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AND FIELD CLUB
FOR THE YEAR
1961

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BEDFORDSHIRE
NATURAL HISTORY SOCIETY & FIELD CLUB
1962

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EDITED BY A. W. GUPPY, B.Sc.

No. 16—1961

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Report of the Council

As in the past, the Society has again slightly increased its membership over the year. Total membership now stands at 334, but this total may not be strictly true as there are a few members in arrears with their subscriptions about which some action must be taken. Forty-two new members were enrolled and three resignations were received.

It is with regret that we have to record that five members died during the year :

Mr W. H. Bonnett of Stagsden, a founder member of the Society and its first Treasurer, a post he held for many difficult years ; a man to whom the Society owes much. He was also our first Honorary Life Member.

Miss Bates of Luton ;

Mrs S. M. Skinner of Bromham Hall ;

Miss E. M. Tideswell of Rushden ;

Mr T. Wallis of Kettering.

It is still felt that, with the interest now taken in Natural History, coupled with the quality of the programmes offered at both the Bedford and Luton meetings in the winter months and in the field in the summer, our membership still remains low, and attendances at our functions fall short of what we feel we are entitled to expect.

The Programme Committee would welcome any suggestion from members as to what they would like to do or to see, or where they would like to go. Any suggestions would be a great help, since arranging programmes becomes yearly more difficult.

The Bedfordshire and Huntingdonshire Naturalists' Trust has made progress during the year, having founded the Felmersham Nature Reserve. This Reserve is controlled by a small committee in which several members of your present Council hold office. The Society has agreed to make a complete survey of the Reserve and to map the whole area, and to assist the Trust in any way that we can. The same members of your Council still hold office in the Select Committee of the Trust.

During the year the Royal Society for the Protection of Birds took up residence at Sandy Lodge, so as a Society we must consider ourselves fortunate in having such an august body within our county, and we look forward to a long and happy association with them.

The Bird Bulletin, under the very able leadership of Mr Wortley and Mr Stephenson, has again had a very good year, and the

Society is greatly indebted to these two members of the Council ; our thanks are also due to them and to the rest of the Luton Council members for the great improvement made in the affairs of the Society at Luton during the past few years.

In conclusion, the Council again asks for members to come forward with ideas, to introduce new members, to further the Society's aims by attending meetings more frequently and by bringing friends with them, to pay subscriptions when due, and to submit something, however small, for publication in the Journal.

KENNETH E. WEST,

Hon. General Secretary.

THE BEDFORDSHIRE NATURAL HISTORY SOCIETY AND FIELD CLUB

STATEMENT OF ACCOUNTS FOR THE YEAR ENDED 31st DECEMBER, 1961

RECEIPTS	£	s.	d.	£	s.	d.	PAYMENTS	£	s.	d.	£	s.	d.
Cash at Bank, 1st January, 1961 ...	104	3	0				Printing, Postages and Stationery ...				49	17	5
Cash in Hand, 1st January, 1961 ...	12	1	4				Meeting Expenses—Hire of Luton Library ...				4	0	0
				116	4	4	Subscriptions to other Societies ...				2	11	0
Donations and Subscriptions, 1961, and arrears ...	89	1	0				Purchase of Bird Song Records ...				8	12	0
Subscriptions, 1962-63 ...	6	10	0				Hire of Films ...				3	8	4
				95	11	0	Lecture Expenses ...				1	2	0
Life Membership ...				10	0	0	Sundry Expenses ...				3	7	10
Surplus on Coach Trips ...					4	9	Loss on Dinner ...				7	10	0
Surplus on Bird Bulletins ...				8	14	6	Cash at Bank, 31st December, 1961 ...				152	5	2
Collections at Meetings ...					19	6							
Hire of Records ...					15	0					£232	13	9
Balance owing to Hon. Treasurer, 31st December, 1961 ...					4	8							
					£232 13 9						£232 13 9		

We have examined the above Account with the books and vouchers of the Society and certify the same to be correct in accordance therewith.

BEDFORD.
9th February, 1962.

THORNTON BAKER & CO.,
Chartered Accountants, Hon. Auditors.

PROCEEDINGS 1961

Indoor Meetings

147TH ORDINARY MEETING, 12th January, 1961, Luton. 'Nature Conservation' by Dr J. G. Dony. Attendance 38. *Chairman*: R. G. O. Stephenson.

148TH ORDINARY MEETING, 19th January, 1961, Bedford. 'Water from the Chalk in East Anglia' by Dr Colin Forbes. Attendance 20. *Chairman*: Dr D. M. Jeffreys.

149TH ORDINARY MEETING, 2nd February, 1961, Luton. 'Butterflies and Moths' by B. B. West. Attendance 27. *Chairman*: Eric G. Meadows.

150TH ORDINARY MEETING, 9th February, 1961, Bedford. 'Bird Ringing and Migration' by Robert Spencer. Attendance 57. *Chairman*: I. J. Ferguson-Lees.

14TH ANNUAL GENERAL MEETING, 23rd February, 1961, Bedford. Details as printed in last issue, No. 15, 1960, page 11.

151ST ORDINARY MEETING, 2nd March, 1961, Luton. 'Flowers of the Dolomites' by Ted and Peggy Cunningham. Attendance 42. *Chairman*: Eric G. Meadows.

152ND ORDINARY MEETING, 16th March, 1961, Bedford. 'Nature Magazine' with Messrs F. G. R. Soper, B. B. West and K. E. West forming the panel. Attendance 37. *Chairman*: F. G. R. Soper.

153RD ORDINARY MEETING, 23rd March, 1961, Luton. 'Nature Magazine' (second edition). The films 'Winter Quarters' and 'The Naturalist in London's County' were shown by R. G. O. Stephenson, together with slides of the Lascaux Caves and their pre-historic paintings. Attendance 43. *Chairman*: E. G. Meadows.

154TH ORDINARY MEETING, 12th October, 1961, Bedford. 'Toadstools' by Dr Large. Attendance 47. *Chairman*: F. G. R. Soper.

155TH ORDINARY MEETING, 19th October, 1961, Luton. 'British Mammals and their Predators' by J. Lingard. Attendance 51. *Chairman*: E. G. Meadows.

156TH ORDINARY MEETING, 9th November, 1961, Luton. 'Nature Reserves of Texel and Naardemeer' by Ted and Peggy Cunningham. Attendance 57. *Chairman*: E. G. Meadows.

15TH ANNIVERSARY DINNER, Friday, 10th November, 1961, De Parys Hotel, Bedford. Attendance 79 members together with the following guests: Mr P. G. Laws (County Planning Officer and Chairman of the Beds. and Hunts. Naturalists' Trust) and Mrs Laws, Mr H. A. S. Key (retiring Hon. General Secretary of the Society) and Mrs Key, Miss Kerr and Miss Proctor (Bedford Training College), Mr Philip Brown (R.S.P.B.) and Mrs Brown, and Mr P. J. Conder (R.S.P.B.); Mrs Conder was unable to be present. The speakers were Messrs P. G. Laws, P. E. Brown, and F. G. R. Soper. A film was subsequently shown by Dr G. A. Metcalfe of his travels in North Italy and Austria.

157TH ORDINARY MEETING, 16th November, 1961, Bedford. 'Sea-birds and Norse Isles' by E. G. Meadows. Attendance 63. *Chairman*: R. G. O. Stephenson.

158TH ORDINARY MEETING, 30th November, 1961, Luton. 'A Scientist in Ghana' by Dr C. G. Johnson. Attendance ... *Chairman*: L. A. Speed.

159TH ORDINARY MEETING, 7th December, 1961, Bedford. 'Summer Medley', a collection of colour slides taken by various members during the year, W. Champkin, Dr Jeffreys, E. Lamb, and E. G. Meadows. Attendance 53. *Chairman*: F. G. R. Soper.

160TH ORDINARY MEETING, 14th December, 1961, Luton. 'Plant and Insect Control' by E. Lamb. Attendance 14. *Chairman*: E. G. Meadows.

Field Meetings

SUNDAY, 15TH JANUARY, 1961. SOUTHILL PARK AND THE SURROUNDING WOODLANDS. *Leader*: M. D. Wortley. Only eight members attended. The main object of the meeting was to study the various waterfowl on the lake and woodland species. The walk round the lake and in the surrounding woodland in the morning proved very interesting. Nuthatch were both heard and seen on numerous occasions during the day, as well as the Tree Creeper. The highlight of the morning was a flock of forty to fifty Siskins feeding on the seeds of Alder trees in company with fifteen to twenty Lesser Redpoll. After a certain amount of manoeuvring, a good view was obtained of the Siskin during a brief spell of sunshine. Kingfisher was observed in flight on two occasions during the morning. The number of winter Duck present on the lake was rather disappointing, there being only small flocks of Tufted Duck, Pochard, and Teal. The usual woodland birds were identified on the walk back through the woods—Long-tailed Tit, Marsh Tit, Coal Tit, Goldcrest, etc. After lunch in the cars, a brief walk was made around the adjoining woodland; the most interesting observation was of a male Hawfinch in flight. This made the day complete, and members dispersed in the fading light after a very pleasant excursion.

SUNDAY, 19TH FEBRUARY, 1961. SCOLT HEAD ISLAND NATURE RESERVE. *Leader*: M. D. Wortley. Fourteen members visited the Nature Conservancy Reserve at Scolt Head, Norfolk, in perfect February weather. The Warden, Mr Chestney, met us at Burnham Deepdale, having kindly agreed to take us round. A reasonable view of a male Velvet Scoter was obtained as it took off from the water showing its prominent white wing-bars; this was the rarity of the day. After lunch, the party moved off, soon flushing twelve or more Short-eared Owls at one time on approaching the top of a ridge. A stroll along the shore produced a number of interesting dead birds, including Guillemot, Brent Goose, and Greater Black-backed Gull. The odd Sanderling was also seen scurrying along the shore. Large flocks of Knot rose up like wisps of smoke, funnelling back down again. A marvellous atmosphere was created by the musical trilling notes of the Oyster-Catchers and the murmuring of the Brent Geese feeding on the mud-flats. Two small flocks of Snow Bunting were noted feeding on the tidewrack in the course of the afternoon. On the way back across the mud flats the dark-breasted Brent Geese allowed close approach as they fed, and afforded excellent views, both on the ground and in flight. The following species were identified during the day: Wigeon, Goldeneye, Ringed Plover, Grey Plover, Turnstone, Curlew, Bar-Tailed Godwit, Redshank, Dunlin, Stonechat and Rock Pipit.

SUNDAY, 9TH APRIL, 1961. BARTON HILLS. *Leader*: E. G. Meadows. This first meeting of the 1961 summer programme was well supported, especially as the weather was cloudy and misty, with a threat of rain. The main object of the meeting was to find the Pasque Flower (*Anemone pulsatilla*) in its principal habitat in the county. About a dozen flowers were found, principally on the rounded tops that have only the merest covering of soil above the chalk. Other flowers found included deep-

coloured Hairy Violets, first flowers of the Cowslip, White and Yellow Dead-nettles, and Arum ; the heads of flower-buds on the Wayfaring Tree were also seen.

Mist and damp easterly wind spoiled the view from the hills, but the hill and valley formation could be studied, and the springs at the head of the valley were of interest. Due to the excessive rainfall of the previous summer and autumn, the water-table in the chalk was high and the flow was plentiful.

SUNDAY, 16TH APRIL, 1961. LEAGRAVE MARSH. *Leader* : M. D. Wortley. Eight people attended this meeting with a 7 a.m. start for the identification of commoner birds by song, the early morning being perfect, with brilliant sunshine. A majority of the common species were identified by their song, including Reed Bunting, Whitethroat, Corn Bunting, Great Spotted Woodpecker, and many others.

SUNDAY, 23RD APRIL, 1961. TOTTERNHOE QUARRIES. *Leader* : P. Evans, M.A., F.G.S. This meeting was arranged for the study of the geology of the Chalk and began at the west end of Sewell and thence into the disused chalk-pit on the north side of Maiden Bower, where the ditch of the Iron Age camp can be seen in section at the top of the cliffs. Each member received a tabulated list showing the layers and archaeological periods in time sequence. In this pit in the Lower Chalk Mr Evans pointed out several faults in the cliffs and the position of the Belemnite Layer near the top, varying in thickness from about $\frac{1}{2}$ " to 6". Many members clambered up the slopes to examine the layer and the faults more closely.

The leader then moved further west to the entrance of a tunnel where the Totternhoe Stone layer at the bottom of the Lower Chalk was seen, and where several blocks of the stone were found lying about where they had been left after shaping.

Finally, from a viewpoint, Mr Evans pointed out the Upper Chalk of Dunstable Downs, the thinner Middle Chalk at the foot, and the Gault below the Lower Chalk forming the undulating plain to the north and the low ridge at Tilsforth.

SUNDAY, 30TH APRIL, 1961. FLITWICK MOOR. *Leader* : R. G. O. Stephenson. This was the annual 'Dawn Chorus' meeting. A nightingale in full song was heard for an hour and a half when eleven members groped through the thick fog at 3.30 a.m. A Sedge Warbler was singing in the darkness, and the other birds gradually began to join in, but the 'Dawn Chorus' was not fully under way until about 4.50, thirty minutes later than expected, probably due to the thick fog blanket delaying the first faint light of dawn.

MONDAY, 21ST MAY, 1961. CASTOR HANGLANDS. *Leader* : K. E. West. Twenty-five people attended this meeting ; the day was fine and dry. The usual limestone flowers were found at the entrance, but the Man Orchid was unaccountably absent, although, later, when the party reached Barnack, hundreds were found. At Castor, the Chequered Skipper butterfly was seen, as were eggs of the Duke of Burgundy Fritillary. Red Damsel Fly was seen at the ponds. Purple Milk Vetch, in quantity, and Deadly Nightshade were found. At Barnack, in addition to Man Orchid, Ploughman's Spikenard in bud, an unusual orange form of Rock Rose, and a late-flowering Pasque Flower were found.

SUNDAY, 25TH MAY, 1961. CHARLE WOOD. *Leader* : M. D. Wortley. Only five people attended this evening meeting at Charle Wood. This is a superb area of pine and deciduous trees, and as such is an ideal habitat for some of our rarer breeding species, the main point of interest being a pair of Redstarts carrying food and allowing close approach. The nest was soon found with four or five young in an old tree stump. A pair of

Wood Warbler was heard in song but unfortunately not seen. Woodcock gave us an excellent display in 'roding' as they flew across the open glade.

SUNDAY, 4TH JUNE, 1961. SOUTHILL PARK AND SURROUNDING WOODLAND. *Leader*: M. D. Wortley. Eighteen members attended this meeting. The day was warm, with no wind, becoming sunnier later on in the afternoon. The party strolled round the lake, which was very low, with mud showing all round the edges. A number of adult and immature herons were seen fishing and preening in the shallows. The usual woodland species were noted on the way round. After tea, a brief visit was made to Keeper's Warren. A variety of interesting trees were identified, some of which were fine specimens. An excellent view was had of a pair of Green Woodpeckers, and a Great Spotted Woodpecker in flight.

SUNDAY, 11TH JUNE, 1961. CHINNOR. *Leader*: K. E. West. Seventeen people attended. The length of the west-facing slope was walked, and much of the typical chalk flora was seen. Owing to the cloudy weather, insects were scarce. The White Helleborine was found in considerable quantities in the beech-woods, as well as Deadly Nightshade and Bird's Nest Orchid, of which some very fine specimens were noted.

SATURDAY, 17TH JUNE, 1961. FOLLY WOOD, FLITWICK. *Leader*: B. B. West. Attendance 21. The weather conditions were very good for moth sugaring, warm and overcast. Over thirty species were taken, the most outstanding being Elephant Hawks, which breed in quantity on the willow-herb of the Moor. Bird's Wing, Iron Prominent, Marbled Crescent, and Grey Arches were some of the more interesting species seen.

SUNDAY, 9TH JULY, 1961. DERBYSHIRE. *Leader*: W. Durant. A party of thirty-six visited Derbyshire by coach. The Lathkill Dale was worked instead of the Manifold Valley, the party walking from the head of the Dale to Alport, with a proportion getting completely lost on the way by turning at right angles at Over Haddon where, at least, they obtained a cup of tea! At the head of the valley the Shining Cranesbill (*Geranium lucidum*) was an outstanding feature, and further down, on stabilised scree, a magnificent display of Jacob's Ladder (*Polemonium coeruleum*), just past its best. In the centre of the Dale the Maiden Pink (*Dianthus deltoides*) was found in profusion, but a search for the Red Helleborine was unsuccessful. The Monkey Flower (*Mimulus guttatus*) was plentiful in the streams in the lower part of the Dale.

SUNDAY, 20TH AUGUST, 1961. WELDON, NORTHANTS. *Leaders*: K. E. and B. B. West. The head quarryman took a party of fifteen round the site which was a happy combination of geology and botany. The limestone flora is rich in species which would otherwise be obliterated by ploughing, and many were seen. Geologically, our guide was able to explain much about the fine stone still quarried here, and about quarry methods in general. He showed us several specimens, in particular, some fine Sea Urchins from the fossil bed. Later, we were taken round the village, built entirely from the local stone.

SUNDAY, 3RD SEPTEMBER, 1961. NORFOLK BROADS. *Leader*: B. B. West. A party of forty-two members started from Wroxham, on the north-western limit of the Broad, and finished at the Ferry Boat Inn, Hickling Broad. Heavy use of the water by the public, and the necessity of keeping to a deep channel, did not allow for much study of bird life, and, unfortunately, recent rain had rendered the marsh to the rear of the inn impassable; however, the party spent an enjoyable day, and later went to the coast, where the typical marine flora was present, although past its best, due to the lateness of the season.

SUNDAY, 12TH NOVEMBER, 1961. SLIMBRIDGE. *Leader*: M. D. Wortley. Thirty-four members visited the Severn Wildfowl Trust at Slimbridge,

passing through Bibury, Cirencester, Stroud and other interesting Cotswold country *en route*. After lunch, while awaiting the guide, members strolled round various pens containing birds from all parts of the world, including such rarities as the Trumpeter Swan, Ross's Snow Goose, Hawaiian Goose, etc. Later, excellent views were obtained from various hides of White-fronted Geese and Pink-footed Geese, as well as over two thousand Wigeon feeding, although numbers were rather below average for the time of year.

SUNDAY, 10TH DECEMBER, 1961. WOBURN PARK. *Leader*: E. G. Meadows. Seventeen members started off from Woburn Church at 10.45 a.m. over the bridge at the end of the lake, where sailing was just starting, and into the 'Evergreens', an area with many kinds of conifers, rhododendrons, and other shrubs. Amherst Pheasants were seen in this area. There were large herds of deer, mainly Fallow, in the open grassy spaces in the middle of the park. At the north end American and European Bison were seen at close quarters. On the return journey Emus and Cranes were seen near Star Lodge. After lunch, the party, reduced to only five, set off to the south end of the park. Here there were much better views of the deer, particularly large herds of thirty to sixty Père David's Deer, while single specimens were seen of Roe Deer and Chinese Water Deer. Several Grey Squirrels were sighted, as well as one clearly-seen black one.

The Fungus Foray

Once again we were fortunate in having a bright sunny day for the fungus foray which was held at Studham on October 8th with 35 people in attendance and with Mr D. A. Reid acting as leader.

The morning was spent searching local woods without much success and as a result it was decided to visit Deadmansea Wood after lunch. The latter stretch of woodland once more lived up to its reputation of being a very productive mycological area. Unfortunately this happy state of affairs may not last much longer since the Forestry Commission have replanted a sizeable area with young conifers, and this is bound to have an adverse effect on the fungus flora.

There were very few rarities collected on this foray, and only one species merits special mention and that is *Lactarius mairei*. This fungus was described from oak woods in North Africa in 1939 and until A. A. Pearson collected a form of this species in Sussex in 1948 it was only known from Morocco. Pearson named his fungus *Lactarius mairei* var. *zonatus* but whether this variety is worthy of recognition or not remains an open question. The fungus which we collected seems to agree more closely with the description of *Lactarius mairei* as originally described rather than with Pearson's variety. The fungus itself, which was also growing in the vicinity of oak trees, closely resembles *Lactarius torminosus* but differs from this species in its much browner pileus.

Other fungi attracting attention were some fine specimens of *Amanita muscaria* and a number of small brightly coloured Discomycetes.

The total number of species collected was 141 of which 15 are new records for the county and two confirm old existing records.

Amanita citrina (Schaeff.) Roques; *A. muscaria* (Linn.) Fr.; *A. phalloides* (Vaill.) Fr.; *A. rubescens* (Pers.) Fr.; *Amanitopsis fulva* (Grev.) Rea; *Armillaria mellea* (Vahl.) Fr.; *Bolbitius vitellinus* (Pers.) Fr.; *Clitocybe infundibuliformis* (Schaeff.) Fr.; *C. odora* (Bull.) Fr.; †*Clitopilus cretatus* B. & Br.; *C. prunulus* (Scop.) Fr.; *Collybia ambusta* Fr.; *C. dryophila* (Bull.) Fr.; *C. fusipes* (Bull.) Berk.; *C. maculata* (A. & S.) Fr.; *C. platyphylla* (Pers.) Fr.; *C. radicata* (Rehl) Berk.; *Coprinus atramentarius* (Bull.) Fr.;

**C. hiascens* (Fr.) Quél.; *C. plicatilis* (Curt. ex Fr.) Fr.; *Cortinarius hemitrichus* (Pers.) Fr.; *C. paleaceus* Fr.; *Craterellus cornucopiodes* (Linn.) Fr.; *Crepidotus mollis* (Schaeff.) Fr.; **Entoloma rhodopolium* (Fr.) Kummer; *Flammula carbonaria* Fr.; *Galera hypnorum* (Batsch) Fr.; *Hebeloma crustuliniforme* (Bull.) Fr.; *H. saccharioides* Quél.; *H. sinapizans* (Paul.) Fr.; *Hypholoma fasciculare* (Huds.) Fr.; *H. hydrophilum* (Bull.) Fr.; *H. velutinum* (Pers.) Fr.; *Inocybe asterospora* Quél.; *I. geophylla* var. *lilacina* Fr.; *I. maculata* Boud.; *Laccaria amethystina* (Vaill.) Cke.; *L. laccata* (Scop.) Cke.; *L. proxima* Boud.; *Lactarius blennius* Fr.; **L. circellatus* Fr.; *L. glycosmus* Fr.; **L. mairei* Malençon; *L. mitissimus* Fr.; *L. pyrogalus* (Bull.) Fr.; *L. quietus* Fr.; *L. subdulcis* (Pers.) Fr.; *L. tabidus* Fr.; *L. torminosus* Fr.; *L. turpis* Fr.; *Lepiota procera* (Scop.) Fr.; **L. subalba* Kühn. ex P. D. Orton; *Marasmius ramealis* (Bull.) Fr.; *M. rotula* (Scop.) Fr.; *Mycena aetides* Fr. (M. *ammoniaci* sensu J. Lange); *M. epipterygia* (Scop.) Fr.; *M. galericulata* (Scop.) Fr.; *M. galopus* (Pers.) Fr.; *M. leucogala* (Cooke) Sacc.; *M. pura* (Pers.) Fr.; *M. sanguinolenta* A. & S.) Fr.; **M. tenerima* (Berk.) Sacc.; **Nolanea farinolens* P. D. Orton; *Omphalia fibula* (Bull.) Fr.; *Panus stipticus* Karst.; *Paxillus involutus* (Batsch) Fr.; **Pholiota gummosa* (Lasch) Sing.; *Pluteus cervinus* (Schaeff.) Fr.; *Psathyrella disseminata* (Pers.) Fr.; *P. gracilis* Fr.; **P. squamosa* (Karst.) Moser; **P. tephrophylla* Rom.; *Psilocybe foenicicii* (Pers.) Fr.; *P. semi-lanceata* Fr.; *Russula cyanoxantha* (Schaeff.) Fr.; *R. fellea* Fr.; *R. foetens* Fr.; *R. nigricans* Fr.; *R. ochroleuca* Fr.; *R. xerampelina* Fr.; *Schizophyllum commune* Fr.; *Stropharia aeruginosa* (Curtis) Fr.; *S. semi-globata* (Batsch) Fr.; *Tricholoma aggregatum* (Schaeff.) Secr.; *T. fulvum* Fr.; **T. lascivum* (Fr.) Gillet; *T. melaleucum* (Pers.) Fr.; *Tubaria conspersa* (Pers. ex Fr.) Fayod;

Boletus chryserteron (Bull.) Fr.; *B. edulis* (Bull.) Fr.; *B. piperatus* (L.) Fr.; *B. scaber* (Bull.) Krombh.; *B. subtomentosus* (Schaeff.) Fr.;

Daedalea quercina (L.) Fr.; *Lenzites betulinus* (L.) Fr.; *Polyporus adustus* (Willd.) Fr.; *P. betulinus* (Bull.) Fr.; *P. fragilis* Fr.; *P. semipileatus* Peck; *Polystictus versicolor* (L.) Sacc.; *Poria versipora* (Pers.) Baxter; *Trametes gibbosa* (Pers.) Fr.;

**Grandinia farinacea* (Pers. ex Fr.) Bourd. & Galz.; *Radulum orbiculare* Fr.;

Clavaria cinerea (Bull.) Fr.; *C. cristata* (Holmsk.) Fr.; *C. inaequalis* (Müller) Quél.;

Corticium confine Bourd. & Galz.; *C. laeve* (Pers.) Quél.; *C. sambuci* (Pers.) Fr.; *Merulius tremellosus* (Schrad.) Fr.; *Pellicularia subcoronata* (V. Höhn. & Litsch.) Rogers; *Stereum hirsutum* (Willd.) Fr.; *S. purpureum* (Pers.) Fr.; *S. sulphuratum* Berk. & Rav.; *Vuilleminia comedens* (Nees ex Fr.) R. Maire;

Lycoperdon nigrescens Pers.; *L. pyriforme* (Schaeff.) Pers.; *Phallus impudicus* (L.) Pers.; *Scleroderma verrucosum* (Vaill.) Pers.; *Sphaerobolus stellatus* Pers.;

Calocera cornea (Batsch) Fr.;

**Exidia nucleata* (Schw.) Burt.;

Melampsorium betulinum Kleb.; *Puccinia lemonnieriana* Maire (P. *cirsii-palustris*); *P. menthae* Pers. II & III on *Mentha arvensis*; *Pucciniastrum epilobii* Otth.; *Uromyces ramicis* Wint. II; **U. trifolii* (DC.) Lév.;

Coryne sarcoides (Jacq. ex Fr.) Boud.; *Galactinia badia* (Pers. ex Fr.) Boud.; *Helvella crispa* Scop. ex Fr.; **Melastiza chateri* (W. G. Sm.) Boud.; *Peziza aurantia* Pers. ex Fr.;

Claviceps purpurea (Fr.) Tul.; *Erysiphe cichoracearum* DC.; †*Hypoxylon coccineum* Bull.; *Sphaerotheca pannosa* (Wallr.) Lév.; *Xylaria hypoxylon* (L. ex Fr.) Grev.;

Sepedonium chrysospermum Fr.;

Lycogala epidendrum Fr.

* New county record.

† A confirmation of existing records.

DEREK A. REID.

Ornithological Section

This year has seen the introduction of the long-awaited card index system for recorders, which enables us to file all observation in Wetmore order, and this, in turn, makes the onerous task of collating records for the 'Bulletin' easier. The Bird Bulletin has now been in existence three years, with over eighty subscribers. In view of this, the Council felt that it could and should become self-supporting as from January 1st, 1961, with a subscription of 3/- annually to cover the printing and postage costs of the four quarterly issues.

A new venture was launched in January when the first of three visits to a bird observatory took place at Gibraltar Point, which is situated at the northernmost point of the Wash in Lincolnshire. This was followed by two visits to Dungeness Bird Observatory in Kent during May and October, to coincide with the Spring and Autumn migration periods.

The section had two very successful field meetings in January at Southill Park. A rewarding day was also had at Scott Head Island in Norfolk during February.

During the summer months two field meetings of an ornithological nature were arranged; to Charle Wood, in the evening, with Woodcock observed 'roding', followed by a visit in June to Southill Park. A coach trip was also organized to the Severn Wildfowl Trust, Slimbridge, in November.

Indoor meetings during the Autumn, of interest mainly to the Ornithologist, included the 'Nature Reserves of Texel and Naardemeer' by Ted and Peggy Cunningham, with excellent slides and taped commentary.

Several members have helped in surveys organized by the British Trust for Ornithology. These surveys will be repeated in the coming year, and new ones started, so that assistance from interested members will be most welcome.

I would also like to take this opportunity to thank the editorial committee (H. A. S. Key, I. J. Ferguson-Lees and R. G. O. Stephenson) and all members for their active support to the section over the past year; without this, all that has been achieved would not have been possible.

MICHAEL D. WORTLEY.

OBSERVATORY WEEKENDS

It has long been felt that members of the Society interested in ornithology would support weekend expeditions to various observatories within reasonable reach of Bedfordshire, the main object being to study the various species present at the localities visited, and to see the many functions of work carried out in the day-to-day life of an observatory, as well as trapping and ringing whenever facilities and conditions allowed. It was also felt that the experience gained on these weekends would assist in the training of anyone wishing to become a qualified ringer and help the formation of a mist-netting team to operate in Bedfordshire in the near future.

The following accounts are of visits made to Gibraltar Point and Dungeness:

GIBRALTAR POINT, LINCOLNSHIRE. 27th-29th January.

Nine members made this journey up to Gibraltar Point under adverse weather conditions. The weather was predominantly windy, with long periods of rain on the Saturday, increasing in force on the Sunday to keep the rain off.

All Saturday was spent in the immediate vicinity of the observatory, the following species being identified during the day: Wigeon, Goldeneye, Dark-breasted Brent Goose, Curlew, Bar-tailed Godwit, Knot, Dunlin, Hooded Crow, and Snow Bunting.

On Sunday all the party had excellent views of thirty Brent Geese feeding on the mud flats at close range. A visit was made to Wrangle mud flats later on in the morning, the only point of interest being the large numbers of Brent Geese feeding, estimated at somewhere in the region of three hundred birds.

DUNGENESS BIRD OBSERVATORY, KENT. 5th-7th May.

The movement of Passerines was disappointing over the weekend, and resulted in little ringing being done, with just a trickle of Whinchat, Redstart, Sedge Warbler, and Common Whitethroat passing through.

A visit to the Wicks and Midrips was made on both days with the following species observed: Whimbrel 35-40, Bar-tailed Godwit 6, Dunlin 60+, and the odd Ringed Plover, Oystercatcher, Curlew. After a further visit to the Wicks and Midrips on Sunday morning the party spent the remainder of the morning and early afternoon in a area of woodland inland. The weather was fair most of the weekend, with bright periods, and showers at night.

DUNGENESS BIRD OBSERVATORY, KENT. 13th-15th October.

Very little Autumn migration movement during the weekend and, again, little ringing was done. The weather was excellent, with a light ESE wind and a clear sky on both days after the clearance of early morning mist.

A sea watch was made in the mid-morning and included Wigeon, Sandwich Tern, Guillemot close inshore, and a single Great Skua. Still virtually no movement in the trapping area at the observatory, so down the coast to Pett Level in the afternoon. The only notable records here were three Red-throated Diver offshore and a single badly oiled Guillemot.

A strong nocturnal movement of Redwing was observed on both nights.

Sunday brought in hardly anything new except two Black Redstart and a Goldcrest, the latter being caught and ringed.

The two sea watches, one in the morning and one in the afternoon proved disappointing, with only nine Common Scoters noted flying NNE offshore.

Annual General Meeting 1962

The 15th Annual General Meeting was held in the Guild House, Harpur Street, Bedford, on Thursday, 22nd February, 1962. Mr F. G. R. Soper was in the Chair and fifty-three members were present.

The Minutes of the 14th Annual General Meeting were read and adopted. The Hon. General Secretary, Mr K. E. West, then gave the Report of the Council which showed an increase of membership to 334.

This, however, was a small total after fifteen years of existence, and an appeal was made for members to alter this state of affairs. Reference was made to the death of Mr Bonnett, the Society's first Treasurer and a founder member. A welcome was extended to the Royal Society for the Protection of Birds which had now set up its headquarters in the county. The Report was unanimously adopted.

The Hon. Treasurer, Mr J. M. Dymond, gave a very satisfactory report but pointed out that two Journals would have to be paid for. He spoke of the general increase in expenses which continued to cause anxiety. Both he and the Hon. Auditor, Mr E. Lucas, were thanked for their services.

Mr A. W. Guppy as Hon. Editor reported on the belated issue of the 15th Journal which contained the Bird Reports for both 1959 and 1960. He again criticised the reluctance of members to produce material for publication, and stated that he had so far received not a single contribution for the next issue.

The Ornithological Secretary, Mr M. D. Wortley, reported a successful year, particularly referring to the Bird Bulletin and its compilation. He thanked all his contributors and his colleagues, Messrs Ferguson-Lees and Stephenson.

There was no report from the Botanical Secretary, Mr W. Durant, who was himself absent; the Hon. Secretary explained that the Section had not been doing independent work but had taken its part in the general field meetings.

In the absence of the Hon. Programme Secretary, the Hon. General Secretary gave a rough draft of the field meetings for the coming summer.

The Chairman read a message from the President, Mr W. E. K. Piercy, then in Australia, who continues in office for a further year. The officers of the Society were then all re-elected for another term of office as follows:

Chairman: Mr F. G. R. Soper.
 Hon. General Secretary: Mr K. E. West.
 Hon. Treasurer: Mr J. M. Dymond.
 Hon. Editor: Mr A. W. Guppy.
 Hon. Programme Secretary: Mr L. A. Speed.
 Hon. Librarian: Miss G. M. Tattam.

The Council was then elected as follows:

Miss E. M. Day, Dr V. H. Chambers, Messrs W. Durant, I. J. Ferguson-Lees, Dr D. M. Jeffreys, and Messrs H. A. S. Key, E. Lamb, E. G. Meadows, S. W. Rodell, R. G. O. Stephenson, B. B. West and M. D. Wortley.

The election of our first President, Mr Oliver G. Pike, as an Honorary Life Member was unanimously approved.

After a prolonged delay, during which the absence of a projector was hurriedly but successfully remedied, Mr Hamilton of the R.S.P.B. showed three interesting and instructive films. The audience endorsed a vote of thanks to Mr Hamilton for his films and to the Bedford High School for the loan of a projector at short notice.

The Chiltern Research Committee

The Chiltern Research Committee is under the Chairmanship of Mr R. S. R. Fitter and is composed of members of the various Trusts, and Natural History Societies which have territories in, or bordering upon, the Chilterns; these are as follows:

Ashmolean Natural History Society of Oxfordshire.
 Bedfordshire and Huntingdonshire Naturalists' Trust.

Bedfordshire Natural History Society.
 Berkshire, Buckinghamshire and Oxfordshire Naturalists Trust.
 Buckinghamshire Archaeological Society, Natural History Section.
 Hertfordshire Natural History Society.
 Middle Thames Natural History Society.
 Oxford Ornithological Society.
 Reading Natural History Society.
 Reading Ornithological Club.

Its object is to co-ordinate any individual work that has been done by Societies and to organize such surveys as may be thought necessary to complete in detail a survey of the Chilterns as a whole. This will demand numerous detailed studies undertaken by qualified organizers and assisted by the various natural history societies concerned. The Bedfordshire Natural History Society has agreed to help in any way that it can, but it cannot undertake work outside its own county since it is felt that so little of the Chilterns actually falls within Bedfordshire.

The Research Committee's only source of income is from contributions made by its ten constituent bodies.

Surveys in progress are as follows, the names being those of the organizers:

Woodlark and Wood Warbler (R. A. F. Gilmour).
 Nuthatch (A. G. Bowne).
 Reptiles and Amphibians (R. H. R. Taylor).
 Clifden Blue Butterfly and its food-plant, the Horseshoe Vetch (E. Taylor).
 Juniper (R. S. R. Fitter).
 Candytuft (*Iberis amara*) (Mrs V. Paul).
 Orchids (Mrs V. Paul).
 Tufted Vetch (*Vicia cracca*) (D. A. Jones).
 Temporary Geological Sections (Prof. H. L. Hawkins).

Other surveys under consideration are for the Muntjac Deer, fungi, and snails.

Hon. Chairman: R. S. R. Fitter.
 Hon. Secretary: A. G. Bowne, Flat 8, Southcote Parade, Reading, Berks.

The Bedfordshire Natural History Society and the Bedfordshire and Huntingdonshire Naturalists' Trust representatives are:

B. B. West, 39 Station Road, Willington.
 K. E. West, 37 Cardington Road, Bedford.

Reports of Recorders

BOTANY

I have received few records of note of plants found during the year in the county. Miss G. Elwell, in a thorough study of the 10-kilometre grid square including most of Dunstable, found *Crepis setosa* Haller f. in the town itself, Brooklime (*Samolus valerandi* L.) in a meadow at Fancott, thus establishing an interesting extension of its range, and finally, Tuberous Pea (*Lathyrus tuberosus* L.) well established near Kensworth, V.c.20 [Beds.]. This last species is already with us on the tunnel-top at Ampthill, but other reported stations have not been permanent. My own work in the county was again limited to the wool-advective season, and only a few species were added to the list.

During the year the full total of wool adventives in the county was accounted for in 'A Census List of Wool Aliens found in Britain, 1946-1960', compiled by J. E. Lousley (*Proceedings of the Botanical Society of the British Isles*, Vol. 4, Part 3). Of equal importance and of great scientific value is an account of 'The Village Elms of Bedfordshire' by R. H. Richens (*Forestry*, Vol. XXXIV, No. 2). This is the fifth in a series of studies of Elms made by Richens and earlier ones have dealt with the elms of Cambridgeshire, Hertfordshire, and Huntingdonshire. It is useful to have our elm population compared with those of our neighbouring counties.

J. G. DONY.

METEOROLOGY

After the exceptional heat and drought of 1959, and the heavy rains of 1960, the year 1961 was less extreme in most respects, although milder and drier than usual on the whole.

January was a variable month with some cold periods, particularly the third week, but became mild during the last four days, with an unusually heavy thunderstorm and hail on the 31st. This mild weather continued throughout February; the whole month was entirely free from air frosts—an almost unprecedented occurrence. March was also mild, and almost completely rainless. Exceptional temperatures of 67 and 68 deg. were reached on the 15th and 16th respectively.

April started with a week of particularly wet weather covering the Easter holiday and, in fact, there were only three completely rainless days during a month which is normally our driest. This wet spell continued until the 8th May, but, thereafter, cool dry conditions prevailed for the rest of the month, apart from the two days, 13th and 14th, when 74 deg. was reached. June was rather warm and dry; during the last four days temperatures rose rapidly to a climax on 30th June and 1st July. July was unusual for its almost complete absence of thunderstorms.

August was cool and wet for the first three weeks, but a remarkable period of fine warm weather was enjoyed from 29th August to 2nd September, with a peak temperature of 87 deg. on 29th. The early autumn continued mild for the time of year, a maximum temperature of 70 deg. being recorded as late as 10th October. Fogs at mid-month heralded a much cooler and rainy second half. November was mild and sunny for a few days at first, but the remainder of the month was dull, with rather wet second and fourth weeks.

December was by far the most unpleasant month of the year. Apart from a short warm spell from 9th to 13th the remainder was exceptionally cold, with dense persistent fog during the third week. Very cold easterly winds prevailed over Christmas, and they were followed by heavy freezing rain and snow on the final four days of the year. The snowfall of 30th-31st was the heaviest experienced since the blizzard of March, 1947, and about one-tenth of the whole year's precipitation fell on the last four days of December.

RAINFALL was everywhere below average by about 10% in the north of the county and about half that amount in the south. The exceptionally dry March has been mentioned, the thirty days from 1st to 29th inclusive comprising the longest dry period of the year. A shorter one, of twenty-two days, lasted from 9th to 30th May. The longest wet spell was from 16th to 27th October. The heaviest day's rain was on 12th June (0.83 inches), but this was closely approached by the rain and snow of 29th December.

SNOW occurred on five days, the falls from 28th to 31st December being exceptional for this part of the country.

RAINFALL FOR 1961

	Ampthill	Bedford	Bromham	Cardington	Eversholt	Kempston	Luton A	Luton B	Silsoe
January ...	2.02	1.76	1.47	1.87	2.38	1.85	2.84	2.86	1.82
February ...	2.10	1.75	1.70	1.79	2.34	1.83	2.67	2.59	2.24
March ...	0.04	0.05	0.02	0.07	0.14	0.06	0.40	0.40	0.12
April ...	2.16	2.18	2.27	2.16	2.58	2.38	3.09	3.26	1.97
May ...	0.63	0.64	0.53	0.65	0.75	0.53	0.67	0.56	0.73
June ...	1.24	1.43	1.16	1.18	1.20	1.26	1.69	1.46	0.99
July ...	1.44	1.42	1.42	1.00	1.54	1.31	1.61	1.23	0.95
August ...	3.11	2.07	1.28	2.36	2.07	2.38	1.86	1.77	1.67
September ...	1.95	1.78	1.56	1.73	2.41	1.87	2.52	2.46	2.22
October ...	2.75	2.46	1.98	2.61	3.02	2.45	2.49	2.79	2.44
November ...	1.71	1.80	1.48	1.55	1.95	1.38	1.94	2.01	1.57
December ...	3.62	3.55	3.25	3.10	3.26	3.57	3.91	3.75	3.34
Totals ...	22.77	20.89	18.12	20.07	23.64	20.87	25.69	25.14	20.06

Ampthill (Mr Horne)
 Bedford (Mr Lock)
 Bromham (the writer)
 Cardington Aerodrome (per Mr Speed)
 Eversholt (Col. Battcock)

Kempston (Mr Payne)
 Luton A (Crescent Road) (Mr Meadows)
 Luton B (Runley Wood) (Mr Meadows)
 Silsoe (N.I.A.E., Wrest Park) (per Mr Dunn)

THUNDER was heard on eight days only, and the year was unusually free from storms of any violence or duration.

TEMPERATURES exceeded 80 deg. on seven days, five of them at the end of June. The three hottest days were 30th June, 1st July, and 29th August—all with 87 deg.

The coldest day was 28th December, with a day maximum of 28 deg. while the previous night, with 15 deg., was the coldest of the year. There were actually no less than twenty night frosts in December, many of them severe. The latest spring frost was on 19th March; the earliest in autumn came on 28th October.

Averages were as follows:

January ...	38.42 deg. F.	July ...	61.05 deg. F.
February ...	44.50	August ...	61.87
March ...	45.90	September ...	60.17
April ...	50.96	October ...	52.10
May ...	53.82	November ...	43.88
June ...	62.76	December ...	35.60

Average for the whole year: 50.92 (49.45 in 1960).

The SUNSHINE figures from the N.I.A.E. at Silsoe are as follows:

January	1.41 hours average <i>per diem</i> .
February	2.52
March	5.40
April	2.80
May	6.98
June	7.65
July	5.71
August	5.43
September	4.37
October	4.15
November	2.03
December	2.38

The figures for May and June are well above the average, those for June by nearly one hour daily. On the other hand, April had only one-half its normal quota, and July, August, and September were all deficient by an appreciable margin.

A. W. GUPPY.

LEPIDOPTERA

Entomologically, 1961 was a moderately good season; in particular, the late summer emergence of butterflies, such as the Peacock and Small Tortoiseshell, was reasonably satisfactory, and there was quite a plentiful immigration of the Red Admiral. In July several immigrant Painted Ladies, *V. cardui* (Linn.), were seen in the county, particularly over the chalk hills in the south. At Willington, along Ball's Lane, there seemed to be a hawking flight pattern of a large number of the species; on one occasion more than ten specimens were seen. A second generation of this immigration was never seen, however, either as larvae or imagines.

The writer, his fiancée, father, and Mr E. C. Lamb spent a weekend in Inverness in early March in search of *Brachionycha nubeculosa* (Esp.), the Rannoch Sprawler, and the season began propitiously in that we were successful in taking the species in spite of snow and low temperatures. The Mercury Vapour Lamp was taken to various parts of the county throughout the summer, and several times to Salcey Forest in Northamptonshire, also to the Norfolk Broads. One memorable night was spent at Flitwick Moor on 30th June which was part of the Society's summer programme. After so many totally unsuccessful arrangements when the attendance of

members has been excellent, but that of moths lamentable, this was very rewarding. Several of the younger members of the Society were able to see species in quantities which they had never thought possible, in particular the Large Elephant Hawk, and the Iron Prominent, on this occasion.

We made several visits to our favourite site at Sandy Warren, and were, as usual, rewarded with the rich diversity of species from different habitats for which this site is noted. It was on one of these visits that numbering of trees was seen, and subsequent enquiries indicated that clear felling was intended by Economic Forestry Ltd. It is pleasant to be able to report that, after long negotiation, it has been possible for the Naturalists' Trust to purchase this delightful tract of country which is now administered as a Nature Reserve jointly by the Royal Society for the Protection of Birds and the Trust. The localised population of *Hylolius pinastri* (Linn.), the Pine Hawk, was more plentiful this season, eight being seen for example in one evening, and, again, the unusual form of *Dryomorpha trimacula* (Esp.), the Light Marbled Brown, with pure white tips to the wings.

At the Felmersham Nature Reserve, which in 1961 came under full control of the Naturalists' Trust, there was a remarkable infestation of the Reedmace (Bulrush) by the Bulrush Wainscot, *Nonagria typhae* (Thunb.). In one of the original field ponds of the downstream section, there was not a single plant which could reach maturity. All contained the typical central boring, with often two or more pupae, when the visit was made in June.

I have had some most interesting data from P. G. Kitchener of Bedford School who is carrying on the excellent tradition of detailed field work for which the School Natural History Society is becoming well known. He has carried out a lot of research on the use of the Mercury Vapour lamp and some of his findings are of interest. For example, on a warm night he notes that numbers of moths have increased very rapidly half an hour after midnight, and the 'rush hour', as he very accurately calls it, is from about 1 to 1.30, when numbers gradually died down, so that by 2.30 in the morning very few moths are flying. This, with little variation, has been our own experience. He finds that the most successful night is a warm one without rain, the next most successful a warm night with plenty of rain after a cool dry day, a cool night with rain being the most unrewarding. I would agree with all this, except that we have most success on a warm slightly drizzly night, preferably after, or with, thunder.

Probably the most interesting piece of work, a joint effort by Messrs. Reay, Marriott, Kitchener, Clifton, and Cutler, is a complete chart of species captured during the season, numbers present, locality, weather conditions, and daily total of individual species. If this could only be repeated each year, a valuable record pattern would be produced, but such is the school turnover that this is probably impossible.

The new edition of 'The Moths of the British Isles' appeared in 1961 with the whole of the coloured plates redrawn by H. D. Swain, F.R.E.S., who unfortunately never lived to see his work published. The plates alone make the edition more than welcome, but it is a pity that so much of the text remains unrevised, so that a false picture emerges which perpetuates the entomological situation of 50 years ago. New records are grafted on to the old text in a very arbitrary way at times, but species such as the Burren Green and the Clifden Nonpareil, which have been discovered to be native, are naturally given in detail which was impossible in the older editions. The maddening lack of cross reference between plates and text continues, and there may at times be ten pages between the illustration of a species and its description, which makes identification of a new species difficult.

The nomenclature is revised by W. H. T. Tams, F.R.E.S., and much of it differs radically from that of Heslop's on which my recording is based. At times even the English name has been changed, as, for example, with species 167 in the lists, in this case to something quite unwieldy. This is now becoming an impossible situation; I have indicated some of the changes for the sake of cross-reference but I shall continue to work to I. R. P. Heslop's classification.

New records for the county, it will be noted, are becoming less. We are finding that we must be somewhere near the maximum species for the localities we visit, and only the changing of our collecting sites is likely to add more to the lists. With the light in fixed positions, such as it has been at Cardington Road, we can tell in advance what will be present each part of the season; only sudden immigrations are likely to alter the picture.

Recorders: PJR—P. J. Reay, PGK—P. G. Kitchener, MJC—M. J. Clifton, KEW—K. E. West, BBW—B. B. West.

164. *Earias clorana* (Linn.), Cream-Bordered Green Pea: (M.V.) Bedford School grounds, and Bromham Road; Bedford, (PGK); Clapham (M.V.), (MJC); Sandy Warren, (M.V.), (BBW, KEW).

167. *Sarothripus revayana* (Scop.), *undulana* (Hüb.), Large Marbled Tortrix: I. R. P. Heslop.

Nycteola revayana (Scop.), Oak Nycteoline, W. H. T. Tams in the new 'South' (a dreadful example of the present confusion over names): Sandy, August, (M.V.), (KEW, BBW); Willington, in ivy, December, (BBW). This species flies from August to April and completes the representation of the Family *Westermanninae* in the county.

327. *Thalpophila matura* (Hufn.), Straw Underwing: London Road, Bedford, (M.V.), (PJR); Willington, in which parish this species appears to be very plentiful, September (BBW).

434. *Amphipyra tragopoginis* (Linn.), Mouse Wainscot: Bromham Road, Bedford, (M.V.), (PGK), 6 in September.

551. *Lygephila pastinum* (Treits.), Plain Blackneck: Galley Hill, Streatley, (BBW), a new locality for this species, of which three specimens were seen.

618. *Cosymbia punctaria* (Linn.), Maiden's Blush: Bedford School grounds, and Bromham Road, Bedford, (PGK).

628. *Chesias legatella* (Schiff.), (*spatiata* Fuessl.), Streaked Carpet: Sandy Warren, (M.V.), June, (KEW, BBW). A broom feeder which, with its cousin *Chesias rufata*, the Broom Tip, is confined to the southern-facing slopes of the Warren where the food plant abounds.

631. *Northopteryx carpinata* (Borkh.) Heslop.

Trichopteryx carpinata (Borkh.) Tams., Early Toothed-Stripe: Sandy Warren, (M.V.), June, (KEW, BBW). A birch and alder feeder which could be based either on the Sutton Fen area, or the Warren.

732. *Coenotephira derivata* (Schiff.), The Streamer: Sandy Warren, (M.V.), June, (KEW, BBW).

741. *Eupithecia irriguata* (Hüb.), Marbled Pug: Sandy Warren, (M.V.), June, (KEW, BBW).

851. *Biston strataria* (Hufn.), Oak Brindled Beauty: Willington, March, 1962, (BBW), a new locality for this species.

B. B. WEST.

ODONATA

Very little serious work was done on this subject this year owing to the indifferent weather conditions and by the fact that what time I had available was almost fully taken up by work in another direction.

I did not receive a single note, report, or observation from anyone, so this year's report must be purely a negative one, apart from the fact that when visiting many of the known habitats it was pleasing to observe that the various specimens were still to be found there, but new localities or specimens were not noted.

K. E. WEST.

BIRDS, 1961

The status and distribution of birds during the first three months remained normal in what was generally a mild winter. The only notable exception was the very large concentration of Common Snipe on the river meadows at Little Barford, with over 1,000 estimated on 18th January.

An unusually late date for an inland county was recorded for Great Grey Shrike with a single bird at Blue Waters Pit near Houghton Regis on 2nd April. April proved a very interesting month for waders with a wide variety of species and above average numbers recorded. A single adult Little Gull was noted at Stewartby Lake in winter plumage on 30th April.

The breeding population of Black-headed Gulls is not very clear; counts, however, were made at Brogborough Clay Pit, Chimney Corner and Stewartby Lake, the latter being the only locality where young reached flying stage.

The influx of Black Tern this year was much smaller than last, almost all the records being on 13th May with 40+ at Stewartby Lake. The county's first White-winged Black Tern was recorded at Stewartby Lake on 16th to 17th May which coincided with several records over the country as a whole.

The first and long overdue record of Collared Dove in the county, was reported from Stagsden on 9th August. This is rather surprising in view of the fact that birds breed as close as Hitchin in Hertfordshire.

The Autumn passage of waders produced a crop of interesting records for the county, including the Baird's and Sharp-tailed Sandpiper, both of which are new species to the Bedfordshire list. Another interesting aspect was the number of Greenshank, Wood Sandpiper and Ruff recorded at Bedford Sewage Farm, but this may be attributed to the fact that a greater area was flooded than usual in recent years, as a general passage of these species was not unusually large over the country as a whole.

Redwings and Fieldfares were both later than usual; normally the first flocks of Redwings appear before the end of September, but this year no real fall was recorded until 13th October, and a heavy south-west movement on the 22nd. Fieldfares were also little in evidence until 13th and 19th October, with further flocks of 200-300 recorded at Stewartby on 22nd.

The exceptionally cold weather in November and December had some very interesting effects on the bird distribution over the county. The Duck population, as a result of the gradual freeze-up, was almost completely absent by the last week in December from all stretches of standing water, especially the diving duck which spread themselves out over a wide area in the flooded Ouse valley, as this stayed comparatively free of ice. Some species such as Lapwing appeared to be absent from the Bedford area from 25th December until 8th January, 1962. The few records received in Bedfordshire of cold weather movements coincided with the general south-westerly movement noted in the southern counties during late December.

While gratefully acknowledging an increased number of reports, may we be permitted to draw attention to one annoying defect in drafting some of them? This defect is the omission, by some recorders, of sufficient details of diagnostic characters which would place the identity of the

species reported beyond doubt. This has resulted in the deletion of certain potentially interesting items by reason of these omissions.

It is most desirable that, where possible, anyone witnessing anything unusual should endeavour to share the experience with other reliable observers who can verify the occurrence. Finally, loose terms such as 'plentiful', 'sporadically', etc. should be avoided at all costs. This report is the outcome of co-operative effort, and attention to such details will result in both improved quality and value, to the mutual advantage of all concerned.

Observers' names are indicated in the text by the following initials:

GCA—G. C. Anderson.	ACM—A. C. Morriss.
BC—B. Cambell.	ICTN—I. C. T. Nisbett.
MJC—M. J. Clifton.	DAP—D. A. Purser.
HC—H. Cole.	PR—P. J. Reay.
NC—N. Craddock.	JCR—J. C. Richards.
JND—J. N. Dymond.	RAR—R. A. Richardson.
DWE—D. W. Ellis.	SWR—S. W. Rodell.
DEE—D. E. Elliott.	CSP—C. S. Payne.
IJFL—I. J. Ferguson-Lees.	DP—D. Peterkin.
DF—D. Franklin.	ANBS—A. N. B. Simpson.
FCG—F. C. Gribble.	EDS & CMS—
SJH—S. J. Haggie.	E. D. & C. M. Skinner.
FDH & KCH—	PS—P. Smith.
F. D. & K. C. Hamilton.	RKS—R. K. Smith.
BDH—B. D. Harding.	RGOS—R. G. O. Stephenson.
DH—D. Hasdell.	CFT—C. F. Tebbutt.
DAH—D. A. Holmes.	LPT—L. P. Tucker.
ARJ—A. R. Jenkins.	RVAW—R. V. A. Wagstaff.
HASK—H. A. S. Key.	DIMW—D. I. M. Wallace.
PGK—P. G. Kitchener.	KRW—K. R. Weedon.
AJL—A. J. Livett.	MDW—M. D. Wortley.
MJM—M. J. Marriott.	EMW & PJW—
CJM—C. J. Mead.	E. M. & P. J. Wilkinson.

Localities: SF—Sewage Farm, ChP—Chalk Pit, ClP—Clay Pit, GP—Gravel Pit, SP—Sand Pit, L—Lake.

Numbers refer to B.O.U. Check List.

The following species were also reported as having been observed in normal numbers and distribution:

84. Mute Swan ; 110. Kestrel ; 115. Red-legged Partridge ; 118. Pheasant ; 126. Moorhen ; 133. Lapwing ; 234. Wood Pigeon ; 241. Barn Owl ; 246. Little Owl ; 247. Tawny Owl ; 262. Green Woodpecker ; 263. Great Spotted Woodpecker ; 280. Carrion Crow ; 282. Rook ; 283. Jackdaw ; 284. Magpie ; 286. Jay ; 288. Great Tit ; 289. Blue Tit ; 290. Coal Tit ; 292. Marsh Tit ; 294. Long-tailed Tit ; 298. Tree Creeper ; 299. Wren ; 301. Mistle Thrush ; 308. Blackbird ; 325. Robin ; 364. Goldcrest ; 371. Hedge Sparrow ; 373. Meadow Pipit ; 380. Pied Wagtail ; 392. Greenfinch ; 393. Goldfinch ; 395. Linnet ; 401. Bullfinch ; 407. Chaffinch ; 409. Yellow Hammer ; 410. Corn Bunting ; 421. Reed Bunting ; 424. House Sparrow.

5. GREAT CRESTED GREBE: The coverage of this species has been better this year, especially during the breeding season, with reports of nesting from the following localities: Luton Hoo Lake—one pair and one young ; Millbrook ClP—one pair and four young ; Wyboston GP—one pair and one young. Birds were also present, but breeding not proved, at Stewartby L—eleven plus pairs noted on 7th June, and a maximum of c. 54 on 2nd July ; Eversholt L—one pair ; Barker's Lane GP—one pair ; Southill L—six plus pairs.

7. SLAVONIAN GREBE: Single bird identified at Stewartby L on 24th December, (MDW, AJL).
8. BLACK-NECKED GREBE: One bird in winter plumage, Barker's Lane GP, 4th September and 7th October, (JND, EMW, SJH, PGK).
9. LITTLE GREBE: Normal distribution. Largest party was c. 30 at Stewartby L on 5th December.
28. CORMORANT: Stewartby L, 1, 5th March, (JND); 1, 22nd, October, (JND, PJR); Southill L, 1, immature, 10th December, (HC); Stewartby L, 1, immature, 24th December, (AJL, MDW).
30. HERON: Occupied nests were recorded at Southill L, 14-16, and at Clapham, 4-5, (DH, MDW, MJC).
45. MALLARD: Maximum numbers as follows—Bedford SF/Barker's Lane GP, c. 150, 10th December, (PGK); Stewartby L, numbers built up from c. 420, 3rd January to 1,500 on 8th January decreasing to 1,400 on 16th, to rise up to c. 1,500, 22nd and falling off to c. 650 by 5th February, (MJM, PJR, JND, EMW, *et al.*). No real build up in numbers here during the latter end of the year, the peak dates being c. 500 on 24th September and c. 900, 29th October, (MJM, PJR, JND, EMW, *et al.*); Wyboston GP, c. 200, 1st January, (PJR); Southill L, c. 200+, 29th January, (JND).
46. TEAL: Maximum numbers as follows—Bedford SF/Barker's Lane GP, c. 80, 5th, 9th and 12 and 22nd January, c. 120, 12th February, an exceptionally large build up was recorded in the Autumn from c. 80, 5th November, c. 200, 12th to c. 450, 19th and 3rd December, (PGK, JND, PJR, MJM, *et al.*); Stewartby L, c. 74, 15th January, (PJR); Wyboston GP, c. 39, 17th December, (SJH); Southill L, c. 40, 2nd January and 15th October, (PJR, JND). Up to 7+ birds present at Bedford SF/Barker's Lane GP between 16th-24th July, (SJH, PJW, EMW).
47. GARGANEY: 3 pairs, Wyboston GP, 26th March, (PJR); 1 male, 28th, (PJW, EMW); 2 males, 2nd April, (JND); 1 male, 5th-14th April, (PJR, NC, JND, DH, *et al.*); 2 pairs, 28th April, (PJR); 1 male, 29th April and 2nd May, (EMW, PJW, SJH); 3, Barker's Lane GP, 21st July, (EMW, SJH); 8-10, Stanford GP, 8th September, (MDW).
49. GADWALL: 1 male, Wyboston GP, 17th January, (PJR, MJM); 1 male, 18th February, (SJH); 1 male, 26th March-10th April, (NC, JND, PJW, EMW, *et al.*); 1 male, 12th November, (PJW, EMW); 1 female, 17th December, (SJH, PGK); 1 female, Bedford SF, 22nd-26th April, (PJR, PGK, DH); 1 male, Barker's Lane GP, 22nd December, (PJR).
50. WIGEON: Small numbers reported from most of the usual waters in winter months; the largest parties were seen at Stewartby L—c. 162, 3rd January, and reaching a peak of c. 190 on 11th January, c. 150, 5th February, c. 80, 5th March and last reported c. 8, 19th March, (PJR, JND, MJM, NC, *et al.*). Present here also from 1st October with maximum c. 11, 17th November, (PJR, PGK); the numbers gradually built up during November and December at Bedford SF reaching a peak of c. 30-40 on 27th December, (PJR, JND, MJM, EMW).
52. PINTAIL: Stewartby L, 1 male, 8th January, (EMW); c. 14, 9th, (EMW); 1 female, 11th, (PJR); c. 8, 22nd, (PJR, MJM); 22-24, 5th February, (NC, JND, PJR); 1 male, 12th February, (SJH, PW, EMW, PJR); 1 male, 5th March, (PJW, EMW, NC); Wyboston GP, 2 pairs, 5th March, (SJH); 1 male, 12th March, (JND); Bedford SF, 1 female, 12th March, (PJW, EMW, JND).
53. SHOVELER: Stewartby L, present January-May, with a maximum of 8 on 11th January, (PJR, MJM, EMW, JND, *et al.*); Bedford SF/Barker's Lane GP, 2 pairs present, 8th-12th April, 1 pair, 13th-14th April, 1 male, 12th July, 1 female, 16th July, 2, 4th September, (EMW, PJR, SJH, DAP); Wyboston GP, 1 pair, 20th May, (ANBS); Stanford GP, 1 pair, 7th May, (ACM).

55. SCAUP: Wyboston GP, 1 male, 2nd-14th April, (JND, PJR, NC, MJM, *et al.*).
56. TUFTED DUCK: Maximum numbers as follows—Stewartby L, 40-50, 3rd January-12th April, with a peak of c. 70, 3rd March, (JND, MJM, PJR); c. 60-70, 16th-19th November, (PJK, JND); Bedford SF/Barker's Lane GP, c. 50, 14th-22nd January, (PJR); c. 24, 12th November, c. 36, 22nd December, (PJR); Wyboston GP, c. 40-50, 1st January-11th April, (JND, PJR); Southill L, c. 43-49, 29th January, (MJM); c. 50, 8th October, (JND). Only four breeding records this year with broods of young observed at Brogborough CIP, 5 young, (MDW); Stewartby L, 3 young, (MDW); Wyboston GP, 7 and 5 young, (FCG).
57. POCHARD: Stewartby L, 50-60, present during January, (PJR, JND, MJM); reaching a peak of c. 80, 5th February, (JND); c. 60, November-December, (PGK); Wyboston GP, c. 34, 1st January, (PJR); c. 83, 5th November, (PGK); Woburn Abbey L, c. 65-70, 10th December, (MDW); Southill L, c. 60, 29th January, (MJM); 120, 12th November, (PJR); only one breeding record at Luton Hoo L, 1-2, young, (MDW); birds present but breeding not proved, Brogborough CIP, Stewartby L, Elstow CIP, (DEE, MDW, RGOS).
60. GOLDENEYE: Stewartby L, 1 female, 16th January, 2, females, 17th, 1 female, 21st-28th January, (PJW, EMW); 1 female, 18th February, (PS); Barker's Lane GP, 1 immature, 22nd December, (PJR); Southill L, 2 males, 16th January, (MJM, PJR); Wyboston GP, 2 immatures, 1st January, (PJR); 1 female, 12th February, (JND).
64. COMMON SCOTER: Stewartby L, 1 adult female, 6th-12th April, (EMW, PJW, JND).
69. RED-BREADED MERGANSER: Stewartby L, 2 adult males, 9th April, (PJR, PJW, EMW).
70. GOOSANDER: Stewartby L, 3 females, 11th January, (PJR); 1 female, 12th February, (PJR, PJW, EMW); 1 pair, 23rd October, (PGK); Southill L, 1 adult male, 10th December, (HC).
71. SMEW: Stewartby L, 1 male, 8th January, (ACM).
73. SHELDUCK: Stewartby L, 2, 16th January, (PJR); Wyboston GP, 1, 5th, 12th March, (JND, SJH); Stanford GP, 1 female, 28th March, (JND, ACM).
- GREY GEESE: Biddenham, 14, 17th January, seen flying in a westerly direction, but conditions not favourable for specific identification, (PJW); Biddenham, 30-50, 5th February, observed in flight, (PJW); East Bedford, c. 20-25, 3rd March, heard calling and flying from nearth-east to south-west, (NC).
73. GREY LAG GOOSE: Brogborough CIP, 2, identified at close range on 30th April, (MDW).
85. WHOOPER SWAN: Wyboston GP, 3 adults, 8th September, (PGK).
86. BEWICK'S SWAN: Kempston, 7, 12th February, heard and seen flying south, (CSP).
91. BUZZARD: Deacon Hill, Pegsdon Hills, 1, 5th May, (AJL); Woburn Park, 1, 9th September, (BC).
93. SPARROW HAWK: Few reports of this species. Flitwick Moor, 1, 1st July, (KRW); Putnoe Wood, 1 male, mid August-15th October, (PGK, JCR, JND); People's Park, Luton, 1, 5th June, (RKS); Houghton Regis, 1, 5th December, (BDH); Bedford SF, 1, 3rd September, (JND).
104. HOBBY: Dunstable Downs, nr. Whipsnade, 1, 22nd July. This bird had been observed on more than one occasion at the same locality earlier on in the month, and possibility of breeding cannot be ruled out, (AJL).

120. WATER RAIL: Stratton School Farm, 1, 2nd October, picked up dead after flying into telegraph cables, (PS); Sandy, 1, 9th December, (FDH & KCH); River Ouse, nr. Bromham, 2, 25th December, (via CMS).
127. COOT: Maximum numbers as follows—Wyboston GP, 100+ during January, (PJR, MJM); 140, 8th October, (JND). No other counts received.
131. OYSTERCATCHER: Stewartby L, 1, 21st May, (ANBS); Barker's Lane GP, 1, 19th July, (PGK).
133. LAPWING: Maximum numbers recorded were—Bedford SF, 1,000, 17th December, (PGK). This species decreased in numbers during the freeze-up of November and December, being completely absent by 27th December.
134. RINGED PLOVER: An unusual number of this species has been reported this year with birds noted at the following localities: Stanford GP, 1, 15th-16th April, (JND, PJR); 2, 26th April, (PJR, SJH); 2, 3rd May, 1, 4th, 5, 5th, 3, 7th, 9, 9th, 1, 24th July, (ACM, ARJ); 1, 9th August, 1, 15th, 2, 16th, 3, 23rd, (ACM); Wyboston GP, 1, 7th April, (SJH); 1, 21st May, (SJH); 1, 19th September, (PGK); Bedford SF/Barker's Lane GP, 1, 15th April, (PJR, SJH); 2, 27th-28th May, (ANBS, SJH); 2, noted on 25th August and then in varying numbers, increasing to three on 4th September, followed by one to two being recorded at regular intervals up to 26th September, (JND, SJH, DAP, PGK, *et al.*).
135. LITTLE RINGED PLOVER: First record, Wyboston GP, 26th March, (PJW, EMW); present in breeding season at Stanford GP, 1 pair successfully bred with 2 young reaching flying stage, (MDW, ACM, CJM, SWR); Heath and Reach, 4+ at one pit with an extensive area suitable for breeding, adjacent pit nest and eggs destroyed before hatching, (CJM); autumn migrants noted at Wyboston GP, Bedford SF/Barker's Lane GP and Stewartby L, (PJR, SJH, JND, NC, *et al.*); single bird last seen on 1st October, (PGK, SJH, DAH, JND, *et al.*).
140. GOLDEN PLOVER: Maximum numbers—300+ near Cardington, 2nd January, (PJR); c. 200, Warden Hill, nr. Luton, 2nd April, (RVAW); parties of 50-150 during January-April and October-December at Warden Hill, nr. Luton, Stanford GP, Cardington, Wyboston GP, Bedford SF and Stewartby. Last spring record, Stanford GP, 2, 18th April, (ACM); first autumn record, Bedford SF, 1, 1st August, (EMW, SJH, DAP).
143. TURNSTONE: Bedford SF/Barker's Lane GP, 5-6, 7th-10th August, (PGK, SJH, DAP).
145. COMMON SNIBE: Largest concentration—Bedford SF, c. 500, 12th November, (JND).
147. JACK SNIBE: Present at Bedford SF until 4th April and from 29th October; with a maximum of 15 on 19th November, (JND, PGK, SJH, PJR, *et al.*). Only other records—1, Chimney Corner CIP, 11th March, (PJR, SJH); Wyboston GP, 1, 15th October, (PGK, SJH, DAP); East Hyde, 1, 25th December, (HC).
148. WOODCOCK: Only one report of breeding—nest with 4 eggs, Daintry and Washer's Wood, (DEE). Also recorded in breeding season at Flitwick Moor and Charle Wood, (RGOS, MDW, AJL).
150. CURLEW: Chimney Corner CIP, 2, 1st January, (MJM); Wyboston GP, 1, 5th April, (PJW, EMW); Stanford GP, 1, 11th April, (ACM); Stewartby L, single ones, 28th May, 9th July, 7th September, 5th November, (SJH, MDW, EMW, PGK); Bedford SF/Barker's Lane GP, 2, 23rd August, (SJH, DAP); 1, 12th November, (PJR); single birds also noted at Longholme L, 29th August, (DH), The Lodge, Sandy, 28th December, (PGK).
154. BLACK-TAILED GODWIT: Stanford GP, 1, 3rd March, (ACM); Bedford SF, 1, 3rd-5th September, in full summer plumage, (JND, PGK, SJH, DAP).

156. GREEN SANDPIPER: Bedford SF, seen in every month except May and June, (last spring record, 10th April; first autumn record, 1st July); up to 4 in January-April and October-December, up to 15 in July-September. Also reported from Stanford GP, Stewartby L, Wyboston GP and River Ivel, Sandy.

159. COMMON SANDPIPER: Spring passage—Barker's Lane GP, 1, 17th-24th April; Stewartby L, 1, 18th, 30th April; Stanford GP, 1, 10th April, 1, 26th to 28th; Wyboston GP, 2-3, 14th April, 1, 29th, (SJH, PJR, ACM, ARJ, *et al.*). Numerous autumn records at these and other localities during July-September. Last recorded at Bedford SF, 5th November, and at Tiddenfoot SP, Linslade, 24th December, (PGK, HC).

161. REDSHANK: Bedford SF, first record, 1, 1st January, (EMW); maximum, 15, 29th March, (PJR); 2 pairs breeding, last seen 8th October, (SJH, DAP). Also present during the breeding season at Kempston, Brogborough CIP, Heath and Reach, Willington GP.

162. SPOTTED REDSHANK: Stewartby L, 1, 31st August, (JND); Bedford SF, 1, 6th-7th September, (JND, PJW, EMW, SJH); 1, 18th September, (SJH, DAP).

165. GREENSHANK: Bedford SF/Barker's Lane GP, 3, 22nd-23rd July, (PJW, EMW, GCA); 1, 23rd-25th August, 4, 29th, (SJH, DAP); 2, 31st, (PJK); peak of 5, 4th September, 2, 5th-10th, 3, 11th, 4, 13th, 1-2 up to 24th September, 1, 27th December, wintering birds are very unusual in the county, (SJH, EMW, PJW, PGK, *et al.*); Wyboston GP, 1, 14th May, (SJH); 3, 16th, (PGK); 2, 24th, (ANBS); 1, 21st, (SJH); 1, 20th August, (FCG); 5, 8th September, 1, 14th-18th September, (PJW, EMW, JND, SJH); 1, 12th November, (PJW, EMW); Stewartby L, 1, 7th September, (EMW, PJW); Stanford GP, 1, 31st July-1st September, (ACM, MDW).

169. KNOT: Bedford SF, 1, in winter plumage, 19th November, (JND, PGK, PJR).

171. LITTLE STINT: Stanford GP, 1, 5th May, (LPT); Wyboston GP, 1, 9th-12th September, (ICTN, RAR).

174. BAIRD'S SANDPIPER: Wyboston GP, 1 identified by EMW on 13th September, and confirmed by IJFL on 15th as a young bird in first winter plumage; seen on numerous dates by several dozen observers up to 24th September. This is the first record for Bedfordshire.

177. SHARP-TAILED SANDPIPER: Bedford SF, 1, first seen on 4th September, (JND, PGK, EMW, SJH); subsequently identified on 9th by IJFL and DIMW as an adult in full, or almost full, summer plumage. The bird was last recorded on 11th September. This is the first record of this species in Bedfordshire.

178. DUNLIN: Spring passage—unusually heavy this year. Bedford SF, 1, 3rd-4th April, (PJR, JND); 1, 24th April, (PJR). Autumn passage, single birds, 23rd and 25th August, 3, 28th, 1-2, 29th August to 18th September, 3, 18th-19th, 1, 21st, 4, 24th, single birds, 29th and 1st October, (JND, PGK, SJH, DAP, *et al.*); 1, 12th November, (PGK); Wyboston GP, 2, 28th March, (PJW, EMW); single ones on 14th and 28th April, (JND, PJR, DH); 2, 7th May, (ANBS); single birds, 8th and 13th September, (EMW, JND); Stanford GP, spring passage—1, 5th April, (ACM); 2, 26th, (PJR); 1, 4th, (LPT); 4, 5th May, 1, 12th and 21st, (SJH, ACM); early return movement, 4, 4th July, 1, 12th, (ACM); Stewartby L 1, 19th November, (PJR, JND, PGK).

179. CURLEW SANDPIPER: Barker's Lane GP, 1 in summer plumage, 20th-21st July, (PGK, EMW, SJH).

181. SANDERLING: Stewartby L, 2, partial summer plumage, 21st May, (NC, PJR).

184. RUFF: Bedford SF, 5, 12th February, (MJM, SJH, PJR); 1 female, 31st March to 17th April, (PJW, EMW, DH, JND, *et al.*); Stanford GP, single ones on 19th March and 30th August, (ACM, AJL); Wyboston GP, 1, 14th-19th September, (SJH, NC, JND, PGK, *et al.*); autumn passage, Bedford SF, 1, male, (blackish ruff), 1st July, (SJH); 1 male, (white ruff), and 3 females, 24th-25th July, (SJH, PJW, EMW, PJR, *et al.*); 3 females, 26th, (EMW); 1 male and 3 females, 27th, 2, 29th, (SJH); single birds, 1st-8th August, increasing to 5, 23rd-28th, and decreasing 29th August-4th September, 5-6, 5th-15th September, 3 last seen on 18th, (JND, DAP, SJH, NC, *et al.*).

198. GREAT BLACK-BACKED GULL: Stewartby L, c. 20-30 roosted regularly January-February, (PJR, MJM, JND); Barker's Lane GP, 3, 22nd December, (PJR).

199. LESSER BLACK-BACKED GULL: Stewartby L, c. 15, 16th January, (PJR); 2, 21st May, 5, 28th, (PJR); c. 30, 3rd August, (HC); c. 160+, 31st, (JND); c. 500-600, roosting October-November, (JND, PGK); Barker's Lane GP, c. 250, 31st August, c. 500, 6th-13th September, c. 50, 22nd October, (PGK).

200. HERRING GULL: Stewartby L, c. 3,500, 16th January, (PJR, MJM); 400+, 31st August, c. 3,000, 19th November, (JND).

201. COMMON GULL: Stewartby L, c. 1,250-1,500, 16th January, (PJR, MJM); c. 700, roosting 19th November, (PJR); no spring build-up of numbers noted in the north of the county but a rise in numbers noted at Luton, c. 53, 6th April, c. 70+, 8th April, (MDW).

202. LITTLE GULL: Stewartby L, 1 adult in winter plumage, 30th April, (JND).

208. BLACK-HEADED GULL: Stewartby L, c. 2,500-3,250 at Gull Roost, 16th January, (MJM, PJR); 400+, 31st August, (JND); 3,000+, 29th October, (PGK); 6,000-7,000, 19th November, (JND, PJR). Owing to lack of coverage it is not possible to compile an accurate figure on the breeding population in the county this year. The following counts, however, were made—Stewartby L, remaining island, 12-14 pairs, the only locality where young appear to have reached flying stage; Chimney Corner CIP, 6-8 pairs attempted breeding; Brogborough CIP, 10+ pairs attempted breeding, (MDW).

211. KITTIWAKE: Stewartby L, single adult ones, 30th March, 2nd, 6th and 7th April, (JND, PJW, EMW, PJR); Barker's Lane GP, 1, immature, 23rd December, (SJH).

212. BLACK TERN: Stewartby L, 1, 11th May, increasing sharply to 40+, 13th, 4, 21st, 1, 22nd, 2, last observed 30th, (PJR, NC, SJH). The influx of Black Tern this year was much smaller than last year over the county as a whole, almost all the birds being concentrated in one day, 13th May; Stanford GP, 1, 17th May, (DEE, ACM).

213. WHITE-WINGED BLACK TERN: Stewartby L, 1 adult male in full summer plumage, 16th-17th May, with all the main characteristics noted, (PJR, JND, SJH). This is the first record of this species for Bedfordshire. Other White-winged Black Terns were identified over the country as a whole, in the period of eight days from the date of the Black Tern influx. 217/18. COMMON/ARCTIC TERN: Stewartby L, 1, 20th April, (SJH); single ones, 13th, 21st, 1, 22nd May, (NC, DAP, SJH, ANBS, *et al.*); 3, 19th August, (FCG); 3, 7th September, (EMW); 1, 5th November, exceptionally late date, (PGK).

235. TURTLÉ DOVE: First record—Wyboston GP, 2, 28th April, (PJR). Last record—3, 17th September at Bedford SF, (JND).

COLLARED DOVE: The first county report of a single bird at Stagsden on 9th August, (DWE, HASK).

237. CUCKOO: First reported, Maulden Wood, 18th April, (DEE). Last seen, Wyboston GP, 23rd September, (1 ad.), (PGK). One observer states "Never heard fewer in 50 years", (CSP).
246. LITTLE OWL: One, carrying dead juvenile starling, was knocked to the ground by one observer's car at Whipsnade on 2nd June. It flew off after the car had passed over it, to perch on an adjacent fence for several minutes, (SWR).
249. SHORT-EARED OWL: 1-4 present at Stewartby L area during winter to early spring and again occasionally in autumn, (ACM, SJH, JND, PJR, *et al.*).
252. NIGHTJAR: Very few records. It is hoped that this is due to incomplete coverage rather than a real reduction in numbers. Reported from near Southill Stn., Rowney Warren and Charle Wood, (ACM, PJR, MDW).
255. SWIFT: First reported "just north of Bedford", 12th April, an early date, (LPT). Small numbers up to end of April, not widespread until well into May. Last seen, Putnoe Lane, 31st August, (JND).
264. LESSER SPOTTED WOODPECKER: Only 3 reports, 2 from the Greensand and no reports of breeding, (DEE, JND, PS).
272. SKYLARK: An albino specimen was seen on the Beds.-Hunts. border on 15th October, (CFT).
274. SWALLOW: First arrival, Wyboston GP, 8th April, a normal date, (PJR), numbers building up until the last 10 days of April, when common. Two reports of late emigrants, Bromham and Bedford SF, 5th November, (EDS & CMS, SJH, EMW).
276. HOUSE MARTIN: First arrival, Felmersham, 26th March, (PJW), but only scattered records up until last week of April. A very late emigrant was seen at The Lodge, Sandy, on 27th November, (FDH).
277. SAND MARTIN: First reported, Felmersham, 26th March, (PJW), soon followed by strong movement about 5th-8th April. Last report, Sandy, 27th October, (KCH). Estimates were made of breeding colonies as follows—Shefford, 300-400 pairs, Sandy, 100-150 pairs, Heath and Reach, 5 colonies, less than 15 pairs, and 3 totalling c. 300 pairs, Leighton Buzzard, 1 colony of c. 40 pairs and 1 of c. 300+ pairs, (CJM).
283. JACKDAW: A report of a bird landing and remaining on the water for 20 secs. at Barker's Lane GP, 7th August, (PGK).
297. WILLOW TIT: Reports from Chiltern Green, Great Barford and Spittlesea Hospital, Luton, of pairs of birds, (HC, NC).
302. FIELDFARE: The wintering flock around Bedford SF had gone by early March but passage birds were seen there in late March and the last on 24th April, (PJR & SJH). First arrival of the winter, Barker's Lane GP, 7th October, (PGK); heavy S.W. movement noticed at Sandy, 13th and 19th October, (FDH).
304. REDWING: Last spring record, Wyboston GP, 3 birds, 5th April, (JND). First autumn arrivals, Chiltern Green and Barker's Lane GP, 14th October, (HC & PGK), with nocturnal movements reported intermittently from then till mid-November, (PJR, DAH, FDH, JND).
311. WHEATEAR: Spring passage, between 40 and 50 birds were reported from Cutenhoe Allotments, Luton, from 18th March to early June, (HC), the largest numbers being 6 at Warden Hill, Luton, on 27th March, (RVAW per DP), and 10 at Wyboston GP, 2nd April, (JND). This is a large increase over recent years. Autumn passage, 16 reports from 8th August-24th September.
317. STONECHAT: After increasing reports from 1957 to 1960, this year's records seem to fit the general pattern. In January and February the bird was reported from Willington, 1 pair, 1st January from Stewartby area,

1 male, 7th and 8th January (also 1 imm.), 4 on 9th January, 1 male, 22nd January, 2 pairs, 19th February, and 1 male, 26th February, also 1 male, Chimney Corner CIP, 7th January. Luton spring records are 1 female at Warden Hill, 12th March, and 1 male, 2 females, Stewartby, 30th April, (PJR, EMW, MJM, PJR, *et al.*). Autumn records beginning on 26th September, 1 male seen at Cutenhoe Allotments, Luton. The bird was seen at Stewartby on 8th October (1), 2, 15th, 2, 22nd, 2 males, 1 female, 28th, 1 male, 1 female, 29th, 1 male, 19th November, 2 males, 1 female, 20th December, 1, 27th. Other reports came from Bedford SF, 1 male and 1 female, 29th October; Bromham, 1 male, 5th November; Clapham, 1 pair, 4th November; Barker's Lane, 1, 26th November.

318. WHINCHAT: First arrival, Great Barford, 22nd April, (NC). Reported in next two months from Cutenhoe Allotments and Copt Hall, nr. Luton, Stanford GP, Little Barford and Stewartby where 2 pairs bred, (HC, PJR, ACM, CFT). July records were received from Bedford SF and Galley Hill but no evidence of breeding except that pairs of birds were seen. From August to 22nd November, reports came from the above areas, also Dunstable Downs Golf Club and Dunstable SF, the latest being a first winter bird at Stewartby L, (SWR, PGK, HC, JND, *et al.*).

320. REDSTART: First record, 1 male, Cutenhoe Allotments, 8th April, (HC). Breeding reported, Woburn Park (Hay Wood area), 1-2 pairs, and Charle Wood, 3 pairs counted, 1 with 4-5 young just hatched on 25th May, (MDW). A pair also reported from Keeper's Warren on 28th May, and an immature bird was seen at Stockgrove, Heath and Reach, on 23rd July, (PJW, EMW, RGOS). Last reported, 1 female near Clophill, 27th August, (HC).

322. NIGHTINGALE: First record, Southill Park, 12th April, (DH). Four days later several were heard and 2 seen in Maulden Wood. The Society's Dawn Chorus Outing at Flitwick Moor on 30th April was greeted by a bird in song at 3.30 in thick ground fog and full moon. It sang continually for 1½ hrs. approx., (RGOS).

327. GRASSHOPPER WARBLER: First heard, 7th April at Flitwick Moor, (DH). Subsequently reported from Daintry and Washer's Wood, Flitwick, Maulden Wood and Stewartby where behaviour indicated nesting, but no proof, (DEE, RVAW, SJH).

333. REED WARBLER: No reports of arrival dates, but breeding was observed in July at Barker's Lane GP, and adults carrying food at East Hyde, (PJW, RKS). A late date of 24th September was recorded at Barker's Lane GP, (SJH).

337. SEDGE WARBLER: First record, 12th April at Barker's Lane GP, (DH), and several reports of nests from Bedford SF, Flitwick Moor, Leagrave Marsh and East Hyde, (SJH, JND, SWR, RKS). On 1st October single birds were reported from Great Barford and Blue Waters ChP, Houghton Regis, (DH, KRW).

343. BLACKCAP: First record, 23rd April, Maulden Wood, (RVAW), and several reports in following two weeks.

346. GARDEN WARBLER: First record, 23rd April, Maulden Wood, (RVAW). No reports of breeding, but seen at Rowney Warren and Warden Warren and Fox Covert in May and June, (PJW, EMW, MDW, RGOS).

347. WHITETHROAT: First record, 12th April, Barker's Lane GP, (DH). A few singles for next week, then plentiful from 23rd onward, (RKS, PGR, JND, RGOS, *et al.*).

348. LESSER WHITETHROAT: Apart from the observations of the breeding of these birds at Biddenham by the Bedford School N.H.S. from May to July, (PJW, EMW, *et al.*), only one other record received from Maulden Wood on 23rd April, (RVAW).

354. WILLOW WARBLER: First arrival, 19th March, Leagrave Marsh, (SWR). Main influx 6th-9th April, widespread thereafter, (PJW, EMW, PJR, *et al.*).
356. CHIFFCHAFF: First reported from Kempston, 10th March, (CSP), 5 different records for 18th March. A week thereafter was fully established, although PJR reported "appeared less common than former years", (SWR, RKS, JND, AJL, *et al.*). Three September records rather overshadowed by a "probable" Chiffchaff reported from Bedford SF on 25th December, (PJR).
357. WOOD WARBLER: Reported breeding in Charle Wood as previous years, and in Heath and Reach area, (MDW and CJM).
366. SPOTTED FLYCATCHER: First reported, Luton Hoo Park on 14th May, (MDW). 6-8 immigrants noted at Barton Springs on 9th September and last reported on 19th at Bedford SF, (RGOS, PGK, PJR).
373. MEADOW PIPIT: FDH reported a great increase in well-known area at Sandy on 31st December, totalling c. 50 in 85 acres.
376. TREE PIPIT: First record, Rowney Warren, 24th April. Birds present in May at Brogborough CIP, Ampthill Park, Millbrook, Washer's and Daintry Wood, Rowney Warren and Warden Hills but no reports of breeding.
379. ROCK PIPIT: 1, Stewartby L, 4th October, (PJW, EMW, GCA, MJC). All main characteristics noted.
- 380b. WHITE WAGTAIL: Bedford SF, 2, 31st March and again at Bedford SF, 2, on 13th July, (KRW); single birds, 10th April and at Howbury Hall Marsh on 14th and Stanford GP on 17th, (JND). Also at Barker's Lane GP on 4th May (1) and Stewartby on 11th (1), (PJR).
381. GREY WAGTAIL: Single birds at East Hyde on 26th February and 5th March, (RKS); 3 near Milton Bryan, (DF per RGOS), on 10th March, 1 at Stanford GP, 28th April, (ARJ & ACM). Departed from Sandy SF on 8th October and along Ouse Valley until 19th November, also at Stewartby on latter date and at New Mill End on 3rd December, (JND, DH, SJH, EMW, *et al.*).
- 382a. YELLOW WAGTAIL: First record, Stanford GP, 5th April, (ACM); present during May and July at Brogborough and Stewartby L, Bedford SF but no breeding reports, (MDW, KRW). Last reported on 1st October at Bedford SF (JND, SJH, PGK).
384. GREAT GREY SHRIKE: 1 reported on 15th January at Hexton on Beds.-Herts. border, (HC); and 1 on 2nd April at Blue Water Pit nr. Houghton Regis, (SWR).
388. RED-BACKED SHRIKE: 1 nest reported in Skimpot CIP, Blows Downs, 1 or 2 birds fledged on 30th July, (SWR). A male was seen in a previous breeding area at Galley Hill on 28th May but no breeding suggested, (RVAW). On 20th July, 1 was seen on a suburban garden to N.E. of Luton, (RKS).
391. HAWFINCH: Southill Park L, 1 male, 15th January, (MDW); 1, 8th October, (JND).
394. SISKIN: Reports of this species were more normal in the early part of the year than in winter 1959-60 only 4 reports, 2 at Woburn, 14th January, and at Southill Park, c. 40-50, 15th January, (MDW); 1 on 29th January and 6 on 12th February, (HC, JND, PJR). Only reported from Sandy in the 1960-61 winter, flocks of c. 25 being seen on 21st October and 25th December, (FDH & KCH).

396. TWITE: A flock of 10 of these seldom-reported birds was seen at Stanford GP on 19th November. 1 was mist-netted and ringed. They were feeding with mixed flocks of Linnets, Goldfinches, etc., (LPT).

397. REDPOLL: Recorded at Southill Park, c. 15-20, 15th January, (MDW), and 16, 29th January, 6, 12th February and at Flitwick Moor on 16th April (4). At the end of the year 3 were seen at Southill on 8th October, and 6 at Flitwick on 10th December, (MJM, JND, PJR, SJH).

409. BRAMBLING: Only one report on 31st December, (1), at Sandy, (FDH & KCH).

425. TREE SPARROW: Flocks of c. 400 at Bedford SF on 8th January and 300 at Wyboston on 5th March, (PJR & SJH).

R. G. O. STEPHENSON.

M. D. WORTLEY.

BEDFORD SCHOOL NATURAL HISTORY SOCIETY

Report for 1961

For the Easter and Summer Terms M. J. Marriott was President, P. J. Reay was Secretary, and J. N. Dymond and M. Joll represented the Committee; in the Christmas Term, however, the Secretary became President, with G. C. Anderson as the new Secretary; P. J. Wilkinson, O. J. Marlow and N. Craddock succeeded to the Committee.

The most important development during the year was the production of three copies of the first Annual Report of the Society—a successful and important venture. In addition a new loose-leaf system for bird records, a new notice board for pamphlets, articles, and so on, and the opening of a small library for the use of members, all furthered the Society's interests.

The Annual Outing this year proceeded in the general direction of Hickling Broad, but the unfortunate weather conditions made a rather disappointing day. A subsidiary outing to Cley in March was also arranged for a few day boys.

Otherwise, field activities followed the same general pattern as in 1960. Although botany and geology had little attention paid to them, a new limnological study and an increased interest in entomology almost restored the balance. The ornithologists again had a successful year and of the four new species recorded in Bedfordshire during 1961 three were first noticed and identified by Society members—a creditable achievement.

The Secretary launched his gull project and continued his work on moths. The President added to his ecological survey of Judge's Spinney, and P. G. Kitchener studied dive-times for a few species of diving-duck.

A brains trust, in which the panel almost outnumbered the audience, and the films *Evolution in Progress*, *Marshland Birds* and *The Moorlands* provided indoor entertainment for the Easter Term. A more ambitious film programme on 21st May included *The Life of Moulds*, *Journey into Spring* and *Life between the Tides*. The opening meeting of the Christmas Term involved the President, O. J. Marlow and P. J. Wilkinson holding forth on various topics, while the second meeting provided Witherby's *Sound Guide to British Birds*; in addition to films on Northumbria, Cowes, and, strangely enough, London Transport! On 22nd October, M. P. Roseveare (O.B.) gave an illustrated talk on 'Lapland Ornithology'.

Brathay Exploration Group Courses were attended by G. C. Anderson (Corsica), M. Joll (Norway), D. P. Ferro (Lake District), J. N. Dymond and P. J. Reay (Foula, Shetland).

O. J. Marlow was awarded the Junior Collecting Prize.

P. J. REAY.

LEPIDOPTERA

The following two papers by P. J. Reay deal in some detail with work carried out in 1961 by members of the Bedford School Natural History Society.

A. MOTH OBSERVATIONS WITH THE MERCURY VAPOUR MOTH-TRAP.

Between May, 1960, and August, 1961, something approaching constructive field-work was carried out on moths and their relationship to the Mercury Vapour Moth-Trap. Although run at various localities in Bedford, most information was obtained from the London Road area in the south

of the town. The work really amounts to little more than casual observation, linked with the examination and identification of the moth-catches in the early morning.

Mercury Vapour Moth-Traps, a revolution in entomology, take advantage of the attractive powers of ultra-violet light to many insects, and in particular to moths. The high power mercury-vapour bulb emits ultra-violet rays, and the guiding vanes of the trap cause the insects to enter the main part of the trap where they can find shelter among the egg cartons put there for the purpose. Although moths are by far the commonest insects taken in the trap, other orders are not infrequently found: Hemiptera (bugs), e.g. aphids, water-bugs; Ephemeroptera (mayflies); Megaloptera (alder-flies), e.g. lace-wings; Coleoptera (beetles), including many aquatic forms; Diptera (true flies), e.g. crane-fly, and Hymenoptera (wasps, etc.), e.g. Ichneumon fly.

The following is a summary of the work:

1. Factors which determine numbers and species of moths caught.

There are factors determined by the environment, and those determined by the lamp itself.

Time of year: An obvious factor, since both more species and more individuals are caught in the summer months, and different times of year attract different species.

Time of night: Sunset determines when flying begins. From experiments to determine agitation times for different species it became apparent that not all moths fly at the same time. My own inferences in June coincide with those of P. G. Kitchener who notes that very few moths enter the trap before 23.00 hours (actually somewhat later in June). He also noted that, although numbers increased rapidly at 00.30 hours, the 'rush-hour' appeared to be from 01.00 to 01.30 hours, after which numbers gradually died down; by 02.30 hours, very few moths were flying.

Temperature: There is, of course, a general increase of temperature as the summer proceeds, and the increased number of both species and individuals is presumably due to a combination of this factor and day-length in governing emergence time. Nevertheless, a cold night in a warm period may reduce the catch considerably, as would be expected where poikilothermic (cold-blooded) animals are concerned, e.g. a drop in temperature from 'warm' to 'near frost' between 25th May and 27th May, 1961:

25th May—18 species; 100 individuals.

26th May—12 species; 18 individuals.

27th May—3 species; 4 individuals.

Rain: Heavy rain does affect the catch since it is likely to hinder flight. Sudden showers may cause the moths to seek shelter at the light. P. G. Kitchener feels that this is a more important factor than temperature (at least, in September), but from observations earlier in the year I would certainly think that temperature is the main factor.

Wind: Since wind also affects temperature, clear-cut conclusions were not possible (a difficulty of interaction of factors) but it does seem that, providing it is not too strong, a wind has little effect—indeed, it may help in bringing moths from a wider area, and hence cause a greater variety of species.

Presence of other lights: This, of course, includes the presence and extent of the moon, but although I made several observations, I could find no correlation between this and the number of moths caught—a contradiction to popular concept. Possibly the presence of the moon only affects the catches at ordinary lights.

Power of the lamp and its surface brightness: E. B. Ford, in the *New Naturalist* volume 'Moths', says "the power of a light source is proportional to the number of insects, the number of species remaining constant". The surface brightness has the reverse effect. Although attempts at verification were made, experimental difficulty and impatience thwarted any coherent results.

Wave-length of light: By using four bulbs of approximately equal wattage, but emitting different wave-lengths, it was conclusively found that the blue end of the spectrum, and, in particular, the ultra-violet light, is most favourable to the entomologist. An interesting outcome of this experiment (unfortunately only executed once) was the capture of two Cinnabars (*Callimorpha jacobae*) when the red light bulb was used. This species is more diurnal than most other species of moth, and the only other capture on this night was a single Heart-and-Dart (*Agrotis exclamationis*); besides this, it is always uncommon to attract more than one to a trap in a single night.

Height of trap above ground and the area the light covers: Both P. G. Kitchener and I have shown that, if the trap is covering a wider area (e.g. erected on a roof), more moths tend to be captured. It is perhaps worth noting that it is usually the male moths which fly higher and farther afield.

Other factors, such as those which affect the life-histories of the moths, the number of predators in the area, and so on, could not be verified. The conclusions drawn on the other factors can be no more than general conclusions since, in addition to the fact that any experiments carried out were scientifically incomplete, several of the factors overlapped and interacted, making individual separation difficult.

2. Behaviour of Moths in and around the trap.

The phenomena of entry: The gist of a theory put forward by Robinson and Robinson implies that many insects approach to within a certain distance of the light, partly circle it, then fly away. Others, on reaching the same distance spiral down, often miss, and repeat the procedure. It is suggested that the light is thus the centre of two concentric spheres:

- (a) Sphere of repulsion;
- (b) Sphere of dazzle—moths deflected in their course.

Thus, a high velocity and/or a slow avoiding reaction will cause a moth to go straight through the boundary between the two spheres.

This theory neatly explains why moths enter the trap, and also my own observations on entry. I suggest three methods of entry:

(a) Direct entry—with very little, or no, circling of the lamp and typical of the Sphingidae (Hawk-moths) and Yellow Underwings, for example.

(b) Spiral entry—a widespread method, involving either spiral flight or ever-decreasing radius around the trap, or a sort of stumbling across the ground.

(c) Zig-zag entry—flying around the trap and towards it in a somewhat zig-zag motion and typical of Geometers.

By searching posts, walls, etc. in the morning after the night during which the trap has been run, a number of moths will invariably be discovered which have obviously been attracted by the light but which have refrained from entering. Generally these are of two types:

(a) *Geometers*, especially Willow Beauty (*Cleora rhomboidaria*), Magpie (*Abraxa grossulariata*), Brimstone (*Opisthograptis luteolata*), and, of course, the 'carpets';

(b) *Species which are particularly well camouflaged against a tree-trunk background*, e.g. Buff-tip (*Phalera bucephala*), Lappet (*Gastropacha quercifolia*), Early Grey (*Xylocampa areola*), Peppered Moth (*Biston betularia*), and groups such as the 'sharks' and 'prominents'; although, of course, this is not invariably so.

Behaviour in the trap: Throughout the period much information was collected supporting a theory of both inter- and intra-specific association within the trap. For example, such species as Heart-and-Dart (*Agrotis exclamationis*), Setaceous Hebrew Character (*Amathes c-nigrum*), Bright-line Brown-eye (*Diataraxia oleracea*), Common Yellow Underwing (*Noctua pronuba*), and so on, are typically found in close association on the egg cartons—and these are fairly closely-related species. More marked, however, is the fact that if a species is to be found to the extent of only a few individuals in the trap, there is likely to be association between them; for example, on 15th June, 1961, only three Common Yellow Underwings were taken, but all three were on the same egg carton and two were in the same cavity. There are many equally convincing examples.

Negative photo-reactivity, involving accumulation on the undersides of the cartons is constantly apparent and not unexpected; for example, on 17th June, 1961, 53 moths of 10 species were attached to the upper sides in contrast to 200 moths of 18 species on the lower.

Behaviour on release: Although most Geometers and such species as the Common Yellow Underwing fly away very readily on release, it is often difficult to make the Hawk-moths, Buff-tips and Peppered Moths, for example, move at all. It is interesting to note that Mouse-moths (*Amphipyra tragopoginis*) crawl rather than fly to cover on release, and this happens with other species to a lesser extent, e.g. Heart-and-Dart.

B. MOTHS OF THE NEIGHBOURHOOD

An elementary study on the populations of a few selected species was carried out by the 'mark-release', followed by the 'trellis-table' method. It soon became obvious, however, that samples chosen were too small to produce really useful results, and, indeed, on one night in April, 1961, it was calculated that an infinite number of Brindled Beauty was flying!

The most promising result was obtained with Nutmegs (*Discestra trifolii*) in May, 1960, and a brief consideration of this will also illustrate the methods used. The first essential is to select a species which is commonly and regularly taken in the trap over a set period, then, having selected a number or colour of paint-spots for the different days, all those insects belonging to the chosen species caught can be marked with their respective paint-spots. Hence, some days later, all marked moths of the species which are taken show on which day they were first caught in the trap.

Consider, for instance, the 25th; following its column diagonally downwards to the left we see the figures 9.7.22. This indicates that on this date 22 new individuals were captured together with 7 which had been marked on the 23rd and 9 which had been marked on the 24th, resulting in a total capture of 38 Nutmegs as shown at the foot of the column diagonally downwards on the right. An approximate estimate of the flying population of 104 can be calculated; from the trellis table we see that, out of 25, 7 and 30 moths taken on subsequent dates, 7, 3 and 3 respectively are recaptures belonging to the 25th when 22 moths were marked. The flying population is then given by:

$$\frac{(25 + 7 + 30) \times 22}{7 + 3 + 3} = \frac{62 \times 22}{13} = 104$$

The results can then be set out in the following manner:

MAY

	23rd	24th	25th	26th	27th	28th	
18	4	9	7	3	2	41	
	20	7	2	3	2	18	
	22	5	3	3	39		
		25	2	3	38		
			7	1	24		
				30	18		

CAPTURES

TOTAL CAPTURES
AND RELEASES

It was found that between 23rd and 28th May between 99 and 185 Nutmegs were at large in the neighbourhood. Unfortunately, this study could not be extended or repeated, and the results are of limited value.

Dominant moths: The final phase of the work was concerned with those species of moths which appear most abundant at particular times of the year. From observations continuing over two complete years and parts of several more, it appears that dominance runs pretty well in a fixed annual pattern; hence the account of the year 1961 with the Bedford School M.V. trap, which follows and which gives particular reference to the dominant species, can be regarded as fairly typical.

(B) MOTHS IN BEDFORD, MARCH TO SEPTEMBER, 1961.

Throughout 1961 Bedford School's Mercury Vapour Trap was run regularly between 5th March and 14th September at different localities in the town, and, not surprisingly, a large number of detailed records was accumulated, the more interesting of which will no doubt be included in Messrs. Wests' county lists. The following account is intended to give an idea of the variation in moth-catches during a typical year, rather than to list only the rare species—indeed, an effort has been made to mention only the more familiar and attractive moths, with special reference to the dominant species. The fact that the trap was run in various localities within a five-mile radius should not affect the general picture.

Grateful thanks must be given to the following for providing localities in which to run the trap and for their help in identification and compilation of records:

MJC—M. J. Clifton, MC—M. Cutler, JND—J. N. Dymond, RBK—R. B. Kerr, PGK—P. G. Kitchener, MJM—M. J. Marriott, JRLT—J. R. L. Turner, NJLT—N. J. L. Turner.

5th, 19th, 26th March. Bedford School Grounds. PJR, JRLT, NJLT.

There were no moths on the 5th, but as the weather warmed, one each of Hebrew Character (*Orthosia gothica*) and Clouded Drab (*Orthosia incerta*) were taken on the 19th, and on the 26th single specimens were taken of Powdered Quaker (*Orthosia gracilis*) and Brindled Beauty (*Lycia hirtaria*).

29th March to 9th May. London Road. PJR.

Although the trap was run on only twenty-two nights in this period, it was a long and varied one which gives little chance of being effectively summarised. Not until 3rd April did reasonable numbers appear (15) featuring Early Grey (*Xylocampa areola*) and Muslin (*Cycnia mendica*) as interesting species. The first Nutmeg (*Discestra trifolii*) appeared on the 12th, but no marked dominance occurred until two days later, when ten out of twenty moths were Brindled Beauty. On and after the 22nd such attractive insects as Chamomile Shark (*Cucullia chamomillae*), Spectacle (*Unca triplasia*), Pebble Prominent (*Notodonta ziczac*), Angle Shades (*Phlogophora meticulosa*), Chocolate Tip (*Clostera curtula*), Silver Y (*Plusia gamma*), Mullein (*Cucullia verbasci*), and Dark-barred Twin-spot Carpet (*Xanthorhoe ferrugata*) showed up for the first time, but only in small numbers.

On no occasion during this exciting period did the total number of insect species on any one night exceed nine, and thirteen insects a night was the most that could be expected on cold nights.

10th to 20th May. Ampthill Road. MJM.

A great increase of temperature around the 12th saw the maximum number of species (15) and insects (31) recorded so far. Right from the start, Shuttle-shaped Dart (*Agrotis puta*) was dominant (possibly an effect of habitat), although they never exceeded 55 per cent of the total catch. First appearances were put in by Peppered Moth (*Biston betularia*), Puss (*Cerura venula*), Poplar Hawk (*Laothe populi*), Latticed Heath (*Chiasmia clathrata*), and Buff-tip (*Phalera bucephala*).

21st May. Bedford School. MJM, RBK.

Only four moths were taken in this cold night—Nutmeg, Shuttle-shaped Dart, Buff-tip and Common Swift (*Hepialus lupulina*).

23rd to 27th May. London Road. PJR.

The first three nights were quite warm, and catches more typical of the month were obtained; forty-four moths of fourteen species on the 23rd, forty-six moths of fifteen species on the 24th and one hundred moths of nineteen species on the 25th. However, eighteen moths of twelve species on the 26th, and only four moths of three species on the 27th, showed the adverse effects of colder weather.

Rustic Shoulder-knot (*Apamea sordens*) just held the position of dominance over Heart-and-Dart (*Agrotis exclamationis*) which, however, were on a steady increase; no other species had consistently high numbers. Buff Ermine (*Spilosoma lutea*), Dot (*Melanchra persicariae*), Flame (*Axylia putris*), Eyed Hawk (*Smerinthus ocellatus*), and Broom Moth (*Ceramica pisi*) were amongst several interesting and attractive species.

11th June. Bedford School. NJLT.

Although cool, it was evident that high summer numbers would soon be attained, for 192 insects of twenty species, 107 of them Heart-and-Dart, were noted. Of eleven Peppered Moths, seven were melanic, three typical and one intermediate.

13th to 24th June. London Road. PJR.

The largest catch appeared on the 22nd when 301 moths—200 of them Heart-and-Dart—were captured. Amongst many entertaining species were Cinnabar (*Callimorpha jacobææ*), Figure-of-Eighty (*Tethea ocularis*), Ghost (*Hepialus humuli*), Privet Hawk (*Sphinx ligustri*), Burnished Brass (*Plusia chrysitis*), Coxcomb Prominent (*Lophopteryx capucina*), Small Angle Shades (*Euplexia lucipara*), V Moth (*Itame wavaria*), Shark (*Cucullia umbratica*), Emerald (*Hemithea aestivaria*), and Golden Plusia (*Polychrisia moneta*). Challengers for 'dominant moth' were Dark Arches (*Apamea monoglypha*), Marbled Minor (*Procus strigilis*) and Flame.

26th to 29th June. Bedford School Grounds. NJLT, PGK, MJC, MC.

New species included Yellow-tail (*Euproctis similis*), Lime Hawk (*Mimas tiliae*) and Buff Arches (*Habrosyne pyritoides*). Even with varying weather conditions, the only constantly common moth was Heart-and-Dart.

30th June and 1st July. Bromham Park. PGK.

Another spell of warm weather as well as a new locality brought in a large number of moths (forty-one species totalling 434 insects). Heart-and-Dart lost some importance and the 'challengers' mentioned above gained some. Both Figure-of-Eight (*Episema caeruleocephala*) and Figure-of-Eighty, as well as a late Puss, a Sycamore (*Apatele aceris*), Lackey (*Malacosoma neustria*), and the first Elephant Hawk (*Deilephila elpenor*) added to a successful week-end.

3rd to 8th July. Clapham and Bedford School. MJC.

The general picture continued, and in spite of slightly colder and wilder weather conditions, the 6th saw forty-two species making a total of 412 moths. By now it becomes difficult to select 'interesting' species, but Cream-bordered Green Pea (*Earias clorana*), Drinker (*Philudoria potatoria*) and Common Footman (*Lithosia lurideola*) should not go unmentioned. Dark Arches was becoming a likely contender for the dominant species.

9th to 11th July. Kimbolton Road. MC.

676 moths (315 of them Heart-and-Dart) on 10th July was the largest number recorded in 1961. Fifty-four Common Wainscot (*Leucania pallens*) was a good catch, also on the 10th, but nothing else in this short period, apart from a Lappet (*Gastropacha quercifolia*) on the 9th would be likely to provoke interest.

21st to 28th July. Bedford School. NJLT.

Generally smaller catches realized a maximum of only 187 on the 22nd, with smaller proportions of Heart-and-Dart, and larger ones of Common Rustic, Common Yellow Underwing and Dark Arches.

Lesser Yellow Underwing (*Euschesis comes*), Broad-bordered Yellow Underwing (*Lampta fimbriata*), and Lesser Broad-bordered Yellow Underwing (*Euschesis janthina*), as well as Frosted Orange (*Gortyna flavago*) and Small Angle Shades were among several species typical of the late-July period.

2nd to 6th August. London Road. PJR.

It was by now considered lucky to take 120 insects a night, and of the 'challengers' mentioned above, Common Rustic probably came off best. It may be interesting to note that, while this and a few other species averaged about twenty a night, Heart-and-Dart numbers were negligible, one to three.

More seasonal attractions included Scalloped Oak (*Crocallius elinguaris*), Mouse (*Amphipyra tragopoginis*), Straw Underwing (*Thalpophila matura*), August Thorn (*Ennomos quercinaria*), Rosy Rustic (*Gortyna micacea*), and, of course, Garden Tiger (*Arctia caja*).

1st to 14th September. Bromham Road. PGK.

This is the last period during which the trap was run. Maximum number of insects was 203, but the average was only about eighty; there were never more than nineteen species.

As is usual in late August and early September, Setaceous Hebrew Character (*Amathes c-nigrum*) achieved a very high dominance factor; in fact, no other moth was consistently common. It was encouraging to note Red Underwing (*Catocala nupta*), Large Ranunculus (*Antitype flavicincta*), Canary-shouldered Thorn (*Deuteronomos alniaria*), and Feathered Gothic (*Tholera popularis*) as attractive species making their mark before the trap was closed down for winter.

BOOK REVIEW

Down the Long Wind—a study of Bird Migration, by Garth Christian. 240 pp. with maps, diagrams and 31 photographic plates. London. George Newnes Limited. Price 21/- net.

From Biblical times, bird migration has been a source of wonderment to mankind but relatively few have made a really close study of it. Gatke, Eagle Clarke and other pioneers did useful original work on the subject, but the great modern army of birdwatchers are content to compile annually a monotonous list of arrival dates, and this adds nothing to what we already know. Mr. Christian's fascinating book contains a wealth of material; he reminds the reader that migration is a constantly evolving process, and that anything written today may need to be expanded during the next decade. His researches have been patient and thorough and cover many widely differing aspects of the subject. Although a tremendous amount of useful information has been recorded the author is never afraid to admit "I don't know". This possibly is one of the most valuable features of the book as, having indicated the vastness and complexity of the subject, it leaves readers in no doubt of what still remains to be done. To quote the author's own words: "We know so much, we also know so little."

Written in an easy and pleasant style, and attractively illustrated, it is to be recommended to all birdwatchers whatever their age or experience.

F.G.R.S.

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The Editorial Committee welcomes suitable contributions on the natural history of the county for publication in *The Bedfordshire Naturalist*. Short paragraphs from members about their own observations of general interest are specially desired. Whenever possible, material should be typewritten in double spacing on one side of the paper only; if this cannot be arranged it must be written very legibly. Illustrations should not be prepared before consultation with the Editor.

Contributions for the 1962 Journal must be sent to the *Honorary Editor* by 31st March, 1963, and anything received after this date may be returned, or held over for a subsequent issue.

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