skerryvore visited by twenty-five which passed on to Ireland (p. 22). Fairlie (Ayr), 25th August (2); Mull, 5th and 19th September, in large numbers on both dates; 23rd, Girvan (30); 19th October, Fairlie (16); 24th, Pentland Skerries, thirty or forty.

Hæmatopus ostralegus (Oyster-Catcher).—First pair arrived Sule Skerry, 18th February, six on 25th. At the Flannans two on 20th March; return to breeding ground, Swordale, on 31st. Three "chicks" at Fairlie, 4th August, on which date the species is observed at the Bell Rock. On 13th November at Largo Bay one with a broken wing when approached took to the water and swam a long way out, "as well as any duck."

Phalaropus fulicarius (Grey Phalarope).—At the Flannans on 18th May (1), 19th (2); Bell Rock, 6th to 9th September, one remained feeding three days.

Scolopax rusticula (Woodcock).—In North Uist not so numerous as usual (February) ("Annals," 1906, p. 114). One flushed from two young at Swordale, 1st July. First seen at Spiggie on 6th October; fifteen were shot on Fitful Head on 23rd. A considerable number seen throughout the winter (p. 118).

Gallinago major (Great Snipe).—One on the Fair Isle on 5th September (p. 79).

G. cœlestis (Common Snipe).—Not so numerous as usual in N. Uist ("Annals," 1906, p. 114) on 4th February, on which date one drumming. At Crosswood, West Calder, drumming on 31st March. Some that had been at Sule Skerry all winter disappeared early in April. At Gilston (Fife) nest with four eggs on 3rd May. More than usual at Inverbroom on 26th December.

G. gallinula (Jack Snipe).—In February not so numerous as usual in N. Uist ("Annals," 1906, p. 114). One shot near Loch Spynie on 10th August, and another reported from Pitgaveny (*The Field*, 25th August 1906, p. 342); "supposed" to breed in Shetland ("Annals," 1906, p. 239). First shot at Swordale, 24th October.

Tringa alpina (Dunlin).—At Crosswood, W. Calder, on 12th April (2), and on 29th April one at Hogganfield and three at Bishop Loch on passage, both localities near Glasgow. In last few days of May in South Uist a great many which must have been chiefly migrants (p. 84). Young, newly hatched, in Fife on 5th June; young on Mearns Moor (E. Renfrew) on 15th, "very scarce here this season." In numbers in Mull on 5th September. A pair at Pentland Skerries on 12th October.

T. minuta (Little Stint).—One obtained on Fair Isle on 14th August (p. 79). On 16th August one on the Eden (Fife), and on 15th September in same locality, two. One at Spiggie on 6th October.

T. subarquata (Curlew-Sandpiper).—At the mouth of the Eden (Fife) on 15th September, two.

T. striata (Purple Sandpiper).—From 5th February till 25th May, in small numbers at the Flannans. At Crail several on 3rd April; at Bell Rock, two on 13th. On island off Barra, half-a-dozen in last days of May (p. 84). Two at Elie on 20th July. About fifty at Sule Skerry on 14th August. At Balcomie (Fife) a few on 14th October.

T. canutus (Knot).—Several at the Eden on 5th June, at Aberlady Bay on 18th July (eleven) (W. Evans). Flocks at the Eden 18th August till 15th September. At Fairlie (Ayr) about twenty on 3rd September.

Calidris arenaria (Sanderling).—Three at Largo on 6th June, and a small flock in South Uist and Benbecula in this month (p. 84). Several at Largo on 7th August, and the Eden on 11th. Two in Mull on 5th September, and one in Swordale 6th, two 8th October.

Machetes pugnax (Ruff).—Over a dozen in one flock on 1st September at Spiggie, Dunrossness, Shetland ("Annals," 1906, p. 239).

Totanus hypoleucus (Common Sandpiper).—Cloverhill, Broughton, 26th March. West Calder, 11th; Caldwell and Beith, 12th; and Clyde at Newton, 13th; Carmichael (Lanark), 17th April. Eggs slightly incubated at Broomlee on 22nd May (Binnie). On 21st July from Balcomie to Crail in every ditch and wet place where as a rule there are none. "Evidently just passing." Last seen at Swordale (E. Ross) on 8th August.

T. ochropus (Green Sandpiper).—Dunbarnie Links, near Largo, 23rd August (W. Evans). Fair Isle, one on 7th and 14th September (p. 79). Locharbriggs (Dumfries) one (♀) shot, 29th December (p. 113).

T. calidris (Redshank).—Cloverhill, Broughton, 17th March; Crosswood, W. Calder, two arrived 18th; returned to Mearns Moor 25th, and to Swordale on 6th April. In Mull on 6th July, passing N.W. On 6th October flock of 150 at Fairlie (Ayr), mostly young.

T. canescens (Greenshank).—Fairly numerous in N. Uist in February ("Annals," 1906, p. 114). At Waulkmill Glen Dam (E. Renfrew) on 21st January a pair, 18th February one, 29th July one, 5th August two; Kilchattan, Bute, one on 8th April; Crosswood, W. Calder, on 13th May, two; near North Berwick, 25th August, one (W. Evans); at Fairlie (Ayr) on 11th and 25th August (1), 3rd September (3), 5th (2), 6th (4); at Swordale (E. Ross) on 20th October (2); Salen, Mull, on 22nd October (2); 7th November (3).

Limosa lapponica (Bar-tailed Godwit).—In N. Uist on 6th February, flocks (20, 10, and 40) ("Annals," 1906, p. 114). Large flocks at Eden mouth on 18th June. Fourteen (one a fine red bird) at Aberlady Bay, 18th July (W. Evans). Eden on 10th August a "good many." Large flocks on the Dornoch Firth on 26th September.

Numenius arquata (Common Curlew).—Arrived Crosswood, W. Calder, on 3rd March; Mearns Moor, same date; Caldwell, 4th; Cloverhill, Broughton, 9th; and left Sule Skerry about 25th April. Seen at the Bell Rock on 4th August, and twelve arrived for winter on 6th August. On the 23rd numbers

passing eastward (? from Pentland Moors to the shores of the Forth) over Morningside late in evening. Flock seen at Pentland Skerries on 28th September.

N. PHÆOPUS (Whimbrel).—Numbers in Barra throughout May (p. 85). Northward movement general from 7th May till 8th June. One at Aberlady on 18th July (W. Evans), and another at Garroch Head, Bute, on 20th. Small numbers Elie and Eden mouth, 26th July till 18th August.

STERNA CANTIACA (Sandwich Tern).—At Crail several on 24th April, North Berwick 29th. Quite a fair-sized flock at Loch of Strathbeg on 27th July ("Annals," 1906, p. 239). Parties of varying size continually passed south at Balcomie (E. Fife) from 10.15 A.M. till 4.15 P.M. on 6th October.

S. FLUVIATILIS (Common Tern).—First report 29th April at North Berwick; 3rd May, Bell Rock (6); 5th, large flock; 8th, Largo Bay, evidently just arrived, "any number" sitting on the sand very tired; 11th, Pentland Skerries, numbers flying over island till 21st when they settled; 9th, Elliot sands, numerous "terns"; many nests and eggs in Fife by 13th June, but numbers less than usual in proportion to birds (Largo). At Tarrsgeir, a small rock south of Texa, off Port Ellen, Islay, a colony of 400 pairs nesting in July (Alex. Ross). At North Ronaldshay, 13th to 24th August, great numbers. Leaving from 27th at Sule Skerry. When undisturbed usually leave Pentland Skerries first week in August. This year strangers robbed many nests in June,[1] and consequently large numbers of young were late. The young strong on the wing left early in August as usual. Last seen Bell Rock 14th September. Numbers of both species at the Fair Isle 11th to 13th, and again on 20th September (pp. 79, 80). Stragglers at the East Neuk of Fife till 9th October (4).

S. MACRURA (Arctic Tern).—At Loch of Sandwick, Whalsay, on 29th May. With Common Terns at the Fair Isle in September (see previous species). Thousands at Nigg Sands, Swordale, on 14th August, and five at Dornoch on 27th September (two young running after parents for food).

S. MINUTA (Little Tern).—Ness of Sound on 7th June (5); Fife, 18th June, nests with two and three eggs; six pairs in one nesting locality in Outer Hebrides (p. 85). Spiggie on 6th October (1), passing east.

LARUS RIDIBUNDUS (Black-headed Gull).—Assumes hood, "Clyde" on 12th February, Kirkliston 17th, and Garscadden 18th. On 22nd March great flocks arrived N. Ronaldshay "presumably for season." At the great colony at Harelaw Dam (E. Renfrew),

[1 In Pentland Skerries?—EDS.]

laying only beginning on 21st April. First appeared Whalsay on 22nd April. A colony of about fifty pairs nesting at the Little Loch (E. Renfrew) disappeared 7th May, all the nests having been destroyed. In Mull on 3rd July first seen on return from nesting. Noup Head 10th July (16). Winter plumage, Edinburgh, 12th August.

L. FUSCUS (Lesser Black-backed Gull).—Appears in Mull on 5th April. Last seen there 22nd September. On 4th November at Bishop Loch, near Glasgow, several. Appearances at this season of this migratory gull deserve attention.

L. GLAUCUS (Glaucous Gull).—One at Southerness (Solway) in mid-September. Two at Sule Skerry on 7th November.

L. LEUCOPTERUS (Iceland Gull).—At Ullapool on 28th January (1) ("Annals," 1906, p. 115). In Tobermory Bay, Mull, one, immature, for a fortnight in December. One on 10th December at the Fair Isle (p. 80).

RISSA TRIDACTYLA (Kittiwake Gull).—At the Bell Rock on 21st February and 12th March flocks flying south. Several at the Flannans on 20th March. Arrived at Treshnish Isles on 3rd April.

PAGOPHILA EBURNEA (Ivory Gull).—One in North Uist in June (p. 85).

STERCORARIUS POMATORHINUS (Pomatorhine Skua).—An immature female obtained on the Fair Isle on 27th November (p. 80).

S. CREPIDATUS (Arctic Skua).—Loch of Sandwick, Whalsay, 29th May, a number. Between 11th June and 8th October in East Fife small numbers—thirteen being of the dark form, three light, and one not noted.

S. PARASITICUS (Buffon's Skua).—On Unst on 30th May one killed, the second obtained in eight years (p. 50). One (♂) shot on the hills at Morvern,[1] Argyll, in the first days of June (p. 186). Another (♂) at Morven, Caithness, about 7th June. One with "extremely long" middle tail feathers reported from Balcomie on 5th October, and another shot at Lochnabhraon on 6th.

ALCA TORDA (Razorbill).—Seen in numbers about the Flannans from 13th February and arrived to stay on 20th March. Seen sitting on the cliffs at Noup Head on 22nd; before that date swimming and flying about. From the end of July till the middle of September a great continuous mortality of this and the next species in Solway (p. 53). At Balcomie on 8th October with fresh south wind "from 10.15 A.M. when we got out . . . till it was too dark to see, a constant stream" passed south. Till

[1] "Morvern" is rarely used, and "Morven," Argyll; "Morven," Caithness; and "Morven," Aberdeenshire, is more in general use.—J. A. H.-B.

1 P.M. they came fast and thick with a large proportion of big flocks, thereafter the stream seemed to slacken. On 9th (with a south-east wind) the movement continued, though not so fast and furious. After two days of very thick fog and other two of varying conditions, during which time no migration was observed, the movement was again resumed on the 14th, many Razor-bills, Guillemots, and Long-tailed ducks passing, all going south, between 10 A.M. and 1 P.M., slackening towards the latter hour. On the 16th a distinct *northward* movement, a lot flying off that way either in small parties or singly.

URIA TROILE. (Guillemot).—At Noup Head appearing in dozens from 17th February till there were many swimming and flying about. They were sitting on the cliffs on 21st March, and are reported at the Flannans as having arrived to stay on the previous day. On the 15th of August they were all away from Noup Head. On 6th October there was a great arrival at Balcomie with a west wind. There were again some parties passing there among the Razorbills on the 8th and 14th.

MERGULUS ALLE (Little Auk).—East Neuk of Fife, 8th October (2); Dunbar, one got on 8th December (Evans); North Berwick, 29th December.

FRATERCULA ARCTICA (Puffin).—At the Flannans, one on 6th April, several on the 9th, hundreds on the 12th. On last-named date at Noup Head great numbers, the first this year. On the 13th at Sule Skerry great numbers arrived for breeding. Returned to Treshnish Isles and Staffa on 16th. A white one seen at Sule Skerry on 1st June. Leaving Sule Skerry from 10th August and last seen 2nd September. All away from Noup Head 12th August. Flocks flying N. at the Bell Rock on 14th-15th October.

COLYMBUS ARCTICUS (Black-throated Diver).—One at Largo Bay on 6th June. Some at St. Andrews on 16th August.

C. SEPTENTRIONALIS (Red-throated Diver).—The (same ?) pair nesting for eight years past at a freshwater loch in Mull returned mid-April. Several at Lerwick 2nd May. Four at Largo Bay on 8th May. One at Bute on 19th. Some at St. Andrews on 16th August. One at the Fair Isle on 10th September (p. 80).

PODICIPES CRISTATUS (Great-crested Grebe).—Reappears in E. Renfrew (Balgray) on 4th March. Nest and five eggs on 13th in E. Renfrew.

P. GRISEIGENA (Red-necked Grebe).—One at the Eden, St. Andrews, 27th January, and another on 12th September.

P. NIGRICOLLIS (Eared Grebe).—One shot by Chas. Berry at Lendalfoot (Ayr) on 27th January. "Not the Slavonian but the one with the bill turned a little upwards, especially the lower mandible." This is a new species to the "Clyde" list.

PODICIPES FLUVIATILIS (Little Grebe).—At Mishnish Lochs on 11th March. Back at nesting place, Edinburgh, on 24th. Builds at Kirkliston on 15th April, and clutch of six eggs there on 24th June.

PROCELLARIA PELAGICA (Storm-Petrel).—About the beginning of June at Lunga, Treshnish, one with a white throat ("Annals," 1906, p. 186).

OCEANODROMA LEUCORRHOA (Leach's Fork-tailed Petrel).—First observed at the Flannans on 16th April; there were several there on 8th May. After one of the gales in the end of November examples were found at Dunscore, Lochar Moss, and Castlemilk respectively—all Dumfriesshire localities.

PUFFINUS ANGLORUM (Manx Shearwater).—Seen in the Firth of Forth from the latter part of May till the end of Autumn. "Not so plentiful as I have in some years seen them" (W. Evans). A few seen late in May till early July at the Fair Isle (p. 80).

FULMARUS GLACIALIS (Fulmar).—Appeared at the Fair Isle on 17th January (p. 80). At the Flannans 4th February (5), 12th (6). Isle Ornsay (Skye), one seen 25th July ("Annals," 1906, p. 240). Whalsay, two small colonies. Eight to twelve pairs now at Barra Head (p. 85). Fifteen pairs below the Lighthouse at Dunnet Head, and one pair three miles on the Thurso side of the Head (p. 118). "Quite a large colony" on Yell this year (Annals, 1906, p. 240). "Say two dozen" at Noup Head on 17th November.

CORRECTIONS.—P. 140, under F. MONTIFRINGILLA, *for* Largs *read* Largo; p. 143, under STRIX FLAMMEA, *read* 27th January, *not* July.

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SOME BIRD NOTES FROM THE OUTER HEBRIDES DURING A MONTH SPENT THERE, MAY–JUNE 1907.

By P. H. Bahr, B.A., F.Z.S., M.B.O.U.

I shall endeavour to make these notes supplementary to a paper contributed by my friend, Mr. N. B. Kinnear, in the "Annals" for January and April 1907, which in turn have enabled us to bring the information contained in Mr. Harvie-Brown's "Appendix"[1] more up to date. In addition to enumerating the various species observed, a few of which have not been previously recorded at this time of the year, I intend more especially to deal with certain traits and habits incidentally observed during my efforts to obtain characteristic photographs of certain of them. Though such photography has been stigmatised by some as useless, yet more certainly has it had the effect of causing more careful observation of the home life of even our commonest species, and many new and interesting facts have come to light. As such, then, I present these few and meagre observations, hoping that they may still prove of interest

[1] "Ann. Scot. Nat. Hist.," April, July, October 1902, January 1903.

to the readers of the "Annals." I am no collector of skins or eggs, and I do not wish in any way to imperil the already overharassed members of our avifauna. I am greatly indebted to those who allowed me to stray over their valuable preserves, and hope, by publishing these notes, I am in no way betraying the localities in which certain species, dear to the collector, were observed.

Song Thrush, *Turdus musicus*, Linn.—It is generally recognised that this species is on the increase. According to my experience they are not found so much in the gardens, even such as contain bushes, as among the wooded islands in even the wildest lochs. On 21st June I disturbed several from such islands, where, amongst the ruins of some long-forgotten castle, they appeared to find an abundance of snails, *et hoc genus omne*. It is to be noted that I did not find any on islands where the Gulls bred, nor could I find any nests. The specimens I saw were all of the dark variety. On another occasion I saw one on the moors by the side of the road. Only once did I hear their song, and that was at Loch Boisdale on my way home on 27th June. I imagine that they were deterred from singing by the execrable weather. Under no circumstances does one appreciate the beauty of the song more than when, above the shrieking of the Gulls, it resounds from some lonely den, re-echoing from the hillsides as it falls on the observer's ear.

Blackbird, *Turdus merula*, Linn.—As on the last occasion I visited these islands, so on this, my experience was limited to a single pair, probably the same; these were feeding on the borders of the aforementioned loch, and appeared to inhabit the same islands as the Thrushes.

Stonechat, *Pratincola rubicola*, Linn.—Unless this species too be on the increase, it would appear to be much more abundant than has been supposed. Some five pairs were observed in S. Uist, even in the wildest parts of the island; they all appeared to be breeding, but no young ones were observed.

Whitethroat, *Sylvia cinerea*, Bech.—Whereas last year we only saw a single bird during our travels, this, on the other hand, I heard no less than three individuals singing: two on 29th May on an island which served as a nesting site for the Black-throated Diver, and one two days later on an island in another loch. That at least one of these was resident would appear from the fact that I heard it on subsequent occasions.

Swallow, *Hirundo rustica*, Linn.—This species would seem to have been especially numerous this year, owing no doubt to the

stormy weather, which blew many out of their course. Thus after a storm from the S.E. two were seen in S. Uist on 31st May. Again on 4th June two more. The keepers tell me that several years ago they nested at Grogary Lodge. On another occasion, 8th June, after another gale three more were seen.

House Martin, *Chelidon urbica*, Linn.—A single example, which is new to the list, was seen after a violent gale (from no particular direction, as it blew from all quarters) on 4th June.

Twite, *Linota flavirostris*, Linn.—This in the Outer Isles represents the Sparrow elsewhere. Its nests are found abundantly, not only in the cultivated parts, but high up on the barren moors far from human habitation. In some stunted sycamore trees we found four nests on 27th June. Some of the eggs were partly incubated. I marvelled at the manner in which the eggs remained in the nest when perilously swaying in the storm. On 5th June a patch of gorse yielded five nests: two which contained six eggs, one young birds.

Starling, *Sturnus vulgaris*, Linn.—This bird has become even more numerous than last year. Numbers nest amongst the stones on which the foundation of the roadway is built. The young were all flying by 9th June.

Raven, *Corvus corax*, Linn.—Of these we saw but little. Once while photographing an Oyster Catcher on her nest, a particularly miserable specimen passed over. The Oyster Catchers immediately gave chase, and so discovered us in our lair. This specimen was in full moult, and many of its primaries were missing.

Skylark, *Alauda arvensis*, Linn.—The skylark's song sounds to me the sweetest when heard above the raging of the storm: no amount of rain seems able to damp their spirits. In these islands the nests are sometimes found miles away from any others of their kind, out on the moors. Last year I found one close to that of a Wild Goose, some seven miles from the nearest piece of cultivated ground. This bird is a very good mimic, and is able to imitate the call notes of many shore birds to perfection. At the end of May, when searching for Dunlins' nests, we were often misled by hearing their characteristic trill, which, on further investigation, proved to proceed from this versatile songster's throat. That they are able to reproduce these notes, even before their rightful owners have arrived, goes far to prove that their memory serves to last from one season to another. In like manner I have heard them reproduce the love-song of the Ringed Plover, and even the shrill notes of the Oyster Catcher, interspersed, of course, with snatches of their original composition. In other parts where the Redshank

is common, his plaintive whistle makes a welcome addition to the Skylark's repertoire.

NIGHTJAR, *Caprimulgus europæus*, Linn.—This species is an addition to the list. After an extra violent gale from the S.E. we saw one, evidently exhausted, on the "machair" (the low-lying ground) on 2nd June. It was being mobbed by Pewits and Gulls.

CUCKOO, *Cuculus canorus*, Linn.—This was a bad year for Cuckoos. Whereas last year they were fairly common, this I heard but two, and that not till 19th June. I often wonder what attractions they can possibly find in such a barren place.

BARN OWL, *Strix flammea*, Linn.—In his "Appendix" to the Avifauna of the Outer Hebrides, Mr. Harvie-Brown includes this species in brackets. I do not know whether such evidence as I can supply will be of sufficient importance for these to be removed. I heard its peculiar cry about midnight on several occasions about 7th June, but was never in the twilight able to detect the author.

SHORT-EARED OWL, *Asio accipitrinus*, Pall.—Though observed in comparatively plentiful numbers last year, not a single specimen was in evidence this. This fact would be in accord with the well-known sporadic habits of this species.

HEN HARRIER, *Cyrcus cyaneus*, Linn.—Males were observed plentifully last year. I had not caught a glimpse of one on this occasion till near the end of our stay. On 25th June I flushed a female in a little-frequented spot. She flew round my head, uttering cries of anxiety. The cause thereof was found to be a solitary young one about fourteen days old, still covered with down, with bright yellow cere and talons. He was sitting on a few twigs of heather under a rock on the side of a steep incline. From its rude structure, the nest appeared to have been recently made; the real nest was found thirty yards farther on amongst some deep heather. No trace of young or egg-shells could be detected on the original site. It would appear that the young one had been removed by the parents, and not washed out by some newly formed torrent; for the new nest was not below the original one, but thirty yards to one side of it, *on the same horizontal level*. I am glad to be able to report that the keepers, acting on instructions from headquarters, did not attempt to shoot the old birds, and spared the life of their offspring.

PEREGRINE, *Falco peregrinus*, Tunstall.—On 13th June a fine pair were shot off some sea-girt rocks by the keepers, presumably in the neighbourhood of their nest. The female, a particularly fine specimen, weighed 2 lbs., her mate ½ lb. less. The male

above had an incubation mark, and this was an oval spot some $2\frac{1}{2} \times 1\frac{1}{2}$ inches, situated on the lower part of the abdomen. The stomach contained the remains of at least three young birds, one of which was a Duckling, the other two looked like young Black-headed Gulls. The carcass of this Peregrine was devoured by Common Gulls—How are the mighty fallen! During the evening of 15th June, I saw a fine specimen fly over, chased by every bird in the vicinity. I first became aware of his approach by the shrieking of the Pewits, who rose in a black cloud, having detected their enemy long before we could see him. The Oyster Catchers all sounded their alarm note, and an angry buzzing told us that the Black-headed Gulls had all been aroused. The excitement continued long after its author had vanished into space. The next morning we discovered the cause in the shape of the carcass of a freshly killed Black-headed Gull.

Kestrel, *Falco tinnunculus*, Linn.—Of late years has become scarcer, but now more plentiful again. In the stomach of a male shot from the nest on 12th June the remains of three mice were found.

Heron, *Ardea cinerea*, Linn.—Was extremely common this year both on fresh-water and sea lochs.

Grey Lag Goose, *Anser cinereus*, Mayer.—By 28th May all the Geese had hatched off. The commonest number of young was five. By 25th June all old, and young, had collected on a solitary hill loch, where they were to be seen in great quantities, when they had, for the most part, begun to moult. In fact, I only saw two which could fly. The primary feathers were found on the islands scattered in great profusion. On this loch I counted no less than 147 adults, entirely omitting the numerous young, which, I think, shows that no diminution in their numbers is taking place. When swimming with their young they are able, by stretching out their necks and sinking their bodies, to make themselves well-nigh invisible. On these occasions the gander leads the way, and his mate brings up the rear.

Bernacle Goose, *Bernicla leucopsis*, Bech.—A fine specimen in full plumage frequented the fresh-water lochs and sea-front on 20th June and subsequent days and then disappeared. It appeared to have no desire to associate with the Grey Lag.

Mute Swan, *Cygnus olor*, Gmelin.—A number of these swans are commonly to be seen flying about. The noise caused by the vibration of their primaries carries to a great distance. With a flock numbering some seven individuals, a Black Swan was seen associating. This is the second occasion on which this exotic species has been observed.

Shoveller, *Anas clypeata*, Linn.—Is still on the increase. We found two nests this year, one on 28th May. This contained eleven eggs, and was in exactly the same position as the one we found last year. The young had all hatched off by 17th June, when not a vestige of the down or egg-shells remained—one is at a loss to know what happens to it. In the beginning of June we constantly observed a Mallard drake associating with a Shoveller duck, seemingly paired to her. In a collection made in these islands there is a remarkable variety of the Mallard which is to all appearances a hybrid between that species and the Shoveller.

Pintail, *Dafila acuta*, Linn.—Though a single drake was seen last year in the middle of June, we were unable to obtain any evidence that they remain to breed. None were seen this year.

Teal, *Nettion crecca*, Linn.—Were abundant this year. By the 20th of June females were seen with young. One of the keepers found a nest containing sixteen eggs.

Wigeon, *Mareca penelope*, Linn.—A pair was seen last year, in the middle of June. No traces of any could be found this season.

Tufted Duck, *Fuligula cristata*, Leach.—A nest with nine eggs was found in the same hollow, which contained a Scaup's nest with a similar number last year. These are to all intents and purposes the same in both species, though the down differs. Unless special steps had been taken, a mistake in identity might easily have occurred. Only one pair of these ducks were seen, as compared with four times that number last year. By 17th June these eggs had all hatched off, and again every vestige of down and egg-shell had disappeared.

Scaup, *Fuligula marila*, Linn.—I think it is well known that duck are especially erratic in regard to their appearance in a locality. Last season we observed no less than five pairs; this, on the other hand, not a single specimen was seen.

Golden-eye, *Clangula glaucion*, Linn.—On 29th May, amid the wintry storms we were treated to, two pairs of Golden-eye appeared and stayed till 8th June, raising hopes that they might breed, though in the absence of trees they would have had to exercise their wits to find suitable nesting-holes. They were composed of two females, a fine drake in full plumage, and a sombre-coloured one of the same sex with white spot but faintly marked.

Long-tailed Duck, *Harelda glacialis*, Linn.—This duck is not common off these coasts during the summer. A pair in full summer plumage were seen out at sea on 8th June.

Scoter, *Œdemia nigra*, Linn.—A pair were seen in the same locality, namely, an inlet of the sea, on two occasions, 20th and 25th June. It is quite possible that they were breeding, but no further evidence came to light. The record of this species remaining in summer is, I believe, new.

Landrail, *Crex pratensis*, Bech.—On their arrival in May, before the grass and rushes have grown tall enough, these birds may be seen skulking about in the open anxiously searching for cover. When thus exposed they are constantly mobbed by Common Gulls. On 23rd June we found a nest containing eleven eggs in a small tuft of rushes in the middle of a bare field. On one occasion, after an extra heavy shower, we almost succeeded in catching a Landrail whose wings had become so sodden that he was unable to fly.

Ringed Plover, *Ægialitis hiaticola*, Linn.—Breeds in great numbers on the sandy "machairs" amongst the growing oats. So sorely are they harassed by the Common Gulls that it is a puzzle to me how they manage to keep up their numbers. These of all other eggs are the most palatable to these marauders. The contents of no less than six nests were robbed in this way, and only one pair of all those which came under our notice managed to hatch off its young in safety. Owing to the inclement weather, no doubt, few complete clutches of eggs were found, three being the full complement in several instances. We found also that those nests in proximity to the Pewits proved best, as the latter courageously and untiringly beat off the Common Gulls, when engaged on their diurnal egg-hunt, from their particular stretch of ground. Of the puny attacks of the smaller species the Gulls appeared not to take the least notice. In these parts it would appear, from an experience during this and last season, that nesting is not commenced till the end of May. Though one would think that the eggs laid amongst their natural habitat, the shingle on the foreshore, would fare better than those farther inland, this does not appear to be the case, for in the latter instance as well they disappeared with the greatest regularity. The peculiar flight indulged in during the love season is remarkable, being more owl- than plover-like, and while thus engaged their version of a love-song, sounding like "pourt, pourt, pourt," may be heard; often I observed them in their fervour chasing a Dunlin in mistake for their own mate. Owing, no doubt, to the constant disturbance by herd boys and cattle, they were as difficult to photograph as their nests. One in particular completely defeated us, for she would observe the slight movement of the string long before the shutter was released. The rapidity with which a bird is able to receive an impression and act on

it, I think, is well shown by the fact that they are able to hear the click of the shutter and fly off before the exposure is completed—a period lasting but $\frac{1}{60}$ of a second. While conscious of being observed in the neighbourhood of her nest, the hen bird would pretend to be feeding, apparently finding a store of nourishment amid barren stones and sand, but in reality keeping her weather-eye open in one direction. This habit they share in common with other waders. The cock bird mounted guard on a knoll overlooking the nest, and to him the hen would run and hold a consultation when perplexed as to the nature of the strange object. Once or twice she behaved in an extraordinary way: under the eye of the camera she would pluck a daisy and run away a short distance and pretend to devour it, returning in a few seconds for another. The nests when first found were mere hollows in the sand, but as incubation commenced a lining of grasses, small stones, and bits of shell was added, and in one instance the leaves of the beautiful silver-weed, which grew around in great profusion.

(*To be continued.*)

PROSECUTION UNDER THE WILD BIRDS ACT.

At the Lerwick Sheriff Court on 8th July—before Sheriff Broun—Major William Stirling, J.P., D.L., a Member of the British Ornithologists' Union, residing at Ord House, Muir-of-Ord, near Dingwall, Ross-shire, and A. L. Jessop, Leasingham, near Sleaford, Lincolnshire, were charged with having on 3rd June, at a part of the island of Hascasay, in the parish of Yell, Shetland, taken two eggs of the Great Skua and four eggs of Richardson's Skua.

The accused did not appear, and Mr. J. C. Grierson, solicitor, acted as their agent.

Wm. Hoseason, son of James Hoseason, farmer, deponed that his father was appointed by the Society for the Protection of Wild Birds to protect the scheduled eggs in the islands. He (witness) was sent to Hascasay to watch that no eggs were taken. On the 3rd of June he was in the house on the island when two strangers came. They said they were in search of eggs, but he told them they could not take any as the eggs were protected. The men said they could not understand that. They said they would have a look round. He (witness) followed the men. They soon came to

a Great Skua's nest on the east side of the island, and after having a look at the eggs they all turned away. On the way back one of the men said it was a great pity to leave the eggs, but he (witness) told them that these eggs were protected, and that if they took them they would have to take the consequences. The two men then stood aside, and spoke for a little, and then they said they would take the eggs and stand the consequences. They afterwards took the eggs. He (witness) did not know the gentlemen's names at the time, but he learned afterwards. They also took four of the Richardson's Skua's eggs from the middle of the island.

The eggs were produced in court and were identified by witness.

Mr. Grierson briefly addressed the Court. The offence was not a serious one, he said, and the £1 for each egg mentioned in the Order did not actually mean that the eggs were worth that sum, and suggested that the eggs should not be forfeited. If the Sheriff would not allow the men to keep the eggs, perhaps he would agree to send them to Christ's Hospital, London, which school was very much interested in ornithology.

The Sheriff sentenced accused to pay a fine of £1 for each egg, jointly and severally, and the eggs to be forfeited. One Great Skua's egg, and two of the Richardson's Skua's eggs, were to be sent to Christ's Hospital, London, and the remaining three to the Edinburgh Museum.

CENTROLOPHUS NIGER, GMELIN, ON THE SCOTTISH COAST, WITH A NOTE ON ONE OR TWO POINTS IN ITS STRUCTURE.

By John Rennie, D.Sc.

In the month of June in the present year I received from Mr. Ewen, schoolmaster, Cullen, a fish regarding which he supplied me with the following note: "It was caught in a net among herring. The locality was a herring area called by fishermen 'Smith Bank,' a sandy tract about 18 to 25 miles N.E. of Cullen. The skipper thinks it had been feed-

ing on young herring. None of them has ever seen such a fish before." This interesting find on examination proves to be a specimen of a somewhat rare visitor to northern waters, viz. *Centrolophus niger*, Gmelin, regarding which notes have already been made in these "Annals." It is generally regarded as a Mediterranean fish; Regan ("Ann. and Mag. Nat. Hist.," 1902, p. 195) gives its distribution as "Mediterranean and N. Atlantic." According to Traquair, it has also occurred in Ireland, and Jordan and Evermann record it from Dennis, Mass., although Traquair throws doubt upon the identity of the species in this latter case. The present specimen is the fourth recorded from the east coast of Scotland; three of these have been found between Lossiemouth and Aberdeen, the fourth occurred in Largo Bay (see notes in the "Annals" for 1902 by Dr. Traquair and Mr. George Sim). The earliest record is by Dr. Gordon in 1841.

In Dr. Traquair's communication some particulars are given as to dimensions, in which he notes in the proportions of his specimen some differences from the current descriptions and figures. Since the Cullen example proves on the whole intermediate it may be of some value to record particularly its more important characteristics.

Along the dorsal region the fish is a deep blue-black colour; ventrally it is lighter, being of a greyish slaty blue. This lighter colour is in part, however, due to the fish having been immersed in spirit. The total length is 14.7 inches; the greatest depth, just in front of the anus, is about 3 inches. It is thus contained slightly less than five times in the total length. Traquair's specimen is stated to be in body depth "slightly over four times in the total." Regan gives the depth of the body as about four times. From snout to posterior margin of operculum this latest example measures 2.9 inches, almost exactly one-fifth of the total length. This accords with the proportion given by both Gunther and Day, viz. one in five. Traquair's measurement is "rather less than one in five and a half." Regan gives this dimension as four and a third to five times, hence Traquair's figure extends the range of variation of this dimension. The pectoral fin measures 1.6 inches to the tip of the longest ray, giving a proportion of rather more than half the length of the head.

Traquair's figure for this dimension is one-half, while Day's is two-thirds. There are 20 rays in the left fin and 21 in the right. The caudal fin is 2.5 inches long, and is thus practically one-sixth of the total. This is Traquair's proportion ; it is less than that of Cuvier and Valenciennes or of Day. There are 38 dorsal and 22 ventral fin rays, but no other specially distinctive external characters.

Mr. Sim in his note comments upon the œsophageal pouches and speculates as to their function. These structures appear to be characteristic of the Families Stromateidæ and Tetragonuridæ, to the former of which *Centrolophus* belongs. They are carefully described by Sim, who, however, omits to note that the ridges which divide the pouches into compartments are simply continuations of the œsophageal ridges. They are here deeper, bridging over the cavity of the pouch, and are fibrous in character. In their anterior parts these ridges are very large, and project prominently into the lumen of the gullet as expanded plates. The edges of the ridges as well as of these plates are beset with numerous recurved setiform spines, which, as Sim points out, are simple and not barbed as stated by Gunther. As to the function of these pouches, it may be of interest to note that I found their cavities filled with a soft, creamy, pulpy substance similar to the contents of the stomach and pyloric cæca. The only difference observable was that the material in the latter organs was in a more fluid condition ; it was, in fact, in a further advanced stage of digestion. Remarkable as it undoubtedly is, the facts seem to suggest that these fishes regurgitate their food ; and as these pouches are so very thoroughly supplied with spines it seems possible that some sort of rumination is indulged in. Certainly the substance in the pouches had no resemblance to recently swallowed material unacted upon. Boulenger states that the Stromateidæ feed on crustaceans, medusæ, and the fry of other fish ; the circumstances under which this example was caught suggest the last named at the time of capture, yet there were no recognisable traces of herring fry, either in the pouches or in the stomach.

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SOME ARTHROSTRACA AND OTHER INVERTEBRATA FROM ST. KILDA.

By C. Gordon Hewitt, M.Sc.

The following list of certain invertebrates collected during a month's visit to St. Kilda, in July 1907, has been written to assist in the completion of a fauna of that island. As Mr. Waterston of Edinburgh has published one or two short lists describing his collections of the previous year, I shall only include in this short paper those species which he has not already recorded, as repetition is both useless and confusing. A list of the Coleoptera, together with those collected by Mr. Waterston, is to be published by Professor Hudson Beare in a separate paper. The following list contains the Isopods and Amphipods, together with certain Lepidoptera and Hydroids :—

ARTHROSTRACA.

Amphipoda.

Gammarus locusta, Fabr.—This species is common on the shore, beneath the rocks.

G. pulex, Desm.—This is common in both streams, and occurs in several of the wells.

Isopoda (*Marine*).

Eurydice pulchra, Leach.—This was common, swimming about in the pools beneath the rocks on the shore.

Idotea baltica, Pallas.—These occurred in the same situations, and were rather small specimens.

Jæra marina, Fabr.—Under stones beneath the tide-marks. This species has a wide distribution throughout the Atlantic coasts.

Ligia oceanica, L.—This species was interesting, as I found mature specimens in the crevices of the rocks on the top of Ruadval, almost 450 feet above sea-level. Its presence there, like that of the littoral mollusc *Littorina littorea*, is explained by the almost constant presence of spray from the Dun passage. The largest specimens were below the normal size. I found the young individuals on the stones between tide-marks.

The fauna of the shore of Village Bay, which is practically the only shore on the island, is very scanty. Crustacea are almost absent except for a few small species. Not a single species of decapod was seen. This scarcity of littoral animal life is no doubt due to the powerful action of the sea. A species of animal attaining any size would almost certainly be crushed by the violent action of the boulders which form the greater part of the shore.

Isopoda (*Terrestrial*).

Oniscus asellus, L.—Common everywhere under stones. Its colour varied from light brown to dark slate.

Trichoniscus pusillus, Brandt.—Fairly common near the shore and on the slopes of Connacher and Mullach Mor where the ground was damp. The specimens were rather small.

Porcellio scaber, Latreille.—This is certainly by far the commonest invertebrate in the island. It occurs in thousands under stones and rubbish—in fact, everywhere from the seashore to the top of the hills. As Sars states, this is the most widely distributed species of the Oniscoidea.

LEPIDOPTERA.

Owing to the very bad state of the weather during the whole of my visit, it was impossible to do much collecting of insects of this order. About forty species were obtained, of which the following are a few :—

Hepialus velleda,[1] Hb.—A large series of this species was collected, as it showed great variations in size and colour. The variety *gallica* also.

Melanchra thalassina, Rott.

Plusia interrogationis, L.—Obtained in the glen, where the larva feeds on the heather (*Calluna*).

Tephroclystis venosata, Fb.—This form was fairly common near the shore, where the larva feeds on the white sea-campion.

Hydriomena alchemillata, L.

Xanthorhoe munitata, Hb.—The Shetland variety of this northern form was obtained.

Eois rusticata, F.—This species was extremely abundant, being by far the commonest moth at the time of my visit.

[1] Mr. Waterston has already recorded this species ("Ann. Scot. Nat. Hist.," July 1906, p. 152).

I was interested to find among the large numbers of specimens of *Forficula auricularia*, L., which occur on the island, a number of the "high-males," the forceps of some of the specimens measuring .75 cms., while those of the "low-males" measured .3 cms.

COELENTERATA.

A few Hydroids were found on the rocks in Village Bay; the following species occur:—

Clava squamata, O. F. Müller.—This was common.

Coryne pusilla, Gärtner.—My friend Mr. F. H. Gravely, to whom I showed these Hydroids, tells me that the specimens of this species were remarkably stunted, having the hydrocauli very much tangled; the perisarc also was less regularly annulated than is usual.

Campanularia flexuosa, Hincks.

The University, Manchester, *August* 1907.

HYMENOPTEROLOGICAL NOTES.

By P. Cameron.

I.—Nocturnal Hymenoptera.

The *Hymenoptera* are, as regards the vast majority of the species, light- and sun-loving insects. There are, however, a few forms which are more or less nocturnal in their habits. I am not now alluding to humble-bees (*Bombi*), which, during warm and moonlight nights, may be seen actively collecting honey or pollen, but to various species and even genera of different tribes and families which apparently, to their more or less nocturnal habits, have acquired a close identity in coloration, as well as a peculiarity in their simple (ocelli) and compound eyes. There may, of course, be exceptions, but as a rule nocturnal *Hymenoptera* have their bodies of a uniform fulvous or light brownish coloration, only slightly, in some cases, marked with black. They have also their eyes larger than is the case with most day-flying species; and, further, they approximate more to each other on the

top than is the case with species which are not known to fly at night. Very noteworthy, also, is the fact that the ocelli, in these nocturnal or quasi-nocturnal species, are much larger than usual, as well as being of a light glassy brown colour. As examples of these two peculiarities we have the Ichneumon tribe *Ophionini, e.g. Ophion* and its ally *Eniscospilus*, which are well known to be attracted by artificial light at night, and I have also seen *Ophion* at "sugar" placed as bait for moths at night. It is the same with the *Paniscini*, which are identical in coloration,—uniformly fulvous,—as well as the Braconid tribe *Zeleini*; *e.g.* I have known *Zele* to come to lamplight at night. Then it is known that the large ants of the genus *Dorylus* (all of them of a uniform fulvous colour) come to light and have been seen flying at night in large numbers. A correspondent sent me from Java a number of a large species of *Dorylus*, which caused great alarm by flying in huge numbers into the fire, besides hovering almost in clouds round the lighted lamps. Then among bees we have the large Indian *Xylocopa rufescens*, which has been found on flowers at night; it is of a uniform golden brown colour, and its ocelli are larger than they are in most of its congeners.

From the fact that the ocelli are larger with the nocturnal than they are with diurnal species, one might fairly conclude that the simple eyes aid the compound ones in enabling the insect to see better in darkness.

II.—Alpine Hymenoptera.

The number of Scottish Alpine Hymenoptera, so far as I know, is not large. Among the Saw-flies we have *Nematus breadalbanensis*, Cam., which is found on the mountains (the Breadalbane and Ben More, Mull) at a height of 3000 feet and upwards; *N. clibrichellus*, Cam., which I captured on the top of Ben Clibrich, Sutherlandshire (3180 feet). Probably *N. carinatus*, Htg., and *N. lativentris*, Thoms., are also Alpine species, having been found on the Braemar mountains, but I have no note of the elevation at which they were taken. *Polyrhembra tenebriossa*, Gr., I have taken on flowers at a height of about 3000 feet on Ben Lawers; *Phygadeuon fumator*, Gr., at 2000 feet, also on flowers. The curious

apterous Ichneumon, *Oresbius castaneus*, Marsh., occurs on mountain tops—on Goatfell, Arran and Gyrvel, Rannoch. Among Alpine *Oxyura* we have *Lygocerus breadalbanensis*, K., and *L. bicolor*, K., which I captured near the top of Ben Lawers (about 3900 feet); and *Megaspilus mullensis*, Cam., from Ben More, Mull. A very rare British Ichneumon, *Arenetra pilosella*, Gr., I found in April near a snow-patch half-way up Ben Lawers.

It need hardly be said that nearer the Equator *Hymenoptera* are more or less abundant at a much greater height than they are in more northern regions. Thus at Simla, Masuri, and elsewhere in the Himalayas *Hymenoptera* are common at a height of 6000 feet and upwards, as they are also in the more southern parts of the Rocky Mountains. Mr. Edward Whymper captured a few species of *Hymenoptera*, of both the aculeate and parasitic divisions of the Order, in the Equatorial Andes at a height of from 12,000 to 13,300 feet (see his "Travels amongst the Great Andes of the Equator," p. 356); those found at the latter elevation being Ichneumons belonging to the *Ichneumonini* and *Paniscini* (cf. Cameron, "The Entomologist," 1908, pp. 95 and 160). The highest *Hymenoptera* of which I can find any record are those mentioned by Hooker in his "Himalayan Journals," 2nd ed., vol. ii. p. 146. There we read: "At nearly 17,000 feet I passed two small lakes, on the banks of one of which I found bees, a May-fly, and gnat." The bees probably were either *Bombi* or belonging to the genus *Andrena*, both being not uncommon at high elevations in the Himalayas, as they are in northern latitudes.

HYDROTÆA BORUSSICA, STEIN, A FLY NEW TO THE BRITISH LIST.

By Percy H. Grimshaw, F.E.S.

On the 9th July of the present year my friend Mr. A. E. J. Carter found a single male *Hydrotæa* sitting on a leaf at Comrie in Perthshire. He noted that it bore some resemblance to *H. curvipes*, but in certain points did not

agree with the published descriptions of that species. Upon his return to Edinburgh Mr. Carter brought the specimen to me, and upon examination it proved to be an interesting addition to the British list, namely, the little-known *H. borussica*, first described by Stein in the "Entomologische Nachrichten," Jahrg. xxv. (1899), p. 23, and more fully afterwards in his monograph of the genus published in the "Verhandlungen der k.k. zool.-bot. Gesellsch. Wien, Jahrg. 1903, pp. 334-335.

At first sight *H. borussica* may be distinguished from *H. curvipes* by its darker colour, the thorax having a decidedly blackish tint with hardly any trace of longitudinal stripes. The yellow markings on the abdomen are somewhat darker, and restricted to the two basal segments, while in the better-known species this colour extends over part or the whole of the third. The wings are also much clearer in the present specimen, although Stein's description says they are conspicuously tinged with yellow.

The bristle arrangement on the legs is of the same general character, but there are several important differences which afford at once a safe and ready means of separating the two species. The following characters, belonging to *H. borussica*, will serve to show how it may be distinguished from *H. curvipes*: the front tibiæ are less deeply excavated, and with the long postero-ventral hairs only extending along the apical third; the middle femora have about five postero-ventral blunt spines, which are confined to the basal third, whereas in *H. curvipes* there are on this surface only 3 to 4, which are more widely spaced and occupy the *middle* third; the middle tibiæ are furnished at the tip with two very long fine antero-dorsal hairs which are absent in the other species; the hind tibiæ are bent much as in *H. curvipes*, but *with more than the apical half thickened*—on the ventral surface at the middle is a very characteristic short row of about 12 to 15 long and strong bristles which *do not converge at the apex*, but whose ends are tortuous, the whole forming a band easily visible to the naked eye and occupying about the middle sixth of the tibia, the dorsal surface with a row of long fine bristles occupying about the basal half.

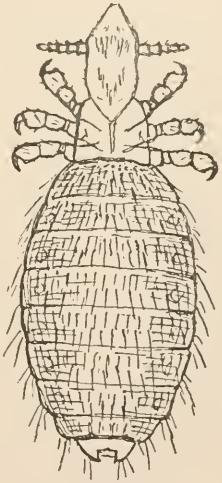
The female of this interesting species is as yet unknown. The male has only been found, so far as I am aware, in Russia and Eastern Prussia.

THE ROYAL SCOTTISH MUSEUM, EDINBURGH,
25th September 1907.

A NEW LOUSE (*HÆMATOPINUS OVILLUS*, NEUM.) FROM THE SHEEP.

By WILLIAM EVANS, F.R.S.E.

IN the spring of last year (1906), when collecting material for a list of the parasitic Hemiptera of this district, I obtained, through the kindness of Mr. W. F. Little, a number of small brownish Anoplura taken from the face of a sheep of the "Black-faced" breed at Crosswood, Pentland Hills, Midlothian. The date on which they were taken was the 30th of April, and I was informed that this louse is common in spring on the faces—especially about the cheeks—of sheep in that part of the Pentlands.



♀ × 22

That these lice belonged to the well-known genus *Hæmatopinus* was evident at a glance, but I could not make them fit with any of the described species, though it was clear they were closely related to *H. stenopsis*, Burm., the louse of the goat. Not being able to identify them, I sent several examples to Professor L.-G. Neumann of the Veterinary College, Toulouse, for his opinion. He replied that they undoubtedly belonged to a new species, and that by an interesting coincidence he had only a few weeks before received from New Zealand a specimen of the same parasite found there on the face of a sheep belonging to the "Border-Leicester" breed, and had written for further specimens to study before describing the

insect. These he has since received, and in May of the present year I had a few more from Black-faced Sheep on the western Pentlands.

Professor Neumann has now described this new species of Anoplura, to which he has given the name of *Hæmatopinus ovillus*, in the *Revue Vétérinaire* for August 1907, pp. 520-524, where full particulars will be found. It is not a little remarkable that a parasite of so well known a domestic animal as the sheep should have remained unknown to science till now. No species of *Hæmatopinus* has hitherto been recorded as occurring on the sheep. Doubtless *H. ovillus* has reached New Zealand from this country by importation on its host. The length of my specimens, one of which is figured on p. 225, varies from 2 to $2\frac{3}{4}$ mm.

ADDITIONS AND CORRECTIONS TO THE TOPOGRAPHICAL BOTANY OF SCOTLAND.

By James W. H. Trail, A.M., M.D., F.R.S., F.L.S.

(*Continued from No.* 60, *Oct.* 1906, *p.* 233.)

Graminaceæ.

Panicum capillare, L., casual, in 83. *P. Crus-galli*, L., 83 cas.; *P. glabrum*, Gaud., 83 cas.; *P. miliaceum*, L., 83 cas.; *P. sanguinale*, L., 83 cas.

Setaria italica, Beauv., 83 cas.; *S. viridis*, Beauv., 83 cas.; *S. glauca*, Beauv., 83 cas.

Cynodon Dactylon, Pers., 83 cas.

Phalaris brachystachys, Link, 83 cas.; *P. canariensis*, L., 83, 84, 93; *P. cærulescens*, Desf., 83 cas.; *P. intermedia*, Bosc., 83 cas.; *P. paradoxa*, L., 83 cas.; *P. minor*, Retz., 83 cas.; *P. tuberosa*, L. 83 cas.

Alopecurus myosuroides, Huds., 83 cas.

Phleum asperum, Jacq., 83 cas.; *P. Bohmeri*, Wibel, 83 cas.; *P. echinatum*, Host., 83 cas.; *P. græcum*, Boiss. and Heldr., 83 cas.; *P. Michelii*, All., 83 cas.; *P. tenue*, Schrad., 83 cas.

Agrostis canina, *L.*, 81; *i.e.* from all the vice-counties. *var.* scotica, *Hackel*, 105.

A. palustris, *Huds.*, 80; *i.e.* from all the vice-counties; *var.* maritima, *Mey.*, 106; *var.* coarctata, *Hoffm.*, 94, 106, 107.

A. vulgaris, *With.* The form *pumila* has been recorded from 72, 74, 75, 86-98, 101, 102, 104-112.

A. elegans, Thore, 83 cas.

Polypogon monspeliensis, Desf., 83 cas.; *P. maritimus*, Willd., 83 cas.

Gastridium australe, Beauv., 83 cas.

Apera Spica-venti, Beauv., 93 frequent cas.; *A. intermedia*, Hackel, 83 cas.

Ammophila arundinacea, *Host.*, 84, 103.

Lagurus ovatus, L., 83 cas.

Deschampsia alpina, *Roem.* and *Schult.*, 100, 102, 105, 106.

D. discolor, *Roem.* and *Schult.*, 90 confirmed, 93.

D. flexuosa, *Trin.*, *var.* montana, *Hook. f.*, 106, 108.

Trisetum pratense, *Pers.*, 110; I have no record of this for 74. *T. pumilum*, Kunth, 83 cas.

Avena pratensis, *L.*, 111?; *var.* longifolia (*Parn.*), 94, 98.

A. strigosa, Schreb., 83, 93, 108; *A. fatua*, L., 108; *A. barbata*, Brot., 83 cas.; *A. sterilis*, L., 83 cas.

Gaudinia fragilis, Beauv., casual 83, 92.

Phragmites communis, *Trin.*, All.

Cynosurus echinatus, L., 83 cas.

Molinia varia, *Schranck*, 78, *i.e.* in all the vice-counties.

var. depauperata (*Lindl.*) has been recorded from a number of vice-counties, and probably may be found where the plant grows on poor open moorlands and other suitable localities.

Eragrostis major, Host, 83 cas.

Kœleria cristata, *Pers.* Under this name records stand for all the vice-counties *except 76, 77? 78, 84, 105, 108†, 112*; but a critical examination of examples from Scotland by Dr. Domin has shown the following results:—

K. glauca, *DC.*, *subsp.* arenaria, *Dumort.*, 85, 90, 95, 106, 107.

K. britannica, *Domin.* (probably a subspecies of K. gracilis, *Pers.*), is the common plant in Scotland, though as yet recorded only from 83, 90, 92, 94, 95, 96, 109, 111.

K. phleoides, Pers., 83 cas.

Catabrosa aquatica, *Beauv.*, 105; *var.* littoralis, *Parn.*, 103.

Dactylis hispanica, Roth., 83 cas.

Echinaria capitata, Desf., 83 cas.

Briza media, *L.*, 99; *B. minor*, L., casual, 83, 92; *B. maxima*, L., casual, 83, 92, 93.

Wangenheimia disticha, Mœnch., 83 cas.

Poa annua, *L.*, *var.* supina, *Gaud.*, 106; *P. bulbosa*, L., 83 cas.

Poa glauca, *Sm.*, 89, 108.

P. Balfouri, *Parnell*, 92, 97, 106.

P. nemoralis, *L.*, 74, 82, 84, 85, 93, 107, 108; *var.* divaricata, *Syme*, 94, (*delete* 92); *var.* glaucantha, *Reichb.*, 98, 108.
P. compressa, *L.*, 85 confirmed, 92 †?
P. Chaixi, Vill., 83.
P. pratensis, *L.*, 107, *i.e.* in all the vice-counties; *var.* sub-cærulea (*Sm.*), 81, 96, 97.
P. palustris, L., 83 cas.; *P. persica*, Trin., 83 cas.
P. trivialis, *L.*, 107; *i.e.* in all the vice-counties.
P. bulbosa, L., var. *vivipara*, 83 cas.
Glyceria fluitans, *R. Br.*, 84; *i.e.* in all the vice-counties; *var.* triticea, *Fr.*, 90.
G. plicata, *Fr.*, 74, 76, 90, 91, 92, 94, 108, 111 confirmed; *var.* pedicellata (*Towns.*), 111; *var.* declinata (*Bréb.*), 92, 94, 96, 100.
G. aquatica, *Sm.*, 82, 91, 93, 94, 101, (*delete* 74).
G. distans, *Wahlenb.*, 84, 106.
Sclerochloa dura, Beauv., 83 cas.
S. procumbens, Beauv. (=Festuca procumbens, *Kunth*); almost certainly not native in Scotland, 83 cas., 91, 92 (plentiful in 1906 along N. bank of new channel of River Dee at Aberdeen).
Festuca rottbœllioides, *Kunth.*, 72; *F. uniglumis*, Soland., casual in 83 and 92.
F. Myuros, L., 83 cas.
F. sciuroides, *Roth.*, 79.
F. ovina, *L.*, *var.* paludosa (*Gaud.*), 105, 106.
F. rubra, *L.*, has no record for 80; *var.* grandiflora, *Hackel*, 90.
F. sylvatica, *Vill.*, 93.
F. elatior, *L.*, has no record for 80; *var.* pratensis, *Huds.*, 74, 84, 93, 95.
F. ciliata, Pers., 83 cas.; *F. ligustica*, Bertol., casual 83, 92.
Bromus giganteus, *L.*, 97.
B. erectus, *Huds.*, 72, 73; *B. madritensis*, L., 92 cas.
B. racemosus, *L.*, 80, 85, 91, 93, 94†; B. commutatus, *Schrad.*, 107.
B. mollis, *L.*, *var.* glabratus, *Dœll.*, 75?; *var.* Lloydianus, *Syme*, 73.
B. Alopecuros, Poir., 83 cas.; *B. arvensis*, L., 83 cas.; *B. divaricatus*, Rhode, 83 cas.; *B. inermis*, Leys., 85 cas.; *B. japonicus*, Thunb., 83 cas.; *B. macrostachys*, Desf., 83 cas.
B. patulus, *Mert.* and *Koch.*, 83 cas.; *B. rigidus*, Roth., 83 cas.; *B. scoparius*, L., 83 cas.; *B. secalinus*, L., var. *velutinus* (Schrad.), 83 cas., 85 cas.
B. squarrosus, L., casual 83, 92; *B. tectorum*, L., 83 cas.; *B. unioloides*, H.B.K., frequent casual, 83, 84, 92.
Brachypodium distachyon, Rœm. and Schult., casual in 83 and 92.
Lolium rigidum, Gaud., 83 cas.; L. temulentum, *L.*, 83 cas., 93 cas.
Psilurus nardoides, Trin., 83 cas.

Agropyrum caninum, *L.*, 84.
A. repens, *L.*, *var.*, Leersianum, *Gray*, common, 81, 93, 94, 95, 96, 98, 106.
A. pungens (?) *Rœm.* and *Schult.*, 93.
A. acutum, *Rœm.* and *Schult.*, 75, 90, 102, 103.
A. junceum, *Beauv.*, 82, 84.
A. triticeum, J. Gærtn., 83 cas.
Ægilops cylindrica, Host., 83 cas.; *Æ. ovata*, L., 83 cas.; *Æ. peregrina*, Hackel, 83 cas.; *Æ. speltoides*, Tausch., var. *Aucheri* (Boiss.), 83 cas.; *Æ. triaristata*, Willd., 83 cas.; *Æ. triuncialis*, L., 83 cas.
Hordeum murinum, *L.*, 74†.
H. marinum, *Huds.*, 83 cas., 84?, 92 frequent cas.
H. bulbosum, L., 83 cas.; *H. jubatum*, L., 83 cas.; *H. europœum*, All., 83 cas.; *H. sylvaticum*, Huds., 83 cas.
H. Caput-Medusæ, Cosson, casual in 83 and 92.
Elymus arenarius, *L.*, 84; *E. sibiricus*, L., casual in 83 and 85.

GYMNOSPERMS.

Coniferæ.

Juniperus communis, *L.*, 79?; *var.* intermedia, *Nyman*, 108.
J. nana, *Willd.*, 93.
Taxus baccata, *L.*, 84, 93†.

CRYPTOGAMS.

Filices.

Hymenophyllum tunbridgense, *Sm.*, (*delete* 112).
Cryptogramme crispa, *R. Br.*, 94.
Asplenium Adiantum-nigrum, *L.*, *var.* Serpentini, *Koch.*, 94.
A. Trichomanes, *L.*, 112.
A. Ruta-muraria, *L.*, 112; *var.* pseudo-germanicum, *Milde*, 89.
Athyrium alpestre, *Milde*, 105, 106.
Cystopteris fragilis, *Bernh.*, *var.* dentata, *Hook.*, 93, 94; *var.* sempervirens, 92.
Polystichum lobatum, *Presl.*, *var.* aculeatum, *Syme*, 79.
Lastræa Filix-mas, *L.*, *var.* abbreviata, *Bab.*, 106.
L. spinulosa, *Presl.*, 79, 81, 94.
L. dilatata, *Presl.*, *var.* collina, *Moore*, 111.
Phegopteris Dryopteris, *Fée*, 110.
P. polypodioides, *Fée*, 93.
Ophioglossum vulgatum, *L.*, 94.
Botrychium Lunaria, *L.*, *var.* incisum, *Milde*, Pentland Hills.

EQUISETACEÆ.

Equisetum maximum, *Lam.*, 84.
E. arvense, *L.*, *var.* alpestre, *Wahlenb.*, 72?; *var.* nemorosum, *Braun*, 106.
E. sylvaticum, *L.*, *var.* capillare (*Hoffm.*), 92, 107.
E. palustre, *L.*, *var.* polystachyum, 93; *var.* nudum, *Newm.*, 111.
E. limosum, *Sm.*, *var.* fluviatile (*L.*), 73.
E. hyemale, *L.*, 97.
E. variegatum, *Schleich*, 104, 108, 110; *var.* arenarium, *Newm.*, 106.

LYCOPODIACEÆ.

Lycopodium Selago, *L.*, *var.* recurvum, *Desv.*, 106.
L. inundatum, *L.*, 97.
L. annotinum, *L.*, 96, 106.
L. alpinum, *L.*, *var.* decipiens, *Syme*, 106.
Isoetes lacustris, *L.*, 98, 102 (Lightfoot).
I. echinospora, Dur., 112.

CHARACEÆ.

Chara fragilis, *Desv.*, 81, 93; *var.* capillacea, *Coss.* and *G.*, 73; *var.* delicatula, *A. Br.*, 93, 105.
C. aspera, *Willd.*, 81, 93; *var.* desmacantha, *H.* and *J. Groves*, 111.
C. baltica, *Bruzel*, 111.
C. hispida, *L.*, 80, 82, 85, 93, 109.
C. vulgaris, *L.*, 85, 93.
Nitella translucens, *Agardh*, 74, 85.
N. opaca, *Agardh*, 94.

SUPPLEMENT.

While these "Additions and Corrections" have been in course of publication, various papers and short notes have been published in botanical journals, and other information has also been acquired. Such additional information as came to hand in time has been included in these additions; but a good many notes relate to species in families already passed. As it appears desirable to make this record as far as possible complete, up to this date (July 1907), these are given as a supplementary list below.

RANUNCULACEÆ.

Adonis autumnalis, L., 83 cas.
Ranunculus circinatus, *Sibth.*, 92.
R. trichophyllus, *Chaix.* *Delete 112.*
R. Drouettii, *Godr.*, 112 confirmed.

R. scoticus, *Marshall*, 94.
R. sardous, *Crantz*, 102.
R. trilobus, L., 83 cas.
Caltha radicans, *Forster*, 94.
Delphinium Consolida, L., *D. divaricatum*, Ledeb., *D. hybridum*, Steph., and *D. pubescens*, DC.; all casuals in 83.
Eranthis hyemalis, Salisb., 85.

Papaveraceæ.

Papaver hybridum, L., and *P. nudicaule*, L., casuals in 83.
Argemone mexicana, L., 83 cas.

Cruciferæ.

Arabis hirsuta, *Scop.*, 99.
Cardamine pratensis, *L.*, *var.* dentata, *Hayne and Welw.*, 94.
(*Alyssum maritimum*, L., said to have been found in 91 or 92.)
A. incanum, *L.*, *var.* viride, *Tausch.*, 83 cas.
Cochlearia alpina, *Wats.*, 90.
Hesperis laciniata, All., 83 cas.
Sisymbrium orientale, L., 83 cas.
Brassica subularia, Brot., 83 cas.
Iberis sempervirens, L., 92 cas.
Carrichtera Vella, DC., 83 cas.
Chorispora syriaca, Boiss., and *C. tenella*, DC., casuals in 83.

Resedaceæ.

Reseda crispata, Link., 83 cas.

Violaceæ.

Viola lutea, *Huds.*, *var.* amœna (*Symons*), 94.

Polygalaceæ.

Polygala oxyptera, *Reichenb.*, 102.

Caryophyllaceæ.

Velezia rigida, L., 83 cas.
Dianthus barbatus, L., 83 cas.
Gypsophila paniculata, L., 83 cas.
Saponaria officinalis, L., 81.
Silene conica, *L.*, 83 cas.
S. dichotoma, Ehrh., 94.
S. anglica, *L.*, and var. *quinquevulnera*, L., *S. juvenalis*, Del., and *S. rubella*, L., casuals in 83.
Cerastium triviale, *Link.*, *var.* holosteoides, *Fr.*, 112 (Fair Isle).

C. alpinum, *L.*, *var.* pubescens, *Syme*, 94.
C. hirsutum, Tenore, 92 cas.
Holosteum umbellatum, L., 83 cas.
Sagina Reuteri, Boiss., 83 cas.
S. apetala, *L.*, 103.
Spergula vulgaris, Bœnn., 112 (Fair Isle).

Portulacaceæ.

Claytonia virginica, L., 83 cas.

Elatinaceæ.

Elatine hexandra, *DC.*, 103.

Malvaceæ.

Althæa rosea, Cav., 83 cas.
Lavatera punctata, All., 83 cas.
Malva moschata, *L.*, 84 cas.; *M. borealis*, Wallm., 83 cas.

Linaceæ.

Linum usitatissimum, L., casual in 81, 92, 93; *L. angustifolium*, Huds., *L. grandiflorum*, Desf., and *L. perenne*, L., casuals in 83.

Geraniaceæ.

Geranium lucidum, *L.*, 94.
G. Robertianum, *L.*, *var.* modestum, *Jord.*, 94.
G. reflexum, L., 83 cas.
Erodium cicutarium, *L'Herit.*, 112.
E. maritimum, *L'Herit.*, 83 cas.
Oxalis Acetosella, *L.*, 112.
O. stricta, L., 83 cas. To this name must be transferred the records formerly given under *O. corniculata*, in accordance with the fact that these names have been transposed in English floras.
Impatiens Roylei, Walp., casual in 83, 92, and no doubt elsewhere.
Limnanthes Douglasii, R. Br., 83 cas.

Ampelidaceæ.

Vitis vinifera, L. Seedlings may often be found in numbers on rubbish heaps near towns, *e.g.* in 83 and 92, no doubt from refuse of fruiterers' shops; but they seldom grow to more than a foot or so in height, or survive more than one winter.

(*To be continued.*)

ON THE FLORA OF SHETLAND.

By William H. Beeby, F.L.S.

(*Continued from p.* 169.)

**Rhinanthus grœnlandicus*, Chabert.—Mr. C. H. Ostenfeld, who has had great facilities for the study of the arctic and boreal forms, has kindly named my plants (conf. also Ostenfeld's "Phanerogameæ and Pteridophyta of the Faroes," p. 51). U. Cliffs north of Saxa Vord. S. By Burga Water and on holm in the same loch. *var. *Drummond-Hayi* (B. White).—N. Hillside, Benegarth, North Roe. The Burga Water plant is "exactly the plant of the Faroes"; this, the large form, is rather less scarce than the variety.

Euphrasia.—A detailed account of the species must be deferred, but the following are the forms so far detected:—*E. borealis*, Towns.; *E. scottica*, Wetest; *E. Foulaensis*, Towns.; *E. curta*, Fr. *E. curta* f. *piccola*, Towns.

Statice maritima, Mill, *var. *planifolia* (Syme).—U. Hill of Hamar, near Baltasound. N. Rocks on the east side of Sand Voe.—I have had the Unst plant in cultivation, side by side with the type, since 1898; in addition to the recorded characters, I may mention that under these equal conditions the variety flowers about three weeks earlier than the type.

Plantago lanceolata, L.—D. A curious proliferous form occurred near Spiggie, with heads recalling the "Hen-and-chickens" daisy, the central head being small, and surrounded by numerous very small heads on long stalks proceeding from below the base of the main head. The plants (2) were seen two years in succession. *var. *depressa*, Rostr. ("Flo. Danica," tab. 3008).—U. Sea-sands, Sandwick. N. Hillside, Benegarth. L. Scalloway. D. In many places. Chiefly on sand, but not confined to it. Leaves very broad, which is the chief characteristic. Doubtless it is the plant recorded as *P. media* by Edmondston. Mr. Ostenfeld writes of the Unst plant—"Just the same form that E. Rostrup named var. *depressa*."

Atriplex hastata, L.—U. A common weed at Baltasound.

**A. laciniata*, L.—D. Some half-dozen plants on a sandbank near Clayval (1899). Next year I visited the spot again, but found the *Atriplex* and all the other low-growing plants buried under an additional foot or two of sand, above which the tops of *Psamma arenaria* just showed. Doubtless the plant occurs

in other places on the adjacent coast, which affords many suitable habitats.

**Salix Caprea*, L.—S. Almost covering two small holms in the middle of Mousa Vord Loch, to which, so far as known, it is now entirely confined. This is a puzzling form, owing to the young branches being pubescent, and to the leaves having a tendency to be somewhat obovate. The Rev. E. F. Linton was at first disposed to consider it a hybrid between *S. Caprea* and one of the other *Capreæ*, but on my explaining that it was the only *Salix* occurring either on or near the holms, he referred it to *S. Caprea*, informing me that sometimes in very exposed situations in the north, the branchlets have a tendency to become pubescent. I have a tree in the garden which I believe to have been grown from a cutting of the Mousa Vord plant. I omitted to label it, so cannot be quite positive; but I do not myself feel much doubt, as I have never brought into this garden any other willow of any sort whatever, and as I know of no *S. Caprea* in the near vicinity, it is unlikely to have originated from wind-borne seed. Mr. C. H. Ostenfeld considers the Mousa Vord plant a large-leaved form of *S. cinerea*, but in this opinion I am unable to concur; partly because my large series of Surrey *Capreæ*, which has been criticised by both F. B. White and E. F. Linton, shows one or two plants with leaves having an obovate tendency, as well as one plant from dry sand on the middle of Bagshot Heath with much more pubescent twigs than the Shetland plant, but chiefly because the clothing of the under side of the leaf is to my eye that of *S. Caprea* and not *S. cinerea*. Mr. Ostenfeld agrees that the garden plant is *S. Caprea*.

**Betula alba*, L.—Recorded by T. Edmondston in a list of Shetland plants contributed to "Ann. and Mag. of Nat. Hist.," 1841; also by him in the same year in the "New Stat. Account of Scotland." The Shetland volume of the latter work contains a chapter entitled "General Observations on the County," by Dr. Laurence Edmondston, father of the botanist. Dr. Edmondston, who was himself a naturalist, confirms the occurrence of the birch in these words—"No indigenous trees are to be seen, if we except a few dwarf bushes of birch, willow, and mountain ash." The fact that Edmondston omits the birch from his Flora is of no moment; he also omits sundry quite common plants such as *Lotus corniculatus*, *Galium Aparine*, *Lobelia Dortmanna*, actually recorded by himself in his lists published a few years earlier! It may be mentioned that in the north part of Northmaven there is a loch called "Birka Water," while in the south part of the same parish there is a ward hill called "Birka Vird"; but whether the birch still lingers in

Shetland is at present uncertain. I accept the record on the authority of Dr. Laurence Edmondston. I have good specimens of branches and stem from the peat, kindly sent me by Mr. William J. Gordon, Yell.

[*Alnus glutinosa*, Gaert.—"Hazel, mountain ash, and elder shrubs are found in the mountains,"—Rev. James Gordon, in "Stat. Account of Scotland," (North Yell and Fetlar) 1794.—Mr. Symers M. Macvicar, to whom I am indebted for extracts from the old "Statistical Account," suggests that "elder" is a misprint for "alder." This I think very likely, for it is pretty sure that elder bushes never grew "in the mountains" in Shetland. Roots from the peat in North Roe have been referred doubtfully to Alnus. The only tree I have seen is by the side of the inn at Tresta, where many plants both native and exotic have been gathered together in the unusually sheltered garden, by a former proprietor. I have not ascertained the origin of the tree, which is a fine healthy specimen some twenty feet high.]

**Corylus Avellana*, L.—Yell. "Hazels . . . are found in the mountains." Rev. James Gordon, *l.c.*, 1794. Delting.—"The mountain ash or rowan tree, the hazel, the honeysuckle, the hip brier, and willow, are natives in many of the islets or holms in the freshwater lochs." Rev. John Bryden in "New Stat. Account," 1841. I regard this evidence as satisfactory considering the nature of the plant. As it occurred on the holms, there is no particular reason to suppose that it has become extinct. The nuts are found from time to time in the peat.

Potamogeton polygonifolius, Pour., form *cancellatus*, Fryer.—This is the name that has been given to the remarkable form, found in the Burn of Brooster, near Walls. ("Scot. Nat.," January 1891.)

P. vaginatus, Turcz.—L. Tingwall Loch, 1887. This plant, the exact name of which has been somewhat doubtful, is now definitely identified by Mr. Arthur Bennett ("J. of Bot.," May 1907). It also occurs in Asta Loch, which drains out of Tingwall Loch. The plant which occurs abundantly in Spiggie Loch, Dunrossness, is probably the same; but in the absence of fruit, or more developed specimens, Mr. Bennett is unable to speak with certainty. As a British plant, it is confined to Shetland.

Iris Pseud-acorus, L.—All the plants examined, in various districts, belong to *I. acoriformis*, Boreau.

**Carex glauca* × *flava*.—S. Holm in a small tarn on Gibbie Law's Burn. This plant, which appeared to me to be a hybrid, is

thought by Mr. Ostenfeld to probably originate as above. Mr. Ostenfeld added, that *C. Hornschuchiana* might be the second parent if it occurred. This sedge does not, however, occur on the holm, which is a very small one, and I have not seen it growing near.

**C. vesicaria*, L.—S. Abundant in drains running into the west end of Grasswater, near Bridge of Walls.

**Triticum junceum* × *repens*.—U. Sea-sands, Norwick.—N. Head of Sand Voe. Abundant in both places. Mr. Ostenfeld confirms the name.

**Asplenium Ruta-muraria*, L.—S. On several groups of rocks about the north Loch of Hostigates.

**A. Trichomanes*, L.—S. Sparingly on rocks, west above Hamari Water. Very sparingly on a ledge of rocks, above the south side of the North Voe of Clousta.

Polypodium Phegopteris, L.—N. Exposed ledge of rock at the N.W. corner of the Björgs of Skelberry, alt. c. 550 feet.—Conf.

Osmunda regalis, L.—S. South Loch of Hostigates; Burga Water; Flatpunds Loch; Galta Water. On holms in the above lochs, abundant on most. By Hostigates I found two seedlings respectively ½ inch and 1½ inch high. These were half-buried among large stones, and had so far escaped the sheep. The fern fruits very freely, and myriads of spores must be drifted ashore every year, but no plants are seen on the shores of the lochs.—Conf.

**Isoëtes echinospora*, Dur.—S. Culeryn; Burga Water; Kirkiegarth and Bardaster Lochs, Walls, and in several other lochs. Apparently common in this district.

Isoëtes lacustris, L.—The spores of this species are covered with thin ridges, or plates, not tubercles. All our books describe them wrongly, down to the last edition of Babington. They are correctly described in the Scandinavian Floras. See Blytt, "Norges Flora"; and Lange, "Danske Flora."

The Fresh-water Holms.—The examination of the Holms which are scattered over so many of the fresh-water lochs has especially attracted my attention during recent years, although comparatively few of them have actually been visited. Whether regarded as the final refuges of some species no longer known in Shetland beyond their confines, or as enabling us to conjure up a picture of Shetland loch-side vegetation, as it was before the advent of the sheep, these holms demand our serious consideration; and until they have been more fully investigated it cannot be claimed

that our knowledge of the Shetland Flora approaches completeness. As recorded above, *Salix Caprea* is entirely confined to two small holms in the middle of Mousa Vord Loch; *Vicia sepium* is practically extinct, except on various holms on which it flourishes; while *Osmunda regalis* luxuriates on the holms in some four or five different lochs, and doubtless on others, but is no longer found on their shores. It may be worth while to try to give a rough picture of the vegetation on some of these holms. Burga-water.—As one approaches the green holm at the north end of this loch, from the south, one sees a thick belt of *Osmunda* surrounding a third or more of the islet; mixed with it grow *Spiræa Ulmaria* and other common species, while over all trail festoons of *Vicia sepium* and *Lathyrus pratensis*; behind this belt are considerable thickets of *Salix aurita*, while in the open grassy spots between the thickets are found *Rhinanthus grœnlandicus*, *Hieracium crocatum*, and other interesting plants; the northern part of the holm is sterile, and is covered with a dense growth of *Luzula sylvatica* almost to the exclusion of any other plants. Hostigates.—The small holm in the south loch contains large clumps of *Osmunda* mixed with other ferns and common plants, as well as well-grown examples of *Pyrus Aucuparia*; these last, however, are not so fine as those on the holm in the adjacent north loch, where they reach a height of some six feet. Hamari-water.—The holm in this loch is particularly interesting. A bank along one side was covered with *Rosa glauca* and *Lonicera Periclymenum*, both flowering profusely; among and below them common ferns luxuriate, and below these *Spiræa*, *Caltha*, etc.; while in the dryer parts *Hieracium strictum* is plentiful, as well as *Salix aurita*, *S. repens*, and various other plants. At the farther end I came upon a little forest of miniature rowan trees, most of them perfectly symmetrical little trees, covered with flowers and fruit, but none of them over four feet in height! One tree a little under four feet bore between thirty and forty bunches of withered flowers and half-ripe fruit; the lowest branches sprang from the main stem only some three or four inches from the soil, and were borne down and touching the ground with the weight of the fruit. Nowhere else have I seen, in the wild state, plants that so nearly approach the dwarfed Japanese trees with which we are now familiar. Unfortunately, I had no camera with me; but when at Clousta some few years later, I made a special visit to Hamari-water for the purpose of photographing the little forest. After wading across to the holm, I was surprised to find that there were no rowan-trees to be seen; eventually, however, I recognised them in a number of dead-looking sticks, some bearing one leaf, some two or three, but no sign of flower or fruit. On getting back to Clousta at night, I learned that there had been an exceptionally severe snow-storm with biting north-east wind at the end of May

or beginning of June, and this no doubt accounted for the disaster. The incident well exemplifies the precariousness of the seasons in Shetland. Mousa Vord.—The two holms in the middle of this loch are practically one, being connected by a ridge of rocks a little below the surface. The soil is poor, and owing to this and to the greater part of their area being covered by the thickets of *Salix Caprea*, the flora is very scanty indeed. The following is a list of all the plants seen on these holms :—

Ranunculus acris.
,, repens.
Caltha palustris.
,, ,, subsp. radicans.
Cardamine pratensis.
Cerastium triviale.
Sagina procumbens.
Spiræa Ulmaria.
Geum rivale.
Angelica sylvestris.
Rumex Acetosa.
,, Acetosella.
Salix Caprea.
Luzula sylvatica.
Anthoxanthum odoratum.
Agrostis alba.
Holcus lanatus.
Poa pratensis.
,, trivialis.
Festuca rubra.

From these few observations on the flora of the holms I think one may safely surmise what the loch-side vegetation was like in the olden time a thousand years ago. While now little meets the eye but the eternally recurring prospect of undulating purple-brown heather-clad hills stretching right down to the margin of the loch basin, with rarely a shrub to break the monotony, there would then have been the pleasant relief of a broad margin of greenery round many of the lochs ; first, a belt of *Osmunda* and other ferns, as well as many other herbaceous species ; behind these thickets of wild roses and honeysuckle, or of several species of willow, with small trees of mountain ash and sometimes birch interspersed. This vegetation would extend some little way up the ravines and gullies, while the lower slopes of the hills themselves would be dotted over with shrubs of one sort or another ; so that the ancient landscape must have been far more diversified and pleasing to the eye than the present often somewhat dreary aspect. So far as the herbaceous plants are concerned, the sheep, and to a lesser degree the ponies and cattle, are responsible for the change that has been wrought ; but in the case of the trees and shrubs the hand of man has been a potent influence, "for a shrub of the size of a walking-stick, a flail tree, or a fishing-rod, would prove a temptation too strong for the moral courage of a Shetlander to resist."[1] Then much brush-wood was no doubt cut for firing, while the sheep, again, have put the finishing touch by nibbling off any seedlings as fast as they spring up and so destroying all chance of renovation.

As an illustration of another phase of vegetation in Shetland I

[1] Rev. John Bryden, *l.c.*

give a list of the plants seen growing on the turf roof of a byre at the croft of Setter, near Walls.

Cardamine pratensis.
Cerastium triviale.
,, tetrandum.
Stellaria media.
Sagina procumbens.
Potentilla silvestris.
Hydrocotyle vulgaris.
Galium saxatile.
Scabiosa Succisa.
Solidago Virga-aurea.
Leontodon autumnalis.
Galeopsis Tetrahit.
Rumex Acetosella.
Juncus supinus.
,, bufonius.
,, squarrosus.
Agrostis vulgaris.
Aira flexuosa.
,, præcox.
Poa annua.
,, pratensis.

I may add, in conclusion, that the few observations on the scenery past and present apply more particularly to the peat and heather tracts. On the limestone, clay-slate, etc., where the hills are clothed chiefly with coarse grasses, the general coloration is of course much brighter; but there is the same monotony as regards trees and shrubs. At the same time one often comes across charming burn-side foreground studies, while the grandeur of the coast scenery alone more than compensates for any shortcomings that some may find in the inland landscape.

Thames Ditton, *May* 1907.

A CONTRIBUTION TO A FLORA OF ST. KILDA: BEING A LIST OF CERTAIN LICHENS, MOSSES, HEPATICÆ, AND FRESH-WATER ALGÆ.

By C. Gordon Hewitt, M.Sc.

During the visit to St. Kilda, in July 1906, which I made in order to study the insect fauna of that isolated volcanic rock, I also collected a few lichens, algæ, and bryophytes, with the hope of assisting in the completion of the flora of that island, as these groups had not been studied to my knowledge.

The lichens were kindly identified by my friend Dr. O. V.

Darbishire, the rest by Mr. H. Murray of the Manchester Museum, to both of whom I wish to express my thanks.

The following list is not supposed to be by any means complete, and any one making a closer study of the lower orders of plants would be well rewarded.

Algæ.

Rhizoclonium hieroglyphicum, Kütz., var. *tortuosum*.

Tetraspora gelatinosa, Desv.—On *Nardia*, also in damp places on *Armeria maritima*.

Hepaticæ.

Metzgeria furcata (L.), Raddi.

Nardia compressa (Hook.), G. and Benn.—On rocks in bed of stream.

Chiloscyphus polyanthus (L.), Dum.—This interesting form almost fills the "Well of Virtues" at the bottom of the glen.

Musci.

Mnium hornum, L.—On the top of Connacher.

Pterygophyllum lucens, Brid.—In damp places.

Fissidens adiantoides, Hedw.—In moist situations.

Lichens.

Cladonia uncialis, Hffm.

Cladonia, sp.

C. furcata, Hffm.

C. rangiferina, Nyl.

Ramalina farinacea (L.), Ach.

R. polymorpha, Ach.

Parmelia saxatilis (L.), Ach.

P. olivacea, L.

Ricasolia amplissima, Scop.—This usually lignicolous species was found on rocks of Mullach of Bich, and Cairn Mor.

R. lætæ-virens (Lightft.), Nyl.—On the cliffs of Ruadval.

Peltigera canina, L.—On the rocks of the cleits.

P. horizontalis, L.

Physcia aquila.—Ach.

Xanthoria parietina, L.

Placodium, sp.

Pannaria plumbea, Lightft.—On Ruadval.
Ochrolechia parella (L.), Mass.
Acarospora fuscata (Schrad.), Th. Fr.—On the rocks of cleits.
Biatora lucida (Ach.), Th. Fr.—On the rocks of cleits.
Rhizocarpon geographicum (L.), Dl.—On the rocks of cleits.

The orchis *O. maculata* which occurs on the banks of the stream interested me during my visit. It is usually pollinated by bees, but as no bees have yet been discovered in St. Kilda, the flowers of that island have to depend on other insects for pollination. Quite accidentally one morning a dipterous fly, an Anthomyia, I believe, settled on my hand; upon its head I noticed two pollinia of *O. maculata*, but before I was able to capture it, it flew away. *O. maculata* is no doubt dependent on the visits of flower-haunting flies and other insects in this island, where the hum of the bee has not yet been heard.

The University, Manchester, *August* 1907.

THE NOMENCLATURE OF BRITISH PLANTS.

By George Claridge Druce, M.A., F.L.S.

In my paper on the "Nomenclature of British Plants" which appeared in the "Annals" for October 1906, but which unfortunately I had no opportunity of seeing in proof, so that numerous misprints occur, I made some suggestions of a tentative nature as to certain changes which, if the Vienna "Actes" were followed, might have to be made in the names of our British plants. These were based upon the arrangement and limitations of Bentham and Hooker's "Genera Plantarum." In 1907 Rendle and Britten issued a "List of British Seed-Plants and Ferns," in which the compilers adopt the sequence and generic limitations of Groves's edition of "Babington's Manual of British Botany," which differs considerably from those used by Bentham and Hooker.

In this List about seventy of the names suggested by me in the foregoing paper are also used, so that, working independently, it is pleasing to find that agreement in the

majority of cases is obtained. Erwin Janchen of Vienna, an enthusiastic worker at nomenclature, has also published a list of alterations which are necessitated in Fritsch's "Exkursion Flora" of Austria, and also adopts a considerable number of the foregoing names. He also chooses the following names suggested by me in the "Annals" which are not used by Rendle and Britten: *Calamagrostis canescens*, *Phragmites vulgaris*, *Bromus hordeaceus*, *Polygonatum odoratum*, and *Crepis mollis*. With regard to one of these, *Polygonatum odoratum*, doubts have been expressed as to whether *Convallaria odorata*, Miller, means our *Polygonatum officinale*, or rather refers to a form of *P. multiflorum*. If that be so, then our *Polygonatum* should be called *Polygonatum angulosum* (Lam.), since *Convallaria angulosa*, Lam., "Fl. Fr.," iii. 268 (1778), is earlier than *P. officinale*, Allioni, "Fl. Ped.," 131 (1785).

The genus *Erythræa* must be replaced by *Centaurium*, Miller, "British Herbal," 1756, p. 62; and our plants are *C. umbellatum*, Gilib. (*Erythræa Centaurium*), *C. vulgare*, Rafn. (*E. littoralis*), *C. latifolium* (Sm.), *C. pulchellum*, Druce, and *C. capitatum*, Rendle and Britten, as *Centaurion capitatum*.

Danaa cornubiense replaces *Physospermum cornubiense* according to Dr. Janchen. *Carex Hostiana*, DC., has precedence over *C. Hornschuchiana*, Hoppe.; and we must read *Alnus rotundifolia*, Miller, *vice A. glutinosa*, Gaertn.; and Dr. Janchen gives good reason for rejecting *Helianthemum marifolium*, Miller, in favour of *H. canum*, Baumg.—it is the *Cistus canus*, L., 1753. *Coronopus verrucarius*, M. and T., replaces *C. procumbens*, Gilib. *Inula squarrosa*, Bernh., must be substituted for *I. Conyza*, DC.; and Dr. Janchen uses *Matricaria suaveolens*, Buchenau, instead of *M. discoidea*, DC. *Taraxacum vulgare*, Schrank, precedes *T. officinale*, Wigg.; and Dr. Janchen uses *Hieracium lanceolatum*, Vill., instead of *H. strictum*, Fries.[1] Rendle and Britten correct me in showing that *Nymphoides orbiculata*, Gilib., must be written *N. peltatum*, Rendl. and Brit., since *peltatum* was the oldest specific name. Other corrections made by them are of *Silene venosa*, Gilib., which they suggest should be *S. latifolia* (Mill.), R. and B.; and if *S. latifolia*, Poiret, is not valid, then that must be so,

[1] The Rev. W. R. Linton does not agree to this, but retains *H. strictum*, Fr.

although Schinz and Thellung, in "Bull. Herb. Boiss.," p. 506, reject this and some other names, which they term "totgeboren." In this particular instance they use *Silene vulgaris*, Moench, but I should prefer to follow the plan followed by Rendle and Britten in using the earliest specific name, even if it had not been generally adopted. *Statice Armeria*, L.,—it should be *S. maritima*, Mill.—is not British, nor are *Rumex aquaticus*, L., and *Carex vitilis*, Fries. *Valerianella rimosa*, Bast., is older than *V. Auricula*, DC. *Cephalanthera Damasonium* (Mill.) is rejected by Rendle and Britten in favour of *C. grandiflora*, S. F. Gray, but with this I do not concur. Two obvious errors in my paper are *Polygonum sagittatum*, Gilib., which was a misprint for *Fagopyrum sagittatum*, Gilib. (it is correctly given on p. 218); the other is *Hordeum bulbosum*, L., which was a *lapsus calami* for *H. nodosum*, L.

H. Schinz and A. Thellung in "Bull. Herb. Boiss.," *l.c.*, also adopt some names used by me in the "Annals" instead of those used in Rendle and Britten's List, *e.g. Ranunculus fœniculaceus*, Gilib., instead of *R. divaricatus*, Schrank, and *Galium hercynicum*, Weig., instead of *G. saxatile*, L.

I cannot follow Rendle and Britten in using the name *Myosotis scorpioides*, L., for *M. palustris*; but on the contrary, following the English custom, since the var. *a* in the "Species Plantarum," of *M. scorpioides*, L., is *arvensis* (if this name be retained), I should write *M. scorpioides*, L., *vice M. arvensis*. There is also this advantage, that in rejecting *M. arvensis*, Hill, we get rid of a most ambiguous name, since it was partly, if not wholly, *M. versicolor*. *M. palustris*, Hill, was the Water Forget-me-not, and is well defined. To go into a detailed criticism of the "Plant List" would now take up too much space and time, but one may point out that *Ononis reclinata* is wrongly omitted and *Ophioglossum lusitanicum* wrongly included. Only those who have worked at the subject know how extremely difficult it is; to prepare a list without errors is well-nigh impossible, and even then the names selected may, according to the standpoint adopted, be rejected for several reasons. This much may be said, that Britten and Rendle, Janchen, and Schinz and Thellung still differ widely in their choice of names. The latter authors, I think correctly, use *Arabis scabra*, All., instead of *A. stricta*

Huds., and write *Ludvigia*, L., rather than *Ludwigia*, and *Evonymus*, L., instead of *Euonymus*. They also use *Potentilla Tabernæmontani*, Asch., instead of *P. verna*, L.; but the older name is *P. minor*, Gilib., although that perhaps is used in an aggregate sense. They are correct in using *P. erecta*, Hampe, instead of *P. sylvestris*, Neck., which Rendle and Britten employ, and also show that if *Galium sylvestre*, Pollich, is to be rejected, it must be called *G. asperum*, Schreber, and not *G. umbellatum*, Lam.; but I have yet to be convinced that *G. sylvestre*, Scop., is a *Galium*—the description does not suggest it, and no one, I believe, has yet identified it. They also point out that the authority of *Anagallis tenella* is Murray and not Lightfoot, and that *Scrophularia alata*, Gilib., has priority over *S. umbrosa*, Dum. We are also indebted to them for vindicating the use of the name *Veronica Tournefortii*, Gmelin, instead of *V. Buxbaumii*. F. W. Schmidt used *V. Tournefortii* in 1791, but it is a synonym of *V. pectinata*; therefore *V. Tournefortii*, Gmel., 1805, is available, and precedes *V. Buxbaumii*, Ten. They also reject Mr. Robinson's reversal of the names of *Oxalis stricta* and *O. corniculata*. Dr. Janchen tells me that the *Orchis montana*, Schmidt, 1794, was only a large form of *Habenaria bifolia* and not the plant familiar to us as *H. chlorantha*, Bab. Since there is an earlier *H. chlorantha* than that of Babington it would appear that we must use *H. virescens* (Zollik) for that species, since Zollik's specific name *virescens* dates from Gaudin's "Flora Helvetica" (1829) and is therefore earlier than *H. chloroleuca*, Ridley. The Continental authorities chiefly use *Platanthera* for the generic name instead of *Habenaria*. The wider question of the advisability of following the Vienna "Actes" when they depart from the Rule of Priority must not be touched on here, although it demands most serious attention, and I for one cannot assent to such an unfair and illogical practice.

ZOOLOGICAL NOTES.

Mr. Norman B. Kinnear.—Our friend and valued contributor, Mr. Norman B. Kinnear, has been offered, and has accepted, the Keepership of the Museum of the Bombay Natural History Society,

and will proceed to India in October to take up the appointment. The Society was founded in 1883, and now its members number some 1200, resident in all parts of India and Burma. By the excellence of its work and the value of its publications it has become one of the leading societies of its kind in the East, and has earned and received the generous recognition of the Government of Bombay. During the quarter of a century it has existed the Society has amassed very considerable and valuable collections from all parts of the Indian Empire. Mr. Kinnear, who is a keen and promising zoologist, is a great-grandson of that distinguished naturalist, the late Sir William Jardine, Bart.

The Editors of the "Annals," while much regretting the loss Scottish Natural History sustains, extend to Mr. Kinnear their best wishes for a career of usefulness and distinction in his new sphere of activity.

Hedgehog in Argyll.—In view of the remarks on this subject in Messrs. Harvie-Brown and Buckley's "Vertebrate Fauna of Argyll and the Inner Hebrides" (1892), the following extracts from my diary during a visit to Ballachulish in 1893 may be of some interest as supplementing the occurrences which have since been recorded in this Magazine (see "Annals," 1901, p. 233; and 1902, pp. 50 and 117). "*29th August.*—Mrs. Campbell" (wife of Dr. Campbell, who was, I believe, lessee of the Ballachulish quarries) "showed me a Hedgehog found by her gardener on the hillside near their house." "*1st September.*—I saw the gardener, who stated that it was the first he had seen in the locality, and that a man at the quarries said he had not heard of one being seen in the neighbourhood for quite ten years. On the same day we saw a Mole." —A. Holte Macpherson, London, W.

Great Grey Seal in the Firth of Forth.—Perhaps it might interest your readers to know that on the afternoon of 27th July I saw, in the bay to the north-west of Rossend Castle, Burntisland, a Great Grey Seal (*Halichœrus gryphus*). It was not over 60 yards from the shore, and I could quite easily identify it by its size, shape of the head and neck, and grey colour of the skin. It came up twice, and I had it under observation on its reappearance the second time very particularly. Being seated in the 1.35 train from Edinburgh, which had only drawn up waiting the signal to enter Burntisland Station, I had no opportunity of seeing where it eventually went to. I pointed it out to the occupants of the carriage, and they remarked on its large size. Being a native of the county of Orkney, and thus quite familiar with the appearance of these seals in the water, I had not the slightest hesitation in identifying the animal. Is not this a rather unusual occurrence in a busy waterway like the Forth?—F. Seatter.

Interesting Birds at Fair Isle.—I have just returned from a five weeks' residence on Fair Isle, where in the course of my investigations I witnessed the passage movements of no less than 82 species of migratory birds. Among the birds observed were several species of special interest (some of them being new to Scotland), and these I propose to mention in this preliminary note, reserving full particulars for a future contribution on the results of the year's observations. The rarer species that came under my notice during September and the early days of October were—Black-throated Chat (*Saxicola occidentalis*), Black-headed Bunting (*Emberiza melanocephala*), Grey-headed Wagtail (*Motacilla viridis*), Red-breasted Flycatcher (*Muscicapa parva*), Greater Redpoll (*Acanthis rostrata*), Ortolan Bunting (*Emberiza hortulana*), Lapland Bunting (*Calcarius lapponicus*), and Hoopoe (*Upupa epops*).—Wm. Eagle Clarke.

Peculiar Blackbird's Eggs and their Significance.—The following record relating to several peculiar clutches of Blackbird's eggs seems to prove that, in cases where the eggs of birds of one species are subject to variation, each individual female of that species lays year after year eggs similar in colour and markings.

Early in April 1903 I found a Blackbird's nest containing three pure blue eggs, but these were taken before the clutch was complete.

On 19th April 1905, within a few yards of the same spot, I again found a Blackbird's nest, presumably belonging to the same bird, as it contained two pure blue eggs and a third of ordinary Blackbird's-egg type. This nest was also robbed before the clutch was complete, but by 26th April a new nest had been constructed close by the old one, and two eggs had been laid, both pure blue in colour. On 30th April, when I again looked at the nest, the bird was sitting closely on a clutch of three eggs, one of which, the last laid, was of ordinary markings. Again the nest was robbed, and again, on 10th May, I found the bird sitting on another nest, which contained a clutch of eggs similar to that found on 30th April.

The next nestful of these peculiar eggs which I found was discovered on 8th April 1906, and consisted of two unspotted eggs: on 9th April the number remained the same, but a pure blue egg was found on the ground a few yards away; this egg I placed in the nest, which, however, proved to be deserted.

This year I did not find the unspotted Blackbird's eggs until 28th June, when I found a deserted clutch in a nest built about 50 yards from the former sites. This clutch consisted of five eggs: four blue and unspotted, and the fifth of ordinary markings.

It is, of course, impossible to prove from the above scanty observations that all these nests belonged to the same pair of birds; yet, as, with the exception of the 1907 nest, all were built within a space of about 100 square yards, it is quite probable that they did.

A gardener who had been at work near the last-mentioned nest declared to me that it belonged to a pair of birds of which the male was a pied specimen, as he had several times seen the bird near the nest; but as the nest was deserted when I first saw it, and the eggs were taken two days later, I was unable to make any personal observations on this point. If the gardener's statement could but be satisfactorily proven, it would form a record of unusual interest.—William Binnie, Aberdeen.

Unusual Situation of Willow-Wren's Nest.—During the past nesting-season I came across a Willow-Wren's nest in a very unexpected position, viz. on the extremity of the drooping branch of a spruce, fully nine feet above the ground. The locality in which this nest was found is a rather damp, low-lying patch of woodland; which fact, in conjunction with the inclemency of the season, may account for the bird's unusual choice of a nesting-place.—S. E. Brock, Kirkliston.

Redstart in Mull.—In regard to the distribution of the Redstart (*Ruticilla phœnicurus*) in the Hebrides, it should, in view of doubts to the contrary, be stated that in this portion of the Inner Hebrides the species is a fairly common summer visitor.—D. Macdonald, Tobermory.

Pied Flycatcher in Ayrshire.—I think it may interest you to know that we have had a Pied Flycatcher (*Muscicapa atricapilla*) breeding here. The nest was in a small hollow on the bole of an old acacia tree about 4 feet from the ground. The young birds were hatched out all right, and all seemed to be going well, when either the bird itself or another started to build a second nest on the top of them, and they were all smothered—a catastrophe I cannot account for.—Mary Young, Glendoune.

Great Spotted Woodpecker nesting in Perthshire.—In connection with the extension of range of this species as a native bird in Scotland, which is being discussed in the pages of the "Annals," it will be of interest to record that I have received reliable information of its nesting both at Crieff and Drumtochty in May last.—Mary Bedford, Meikleour, Perthshire.

Great Spotted Woodpecker nesting near Callander, Perthshire.—This spring my daughter discovered that we had the Great Spotted Woodpecker (*Dendrocopus major*) in this neighbourhood. In June she watched a pair of these birds carrying lichens in their beaks and depositing them in a small hole in an alder, so that there can be no doubt they are nesting with us.—J. B. Baillie Hamilton, Callander.

Albino Shag in Mull.—On 14th and 15th June I visited a bird colony established within recent years at Rhu-na-Caillich, in the extreme N.W. of Mull. While there I was assured by Mr. Alex.

Mitchell, lessee of the salmon fishings, that a wholly white Shag (*Phalacrocorax graculus*) was seen near there a few days previous to my visit. On 18th July I was informed by four Staffa boatmen that they had that morning passed close to a Shag which was completely white. All my informants were unanimous that the bird was a Shag, and that a similarly coloured bird had never before been observed by them.—D. Macdonald, Tobermory.

Little Bittern in Inverness-shire.—It may be of interest to your readers to know that I found a Little Bittern (*Ardetta minuta*), a female, at Lentran station, six miles from Inverness, on the 9th of June. The bird was alive, but one wing was broken, it having evidently come in contact with the telegraph wires.—Wm. Milne, Inverness.

[The Little Bittern is of rare occurrence in Scotland, and has not hitherto been known to visit the Moray area.—Eds.]

Nesting of the Quail in East Lothian.—Learning that a strange note had been repeatedly heard by the field-workers at Saltoun East Mains farm on 3rd June in the young corn and grass fields, I went out on the morning of 5th and heard the unmistakable dactylic cry of the Quail (*Coturnix coturnix*). There seemed to be three calling males in the grass field that day. After this the call was heard almost daily in four different fields for at least a fortnight. I managed to see a bird once, in a spot where the hay grew thinly, and another time I surprised one feeding in the middle of the road, as I came along quietly on my bicycle. Its alarm cry was exactly like that of a partridge, though not quite so strong. The hay-field where I first heard the birds calling was cut on 17th July, but in spite of vigilance and precautions following on my interest in the matter, the nest was not found till the horse-rakes had dragged a great swathe of hay over it. I found one egg close beside the empty nest, and other five some ten yards off, all broken, containing chicks on which the down had begun to form. Possibly there had been more eggs than these, but I could only find the six.—H. N. Bonar, Saltoun.

[Introduced Quails were put down in Stirlingshire, remained some time, but disappeared.—J. A. H.-B.]

Garganey in Aberdeenshire.—On the 10th of November 1906 we saw a Garganey (*Querquedula circia*) at the mouth of the Don. It allowed us to get very close to it, and, although it kept itself partially submerged while we were near it, we were able to identify it by the light streak over the eye. We also found its footmarks on the sand, and had a distant view of the whole bird before it swam off and submerged itself. According to Mr. Sim, the only record for this district was also for the autumn migration season (22nd October 1898).—A. L. Thomson and L. N. G. Ramsay, Aberdeen.

Tufted Duck nesting in West Lothian.—With reference to Mr. Brock's notice in the July number of the "Annals," I may state that I have known the Tufted Duck to nest regularly in the eastern portion of West Lothian during the last ten years.—Bruce Campbell, Edinburgh.

Dotterel in Mull.—On the 19th of May I accompanied a friend in a climb to view the grand panorama to be seen from the summit of one of the mountains of N.W. Mull. The sight was very grand, but to me a more interesting one was in store, for my eye caught sight of a plover-like bird, and within a few feet of it its brighter-coloured mate—a pair of Dotterels (*Endromias morinellus*). We had our binoculars, but there was little need for them, as the birds were so confiding as to permit our approach to within ten yards of them. During the hour we watched them they were engaged seeking insects, which they found among the coarse herbage on the hill-top. They were never more than a few yards apart while thus engaged, as each bird would move three or four feet, pick up an insect, stand for a second or two, and then repeat the process. I visited the scene again on the 24th, but, as I expected, both birds had taken their departure.—D. Macdonald, Tobermory.

Woodcocks in Dumfriesshire.—Of recent years the nesting of Woodcocks in this locality has become more and more frequent. Their nests are to be found in woods and coverts, and in the spring at twilight Woodcocks may be seen "roding" up and down the sides and edges of the coverts. In June and July the broods, accompanied by their parents, may be flushed in the more open parts of the woods. In August they seem to have left the woods and taken refuge in the great stretches of bracken, which grows here in some places to the height of four or five feet. Such patches of cover, if near a wood, may be almost counted on to hold a Woodcock. This season (1907) they have been more than usually plentiful, and already (1st September) many have been shot. On 17th August five couple were shot while walking up grouse. It was noticed that they were usually flushed at the edge of a clump of brackens, and that where one was flushed another Woodcock was nearly certain to be within thirty yards; but never were two birds flushed at a time, so close did they lie. When on the wing they flew "like owls," in a dull, heavy, direct way, very different from their autumnal zigzag flight in the coverts. On three or four occasions we saw, say at a hundred yards in front of us, one of these birds flutter up out of the bracken and settle down again a few feet off. This happened presumably when the bird wished to move and was unable to do so on foot because of the too dense undergrowth of heather or dead bracken. It would be interesting to know if this increase in numbers of Woodcock is general throughout Scotland this season.—Hugh S. Gladstone, Capenoch, Thornhill, Dumfriesshire.

Black-tailed Godwit in Barra.—On her return from the north of the Long Island, Her Grace the Duchess of Bedford shot a Black-tailed Godwit at Eoligary, Barra, which will be preserved and find a resting-place in the collection of local birds formed by the Messrs. MacGillivray of Eoligary. It was shot by her on 7th September 1907. Her Grace perfectly identified the bird before it was shot, and I am informed of the above facts by Mr. Wm. MacGillivray *in lit.* 19th September 1907, with the additional information that so far as he, Mr. MacGillivray, is aware, "this is the first record of the species for Barra."—J. A. Harvie-Brown.

Black-throated Diver on the Aberdeenshire Coast.—On the 30th of January 1907 a Black-throated Diver (*Colymbus arcticus*) was shot at the mouth of the Don; it is now in Marischal College Museum. Mr. Sim ("Vertebrate Fauna of Dee") said in 1903 that he had had only one specimen through his hands in forty years; thus, although there has been another since, it seems to be very rare in this district.—A. Landsborough Thomson, Aberdeen.

The House Cricket (*Gryllus domesticus*) in an old Quarry near Edinburgh.—One associates the House Cricket so entirely with ovens and fireplaces, that I was almost incredulous when my son told me he heard dozens "chirping" in an old quarry west of Slateford, near Edinburgh, on the evening of 25th June last. On 20th July he heard them again, and this time brought home three in support of his statement. I then visited the place myself, and found the insects quite numerous, and at all stages from newly hatched young to full-sized adults. They were living under a layer of rubbish, including pieces of old furs, corsets, the stuffing of chairs, tin cans, etc., that had been from time to time deposited in the quarry.

No doubt the crickets have been introduced into the quarry with some of the rubbish, and it will be interesting to see if the colony survives the winter in the open.—William Evans, Edinburgh.

False-Scorpions of the West of Scotland.—Since writing my note for the July "Annals" I have detected two other species in the West of Scotland.

Cheiridium museorum (Leach) has been obtained in the two widely separated counties of Ayr and Ross. In the former county a number of specimens were taken by myself in a meal-mill at Dalry on 29th June, and in the latter a single adult was discovered by Mr. G. A. White in a hay-barn at Balmacara on 26th August.

This species builds nests for the various purposes of moulting, reproduction, and resting. But it differs to some extent in its reproductive habits from our other Scottish species. Sometimes the female follows the course adopted by *Obisium* and *Chthonius* of shutting herself inside her nest and retaining her embryo mass attached to

her genital pore during the period occupied by the embryonic changes; but at other times she apparently lays a few eggs inside a nest and allows them to develop without her presence in the nest at all. This latter method is so startling that I have diffidence in publishing the fact; but in June 1905 I obtained such nests with eggs in my own house in Edinburgh, and in the spring of 1907 Mr. G. A. Whyte obtained strongly confirmatory evidence by finding nests containing several young that had attained their definitive form and were unaccompanied by the female.

Chelifer rufeolus, Simon.—On 28th June I obtained three immature individuals of this species—the first Scottish examples—from a stable loft in Walls Street, Glasgow; and in the month of August Messrs. Whyte and I discovered it commonly at Balmacara, where we took eighty specimens from a small byre. In the Glasgow stable the moulting nests were found on wood and in a clotted mass of straw; and in the byre at Balmacara a female carrying her embryonic mass was shaken out of some refuse on 24th August. The synonymy of this species is not yet finally settled, and it is possible that in the future another name will be substituted for that used here.

Two records made this summer of species already referred to in the July "Annals" deserve notice. *Chelifer cancroides* (Linn.) has been discovered in a second Glasgow stable; and *Obisium maritimum*, Leach, has been obtained on the shore of Loch Duich, near Balmacara.—Robert Godfrey.

BOTANICAL NOTES AND NEWS.

Juncus balticus, *Willd.*, away from the Sea-Coast.—This plant is given in works on the British flora as found "in sandy places near the sea, or rarely by inland lakes." The only locality under the latter head is, or rather was, the Loch of Drum or Park in the valley of the Dee, about twelve miles inland. It now seems to be extinct at this place; at least it has not been found there for some years. In August of this year, while residing at Aviemore in East Inverness-shire, I walked from the railway station of Daviot by Moy and Tomatin to Carr Bridge. Between the two last places the road crosses a range of hills; and although it passes through a ravine known as the Slochd Mor, it reaches a height of 1327 feet above sea-level. Near a milestone marked "Carrbridge 6½" miles, where the altitude must approach 1300 feet, grow several clumps of *J. balticus*. Two or three of these are some feet across, and of vigorous growth, so that the conditions appear to be very favourable despite the altitude and the distance from the sea-coast. Even the upper end of the Moray Firth is nearly twenty miles away; and the open sea is considerably more distant.—James W. H. Trail.

Mite-Galls on the Beech (*Fagus sylvatica*) in Scotland.—In August I found in Rothiemurchus several forms of growth on the leaves of beech trees, which were due to the action of microscopic mites of the group *Eriophyidæ*, formerly known as *Phytoptidæ*. The most frequent was the form once regarded as a fungus, under the name of *Erineum fagineum*, Persoon, consisting of patches on the lower surface of the leaves covered with short clubbed hairs. I have seen these patches in various parts of Scotland, from Dumfries northwards, but always of a pale colour, or at most becoming pale rusty brown. The red variety, described from the Continent of Europe, has not been seen by me in Scotland.

On a few trees in Rothiemurchus, and on one by the Findhorn near Relugas, I met with leaves bearing similar pale hairs on the upper surface in narrow belts along the chief veins, the so-called *Erineum nervisequum*, Kunze. These sometimes occurred on the same leaves as *E. fagineum*, but usually there appeared to be little connection between them. They are both attributed to *Eriophyes nervisequus*, Can.

On a few other trees the leaves were still more markedly altered, being thickened in texture, permanently folded along the veins, and covered with hairs, which early become pale brown. The leaves remain small and useless to the plant. Usually the two or three terminal leaves of a shoot are entirely altered, while the lower ones show no sign of injury. One or two trees showed many branches affected, while others had few attacked. I have seen this gall only rarely before in Aberdeenshire and Perthshire, and at Kew, near London. All the examples that I have found have been dry and vacated by the makers. It has been attributed to *Eriophyes stenaspis*, Nalepa; but the gall characteristic of this mite is a rolling of the leaf-margins into narrow tubes more or less filled with hairs, known as *Legnon circumscriptum*, Bremi. This latter gall I have found in Dumfries and elsewhere in Scotland, but not frequently, and never associated with the plicate leaves. I looked without success for the rolled leaf-margins on the trees that bore the other form; and I did not see them in the valley of the Spey this autumn.

As the Beech is itself a comparatively recent introduction into Scotland from the continent of Europe, its galls must have been introduced with young trees.—James W. H. Trail.

Galled Flowers of Field Gentian (*Gentiana campestris*, L.).—I had occasionally observed in former years distorted and swollen flowers on the Gentian in the valley of the Dee, *e.g.* in Braemar and near Dinnet, but had not had the fitting opportunity to examine these closely, hence I was glad to use the opportunity to do so presented by finding such flowers rather plentifully in August in various places in Rothiemurchus, in Abernethy, Cromdale, and elsewhere near the Spey. The plants showed a tendency to be badly affected in

limited areas, and to remain free from the attack in other places a little way off from infested spots. Only the flowers showed signs of injury. They remained closed, but much swollen, and the purplish colour of the corolla was often very evident, though in other examples the green alone was visible. The parts of the flower become much swollen, and so distorted as to be useless for their proper functions, the stamens often bearing no pollen; while the ovary becomes inflated, and, bursting down one side, displays a smaller flower of like structure, the ovary of which may show even a third flower from its interior. Among the distorted organs of the flowers were numbers of the cause of injury, the mite *Eriophyes Kerneri*, Nalepa.—James W. H. Trail.

A New Variety of the Lesser Broomrape (*Orobanche minor*, Sm.) in Scotland.—When in Scotland in August I had the pleasure of finding near Cupar, Fife, some specimens of a very dark-coloured *Orobanche*, which I could not name. I sent it to Mr. Claridge Druce, who said he believed it to be an unusual variety of *O. minor*, a plant very rarely found in Scotland,[1] and advised me to send it to Professor Von Beck of Prague, who is writing a monograph on the *Orobanchaceæ*. I did so, and I now forward a translation of the Professor's very interesting reply:—"Botanic Garden and Institute of the Imperial German University, Prague, 4th September 1907.—Honoured Madam—I thank you sincerely for your kindness in sending the *Orobanche*, which is indeed an unusual form of *O. minor*. I had not seen it before, and I recognise it as forma *conciliata*,—Corolla excepta basi alba amethystino-violacea, squamæ calycis cum cauli purpurascentes. It is very interesting that other *Orobanches* found in Scotland are also of a darker colour, as is the case with *O. rubra*, Hook."—M. C. Murray.

CURRENT LITERATURE.

The Titles and Purport of Papers and Notes relating to Scottish Natural History which have appeared during the Quarter—July-September 1907.

[The Editors desire assistance to enable them to make this Section as complete as possible. Contributions on the lines indicated will be most acceptable, and will bear the initials of the Contributor. The Editors will have access to the sources of information undermentioned.]

ZOOLOGY.

The Crested Tit in Scotland. "Lichen Grey." *The Field*, 10th August 1907, p. 249.—A short article, describing the nesting and other habits of the species, with a note on its distribution.

[1] Only in Fifeshire (85), where it has been suggested that it was introduced probably with agricultural seeds (Ed. "A.S.N.H.").

Nesting of the Scoter in Sutherland. C. H. T. Whitehead. *The Field*, 13th July 1907, p. 53, and 31st August 1907, p. 435.—Nest with six young and two eggs found towards end of June near the edge of an inland loch, and another brood a few days later swimming with the mother in a small tarn.

Some Notes on the Lepidoptera of the "Dale Collection" of British Insects, now in the Oxford University Museum (*continued*). James J. Walker, M.A., R.N., F.L.S. *Ent. Mo. Mag.*, July 1907, pp. 154-158.—Reference made to a series of Zygæna exulans from Braemar; specimens of Sphinx pinastri taken by Dr. Leach near Edinburgh and by Mr. Wilson, in 1818, in "Ravelston Wood, near Edinburgh"; and four examples of Sesia scoliæformis from Rannoch.

Notes on the Genus Cryptophagus, with a Table of Species. Arthur J. Chitty. *Ent. Mo. Mag.*, July-August 1907, pp. 164-171.—C. fumatus taken at Forres and C. cylindrus mentioned as occurring in the North of Scotland.

On the Braconidous Cryptogastres. Claude Morley, F.E.S. *Entomologist*, August 1907, pp. 179-184.—Acrogaster rufipes recorded from Aberdeenshire, and A. quadridentatus from Nairn.

Hypophyllus crinipes, Staeg., in the Forth District. A. E. J. Carter. *Ent. Mo. Mag.*, July 1907, p. 160.—One male and two females taken at Musselburgh.

On some British Polyzoa. Canon A. M. Norman, M.A., etc. *Ann. and Mag. Nat. Hist.*, September 1907, pp. 207-212, plate ix.—Terebripora ditrupæ, *sp. n.*, described from specimens obtained off Shetland. Schizoporella alderi and Phylactella pygmæa are also recorded from Shetland.

On the Occurrence of a supposed Australasian Hydroid (Sertularia elongata) in the North Sea. James Ritchie, M.A., B.Sc. *Proc. Roy. Phys. Soc.*, vol. xvii. No. 2 (March 1907), pp. 78-80.—A cluster of colonies found in the net of a trawler which had been working off the Shetland Isles and off Buchan Ness. The author comes to the conclusion that the specimen drifted from an Australasian, perhaps from a West Australian locality, to the spot where it was picked up.

The Atractylis coccinea of T. S. Wright. G. S. Russell, M.A. *Ann. and. Mag. Nat. Hist.*, July 1907, pp. 52-55, and figure.—Redescribes the species, and refers to specimens obtained in the Firths of Forth and Clyde.

History of the Loch-an-Eilein Ospreys. C. G. Cash. *Cairngorm Club Journal*, July 1907, pp. 270-278.—Give chronological notes gathered from various sources and from personal observations extending from the year 1804 to 1902. Information regarding Loch Morlich, Glenmore, is also given.

BOTANY.

Hybrids among British Phanerogams. By Rev. E. F. Linton, M.A. *Journ. Bot.*, 1907, pp. 268-276, 296-304.—A catalogue with notes of all known to the author. The ferns and allies are also included, despite the title of the paper.

Plants of E. Perth and S. Aberdeen. By Rev. E. S. Marshall, M.A., F.L.S., and W. A. Shoolbred, F.L.S. *Journ. Bot.*, 1907, pp. 292-296.—Several new to each district are mentioned in the critical genera, *e.g.*, *Hieracium*.

On the Disappearance of Cryptogamic Plants. By A. R. Horwood. *Journ. Bot.*, 1907, pp. 334-339.—Relates to Leicestershire especially, but gives valuable notes on effects of industrial works on these plants, the gases proving harmful.

Notes on British Hepaticæ. By Symers M. Macvicar. *Journ. Bot.*, 1907, pp. 258-262.—Several species and varieties discussed, either new to Britain or of critical importance.

New Localities of Rare Lichens. By A. Lorrain Smith. *Journ. Bot.*, 1907, p. 345.— Names *Pertusaria gyrocheila* from Harris and *Ramalina Curnowii* from Lewis.

Gall Formation on Ramalina. By A. Lorrain Smith. *Journ. Bot.*, 1907, pp. 344-345.—Thalli deformed and showing cavities tenanted by mites. *R. cuspidata*, var. *crassa*, from North-East Scotland, is one of the forms named as bearing the galls.

BOOK NOTICES.

The Letters to Gilbert White of Selborne from his Intimate Friend and Contemporary the Rev. John Mulso. Edited with Notes and Introduction by Rashleigh Holt-White, M.A. London: R. H. Porter.

This volume contains a series of 229 letters addressed to Gilbert White between the years 1744 and 1790. That these should have been carefully preserved by their distinguished recipient is no small recommendation, and will appeal to many who revere all things associated with White's memory. The letters relate to a great variety of subjects, many of them of current interest at the time they were penned; but it must be said that the allusions to natural history are few and of little consequence. We are able to gather from them, however, some knowledge of subjects and persons in which White was evidently interested other than Natural History and naturalists, and this is undoubtedly their chief value. On the other hand, a perusal of them does not lead one to

form a high opinion of their author, but the fact remains that, whatever his faults, he was Gilbert White's oldest and most intimate friend, and one for whom he evidently had great regard. Mulso seems to have been a far-seeing man, for, writing in 1776, he says of the Natural History of Selborne: "Your work, upon the whole, will immortalize your place of abode as well as yourself, it will correct men's principles; and give health to those who chuse to visit the scenes of Mr. Grimm's pencil, in their original": prophetic words. The introduction affords information of interest anent the Mulso family and the friendly relations existing between its members and the Selborne naturalist.

Report on the Immigrations of Summer Residents in the Spring of 1906. By the Committee appointed by the British Ornithologists' Club. London: Witherby & Co., 1907. Price 6s.

This is the Second Report issued by the Committee, and like the last deals solely with the arrival of Summer birds on the English coasts, their dispersal to accustomed English nesting haunts, and their passage movements to beyond the area, so far as it may be possible to detect them. It contains a considerable amount of information on the dates of arrival on great stretches of coast-line and from wide inland areas, and may be studied with advantage in conjunction with Mr. Paterson's Report on the Scottish movements. As these English investigations of the Club are still in their infancy, it would be well to desist from drawing useless and misleading deductions from the data at present obtained, and to reserve for some future Report a final and authoritative pronouncement based upon the necessary adequate material.

The Insect Hunter's Companion. By the Rev. Joseph Greene, M.A. Fifth edition, revised and extended by A. B. Farn. London: West, Newman and Co., 1907. Price 1s. 6d. net.

This little book is an old friend in a new garb. The text is practically the same as in the older editions, but the typography and paper are improved, and the book is bound in a neat green gilt-lettered cover. Although it was written so many years ago, we venture to think that this little work will still hold its own amid the many larger and more up-to-date handbooks. For the schoolboy or novice it is an agreeable and useful fulfilment of its title, and can be conveniently carried in the pocket and even taken into the field.

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