

The
BEDFORDSHIRE
NATURALIST

THE
JOURNAL
OF THE
BEDFORDSHIRE
NATURAL HISTORY SOCIETY

FOR THE YEAR

1968

No. 23

Price Ten Shillings

PUBLISHED BY THE
BEDFORDSHIRE NATURAL HISTORY SOCIETY

PRINTED BY TAVISTOCK PRESS
BEDFORD
1969

BEDFORDSHIRE NATURAL HISTORY SOCIETY

1969

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BOTANY :

Fungi :

Dr. D. A. Reid, The Herbarium, Royal Botanic Gardens, Kew.
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METEOROLOGY :

A. W. Guppy, 22 Poplar Avenue, Bedford.

ZOOLOGY :

Bees, Wasps and other Hymenoptera :

Dr. V. H. Chambers, 12 Douglas Road, Harpenden.

Butterflies and Moths : B. B. West, 39 Station Road, Willington.

Amphibians, Fishes and Reptiles :

F. G. R. Soper, The Briars, Bromham Park, Bedford.

Birds : A. J. Livett, 12 Broughton Avenue, Luton.

Mammals : H. A. S. Key, Friary House, Greyfriars, Bedford.

For all other branches of natural history :

W. G. Goldstraw, 100 Putnoe Lane, Bedford.

REPORT OF THE COUNCIL

The Council met on five occasions during 1968; this was slightly fewer than usual, but more of the detailed planning of the Society's activities was delegated to specialised sub-committees who met fairly frequently.

The sub-committee formed to look into the income and expenditure of the Society recommended that in view of the declining reserves, due to the high cost of recent journals and to losses incurred on coach trips, a stricter control on expenditure would have to be effected. The Council agreed that subscriptions to the Council for Nature, the British Naturalists' Association and the British Trust for Ornithology would have to be discontinued for the time being, and that ways and means of avoiding losses on coach trips would have to be found. Also, at a Special General Meeting convened for the purpose, the Council's recommendation to increase the ordinary members' subscription from 15/- to £1 was endorsed. The subscription rate had remained unchanged since 1962, but during that time postage rates and printing costs had risen considerably. The Council appreciated that it is not sufficient just to increase subscriptions and hope for the best: it must endeavour to provide better value for money, thereby ensuring the continued support of the present membership and, if possible, stimulating an increase in the rate of recruitment of new members.

In general the field meetings during the year were reasonably well attended although the two coach trips, particularly the one to Staffordshire, were poorly supported. Of the indoor meetings, those at Bedford attracted good numbers but those at Luton were not quite so well supported.

During the year the Council lost the services of Mrs. Valerie Forshaw. She was a most enthusiastic member of the Society and takes with her to Scotland the thanks and best wishes of us all.

Thanks are also due to the Chairman, L. A. Speed, for the continued invitation to his home for the meetings of the Council that were held in Bedford.

T. A. HASDELL, *Hon. Secretary.*

PROCEEDINGS

INDOOR MEETINGS

233rd ORDINARY MEETING, 17th January, Luton. "A Glimpse of Jordan" by R. Spencer. *Chairman*: A. J. Livett.

234th ORDINARY MEETING, 25th January, Bedford. Film evening: "The Living Pattern", "The Lonely Places" and "Darwin and the Insects of Brazil". *Chairman*: Dr. D. M. Jeffreys.

235th ORDINARY MEETING, 15th February, Bedford. "Fair Isle" by J. N. Dymond. *Chairman*: T. A. Hasdell.

236th ORDINARY MEETING, 28th February, Luton. Members' slides with an informal discussion on them. *Chairman* : A. J. Livett.

PUBLIC FILM SHOW, 7th March, Luton. "Sea Bird Summer".

21st ANNUAL GENERAL MEETING, 14th March, Bedford. *Chairman* : L. A. Speed.

237th ORDINARY MEETING, 3rd October, Bedford. "Talking about Ants" by E. D. Briant. *Chairman* : L. A. Speed.

238th ORDINARY MEETING, 16th October, Luton. A medley of wildlife films by W. J. Champkin. *Chairman* : D. Green.

239th ORDINARY MEETING, 13th November, Luton. "A Look at British Bird Observatories" by J. N. Dymond. *Chairman* : A. J. Livett.

PUBLIC FILM SHOW, 14th November, Bedford. "Ripples in the Reeds", "Lune Valley", "The Call of the Running Tide" and "Swallows". *Chairman* : F. G. R. Soper.

240th ORDINARY MEETING, 21st November, Bedford. "Butterflies and Moths" by W. J. Champkin and Dr. D. M. Jeffreys. *Chairman* : A. W. Guppy.

SPECIAL GENERAL MEETING, 5th December, Bedford. To consider proposed increase of subscription. *Chairman* : L. A. Speed.

241st ORDINARY MEETING, 5th December, Bedford. "Escape to the Hills" by H. A. S. Key. *Chairman* : J. M. Dymond.

242nd ORDINARY MEETING, 11th December, Luton. Film evening: "Between the Tides" and "Wild Wings". *Chairman* : B. D. Harding.

FIELD MEETINGS

SATURDAY, 20th JANUARY TO SUNDAY, 21st JANUARY. SCOLT HEAD ISLAND. *Leader* : T. A. Hasdell.

The weather was fine for the whole weekend and the party had excellent views of most of the usual wintering species including two Hen Harriers, Brent Geese, Twite and Snow Buntings. Attendance : 6.

SUNDAY, 12th MAY. KEW GARDENS. Coach Outing. *Leader* : L. A. Speed.

On reaching Kew the party dispersed to pursue their individual interests. It was a warm cloudy day. Tulips and other typical spring flowers were at their best, and the rhododendrons were just coming into bloom. Attendance : 27.

WEDNESDAY, 15th MAY. STOCKGROVE WOODLANDS, HEATH AND REACH. *Leader* : D. Green. Evening chorus of birds.

Continuous rain made observation impossible, and the party disbanded after just a short time. Attendance : 10.

WEDNESDAY, 29th MAY. FELMERSHAM NATURE RESERVE. *Leader* : F. G. R. Soper.

The most outstanding feature seen was the Hawthorn blossom. A few birds were seen and also a few fish, most probably Bream. Attendance : 23.

WEDNESDAY, 19th JUNE. SOUTHILL TUNNEL. *Leader* : L. A. Speed.

The evening was fine before a storm brought the meeting to a premature end. 28 plant species were found in flower. Attendance : 22.

SUNDAY, 23rd JUNE. NORTH STAFFORDSHIRE MOORS. Coach Outing. *Leader* : F. C. Gribble.

The party drove over Morr ridge with excellent views of the country around Leek. A walk over Gradbach Hill and along the River Dane produced quite a few birds including Red Grouse, Black Grouse, Curlew, Snipe, Whinchat, and Wheatears with young. A pair of Grey Wagtails were watched on the River Dane and a Great Spotted Woodpecker and a male Pied Flycatcher were seen during lunch. In the afternoon the strong wind and driving drizzle were a nuisance but cleared for the return journey across a different section of the moors. Attendance : 18.

SATURDAY, 29th JUNE. TOTTERNHOE KNOLLS. Leader : Dr. D. M. Jeffreys.
On a fine sunny day many typical chalkland plants were found. Most noteworthy were the exceptional numbers of Frog Orchid, and also the numerous Man, Bee and Musk Orchids. Some worn specimens of the Small Blue butterfly were still flying, and the eggs of this species were found and shown to the members. Attendance : 18.

SUNDAY, 14th JULY. MARKHAM HILLS. Leader : A. W. Guppy.
Heavy rain throughout the morning and until nearly 2.0 p.m. discouraged attendance. In fact the afternoon was subsequently brilliantly fine and sunny, and the few attending spent a most enjoyable time on the hills. Over 60 species of flowering plants and many insects were noted. A notable feature was the abundance of Twayblade (*Listera ovata*). Attendance : 4.

WEDNESDAY, 31st JULY. WYBOSTON GRAVEL, PITS. Leader : J. N. Dymond.
The evening was dull and cloudy and visibility was poor. The party first visited the new workings and saw nine Common Terns, including one juvenile, a single Common Sandpiper and the Sand Martin colony of about 350 pairs. In the failing light a brief visit to the older workings was disappointing : although a Little Ringed Plover and the usual wild-fowl were seen, little of the diagnostic features could be discerned. Attendance : 29.

SATURDAY, 3rd AUGUST. PUTNOE WOOD. Leader : W. J. Champkin.
A full report of this meeting appears on page 8. Attendance : 21.

SUNDAY, 25th AUGUST. FLITWICK MOOR. Leader : W. G. Goldstraw.
The party walked through Folly Wood and noted the changes which have occurred since the wood was described in the Bedfordshire Flora in 1947. The influence of the acid peaty soil and wet conditions was seen in the cut-peat area and the south-western part of the moor, both of which revealed an interesting variety of plants. The rare Shepherd's Rod (*Dipsacus pilosus*) appeared to be firmly established. Attendance : 15.

SUNDAY, 13th OCTOBER. FUNGUS FORAY. COLWORTH HOUSE, SHARNBROOK. Leader : Miss M. Holden.

A joint meeting with the British Mycological Society and the Colworth Natural History Society. A detailed report of this meeting appears below.

THE FUNGUS FORAY

The fungus foray was held at Colworth House, Sharnbrook on 13th October, and was led by Miss Margaret Holden of Rothamsted Experimental Station. About twenty persons attended, including several members of the British Mycological Society.

The wood, consisting of mixed deciduous trees with considerable numbers of Ash, was not very productive and only 86 species were found, of which ten were new to the county and two confirmed existing but ancient records.

The most interesting finds were *Agaricus excellens* — a large robust, white mushroom, and *Inocybe atripes* which has, as its name suggests, a dark brown or blackish stipe. The specimens of the latter, collected on a grass verge outside the garden of a house near Sharnbrook Church while waiting for the party to set out at the beginning of the day, were considerably larger than normal.

Heaps of rotting chaff and grain provided an unusual habitat which produced considerable numbers of *Coprinus cinereus*. This fungus has a grey cap and a white stalk which is usually prolonged into a conspicuous rooting base. Also present on these heaps were swarms of two small Discomycetes viz. *Lamprospora carbonicola* and *Cheilymenia theleboloides*, which have orange and egg-yellow apothecia respectively reaching 3 mm. in diameter.

Several specimens of *Coprinus galericuliformis*, only recently recorded from Britain, were collected. This fungus resembles *C. plicatilis* but has a buff-coloured, wrinkled, campanulate or acorn-shaped cap. Another uncommon member of the same genus was *C. xanthothrix*, which is closely related to *C. micaceus*, but although similar in general appearance it has a paler, almost ivory-coloured cap and a much less tufted growth form.

Also worthy of mention was the occurrence of two large fruitbodies of *Oudemansiella longipes*—a fungus easily confused with *O. radicata*, but having a brown tomentose stipe. The last record of this species from the county was one published by Hamson in 1904.

It is interesting to note the presence of *Pistillaria micans*, for although new to the county, this minute pink clavarioid fungus is probably quite common but easily overlooked since it is only 2-3 mms. high and occurs on dead nettle stems and similar plant debris. The fact that specimens of *Lactarius subsericeus* were once again collected in the county suggests that this orange-brown fungus with yellowing milk is also more common than is generally supposed.

Before consulting the list of species which follows readers should be warned that there has been a change in the nomenclature compared with previous years. The names of the agarics follow those accepted in the New Check List of British Agarics and Boleti by Dennis, Orton & Hora published in 1960 by the British Mycological Society. This is basically very similar to the nomenclature adopted in Collins Guide to Mushrooms & Toadstools by Lange & Hora published in 1963. The names of the polypores are also similar to those used in the latter book although in fact they are based on those in Pegler in 'Polyporaceae—Part 1. With a Key to British Genera' published in the News Bulletin of the British Mycological Society No. 26, 1966. Names of Clavarioid fungi follow those used by Corner in 'A Monograph of Clavaria & Allied Genera' published by the Oxford University Press 1950, while names of the resupinate Basidiomycetes are based on those used by Christiansen in 'Danish Resupinate Fungi' published in Dansk Bot. Ark. 19, 1959-60. Nomenclature of the Ascomycetes follows Dennis's 'British Ascomycetes' published by Cramer 1968.

**Agaricus excellens* (Møll.) Møll.; *A. vaporarius* (Vitt.) Moser; *Armillaria mellea* (Vahl ex Fr.) Kummer; *Clitocybe geotropa* (Bull. ex St. Amans) Quéf.; *Conocybe filaris* (Fr.) Kühn.; *Coprinus cinereus* (Schaeff. ex Fr.) S. F. Gray; *C. comatus* (Müll. ex Fr.) S. F. Gray; *C. disseminatus* (Pers. ex Fr.) S. F. Gray; **C. galericuliformis* Watling; *C. micaceus* (Bull. ex Fr.) Fr.; *C. picaceus* (Bull. ex Fr.) S. F. Gray; **C. xanthothrix* Romag.; **Flocculina granulosa* (Lange) Orton; *Galerina hypnorum* (Schrank ex Fr.) Kühn.; *G. mutabilis* (Schaeff. ex Fr.) Orton; *Gymnopilus penetrans* (Fr. ex Fr.) Murr.; *Hebeloma crustuliniforme*

(Bull. ex St. Amans) Quél.; *Hygrophorus atropunctus* (Pers. ex Fr.) Smith & Hesler; *H. eburneus* (Bull. ex Fr.) Fr.; *Hypholoma fasciculare* (Huds. ex Fr.) Kummer; **Inocybe atripes* Atk.; *I. fastigiata* (Schaeff. ex Fr.) Quél.; *I. geophylla* (Sow. ex Fr.) Kummer; *I. geophylla* var. *ilacina* Gillet; *I. jurana* Pat.; *Lactarius quietus* (Fr.) Fr.; *L. subdulcis* (Pers. ex Fr.) S. F. Gray; *L. subsericeus* Hora; *Lepiota cristata* (Fr.) Kummer; *Lepista saeva* (Fr.) Orton; *Marasmius ramealis* (Bull. ex Fr.) Fr.; *Mycena alcalina* (Fr. ex Fr.) Kummer; *M. filopes* (Bull. ex Fr.) Kummer; *M. galericulata* (Scop. ex Fr.) S. F. Gray; *M. galopus* (Pers. ex Fr.) Kummer; *M. polygramma* (Bull. ex Fr.) S. F. Gray; *Nolanea farinolens* Orton; (*) *Oudemansiella longipes* (Bull. ex St. Amans) Moser; *O. radicata* (Relh. ex Fr.) Sing.; *Pholiota squarrosa* (Müll. ex Fr.) Kummer; *Pluteus salicinus* (Pers. ex Fr.) Kummer; *Psathyrella candolleana* (Fr.) Maire; *Stropharia inuncta* (Fr.) Quél.; *Tricholoma album* (Schaeff. ex Fr.) Kummer; *T. sulphureum* (Bull. ex Fr.) Kummer; *Tubaria furfuracea* (Pers. ex Fr.) Gillet.

Boletus chrysenteron Bull. ex St. Amans.

Antrodia mollis (Sommerf. ex Fr.) Karst.; *Coriolus versicolor* (L. ex Fr.) Quél.; *Daedaleopsis confragosa* (Bolt. ex Fr.) Schroet.; *Fistulina hepatica* Schaeff. ex Fr.; *Heterobasidion annosum* (Fr.) Bref.; *Leptotritus semipileatus* (Peck) Pouzar; *Piptoporus betulinus* (Bull. ex Fr.) Karst.; *Polyporus brumalis* Pers. ex Fr.; *Tyromyces sericeo-mollis* (Rom.) Bond. & Sing.; *Xylodon versiporus* (Pers.) Bond.

Clavulina cinerea (Fr.) Schroet.; **Pistillaria micans* (Pers.) Fr.

Coniophora arida var. *flavobrunnescens* Bres.; *Corticium confluens* Fr.; *Cristella farinacea* (Pers. ex Fr.) Donk; *Peniophora quercina* (Pers. ex Fr.) Cooke; *Stereum gausapatum* (Fr.) Fr.; *S. hirsutum* (Willd. ex Fr.) S. F. Gray; *S. rugosum* (Pers. ex Fr.) Fr.; *Vuilleminia comedens* (Nees ex Fr.) R. Maire.

Lycoperdon pyriforme Pers.

Calocera cornea (Batsch ex Fr.) Fr.; *Dacrymyces deliquescens* (Bull. ex Mérat) Duby.

Exidia nucleata (Fr. ex Schw.) Burt.

Auricularia auricula-judae (Bull. ex Fr.) Schroet.

Calycella citrina ([Hedwig] Fr.) Boud.; **Cheilymenia theleboloides* (A. & S. ex Fr.) Boud.; *Coryne sarcoides* (Jacq. ex Fr.) Tul.; *Helvella crispa* Fr.; **H. stevensii* Peck; **Lamprospora carbonicola* Boud.; *Peziza succosa* Berk.

Daldinia concentrica (Bolt. ex Fr.) Ces. & de Not.; *Hypoxylon serpens* (Pers. ex Fr.) Fr.; (*) *Rosellinia aquila* (Fr.) de Not.; *Thaxteria phaeostroma* (Dur. & Mont.) C. Booth.; *Xylaria hypoxylon* [Linn.] Dumort.; *X. polymorpha* (Pers. ex Mérat) Dumort.

**Mycogone* sp.

New County Record () Confirmation of old record.

DEREK A. REID.

MOTH EVENING AT PUTNOE WOOD

On the evening of 3rd August 1968 a meeting was held at Putnoe Wood. The mercury-vapour trap was in operation from 8.30 to 11.0 p.m. It was a fairly mild evening with slight drizzle. The following 51 species of moths were taken in the trap: numbers refer to the 1961 edition of I. R. P. Heslop's list.

125	<i>Halrosyne pyritoides</i> (Hüfn.)	Buff Arches
129	<i>Euproctis similis</i> (Fuessl.)	Gold Tail
154	<i>Philudoria potatoria</i> (Linn.)	Drinker
156	<i>Gastropacha quercifolia</i> (Linn.)	Common Lappet
161	<i>Drepana binaria</i> (Hüfn.)	Oak Hook Tip
197	<i>Phragmatobia fuliginosa</i> (Linn.)	Ruby Tiger
264	<i>Zeuzera pyrina</i> (Linn.)	Wood Leopard
285	<i>Agrotis exclamatoris</i> (Linn.)	Heart and Dart
312	<i>Amathes depuncta</i> (Linn.)	Plain Clay
315	<i>Amathes triangulum</i> (Hüfn.)	Double Square Spot
319	<i>Axyليا putris</i> (Linn.)	Flame Rustic
324	<i>Naenia typica</i> (Linn.)	Gothic Type
327	<i>Euschesis comes</i> (Hüb.)	Lesser Yellow Underwing
329	<i>Euschesis janthina</i> (Schiff.)	Lesser Bordered Yellow Underwing
331	<i>Noctua pronuba</i> (Linn.)	Common Yellow Underwing
346	<i>Melanchra persicariae</i> (Linn.)	White Dot
393	<i>Leucania pallens</i> (Linn.)	Common Wainscot
400	<i>Leucania comma</i> (Linn.)	Shoulder Striped Wainscot
408	<i>Leucania conigra</i> (Schiff.)	Brown Line Wainscot
436	<i>Laphygma exigua</i> (Hüb.)	Small Mottled Willow
441	<i>Apamea lithoxyloa</i> (Schiff.)	Common Light Arches
444	<i>Apamea monoglypha</i> (Hüfn.)	Dark Arches
456	<i>Apamea secalis</i> (Linn.)	Common Rustic
461	<i>Eremobia ochroloca</i> (Schiff.)	Dusky Sallow Rustic
472	<i>Euplexia lucipara</i> (Linn.)	Small Angle Shades
476	<i>Thalophila matura</i> (Hüfn.)	Straw Underwing
493	<i>Cosmia pyralina</i> (Schiff.)	Lunar Spotted Pinion
496	<i>Cosmia trapezina</i> (Linn.)	Dun Bar
651	<i>Scoliopteryx libatrix</i> (Linn.)	Herald
653	<i>Hypena proboscidalis</i> (Linn.)	Common Snout
684	* <i>Cosymbia annulata</i> (Schulzens.)	Maple Mocha
694	<i>Scopula imitaria</i> (Hüb.)	Small Blood Vein Wave
725	<i>Xantherhoe ferrugata</i> (Clerk.)	Dark Twin Spot Carpet
726	<i>Xantherhoe spadicearia</i> (Schiff.)	Red Twin Spot Carpet
729	<i>Xantherhoe montonata</i> (Schiff.)	Silver Ground Carpet
758	<i>Euphyia bilineata</i> (Linn.)	Yellow Shell
770	<i>Lygris mellinata</i> (Fabr.)	Currant Spinach
772	<i>Cidaria fulvata</i> (Forst.)	Barred Yellow
776	<i>Dysstroma truncata</i> (Hüfn.)	Common Marbled Carpet
784	<i>Hydriomina fureata</i> (Thunb.)	July Highflyer
795	<i>Epirrhoe alternata</i> (Müll.)	Common Bedstraw Carpet
818	<i>Ortholitia chenopodiata</i> (Linn.)	Shaded Broad Bar
868	<i>Eupithecia succenturiata</i> (Linn.)	Bordered Pug
889	<i>Abraxis grossulariata</i> (Linn.)	Common Magpie
896	<i>Deilinia pusaria</i> (Linn.)	White Waved Silver
913	<i>Denteronomus fuscantaria</i> (Steph.)	Dusky Thorn
915	<i>Selenia bilunaria</i> (Esp.)	Early Thorn
923	<i>Opisthographis luteolata</i> (Linn.)	Sulphur Thorn
935	<i>Biston betularia</i> (Linn.)	Pepper and Salt
947	<i>Ectropis crepuscularia</i> (Schiff.)	Small Engrailed
964	<i>Chiasmia clathrata</i> (Linn.)	Heath Lattice

* New County Record

W. J. CHAMPKIN

ANNUAL GENERAL MEETING, 1969

The Society's 22nd Annual General Meeting was held at the Guildhouse, Harpur Street, Bedford on Thursday, 27th March, 1969. The retiring President, A. W. Guppy, took the chair in the absence of the

Chairman, L. A. Speed, who was abroad on business. 46 members attended.

The minutes of the 21st Annual General Meeting held on 14th March, 1968 were read and adopted.

The Treasurer stated in his report that in spite of the poor financial position of the Society at the end of 1968 he was optimistic that there would be an improvement in 1969. This was mainly due to the increase in the subscription rate from 1st January, 1969, and to the fact that there would not be such heavy expenditure on Journals as in 1968. The handsome profit from the film show at Luton in March was an auspicious start to the financial year. The Treasurer expressed the thanks of the Society to E. Lucas and Messrs. Thornton Baker & Co. for auditing the accounts, and the adoption of his report was proposed by M. Rogers and seconded by D. Green.

The recorder for birds, A. J. Livett, then summarised the activities of the ornithological section. He reported that many members had been actively engaged in the Atlas Project, which is a five-year survey of breeding birds being carried out throughout Great Britain and Ireland by the British Trust for Ornithology, and he confirmed that all records obtained in the County from the project would be incorporated in the Society's records. During the year a total of 155 species were recorded in Bedfordshire, and details of some of the more notable occurrences were given. These included the first breeding record of Lesser Black-backed Gull in the County, a Buzzard in the Luton area from March until October, two Montagu's Harriers in May and June, and two Red-necked Grebes at Wyboston in December.

On the Council's proposition the following officers were elected :

President : Dr. D. M. Jeffreys
Chairman : L. A. Speed
Hon. Secretary : D. Green
Hon. Treasurer : J. M. Dymond
Hon. Programme Secretary : Miss E. G. Cole
Hon. Editor : J. N. Dymond

Thirteen nominations were received for the Council and a ballot was held. The ten members elected were :

W. J. Champkin	J. P. Knowles
Miss E. M. B. Day	A. J. Livett
W. G. Goldstraw	S. W. Rodell
B. D. Harding	F. G. R. Soper
H. A. S. Key	R. V. A. Wagstaff

Under 'Any other business' M. Rogers asked what the Council was doing to oppose the threatened development of Wyboston Gravel Pits and Stewartby Lake for water sports. During the ensuing exchanges it was apparent that several members felt strongly about these threats. F. G. R. Soper assured the meeting that the Bedfordshire & Huntingdonshire Naturalists' Trust was doing everything possible, and it was decided that the matter would be further discussed at the next Council Meeting.

H. A. S. Key proposed that a vote of thanks should be extended to T. A. Hasdell for his services to the Society as Hon. Secretary during

the past two years, and this was seconded by K. E. West and carried unanimously.

The meeting concluded with a most interesting address by the retiring President, A. W. Guppy, on the little known subject of 'Pollen Grains'.

REPORTS OF RECORDERS

METEOROLOGY

Most people would probably describe 1968 as a very wet year and would point, if any justification were needed, to the frequent floods in the Ouse valley from July onwards; in fact, the rainfall totals in Bedfordshire itself were, in general, considerably less than in 1965 or 1966. However, apart from during the early part of June, there was very little warm sunny weather and, in consequence, there was nothing like the usual amount of surface evaporation in the subsequent cool and cloudy conditions prevailing.

Furthermore, there were remarkable and freakish variations in rainfall from place to place; the rather rash statement by Mr. Cecil Gulliver in a recent issue of 'Bedfordshire Times' that 'last year was the wettest in Bedfordshire since 1954 with 32.01 inches of rain—eight inches above the average' is hardly borne out by the surprising fact that the year's total at Cardington was very slightly *below* the average of the last twenty years and over ten inches less than the Souldrop figure.

Two periods stand out particularly as contributing to these discrepancies; one is the two day period 9-10th July, the other a similar period on 15-16th September, many stations recording between 2 and 2½ inches on the former occasion and between 1½ and 2 inches on the latter.

The excess precipitation was confined to the summer months; the early spring was drier even than average, and produced the only 'drought' of the year—a period of sixteen consecutive days without rain from 18th February to 5th March inclusive. The last three months of the year, too, were well below average in their totals.

The only persistent snow during the year was that which fell on the night of 8/9th January, and which was followed by one or two extremely cold days, so that thawing was not complete until 14th.

Although some thundery activity accompanied the heavy summer rainfall, particularly in July, the county as a whole appears to have escaped the violent and spectacular storms which occurred at the beginning of that month in the west of England, south Wales and the west Midlands.

There were no extremes of temperature during the year. 80 deg.F. was exceeded on only one or two days, and, at the other end of the scale, there were only two days, 10th January and 28th December, on which the thermometer failed to rise above freezing-point. Once again, the winter had fewer frosts than usual and none was severe. Against this must be recorded the increasing prevalence of cold northerly and north-easterly winds, particularly in the early part of the year. This is a change in our weather pattern which has taken place since the beginning of the century, although there is, as yet, no wholly satisfactory explanation.

A. W. GUPPY.

RAINFALL FOR 1968

	Cardington	Kempston	Luton
1965	inches 25.03	26.07	30.29
1966	27.28	28.72	34.13
1967	19.99	20.78	29.41
1968			
January	1.39	1.73	
February	0.78	0.76	
March	0.50	0.50	
April	1.66	1.99	
May	1.82	1.80	
June	2.12	2.66	
July	4.15	4.98	
August	2.48	2.69	
September	2.88	4.13	
October	1.30	1.59	
November	1.30	1.73	
December	1.45	1.68	
Total	21.83	26.24	30.31
Average	21.77	22.81	26.47
	(20 years— 1948-1967)	(22 years— 1946-1967)	(35 years)

Cardington Per L. A. Speed
 Kempston C. S. Payne
 Luton (Crescent Road) Per E. G. Meadows

HYMENOPTERA

The very wet summer of 1968 was most unfavourable for bees and wasps, although queens of several hardy *Bombus* species were seen flying in drenching rain on 25th May. Late summer species were less affected and the abundant Handsome Sand Wasp (*Mellinus arvensis*) was seen still provisioning burrows at Aspley Heath on 20th October: dipterous prey are numerous, and possibly easier to catch, in the late autumn. The Mason Bee (*Osmia bicolor*) is still relatively sparse at Totternhoe as regular counts show, but on 1st June I saw a few carrying pieces of grass stems ten or twenty times their length to deposit on their stocked and sealed snail shell nests. The great diminution in numbers during the past 25 years or so is, I am sure, associated with a general tidying up of farms, so that there are fewer forage plants, such as dandelions and Cruciferae, to ensure fertility and nest-building activity. The main food plant, *Hippocrepis*, is still abundant, but few *Osmia* are seen, even in hot sunshine. It is satisfactory to note the apparent, but slow, increase in size of the small colony of *Andrena clarkella*—an early spring willow oligotropic bee—at Felmersham Nature Reserve. Perhaps this colony may increase to the size of the enormous colonies that formerly flourished for a few years at Flitwick Moor and elsewhere, and then suddenly vanished. Additional 'aculeate' and sawfly records have been made for the Felmersham and Totternhoe reserves, and in the course of chalk grassland studies, I have made some further records of the peculiar Dryinid wasps, parasitic on 'hoppers' of the sub-family Deltocephalinae (Hemiptera: Cicadomorpha), which, although not rare, are seldom caught as most of their activity is at the base of grasses, or even beneath the soil, although they are fully winged.

V. H. CHAMBERS.

AMPHIBIANS, FISHES AND REPTILES

Years ago a former Duke of Bedford introduced to some of the lakes in Woburn Park, two European species of fish not occurring naturally in Britain, namely the Pike-perch or Zander and the Danubian Catfish or Wels. Both did well and some time ago, when the lakes were cleaned out, fish of both species were sold or given to angling societies. Flooded gravel pits and lakes in the Leighton Buzzard area, as well as the river and canal, were stocked, and both species have thrived. In 1968 a Pike-perch of 8 lbs, caught in a lake in Buckinghamshire, was accepted as the national record for the species by the British Committee, and in these circumstances it must be regarded as a permanent addition to the British List in the same way as the Grey Squirrel and the Little Owl. Similarly with the Danubian Catfish, where 1968's heaviest rod-caught fish was 24 lbs, although this falls short of the best Woburn fish, some of which exceeded 40 lbs in weight.

As regards amphibians, the Midwife Toad still maintains its position in the centre of Bedford. Originally introduced with plants into a Bedford nursery in 1878, it spread to nearby gardens, and although the nursery and many of the gardens have been built over, several colonies still exist in the vicinity. My attempt to found a colony at Bromham was unsuccessful, but a recent attempt to do so in the Brickhill area of north Bedford seems to have fared better. Whether this colony will become as firmly established on a permanent basis as the original one still remains to be seen. It is hoped so.

F. G. R. SOPER.

BIRDS

155 species of birds were recorded in Bedfordshire during 1968, but there were no additions to the County list. The weather was generally mild during the first three months of the year with only the odd cold spells occurring. Although there were widespread restrictions imposed during the epidemic of Foot and Mouth Disease, most of the areas with wildfowl concentrations remained accessible. The numbers of several of the common species of duck were slightly higher than in previous years and there were the usual few records of less common species such as Gadwall, Pintail and Goosander, with two reports of Bewick's Swans. A Bittern was seen at Cityfield Farm Gravel Pit in February, and during March a small party of White-fronted Geese stayed at Dunstable Sewage Farm for several days. Three wintering Chiffchaffs were recorded during January and February and in the latter month a Blackcap was seen in Bedford. Fieldfare, Redwing and Brambling were all very scarce, but Golden Plover flocks were up to average.

The first summer migrant in the County was a Chiffchaff, at Bidwell on 17th March, and in the next ten days many more were recorded, together with the first Wheatears and Sand Martins. By 28th March Little Ringed Plovers were back at Wyboston Gravel Pits, and on 29th the first Willow Warbler was seen, closely followed by a Yellow Wagtail on 2nd April, and in the next two weeks the last two species became widespread. The period 12th to 17th April produced the first records of Redstart, Tree Pipit, House Martin, Whitethroat, Sedge Warbler, Grasshopper Warbler and Blackcap. Cuckoos were first heard on 18th and a Swift was seen on 20th.

The spring passage of waders was very poor, and several common species of sea terns were seen during spring, but numbers were not particularly high.

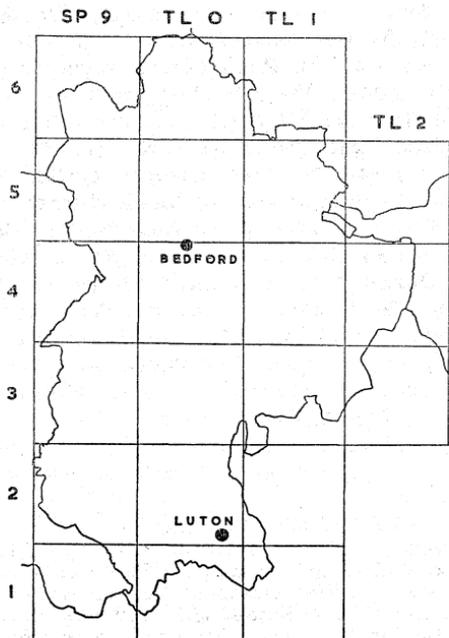
1968 was the first year of the British Trust for Ornithology's five-year scheme to survey the distribution of breeding birds in Great Britain and Ireland, and nearly thirty observers were actively engaged on this project in Bedfordshire. Much hitherto unknown information about the breeding birds of the County was recorded, and many of our less numerous species were closely checked. The only new breeding record for the County was Lesser Black-backed Gulls at one of the clay pits, and Black-headed Gulls bred for the first time at a locality away from the clay basin. At least three pairs of Red-backed Shrikes were present, one of them at a new locality, and two pairs are known to have been successful. Common Terns again bred at Wyboston Gravel Pits, but with less success than in 1967, Long-eared Owls bred at Sandy Lodge, and a Stone Curlew was calling near Hexton, where breeding has been suspected in previous years. Most notable on the debit side was the scarcity of Wood Warblers, none of which were proved to have bred.

The autumn passage of waders was uneventful with no large numbers of the common species and few occurrences of the less frequent species, but there was a reasonably good passage of terns lasting from 14th July until 7th October. During August there were singles of Kittiwake, Little Gull and Shag, and two records of single Cormorants.

Reports of departing summer migrants included a Swift at Bedford on 12th September, a Wheatear near Houghton Regis on 12th October, two Swallows at Sharnbrook on 29th October, and a number of House Martins in late October with the last at Dunstable Sewage Farm on 4th November. A Fieldfare over Bedford on 12th September was earlier than usual (although Fieldfares were exceptionally early all over Britain), but this record is completely overshadowed by two flocks in neighbouring Northamptonshire in late July; and the other winter migrants followed a fairly normal pattern. The observations of diurnal and nocturnal passage of Redwings from 18th-20th October coincided with the huge immigration on the east coast during this period.

Wildfowl flocks showed their customary build-up but, in general, counts were not so high as in 1967, although the many Shoveler at Wyboston Gravel Pits were unusual. Other interesting records during the latter months of the year included a Great Grey Shrike at Sundon in November and a flock of 61 White-fronted Geese over Houghton Regis on 29th December. Two Red-necked Grebes at Wyboston Gravel Pits at the end of December constitute the first record of this species in Bedfordshire since 1955.

[In order that the Annual Report for Birds should be as complete as possible, the data which were obtained during 1968 by observers engaged on the B.T.O. Atlas Project in Bedfordshire have been incorporated with the records that were sent to the Recorder for Birds. Analysis of the data submitted to the writer, as Atlas Organiser for Bedfordshire, has made it clear that much interesting and valuable information was not sent to the Recorder for Birds, and it should be stressed that the formation of a comprehensive Annual Report would have been greatly facilitated if this had been done. Members are requested, with emphasis, to submit *all* available information to the Recorder for Birds in future years. The map outlines Bedfordshire, and the twenty-one 10-km. squares that are being treated as our Atlas area are shown on it. It will be seen that parts of all the adjacent counties are included in this area to a greater or lesser extent. Readers are referred to the article on page 29 of this Journal which outlines the method of recording that is being used in the Atlas Project. In the following text, against all species that were recorded as present in the complete Atlas area in possible nesting



habitat, have been inserted the total number of squares in which each species was recorded in 1968 in each of the three categories. For example: the (2-2-7) against Great Crested Grebe means that, respectively, in two squares the species was recorded as present, in another two squares it was recorded as probably breeding, and in seven of the remaining seventeen squares it was proved to have bred. Where possible, Atlas data that refers to parts of adjacent counties have been so designated. J. N. Dymond.]

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Species recorded as present in normal numbers in Bedfordshire, and not included in the text are: **Mute Swan** *Cygnus olor* (3-2-10), **Red-legged Partridge** *Alectoris rufa* (7-3-11), **Partridge** *Perdix perdix* (5-3-12), **Pheasant** *Phasianus colchicus* (3-1-16), **Moorhen** *Gallinula chloropus*

(1-0-20), **Stock Dove** *Columba oenas* (5-5-9), **Woodpigeon** *Columba palumbus* (1-0-19), **Skylark** *Alauda arvensis* (3-4-14), **Carriion Crow** *Corvus corone corone* (4-2-14), **Rook** *Corvus frugilegus* (4-0-17), **Jackdaw** *Corvus monedula* (2-2-16), **Jay** *Garrulus glandarius* (6-1-10), **Great Tit** *Parus major* (3-1-17), **Blue Tit** *Parus caeruleus* (2-0-19), **Coal Tit** *Parus ater* (4-3-9), **Marsh Tit** *Parus palustris* (4-3-11), **Long-tailed Tit** *Aegithalos caudatus* (4-1-15), **Tree Creeper** *Certhia familiaris* (8-4-8), **Wren** *Troglodytes troglodytes* (2-2-17), **Mistle Thrush** *Turdus viscivorus* (2-1-16), **Song Thrush** *Turdus philomelos* (0-0-21), **Blackbird** *Turdus merula* (1-0-20), **Robin** *Erithacus rubecula* (3-2-16), **Goldcrest** *Regulus regulus* (5-7-4), **Dunnock** *Prunella modularis* (3-1-17), **Starling** *Sturnus vulgaris* (2-0-19), **Greenfinch** *Carduelis chloris* (6-3-12), **Goldfinch** *Carduelis carduelis* (3-4-13), **Linnet** *Acanthis cannabina* (3-2-16), **Bullfinch** *Pyrrhula pyrrhula* (2-4-15), **Chaffinch** *Fringilla coelebs* (3-6-12), **Reed Bunting** *Emberiza schoeniclus* (1-2-18), **House Sparrow** *Passer domesticus* (2-1-18), **Tree Sparrow** *Passer montanus* (2-3-16).

The following abbreviations are used in the text: SF—Sewage Farm, ChP—Chalk Pit, CIP—Clay Pit, GP—Gravel Pit, SP—Sand Pit, L—Lake, NR—Nature Reserve.

Great Crested Grebe *Podiceps cristatus* (2-2-7)

Successful breeding was recorded at Chawston GP, Wyboston GP, Stewartby L, Southill L (6+ pairs) and Luton Hoo L, and birds were present during the breeding season at Felmersham NR, Barkers Lane GP, Vicarage Farm CIP, Millbrook CIP, Chimney Corner CIP, Woburn Park L and Battlesdon L. A nest with four eggs was found at Luton Hoo L on the early date of 10th March (AJL). Only at Stewartby L were numbers at all substantial with a peak of 48 early in the year, 75 in June increasing to 118 in August, and then a gradual decline to 35 in November.

Red-necked Grebe *Podiceps grisegena*

Two at Wyboston GP from 25th-28th December (JND, PGK, EMS, JTRS).

Slavonian Grebe *Podiceps auritus*

One at Stewartby L on 21st April (BS).

Little Grebe *Podiceps ruficollis* (5-4-5)

The only reports of breeding in the County were from Stanford GP, Luton Hoo L, Battlesdon L and Heath and Reach SP. Although birds appeared at other localities in the winter months, numbers did not exceed ten at any one place.

Cormorant *Phalacrocorax carbo*

A juvenile at Vicarage Farm CIP on 12th August (JND). A further bird at Arlesley ChP on 22nd August was found dead two days later (KC, PK).

Shag *Phalacrocorax aristotelis*

An adult flew SW over Bedford SF on 11th August (JND, MR, PT).

Heron *Ardea cinerea* (5-0-3)

11 pairs bred at Southill L and three pairs at Bromham (IJFL, JTRS, PT). The third herony in the Atlas area is not in Bedfordshire.

Bittern *Botaurus stellaris*

One at Cityfield Farm GP on 11th February (BRS).

Mallard *Anas platyrhynchos* (1-0-20)

The maximum numbers recorded at selected localities from January

to March and from September to December are tabulated. In this table and in the two subsequent ones 'n/c' indicates birds present but not counted and '-' indicates no report.

	Jan.	Feb.	Mar.	Sept.	Oct.	Nov.	Dec.
Stewartby L	200	200	50	150	500	625	700
Wyboston GP	60	120	40	78	70	60	350
Chimney Corner CIP	170	200	100	n/c	140	n/c	200
Barkers Lane GP	n/c	25	40	10	60	n/c	4

Sporadic counts from other localities included 350 at Luton Hoo L in October and 150 at Chawston GP in December.

Teal *Anas crecca* (3-0-1)

The maximum numbers recorded at selected localities from January to March and from September to December are tabulated.

	Jan.	Feb.	Mar.	Sept.	Oct.	Nov.	Dec.
Bedford SF	n/c	45	4	6	n/c	70	45
Stewartby L	40	15	25	—	—	75	160
East Hyde	20	15	8	—	11	n/c	29
Dunstable SF	8	1	3	—	—	7	3
Wyboston GP	30	14	4	6	—	75	350

Birds present during the late spring and summer at East Hyde and Southill L, but no evidence of breeding. The locality of the one breeding record in the Atlas area, is not in the County.

Garganey *Anas querquedula*

First recorded at Wyboston GP on 7th April, and present there during most of August and September, maximum six on 14th September, two remaining until 3rd October (JND, MR, PT).

Gadwall *Anas strepera* (1-0-0)

One at Chimney Corner CIP on 21st January and four at Stewartby L on 17th April (PT). A single bird at Bedford SF on 25th August (BL). The locality of the summering bird in the Atlas area is not in the County.

Wigeon *Anas penelope*

Reported during the winter months at Chawston GP, Wyboston GP, Southill L, Chimney Corner CIP, Vicarage Farm CIP, Stewartby L, Dunstable SF and Luton Hoo L, but the highest count was only 27 at Stewartby L in February.

Pintail *Anas acuta*

Two at Stewartby L on 11th and 24th February, one there on 17th November and up to six in December. Two at Wyboston GP on 28th January, singles there on 7th April, 29th September and 3rd December, and three on 29th December. Single birds at Dunstable SF on 3rd and 17th December, and two at Chimney Corner CIP on 27th December.

Shoveler *Anas clypeata* (2-0-1)

The only summer record was of a male at Southill L in June (JTRS). Of numerous winter records the larger numbers were 13 at Stewartby L in December, 14 at Wyboston GP in September, five there in October, seven in November and 25 in December, and 13 at Bedford SF in September. One of the summering records and the breeding record in the Atlas area were both from localities outside the County.

Tufted Duck *Aythya fuligula* (4-1-7)

Present during the breeding season at the following localities, and young seen at most: Wyboston GP, Barkers Lane GP, Vicarage Farm CIP, Stewartby L, Chimney Corner CIP, Brogborough CIP, Millbrook CIP, Felmersham NR, Southill L, Woburn Park L, Battlesdon L, Luton Hoo L, Dunstable SF and East Hyde.

Winter gatherings: Jan.-Mar. The peak counts were c200 at Wyboston

GP on 28th January, c375 at Stewartby L, on 10th January, 49 at Luton Hoo L, on 3rd February, 27 at Battlesdon L, on 17th March and 42 at Elstow CIP on 26th March, with smaller numbers at other suitable waters.

Oct.-Dec. The peak counts were c200 at Wyboston GP on 28th December, 80 at Stewartby L, on 27th December, 27 at Luton Hoo L, on 20th October, 48 at Vicarage Farm CIP on 27th December, 24 at Battlesdon L, on 17th November and 35 at East Hyde on 31st December.

Pochard *Aythya ferina*

(4-0-3)

Present in the breeding season at Battlesdon L, Dunstable SF, East Hyde (four young), Luton Hoo L, Southill L, Vicarage Farm CIP, Wyboston GP, Stewartby L, and near Cityfield Farm GP (eight young).

The maximum numbers recorded at selected localities from January to March and from September to December are tabulated.

	Jan.	Feb.	Mar.	Sept.	Oct.	Nov.	Dec.
Stewartby L	325	128	157	—	9	23	40
Wyboston GP	225	200	100	337	20	97	230
Dunstable SF	8	2	4	4	—	—	2
Battlesdon L	6	10	23	—	—	10	—
Luton Hoo L	—	30	10	—	14	—	—

Goldeneye *Bucephala clangula*

Present at Stewartby L from January until May with seven on 8th January, 16 on 10th-11th February, eight on 10th March, 18 on 9th April and finally a pair on 3rd May. Single birds recorded at Vicarage Farm CIP and Luton Hoo L, and three at Wyboston GP on 13th April. The first autumn bird was at Stewartby L on 2nd August, an extremely early date, and then none were seen until a single there in October, with an increase to four on 28th November and c10 on 23rd December. Up to two at Wyboston GP in November and five there on 1st December.

Goosander *Mergus merganser*

A male flew over Dunstable SF on 14th January (BS). At least three at Stewartby L on 23rd December (MS, SCS). A female at Wyboston GP on 28th December (EMS, JTRS) and two males and a female at nearby Chawston GP on 29th (JND).

Smew *Mergus albellus*

A female at Wyboston GP on 28th December (EMS, JTRS).

Shelduck *Tadorna tadorna*

(0-1-0)

Two at Dunstable SF on 13th January, one there on 10th February, two on 2nd March, one on 2nd September and one on 17th November (BS, MS, SCS). Singles at Bedford SF on 28th August and 7th September (JTRS, PT), and two at Stewartby L on 10th March (ACM, BS). The locality of the probable breeding record in the Atlas area is not in the County.

Grey Lag Goose *Anser anser*

Two at Dunstable SF on 13th April (AJL).

White-fronted Goose *Anser albifrons*

Five at Dunstable SF on 3rd March had decreased to three by 9th (DG, BDH, AJL, et al). A single bird at Dunstable SF on 24th December and 61 flew over Houghton Regis on 29th December (BDH, AJL).

Canada Goose *Branta canadensis*

(1-0-0)

One at Dunstable SF on 3rd April (BS). The summering record in the Atlas area was at a locality not in the County.

Bewick's Swan *Cygnus bewickii*

Two adults and one immature at Wyboston GP on 20th January (JND, MR), and four adults and three immatures near Felmersham NR on 21st February (PT).

Buzzard *Buteo buteo*

One soaring over Luton Hoo Park on 16th March (AJL) was seen regularly until at least October (R. Bush, per AJL). Possibly the same individual was flying over Luton on 14th April (AJL, KL).

Sparrow Hawk *Accipiter nisus* (2-0-2)

One at Stewartby L on 4th July and a further bird at Sharpenhoe on 6th October (BS, JTRS). Successful breeding reported by a reliable game-keeper at Melchbourne Park (per JND). The second breeding record in the Atlas area was at a locality not in the County.

Montagu's Harrier *Circus pygargus* (1-0-0)

A dark melanistic female was seen in mid-Bedfordshire from 16th to 22nd May. On 10th June a harrier, presumably Montagu's, was seen in the same area, and on 28th and 29th June a male was seen there. No further indication of breeding was obtained.

Hobby *Falco subbuteo* (1-0-2)

A pair bred successfully in mid-Bedfordshire. Single birds seen at Shuttleworth College on 2nd August and at Colworth on 22nd August (MR, MS). The second breeding record in the Atlas area was not in the County.

Kestrel *Falco tinnunculus* (8-3-9)

Single birds recorded during January to March and August to December at the following localities: Wyboston GP, Goldington/Howbury Hall/Castle Mill/Bedford SF/Barkers Lane GP, Clapham, Stewartby L/Vicarage Farm CIP, Chimney Corner CIP, Rowney Warren, Maulden, Old Warden, Flitwick Moor, Tingrith, Barton Hills, Pegsdon, Bradger's Hill, Sharpenhoe, Dunstable, Houghton Regis, Dunstable SF, Dunstable Downs/Whipsnade, Eaton Bray, Luton, Leagrave, Luton Hoo Park, East Hyde, and Heath and Reach/Garsides SP.

Reported localities of breeding pairs were Chaul End, Stopsley, Sundon, Dunstable SF, Chalton, Stewartby L, Tingrith and Pegsdon (two young reared), and single birds were seen at Caddington, Flitwick Moor, Westoning and Wyboston GP, but in nine 10-km. squares in the Atlas area breeding was proved. In TL 14 2-5 pairs were present.

Water Rail *Rallus aquaticus* (2-1-1)

Many records for Flitwick Moor where at least two pairs probably bred. The other breeding record in the Atlas area was from a locality not in the County. Outside the breeding season reported at Barkers Lane GP, Bedford SF, Biggleswade Common, Dunstable SF, Edlesborough, River Ivel, Pavenham, Willington and Wyboston GP.

Coot *Fulica atra* (1-0-20)

Highest counts were c190 at Millbrook CIP on 10th January, 400+ at Stewartby L on 14th January, 250+ at Luton Hoo L on 3rd February, c350 at Wyboston GP on 25th December and c260 at Chimney Corner CIP on 27th December. An estimated 20-40 pairs in TL 14.

Lapwing *Vanellus vanellus* (3-0-16)

The larger flocks early in the year were c250 at Dunstable SF on 3rd January and c500 at Luton Hoo Park on 3rd February. A post-breeding gathering of c500 was at Wyboston GP on 20th July and passage to SW was first noted over Sandy and Dunstable on 30th June. The largest flock later in the year was c500 at Wyboston GP on 3rd October, and cold-weather movements to W and SW were recorded on 9th, 26th and 27th December.

Ringed Plover *Charadrius hiaticula*

Spring passage: Two at Wyboston GP on 14th April and two at Stewartby L on 17th May.

Autumn passage : Up to six at Bedford SF from 9th to 18th August, and up to two at Dunstable SF from 10th to 19th August. Also four at Dunstable SF from 5th-13th October.

Little Ringed Plover *Charadrius dubius* (1-1-4)

Spring passage : The first two birds were at Wyboston GP on 28th March, after which numbers increased to about eight by 21st April; at Stewartby L recorded from 31st March until June; at Vicarage Farm CIP a pair present during April; at Bedford SF one on 4th April.

Breeding was suspected at Wyboston GP, Vicarage Farm CIP and Stewartby L, but no reports of success were received and neither were records for any of the other suitable localities in the County. Full details of the four breeding records in the Atlas area are unavailable, but three of these records are thought to be at localities outside the County.

Autumn passage : At Dunstable SF two from 10th-21st August; at Bedford SF up to four from 30th July to 11th September; at Wyboston GP up to four from July to 21st August; at Stewartby L one on 20th July.

Golden Plover *Pluvialis apricaria*

The larger flocks early in the year were c200 at Henlow on 7th January, c400 at Old Warden on 8th January and c700 at Cardington on 27th March, and there were still 47 near Stewartby on 15th April.

The first autumn record was one at Wyboston GP on 2nd August, with another calling over Bedford on 7th September. At Wyboston GP 17 were seen on 6th October, and during December there were 300-350 near Stewartby. Also 40 at Bedford SF on 15th December and numerous reports of small groups.

Snipe *Gallinago gallinago* (4-3-1)

No definite breeding records although 'drumming' heard at Biggleswade Common, Flitwick Moor and Wyboston GP (AJL, JTRS, PT). The locality of the breeding record in the Atlas area is not in the County. Widespread outside the breeding season, the maximum numbers reported being c80 at Felmersham NR on 25th February, c45 at Bromham on 15th November, c60 at Bedford SF on 23rd November and c200 at Wyboston GP on 25th December.

Jack Snipe *Lymnocyptes minima*

Odd birds early and late in the year at Wyboston GP, Bedford SF, Felmersham NR, Stewartby L, Chimney Corner CIP, Dunstable SF and East Hyde. The latest spring bird was at Wyboston GP on 6th April, the first autumn bird was at the same locality on 11th October, and the maximum number was five at East Hyde on 29th December.

Woodcock *Scolopax rusticola* (4-4-5)

The Atlas data suggest that this species is widely distributed in suitable woodland areas in the County, but full details have not been received. Singles at Luton Hoo Park on 16th March, at Hanger Wood on 15th December, and at Putnoe, Bedford on 29th December (JND,PGK, AJL).

Curlew *Numenius arquata* (1-0-0)

Two flew over Biggleswade on 26th June and one flew over Sandy on 20th July (RFP). Three at Wyboston GP on 5th August (PT). The locality of the summering record in the Atlas area is not in the County.

Whimbrel *Numenius phaeopus*

One at Bedford SF on 10th May (JTRS).

Black-tailed Godwit *Limosa limosa*

Singles at Bedford SF on 2nd March (JND), Stewartby L on 7th April (BS) and Wyboston GP on 14th-16th April (DJA, PT).

Green Sandpiper *Tringa ochropus*

Spring passage: Singles at Dunstable SF on 28th March, Wyboston GP on 16th April and Stewartby L on 19th April.

Autumn passage: At Bedford SF from 28th June to 10th October, maximum 15 on 6th August; at Dunstable SF from 14th July to 29th September, maximum six on 18th August; also one at Flitwick Moor on 18th July, one or two at Wyboston GP during August, one at Barkers Lane GP on 6th August, one at Southill L on 23rd June and one at Howbury Hall on 23rd August.

Winter records of single birds at Dunstable SF on 24th November, Bedford SF on 21st December and over Bedford on 13th November.

Wood Sandpiper *Tringa glareola*

No spring records. First autumn bird at Bedford SF on 31st July, and last seen there on 25th August, maximum seven on 11th August. Single at Wyboston GP on 12th-14th September.

Common Sandpiper *Tringa hypoleucos*

Spring passage: Singles at Wyboston GP from 16th April to 10th May, at Stewartby L on 17th April, at Pavenham on 19th May, at Barkers Lane GP from 28th May to 1st June, and at Dunstable SF on 19th May. Up to four at Southill L during May.

Autumn passage: At Dunstable SF from 14th July to 22nd September, maximum seven on 14th-15th August; at Bedford SF from 24th July to 17th September, maximum 15 on 3rd August; at Stewartby L from 7th July to 27th October, maximum six on 17th and 30th July; at Wyboston GP from 6th July to 14th September, maximum eight on 10th August. Also six flying over Luton on 5th August, two at Barkers Lane GP on 5th August and two at Blunham on 10th August.

Redshank *Tringa totanus* (1-1-5)

Positive breeding records for Stewartby L, Stanford GP, Barkers Lane GP and Bedford SF. Probably bred at Vicarage Farm CIP. Recorded in each month of the year except January and October, the maximum being eight at Bedford SF in March and April. One breeding record in the Atlas area was at a locality not in the County.

Spotted Redshank *Tringa erythropus*

One at Bedford SF on 29th-30th August (PT).

Greenshank *Tringa nebularia*

No spring records. Autumn passage commenced with one at Stewartby L on 17th July (ACM). Singles at Bedford SF from 24th July to 24th September, with two on 17th and 24th September (PT). Single birds at Wyboston GP on 20th July, 3rd and 23rd August (JND, MR, PT).

Knot *Calidris canutus*

One at Wyboston GP on 9th June (JND, MR).

Little Stint *Calidris minuta*

At Bedford SF one on 8th, two on 18th and one on 24th August (BL, JTRS).

Dunlin *Calidris alpina*

Spring passage: At Stewartby L, three on 10th March and one on many dates from 9th April to 17th May; at Wyboston GP one on 11th May.

Autumn passage: At Bedford SF from 25th July to 26th October, maximum four on 15th September, and one on 8th December; at Dunstable SF singles from 21st August to 2nd September, and one on 8th December; at Wyboston GP one on 14th December; and at Stewartby L one on 17th November.

Ruff *Philomachus pugnax*

Two at Bedford SF on 15th-16th April were the only spring records.

Autumn passage: At Wyboston GP two on 12th September and seven

on 29th September; at Bedford SF from 8th August to 13th October, maximum 11 on 14th-15th September; at Dunstable SF singles on many dates from 31st July to 29th September, with two on 21st August.

Stone Curlew *Burhinus oediacnemus* (1-0-0)
One calling near Pegsdon on 12th April (KRD).

Skua *Stercorarius* sp
One flying S over Bedford on 16th September (JTRS).

Great Black-backed Gull *Larus marinus*
c100 at Elstow CIP on 3rd January and c100 at Dunstable SF on 26th December were the only large concentrations reported (BS, PT).

Lesser Black-backed Gull *Larus fuscus* (0-0-1)
Three pairs bred in the "clay basin"—these constitute the first breeding records for Bedfordshire. High counts include c200 at Stewartby L on 9th March, c300 at Elstow CIP on 27th August, and c500 at Dunstable SF on 7th September.

Herring Gull *Larus argentatus*
c3,000 counted at Stewartby L on 9th March (JND).

Common Gull *Larus canus*
c500 counted at Stewartby L on 9th March (JND).

Little Gull *Larus minutus*
One immature at Stewartby L on 2nd August (PT).

Black-headed Gull *Larus ridibundus* (0-0-2)
Approximately 38,000 at Stewartby L on 9th March (JND). Breeding numbers only recorded at Vicarage Farm CIP (c500 pairs), but bred at Wyboston GP for the first time rearing at least 12 young.

Kittiwake *Rissa tridactyla*
One first year bird at Stewartby L on 12th August (JND, JTRS).

Black Tern *Chlidonias niger*
Spring passage: At Stewartby L, one on 21st April and seven on 10th and 14th June (at least one different individual); at Wyboston GP one on 4th May.

Autumn passage: At Bedford SF at least three on 14th July; at Wyboston GP two on 7th September; at Stewartby L, one on 5th August, 11+ on 22nd August, three on 1st September, two on 5th and 22nd September and three on 6th October.

Common/Arctic Tern *Sterna hirundo/paradisaea*
Spring passage: At Stewartby L, 10+ on 10th May, one on 8th June and three on 17th June.

Autumn passage: At Stewartby L, two on 28th July, 15+ on 22nd August, one on 1st September and seven on 22nd September.

Common Tern *Sterna hirundo* (0-0-1)
Spring passage: First spring birds at Wyboston GP on 28th April; two E over Tempsford Hall on 8th May; at Stewartby L, one on 10th June.

Breeding: Probably five pairs attempted to breed at Wyboston GP, at least two pairs being successful, and at least four young were seen. On 6th July 12 adults and one juvenile were recorded. Last seen on 21st August (JND, MR, PT). One at Barkers Lane GP on 21st June may have been a Wyboston adult as they undoubtedly travel a considerable distance along the Ouse valley while they are breeding.

Autumn passage: At Bedford SF one or two on many dates from 14th July to 7th October; one over Bedford on 5th August; at Stewartby L, two on 28th July, one on 30th July and six on 4th August.

- Arctic Tern** *Sterna paradisaea*
Three at Stewartby L, on 3rd May and one there on 14th June (JND).
- Little Tern** *Sterna albifrons*
One at Wyboston GP on 21st April (PT).
- Sandwich Tern** *Sterna sandvicensis*
One flying W over Bedford SF on 21st July (JND, MR).
- Turtle Dove** *Streptopelia turtur* (3-10-8)
First recorded at Wyboston GP and Flitwick Moor on 21st April and last seen at Howbury Hall on 16th September. At least 100 at Wyboston GP during August.
- Collared Dove** *Streptopelia decaocto* (1-6-5)
This species is now well established in the County, and records were received from most towns and a number of villages.
- Cuckoo** *Cuculus canorus* (4-12-5)
First recorded at Sandy Lodge and Leighton Buzzard on 18th April (AJL, RFP) and last seen at Bedford SF on 26th August (PT).
- Barn Owl** *Tyto alba* (6-1-5)
Records received for Sandy, Chalton, Felmersham, Salford, Renhold, Bedford SF and Southill. Breeding proved near Steppingley (AJL). At least three of the breeding records in the Atlas area were probably at localities not in the County.
- Little Owl** *Athene noctua* (2-5-12)
Widely distributed in the County, but probably fairly thin on the ground.
- Tawny Owl** *Strix aluco* (2-6-9)
From the Atlas data clearly widespread in the County.
- Long-eared Owl** *Asio otus* (2-2-1)
Bred successfully at Sandy (four young) and one bird found dead there on 5th August (RBB, IJFL, JPK, JTRS). Two of the records in the Atlas area were from localities not in the County.
- Short-eared Owl** *Asio flammeus*
One at Bedford SF on the unusual date of 24th July (PT) and one at Pegsdon Hills on 10th November (DG, AJL, BS).
- Nightjar** *Caprimulgus europaeus* (2-3-0)
An estimated 10-20 pairs in TL 14 (RBB, IJFL, JTRS).
- Swift** *Apus apus* (6-2-12)
First recorded at Pavenham on 20th April and became plentiful during the next two weeks. Last autumn record was on 12th September at Bedford. (JND, PWE, MR, EPY).
- Kingfisher** *Alcedo atthis* (5-2-2)
Reported at the following localities: Barkers Lane GP, Bedford SF, Castle Mills, Newnham, Clophill, Dunstable SF, East Hyde, Flitwick Moor, Sandy, Great Barford (nest found), Pavenham and Wyboston GP. (The first four localities may refer to the same birds.)
- Green Woodpecker** *Picus viridis* (6-6-5)
Located during the breeding season in most areas of the County, with an estimated 10-20 pairs in TL 14.
- Great Spotted Woodpecker** *Dendrocopos major* (4-9-1)
Surprisingly absent from a number of areas in the County, particularly in the west

Lesser Spotted Woodpecker *Dendrocopos minor* (6-1-4)

Single birds seen at Bedford SF (GTC), Caddington (RVAW), Charle Wood (AJL), and Wyboston GP (PT). At least three pairs in TL 14 (IJFL, JTRS). No details are available of other records in the Atlas area.

Swallow *Hirundo rustica* (2-0-19)

First spring arrival was one at East Hyde on 7th April (SCS) and last seen at Sharnbrook on 29th October (MR).

House Martin *Delichon urbica* (3-0-17)

First spring birds at Wyboston GP on 16th April (PT) and last seen at Dunstable SF on 4th November (SCS).

Sand Martin *Riparia riparia* (3-1-9)

First recorded at Felmersham NR on 25th March and latest emigrant at Wyboston GP on 6th October (BL). A colony of c350 pairs at Wyboston GP (JND, MR) and 150-250 pairs in TL 14 (IJFL, JTRS).

Maggie *Pica pica* (6-1-11)

Appears to be rather scarce in some areas of the County.

Willow Tit *Parus montanus* (6-3-8)

Recorded in the majority of the well-covered 10-km. squares in the Atlas area.

Nuthatch *Sitta europaea* (4-3-5)

Appears to be rather local in some areas of the County, particularly in the north and west.

Fieldfare *Turdus pilaris*

Numbers were very low in the early months of the year, and the only flocks reported were c60 at Bedford SF on 27th March, 28 at Odell Wood on 8th April and 15 at Pegsdon Hills on 13th April, with the last bird at Bedford SF on 15th April. First autumn record was of a bird flying over Bedford on 12th September. During the first three weeks of October this species became widespread throughout the County, with some 275 seen flying over Bedford on 20th October and a week later several hundred moving SW at Whipsnade.

Redwing *Turdus iliacus*

The maximum number reported in the early months of the year was just ten at Stewartby L on 8th January (AJL). First autumn record was one at Sharpenhoe on 6th October (BS). On 18th, 19th and 20th October there was heavy diurnal and nocturnal passage to the west over Houghton Regis and Stopsley (BDH).

Ring Ouzel *Turdus torquatus*

One at Bedford SF on 14th April (PT) and one at Wyboston GP from 11th-16th April (BS, PT).

Wheatear *Oenanthe oenanthe*

First recorded at Bedford SF and Dunstable SF on 23rd March (KCM, BS, PT), and then numerous reports of odd birds during the last week of March, throughout April and during early May, with the last spring bird at Luton on 19th May (RVAW). Autumn passage from 20th July to 12th September, with as many as eight at Galley Hill on 3rd September (MS).

Stonechat *Saxicola torquata*

One near Dunstable on 7th January and a female at Potton on 3rd March. None others recorded until 23rd December at Stewartby L. (RF, RFP, MS, SCS).

Whinchat *Saxicola rubetra*

The first spring arrivals were earlier than usual with singles at Dunstable SF on 20th April, Galley Hill on 23rd and Wyboston GP on 28th. Four breeding pairs on Dunstable Downs during July and one pair at

Biggleswade Common (RBB, IJFL, BS, JTRS). At least one of the breeding records in the Atlas area was at a locality not in the County. Autumn migrants from 27th August to 29th September at various sites.

Redstart *Phoenicurus phoenicurus* (2-1-3)

First recorded at Bedford SF on 12th April (PT) and last seen at Everton on 3rd September (PWR). As usual, breeding territories sited along the greensand belt from Shuttleworth to Heath and Reach. Four positive breeding records received for Shuttleworth, Keepers Warren and Heath and Reach (DG, IJFL, JTRS).

Nightingale *Luscinia megarhynchos* (2-10-0)

One heard singing at Maulden Wood on 5th May (AJL) and a pair located at Bow Brickhill on 12th May (KRW). 8-10 pairs recorded at Chicksands Wood and Home Wood (IJFL, JTRS).

Grasshopper Warbler *Locustella naevia* (4-9-4)

First recorded at Maulden Wood on 17th April (SCS). Present during the breeding season at Barton Hills, Bow Brickhill, Dunstable Downs, near Dunstable SF, Flitwick Moor, Warden Hill/Galley Hill (3-5 singing males), Maulden, Pegsdon Hills, Melchbourne Park (two singing males), Shire Oak, Studham, Sundon Quarries, Rowney Warren, Chicksands Wood and Home Wood. The last three localities, all in TL 14, totalled some 25-40 pairs (IJFL, JTRS).

Reed Warbler *Acrocephalus scirpaceus* (3-0-9)

First recorded at Wyboston GP on 4th May and last seen at Bedford SF on 24th September. 20-30 pairs at Southill L (IJFL, JTRS).

Sedge Warbler *Acrocephalus schoenobaenus* (1-5-13)

First seen at Barkers Lane GP on 16th April and last reported at Bedford SF on 28th September. In some areas breeding at a considerable distance from any wet habitat.

Blackcap *Sylvia atricapilla* (3-6-11)

A male at Bedford on 27th February was clearly a wintering individual (IJFL). The first spring migrant was recorded at Houghton Regis on 17th April (BDH) and during the next week many additional arrivals were seen. Last autumn record was a male at Sandy Lodge on 19th October (JPK).

Garden Warbler *Sylvia borin* (2-12-4)

First spring bird at Howbury Hall on 26th April (PT) and last emigrant at Wyboston GP on 7th September (JND, MR).

Whitethroat *Sylvia communis* (2-3-16)

First migrant at Wyboston GP on 16th April and widespread within the next few days. Last autumn record was three at Bedford SF on 22nd September (JTRS).

Lesser Whitethroat *Sylvia curruca* (2-12-3)

First spring record was a singing male at Everton on 28th April (PWE) and five at Wyboston GP on 8th September were the last autumn birds (JND, MR). The Atlas data indicate that this species is fairly well distributed in the County, but in no area is it common. Only some 5+ pairs in TL 14, a well-wooded 10-km. square with much suitable habitat (IJFL, JTRS).

Willow Warbler *Phylloscopus trochilus* (2-2-17)

First recorded at Blunham on 29th March (PWE) and last seen at Wyboston GP on 8th September (JND, MR).

Chiffchaff *Phylloscopus collybita* (2-5-13)

Four wintering birds were recorded: at Bedford on 7th January, at Wyboston GP on 14th January, at Bedford SF on 18th February, and, at the end of the year, at Maulden on 22nd December (JND, MR, BS,

PS). The first spring arrival was one at Bidwell on 17th March (DG) and many were recorded during the next ten days. Last autumn bird was in sub-song at Houghton Regis on 6th October (BDH).

Wood Warbler *Phylloscopus sibilatrix* (2-1-2)

Single migrant singing at Wyboston GP on 21st April (JND, MR), one singing at Charle Wood on 17th May (AJL) and one report for Sandy Lodge (per IJFL). No reports from other suitable localities. The two breeding records in the Atlas area were both at localities outside the County.

Spotted Flycatcher *Muscicapa striata* (4-1-14)

First recorded at Battlesdon L and Bromham on 12th May (BDH, PT) and last seen at Bedford on 23rd September (JND, MR).

Meadow Pipit *Anthus pratensis* (4-2-5)

The Atlas data show that this species is absent from much of the northern and western part of the County.

Tree Pipit *Anthus trivialis* (2-6-4)

First recorded at Stewartby L on 13th April (AJL). Breeding in most suitable areas in the County. An estimated 30-50 pairs in TL 14 (IJFL, JTRS).

Pied Wagtail *Motacilla alba yarrellii* (3-5-12)

During the winter at least 300 were roosting under the roof of the factory of George Kent Ltd. in Luton, and at least 500 were roosting in a similar site on Goldington Power Station, Bedford.

White Wagtail *Motacilla alba alba*

All records were for April, with one at Wyboston GP on 7th (JND, MR), one at Stewartby L on 13th (AJL), two at Bedford SF on 24th (PT), one at Dunstable SF on 26th (BS) and one at Wyboston GP on 28th (PT).

Grey Wagtail *Motacilla cinerea* (0-0-2)

The two breeding records in the Atlas area were at localities not in the County, and no birds were reported in Bedfordshire during the summer months. Winter records, mostly of single birds but two on a number of occasions, at Bedford SF/Barkers Lane GP, Stewartby L, Dunstable SF and East Hyde, and a probable migrant at a pool in Maulden Wood on 1st September (AJL).

Yellow Wagtail *Motacilla flava* (2-2-9)

First recorded at Dunstable SF on 2nd April (BS) and last autumn migrant was at the same locality on 6th October (MS). A variant male at Dunstable SF on 19th April (BS). Apparently absent from eight 10-km. squares in the Atlas area although some of these squares have suitable wetish habitats. 10-15 pairs in TL 14 (IJFL, JTRS).

Great Grey Shrike *Lanius excubitor*

One seen at Sundon cement works on 10th November (KCM).

Red-backed Shrike *Lanius collurio* (0-1-2)

First recorded on 5th May. Two pairs bred successfully at one locality, raising two and three young, and an adult was heard singing at a different locality on the chalk downs in June. For the first time a pair was seen in the west of the County in June.

Hawfinch *Coccothraustes coccothraustes* (2-3-2)

A pair attempted to breed at Sheerhatch Wood (DLC, IJFL), an immature was seen at Husborne Crawley on 10th June (RFP), and probably bred at Flitwick (WGS). The localities of the remaining four records in the Atlas area are probably all outside the County.

Siskin *Carduelis spinus* (0-1-0)

A singing male at Sandy Lodge for much of the summer months. Recorded at Flitwick Moor during March and December, at Eversholt in November, at Maulden Wood in April and at Luton Hoo Park in December, but no large flocks were seen.

Redpoll *Acanthis flammea* (3-5-2)

Present during the breeding season in TL 14 at Chicksands Wood, Keepers Warren, Southill Park, Rowney Warren and Shuttleworth, in all some 50-70 pairs (IJFL, JTRS), and at Flitwick Moor, Maulden Wood and Barton Hills. The only record of proven breeding in the County was at Flitwick Moor (MS).

Brambling *Fringilla montifringilla*

A flock of c40 at Wyboston GP during January and early February (JND, MR) and a single bird at Luton on 11th January (SWR) were the only records in the early months of the year. In the autumn not recorded until a few were seen at Barton Hills on 5th November, and this party increased to c75 in the next two days. Other small flocks recorded at Sandy Lodge, Pegsdon Hills and Sharpenhoe.

Yellowhammer *Emberiza citrinella* (3-8-10)

c500 at Goldington on 9th January appears to be the largest flock ever recorded in the County (PT).

Corn Bunting *Emberiza calandra* (4-8-5)

The Atlas data show a wide distribution in the County, but in many areas distinctly thin on the ground. Just 5-10 pairs in TL 14 (IJFL, JTRS).

ADDITION TO THE 1965 REPORT

Little Ringed Plover *Charadrius dubius*

At least one pair bred at Heath and Reach SP during June and July (HMG).

ADDITIONS TO THE 1966 REPORT

Hobby *Falco subbuteo*

One flew over the A5 near Heath and Reach on 3rd September (HMG).

Little Ringed Plover *Charadrius dubius*

One pair seen at Heath and Reach SP during May but no evidence of breeding (HMG).

A. J. LIVETT.

CHARLES ABBOT'S 'FLORA SELECTA'

By J. G. DONY

Charles Abbot's herbarium has long presented one of the problems in interpreting the history of the study of natural history in Bedfordshire. He was very proud of his specimens and appears in the preface to *Flora Bedfordiensis* to give credit for the collection to 'a fair associate . . . the amiable and interesting partner of his pursuits' to whom 'he is indebted for the preparation of an herbarium, the admiration of all who have knowledge and judgment to discover its superior beauty and excellence'. Mrs. Abbot is mentioned frequently in his correspondence and, in his annotated copy of the Flora, he writes of *Adonis annua* that

she 'has often brought this elegant plant in from the cornfields'. Abbot was writing at a time when botany, unlike the other natural sciences and mathematics, was becoming to women, but the extent to which his wife was a co-worker has been and still remains a mystery.

An herbarium of Abbot's went to the Higgins family at Turvey Abbey where it remained until 1945 when it was placed on long loan at Luton Museum and Art Gallery by the Rev. H. H. L. Longuet-Higgins. It consists of five folio volumes each containing the bookplate of Charles Longuet-Higgins dated 1874. It was seen at Turvey Abbey, probably in 1879 or 1880, by A. R. Pryor who wrote an account of it in the *Journal of Botany*, 1881. Pryor, who saw only five volumes, reported on the almost complete absence of any indication of locality to the extent that one could not be sure that any specimens related to Abbot's work on the flora of Bedfordshire. At most they were a check on Abbot's knowledge of plants. It needs, however, to be noted that the bare information of the Latin names on the sheets is in the unmistakably clear handwriting of Abbot, which Pryor probably did not know, and which still leaves doubt as to Mrs. Abbot's part in making the collection.

In 1968 Luton Museum acquired from a bookseller five additional volumes of Abbot's herbarium. One volume was uniform with the five folio volumes already on long loan at the Museum, and had the same bookplate of Charles Longuet-Higgins, dated 1874. It is clearly a sixth volume of Abbot's herbarium (it bears VI on the spine) containing plants in Class XXIV of the Linnaean classification, i.e. the cryptogams—ferns, fern allies and mosses. It consists of sixty pages, more of them blank than in the other volumes. The pages for the mosses allow for a number of specimens on each page, and the names of these were inserted in readiness for the additional specimens when they were obtained. The names, again only the Latin ones, are in Abbot's clear handwriting. It is certain that Pryor did not see this volume which would have been as great an interest to him as the others. It would appear that by 1880 it had already become separated from the rest, but in what way is not known.

The remaining four volumes acquired by the Museum would also have been of great interest to Pryor as they are in most respects far more important than Abbot's main herbarium. They are quarto volumes, each bearing on the spine 'Flora Selecta', and they are numbered 1 to 4. Inside each volume is Abbot's own bookplate as well as the selfsame bookplate of Charles Longuet-Higgins as in the larger herbarium. Again the handwriting on the sheets is very clearly Abbot's.

The 'Flora Selecta', which only contains about four hundred specimens, differs from the other collection in two major respects. Firstly, the plants are arranged in no systematic order, apparently being put in as they were collected or came Abbot's way. Secondly, while no specimens are dated, most of those in the first volume and a few in the fourth are localised. At the end of the last volume there are some willow leaves which are no doubt Abbot's attempt at specification of the Bedford Willow, but unfortunately no written details are given.

Each of the four volumes has some distinctive feature probably expressing some change in time in Abbot's approach to field botany. In the first volume the sheets bear the Latin names and usually the stations, and there is an alphabetical index of Latin names and a loosely inserted list of English names in running order. The second volume, consisting of 95 sheets with 125 specimens, has only the Latin names on the sheets and the station of the first specimen only: an alphabetical index of Latin names is bound in this volume too. The third volume has 116 sheets and as many specimens, and both Latin and English names are written on the sheets, and alphabetical indices of each are bound in.

The last volume is apparently unfinished as it contains 80 pages but only 44 specimens, eleven of which are localised and bear both Latin and English names. There is no index to this volume.

It is the first volume which must be of interest to Bedfordshire botanists as it contains the first localised specimens of a number of the county's plants. It consists of 95 sheets with 108 specimens, 65 of which were collected in Bedfordshire. Here is Pasque Flower from Barton Hills appearing to be more dwarfed than we are accustomed to seeing it now. Some of the plants are no longer with us: *Arnoseris minima* (Maulden), *Lythrum hyssopifolia* (Oakley West Field), *Vaccinium oxycoccus* (Ampt-hill), *Sagina nodosa* (Stevington), *Drosera rotundifolia* (Ampt-hill), *Caucalis latifolia* (Milton Hill), *C. royeri* (Oakley-field) and *Bupleurum rotundifolium* (Barton Hill). Some familiar plants are still to be seen in the places where Abbot found them and looking much the same. A few specimens were provided by his fellow clergyman botanists—John Hemsted two from Suffolk, D. Jenkins *Pyrola minor* and *Allium ursinum* from Whipsnade, and T. Orlebar Marsh *Salvia pratensis* from Biddenham. Some specimens are from as far afield as Wales, 'Scottish bogs', the North, Essex and Lambeth, but there is no indication that Abbot himself was so widely travelled. Undoubtedly, however, he did go to Gamlingay Bogs and Newmarket Heath.

The English names are not without interest. Those in the third and fourth volumes are in the main those generally now in use, being very often merely anglicised forms of the Latin name. Such were the names Abbot used in his Flora. In the first volume there are some delightful names such as Herb True-love (*Paris quadrifolia*), Sky Flower (*Senecio integrifolius*), Lizard Flower (*Coeloglossum viride*), and Snail and Moon Trefoil (*Medicago arabica*). The use of the names, the passing of which one must regret, could be a clue to the date of the first volume.

The acquisition of the 'Flora Selecta' and the hitherto unknown sixth volume of Abbot's herbarium adds to Luton Museum's extensive botanical collection, which already contained the rest of Abbot's herbarium on long loan and his own annotated copy of *Flora Bedfordiensis*. Close enquiry has so far failed to trace another copy of the Flora in which Abbot inserted a list of the lepidoptera of the county.

THE B.T.O. ORNITHOLOGICAL ATLAS

By J. N. DYMOND

Early in 1968 the British Trust for Ornithology launched a project whereby the distribution of the breeding birds of Great Britain and Ireland could be surveyed. Great changes in the distribution of many bird species in north-west Europe were brought about by a period of climatic amelioration which began about 1890 and culminated in the mid-thirties. Many are the factors which instigated this scheme: the rapidly-growing population's desire for recreational areas is constantly exerting pressures on habitats; pollution in various forms is having its effect; development of farming, fishing and forestry methods are all having an effect; and urbanisation of hitherto rural areas is eating away at our countryside. And so the production of an atlas of the breeding distribution of our birds has a great potential as a conservation document.

The basic unit of field-work is the 10-kilometre square of the National

Grid. There are twenty-one such squares wholly or partly in Bedfordshire, and good progress has been made towards covering these areas. Close liaison with adjacent counties is obviously most desirable, and, in forming an interim progress report for observers in Bedfordshire, I have been fortunate to have had access to the data obtained for squares partly in Bedfordshire by observers from Northamptonshire, Huntingdonshire and Hertfordshire.

Nationally no effort is being made to count birds or to determine their relative densities, but a number of counties have undertaken to do some degree of population assessment and we, in Bedfordshire, will in 1969 attempt to assess the numbers of certain species. Although the basic requirement for the atlas is to determine whether each species is present or absent in each square, the method of recording is further refined. Three categories are used: firstly where the species is present in possible nesting habitat; secondly where there is good indication of breeding, i.e. a singing male noted on several dates, courtship behaviour, or a nest-hole being excavated; and thirdly where breeding is confirmed. In a great many cases it is unnecessary to actually find the nest in order to confirm breeding—a bird can be observed carrying food for its young or carrying a faecal sac, or a parent can be observed feeding dependant fledglings, or a parent can be seen injury-feigning, etc.

From the data obtained in Bedfordshire in just one season we have already discovered some interesting facts about some of our breeding species: Collared Doves are breeding in most 10-km squares, Lesser Redpolls are quite numerous in the greensand woodlands, Wood Warblers appear to be even thinner on the ground than was previously thought, Nightingales have been sparsely recorded, Stonechats appear to be completely absent from Bedfordshire now, and there are even several squares without a single pair of Mute Swans. In the 1968 season 105 species were found to be present in the Bedfordshire area of twenty-one squares.

The Atlas project is scheduled to last for five years, and, with the initial groundwork completed in 1968, effort in each square can be concentrated on finding new species and on improving the category of species that have already been recorded. Casual records are always useful and members with local knowledge of particular areas may well be able to provide important information. Would readers who can offer any information or who wish to participate more fully in the project please get in touch with the writer.

FOOD OF BARN OWLS IN BEDFORDSHIRE

BY I. J. FERGUSON-LEES AND J. T. R. SHARROCK

On 7th, 14th and 21st July, 1968, at Southill Park, Bedfordshire, we collected a total of 68 pellets from a row of barns and sheds where a pair of Barn Owls *Tyto alba* has, we understand, nested for some years. Although we did not see a Barn Owl on any of these or several other visits which we had paid to the site about that time, the pellets had the characteristic glossy black appearance and rounded shape of this species. Our identification of them was confirmed by David E. Glue, now of the British Trust for Ornithology, who is studying the food of the Barn Owl by means of similar samples of pellets sent to him

from all over Britain (see *Bird Study*, 14 : 169-183 ; and *British Birds*, 61 : 280). The pellets ranged in age from some which were still wet when collected (and had therefore been cast within a matter of hours) to others which had clearly been lying on the ground inside the buildings for some time ; from previous work on the rate of decomposition, however, Mr. Glue was able to say that he did not consider that "any of the pellets was more than a few months old" and it seems safe to conclude that all 68 had been cast in 1968.

Mr. Glue analysed the animal remains in these pellets, the mammals and insects all being identified by him and the bird prey by Graham S. Cowles of the Bird Room at the British Museum (Natural History). The results are set out in the table, where the total numbers of mammals are based on the highest counts of skulls, lower jaws or pelvises and those of birds on the maximum numbers of skulls or lower mandibles. While these data will be included in a much wider paper which Mr. Glue is preparing for publication elsewhere, we consider that this Bedfordshire sample is worth summarising here, particularly in view of the interesting selection of small mammals, which at least shows some of the species present in that part of Southill Park, although it should not be taken as even a very rough indication of their relative abundance. The habitat surrounding these barns includes tree-dotted parkland and grass fields with grazing cattle, various crops and an adjacent area of deciduous woodland ; a stream runs through the area.

As the prey animals found in any study of the food of a predatory bird vary greatly in size and weight, it has now become customary to use 'conversion factors' to express the numbers as 'prey units' in order to create a more realistic picture of the total amount represented by each food species ; this method of correcting difference, with a 20-gram rodent or bird as the standard unit (1.0), was first suggested by H. N. Southern (1954) in his study of the prey of Tawny Owls. *Strix aluco* (*Ibis*, 96 : 348-410). The total number of vertebrate animals in the 68 pellets was 273, an average of 4.0 per pellet, and the total number of prey units was 233.85, an average of 3.43 per pellet. The pellets varied in size from 21 x 35 mm and 25 x 24 mm to as much as 30 x 86 mm, and they contained from one (usually relatively large) animal to as many as eight. One pellet included the remains of examples of all three mainland British shrews, the only such pellet that Mr. Glue has come across in many hundreds.

Table. Analysis of vertebrate prey found in 68 pellets of the Barn Owl *Tyto alba* at Southill Park, Bedfordshire, in July 1968

	Total animals	Conversion factor	Prey units	Percentage diet
Common Shrew <i>Sorex araneus</i>	70	0.5	35.0	15.0%
Pygmy Shrew <i>Sorex minutus</i>	14	0.2	2.8	1.2%
Water Shrew <i>Neomys fodiens</i>	3	0.75	2.25	1.0%
Harvest Mouse <i>Micromys minutus</i>	6	0.3	1.8	0.8%
Wood Mouse <i>Apodemus sylvaticus</i>	29	1.0	29.0	12.4%
Brown Rat <i>Rattus norvegicus</i>	2	5.0	10.0	4.3%
Bank Vole <i>Clethrionomys glareolus</i>	16	1.0	16.0	6.8%
Water Vole <i>Arvicola terrestris</i>	1	5.0	5.0	2.1%
Short-tailed Vole <i>Microtus agrestis</i>	118	1.0	118.0	50.5%
Yellowhammer <i>Emberiza citrinella</i>	2	1.0	2.0	0.9%
House Sparrow <i>Passer domesticus</i>	12	1.0	12.0	5.1%

Invertebrate prey included one cockchafer *Melolontha melolontha* and two ground beetles (Carabidae).

THE MOLLUSCA OF THE LUTON AREA

By MRS. E. B. RANDS

When the Bedfordshire Natural History Society was formed in 1946 it was fortunate in having Dr. B. Verdcourt as its Recorder for Mollusca. He published in this journal some very interesting accounts of the Mollusca of Bedfordshire. Unfortunately since he left Luton in 1948 very few articles have appeared on this subject.

During the autumn of 1968 my family and I began the task of re-recording the species to be found in the Luton area (O.S. TL02) for the census being carried out by the Conchological Society of Great Britain. The following list shows the position up to 1st January 1969. Many species now recorded were not found by Dr. Verdcourt, but several of his records still need corroboration. Some species, however, may have disappeared from the area due to the intensive building and cultivation programmes.

<i>Pomatias elegans</i>	Barton Springs
<i>Potamopyrgus jenkinsi</i>	Barton Springs
<i>Carychium tridentatum</i>	Barton Springs and Fancott
<i>Carychium minimum</i>	Leagrave
<i>Lymnaea truncatula</i>	Leagrave
<i>Lymnaea palustris</i>	Leagrave
<i>Lymnaea peregra</i>	Leagrave and Wardown Lake
<i>Lymnaea stagnalis</i>	Toddington Pond
<i>Planorbis planorbis</i>	Toddington Pond
<i>Planorbis vortex</i>	Wardown Lake and Leagrave
<i>Planorbis contortus</i>	Wardown Lake
<i>Acroloxus lacustris</i>	Toddington Pond
<i>Succinea putris</i>	Fancott and Leagrave
<i>Succinea pfeifferi</i>	Barton Springs
<i>Azeca goodalli</i>	Barton Springs, Fancott and Sundon
<i>Cochlicopa lubrica</i>	Barton Springs, Fancott and Sundon
<i>Lauria cylindracea</i>	Luton garden
<i>Acanthinula aculeata</i>	Barton Springs
<i>Vallonia costata</i>	Leagrave
<i>Vallonia excentrica</i>	Leagrave
<i>Ena obscura</i>	Barton Springs and Bradger's Hill
<i>Marpessa laminata</i>	Barton Springs
<i>Clausilia bidentata</i>	Barton Springs, Fancott and Sundon
<i>Arianta arbustorum</i>	Barton Springs and Fancott
<i>Helix hortensis</i>	Barton Springs and Fancott
<i>Helix nemoralis</i>	Fancott and Sundon
<i>Helix aspersa</i>	Luton gardens
<i>Hygromia striolata</i>	Luton, Fancott, Barton Springs and Sundon
<i>Hygromia hispida</i>	Luton, Barton Springs and Sundon
<i>Hygromia liberta</i>	Barton Springs and Sundon
<i>Monacha granulata</i>	Barton Springs
<i>Monacha cantiana</i>	Barton Springs, Sundon and Fancott
<i>Helicella asperata</i>	Barton Springs
<i>Helicella itala</i>	Barton Springs
<i>Punctum pygmaeum</i>	Barton Springs
<i>Discus rotundatus</i>	all localities
<i>Euconulus fulvus</i>	Fancott
<i>Vitrea crystallina</i>	Fancott and Barton Springs
<i>Vitrea contracta</i>	Barton Springs
<i>Oxychilus draparnaldi</i>	Bradger's Hill
<i>Oxychilus cellarius</i>	Barton Springs and Fancott
<i>Oxychilus helveticus</i>	Barton Springs, Fancott and Sundon

<i>Oxychilus alliarius</i>	Fancott and Sundon
<i>Retinella radiatula</i>	Barton Springs
<i>Retinella pura</i>	Barton Springs, Sundon and Fancott
<i>Retinella nitidula</i>	Barton Springs, Sundon and Fancott
<i>Zonitoides nitidus</i>	Leagrave
<i>Vitrina pellucida</i>	Barton Springs, Fancott and Sundon
<i>Sphaerium lacustre</i>	Wardown Park and Leagrave
<i>Pisidium casertanum</i>	Barton Springs and Sundon
<i>Pisidium personatum</i>	Fancott
<i>Pisidium obtusale</i>	Barton Springs and Leagrave
<i>Pisidium subtruncatum</i>	Wardown Lake
<i>Pisidium nitidum</i>	Wardown Lake

The following species have also been recorded in the area by various other people, but their locations are unknown to me: *Cochlicopa lubricella*, *Vertigo pygmaea*, *Pupilla muscorum*, *Cecilioides acicula*, and *Helicella virgata*.

The following slugs have been recorded, but there must be several more still awaiting discovery: *Arion circumscriptus*, *A. hortensis*, *A. ater*, and *Agriolimax reticulatus*.

We hope to extend this recording of the Mollusca to the other 10-km. squares in Bedfordshire. If anyone is interested in this subject and would like to help, I would be glad if they would get in touch with me.

NEW MEMBERS

a Associate.

j Junior.

s Student Member.

- jAllen, Miss P. R., 40 Alexandra Avenue, Luton.
 Anderson, D., 51 Springfield Crescent, Harpenden, Herts.
 Armitage, D. J., 100 Wilbury Road, Letchworth, Herts.
 jBreacker, Miss J. A., 5 Hillview Crescent, Luton.
 Bruce, W. G., 18 Putnoe Lane, Bedford.
 Bruce, Mrs. B. J., 18 Putnoe Lane, Bedford.
 jCharlson, Miss E. M., 19 Bowhill, Putnoe, Bedford.
 Cook, D. R., 16 Whipperley Ring, Luton.
 Cooper, D. A. P., 50 Village Road, Bromham, Bedford.
 Cooper, D. R., 2 Hazelwood Lane, Ampthill, Bedford.
 Cooper, R. J., 187 Mancroft Road, Aley Green, Luton.
 jCosgrave, Miss M. M., 79 Foster Road, Kempston, Bedford.
 Denton, Miss G. S., 54 Priory Court, Bedford.
 jEllis, Miss S., 86 Pembroke Avenue, Luton.
 jFuller, M. G., 58 Luton Road, Chalton, Luton.
 aHodgkins, Miss J., 7 Rosamond Road, Bedford.
 Hutton, Dr. K., Colworth House, Sharnbrook, Bedford.
 jKnight, P. E., Middle Farm, Oakley, Bedford.
 Lea, D., Riverside, Great Barford, Bedford.
 jLeech, Miss K. M., 49 Alexandra Avenue, Luton.
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 jMerrin, D. J., 3 Brandreth Place, Sandy, Beds.
 jMerrin, S. P., 3 Brandreth Place, Sandy, Beds.
 Moles, P. W., 37 Cemmaes Court Road, Hemel Hempstead, Herts.

Mosley, D. E., Torricon, The Bury, Pavenham, Bedford.
 aMosley, Mrs. H. J. Torricon, The Bury, Pavenham, Bedford.
 Oliver, W. G., 152 Manor Road, Barton, Bedford.
 Oxenham, P., 6 Mossbank Avenue, Vauxhall Park Estate, Luton.
 Randall, A. L., Staithes, 10 The Hill, Blunham, Bedford.
 jRandall, P. G., Staithes, 10 The Hill, Blunham, Bedford.
 Rands, D. G., 51 Wychwood Avenue, Luton.
 Rands, Mrs. E. B., 51 Wychwood Avenue, Luton.
 Rowland, Miss L. A., 70 Clapham Road, Bedford.
 Rowley, Miss D., 10 Park Road North, Bedford.
 Smith, A. D., 35 King Street, Dunstable, Beds.
 Smith, S. H., 108 Hitchin Road, Upper Caldecote, Biggleswade, Beds.
 Smith, Mrs. B. A., 108 Hitchin Road, Upper Caldecote, Biggleswade.
 aTibbutt, H. G., 12 Birchdale Avenue, Kempston, Bedford.
 sWalker, Miss J., 16 Arrow Leys, Putnoe, Bedford.
 Ward, I. E. S., 45 Crombie Road, Sidcup, Kent.
 Williams, A. N., Flat 5, Ridge Court, Cowridge Crescent, Luton.

DEATHS

It is with deep regret that we record the deaths of the following members of the Society.

In December, 1967, Mrs. D. L. Bligh of Houghton Regis, a member since 1962.

In August, 1968, Lt. Col. E. P. Young of Pavenham, a member since 1954.