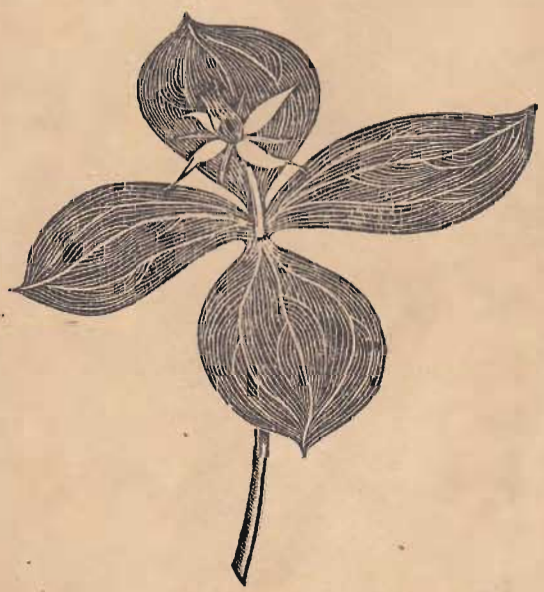
The Reading Naturalist

No. 18



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CONTENTS

Meetings, Excursions and Attendances 1964-65

Illustrated lectures were given at eight of the evening meetings held during the winter of 1964-65, and the remaining meetings were devoted to films, exhibits and talks presented by members. At the Annual General Meeting, Dr. E. V. Watson devoted his Presidential Address to the subject of "Some thoughts on habitats and communities", a slightly abridged version of which will be found in these pages. The lectures given were: "The Molluscan Radula" by Professor A. Graham, (36); "Alien Plants in Britain" by Mr. J. E. Lousley, (51); "Dragonflies" by Mr. A. E. Gardner, (48); "A Geologist in the Niger Delta" by Dr. J. R. L. Allen, (40); "Oaks and Insects" by Professor G. C. Varley, (39); "Bird Observations" by Mr. D. Iles, (40); "A Botanist in Australia" by Mrs. Daphne Prue, (21).

Winter walks were held on the 7th November, Kennet side; 2nd January, Peppard area and 6th February, Tilehurst to Sulham. The December and March walks had to be cancelled due to bad weather.

The summer walks and meetings were as follows, the attendance being shown in brackets: 3rd April, Annual General Meeting of the Berks, Bucks and Oxon Naturalists' Trust, held at Oxford; 10th April, Padworth Gulley, for spring flowers and birds (20); 21st April, the Loddon Valley, for Loddon lilies (24); 1st May, Ufton Woods, mainly for marsh violets (19); 15th May, Gravel pits, for birds (22); 29th May, Basildon (21); 12th June, Bix Bottom, for Chiltern orchids (25); 26th June, Heath Pond, Finchampstead, mainly for pond life (30); 3rd July, White Horse Hill, for orchids amongst other things (15); 14th July, Calcot Mill to Burghfield Bridge, for river plants (12); 28th July, Pamber Heath and Forest, mainly entomological (16); 7th August, Watlington Hill and Chinnor, for botany (22); 14th August, Pangbourne, mainly woodland (14); 28th August, Shiplake to Henley by way of Marsh Lock, riverside and meadows (17); 4th September, Crazies Hill (21); 18th September, Southlake, birds and fungi (a list of the latter will be found in this issue); 2nd October, Peppard, fungus foray.

The Young Naturalists' Evening

The Young Naturalists' Evening was held in the Town Hall on 24th March. Members of the panel were Dr. Bruce Campbell, Professor A. Graham, Professor T. M. Harris, Dr. M. H. Hey and Mr. W. S. Fraser, with Mr. W. A. Smallcombe as Questionmaster. Pupils from Reading schools had submitted about 600 questions, but the panel had time to answer only 30. Prizes for the eight best questions were awarded by the Society. They were presented by the Right Worshipful The Mayor of Reading, Councillor Mrs. A. Sturrock, J.P., who then joined the audience to see the Nature Conservancy film, "The Living Pattern".

The prize-winners were: Elizabeth Andrews, The Abbey Junior School, 11 years; Richard C. Wicks, E.P. Collier Primary School, 11½ years; Susan Dalton, English Martyrs Primary School, 10 years; Anne Boucher, St. Joseph's Convent Preparatory School, 8½ years; Simon Lambden, Newtown Junior School, 10 years; David Tither, Reading School, 11 years; Marilyn Hobbs, St. Michael's Primary School, 11 years; Elizabeth Budge, St. James' Primary School, 11 years.

SOME THOUGHTS ON HABITATS AND COMMUNITIES

Presidential Address to the
Reading Natural History Society
October, 1964

By E. V. Watson, B.Sc., Ph.D., F.L.S.

We are told that within a single gram of soil there may dwell 117,000 fungi and 150 million bacteria. So here, apart from all the larger and better known organisms, in a little heap that would sit comfortably on a penny, are nearly as many fungi as there are people in Reading and almost three times as many bacteria as there are people in Britain. In a cubic metre of soil the numbers of micro-organisms are quite astronomical, and with them are plenty of other kinds of plants, soil algae, spores and seeds of many sorts, and a soil fauna, ranging from protozoa to the larger and more obvious members like centipedes and insect larvae, and not least the earthworms about which Charles Darwin wrote with such knowledge.

Here then, in what we normally think of as a habitat where rooted plants may grow, is a vast and complex community. It is not just a habitat, but a community. Indeed, we cannot always separate the two. We fail because life is all-pervading. Even the so-called lifeless rocks, with their shades of grey and olive and ochre, are not what they seem; for these are the colours, not of the rock, but of its encrusting lichens. Thus, the community of soil organisms becomes the habitat of rooted plants; the community of encrusting lichens becomes the habitat of mosses and liverworts; the community of mosses and liverworts becoming the habitat of colonising vascular plants. Then finally, the vascular plant communities in turn provide the habitats of larger animal forms; - insects with their favoured food-plants, mammals and birds.

We may now explore a little the habitats of mosses and liverworts and British plant communities considered as habitats for certain larger organisms in the animal kingdom, such as birds. After that we may consider the existence of parallel or vicarious communities - both plant and animal - in different parts of the world where comparable climatic regions prevail.

A remarkable feature of many mosses and liverworts is their extreme sensitivity to quite small differences in soil conditions.

A feature to which many mosses and liverworts are extremely sensitive is that of H-ion concentration, i.e. the acid or basic character of the solutions formed when rain-water falls on a particular soil. Often we have vicarious pairs of species, each of which acts as an indicator plant in this respect. Examples are Dicranella heteromalla (very common on acid banks) and Dicranella varia (calcareous banks). The latter is distinguished at once by its red seta, but also by its opposite ecological requirement.

Of other environmental features, humidity is one of the most important. A Swiss botanist, Amann, pointed out how certain species demanded a high proportion of foggy days in the year. Although Reading could supply these, many bryophytes that insist upon the high atmospheric humidity that fog implies will not tolerate its city counterpart, smog! Sensitive methods have been used to test the relative humidity of such micro-habitats as a hollow and an adjoining prominence on a bank, and the difference has been startling, with drastic effects on the bryophyte flora.

There is a moss, Tetraplodon mnioides, that one sees from time to time in the hills. Whenever one does find it, one may be fairly sure it is growing on the decomposing remains of some animal, often on the bones of a sheep. Its close ally, Splachnum ampullaceum, habitually grows on dung. These are specialised habitats, but even more remarkable are those species that Persson has called the 'copper mosses', because they are practically confined to areas where copper is present in quite high concentration - sometimes as high as 675 parts per million. As Persson says, here are bryophytes which surely have an interest for ore prospectors.

Herr Hörmann of Echsenbach has informed me that the site of a village, which had been totally destroyed in the Thirty Years' War, was located largely through the presence in that part of the forest of the moss, Mnium undulatum - indicator of more fertile conditions.

Although some are more limited that others in habitat range, every moss or liverwort has a certain circle of habitats in which alone it will grow. Coming to know the limits of this circle is a fascinating pursuit. It has two drawbacks, however. One is that the species are sometimes hard to distinguish; the second is the difficulty of separating the influences exerted by the many environmental factors. Thus, even when we know that Funaria hygrometrica likes the sites of old bonfires, and that Polytrichum norvegicum is practically confined to late snow areas on the highest Scotish mountains, we may still not know exactly what factors bring about this rigid habitat selection.

Perhaps we may turn now to a larger scale of botanical unit, namely British plant communities, which Tansley explored, some 50 years ago, in 'Types of British Vegetation'. He enlarged on this in his monumental work, 'The British Islands and their Vegetation'. These 'types of vegetation' are both communities themselves and the providers of habitats for other organisms.

The principal plant formations in Britain are forests, grassland, heath and moor, bog, aquatic, high alpine tundra, sand dune and salt marsh. Even when we sub-divide some of these into 'associations' we are still considering only those 'types of vegetation' that would occur in this country without the intervention of man at all. The animal life which made these communities its habitat will have greeted the earliest human settlers. To-day the position is very different. Vast areas that once were forest are covered by a patchwork of fields and hedgerows, ploughland and potato crops, cereals and sugar-beet, orchards and gardens and parkland. These and many more have added new or alien 'types of vegetation' which nevertheless furnish habitats for other forms of wild life and so influence the whole ecology of our islands.

Even the forests, apart from being greatly diminished in extent, have altered their character beyond recognition. In Highland Britain, where once the boreal pine forests covered enormous areas, great plantations of alien conifers now stand: Sitka spruce, western red cedar, lodgepole pine and Douglas fir from western North America; Norway spruce and European larch from the Continent, the latter often replaced by, or hybridised with, the redder-barked 'Jap larch' from the Far East. Only restricted areas of native Scots pine remain.

Grasslands are formed no more as a result of 'natural causes' - grazing by native herbivores, naturally occurring fires and so forth - but depend instead on the policies of the hill farmers. So, whilst we enjoy almost limitless variety of grassland - water meadows and short-term leys, long-term leys based on perennial rye grass in selected strains, Agrostis-fescue hill grazings and Nardus-Deschampsia pasture, park turf with a surprisingly high proportion of annual meadow grass in it and tussocky Molinia grassland on moors and in boggy places - whilst we have all these and many more - it is hard indeed to say which, if any, of them is truly natural. Again, only a handful of closely guardded and carefully managed areas of true, unspoilt fen remain, places like Wicken Fen near Cambridge and Minsmere Reserve in Suffolk.

With the shrinkage and alteration of so much that was primaeval and indigenous, and the continual increase of so much

that is alien or artificial, perhaps we should speak no more of 'types of British vegetation' but rather of 'types of vegetation to be seen in Britain'. It is against this background that the ornithologist is concerned to appraise these various plant communities as the habitats or homes of birds. It is not an easy task to classify them in a comprehensive way, and then to relate the avifauna to them; and we have not made a great deal of progress in this direction since E.M. Nicholson attempted to do this rather more than 30 years ago in his book, 'The Art of Bird Watching'.

The task is made more complex because of two inherent attributes of birds. One is the fact that they inhabit certain areas which are not vegetation at all, for no analysis of vegetation types will ever embrace the home of house-sparrow or gannet, sanderling or fulmar petrel. The second consideration lies in the totally different demands that a particular species makes on the habitat at different seasons of the year. Thus, curlew and red-shank return to the moors and inland marshes each summer but make their homes on the salt flats through the winter months. Many other species of bird make one kind of demand on the habitat as a breeding ground and yet quite another as a feeding ground. Heron, chaffinch and goldfinch, blackbirds, thrushes and rooks, all these and many more are in this category; for all make an absolute demand for trees as a nesting site, yet for feeding grounds are for much of the time dependent upon the open fields.

Despite this complexity, however, there are close links between a given plant community and the quality of the bird life that it supports. Nuthatch and tree creeper frequent varied tracts of deciduous woodland; stonechats and Dartford warblers gorse-clad commons; and so on. We can explore only one or two of these communities, and I have selected the relatively high altitude vegetation types and their attendant bird life - coniferous forest and alpine grassland and tundra. These régimes or 'ecosystems' have a fascination of their own, and they are well suited to our purpose.

The coniferous forest belt commands universal recognition, by botanists and geographers alike. It has a circumboreal distribution lying to the north of the deciduous forest belt. Essentially the same kind of community appears in most of the great mountain ranges of the Northern Hemisphere. In Britain we have a relatively simple picture, with very little indigenous coniferous forest, whilst in Continental Europe, stretching east into Asia, there is a much more complete and complicated representation. In North America the position is more complex still, because of the greater wealth of coniferous species involved.

In the recent past - in not very distant post-glacial times - Pinus sylvestris (Scots pine) grew much more widely in Britain than it does today; so that what we have in places like the Rothiemurchus and Glenmore forests of Inverness-shire in a 'relict' boreal forest; and apart from a certain amount of juniper, it is a vegetation with a single coniferous dominant, the Scots pine itself. Some people may regard this as a gloomy and monotonous landscape, but it is one of great antiquity, with many components of deep natural history interest. The ground flora includes the moss Ptilium cristacastrensis and the orchid Goodyera repens, both exclusive to this particular community. The general plant cover at ground level consists mainly of heather, bilberry and associated grasses, mosses and lichens. These, together with the dominant pine, form the community of plants and make the habitat of the animals. A rich and distinctive insect life prevails, whilst characteristic birds are the crested tit and crossbill. The important thing is to see the community as a whole; better still, to see something of how it works.

These pine forests, situated conveniently near highland lochs, have been in the limelight lately through the return of the osprey to breed near Loch Garten. It is interesting to note that by recovering the osprey as a British breeding species, we have done no more than recover a characteristic member of the community that has been lost for half a century, a member that ranges round the world in the boreal forest zone, from Alaska to Labrador and from Scandinavia to eastern Siberia. Two subspecies are involved, whilst a third occurs in Malaysia and Australia. Since both the Old World and the New World ospreys winter in the tropics, these birds in fact make their presence felt, from time to time, among the fish population of lakes over a large proportion of the Earth's surface.

This would be a convenient point at which to draw attention to the importance of studying whole communites, plant and animal, in the soil and in the air above. This is particularly so in Great Britain, where many interesting communities occur now on a diminished scale. Nothing could have been more timely than the setting up of the Nature Conservancy some 15 years ago, and it is interesting to note that many of their long-term projects are centred indeed on the study of entire communities from every angle. This is true at the research station at Merlewood, near Grange in Lancashire, and again at Monkswood in Huntingdonshire. The problems are of course of quite daunting complexity. Equally timely has been the relatively recent founding of the Council for Nature, and the erection of local Naturalists' Trusts in one region after another.

We now come to the question of the Continental European and American counterparts of our boreal Scots pine forest. If one visits northern Scandinavia one will see the boreal coniferous forest on an infinitely more extensive scale than we can see it at home; even more so if one is privileged to undertake a trans-Canadian journey. My own limited experience, however, lies not here, but farther south in Continental Europe (in southern Germany and Austria); farther south too than Canada, in fact in the U.S.A.

In central Austria, in the Salzkammergut, the coniferous forest belt is characteristic of altitudes approximately between 3,000 and 6,000 feet. The low-level vegetation type of high northern latitudes becomes the characteristic belt at moderate altitude when we move as far south as Austria. Much the same may be said of the Black Forest area in south Germany. Almost always Picea abies (spruce) or Abies pectinata (silver fir) remain the dominant trees , but locally they are much mixed with beech and larch. Coal tits and crested tits, goldcrests and crossbills may be met with, much as in the Scottish pine forest. But just as the herbaceous flora is richer in species, so are the birds. In this subalpine zone of the Black Forest, years ago, I met the rock bunting and citril finch. In the Salzkammergut, more recently, I was fortunate enough to see the rather rare yellow-headed woodpecker.

In the U.S.A., aside from the southern edge of the boreal forest belt, there are characteristic zones of evergreen forest on both the Rocky Mountains and the coastal ranges in the west. In addition, the redwood forest is a feature of the coastal plain in northern California, whilst over an enormous area in the aouth-eastern states there extends a pine forest dominated by a handful of long-leaved pine species. In the western mountain ranges quite different groups of conifers provide the dominants at different altitudes. The highest conifer belt of all is commonly that of alpine fir and Engelmann spruce, trees of ideal spire-like form, very different from the untidy outline of the lodgepole pine which covers so much ground at lower altitudes in the Rockies. Far out on the southern and south-eastern extensions of the Rockies one still meets with coniferous forest domination but here the trees - like Abies concolor and some kinds of 'cedar' (Juniperus) - are species of shorter stature. With increasing aridity the individuals become more widely spaced and the formation ultimately ceases to be forest in the full sense. This is a far cry from the conifer forest of the rain slopes of the Cascade Mountains, in the state of Washington, where great stands of Douglas fir and western red cedar, Sitka spruce and various kinds of silver fir regularly attain 150 to 200 feet in height.

In every instance, amid much diversity, we are still in a habitat which is made essentially by evergreen trees. This fact of a permanent canopy must of itself exert a profound effect on the community as a whole. Its influence will be felt everywhere, in the soil, in the 'herb layer', and of course upon the animal inhabitants of the trees themselves.

Despite diversity, a certain uniformity prevails. Thus, one may be 6,000 miles away from home, and yet in the evergreen forests of the Pacific States the bird life is essentially familiar; we still find crossbills in these conifers; in place of the crested tit we see the chickadee (relative of British marsh and coal tits). Replacing our jays are metallic blue-crested jays. Replacing our warblers are the western representatives of the 'New World warblers' more colourful in plumage than our own though weaker in song. In place of the European nutcracker of Continental coniferous forests is found Clarke's nutcracker, a bold species whose habits have earned it the name of 'camp robber'. And so one could go on, with the red-breasted nuthatch and the tyrant flycatchers and various kinds of woodpecker which in turn replace exactly the British nuthatch, the European flycatchers and the greater spotted woodpecker Here and there an altogether alien form obtrudes, like the western tanager, resplendent in red and yellow plumage, but for the most part the pattern is familiar and only the species are new to us.

Above the coniferous belt, in Old and New World alike, stretches alpine grassland that gives place at extreme altitude to a kind of tundra that is very like the vegetation of the Arctic. This happens in Britain well below 3,000 feet, in Austria at about 6,000 - 7,000 feet, and in parts of the Rocky Mountain system at higher altitudes still. 'Grassland' is a poor term of description, however, when amid the grass or on the natural morainic ground can be found a marvellous wealth of flowering alpines. Among these alpines many genera and even some species will be familiar. I shall always remember the thrill that it gave me to see, high in the Rockies of Wyoming, flowering Dryas octopetala and Saxifraga oppositifolia, two of our own favourite alpines well-known for their fondness for calcareous rock. In Austria in April, at slightly lower altitudes, few sights are more characteristic than that of the pure, intense blue flowers of Gentiana verna.

The outstanding feature of the alpine flora of the Rocky Mountains (as I recall it), in early July, was the presence of perhaps 40 to 50 species all in full bloom at the same period - many of them forming great sheets of colour - and this in a space of a few acres in some specially favoured spot. They belonged to such genera as Gentiana, Potentilla, Silene, Veronica, Astragalus, Phacelia, Campanula, Pedicularis and Allium, with strong representation of the characteristically north American genera Phlox, Pentstemon and Eriogonum, not to mention a wide assortment of

Compositae and Umbellifers.

Summarising these remarks, one may say that every niche we care to think of in wild nature is both a community and a habitat. The soil - a community of diverse organisms and a habitat for terrestrial plants - this was our beginning. Bryophyte communities are the habitat of numerous forms of life. In them higher plants might root; but they are also the home of various beetles and other small invertebrates. Furthermore, even within the water-filled cells of Sphagnum leaves certain algae make their home. On a bigger scale, we noted how all the diversity of British vegetation can be grouped into a few major types - the great 'Plant Formations'. To the ornithologist these are just habitats for birds, sources of food and of suitable nesting sites.

Lastly, we looked more closely at two high latitude - and often high altitude - 'formations', coniferous forest and alpine vegetation and saw how these can recur in many different parts of the northern hemisphere. Not only do the plant associations have many genera (and often species) in common; but into the habitats that they form parallel kinds of bird life have grown. A meadow pipit rises with a plaintive 'peet-peet' from the heather or coarse grass of our hills. A buzzard soars moth-like overhead. Six thousand miles west, in the Rocky Mountains, a little-known bird rises from our feet amid the 'natural moraine gardens'; it is the American pipit - close relative of our own bird. The principal large American predators belong to the genus Buteo, the same as our European buzzard. In the Pacific conifer belt the high thin notes we hear are those of siskins, the louder metallic ones those of the crossbill; two birds we had learnt to recognise long since in the hills of Banff and Inverness-shire.

Ecology is the study of plants and animals 'in their homes'. As such it has infinite scope, and we have touched but one small aspect of it. Today some ecologists, probably rightly, concentrate on closely circumscribed problems, such as the mathematical expression of pattern in vegetation. Their work may bear fruit, but we must never lose sight of the broader picture which shows us all organisms as components in a single, living whole. It is this view of the whole which is the peculiar advantage and special aim of Natural History Societies such as ours. All of us must specialise of course; but now and again it is fitting to stand back and view the scene. In doing so, we sense the integration and inter-dependence of all living things.

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ON THE INCIDENCE OF PATENCY OF THE DUCTUS ARTERIOSUS (DUCTUS BOTALLI) IN SHEEP (OVIS)

By C. J. Leeke, B.Sc., A.M.I.(Biol.)

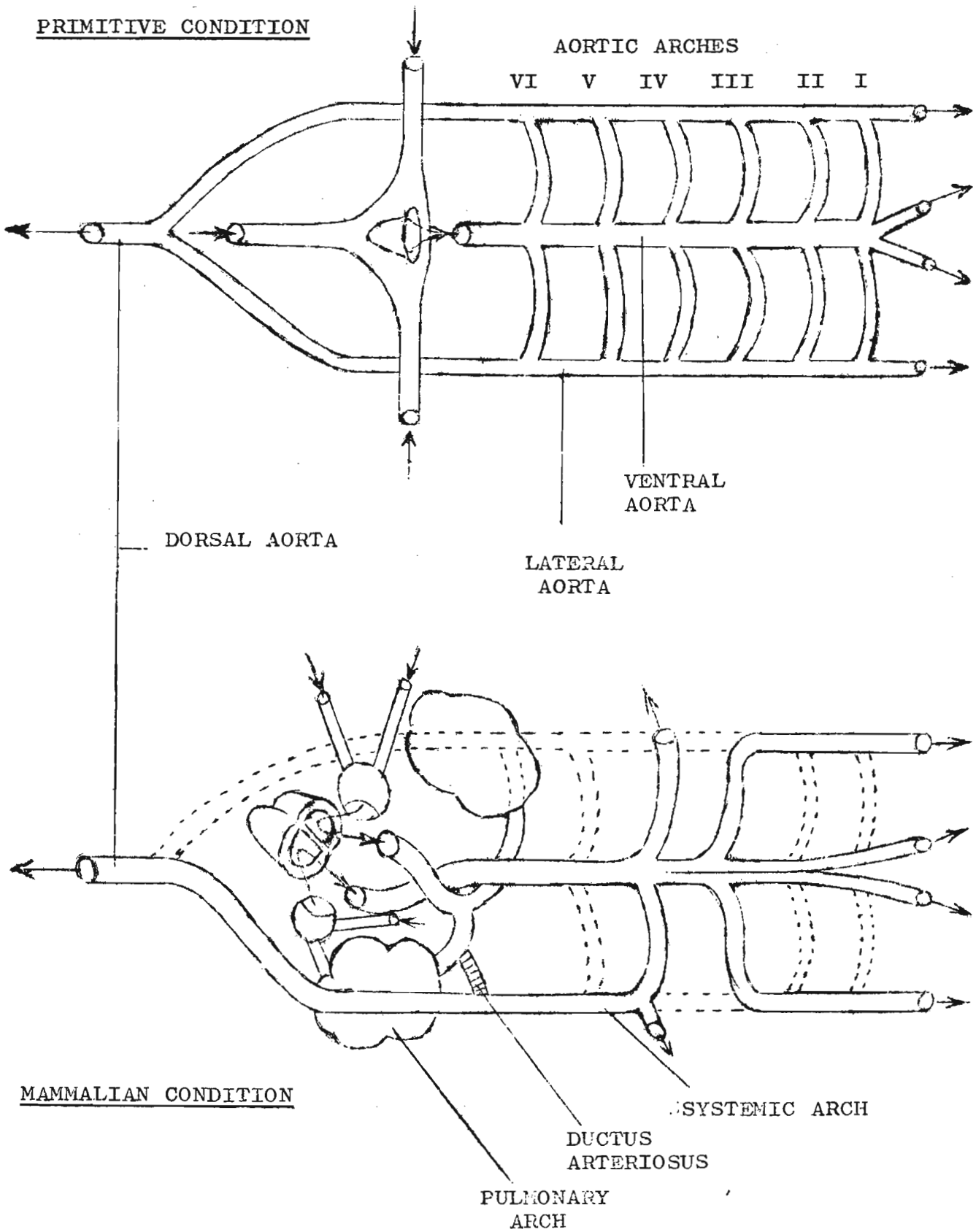
Introduction

The ductus arteriosus is a relic in the circulatory system of mammals of primitive times when two lateral aortae were present, collecting blood from the six pairs of aortic arches that served the gills of our fish ancestors and passing it back to a common dorsal aorta. Modern fishes generally have less than six pairs of aortic arches, and as gills became superseded by lungs much more of this system disappeared. In the several groups of vertebrates, various parts survived to serve special needs.

In the mammals, the left side of aortic arch III and part of the left lateral aorta became the systemic arch, while parts of aortic arch VI became the pulmonary arch. The remainder of the left side of aortic arch VI survives as the ductus arteriosus, linking the systemic and pulmonary arches.

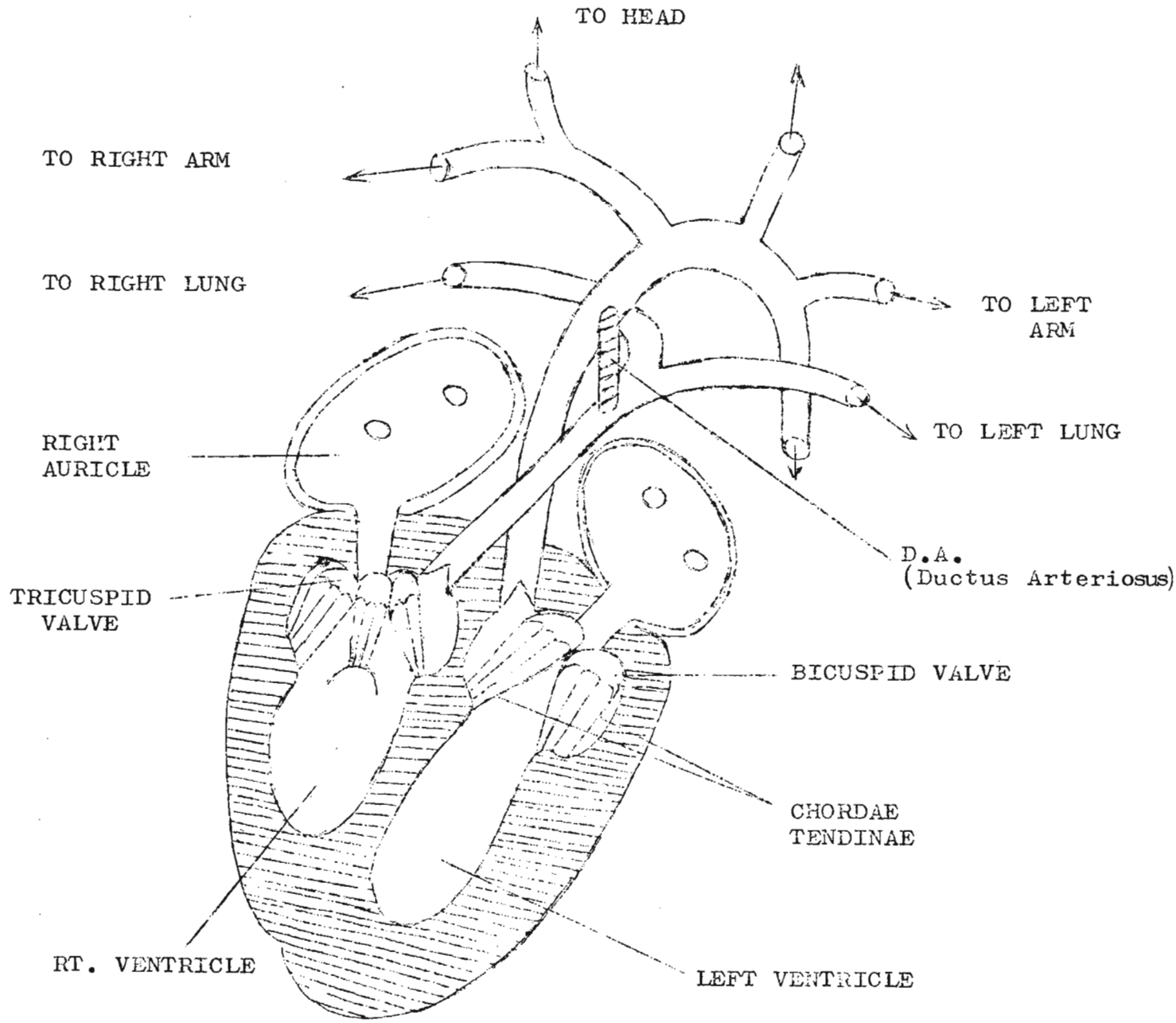
If the ductus arteriosus remained patent (i.e. open) throughout the life of the mammal, blood could flow between the pulmonary arch (carrying deoxygenated blood to the lungs) and the systemic arch (carrying oxygenated blood to the body). This would be comparable with a 'hole in the heart' condition. Normally, at birth, the ductus arteriosus constricts and the very small bore left becomes filled with some fatty material, which effectively blocks it. Before birth, however, the ductus arteriosus is of equal bore to the pulmonary arch and allows blood from the right ventricle of the heart to pass into the systemic arch, thus by-passing the non-functioning lungs. It will be seen that this very important vessel ensures that all the effort in the embryonic circulation shall go into circulting all the blood to the body and in particular to the placenta. It will also be appreciated that its presence as a patent vessel is an embarrassment to functioning lungs.

It was therefore with some surprise that a class, dissecting sheeps' hearts, discovered that four out of eighteen had a patent ductus arteriosus. Immediate inquiries of colleagues and other interested people elicited no information about this condition. A visit to the Zoology Department of Birkbeck College and to the library of the Zoological Society of London resulted in the finding of one paper recording an instance of this in 1939. Later, the



DIAGRAMMATIC AFTER DE BEER

DIAGRAM OF MAMMALIAN HEART TO SHOW DUCTUS ARTERIOSUS



library of the Royal College of Veterinary Surgeons produced references to papers mostly relating to the physiology of the ductus. No one seemed to know how frequently the condition occurred.

The problem

What is the incidence of patency of the ductus arteriosus in sheep, and how can one find out this information? If it is common (and after all, four out of eighteen is a high percentage), why has it not been recorded more often?

The method

It was decided to look at a large number of sheeps' hearts, and the abattoirs seemed a reasonable place at which to start. After discussions with Mr Loosemore at the Veterinary Department at Coley Park, when it was suggested that 1000 hearts would be a statistically sound number to examine, permission was obtained from Mr Alf Meade to carry out the work at the Reading Abattoirs.

As soon as the sheep are killed they are skinned, eviscerated and the 'pluck' is removed and hung on racks. It was impossible to tell from the external appearance of the ductus whether or not it was patent, as it was hidden beneath fat, pericardium and the thymus gland, and it was not possible to probe from the opened systemic arch as the still warm tissue was so soft that a seeker penetrated the wall of the vessel. The technique finally adopted was to open the systemic arch longitudinally to give a view of the inner communication to the ductus arteriosus. If this was not obviously closed, the pericardium was opened ventrally from the ventricle, working anteriorly along the ductus arteriosus to the systemic arch and cutting through the glandular and fatty tissue. The ductus could then be pulled into view and cut across, when a spot of blood could be seen on the cut end if it was patent. To safe-guard against the possibility of there being a long pocket of blood, open only at one end, the vessel was removed completely for dissection later. Once this system of examination had been evolved, it took one minute to examine each heart, remove the ductus if it appeared patent, and record the findings.

I thought it advisable to consider hearts from sheep of approximately the same age. This problem was simplified, if not solved, by working only between cretain narrow limits of time, i.e. from the beginning of January to the beginning of February. Old sheep, recognised by the degenerate condition of the thymus gland, were excluded. Later in February, noticeably younger lambs were appearing and were also excluded. It was probable that the hearts considered were from lambs at least eight months old. However, it should not be overlooked that Devon farmers mate their ewes as early as November.

Results

The results are presented in the following Table. Those vessels found to be patent fell into two groups, those with a bore of about 0.5 mm. and those with a bore of about 2.0 mm. None of the vessels taken for linear dissection was found to be blocked at either end, so that all the records were of genuinely patent vessels.

Date	Number patent 0.5 mm.	Number patent 2.0 mm.	No. examined	% patent	Nearest integer
4-i-57	4	0	63	6.35	6
6-i-57	8	2	181	5.52	6
13-i-57	10	1	185	5.95	6
20-i-57	4	0	75	5.33	5
27-i-57	3	1	83	4.82	5
3-ii-57	3	0	101	2.97	3
3-i-58	1	0	7	14.29+	14
19-i-58	4	0	142	2.82	3
26-i-58	11	0	149	7.38	7
2-ii-58	1	0	38	2.63	3
Totals	49	4	1024		
Averages				5.18	5
Results in sheep less than 8 months old:-					
8-viii-58	8	0	114	7.01	7
9-viii-58	4	0	56	7.14	7
Original specimens:-					
14-xi-56	3-4½ mm.	8-9½ mm.	18	22.22+	22

+ Figures unreliable because of small number examined.

Conclusion

From the hearts seen, it may be concluded that some 5% of lambs retain a patent ductus arteriosus for several months after birth. The original hearts appear to be exceptional, since none was found comparable to them. It may be seen that the percentage of patent vessels is very near to the average from all numerically reasonable samples, and this strongly supports the average percentage as a genuine value.

It would seem that the timing of the closure is not precise, nor is the deposition of fatty material to complete the closure of the ductus arteriosus.

Discussion

The references, listed below, deal largely with the importance of the ductus arteriosus before birth, the physiological causes of closure, and some effects of patency. Notable among these effects is a cardiac murmur which can easily be heard with a stethoscope and can be identified by its location. No attempt has been made to ascertain the incidence of the condition.

Veterinary surgeons called to a sheep found dead in the pasture are primarily concerned with the possibility of contagious disease. Having cleared up this question, there is no urgency to ascertain the exact cause of death, which might well be a costly procedure. These, and any other animals which die from non-contagious causes, are labelled as unfit for human consumption and may be used for animal foods or for dissection purposes. The hearts which led to the carrying out of this investigation were purchased from a well-known biological suppliers who obtain them from a number of sources. While some undoubtedly are taken from slaughtered animals, others are from carcases designated as unfit for consumption.

It is my opinion that some of these undiagnosed deaths may be due to the effect of a patent ductus arteriosus, associated with some physical or nervous stress. That this may be so is based on the following slender evidence. While I was engaged with a rack of plucks, one of the meat inspectors asked me to look at the pluck taken from a calf which had died in the pen. The ductus arteriosus of the calf had a bore equal to that of the pulmonary arch. There had been no constriction at all. No other cause of death was apparent, so the carcase acquired a bright splash of green dye, which marked it off from butcher's meat. This particular animal had not been subjected to any undue physical exertion, but I submit that it must have experienced some nervous stress in being removed from its home surroundings to the abattoi, where even to my inadequate nostrils the smell of death is strong.

It may be that an insufficient number of hearts was seen to make an accurate estimate of the frequency of this condition in the nation's sheep population. This is suggested by the fact that none was found comparable to the original specimens. Perhaps all sheep with that degree of patency die before reaching the slaughter house.

The cardiac murmur suggests some further interesting work. It is known that the murmur is caused by turbulence, in the same way that plumbing noises are caused. These are capable of mathematical evaluation, the equation being

$$Re = \frac{v.d.p}{n}$$

where Re = Reynold's number (thought to be 700-1000), v = velocity (mean linear), d = diameter of the tube, p = density of the fluid, and n = viscosity of the fluid; v and d are roughly inversely proportional and p and n are constant values for blood. Because the left venricle is more powerful than the right, the pressure in the systemic arch is greater than that in the pulmonary arch. Therefore blood flows along the patent ductus arteriosus from the former to the latter. The turbulence occurs at the junction of the ductus arteriosus and the pulmonary arch, where an awkward turn must be negotiated by the blood. Now what is needed is experimental evidence to associate the sound of the cardiac murmur with the value of d. It would then be a simple matter to cull those lambs in which the bore of the ductus arteriosus was so large as to be unlikely to close and likely to cause trouble.

Summary

The evolution and importance to mammals of the ductus arteriosus is discussed. Patency of the ductus in four sheeps' hearts is reported and the problem of incidence is considered. The method of investigation is described and results listed. It was found that about 5% of sheep may have a patent ductus arteriosus with a very small bore compared with that of the pulmonary arch. In view of the figures quoted for younger lambs, it would seem that closure may not be a precisely timed and final blocking by fatty material could be delayed for several months. It is suggested that some deaths may be due to the patent ductus plus some stress. As no vessel was found in this investigation comparable with the original specimens, it may not be reasonable to use the figures obtained on a national scale; alternatively, the failure may provide support for the theory about undiagnosed deaths. It is suggested that the cardiac murmur might be used to estimate the diameter of the patent ductus arteriosus in living sheep.

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SOME EMPIDIDAE (DIPTERA) OF THE READING AREA

By Jonathan H. Cole, B.Sc., M.I.Biol.

Interest in this large family of characteristic but mainly small and unobtrusive flies was given a boost by the appearance of J.E. Collin's monograph in 1961. Since 1963, when I obtained a copy, I have collected Empids in the Reading area, mainly from a few well known hunting grounds, and by June 1965 had recorded 96 species; Collin describes 354. My recent move from the district curtailed any further work, but in the comparatively short time of two and a half years several little known or rare species turned up, some regularly, and included one new to Britain (Cole, 1964). This leads me to the unoriginal observation that it is Empid specialists who are rare rather than the flies, and that the known distribution of a large number of the apparently scarce species is probably that of their collectors.

I have unfortunately not had time to check other published records, and therefore offer this incomplete list uncritically. The nomenclature follows that of Collin and the localities unless otherwise distinguished are as follows:-

Goring	-	garden and greenhouse of 'Avebury', Milldown Avenue
Tidmarsh	-	along the river Pang
Thatcham	-	reed beds and along the canal
Woodcote	-	Elmorepark Wood.

Dates are given when a species has been recorded on one or two occasions only.

TACHYDROMINAE

Drapetis assimilis Fall.	Several on *Heracleum* umbels, Tidmarsh	23.vi.63
" *simulans* Collin	1 ♀ among *D. assimilis*, above	23.vi.63
	1 ♂ compost heap, Goring	
Elaphropeza ephippiata Fall.	Goring - three localities	
Crossopalpus nigritella Zett.	On mud round pool draining from silage, Goring	April 63, 64
" *humilis* Frey	Several on compost heap, Goring	19.iv.63
" *minima* Mg.	Few on compost heap, Goring	26.iv & 22.v.63
Stilpon nubila Collin	Little known sp., breeding in greenhouse and recorded once from adjacent compost heap, Goring	64, 65

Tachypeza nubila Mg.	Common everywhere	
" fuscipennis Fall.	1 ♂ Hartslock Wood, Goring. Rare; first record outside Suffolk	13-v-64
Sicodus arrogans L.	Common everywhere	
" annulimanus Mg.	2 ♂♂ Goring	24-vi-64; 1-vi-65
Tachydromia pectoralis Fall.	Goring - Hartslock Wood, Streatley Hill, Padworth Gulley	
" ciliaris Fall.	Goring, Hartslock Wood, Streatley Hill	
" pallipes Fall.	1 ♂ Goring - Hartslock Wood	10-viii-64
" leucothrix Strbl.	Goring, Streatley Hill, Woodcote. Has rarely been recorded.	
" nigra Mg.	Tidmarsh (several)	23-vi-63
" minuta Mg.	Common everywhere	
" albifacies Collin	Goring, Streatley Hill, Woodcote	
" exilis Mg.	1♀ Streatley Hill	1-vii-64
" annulata Fall.	1♀ Goring	6-vi-57
" coarctata Collin	Burghfield gravel pits, Tidmarsh	
" cothurnata Mcq.	Goring, Streatley Hill, Woodcote	
" cursitans F.	Tidmarsh (several)	1-vi-63
" candicans Fall.	2♀♀ Streatley Hill	3-vi-63, 29-v-64
" leucocephala v.Ros.	1♀ Goring - Coneyberry W. 1♂ Streatley Hill	3-vi-63 1-vii-64
" pallidicornis Mg.	Thatcham (several)	28-vi-65
" extricata Collin	Goring	
" pallidiventris Mg.	Goring, Tidmarsh	
" fasciata Mg.	Streatley Hill, Thatcham	
" calceata Mg.	1♀ Streatley Hill	2-viii-63
" major Zett.	1♀ Woodcote	17-v-65
" annulipes Mg.	Fairly common everywhere	
" agilis Mg.	Fairly common everywhere	
" incerta Collin	1♂ Woodcote	16-vii-63

" *longicornis* Mg.	Fairly common everywhere	
" *tantula* Collin	1♀ Streatley Hill	1-vii-65
Symballophthalmus scopularis Collin	1♀ Woodcote	17-v-65
HYBOTINAE		
Atelestus pulicarius Walk	Goring - 3 localities	
Hybos culiciformis F.	Common everywhere	
" *femorstus* Müller	Common everywhere	
Bicellaria nigra Mg.	Goring - Coneyberry Wd. & Sonning Common	
" *nigrita* Collin	2♀♀ Streatley Hill & Goring	1-vii-64 & 4-vi-65
" *intermedia* Lundb.	Goring & Streatley Hill	
" *pilosa* Lundb.	Several Goring & Coneyberry Wd.	3-vi-63
" *vana* Collin	Common everywhere	
Ocydromia glabricula Fall.	Common everywhere	
Leptopeza flavipes Mg.	1♀ Tidmarsh 1♂ Goring - Hartlock Wd.	1-vi-63 3-vi-64
Trichinomyia flavipes Mg.	Goring - 3 localities	Oct. 64
Oedalea holmgreni Zett.	Common everywhere	
" *stigmatella* Zett.	1♀ Goring	3-vi-60
Microphorus anomalus Mg.	Thatcham & Tidmarsh	
" *crassipes* Macgu.	1♂ Streatley, water meadow	21-v-63
Euthynewia sp.	A new British sp., as yet unidentified satisfactorily. Several bred from rotten log, Goring-Hartslock Wood.	April-May 63 & 64
EMPIDINAE		
Rhamphomyia s. str. sulcata Mg.	Common everywhere in Spring.	
" *subcinerascens* Collin	1♂ Goring Hartslock Wd.	24-iv-65
Rhamphomyia (Pararhamphomyia) atra Mg.	Goring - 3 localities	
" (") *tibiella* Zett.	1♂ Thatcham	28-vi-65

Rhamphomyia (Aclonempis) albohirta Collin	Several - Woodcote	14-v-65
" (") longipes Mg.	Fairly common everywhere	
" (Holoclera) nigripennis F.	Thatcham & Pamber Forest	
" (") flava Fall.	Goring, Coneyberry Wd. & Tidmarsh	
" (Amychoneura) hirsutipes Collin	1♂ Goring	3-x-64
Empis s. str. nigripes F.	Common everywhere	
" nuntia Mg.	Common everywhere	
" aestiva Loew	Common everywhere	
" praevia Collin	1♀ Goring	29-v-64
	Several Pamber Forest	5-vi-65
" chioptera Mg.	Common everywhere	
" candatula Loew	Fairly common everywhere	
" (Xanthempis) punctata Mg.	1♀ Streatley Hill	3-vi-63
" " stercorea L.	Fairly common everywhere	
" " trigramma Wied.	Fairly common everywhere	
" " lutea Mg.	Fairly common everywhere	
" " scutellata Curtis	1♂ Burghfield Gravel Pits	21-v-58
Empis (Kritempis) livida L.	Common everywhere	
Empis (Polyblepharis) opaca Mg.	1♂ Padworth Cully	9-v-64
Empis (Leptempis) grisea Fall.	2♀♀ Tidmarsh & Streatley Hill	19-vi-65 1-vii-65
Empis (Coptophlebia) albinervis Mg.	1♂ Thatcham	28-vi-65
Empis (Pachymeria) tessellata F.	Very common everywhere	
" " femorata F.	Swarm of ♂♂ Goring - Coneyberry Wd.	29-v-64
Hilara maura F.	Common everywhere over water	
" quadrivittata Mg.	Goring & Pamber Forest	
" interstincta Fall	Common everywhere	
" monedula Collin	Common everywhere	

Hilara lurida Fall.	1♂ Goring - Hartslock Wd.	13-v-64
" nigrina Fall.	Tidmarsh, swarm over River Pang	15-viii-63
" chorica Fall.	Tidmarsh 23-vi-63 &	19-vi-65
" rejecta Collin	1♂ Goring	22-vii-64
" golactoptera Strobl	Fairly common everywhere	
" litorea Fall.	1♂ Woodcote	16-vii-63
" flavipes Mg.	Pamber Forest swarm	15-viii-64
" subpollinosa Collin	Several Thatcham	28-vi-65
HEMERODROMIINAE		
Chelipoda vocatoria Fall.	Streatley Hill on bracken	
Phyllochomia melanocephala F.	Goring & Pamber Forest	
Dolichocephala irrorata Fall.	Goring & Streatley Water meadow	
Dryodromia testacea Rond.	Rare - several Woodcote	14-17-v-65

References

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ADDITIONAL SYRPHIDAE OF THE READING AREA

By J.H. Cole, B.Sc.

My previous list of hoverflies (Diptera: Syrphidae) taken in the Reading area (Reading Naturalist 1959, no.11; 1965, no.17) contained 114 species and varieties. The following 26 species and varieties may now be added, bringing the total to 140, which represents over half of the British list.

SYRPHINAE

Syrphus grossulariae Mg.	1 ♂	Goring, Oxon.	19.vi.60
" euchromus Kowarz.	1 ♂	Hartslock Wood, Goring	24.iv.60
" cinctus Fall.	1 ♀	" " "	4.ix.59
" (Melangyna) quadrimaculatus Verrall	1 ♂	Downs near Streatley, Berks.	13.iv.58
" (Ischyrosyrphus) glaucius L.	1 ♀. several ♂♂	Pamber Forest, Hants.	15,26.viii.64

CHEILOSIINAE

Cheilosia intonsa Loew	1 ♂	Hartslock Wood, Goring	21.iv.60
" maculata Fall.	1 ♀	Goring	2.vi.60
" chrysocoma Mg.	1 ♀	Pamber Forest	3.vi.61
" fraterna Mg.	1 ♂	" "	26.viii.64
Heringia heringii Zett.	1 ♀	Goring	18.v.59
Parapenium flavitarsis Mg.	1 ♀	Silchester Common, Hants.	25.vii.59
Brachyopa scutellaris Desv.	2 ♀♀	Coneybury Wood, Goring, Oxon.	25.v.60; 7.v.61
	2 ♂♂	"	3.vi.62; 25.v.63
Pipiza bimaculata Mg.	2 ♂♂	Hartslock Wood, Goring	24.iv.60; 7.v.61
Neoascia dispar Mg.	1 ♀	Thatcham reed beds, Berks.	29.vi.61
Chrysogaster chalybeata Mg.	1 ♀	Loddon bank, near Shinfield, Berks.	16.viii.61
" solstitialis Fall.	1 ♀	Palmer Pk., Reading	24.viii.56
" (Orthoneura) splendens Mg.	1 ♂	Thatcham	27.viii.64

ERISTALINAE

Merodon equestris F. var. typ.	2 ♂♂	Goring	25.v.60
" " var. narcissi (F.)	1 ♂	Goring	25.v.60
	1 ♂, 1 ♀	Goring	11.vi.64
" " var. validus Mg.	2 ♀♀	Goring	5.vi.61; 11.vi.64
Helophilus frutetorum F.	1 ♂	Thatcham reed beds	20.vi.60
	2 ♀♀	" " "	29.vi.61

SERICOMYINAE

Sericomyia lappona L.	2 ♂♂	Pamber Forest	3.vi.60
" silentis Harris (= borealis Fall.)	several ♂♂	Pamber Forest	26.viii.64

XYLOTINAE

Xylota abiens Mg.	1 ♀	Pamber Forest	3.vi.60
" lenta Mg.	1 ♂	Goring. (Pupa found in rot hole, Coneybury Wood. Adult emerged	12.iv.60)

CHRYSOTOXINAE

Chrysotoxum verralli Collin	1 ♂	Thatcham	19.vii.64

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Weather Records in 1965

By A. E. Moon

The data refer to Reading University Meteorological Station. A "rain day" is a day on which rainfall equals or exceeds 0.01 of an inch. The averages for temperature refer to the period 1931-60, those for the amount of precipitation and number of rain days to 1916-50, and those for sunshine to 1921-50. For the designation of frost and ground-frost days see Weather Records in 1961.

STATION - READING UNIVERSITY. HEIGHT ABOVE MEAN SEA LEVEL - 148 ft.

		JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	YEAR
MEAN DAILY TEMPERATURE °F.	MAX.	43.7	42.6	51.2	55.8	61.9	67.4	65.9	69.2	62.4	60.3	46.9	47.2	56.3
	MIN.	34.4	34.0	35.8	40.5	46.7	50.9	52.4	52.5	47.5	45.5	36.2	36.0	42.8
	MEAN	39.1	38.3	43.5	48.1	54.3	59.1	59.1	60.9	54.9	52.9	41.5	41.6	49.5
	DIFFERENCE FROM NORMAL	+0.1	-1.6	-0.4	-0.6	0.0	-1.0	-4.0	-1.9	-3.6	+1.5	-3.3	+0.6	-1.2
EXTREME TEMPERATURES °F.	E. MAX.	53	50	73	67	81	74	74	78	68	75	58	56	81
	DATE	11,16	12	29	3	14	11, 14	14	12	20,21,22	7	8	17,18	MAY 14
	E.MIN.	25	23	19	34	37	43	41	46	39	34	24	20	19
	DATE	5	3,4	3	29	20	7	4	1	20	17,23	15	28,29	MAR. 3
	E. GRASS MIN.	17	16	13	25	26	33	35	37	33	27	12	9	9
	DATE	5	3	3	3	20	7	4	8	20	17,24	15	28	DEC. 28
DAYS WITH	FROST	11	7	9	0	0	0	0	0	0	0	9	7	43
DAYS WITH	GROUND FROST	20	16	18	12	4	0	0	0	0	8	19	18	115
SUNSHINE HOURS	SUM	70.9	32.7	135.9	147.4	166.4	167.4	110.6	179.2	114.1	110.6	90.4	61.9	1387.5
	% POSSIBLE	27	12	37	36	35	34	22	40	30	30	34	25	31
	DAILY MEAN	2.29	1.17	4.38	4.91	5.37	5.58	3.57	5.78	3.80	3.57	3.01	2.00	3.80
PRECIPITATION INS.	AMOUNT	2.09	0.17	2.42	1.54	1.78	1.84	3.47	2.32	4.55	0.61	2.75	3.79	27.33
	RAIN DAYS	17	7	17	21	18	14	15	13	15	5	17	21	180
	MAX. RAIN IN 1 DAY	0.58	0.05	0.43	0.19	0.27	0.44	0.65	0.85	0.99	0.25	0.63	0.46	0.99
	DATE	13	19	3	9	22	21	11	2	25	14	7	22	SEP. 25
LONGEST RUN OF CONSECUTIVE	RAIN DAYS	12	2	13	7	6	3	7	6	3	0	7	5	-
LONGEST RUN OF CONSECUTIVE	DRY DAYS	5	6	7	4	6	5	5	4	6	11	5	4	-
	SNOW OR SLEET DAYS	7	4	5	1	0	0	0	0	0	0	3	0	20
	DAYS SNOW LYING	1	1	4	0	0	0	0	0	0	0	0	0	6
VISIBILITY	FOG AT 0900 G.M.T.	1	1	3	2	0	0	0	0	2	7	0	2	18
THUNDERSTORM ACTIVITY	DAYS OF THUNDER	0	0	1	5	1	0	5	1	2	1	0	1	17
	DAYS OF HAIL	0	0	0	2	0	0	1	0	0	0	0	1	4
AVERAGES MEAN DAILY TEMPERATURE °F.	MAX.	44.2	45.5	51.4	57.0	63.5	69.1	71.8	71.6	66.6	58.6	50.5	46.0	57.9
	MIN.	33.8	34.2	36.5	40.5	45.3	50.9	54.5	54.0	50.2	44.2	39.2	36.0	43.3
	MEAN	39.0	39.9	43.9	48.7	54.3	60.1	63.1	62.8	58.5	51.4	44.8	41.0	50.7
PRECIPITATION	AMOUNT	2.41	1.78	1.69	1.90	1.86	1.61	2.53	2.20	2.10	2.60	2.74	2.30	25.72
	RAIN DAYS	17	13	13	14	13	11	13	13	13	15	15	17	167
SUNSHINE	SUM	52.7	70.0	120.9	156.0	195.3	210.0	192.2	182.9	138.0	105.4	63.0	46.5	1532.9
	DAILY MEAN	1.7	2.5	3.9	5.2	6.3	7.0	6.2	5.9	4.6	3.4	2.1	1.5	4.2

Monthly Weather Notes

JANUARY

This was the sunniest January since 1959.

FEBRUARY

The driest February since 1934; the total sunshine was the lowest for this month since 1947.

MARCH

This month was one of sharp contrasts; in the first week the coldest March day since 6th March 1942 occurred and also the coldest March night since 7th March 1947, together with the winter's heaviest snowfall - 8 inches lying at 09 hours on 3rd. In the last week a complete reversal of the cold opening was experienced, with temperature reaching 60°F. (27th) for the first time this year and the highest maximum (73°F. on 29th) recorded in March at the University Station since reliable records commenced in 1921.

MAY

This was the wettest May since 1958.

JULY

It was the coldest July since 1954 and the wettest since 1957. The total sunshine was the lowest for this month since sunshine records were started in Reading in 1939; the amount represented little more than the average expected amount for October. The screen minimum of 41°F. on the night of 3rd/4th was the lowest in July since 1st July 1924.

SEPTEMBER

It was the coldest September since 1952 and the wettest since 1927. The total sunshine recorded was the lowest September figure since 1957. The 10th was the coldest September day since 30th September 1960.

OCTOBER

The maximum temperature of 73°F. on 4th was the highest in October since 3rd October 1959, the maximum then being 80°F. It was the driest October since 1950. The first autumn ground frost occurred on 16th (last year the date was 9th October).

NOVEMBER

This was the coldest November since 1952, but the sunshine total was the highest since records started in Reading in 1939. The 16th was the coldest November day since 22nd November 1956 and the night of 14th/15th the coldest in November since 12th November 1959. The first autumn air frost was recorded on 13th and the first snow of the present season occurred on 16th. Unusually low barometric pressure was recorded on 29th.

DECEMBER

It was the warmest and wettest December since 1959.

THE RECORDER'S REPORT FOR ENTOMOLOGY
1964 - 1965

By B. R. Baker

Order Orthoptera (Grasshoppers, Bush Crickets, etc.)

Tettigonia viridissima (L.) Great Green Bush Cricket

The colony of this impressive insect continues to exist on the Chiltern slopes near Ipsden, but fewer nymphs were observed in the early part of this season as compared with last year.

Meconema thalassinum (Deg.) Oak Bush Cricket

A colony has been under observation during the past few seasons in a beech-wood area at Goring Heath. Very young nymphs have been found in some numbers by searching the under surfaces of the leaves of regenerating hazel during late May. The nymphs mature steadily throughout the summer, and adults may be found on oak and beech trunks from early to late autumn; many were found at Goring Heath in late October.

Stenobothrus lineatus (Panz.) Stripe-winged Grasshopper

Numerous examples were noted on Swyncombe Downs on 1st Sept., along with Chorthippus brunneus (Thun.), Common Field Grasshopper, and C. parallelus (Zett.), Meadow Grasshopper.

Gomphocerippus rufus (L.) Rufous Grasshopper

A colony exhibiting good colour variation, including an unusual striped form, exists on a chalk exposure near the King Charles' Head, Goring Heath.

Tetrix subulata (L.) Slender Ground-hopper

Adults were discovered on 22nd May in litter by the side of the small stream in the marsh at Pamber Forest, Hants.

Order Lepidoptera (Butterflies and Moths)

1965 has been an uneventful year for records of immigrant species, and the notes that follow therefore relate only to the resident Lepidoptera.

Trichiura crataegi L. Pale Oak Eggar Moth

Larvae beaten from hawthorns and sloes during May and a fine run of adults to light during September; Maidenhead Thicket, Berks. (T.J. Homer).

Eilema deplana (Esp.) Buff Footman

A single example to light in Morgaston Wood, Hants., 30th July. This wood is similar in character to the lower lying parts of Pamber Forest, from which locality the species was reported in 1964. It is probable that much of the scattered oak woodland in this section of north Hampshire holds this uncommon species.

Amathes castanea (Esp.) Neglected Rustic

This species may be found from late August to mid-September on most of our local heaths, i.e. Crowthorne, Burghfield and Pamber. Searching the heather at Pamber Heath after dark in late May and early June revealed several well-grown larvae - these were bred through to adult moths in late August.

Apamea ophiogramma Esp. The Double Lobed

Several larvae of this marshland species were found at Woolhampton on 26th May. They feed internally in the stems of Phalaris, the infected stems being easily detected by the presence of the 'yellowed' leaves.

Cucullia absinthii L. Wormwood Shark

A single example to light at Pinkney's Green, Maidenhead, on 18th July (T.J.H.). Previously regarded as a maritime species, this moth has of recent years extended its range into the south-eastern and midland counties. Mr. Homer's record would appear to be the first for Berkshire.

Lithacodia fasciana L. Marbled White Spot

A remarkable melanic specimen of this not uncommon species was found sitting on an oak trunk in Pamber Forest, Hants., on 5th June. The specimen has been photographed for the Proceedings of the South London Entomological Society.

Eustrotia uncula Clerck Silver Hook

A single example was noted in a damp hollow on Snelsmore Common, 10th June.

Paracotia fuliginaria L. Waved Black

Most of the records of this very interesting species, so far as our district is concerned, come from Crowthrone, Sandhurst and the Camberley area, though an atypical population appears to exist in the Kennet Valley where larvae have been found on lichens as opposed to the usual bracket fungi. A few records are known from the Mortimer and Pamber areas. Dr. M.I. Crichton has been operating a light-trap at Mortimer in conjunction with research proposed by Rothamsted Experimental Station, and his 1965 records show that P. fuliginaria exists in the Mortimer area in some strength. Between 19th July and 18th August, 23 examples were trapped, the highest number of specimens taken on any one night being four on 30th July.

Trisateles emortualis (Schiff.) The Olive Crescent

It was reported in the last number of the Reading Naturalist that this rare species had been taken at Medmenham and at least two other localities in the Chilterns in 1964. It subsequently transpired that the 'two' localities (other than at Medmenham) are in fact the same piece of woodland. From this elite locality, about four specimens were obtained in 1965 by collectors living well away from the Reading area. Emortualis remains something of an enigma, for its life-history still requires elucidation.

Lobophora halterata Hufn. The Seraphim

Many examples were noticed sitting on aspen trunks in mid-afternnon on 16th May, in a wood on rising ground behind Fir Tree Farm, Hampstead Norris.

Dyscia fagaria (Thunb.) Grey Scalloped Bar

A male was found resting after dark on Calluna at Pamber Heath on 29th May.

Aegeria myopaeformis (Borkh.) Red-belted Clearwing

Mr. Gambles brought the Recorder a specimen of this clearwing which he had found at his home at Woodley. This is the first record of this seldom noticed species of which the Recorder has a note over a period of 13 years (see Reading Naturalist no. 17, p.25).

Order Coleoptera (Beetles)

Anaglyptus mysticus (L.)

A single specimen was found at Goring Heath on 8th July. The larvae of this attractive 'long-horn' feed upon the wood of a number of trees, such as oak, beech and sycamore, preferring very dry wood of boles and branches.

The Recorder would like to express his thanks to Dr. E. Burtt for records of Orthoptera and Coleoptera; Dr. M.I. Crichton and Mr. T.J. Homer for detailed information on Lepidoptera; and to the Director of Reading Museum, Mr. T.L. Gwatkin, for allowing the inclusion of those records kept at the Museum.

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THE RECORDER'S REPORT FOR BOTANY

1964 - 1965

By B. M. Newman

Every year, a little more of the Berkshire countryside disappears under concrete, as new housing estates and roads are built. One result of this is that comparatively common plants become rarer. At the same time, alien plants may be introduced in various ways, and some of these become established. The only way to gain a picture of the changing nature of the local flora is by the collection of individual records, and members are urged to send in as many as possible. When sending in records, a more detailed description of the locality would be useful, preferably with the grid reference, which will not be published.

Interesting finds during the past year include Vulpia ambigua, which is new to Berkshire, and Arnoseris minima, which has not been recorded in the county since 1891.

The nomenclature and order are according to 'A List of British Vascular Plants' by J.E. Dandy (1958), with the exception of three recently introduced aliens. An alien taxon, i.e. one known or believed to have been introduced by the agency of man, is indicated by +.

Records sent in by the following members are gratefully acknowledged: Dr. H.J.M. Bowen (HJMB), Miss K. Butler (KB), Miss L.E. Cobb (LEC), Dr. M. Fishenden (MF), Mrs. W. Fulford (WF), Mr. C.P. Harding (CPH), Mr. J.A. Newman (JAN), Mrs. V.A. Phillips (VAP), Mr. A. Price (AP), Mrs. A.M. Simmonds (AMS) and Miss J.M. Watson (JMW). Their records are initialled.

Members' Records

Equisetum sylvaticum L. Wood Horsetail

Locally abundant in ferruginous swamp under alder, Goldfinch. Bottom nr. Crookham (HJMB).

E. telmateia Ehrh. Great Horsetail

Ashley Hill, Berks. (AMS).

Asplenium trichomanes L. Common Spleenwort

North Stoke, Oxon. (AMS).

Ceterach officinarum DC. Rusty Back Fern

Wall in Ferry Lane, Goring (WF).

Dryopteris lanceolatocristata (Hoffm.) Alston Narrow Buckler Fern

Grazely; Arborfield; Swallowfield (AMS).

Ophioglossum vulgatum L. Adderstongue Fern

Near Crazies Hill (AMS).

Helleborus foetidus L. Stinking Hellebore

S.E. corner of Sulham Woods, nr. Nunhide Lane (JMW).

Ranunculus sceleratus L. Celery-leaved Crowfoot

Remenham (LEC).

Ranunculus hederaceous L. Ivy-leaved Crowfoot

Small colony on mud near Hampstead Marshall. Probably diminishing (HJMB).

R. lenormandii F.W. Schultz Moorland Crowfoot

A few plants in acid pools, The Leas, Finchampstead (HJMB).

+ Adonis annua L. Pheasant's Eye

Two plants at edge of cornfield, Aston Tirrold (MF).

Myosurus minimus L. Mouse-tail

Garden weed, Morlands Avenue (WF); Great Lea Common (AMS).

Aquilegia vulgaris L. Columbine

Bix Bottom, Oxon (VAP).

Thalictrum flavum L. Common Meadow Rue

Remenham (LEC).

Nymphaea alba L. White Water Lily

Aldermaston, old gravel pits (AMS).

+ Papaver somniferum L. Opium Poppy

Hardwick, Oxon. (AMS).

Iberis amara L. Candytuft

Sonning Eye (VAP).

+ Hesperis matronalis L. Dame's Violet

Alongside Streatley Warren (MF).

+ Erysimum cheiranthoides L. Treacle Mustard

Arborfield (LEC).

Polygala serpyllifolia Hose Heath Milkwort

Fence Wood, Hermitage (AMS).

Silene gallica L. Small-flowered Catchfly

Fleetway Farm, nr. Eversley (AMS).

Stellaria neglecta Weihe Greater Chickweed

Shinfield. 100 plants in hedge bank near river Loddon (HJMB).

S. palustris Retz Marsh Stitchwort

Remenham (LEC).

Montia fontana L. Water Blinks

Great Lea Common; Fleetway Farm nr. Eversley (AMS).

+ M. perfoliata (Willd.) Howell Spring Beauty

Two plants in Northcourt Avenue, Reading (LEC); Elmhurst Road and Alexandra Road, Reading (VAP).

Chenopodium murale L. Nettle-leaved Goosegrass

Small Mead tip (AMS).

+ Geranium phaeum L. Dusky Cranesbill

Near Nettlebed (VAP).

G. columbinum L. Dove's-foot Cranesbill

Nunhide Lane, Sulham (JMW).

G. lucidum L. Shining Cranesbill

Chalk-pits on the Henley Road, nr. the 'Flowing Spring' (JMW).

+ Oxalis europaea Jord. Upright Yellow Sorrel

Bracknell. Waste ground in several localities (CPH).

+ Impatiens glandulifera Royle Himalayan Balsam

Berks.-Hants. border, nr. Swallowfield (VAP).

+ Vitis vinifera L. Grape Vine

One large plant by the railway in Reading (HJMB).

Genista tinctoria L. Dyer's Greenweed

Holding its own at Arborfield (LEC); Binfield and Hawthorn Hill (7-8 localities) (CPH); Fleetway Farm nr. Eversley (AMS).

Medicago falcata L. Sickle Medick

Small Mead tip (AMS).

+ Melilotus alba Desr. White Melilot

Frequent in disused brickfields, Binfield (CPH).

+ M. indica (L.) All. Small-flowered Melilot

Small Mead tip (AMS).

Trifolium medium L. Zig-zag Clover

Disused brickworks, Bracknell (CPH).

Lotus tenuis Waldst. & Kit. ex Willd. Slender Birdsfoot-trefoil

Frequent in old brickyard nr. Embrook (HJMB).

Astragalus glycyphyllos L. Milk-vetch

Sulham Woods (JMW).

Ornithopus perpusillus L. Least Bird's-foot

Grassy patch by railway line, Crowthorne (MF).

Lathyrus nissolia L. Grass Vetchling

Between Ashampstead and Quicks Green (MF); disused brickworks, Bracknell (CPH).

Potentilla argentea L. Hoary Cinquefoil

One plant near Padworth Mill (AMS).

Agrimonia odorata (Gouan) Mill. Scented Agrimony

Grassy track, west of Hawthorn Hill (CPH).

+ Amelanchier confusa Hyland Snowy Mespilus or June Berry

Ufton Nervet woods (AMS).

Hippuris vulgaris L. Mare's Tail

Canal, North Warnborough, Hants. (AMS)

Viscum album L. Mistletoe

Parasitic on Lime (Tilia), Aldermaston Court (HJMB).

Thesium humifusum DC. Bastard Toadflax

On bare chalk, N.E. of railway line, Churn Halt (CPH)

Torilus arvensis (Huds.) Link Spreading Hedge-parsley

Single plant on edge of cornfield near Chilton (MF).

+ Smyrnium olusatrum L. Alexanders

Bath Road, Southcote (VAP).

Petroselinum segetum (L.) Koch Corn Parsley

Berkshire Downs nr. Aston Tirrold (AMS).

Oenanthe aquatica (L.) Poir. Fine-leaved Water Dropwort

Near Pingewood (AMS).

Foeniculum vulgare Mill. Fennel

Queen's Road car park, Reading (AMS).

+ Heracleum mantegazzianum Somm. & Levier Giant Hogweed

Old Basing, Hants. (AMS).

+ Fagopyrum esculentum Moench Buckwheat

Garden weed, Addington Road, Reading (AMS).

Salix pentandra L. Bay Willow

Old Mill, Aldermaston (AMS).

Monotropa hypophegea Wallr. Yellow Bird's Nest

Mapledurham (VAP).

Hottonia palustris L. Water Violet

Near Cleeve (KB); Pingewood (VAP).

Gentianella germanica (Willd.) Börner Scarce Autumn Felwort

Over 100 plants in chalk grassland at Woodland St. Mary, where the owner is protecting it)HJMB).

+ Symphytum grandiflorum DC.

Pepper Lane, Reading (HJMB).

Cuscuta europaea L. Greater Dodder

Near Hennerton (JAN).

C. epithymum (L.) L. Lesser Dodder

On Calluna vulgaris, Longhill, Bracknell (CPH).

Hyoscyamus niger L. Henbane

27 plants at Rectory Road, Streatley (MF).

+ Datura stramonium L. Thorn-apple

Woodley tip (VAP).

Misopates orontium (L.) Raf. Weazel's Snout

Several plants in field at Brooklands Farm nr. Binfield (CPH); Fleetway Farm, nr. Eversley (AMS).

Kickxia spuria (L.) Dumort. Round-leaved Fluellen

A few plants at Brooklands Farm nr. Binfield (CPH); near Nunhide Lane (VAP).

K. elatine (L.) Dumort. Sharp-leaved Fluellen

Brooklands Farm, nr. Binfield (CPH); near Nunhide Lane (VAP).

+ Veronica filiformis Sm. Round-leaved Speedwell

Hurst (LEC).

Pedicularis palustris L. Red Rattle

North Warnborough (AMS).

+ Odontites lutea (L.) Reichb.

At least 1,000 plants on gravel near Aldermaston. This South European species flowers in September and is well established over a limited area. It is new to Britain (HJMB).

Lathraea squamaria L. Toothwort

Near Toker's Green (BMN).

Orobanche elatior Sutton Tall Broomrape

Twenty flower-spikes on roadside near rifle range, Churn (CPH).

Utricularia vulgaris L. Common Bladderwort

Flowering on 20th July at Littlejohn's Farm, Reading (AP).

Mentha longifolia (L.) Huds. Horse Mint

Growing wild in a garden at Bracknell (CPH).

+ Salvia verticillata L.

Several plants apparently established on waste ground near Reading station (HJMB).

+ Salvia reflexa Hornem.

Birdseed alien; Weston, nr. Shefford (HJMB).

Stachys arvensis (L.) L. Field Woundwort

Fleetway Farm near Eversley (AMS).

Galeopsis angustifolia Ehrh. ex Hoffm. Red Hemp Nettle

Mapledurham (VAP).

Nepeta cataria L. Cat-mint

Rectory Road, Streatley (extends for some distance) (MF); one plant in hedge nr. Compton; Watlington Hill (CPH).

Scutellaria minor Huds. Lesser Skullcap

North Warnborough (AMS).

Littorella uniflora (L.) Aschers. Shore-weed

South Lake, Earley (AMS).

Campanula trachelium L. Nettle-leaved Bell-flower

Near Hennerton (AMS).

Legousia hybrida (L.) Delarb. Venus's Looking-glass

Sonning Eye (VAP).

Bidens cernua L. Nodding Bur-marigold

Bramshill, Hants. (VAP).

B. tripartita L. Bur-marigold

Bramshill, Hants. (VAP).

+ Galinsoga parviflora Cav. Gallant Soldier

Suttons; Halls Lane; Tipping Lane; and as a garden weed near St. John's church, all Reading (VAP).

+ G. ciliata (Raf.) Blake Shaggy Soldier

Remenham (LEC); Whiteknights Road, Reading (VAP).

+ Inula helenium L. Elecampane

Frequent in a new plantation, Bowsey Hill (CPH).

Pulicaria vulgaris Gaertn. Lesser Fleabane

Farmyard at Bramshill (VAP); still flourishing in Mrs. Simmonds' garden in Reading, where it was accidentally introduced two years ago (AMS).

Erigeron acre L. Blue Fleabane

Disused brickworks, Bracknell (CPH).

+ E. annuus (L.) Pers. (? E. strigosus Muhl. ex Willd.)

Roadside, Crookham Common (HJMB).

Carduus tenuiflorus Curt. Slender Thistle

Mapledurham (VAP).

Arnoseris minima (L.) Schweigg. & Koerte Swine's Succory

About 100 plants in an arable field near Wokingham were found by Dr. G.F.C. Hawkins. The species has not been recorded in Berkshire since 1891 (HJMB).

Lactuca serriola L. Prickly Lettuce

One plant at sewage works, nr. Moss End (CPH).

Hydrocharis morsus-ranae L. Frogbit

Littlejohn's Farm, Reading. Flowered in July, probably for the first time in six years (AP).

Stratiodes aloides L. Water Soldier

Pond at Nettlebed (VAP).

Ornithogallum umbellatum L. Star of Bethlehem

Near Crazies Hill (AMS).

+ Juncus tenuis Willd. Slender Rush

Heath Pond, nr. Finchampstead (AMS).

J. compressus Jacq. Round-fruited Rush

Burghfield gravel pits (AMS).

Allium ursinum L. Ramsons

Wet woodland, and small island in the river Loddon nr. Shinfield (HJMB).

Epipactis helleborine (L.) Crantz. Broad Helleborine

Plentiful at Long Hill and Harman's Water, Bracknell (CPH).

Ophrys apifera Huds. Bee Orchid

50 plants on Chobham Common near Longcross station; one spike at Watlington Hill (CPH).

Orchis simia L. Monkey Orchid

Has done better this year; seven plants were seen (AMS).

Orchis mascula (L.) L. Early Purple Orchid

A few plants in a wood, Grazeley (LEC).

+ Acorus calamus L. Sweet Flag

Many plants in flower, Caversham (VAP).

Lemna polyrhiza L. Great Duckweed

Bulmershe Lake; abundant in June (AP).

Carex vesicaria L. Bladder Sedge

Old gravel pit north of Burghfield (HJMB).

C. strigosa Huds. Loose-spiked Wood Sedge

By streams in deep shade in Pingewood and in a wood south of Crookham (HJMB).

C. curta Gooden. Pale Sedge

Frequent around the lake at Long Moor (HJMB).

Vulpia ambigua (Le Gall) More Bearded Fescue

At least 1,000 plants by old army camp at Kingsride nr. Ascot; new to Berkshire (HJMB).

Poa subcaerulea Sm.

Damp pasture near The Leas, Finchampstead (HJMB).

Calamagrostis epigejos (L.) Roth Wood Small-reed

Ashley Hill, Berks. (AMS).

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THE RECORDER'S REPORT FOR MAMMALS, REPTILES AND AMPHIBIA

1964 - 1965

By H. H. Carter

Most of the following notes are based on my own observations; the exceptions marked CJL, ECH, AKM, BGH and AP are by C.J. Leeke, E.C. Hemken, A.K. Mowll, B.G. Hamblin and Arthur Price, respectively. Information from members will be welcomed; even sight records of common species will help to build up a picture of their status in the district.

INSECTIVORA

Erinaceus europaeus L. Hedgehog. Many seen dead on roads in June.

CARNIVORA

Meles meles (L.) Badger. Abundant in the district. I know of more than 20 setts and groups of setts near Reading, most of which are in use although not always regularly so. Information about new sites is of course desirable, but so is news of the continued occupation of old sites. I have received many reports of persecution in the area west of Reading from CJL and AKM. ECH reports much activity at South Lake, Earley, where there are now five separate setts.

Mustela nivalis (L.) Weasel. I have one record for the year, of a weasel seen crossing the Peppard Road just outside the borough boundary on 26th December.

Vulpes vulpes (L.) Fox. One at Sonning Eye on 9th September near a disused badger sett ignored my presence entirely. It was wandering dog-like through long grass and soon disappeared into cover. I have several notes of tracks and droppings from Sonning Eye in other years. AP records that an earth with cubs was discovered on Littlejohn's Farm at the beginning of June, and one cub was killed. On 7th June, the earth was dug out; in it were found the remains of two small piglets, a mole, and a quantity of chicken feathers. The vixen had removed the surviving cubs.

ARTIODACTYLA

Muntiacus sp. (probably M. reevesi (Ogilby) or M. reevesi x muntjak) Muntjac. BGH heard barking early in the morning from the area east of Wykeham Road, Earley, at the end of December 1964.

LAGOMORPHA

Lepus europaeus Pall. Brown Hare. Four were seen on Bishopsland Farm on 16th-17th March and three on 29th April.

Oryctolagus cuniculus (L.) Rabbit. Seen in small numbers (not more than three) on various occasions near Sonning Eye and Caversham gravel pits.

RODENTIA

Sciurus carolinensis Gm. Grey Squirrel. Several records from South Oxfordshire in January and February, including tracks in the snow on 20th February. One was seen on 23rd and 30th June near the water tower at Emmer Green, feeding on fallen acorns of the 1964 crop, many of which had already taken root and sprouted. (Probably the same individual was seen dead on the road at this spot in July.) Two were seen in Bur Wood and Hagpits Wood (both near Sonning Common) on 6th and 7th August, respectively, feeding on unripe beech mast. Further records on 4th November and 26th December indicate that this species remains active throughout the year and cannot be considered a true hibernator.

Arvicola amphibius L. Water Vole. Occurs on the banks of the Thames within the borough of Reading. I have a record from View Island, below Caversham weir, and records in earlier years from Christchurch Meadow opposite De Montfort Island. It also occurs at South Lake, Earley, and indeed wherever there are large ponds and rivers.

REPTILIA

Lacerta vivipara Jacquin Common (Viviparous) Lizard. A pregnant female was brought to Reading Museum in the first week of August from an unspecified locality, and put on display. She was seen digging in a patch of damp soil on 13th August and laid eggs the following day. The young lizards, eight in number, emerged the same or the following day and fed readily on small insects and spiders; frog-hoppers were refused. At first they were nearly black, but by the end of a week they were perceptibly paler. During the following months they disappeared one by one, presumably eaten by their mother or (much less probably) by a female slow-worm (Anguis fragilis L.) which shared the same cage.

Natrix natrix (L.) Grass Snake. A large specimen 90 cm. (35½ in.) long was killed in his garden by Mr. M.A. Taylor of Parkside Road, Reading, on 14th May. I have many records for the previous year.

N. maura (L.) Viperine Snake. An accidental import with cork from Morocco, brought to me by the manager of the cork factory at Caversham Mill, whose son is keeping it as a pet. When handled to prevent its escape, the snake ejected the contents of its anal glands in the manner of the closely related N. natrix; the glands were however colourless, not yellow or

milky, and had a smell reminiscent of rotten eggs.

Vipera berus (L.) Adder. An unusual male 53 cm. (21 in.) long was taken alive at Padworth in mid-April by J. Stroud and brought to me for sexing. It was entirely black except for some white on the lower lip and flecks of white on some of the body scales. In oblique illumination the dorsal pattern could be made out as an area of denser, less reflective black. This type of melanism, in which the original dark markings persist unchanged, is rare in males. This individual was at first mistaken for a melanistic N. natrix, and as such it was handled by the finder and his friends, and indeed by myself until the squat body and short tail led me to box it hurriedly and confirm my suspicions by a discreet examination of the head scales. The animal was later released alive near Padworth. A full account of the incident appeared in the Reading Mercury for 24th April.

AMPHIBIA

Rana temporaria L. Common Frog. A female taken on migration at Sonning, and a frog whose sex was not determined, seen on the road north of Bishopsland Farm, both on the rainy night of 22nd March. Large numbers also migrated to the former site of Priory Pond, Tilehurst, a long-established breeding ground built over in 1963-64. I took 20 in the small back garden of 7 Keswick Close, several of them in amplexus, and all heading towards 5 Keswick Close where there was a still larger concentration in temporary rain-water puddles, first reported on 15th March. Of my 20 specimens, taken on 23rd March, one male and two females were markedly erythristic. AP reports the reappearance of unpigmented frog-spawn which duly hatched into albinistic tadpoles with skewed notochords [a note on which appears later in this issue].

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FUNGI AT KINGWOOD COMMON (SUPPLEMENTARY LIST)

At the Society's Foray at Kingwood Common on 2nd October 1965, the following species of fungi were found by members and kindly identified by Dr. F.B. Hora. None of them has appeared in the previous lists for the area, published in the Reading Naturalist nos. 12-17.

Clitocybe houghtonii - a note-worthy find.
Coprinus (Psathyrella) hiascens
Cystoderma (Lepiota) amianthinum
Inocybe hirtella
Lactarius piperatus
Lepiota castanea
Mycena speirea
Nectria cinnabarina
Pholiota (Flammula) gummosa
Psathyrella conopilea
Russula mairei - formerly recorded as R. emetica, which it replaces in beechwoods.
Stropharia coronilla
Tremella mesenterica

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FUNGI IDENTIFIED AT SOUTHLAKE, EARLEY, ON 18th SEPTEMBER 1965

By E.C. Hemken

The excursion through the Southlake area, Earley, on 18th September was attended by 18 members including Dr. F.B. Hora, to whom special thanks were tendered. The weather was kind and the fungi plentiful. Although Amanita muscaria, usually plentiful, was not seen, nine species of fungi not previously recorded in the area were identified; these are indicated in the following list by an asterisk.

Amanita citrina
c. var. alba
fulva
rubescens
Boletus badius
chrysenteron
edulis
erythropus
piperatus +
subtomentosus +
testaceoscaber
scaber
Mycena galericulata
galopus
Nolanea cetrata (?)
Panellus papilionaceus +
Paxillus involutus
Phallus impudicus
Pluteus cervinus
cornucopioides
ostreatus var. euosmus
salicinus +
umbrosus (?) +
Polystictus versicolor

Calocera viscosa
Clitocybe auriantacus
flaccida
Collybia fuscipes
maculata
peronata
Coprinus micaceus
Cortinarius cinnamomeus
purpurascens
Daedalia quercina
Gymnopilus penetrans
Hypholoma fasciculare
Laccaria laccata
amethystina
Lactarius camphoratus +
quietus +
tabidus
turpis
vietus
rufus
subdulcis +

Phaeolus schweinitzii (f. Polyporus)
Psathyrella squamosa
Psilocyba semilanceolata +
Peziza aurantia
Scleroderma aurantium
Sparassis crispa
Stropharia aeruginosa
Russula grisea
cyanoxantha
fellea
ochroleuca
mairei
atropurpurea
emetica (? emeticella)
vesca
xerampelina
virescens

Myxomycetes (4 unident. spp.)

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GENERAL OBSERVATIONS

Dolomedes fimbriatus (Clerck) (Arachnida)

The spider Dolomedes fimbriatus, while note rare, is local in distribution, and it is refreshing to find that it is still present in our area (1965). Specimens have been captured at two Crowthorne localities - Broadmoor Bottom and Heath Pool - in each case in the Sphagnum bogs of these areas. It is to be hoped that this species will persist at Heath Pool (now National Trust property) without disturbance.

John E. Cooper

Albino frog-spawn in Reading, 1965

White spawn of the common frog, Rana temporaria, was found in an artificial pond in the garden of Mr. & Mrs. Masterman at 11 Buxton Avenue, Caversham, Reading, on 24th March 1965. A light-coloured frog was seen in a neighbour's garden a few days earlier.

The spawn was distributed to schools in Reading, where its development was studied. The writer obtained newly-hatched white tadpoles with grey eyes from Kendrick School. Fourteen frogs were reared from these tadpoles, but eight died during an attempt to establish the optimum conditions for hibernation. Six frogs, now normally pigmented, appear to be over-wintering successfully. It is hoped to continue the study of these frogs in the ensuing years.

This strain of frogs seems to be connected with a strain with a recessive gene for albinism that was bred from white spawn by Mr. W.A. Smallcombe in 1938-41 (see Smallcombe, Albinism in Rana temporaria, J. Genet. 49: 286-290, 1940).

Arthur Price

An unusual pheasant

A cock pheasant, Phasianus colchicus L., of unusual appearance shot at Stonor Park on 10th January proved to be one of the 'Old English' breed (P. c. colchicus) which has no white neck-ring and a more uniformly copper-coloured body than the ring-necked 'Chinese' breed. The odd appearance of this individual was due to the virtual absence of the pigment melanin, which produces black or dark brown markings. As often happens when melanin is missing, the surface structure of the affected parts of the feathers is also affected, producing a dull, lustreless effect instead of the usual brilliant metallic gloss.

The cause of this condition is not a disease, but an inherited defect in the bird's body chemistry that prevents it from forming melanin while the feathers are developing. When I made an internal examination of the carcase, there was no sign of sexual degeneration, which sometimes produces oddities in pheasant plumage. Indeed the bird was in excellent condition, well-fleshed and fat, and my family and I had a delicious dinner.

H.H. Carter