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THE JOURNAL OF THE
BEDFORDSHIRE
NATURAL HISTORY SOCIETY

FOR THE YEAR

1979

No. 34

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BEDFORDSHIRE NATURAL HISTORY SOCIETY 1980

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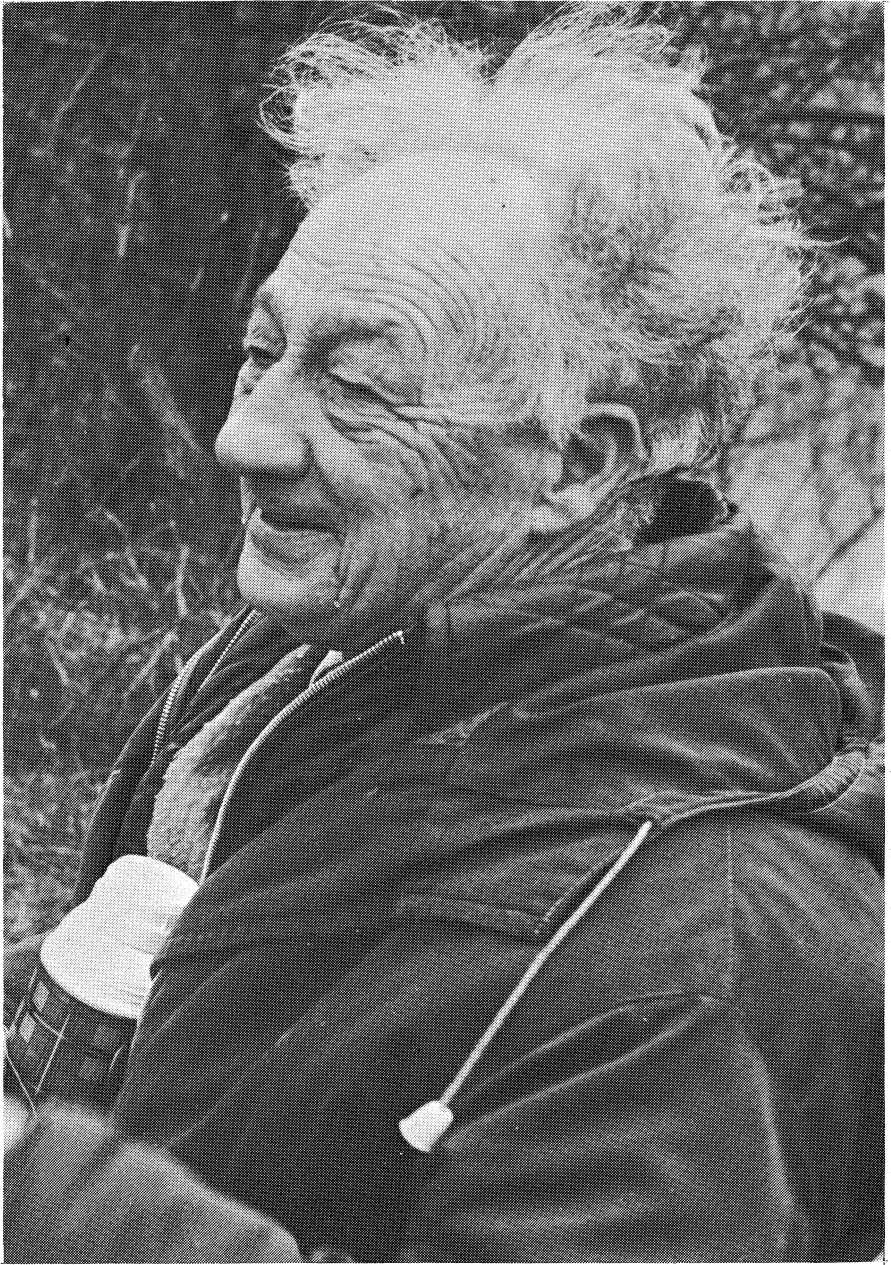
THE BEDFORDSHIRE NATURALIST

No. 34 (1979)

Edited by C. R. BOON

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John G. Dony who celebrated his 80th birthday in 1979 (Photo: V. W. Arnold)

REPORT OF THE COUNCIL

It has given the Council much pleasure to see many new members join the Society during the past year. We have had an inevitable fall in the total membership since the subscription rates were increased; this always happens. However we do feel, as a Council, that the sum of £3.50 is a realistic one in view of the ever increasing costs of hiring halls, rise in printing costs etc.

The membership figures are as follows:—

| | 1976 | 1977 | 1978 | 1979 |
|-----------------------|------|------|------|------|
| Ordinary Members | 271 | 273 | 311 | 298 |
| Associate Members | 49 | 41 | 52 | 60 |
| Student Members | 65 | 49 | 45 | 44 |
| Corporate Members | 9 | 9 | 9 | 9 |
| Life Members | 5 | 5 | 5 | 5 |
| Honorary Life Members | 4 | 4 | 4 | 4 |
| | 403 | 381 | 426 | 420 |

The Annual Library Exhibition organised by Mr A. Martin was held in Dunstable Library and resulted in much interest being shown and several new members gained. The popular "Mini" exhibitions are still appearing regularly in the windows of the Town and Country Building Society throughout the county and provide a regular recruitment outlet.

It was with very deep regret that we learned of the sudden death of Dr D. M. Jeffreys. He is very much missed by all those members who knew him well for his kindness to everyone and for his quiet sense of humour.

On a happier note we were able to wish Dr John Dony many happy returns of the day when he celebrated his 80th birthday in August 1979. Luton Borough Council honoured him with a Civic Reception and presentation. He has subsequently addressed the Society on the theme of "My 80 years in Bedfordshire", a fascinating account of a very long and crowded life full of achievements in many fields. The Society is proud to count him among its members and hopes that one day we shall be hearing his account of "My 100 years in Bedfordshire".

Outside bodies such as the County Council, District Councils, Nature Conservancy Council and the Beds and Hunts Naturalists' Trust continue to consult us and ask us to undertake special surveys. One such survey currently being undertaken is of the wildlife interest of Bramingham Wood, Luton for Luton Borough Council. The *Landscape and Wildlife Subject Plan* has been continuing in co-operation with the County Council and we hope to see it published in 1980. We must thank all our hard working Recorders for the extra work and effort they contribute to these special surveys, on top of all their ordinary recording duties.

Our Honorary Editors must be congratulated on the continuing high standard of the *Bedfordshire Naturalist* and the *Muntjac* newsletter. We hope that more members will send in contributions for publication.

It is with regret that we are losing Mrs H. Muir-Howie as our Honorary Programme Secretary. She has found that, since her marriage in August 1979, her spare time has become increasingly less.

Finally the Council wishes to thank all members for their continued support and would wish them all a happy and rewarding membership of the Society.

E. BERYL RANDS

EDITORIAL

Last year's editorial mentioned the 80th birthday of John Dony which took place in 1979. In gratitude for all he has done for the Society and with our esteem and affection we publish a photograph of John as frontispiece to this Journal.

Another landmark occurred in 1979 with the publication by the Society of the *Bedfordshire Bird Atlas*. This was quite an achievement for a local natural history society and it has received very favourable reviews. Congratulations to all concerned.

A word of explanation is needed perhaps for the last named member in the list of Recorders on the inside rear cover. For several years it has been mooted that the flora and fauna of specific sites in the county recorded by our diligent band of Recorders should be collated. If a threat should occur to any site the Society would have a basic list of the more important organisms occurring there. Also changes in the sites over the years could be monitored, perhaps providing basic data for articles on the everchanging natural history scene. We wish luck in his task to the Site Recorder and, as Editor, I hope a yearly report will be published in the Journal.

Every year articles and reports in the Journal include species distribution maps or, as they are sometimes called, tetrad maps. Many readers may puzzle over these and wonder where their town or village is located in relation to all the dots. On page 68 is produced a tetrad map of Bedfordshire on which are shown most of the towns and villages of the county (not all – some could not be fitted on). We hope this and the accompanying text will be of some help.

My thanks to Derek Rands for improving or redrawing the many diagrams, also thanks to Mary Sheridan for typing many of the tables so that they could be directly reduced.

Finally a plea to all potential authors – please let me know by the end of the year what you are planning and, to the Recorders, I would appreciate their reports by the end of March 1981. This helps greatly towards an early publication date.

C.R. BOON

PROCEEDINGS

Indoor Meetings

- 404th Ordinary Meeting, 4th January, Flitwick. "Animal colouration" by Mr A. R. Outen. Chair: Mr D. Anderson.
- 405th Ordinary Meeting, 16th January, Dunstable. "Changes in the flora of Bedfordshire" by Dr J. G. Dony. Chair: Mr C. R. Boon.
- 406th Ordinary Meeting, 23rd January, Maulden. "Everyone's Natural History in Bedfordshire" by Mr W. J. Drayton. Chair: Mr D. Green.
- 407th Ordinary Meeting, 1st February, Bedford. "Aphids, the successful suckers" by Dr. J. R. Couchman. Chair: Miss H. M. Webb.
- 408th Ordinary Meeting, 6th February, Dunstable. "Mammals of Great Britain" by Mr R. George. Chair: Mrs E. B. Rands.
- 409th Ordinary Meeting, 15th February, Luton. "Get to know your garden birds" by Mr W. J. Drayton. Chair: Mr P. Smith.
- Special Meeting, 22nd February, Pottton. "Lichens of our churchyards" by Mrs F. B. M. Davies and "Harvest mice in Bedfordshire" by Mr D. G. Rands. Chair: Mr T. H. Johnson.
- 410th Ordinary Meeting, 28th February, Bedford. "Nature through the lens" by Mr H. A. S. Key. Chair: Mr R. B. Stephenson.

- 411th Ordinary Meeting**, 6th March, Dunstable. The Chairman's Evening with Mr D. Green.
Annual General Meeting, 14th March, Bedford.
- 412th Ordinary Meeting**, 21st March, Maulden. "The identification of some common birds in Bedfordshire" by Mr A. J. Livett and Mr B. J. Nightingale. Chair: Dr J. G. Dony.
- 413th Ordinary Meeting**, 29th March, Flitwick. "Natural History can be fun" by Mrs B. Chandler. Chair: Mr M. Chandler.
- 414th Ordinary Meeting**, 10th October, Bedford. "Springtime in Austria" by Mr M. Chandler. Chair: Mrs S. Irvine.
- 415th Ordinary Meeting**, 16th October, Dunstable. "Hedges and verges" by Mr B. Sawford. Chair: Mrs E. B. Rands.
- 416th Ordinary Meeting**, 25th October, Flitwick. "Herons and a hill" by Mr R. Scott. Chair: Mr M. Chandler.
- 417th Ordinary Meeting**, 30th October, Leighton Buzzard. "The wild flowers of Bedfordshire" by Dr J. G. Dony. Chair: Mr P. Smith.
- 418th Ordinary Meeting**, 6th November, Dunstable. "Some common flowers of Bedfordshire" by Mr C. R. Boon. Chair: Dr N. F. Janes.
- 419th Ordinary Meeting**, 14th November, Bedford. "The Bedfordshire countryside" by Mr D. G. Rands. Chair: Mrs S. K. Fothergill.
- 420th Ordinary Meeting**, 22nd November, Luton. "An introduction to cup fungi" by Miss M. Holden. Chair: Mr A. R. Outen.
- 421st Ordinary Meeting**, 27th November, Flitwick. "The palaeo-ecology of the Oxford Clay" by Mr K. G. Baker. Chair: Mr W. J. Drayton.
- 422nd Ordinary Meeting**, 4th December, Dunstable. "The biology of angels" by Mr E. Eastwood. Chair: Mrs J. Toomer.
- 423rd Ordinary Meeting**, 12th December, Bedford. "Common or garden birds" by Mr W. J. Drayton. Chair: Mr R. B. Stephenson.

Field Meetings

- 28th January **Melchbourne Park**. Leader: Mrs B. Chandler.
- 25th February **Walton-on-the-Naze, Essex**. Coach trip.
- 11th March **Tring Reservoir**. Leader: Mr R. V. A. Wagstaff.
- 25th March **The Lodge, Sandy**. Leaders: Mr T. Hollingworth and Mr A. Parker (Warden).
- 8th April **Stratford Saye House, Berkshire**. Coach trip to the Courage Shire Horse collection.
- 15th April **River Ouse, Bedford**. Leader: Mr A. Muir-Howie.
- 29th April **Hayley Wood, Cambs**. Leader: Mr M. Chandler.
- 14th May **Sundon Hills**. Leader: Dr J. G. Dony.
- 17th May **Palmer's Wood, Old Warden**. Leader: Mr J. P. Knowles.
- 20th May **Lower Alders and Campton Plantation**. Leader: Mr J. R. A. Niles.
- 1st June **Sewell Cutting**. A moth identification evening. Leader: Mr V. W. Arnold.
- 3rd June **Bromham Mill**. Leader: Dr B. S. Nau.
- 8/10th June **Yorkshire Dales**. Weekend expedition. Leader: Mr V. W. Arnold.
- 16/17th June **Maulden Wood**. The annual all-night meeting.
- 21st June **Barkers Lane Pits**. Leader: Mr A. Muir-Howie.
- 27th June **Potton Churchyard**. Study of lichens. Leader: Mrs F. B. M. Davies.
- 8th July **Gooderstone Water Gardens, Norfolk**. Coach trip.
- 12th July **Totternhoe Knolls**. Leader: Mr R. Bradshaw.
- 15th July **Shuttleworth College**. A one day course on a variety of natural history subjects.
- 20th July **Stockgrove Park**. Leader: Mr T. Hollingworth.
- 22nd July **Odell Great Wood**. Leader: Dr. J. G. Dony.
- 29th July **Clarendon School, Haynes**. Leaders: Mrs Baldwin and Mrs E. B. Rands.

| | |
|----------------|---|
| 5th August | Sharnbrook Summit. Leader: Mr W. J. Champkin. |
| 8th August | River Ouse, Bedford. Leader: Mr H. A. S. Key. |
| 12th August | Ampthill Park. Leader: Mr C. R. Boon. |
| 16th August | Noon Hill and Lilley Hoo. Leader: Dr V. H. Chambers. |
| 19th August | Potton Wood. Leader: Mr J. Green. |
| 2nd September | River Ivel. Joint meeting with the East Beds. RSPB group. Leader: Mr J. J. Tirrell. |
| 9th September | Queen Elizabeth Country Park. Coach trip. |
| 14th September | Stevington. Leader: Miss H. M. Webb. |
| 30th September | The Lodge, Sandy. The annual fungus foray. Joint meeting with the British Mycological Society. Leader: Dr D. A. Reid. |
| 14th October | Dedmansey Wood. Leader: Mr W. J. Drayton. |
| 21st October | Tring Reservoir. Leader: Mr R. V. A. Wagstaff. |
| 28th October | Kingshoe Wood. Leader: Mr M. Chandler. |
| 4th November | Royal Botanic Gardens, Kew. Coach trip. |
| 2nd December | Stewartby. A follow-up field meeting to the lecture on the Oxford Clay. Leader: Mr K. G. Baker. |
| 30th December | Shire Oak, Heath and Reach. Leader: Dr B S Nau. |

YORKSHIRE DALES – 8TH TO 10TH JUNE 1979

Whernside Cave and Fell Centre near Dent in Cumbria was the residential centre for the 18 BNHS members and friends who ventured north for what proved to be a most interesting and enjoyable weekend. The following is an account of the flowers seen.

The first full day, Saturday 9th June, was spent in Gunnerside Gill, a valley which runs north-west from Gunnerside and drains a tributary of the River Swale. The drive from Whernside was over some very scenic Yorkshire countryside. After parking the cars we set out towards the valley and, on the hillside in the bracken, were surprised to see Wood Anemone (*Anemone nemorosa*) and Bluebell (*Endymion non-scriptus*) growing in profusion – presumably a once wooded hillside. We passed through a few trees before reaching the valley bottom and it was here, just below the line of trees, that grew perhaps the most exciting find – albeit not in flower – the Chickweed Wintergreen (*Trientalis europaea*). This is a rare plant in Yorkshire and it is not recorded in the *Atlas of the British Flora* in this 10km square. Lower down the slope was the very attractive Wood Horsetail (*Equisetum sylvaticum*) and also many magnificent specimens of the Early Purple Orchid (*Orchis mascula*).

The valley was full of old lead mine workings and the plant which often grows on the spoil heaps was seen in several places, the small, starry, somewhat nondescript Vernal Sandwort (*Minuartia verna*). Another plant of this habitat, more often associated with the coast, was the upland form of the Scurvy Grass (*Cochlearia officinalis* ssp. *alpina*). A frequent tree in full flower was the Bird Cherry (*Prunus padus*) and another upland plant was the Mossy Saxifrage (*Saxifraga hypnoides*).

After lunch at the divide of the valley and a study of the mine workings we returned along the track over the hillside and were surprised to see snow still lying in gulleys on the other side of the valley. Botanically the return walk was not expected to live up to the valley, but this was not to be the case. First a large area of Cloudberry (*Rubus chamaemorus*) in full white flower was found. Almost immediately, in short turf on the other side of the track there were the beautiful flowers of the Mountain Pansy (*Viola lutea*) in glorious shades of blue-violet and yellow, some with violet on the upper petals only; many photographs were taken here.

We returned to the cars and to Whernside well-satisfied with the first day. Although it had been cloudy and slightly hazy it was excellent for walking.

The roadside verges were a treat to see after the rather dull chemically-treated wastes of southern England and were fully studied on the evening walk from Whernside to The George and Dragon in Dent. First, in the wall of the Manor garden was Rue-leaved Saxifrage (*Saxifraga tridactylites*) and Shining Cranesbill (*Geranium lucidum*). Plants of interest in the

hedgerow were Crosswort (*Galium cruciata*), Bistort (*Polygonum bistorta*), Water Avens (*Geum rivale*) and Sweet Cicely (*Myrrhis odorata*). Perhaps the most attractive species was the Wood Cranesbill (*Geranium sylvaticum*).

The last day, June 10th, was sunny and quite warm. The morning was spent at a marvellous nature reserve called Salt Lake Quarry. The show plant was certainly the Bird's-eye Primrose (*Primula farinosa*) which literally carpeted many square yards. Another northern plant that was good to see was the Globe Flower (*Trollius europaeus*). Early Purple Orchid was abundant and several plants of Frog Orchid (*Coeloglossum viride*) were seen. It is impossible to do justice to the abundance of the flora in this reserve – it really had to be seen to be believed.

From here we went in convoy to South House Farm where lunch was taken, during which we were regaled with tales of the awful winter just passed – the blizzards in particular – as seen and experienced by a sheep farmer.

We visited an area of limestone pavement on the farm and on the walk over the fields were very blasé about the Bird's-eye Primrose and Mountain Pansy in the turf. The pavement itself was rather a disappointment owing to the lateness of the season at that altitude, about 1300ft, it being some five weeks or more according to the farmer. Obviously many plants were growing in the crevices but few were in flower.

We walked the half-mile or so over to the entrance to the famous Alum Pot, a very imposing sight. On the edge above the gaping hole were perhaps the finest specimens we saw of the Bird's-eye Primrose. The sight of the great cleft in the ground full of spray from the stream disappearing into the dark depths was a fitting end to a marvellous weekend.

I am sure I will be joined by all who went in thanking Vic Arnold for organising it all and for conducting us to such interesting places and, not least, for finding such good and reasonably-priced accommodation.

C.R.B.

REPORT OF THE TREASURER

The Statement of Accounts continues to give further details to show more clearly where our income was derived and how the expenditure was disbursed.

The Current Accounts are now shown separately so that we can see that during the year there was a surplus in the day-to-day running of the Society of £385. This may seem a very healthy amount but our budgetary forecasts for 1980 indicate that, for this current year, we can expect a loss of about £100 due to the need to replenish our stocks of paper and brochures in addition to the continuing rise in postage costs and hall hire charges.

The Bird Atlas was published during the year and the financial details for this are shown. In 1979 there was a shortfall of £330, but £214 had already been received in 1978 so that we had virtually broken even on this venture and still have copies for sale.

Also shown separately are details of money received as grants for specific purposes, rather than as general income.

In an attempt to keep the value of our funds we continue to re-invest the interest received and a further £2,500 has been invested in Local Authority Bonds. This is for 5 years at 12½%.

M. CHANDLER

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1979

| 1978 | INCOME – Current Accounts | 1979 |
|------|--|-------------|
| | £ | £ |
| 817 | Subscriptions | 1139 |
| 38 | Sales | 78 |
| 26 | Surplus on meetings | 30 |
| 25 | Donations | 1 |
| 906 | | 1248 |
| | EXPENDITURE – Current Accounts | |
| | ADMINISTRATION | |
| – | Officers' Expenses | 2 |
| 15 | Postage | 41 |
| 11 | Stationery | – |
| – | Sundries | – |
| 50 | Purchase of car stickers | – |
| 20 | Insurance | 20 |
| 20 | Auditors' Fees | 20 |
| 116 | | 83 |
| | MEETINGS | |
| 115 | Hire of halls | 119 |
| 9 | Lectures and Films | 5 |
| 58 | Programmes | 84 |
| – | Officers' Expenses | – |
| 182 | | 208 |
| | SCIENTIFIC | |
| 771 | Journal | 520 |
| 31 | Subscriptions to other Societies | 22 |
| 12 | Recorders' Expenses | 10 |
| 20 | Sundries | – |
| 834 | | 552 |
| | PUBLICITY | |
| 159 | Newsletter | 70 |
| 36 | Application Forms | – |
| 5 | Advertising | 6 |
| 200 | | 76 |
| | DEPRECIATION | |
| 17 | of equipment @ 10% on cost | 17 |
| | TOTAL | £860 |
| 145 | Excess of Income over Expenditure (current accounts) | 385 |
| | DEPOSIT ACCOUNTS | |
| | INTEREST | |
| 492 | City of Nottingham Bonds | 507 |

| | | |
|-----|----------------------|-----|
| 96 | Bank Deposit Account | 98 |
| 588 | | 605 |

PUBLICATIONS ACCOUNT

| | | |
|-----|-----------------|------|
| 214 | Income | 2005 |
| — | Expenditure | 2335 |
| | Balance on year | -330 |

GRANTS ACCOUNT

| | | |
|---|-------------------------|-----|
| — | Income | 323 |
| — | Expenditure | 154 |
| | Balance carried forward | 169 |

BALANCE SHEET AS AT 31st DECEMBER 1979

| 1978 | | | | 1979 |
|-------|------------------------------------|-------------|---------------------|-------|
| £ | | £ | £ | £ |
| | FIXED ASSETS | COST | DEPRECIATION | |
| 35 | Books and Journals | 35 | — | 35 |
| 10 | OS Maps | 10 | — | 10 |
| 8 | Bird song records | 8 | — | 8 |
| 15 | Display boards | 15 | — | 15 |
| 15 | Microscope | 15 | — | 15 |
| 3 | Tools | 3 | — | 3 |
| 2 | Screen | 2 | — | 2 |
| 42 | Slide projector | 60 | 24 | 36 |
| 77 | Duplicator and stand | 110 | 44 | 66 |
| 207 | | | | 190 |
| | CURRENT ASSETS | | | |
| 368 | Bank Account | | | 703 |
| 1815 | Deposit Account | | | 170 |
| 11 | Cash in Hand | | | 58 |
| 6000 | City of Nottingham Bonds | | | 6000 |
| — | East Staffordshire DC Bonds | | | 2500 |
| 250 | Debtors — Interest on Bonds | | | 250 |
| 12 | Debtors — Subscriptions | | | — |
| — | Debtors — Bank payment not cleared | | | 100 |
| 8456 | | | | 9781 |
| | CURRENT LIABILITIES | | | |
| 22 | Creditors | | | 555 |
| 214 | Bird Atlas Account | | | — |
| 236 | | | | 555 |
| £8427 | TOTAL | | | £9412 |

Honorary Auditors
P. J. HIGGINS
A. M. SMITH

METEOROLOGY

Report of the Recorder

THE WEATHER OF 1979

The year 1979 was marked by a prolonged and severe winter, the worst experienced since the notorious one of 1963, and by unusually heavy rainfall totals at certain periods.

Snow from the last two days of 1978 was already lying on New Year's Day and there were frequent further falls during January and February, the low prevailing temperatures keeping it unmelted for long periods – fifteen days in January and nine in February – with predominantly easterly and north-easterly winds. March was somewhat less cold, but much of the high precipitation was in the form of sleet and hail, the monthly total being exceeded in the present century only by the corresponding figures for 1916 and 1947, both well remembered for their blizzards. The 16th was a particularly unpleasant day, with long periods of sleet and a biting north-easterly wind.

April and May were both wetter than usual, but short warm spells developed at mid-month, with temperatures up to 21 deg. C. on 15 April and up to 26 deg. C. a month later. As usual, the thunderstorm season began at the end of May, with a heavy storm on the 30th.

June and July, on the other hand, were both much drier than usual, and settled warm weather was a feature of the third week of June (25 deg. C. on the 20th) and of much of July, the warmest weather of the year being experienced during the fourth week. August, though not quite so warm, had a fairly high rainfall, much of it due to thunderstorms. However, it was the autumn months, once again, as in the previous year, which produced some of the year's pleasantest conditions, and temperatures as high as 15 deg. C. occurred as late as the end of November and into the first week of December. The latter month then developed into the wettest for 65 years in north Beds., the rainfall having been only twice exceeded by similar periods during this century, in 1910 and 1914.

RAINFALL

Rainfall was about 20 per cent above the long-term average, but, as in 1978, variations between individual months were very marked. The unusually wet March and December have already been noted, but in other months there were some days of exceptionally heavy rainfall, quite apart from thunderstorms. Against this, July and September were dry, an infrequent occurrence for the former, though not for the latter.

Apart from a 'freak' rainfall at Silsoe during a thunderstorm in August, reported below, the wettest days of the year were:

| | |
|------------|--|
| Cardington | 30.5 mm on 13 December |
| | 26.0 mm on 27 December |
| | 25.8 mm on 25 October – all frontal rain |
| Luton | 40.0 mm on 27 December |
| | 29.0 mm on 25 October |

The longest wet period at Cardington was from 16 May to 2 June inclusive – 17 days. At Luton there was precipitation on every day from 2 to 29 March – 28 days.

There were two periods of 'absolute drought' during the year, periods of 14 consecutive days without measurable rain. These were from 9 to 22 July and from 3 to 16 September.

SNOW

Snow fell in Bedford on at least 17 days during the year which is unusual. The heaviest falls were on 17 January and during the blizzard of 14 February.

RAINFALL FOR 1979

| | Cardington | Luton | Sandy | Silsoe |
|------------|------------|-------|-------|--------|
| January | 53.0 | 53.9 | — | 51.4 |
| February | 45.3 | 54.8 | — | 36.8 |
| March | 100.5 | 123.0 | — | 101.6 |
| April | 65.1 | 88.3 | — | 73.8 |
| May | 78.6 | 103.6 | 77.2 | 72.0 |
| June | 33.4 | 36.5 | 35.9 | 23.0 |
| July | 18.7 | 16.9 | 16.0 | 12.0 |
| August | 53.0 | 66.1 | 66.0 | 107.8 |
| September | 11.0 | 22.1 | 11.9 | 12.3 |
| October | 66.5 | 81.2 | 61.1 | 61.4 |
| November | 32.9 | 44.3 | 42.4 | 40.8 |
| December | 104.2 | 130.7 | 111.8 | 107.5 |
| Total, mm. | 662.2 | 821.4 | — | 700.4 |
| 1978 | 605.9 | — | — | 541.0 |

Cardington: M.o.D. per Mr L.A. Speed
 Luton (Runley Road): Lee Valley Water Company (Mr S.R. Rippon, Chief Engineer.)
 Sandy: R.S.P.B., The Lodge, Mr Ivan Proctor, Warden.
 Silsoe: N.I.A.E. Mr Alan Hunter, Met. Observer.

(Rainfall readings at Dunstable, Periwinkle Lane, have not yet been resumed by the Lee Valley Water Company.)

THUNDER

Thunder was heard in Bedford on 13 occasions, a much higher figure than in 1978, with appreciable rainfall exceeding 6 mm on six occasions. The three heaviest storms were those of the late afternoon of 13 June, with over 15 mm of rain, the widespread storms of 29 July, and the heavy storm on the evening of 7 August. This latter produced the remarkable total of 57.2 mm of rain at the N.I.A.E., Silsoe, most of it within a couple of hours. The corresponding figures for Cardington and Luton were only 11.4 and 17.8 mm respectively.

TEMPERATURES

As might have been expected, temperatures were much lower than average for the first four or five months, and this brought down the mean for the whole year to 9.4 deg. C. — just under 49 deg. F. This is about 0.7 deg. C. below the long-term mean. In January, for example, the highest day temperature was only 6 deg. C. and there were seven days on which it did not rise above freezing. There were 25 night frosts, the coldest night of the year being that of the 27/28 January with a temperature of 7 deg. F. or minus 13.9 deg. C.

The temperature exceeded 80 deg. F., or 26.7 deg. C., on only one day of the year — 27 July, with 27.8 deg. C.

PRESSURE

Two extreme barometric readings during the year seem worthy of record; on 25

February there was a reading of 30.57 in. of mercury, or 1032 mb. and three weeks later, on 14 March, the barometer fell to 28.66 in. or 966 mb. These are both uncorrected for height above sea-level, in this case about 125 ft.

SUNSHINE

The sunshine recorded at the N.I.A.E., Silsoe, was about 98 per cent of the long-term mean, and higher than in either of the two preceding years.

CELESTIAL PHENOMENON

A sun-pillar was observed at sunset on 25 February. These are usually considered to be caused by the presence of ice crystals in the upper atmosphere.

A.W. GUPPY

MAMMALS

Report of the Recorder

I am pleased to report that 1979 was a good year for mammal recording. Although it was not quite as good as some previous years for the number of new records obtained, the content has made up for that.

Last year I reported a new species for Bedfordshire, the Red-necked Wallaby, since when none have been seen, which only shows the problem of such an escaped species getting established. In 1979 we had a new species which is much more likely to stay with us during the coming years, this being the American Mink. This species which has escaped from fur farms in many parts of Britain is already well established over a wide area of the country, and has now definitely entered Bedfordshire. The Mink lives near rivers and small waterways and has come to us up the River Ouse from Huntingdonshire, our record being from the area of Wyboston. There is also the probability of a sighting in the Southill area, so they may already be more widespread in the county than we realise.

Two records that I was very pleased to obtain were for the Fat Dormouse (*Glis glis*). Fifteen of these animals were removed from the loft of a house in Whipsnade and are now on exhibition in Whipsnade Zoo. The site is the very same one from which the last south of the county record was obtained in 1948 and shows the benefit of checking old locations! The other record was from Studham but this time of a single animal under the floor of a house. It was also taken to the Zoo for identification before being released at its capture site. We will have to wait some years to see if this is a population increase or just coincidence, but there have also been many sightings of these animals in Ashridge over the last two summers – 1978 and 1979 – which is just over the county border from our locations.

Harvest Mice were again very well recorded, mainly through the enthusiastic work of D. Rands, and this is now the first species to be recorded in all 10 Km. squares in Bedfordshire. It is second on the list of total tetrad records with 273, being exceeded only by Rabbit with 317, while Mole comes next with 237, then Hedgehog with 222 and Brown Hare 208, these being the only species with more than 200 records. This level of Harvest Mouse records shows how far the other species have to catch up, as it is not really common compared with many other species. Bedfordshire was well represented in the recently published National Harvest Mouse Survey, organised by the Mammal Society, so our work is of value not only in Bedfordshire but also as part of the national coverage.

It was good to see records being obtained for the less common species as well, 1979 producing three new tetrad records for Pygmy Shrew, three for Water Shrew, one for Daubenton's Bat, two for Pipistrelle Bat and seven for House Mouse.

Our new tetrad records for 1979 were 251, and 14 new 10 Km. square records, these latter going to Monks Wood to add to the National Record maps. In the eight years I have been recording mammals, we now have totals of 3004 tetrad records and 448 10 Km. records. The

total number of mammal species recorded in these eight years is 36, but during 1979 we had records for only 27 species, the missing ones being Wallaby, four Bat species, Dormouse, Yellow-necked Mouse, Otter and Red Deer, most of which I would not expect to record every year, or in some cases not in any future year.

It must be remembered that records still tend to show the areas of recorders' activity rather than actual species distribution, but 1979 showed a much better spread of records over the whole of the county than usual with a good number of records from the north of the county and around the edges, sites that usually get overlooked.

The new tetrad records for 1979 are listed below, and if added to the distribution maps published in *Bedf Nat* 29: 36-39 and the update lists published each year since then, will give a full record up to the end of 1979.

- Hedgehog *Erinaceus europaeus* – 8 tetrads. 92I, 95Z, 01I, 06E, 13Y, 24HMP.
 Mole *Talpa europaea* – 21 tetrads. 82X, 92SWX, 94X, 96V, 03R, 06BJPU, 14BJ, 15CHLM, 28E, 24KS, 25Q.
 Common Shrew *Sorex araneus* – 22 tetrads, 92V, 93F, 94X, 95M, 96W, 02S, 04Y, 05D, 061JP, 141J, 15CKLM, 23EJ, 24N, 25AQ.
 Pygmy Shrew *Sorex minutus* – 3 tetrads. 93F, 02S, 15K.
 Water Shrew *Neomys fodiens* – 3 tetrads. 15M, 24DN.
 Bat – 3 tetrads. 92V, 01H, 13I.
 Daubenton's Bat *Myotis daubentoni* – 1 tetrad. 03B.
 Pipistrelle Bat *Pipistrellus pipistrellus* – 2 tetrads. 02A, 03B.
 Rabbit *Oryctolagus cuniculus* – 10 tetrads. 82X, 94A, 95E, 02S, 06B, 12B, 15CHM, 24N.
 Brown Hare *Lepus capensis* – 7 tetrads. 95MQ, 01BC, 15C, 23E, 25C.
 Fat Dormouse *Glis glis* – 2 tetrads. 91Y, 01H.
 Bank Vole *Clethrionomys glareolus* – 7 tetrads. 02S, 03E, 12B, 14PX, 15M, 23E.
 Short-tailed Vole *Microtus agrestis* – 18 tetrads. 93FM, 94X, 95M, 96W, 04Y, 05D, 06IJU, 14P, 15CLM, 23E, 24FN, 25Q.
 Water Vole *Arvicola terrestris* – 3 tetrads. 92DE, 95X.
 Harvest Mouse *Micromys minutus* – 58 tetrads. 82X, 92GU, 93F, 94JPQRUVW, 95LQUVWZ, 96LMV, 01NPTZ, 02IKNTYZ, 03GHQV, 04AELT, 05FGHTY, 06Q, 11J, 12FJ, 13FGL, 14BG, 15B, 23E, 24AU, 25AQ.
 House Mouse *Mus musculus* – 7 tetrads. 94S, 95M, 02Q, 12B, 14J, 23E, 25Q.
 Wood Mouse *Apodemus sylvaticus* – 17 tetrads. 92E, 93F, 94X, 02S, 06IJ, 11J, 14BJP, 15FKM, 23EJ, 24N, 25Q.
 Brown Rat *Rattus norvegicus* – 10 tetrads. 94R, 02R, 03Q, 05D, 06A, 12C, 14B, 15IL, 23J.
 Grey Squirrel *Sciurus carolinensis* – 11 tetrads. 82X, 92QR, 94X, 95X, 02S, 13Y, 14J, 15T, 24H, 25Q.
 Fox *Vulpes vulpes* – 14 tetrads. 92X, 94SX, 95MX, 03S, 04RU, 06C, 11J, 13Y, 16B, 24H, 25Q.
 Badger *Meles meles* – 1 tetrad. 11J.
 Ferret *Mustela furo* – 1 tetrad. 02T.
 American Mink *Mustela vison* – 1 tetrad. 15T.
 Stoat *Mustela erminea* – 10 tetrads. 92ET, 93W, 94V, 95Y, 02DP, 03F, 05AC.
 Weasel *Mustela nivalis* – 4 tetrads. 01E, 15M, 24CH.
 Muntjac Deer *Muntiacus reevesi* – 7 tetrads. 92W, 02PST, 05AD, 25Q.

My thanks go to the 24 people listed below who contributed the records, only two of whom were non-members.

D. Anderson, C. Banks, C. W. Burton, S. Cham, B. Clutton, R. Fryett, J. Green, C. Hill, G. Hooper, J. E. Kemp-Gee, D. J. King, D. P. Lawrence, B. Munn, B. S. Nau, B. Nightingale, D. G. Rands, E. B. Rands, M. B. Rowland, A. J. Rundle, B. Stephenson, C. Tack, M. Tack, T. Thomas, A. A. Woodgate.

DAVID ANDERSON

BIRDS

Report of the Recorder

INTRODUCTION

The dominant feature of the year for birdwatchers was the severe arctic weather which prevailed during the early part of the year. This provided excellent, albeit often uncomfortable, conditions to see rare species at close quarters.

During the first week in January cold air swept up from the Continent and from mid-month heavy snow fell throughout the country. Wildfowl were displaced from traditional areas and Bewick's Swans were seen in Luton Hoo and Blunham GPs, while Wigeon, Pintail and the three "sawbill" ducks all occurred in record numbers. Hen Harriers, a species to be a feature of the winter, appeared three times in January and once in February, while Short-eared Owls were almost commonplace. The first of two Red-throated Divers appeared at Blunham GPs on 22nd January, while a few days before a dead Bittern was found near Felmersham, ironically a road-accident casualty and not a victim of the weather. Towards the end of the month a Black-tailed Godwit was found feeding near a busy main road at Marston Moretaine, where it stayed for three weeks, the county's first winter record.

Although a ban on wildfowling brought temporary relief from one quarter the weather during February was unrelenting. Blizzard conditions on the 15th had spectacular effects on the county's avifauna. No less than four Puffins were found, of which three were later released alive by the R.S.P.B., but circumstances suggest that many more may have perished. At Wyboston GP a Ring-necked Duck, Ferruginous Duck and Red-necked Grebe made up a rare trio attracting birdwatchers from far afield, while nearby a second Red-throated Diver arrived at Blunham GP and at least five Short-eared Owls performed at Girtford. Stewartby Lake was one of the few local waters to remain unfrozen throughout and Slavonian Grebe, Smew and Goosander were all on view. On the 24th February a Great Grey Shrike appeared briefly at Dunstable SW, while on the next day a Goshawk flew over Strealey.

March was colder than average but the first twelve days enjoyed relatively mild air from the south. However mid-March brought a further cold snap and with it another Red-necked Grebe and Ring-necked Duck. However by this time thoughts had largely turned towards spring migration, but because of the north-easterly winds this was slow in coming. Species that one would expect to find in March were not apparent and it was not until the middle of April that summer visitors became more evident. The pattern then was of little delay between the vanguard of each species and the main arrival, although in general terms dates were later than usual.

Species of note during the spring included Red Kite, a Hoopoe, good passages of Common Scoter and Ring Ouzels, Sanderling, Rock and Water Pipits. Unexpected migrants during May and June included a Honey Buzzard, Sandwich Tern, Blue-headed Wagtail and Pied Flycatchers.

During the summer two notable events took place with the breeding of Gadwall for the first time in the county, and of Sparrowhawk, the first for many years; the last two years had seen increases for both species. Of the more regular breeders Little Ringed and Ringed Plovers had excellent seasons, although dependant as they are on man-made environments they may not find conditions at the two main sites so suitable in 1980. Quail were present in two areas, with breeding proved at one, and once again Hobbys were successful.

The autumn passage was unspectacular and short-lived with the majority of the waders passing through quickly. Included were Temminck's and Little Stint, Whimbrel, Black-tailed Godwit, Grey Plover and Wood Sandpiper. At The Lodge, Sandy, Wryneck and Crossbills all appeared, while elsewhere in October, a late Red-backed Shrike was seen and, quite remarkably, four Bearded Tits visited an area on the outskirts of Luton.

In December a Black-necked Grebe and another Great Grey Shrike were seen to round off an outstanding year, in which 172 species were recorded, an all time high.

My thanks to the following observers:—

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SYSTEMATIC LIST FOR 1979

Species recorded in Bedfordshire during 1979 and not included in the systematic list are:—

Mute Swan, Kestrel, Red-legged Partridge, Grey Partridge, Pheasant, Lapwing, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Stock Dove, Woodpigeon, Collared Dove, Green Woodpecker, Great Spotted Woodpecker, Meadow Pipit, Wren, Dunnock, Robin, Blackbird, Song Thrush, Mistle Thrush, Goldcrest, Long-tailed Tit, Marsh Tit, Willow Tit, Coal Tit, Blue Tit, Great Tit, Nuthatch, Treecreeper, Jay, Magpie, Rook, Starling, House Sparrow, Tree Sparrow, Chaffinch, Greenfinch, Goldfinch, Linnet, Bullfinch, Yellowhammer, Reed Bunting, Corn Bunting.

English and scientific names follow the 'British Birds' List of Birds of the Western Palearctic (1978).

The following abbreviations are used in the text:— B.T.O. = British Trust for Ornithology; CHP = Chalk Pit; CLP = Clay Pit; GP = Gravel Pit; L = Lake; SW = Sewage Works; R = River; RSPB = Royal Society for the Protection of Birds.

- Red-throated Diver** *Gavia stellata* One at Blunham GP 22-24th January, and a second at the same locality 16-24th February were the first since 1970 (JT, JTRS et al).
- Little Grebe** *Tachybaptus ruficollis* Typical autumn build up in October with 18 at Blunham GP on 18th and 21 on Luton Hoo L on 28th.
- Great Crested Grebe** *Podiceps cristatus* Little change in breeding status with breeding proved at six sites, but undoubtedly present at more.
Winter peaks of 115 on 5th January and 80+ on 18th February, both at Stewartby L.
- Red-necked Grebe** *P. grisegena* There was a widespread influx of this species throughout the country during the severe weather at the start of the year. In Bedfordshire singles at Wyboston GP 20th-24th February, Stewartby L 25th February, The Boating Lake, Bedford Embankment 20th March and Blunham GP 21st March. The dates suggest that perhaps only two individuals were involved (CD, AJL, JTRS et al).
- Slavonian Grebe** *P. auritus* Single Stewartby L 11th February (AJL, TP).
- Black-necked Grebe** *P. nigricollis* Single Blunham GP 23rd December (PH).
- Cormorant** *Phalacrocorax carbo* Recorded regularly in the Brogborough/Stewartby L area with peak of nine on 8th April. Elsewhere singles seen over Blunham, on Luton Hoo L, the R. Ouse near Goldington and Dunstable SW.
- Bittern** *Botaurus stellaris* One found dead near Felmersham on 17th January was a victim of a road accident and not the weather (per RSPB).
- Grey Heron** *Ardea cinerea* Breeding noted at Southill Park, Luton Hoo and Bromham Mill.
- Bewick's Swan** *Cygnus columbianus* Eleven in Luton Hoo 1st January, 16 Blunham GP 2nd January; two over Odell Plantation 27th October; three at Harrold GP 28th October and two Blunham GP 22nd December
- Bean Goose** *Anser fabalis* Single at Harrold GP 9th September and then irregularly to 23rd December was a bird of suspect origin.
- Pink-footed Goose** *A. brachyrhynchus* A party of 21 Chimney Corner CLP on 4th January is the first wild occurrence since 1955. One that associated with the Greylags at Radwell GP on 6th May must be of more dubious origin.
- White-fronted Goose** *A. albifrons* Single Dunstable SW on 10th November.
- Greylag Goose** *A. anser* Three pairs nested at Roxton GP raising six, five and one. 16-18 goslings reared near Harrold GP and 16 goslings were seen at Blunham GP, 6th June. Recorded at Harrold/Radwell GP, Blunham GP and Roxton GP throughout the year with peaks of 71 (November), 48 (March) and 43 (August) respectively.

- Snow Goose *A. caerulescens*** Escaped birds noted at Radwell GP 19th January, Harrold GP from March to December, with four on 31st May, a pair at Roxton GP 25th-28th June and a single Dunstable SW 27th February.
- Canada Goose *Branta canadensis*** The following young were raised: six Brogborough CLP, 21 Harrold GP, 17 Luton Hoo, and six Southill L. Nesting also took place at Stewartby New Pits and Eversholt L with unknown success.
A steady increase in numbers continues, with the Harrold flock peaking at 150, the Luton Hoo flock at 56, and the "brick-pits" flock at 75.
Also reported from Eversholt L with maximum of 29, Southill L, with 19, and smaller numbers from Roxton, Radwell GP, Dunstable SW, and Blunham GP.
- Barnacle Goose *B. leucopsis*** Singles at Blunham GP in April, Luton Hoo in February, and Harrold GP from June to September are of suspect origin. However four and then five at the latter site from 13th October to 4th November may have been wild birds, as were probably two flying SSE over Dunton Fen on 27th February.
- Brent Goose *B. bernicla*** One at Radwell GP on 6th February and then in flight over Harrold GP and Radwell GP on 25th February would be the first county record since 1893. As with all such geese records doubts must remain about its origin although this species is less commonly kept in wildfowl collections.
- Egyptian Goose *Alopochen aegyptiacus***. Single at Blunham GP on 27th June (see also 1978 records). This bird did not escape from Mr Zwetloot's nearby collection. Another at Blunham 1st September.
- Shelduck *Tadorna tadorna***. Spring records involving one to two birds from six sites from 12th March to 28th May. Birds on moult migration noted at Dunstable SW with single on 26th July, and 10 at Harrold GP 11th August. Winter records from Harrold GP, Blunham GP and Dunstable SW.
- Mandarin *Aix galericulata***. No confirmed breeding records although a duck was seen nest prospecting near Old Warden 15th April. Other spring records from near Blunham, the R. Ouse near Bedford, Old Linslade, and Eversholt L. Winter records from Harrold GP, Whipsnade Zoo (free flying), Luton Hoo L, Woburn Park L, Eversholt L. Bedfordshire's population remains low.
- Wigeon *Anas penelope***. In keeping with recent years widespread during both winter periods with noticeable influx during cold weather in mid-February. Maxima of 200+ Radwell GP 25th February, c130 near Harrold and 150 over Melchbourne on 28th January, 150 + near Harrold 24th February, and then 113 at Blunham GP 24th December. Smaller numbers from eleven other sites, with first arrival 16th September and latest departure 14th April.
- Gadwall *A. strepera***. The first breeding record took place in the county, when a pair raised three young Luton Hoo L. Elsewhere recorded regularly during both winter periods from Harrold GP, Radwell GP, Wyboston GP, and Blunham GP with a maximum there of 26 at the end of December. Smaller numbers from Dunstable SW and Southill L.
- Teal *A. crecca***. Wildfowl counts continued at selected waters during the winter months on specific dates, and the totals are shown below and elsewhere for the species concerned. The December count for all species was affected by flooding and the January count by severe weather with many waters frozen.

| | 14/1 | 18/2 | 18/3 | 16/9 | 14/10 | 18/11 | 16/12 |
|-------|------|------|------|------|-------|-------|-------|
| Total | 15 | 111 | 67 | 70 | 162 | 275 | 24 |

This species is particularly susceptible to cold weather and this is reflected in the low numbers in the first winter period. Movements were noted at Bedford SW with c100 on 7th January and c95 on 18th February. Numbers grew in the second winter period with 166 on Southill L 11th November.

Pairs present during the breeding season at Southill and Home Wood, Northill but breeding not proved.

Mallard *A. platyrhynchos*

| | 14/1 | 18/2 | 18/3 | 16/9 | 14/10 | 18/11 | 16/12 |
|-------|------|------|------|------|-------|-------|-------|
| Total | 61 | 312 | 196 | 1804 | 1436 | 1453 | 583 |

Numbers remained well below average throughout the year, with largest flock at Harrold GP with 850+ 4th November.

Pintail *A. acuta*. Noteworthy record of c100 over Melchbourne 28th January. Otherwise sightings were typically infrequent with four at Blunham GP 22nd February, a single there on 26th February, and then singles Dunstable SW 1st March, Harrold GP 29th September, Brogborough CLP 17th November and again 30th December.

Garganey *A. querquedula*. An absence of records for 1979.

Shoveler *A. clypeata*. Reported in every month except July, with records from eleven sites with maximum of 70 Dunstable SW 11th November.

Red-crested Pochard *Netta rufina*. Adult male Blunham GP 3rd April (JT).

Pochard *Aythya ferina*. Single pairs raised four young Luton Hoo and one at Brogborough CLP.

Winter counts as follows:—

| | | | | | | | |
|-------|------|------|------|------|-------|-------|-------|
| | 14/1 | 18/2 | 18/3 | 16/9 | 14/10 | 18/11 | 16/12 |
| Total | 132 | 199 | 220 | 188 | 97 | 283 | 251 |

† In the first winter period above average, but failed to reach usual numbers in the autumn.

Highest counts were from Blunham GP with 308 1st January, then 100+ regularly to 18th March, and in the second winter period with 157 on 16th December. Elsewhere the only count over 100 was 105 at Grovebury Road Sand Pit 4th March.

Ring-necked Duck *A. collaris*. The second and third county records with single drakes at Wyboston GP 19th to 24th February and Blunham GP 27th March (JTRS, DJF et al).

Ferruginous Duck *A. nyroca*. One at Wyboston GP on 20th February was only the second county record this century (JTRS, DJF et al).

Tufted Duck *A. fuligula*. Present during the breeding season at eleven sites raising 12 broods.

| | | | | | | | |
|-------|------|------|------|------|-------|-------|-------|
| | 14/1 | 18/2 | 18/3 | 16/9 | 14/10 | 18/11 | 16/12 |
| Total | 176 | 162 | 139 | 310 | 233 | 384 | 160 |

Average numbers in the first winter period, but high totals from September. At Blunham GP counts of 100+ were made on seven dates during January and February with peak of 193 on 1st January. Elsewhere 115+ Radwell GP and 100+ at Stewartby L on 25th February and c200 at Wyboston GP on 24th February were notable. Later, good numbers were present at Harrold GP from July to December with peak of 160 on 16th September. 200 were at Barkers Lane GP 26th December.

Common Scoter *Melanitta nigra*. Well represented during spring with three at Blunham GP 7th April, a pair at Stewartby L 8th April and single ducks at Dunstable SW 15th to 19th April and Blunham GP 3rd May.

Goldeneye *Bucephala clangula*. An average year with records from eight sites, with a maximum of ten on three dates at Blunham GP. The last spring departure was noted on 15th April and the first in autumn 21st October. Eight had returned to Barkers Lane GP on 11th November.

Smew *Mergus albellus*. A good sequence of records of this normally rare duck at Stewartby L during February, with two on 4th, three on 11th, one on 25th staying until 1st March (BN et al).

Red-breasted Merganser *M. serrator*. As with all three "sawbills" noticeable influx during the severe winter. Singles at Brogborough CLP 14th January and Dunstable SW 22nd February, three over Girtford on 25th February, three pairs at Radwell GP 23rd February, 3 at Blunham GP 1st March, singles Luton Hoo and Brogborough CLP 3rd to 4th March and finally three at Stewartby L 8th April.

Goosander *M. merganser*. Records from nine sites during the first winter period. Up to 15 were seen regularly at Blunham GP during January, with a peak of 30 on 22nd January. In the second winter period singles Radwell GP 18th November and Blunham GP on 22nd December, four at Harrold GP 23rd December and two at Blunham GP 29th December.

Honey Buzzard *Pernis apivorus*. Single seen at The Lodge, Sandy 14th to 25th June (DJF, TS et al).

- Red Kite** *Milvus milvus*. A single over Sundon Park, Luton on 26th March was only the third county record this century (MB). A bird probably of this species was reported to the RSPB from near Marston Moretaine 22nd May (per IKD).
- Hen Harrier** *Circus cyaneus*. One of the notable species affected by the arctic weather, being widely reported from all over the country. Singles from the Pegsdon area 1st and 8th January, Tempsford Airfield 6th January, Charle Wood 16th January and Blunham 18th February virtually double the previous county total since 1946.
- Harrier** sp *Circus* sp. A single of either Marsh or Montagu's Harrier over Carlton on 28th May (DSW).
- Goshawk** *Accipiter gentilis*. The third county record, with a female near Streatley on 25th February (MS).
- Sparrowhawk** *A. nisus*. The first definite breeding record in the county since 1972 occurred in the west with three young raised. Signs of a good recovery are indicated by records from Luton Hoo on several dates April to December, the Odell/Harrold area April to December, Maulden Woods June and July, Riseley in August and Whipsnade Zoo Park in September.
- Buzzard** *Buteo buteo*. Single at The Lodge, Sandy 5th February.
- Osprey** *Pandion haliaetus*. No records for 1979.
Additional 1978 record. One at Eversholt Lake 11th June and later the same day near the A5 (JPK).
- Hobby** *Falco subbuteo*. At least one young raised near traditional site in mid-Beds. Observations away from breeding site were slightly down on 1978 with records from six sites from 2nd June to 23rd September.
- Quail** *Coturnix coturnix*. Reported from near Biggleswade, where breeding was proved with sight of a family party, and from near Luton where one or two pairs remained from May to July.
- Lady Amherst's Pheasant** *Chrysolophus amherstiae*. Recorded from Luton Hoo, with a maximum of 24, Charle Wood where breeding success was thought to be moderate, and Maulden Woods.
- Water Rail** *Rallus aquaticus*. Present during breeding season at Flitwick Moor and Manor Farm, Toddington. Winter records from Blunham, Ickleford Common, Whipsnade, Harrold GP, Dunstable SW and Old Inslade.
- Moorhen** *Gallinula chloropus*. Large concentration noted in Luton Hoo when 78 were counted in one field in November.
- Coot** *Fulica atra*. Notable influx during November at Blunham GP with peak of 224 on 18th, Brogborough CLP with peak of 300 on 17th, Dunstable SW with 150 on 11th and Harrold GP with 200 on 25th.
- Oystercatcher** *Haematopus ostralegus*. Single Dunstable SW 7th August (LE).
- Stone-curlew** *Burhinus oedicanus*. Visits made to previous breeding sites proved negative.
- Little Ringed Plover** *Charadrius dubius*. An all time high of 18-20 pairs bred at five sites with birds present at another four sites during the summer. The first arrival on 24th March was early.
- Ringed Plover** *C. hiaticula*. Eleven pairs bred at three sites. However, drastic changes have been made at the two main sites and birds of this and the previous species may not find such suitable habitat in 1980.
Passage noted from 3rd March to 21st August with maximum of 15 at Harrold GP 21st July.
- Golden Plover** *Pluvialis apricaria*. A poor year with the largest flock of 40-50 near Thurleigh on 6th April. The last spring birds were five near Bedford SW on 7th April and the first in autumn was a single at Radwell GP 22nd July.
- Grey Plover** *P. squatarola*. Single at Barkers Lane GP 8th July (MJP).
- Sanderling** *Calidris alba*. Single at Harrold GP 8th May (DSW).
- Little Stint** *C. minuta*. A single at Dunstable SW from 23rd July to 2nd August was joined by a second 25th to 26th (LE, WJD et al).
- Temminck's Stint** *C. temminckii*. Single at Dunstable SW 19th to 20th August was only the third county record (AT et al).

- Dunlin** *C. alpina*. Winter birds at Stewartby L 2nd January, Wyboston GP 19th February and Harrold 17th November.
Spring passage noted at three sites 11th March to 31st May and then in autumn at two sites 15th July to 16th September with a maximum of three at Dunstable SW 29th July.
- Ruff** *Philomachus pugnax*. A single remained by R. Ouse near Bedford 29th to 31st January.
Very poor passage with two at Bedford SW 25th April, and singles Harrold GP 14th August, and Bedford SW 27th August and 8th September.
- Jack Snipe** *Lymnocyptes minimus*. In the first winter period birds seen at Biggleswade Common, Harrold GP, Wyboston GP, Dunstable SW and Houghton Regis CHP. During the second winter period records from only Harrold GP and Houghton Regis CHP.
Never more than two seen on any one date.
- Snipe** *Gallinago gallinago*. Drumming occurred at three sites during the breeding season.
Numbers well down with 50 at Millbrook on 25th February the largest flock.
- Woodcock** *Scolopax rusticola*. Roding noted at five sites, all, apart from Luton Hoo, on the Greensand Ridge.
- Black-tailed Godwit** *Limosa limosa*. From about 28th January to 13th February a single at Marston Moretaine. Three at Harrold GP 21st to 22nd July (BN, DSW et al).
- Whimbrel** *Numenius phaeopus*. Single west over Maulden 21st July (BN).
- Curlew** *N. arquata*. Singles near The Lodge, Sandy 20th December and south over Elstow CLP 25th December.
- Curlew/Whimbrel** *Numenius* sp. Eight flying SW over Carlton 24th July (DSW).
- Redshank** *Tringa totanus*. Breeding took place at three sites, present at another two during the breeding season.
- Greenshank** *T. nebularia*. Single spring record, from Harrold GP, on 20th May. First in autumn, at Radwell GP, on 22nd July was in full summer plumage. Main passage lasted until 16th September at four sites, with a peak of 6+ at Harrold GP on 12th August where the last stayed until 30th September.
- Green Sandpiper** *T. ochropus*. Influx noted during severe weather between 17th and 26th February with birds at four sites. Records during second winter period from Bedford SW with up to four on 25th October.
Spring passage from mid-March to 25th April at four sites with peak of five on 23rd March at Bedford SW. In the autumn, passage took place from 15th July to 24th September. Records from seven sites with a maximum of eight at Bedford SW 2nd September.
- Wood Sandpiper** *T. glareola*. Singles at Dunstable SW 7th to 24th August and Bedford SW 21st to 26th August.
- Common Sandpiper** *Actitis hypoleucos*. Spring passage from 20th April to 20th May from nine sites, with maximum of five at Harrold GP on 8th May.
Autumn passage lasted from 15th July to 23rd September from nine sites with a peak of eight at Dunstable SW on 7th August and seven at Harrold GP on 8th August.
- Turnstone** *Arenaria interpres*. Single at Harrold GP 6th to 7th May (DSW, BN).
- Sandwich Tern** *Sterna sandvicensis*. The sixth county occurrence with a single at Stewartby L 24th June (AJL).
- Common Tern** *S. hirundo*. Young flying birds seen at Stewartby L, Radwell GP, Tempsford GP, Harrold GP and Barkers Lane GP may all have been reared nearby.
Territory held at Roxton GP. Passage lasted 13th April to 26th August from 12 localities, with a peak of 17 at Luton Hoo 17th May.
- Black Tern** *Chlidonias niger*. Good movement in May with 14 at Brogborough CLP on 13th and five Luton Hoo on 17th. In autumn singles Stewartby L 19th August and Brogborough CLP 27th August.
- Puffin** *Fratercula arctica*. A remarkable hard weather influx took place in February. On the 15th an immature was found at Millbrook which later died. Another found on the same day, at Cotton End, was later released alive on the coast. Equally fortunate were one found walking along the A5140 at Wootton on 17th February and one picked up in Roxton Park, both released alive.

- Turtle Dove** *Streptopelia turtur*. The first in spring, on 19th April at Bedford SW, was earlier than average, although the main arrival did not take place until the first week in May. In autumn the last at Whipsnade Zoo Park 26th September.
- Ring-necked Parakeet** *Pittacula krameri*. One was found dead in Harlington after the snow had thawed in March but the remaining three were still present at the end of the year (see 1978 Report). Singles were seen over Kempston on 18th November and by R. Ouse a mile from Bedford centre on 1st December. A pair was present in the Riseley area from September to the end of the year.
- Cuckoo** *Cuculus canorus*. The first birds were heard on 13th April, a typical date, at Home Wood and Dunstable Downs. However it was not well reported until first week of May. The last was at Old Warden on 9th September.
- Barn Owl** *Tyto alba*. Little change in status with summer records from three sites with breeding proved at one. Eight winter records.
- Little Owl** *Athene noctua*. Remains widespread and the easiest owl to see in Bedfordshire. At least six pairs bred in 500 acres of Whipsnade Zoo Park.
- Tawny Owl** *Strix aluco*. Reports from only 16 locations, although probably present in most woods and copses.
- Long-eared Owl** *Asio otus*. One found dead by Cambridge Road, Bedford 2nd February. At a traditional roost in the south of the county one seen 27th October and two on 2nd December.
- Short-eared Owl** *A. flammeus*. Unprecedented numbers were reported from 17 locations, although some descriptions received did not rule out the previous species. At least 26 birds were involved, and probably more, peaking in February with at least five at one locality. Several stayed on through April with the last at Girtford on 30th April. In the second winter period a more typical situation with just a single at Millbrook 24th December.
- Nightjar** *Caprimulgus europaeus*. Six to seven pairs bred at three observer-saturated localities. Equally suitable areas are underwatched.
- Swift** *Apus apus*. The first arrival was on 3rd May, over Sundon Park, Luton; widespread by 8th May. Large feeding flocks were noted in June during cold weather with c500 in Luton Hoo on 6th and 17th, and c1000 over Stewartby L on 24th. The last was a single on 26th September at Dunstable SW.
- Kingfisher** *Alcedo atthis*. A pair bred successfully near Flitwick Moor. Reports indicate a drop in numbers with only one other breeding season record, and ten outside this period.
- Hoopoe** *Upupa epops*. One was heard in Luton Hoo Park 1st April (AJL).
- Wryneck** *Jynx torquilla*. Single at The Lodge, Sandy 14th July (IWJ).
- Lesser Spotted Woodpecker** *Dendrocopos minor*. With sightings from 16 locations no apparent change in status.
- Skylark** *Alauda arvensis*. Hard weather movements on 1st January, which involved "many thousands" passing west over Dunstable following the Downs, and on 17th February when flocks of 250 and 150 passed over Hexton and Streatley.
- Sand Martin** *Riparia riparia*. Generally late in arriving, the first was on 29th March at Harrold GP, with the main arrival about 15th April. The last were on 23rd September at Stewartby L, and Dunstable SW. Of the colonies reported one of the largest, 150 holes at Radwell GP, has since been destroyed by excavation. 206 nest holes were counted at Harrold GP.
- Swallow** *Hirundo rustica*. The first, at Harrold GP on 10th April, was later than average with the main arrival 14th-15th April. The last on 27th October at Harrold GP and Dunstable SW.
- House Martin** *Delichon urbica*. 15th April saw the main arrival, with the first only three days earlier at Potton and Harrold GP. Late birds in November were seen over Leighton Buzzard on 1st, Carlton on 4th and Dunstable SW on 10th.
- Tree Pipit** *Anthus trivialis*. A poor year with breeding records from Maulden Woods, Charle Wood/Wavendon Heath and Old Warden. Two were in song at The Lodge, Sandy 12th June.

- Rock Pipit** *A. spinoletta*. One at Harrold GP 17-18th March. Involved in the same inland movement was an individual of the race *A. spinoletta spinoletta*, known as the Water Pipit, which stayed at Dunstable SW from 17th to 20th March (DSW, WJD et al).
- Yellow Wagtail** *Motacilla flava*. The first was at Harrold GP on 10th April and was widespread by 12-15th. A large spring passage of c60 was noted at Harrold GP on 7th May. Associated with this fall was a bird showing characteristics of the continental race *M. flava flava*, known as the Blue-headed Wagtail.
- Grey Wagtail** *M. cinerea*. Breeding again took place in Luton Hoo. Elsewhere reasonably widespread outside the breeding season.
- Pied Wagtail** *M. alba*. Roosts of 3-400 at Harrold GP and 4-500 in glasshouses at Cotton End are of note.
Birds of the continental race *M. alba alba*, known as the White Wagtail, were reported from Harrold GP 15th – 29th April and from Dunstable SW on 23rd September.
- Nightingale** *Luscinia megarhynchos*. Ten singing males were reported from five sites, with the first on 28th April from near Old Warden.
- Black Redstart** *Phoenicurus ochruros*. More sightings than usual, but no breeding records. In Whipsnade Zoo Park a male and two females were present on 4th April, with another individual on 14th April, a male on Dunstable Downs 22nd April and two at Blunham 6th October.
Additional 1978 record: One in Houghton Regis CHP 11th October.
- Redstart** *P. phoenicurus*. An average breeding season with four pairs in Charle Wood/Wavendon Heath and a single pair in Stockgrove Park.
In spring early passage noted at Flitwick Moor with a male on 10th April, and Whipsnade Zoo Park and The Lodge, Sandy from 8th May. In autumn birds occurred in Potton Wood 9th September, Kempston Mill 22nd September and a remarkably late bird caught and ringed at Odell Woods 28th October.
- Whinchat** *Saxicola rubetra*. Spring passage first noted on 8th May with five at Harrold GP and a single at Dunstable SW, and then at Edworth with a single on 19th May. Autumn records from Dunstable SW, Potton Wood and Luton Hoo, with the last at Kempston Mill on 29th September.
- Stonechat** *S. torquata*. A sharp drop in reports, perhaps due to the hard winter, with birds at Dunstable SW and Barkers Lane GP only.
- Wheatear** *Oenanthe oenanthe*. One pair bred on Warden Hills and another was seen regularly during the breeding season at Begwary.
Both spring and autumn passages were heavy and widespread with the first in Luton Hoo on 23rd March. One of the Greenland race, *O. oenanthe leucorrhoea*, was seen at Bedford SW on 9th May, (IKD). The last in autumn was at Whipsnade Zoo Park 14th October.
- Ring Ouzel** *Turdus torquatus*. Spring passage from Barton Hills on 8th April when one or two were seen, and from Blows Downs with four males on 22nd April.
- Fieldfare** *T. pilaris*. A bird was present in suitable breeding habitat throughout late April, seen behaving in an agitated manner suggesting it was holding territory. A late passage bird was seen near Biggleswade on 13th May. In autumn the first arrival was on 7th October at Whipsnade Zoo Park.
- Redwing** *T. iliacus*. The last spring bird was at Bedford SW on 18th April and the first in autumn at Dunstable Downs on 20th October. Roosts of c2000 at Harrold GP on 2nd December and c3500 near Chellington on 9th December were of note.
- Grasshopper Warbler** *Locustella naevia*. A total of 33 singing males at five sites represents a good year for this species. The first was singing in Maulden Woods on 13th April.
- Sedge Warbler** *Acrocephalus schoenobaenus*. Spring arrivals were first noted at Girtford GP on 13th April, a typical date. Widespread by 15th April.
- Reed Warbler** *A. scirpaceus*. Singing birds reported from eight localities with the first on 6th May at Harrold GP and Luton Hoo. 25+ pairs bred at Harrold GP.
- Lesser Whitethroat** *Sylvia curruca*. First in spring 28th April at Harrold GP and last in autumn same locality 23rd September.

- Whitethroat** *S. communis*. Arriving earlier than usual, the first was at Old Warden Tunnel on 15th April. Not widespread until second week of May. In autumn the last was on Dunstable Downs 5th October.
- Garden Warbler** *S. borin*. First to arrive was an individual near Old Warden on 5th May.
- Blackcap** *S. atricapilla*. The first was on 12th April in Luton Hoo. Wintering records from Dunstable, where one was seen feeding in a garden in January, and from Carlton on 7th November.
- Wood Warbler** *Phylloscopus sibilatrix*. This species just maintains its breeding status with single pairs in Charle Wood and The Lodge, Sandy. Elsewhere singing noted from Potton Wood, Blunham and Luton Hoo.
- Chiffchaff** *P. collybita*. Very late spring arrival, with the first at Aspley Heath 23rd March, and the main arrival 13th – 15th April. One in song in Luton 4th October. A Chiffchaff/Willow Warbler was seen in Bedford 12th February and a Chiffchaff in Amptill Park 20th December.
- Willow Warbler** *P. trochilus*. Late arrival, with the first, at Harrold GP, on 10th April, then the main arrival 13th – 15th April. Together with the previous species, many observers thought breeding numbers were up. One ringed in early August at Harrold GP was retrapped in Southern Portugal in October.
- Spotted Flycatcher** *Muscicapa striata*. First spring arrival was on 9th May at Whipsnade Zoo Park, but not well distributed until 19th – 22nd May. A late bird was noted in Whipsnade Zoo Park on 28th September.
- Pied Flycatcher** *Ficedula hypoleuca*. A good year with passage noted from Potton Wood on 27th April, Whipsnade Zoo Park on 8th May with another on 9th and lastly at Cardington Lock 21st September.
- Bearded Tit** *Panurus biarmicus*. Two males and two females were found in a damp overgrown meadow near Icknield School, Luton on 20th October. They were relocated there in January 1980 (RAK).
- Red-backed Shrike** *Lanius collurio*. A male was found dead by the Potton Road, Biggleswade on 17th June, and one was seen near Chicksands Wood on 22nd June. A late bird was found near Eggington on 7th October.
- Great Grey Shrike** *L. excubitor*. Singles Dunstable SW 24th February and near Sandy 25th December (WJD, RW).
- Carrion Crow** *Corvus corone*. Two of the race *C. corone cornix*, the Hooded Crow, were seen in Whipsnade Zoo Park 22nd December.
- Corvidae**. Autumn movements comprising mainly of Jackdaws, *Corvus monedula*, were seen on 3rd September with c1000 over Knocking Hoe and c600 at Shillington. c800 moved NE over Harrold GP on 3rd November.
- Brambling** *Fringilla montifringilla*. Small flocks with a maximum of 30, were widespread during the first winter period with reports from ten locations. In the second winter period singles only from Sundon Park, Luton on 24th November, Eversholt on 16th December and Tingley Wood on 30th December.
- Siskin** *Carduelis spinus*. A poor year with only reports of four from Warden Wood 27th January, a single Luton Hoo 16th February and 15 Flitwick Moor 24th – 25th February.
In the autumn a single record only with one in Luton Hoo on 22nd October.
- Redpoll** *C. flammea*. Observers have suggested a decline both in breeding numbers, and in winter flocks, with the largest of c30 in Flitwick Moor on 3rd February.
- Crossbill** *Loxia curvirostra*. At The Lodge, Sandy four on 15th August, a pair on 26th September, and singles 27th September and 2nd October.
- Hawfinch** *Coccothraustes coccothraustes*. A drop in records with singles in Luton 2nd February, Studham on 4th February and one or two birds from near Old Warden in spring. A pair is suspected to have bred in Whipsnade Zoo Park. A species often overlooked.

B. NIGHTINGALE

SAND MARTIN RINGING IN BEDFORDSHIRE

by P.J. Wilkinson, 7 Wychwood Avenue, Knowle, Solihull, West Midlands

INTRODUCTION

The Sand Martin, *Riparia riparia*, breeds throughout the British Isles and there can be few birdwatchers not familiar with its colonies of nesting holes clustered together in the cliff-faces of sand and gravel pits. Because of the nature of its chosen nesting places colonies come and go as suitable faces appear and disappear, although some colonies may last for many years; a few pairs have, for example, nested for many years in drainage holes along the embankment of the River Ouse in Bedford.

Because of their gregarious behaviour, both at breeding colonies and on passage, Sand Martins can be caught and ringed in large numbers and the species was chosen as the subject of a special enquiry by the British Trust for Ornithology during the 1960's. Both during and since that enquiry (between 1964 and 1978 inclusive) I have ringed Sand Martins at several colonies in Bedfordshire as set out in Table 1.

| Colony | Years ringed | Juveniles | Adults | Total |
|----------|--------------|-----------|--------|-------|
| Harrold | 1964-78 | 1230 | 1026 | 2256 |
| Maulden | 1965-69 | 202 | 345 | 547 |
| Tingrith | 1965-69,71 | 413 | 780 | 1193 |
| Wyboston | 1964 | 26 | 69 | 95 |
| Totals | | 1871 | 2220 | 4091 |

Table 1 Analysis of ringing from 1964 to 1978

Although I am by no means the only ringer to have ringed Sand Martins in Bedfordshire (birds have been ringed at colonies at Shefford, Clophill, Heath and Reach, Blunham and Wyboston by other ringers in years subsequent to 1964) the birds I have ringed and the birds which I have caught already ringed are sufficiently numerous to allow some conclusions to be drawn about their movements and behaviour.

POPULATION LEVELS

It is not within the scope of this note to discuss the size of the Bedfordshire Sand Martin population but it seems certain that it has declined from the levels of the late 1960's. The colonies at Shefford, Clophill, Maulden and Tingrith have disappeared without new colonies appearing to take their place and the Harrold colony has been much smaller throughout the 1970's than in the previous decade.

MORTALITY

Sand Martins are not long-lived birds and from 4159 birds ringed or caught already ringed only 13 are known to have reached 4 years of age or more. Table 2 shows the number of birds ringed as adults and juveniles and recaptured in each year after ringing. It also shows those known to be alive because they were caught in a subsequent year but not in the year in question, so that the totals are representative of the numbers known to be alive.

MOVEMENTS

Recoveries provide the raw material for plotting the movements of individual birds. In many species recoveries come mainly from dead birds but in the Sand Martin they are very largely of birds caught by other ringers and released alive with the ring still on. Table 3 groups the recoveries obtained of birds ringed by myself of which only four were found dead, while Table 4 sets out details of birds already ringed elsewhere and caught by myself.

| | Ringed as Adult | | | | Ringed as Juvenile | | | |
|-------------------------------------|-------------------------------------|------------------|------------------|------------------|--------------------|----------------|----------------|----------------|
| | When recaptured: after 1 year | after 2 years | after 3 years | after 4 years | 1 year old | 2 years old | 3 years old | 4 years old |
| Ringed at study colony, recaptured: | | | | | | | | |
| at colony of ringing | 130 | 42 | 6 | 1 | 27 | 10 | 2 | - |
| elsewhere | 7 | 6 | 2 | - | 25 | 6 | 4 | - |
| Ringed elsewhere, recaptured: | | | | | | | | |
| at study colony | 12 | 6 | - | 1 | 34 | 9 | 1 | 1 |
| Known to be alive | 53 | 9 | 2 | - | 25 | 9 | 1 | - |
| Totals | 202 | 63 | 10 | 2 | 111 | 34 | 8 | 1 |

Table 2 Analysis of the recapture of ringed birds

RETURN FROM WINTER QUARTERS

Sand Martins return from their winter quarters in Africa arriving in this country mostly in April and May. Because of the need to avoid disturbance of the birds while they are settling into their colonies, ringing does not generally start until breeding is in full swing and there are comparatively few recoveries illustrating the return from winter quarters. A bird ringed at Tingrith on 6.7.69 as an adult and controlled (caught and released alive) by a French ringer near Richard Toll, Senegal on 20.2.71 must have been close to its winter quarters while a juvenile ringed at Harrold on 9.7.66, controlled at a colony near Richmond, Yorkshire, in 1967 was finally found dead on 5.4.68 at Rongères La Chatre (Indre) France on its spring migration. The earliest recovery in this country is of a 1966 Harrold bird controlled feeding at Ecton, Northampton on 4.5.68. It is possible that some recoveries of adults ringed and recovered in the same summer may represent return movements and this will be discussed in the next section.

| Where and When recovered | Ringed as Adult | Ringed as Juvenile | Where and When ringed | Ringed as Adult | Ringed as Juvenile |
|-------------------------------|-----------------|--------------------|----------------------------|-----------------|--------------------|
| Colony of ringing - same year | 219 | 4 | Another colony - same year | 7 | 6 |
| - subsequent year | 165 | 33 | - earlier year | 16 | 26 |
| Another colony - same year | 6 | 4 | Roost - earlier year | 1 | 21 |
| - subsequent year | 10 | 32 | Feeding - earlier year | - | 4 |
| Roost - same year | 3 | 16 | Totals | 24 | 57 |
| - subsequent year | 2 | - | | | |
| Feeding - same year | - | 2 | | | |
| - subsequent year | 2 | 2 | | | |
| Abroad | 1 | 3 | | | |
| Totals | 408 | 96 | | | |

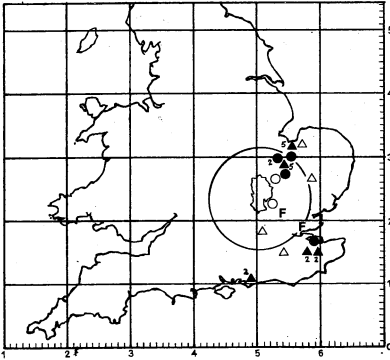
Table 3 Recovery details of birds ringed at study colonies

Table 4 Recovery details of birds caught at study colonies but ringed elsewhere

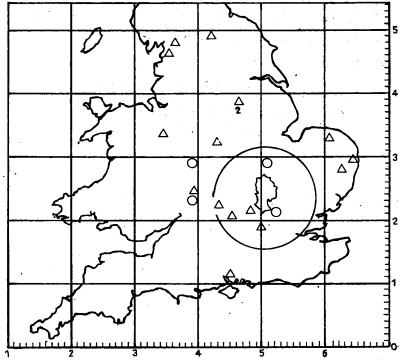
COLONY FIDELITY AND INTER-COLONIAL MOVEMENTS

It is unfortunately not possible to be certain which Sand Martins ringed as adults at a colony are actually breeding at that colony but it is clear from Tables 3 and 4 that a substantial proportion of those ringed as adults remain at the colony throughout the breeding season and return to the same colony in subsequent years.

There are some movements of adults between colonies in the same year as shown in Figs 1(a) and 2(a). Although it is quite likely when colonies are close together, that birds



a) Recovered in year of ringing

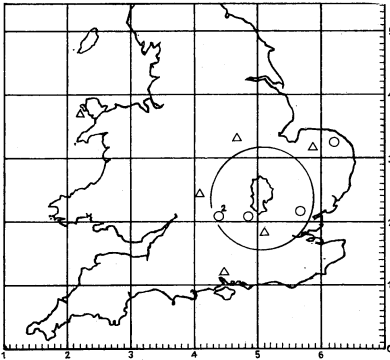


b) Recovered in subsequent years

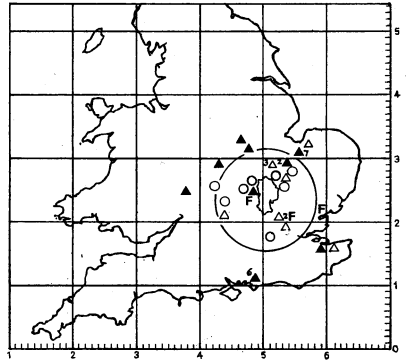
Fig 1: Recovery sites of Sand Martins ringed in Bedfordshire (large circle indicates a 50 mile radius from Bedfordshire).

Ringed as an adult: ○ – at a colony, ● – at a roost.

Ringed as juvenile: △ – at a colony, ▲ – at a roost, F – at feeding.



a) Recovered in year of ringing.



b) Recovered in subsequent years.

Fig 2: Ringing sites of Sand Martins recovered in Bedfordshire (large circle indicates a 50 mile radius from Bedfordshire).

Ringed as adult and recovered: ○ – at a colony, ● – at a roost.

Ringed as juvenile and recovered: △ – at a colony, ▲ – at a roost, F – at feeding.

may visit neighbouring colonies casually, none of the recoveries from the study colonies clearly fall into this category. At least three other categories of movement, however, seem possible:-

- (i) birds returning from winter quarters may pass through other colonies before reaching the breeding colony. This may be the explanation for birds ringed on 28.5.66 and 30.5.66 at Braintree in Essex and North Walsham in Norfolk, both controlled at Harrold on 8.7.66 but it is possible that they could be in the next category.
- (ii) failed breeders or non-breeders may move from colony to colony. In the absence of breeding histories of individual birds or multiple recoveries of the same bird at several different colonies in the same season this cannot be proved. There are, however, no intercolonial recoveries of birds ringed and recovered during the peak of the breeding season in June and the first half of July.
- (iii) birds returning to winter quarters may pass through other colonies on their way out of the country. This seems the most likely explanation for a number of recoveries from the latter part of July onwards when birds are known to be on migration, and is discussed more fully in the next section.

Equally a small number of adults are caught at different colonies in subsequent years. Figs 1(b) and 2(b) show subsequent year recovery colonies of adults ringed in Bedfordshire and ringing colonies of adults recovered in subsequent years in Bedfordshire while Table 5 shows movements between colonies in Bedfordshire.

There is clearly some local mobility between breeding colonies. Indeed, in some cases the birds have little choice; at Maulden, for example, at a time when colonies were generally increasing in size, the colony could not expand because of the limited face available and birds were clearly 'exported' to Tingrith and elsewhere.

There is also some evidence of interchange beyond the local level. Of the recoveries shown on Figs 1(b) and 2(b), all but three (birds from Worcester and Oxfordshire caught at Tingrith in late July and a bird from Tingrith caught at Evesham in early August) were both ringed and recovered during the peak of the breeding season.

| Ringing colony | to | Ringed as Adult | | | to | Ringed as Juvenile | | |
|----------------|----------------------|-----------------|-----------------------------|--------|---|--------------------|--|------------------|
| | | number | from | number | | number | from | number |
| Harrold | - | - | - | - | Tingrith | 1 | Maulden Shefford | 1 1 |
| Maulden | Clophill Shefford | 1 4 | Heath and Reach Shefford | 1 4 | Clophill Harrold Shefford Tingrith | 1 1 4 9 | Heath and Reach Shefford | 1 1 |
| Tingrith | Shefford | 1 | Heath and Reach Shefford | 1 3 | - | - | Clophill Harrold Maulden Shefford | 1 1 9 1 |

Table 5 Local subsequent-year intercolonial movement

As soon as juveniles are free-flying it is impossible to be certain that the colony at which they are ringed is their natal colony although for many birds this is likely to be the case.

In subsequent years almost as many are caught at different colonies as at the colony of ringing (See Figs 1(b) and 2(b) and Table 5), a quite different pattern from adults. Most intercolonial moves occur at the local level and although it is possible that long-distance recoveries do represent genuine intercolonial movement it seems more likely that these represent young birds caught on dispersal to winter quarters (discussed more fully below) returning to their natal area or locally close to it.

DISPERSAL TO WINTER QUARTERS

Fortunately Sand Martins remain gregarious during their dispersal to their winter quarters and form large roosts at which they can be netted. Such roosts consist largely of juvenile birds, presumably because adults are more likely to remain at colonies until closer to the end of the breeding season which extends well into August and even into September.

Roosts start to form in mid-July and the earliest recovery is of an adult ringed at Harrold on 20.7.65 caught at a roost at Burham, Kent on 12.7.66. Apart from this particularly early bird, adults from the study colonies have not been caught at roosts until the beginning of August. Only one adult was recovered abroad while on autumn migration, ringed at Harrold (as a juvenile) on 7.7.68 and found dead on 24.8.71 at L'Aiguillon-sur-mer (Vendée).

As well as passing through roosts it is clear that some adults pass through other colonies while on migration. Birds ringed at Stone near Aylesbury on 29.6.66 and Long Hanborough in Oxfordshire on 16.7.66 and both controlled at Maulden on 17.8.66 are good examples. Before retiring to a colony for the night Sand Martins frequently perform a communal flight similar to that which can be seen at reed-bed roosts; this may well serve to attract migrating birds.

Juveniles appear to disperse from colonies extremely quickly. In marked contrast to adults only four juveniles were retrapped in the same year at their colony of ringing, none at an interval greater than eight days. Like adults they move between colonies though perhaps more casually. Certainly the juvenile, ringed on 4.7.65 in Hampshire, controlled on 20.7.65 at Harrold, was moving in an unexpected direction, though paralleled by those birds shown in Fig 1 moving NE from Bedfordshire to roosts in Cambridgeshire and Norfolk. The earliest juvenile caught at another colony was caught on 12.7.75 at Middleton in Norfolk having been ringed on 29.6.75 at Harrold, while one ringed at Tingrith on 6.7.69 was caught at a colony at Ingatestone, Essex, as late as 28.8.69

At the same time as some juveniles are roaming from colony to colony others are forming roosts and Bedfordshire ringed juveniles have been caught at roosts between 24 July and 27 August while juveniles ringed at roosts between 28 July and 17 September have subsequently been caught in Bedfordshire. Sand Martins may certainly move on autumn migration at some speed; a juvenile ringed at Harrold on 20.8.78 was caught at a roost at Hiers-Brouage (Charente-Maritime), France on 29.8.78

ACKNOWLEDGEMENTS

It is a pleasure to thank the landowners of the colonies at which I have caught Sand Martins and my long-suffering family and other assistants who have helped me. It is also a pleasure to thank Mrs Joan Rimmer for patiently deciphering my handwriting and Chris Boon and Derek Rands for their assistance with the tables and maps.

POSTSCRIPT

Since the above account was written the results of the ringing in 1979 have become available. A further 323 Sand Martins (156 adults, 167 juveniles) were ringed at Harrold by Mark Woodhead and myself. Most recoveries fell within the established pattern but it is noteworthy that a third bird at least five years old was handled and a juvenile ringed at the colony was retrapped there 20 days later, although it is not known whether it had wandered during that period. The two most interesting recoveries, however, were of a bird ringed as a juvenile on 20.8.78 at Harrold, caught on 2.8.79 at a roost at Llangorse Lake, Powys, probably migrating on a more direct westerly route for its second autumn migration, and of another juvenile, also ringed on 20.8.78, caught on 18.6.79 as a breeding female at a colony at Grude, Klepp, (Rogaland) in Norway. Recoveries of British-ringed Sand Martins in Norway are extremely rare; it seems most likely that it was a Norwegian-bred bird which, when ringed, had wandered from its normal southerly migration route.



Female Hobby with prey for 21 day old young. (Photo: T.A. Waddell)

A SUMMARY OF BIRDS OF PREY IN BEDFORDSHIRE 1946-79

by P. Smith, The Old Coach House, Heath Lane, Aspley Heath,
Woburn Sands, Milton Keynes.

INTRODUCTION

On arriving in Bedfordshire for the first time a bird watcher might be forgiven for thinking that he had arrived on an ornithological wasteland. The topographical features of the county are generally uninspiring as we have no striking mountain ranges, lakes, or forests, and are 100 miles from any coastline. The geology has been well described and some of the better known regular bird watching sites have resulted from mineral extraction.

Despite the apparent ornithological dullness of our county, the current bird list stands at 257 and has been well documented since 1946. Having personally bird watched in the county for some 20 years, I have learnt by experience that regular watching pays off and have on my County List such birds as Wilson's Phalarope, Woodchat Shrike, Long-tailed Duck, Osprey and Temminck's Stint.

If a census was taken amongst bird watchers as to their favourite family, I have no doubt that a considerable number would answer "Birds of Prey". It was with this in mind and the interesting occurrences of these birds in Bedfordshire that prompted me to write this short paper in which Owls, although they are birds of prey, are excluded.

It cannot be said that birds of prey are common anywhere, but the variety seen over the years in our small inland county is worthy of note. They have probably suffered more than any other group of birds at the hands of man, being affected by toxic chemicals, illegal trapping, shooting, egg collectors, falconers, and general habitat destruction. Somehow despite this human disturbance and interference they are now showing signs of increasing in Britain.

SYSTEMATIC LIST

The following in a systematic list of birds of prey recorded in Bedfordshire between 1946 and 1978 (B.N.H.S. 1947-79) and also recorded in 1979 (published in this Journal). The sequence and names follows the *British Birds* list (British Birds 1978).

The individual sightings are shown in detail in Table 1 which also notes the occurrences of breeding. Details of the breeding pairs, with numbers of young where known, are shown in Table 2.

- Honey Buzzard** *Pernis apivorous* There have been recently three accepted records and one possible in 1951. The recent records were in July 1976, May 1977, and June 1979 and it is not beyond hope that this rare bird might eventually breed in the county if left undisturbed. The one reported in 1969 was caught in Huntingdonshire and released at The Lodge, Sandy.
- Red Kite** *Milvus milvus* There were early possible records in 1947 – three, and 1954 – one, none of which was positively identified. The first accepted record was in May 1970 since when single records have been accepted for August 1976 and March 1979, with an additional possible in May 1979. The records for the species span from March to August.
- White-tailed Eagle** *Haliaeetus albicilla* One really exceptional record on 1st May 1951 of a bird attacking poultry at Bromham Road, Biddenham, Bedford. The recorder for birds at the time questioned the observer and was satisfied as to the bird's identity. The only previous occurrence was at Cardington in April 1863. So look out for White-tailed Eagles in the county during the spring!
- Marsh Harrier** *Circus aeruginosus* The first record of this bird since 1946 was not received until May 1966 since when there have been only two further positive records, May 1971 and 1974. Interestingly all the records occurred in May – let us hope, as the breeding population in the country expands, more sightings will be reported in the future.
- Hen Harrier** *Circus cyaneus* Reported more frequently than the former species; the first positively recorded was found dead in a vermin trap December 1953. Since then recorded in November 1966, December 1972, December 1975, December 1978 and a record four or

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|------|------|---------------|---------------|------|---------------|---------------|------|---------------|------|------|---------------|---------------|----------------|----------------|----------------|---|
| Honey Buzzard | | | | | (1) | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | | |
| Red Kite | | (3) | | | | | (1) | | | | | | | | | | | 1 | | | | | | | | | | | 1 | | (1) | | | | | | | | |
| White-tailed Eagle | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Harrier sp. | | | | (1) | | (1) | (1) | (2) | | | | | | | (1) | | | | | | (3) | (1) | | | | | | | | | (1) | | | | | | | | |
| Marsh Harrier | | | | | | | | | | | | | | | | 1 | | | | | | 1 | | | 1 | | | | | | | | | | | | | | |
| Hen Harrier | | | | | | | 1 | | | | | | | | | 1 | | | | | | 1 | | | 1 | | | | 1 | | 5 | | | | | | | | |
| Montagu's Harrier | | | 1 | | | | | | | | | 1 | | | | | | | | 2 | | 1 | | 1 | 1 | | | | | | | | | | | | | | |
| Goshawk | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | |
| Sparrowhawk | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | 2 | 5 | $\frac{2}{B}$ | 2 | • | 1 | 4 | 4 | $\frac{2}{B}$ | $\frac{2}{B}$ | 3 | 3 | 3 | 1 | 7 | 8 | $\frac{5}{B}$ | 7 | $\frac{12}{B}$ | • |
| Buzzard sp. | | | | | | | 2 | 2 | | | | | | | | | | | | | | | | | 3 | 1 | 2 | 1 | | 3 | | 4 | | | | | | | |
| Buzzard | 2 | 2 | 1 | | 4 | 2 | 4 | 3 | 4 | 21 | 9 | 6 | 3 | 4 | 3 | 2 | 3 | 1 | 3 | 2 | 7 | 2 | 2 | 4 | 2 | 5 | 4 | 4 | | 7 | 4 | 4 | 5 | 2 | | | | | |
| Rough-legged Buzzard | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | 2 | 2 | | | | | | | | |
| Golden Eagle | | | | | | | | | (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Osprey | | | | | | 3 | (1) | | | | 1 | | | | | | | | | 1 | | | | | 1 | 1 | 1 | | 1 | 3 | 3 | 3 | | | | | | | |
| Kestrel | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| Merlin | 1 | | | | | 1 | (1) | 1 | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | 1 | 1 | | | | | | |
| Hobby | 1 | 1 | 1 | 2 | B | B | B | | | 2 | 1 | 3 | | | 1 | 2 | 1 | 1 | | | | 1 | 1 | 4 | $\frac{1}{B}$ | $\frac{2}{B}$ | 1 | 6 | 2 | 3 | $\frac{2}{B}$ | 4 | 5 | $\frac{4}{B}$ | $\frac{5}{B}$ | $\frac{12}{B}$ | $\frac{15}{B}$ | | |
| Peregrine | 1 | 1 | 2 | 1 | | | 2 | (1) | 1 | | | | (1) | 1 | 3 | | 3 | | | | | | | | | | | | | | | 1 | | | | | | | |
| | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | | | | | |

Table 1: Sightings of birds of prey from 1946 to 1979. Encircled numbers indicate records not positively identified.

• — recorded in typical numbers, B — breeding occurrences.

| | | Breeding pairs/young fledged | | | | | | | | | | |
|--------------------|-------------------|------------------------------|------|------|------|------|------|------|------|------|------|------|
| Kestrel | Breeds every year | | | | | | | | | | | |
| Sparrowhawk | | | 1 | | 1 | 4? | | 1? | | 2? | 1 | |
| | | | 1y | | | | | | | | 3y | |
| Hobby | 1 | 1? | 1? | | 1 | 1 | | 1? | 3 | 1 | 1 | 1 |
| | 3y | | | | 3y | 2y | | | 6y | 2y | 2y | 1y |
| | 1950 | 1951 | 1952 | 1962 | 1967 | 1968 | 1969 | 1973 | 1976 | 1977 | 1978 | 1979 |

Table 2: Details of breeding pairs from 1946 to 1979.

? – possible breeding.

y = young fledged.

five individual birds in 1979 in January and February. Clearly a wintering bird in the county with an exceptional year in 1979.

Montagu's Harrier *Circus pygargus* A pair attempted to breed in 1945 in the south of the county but unfortunately the eggs were stolen by a party of schoolboys. Since 1945 recorded in August 1948, May 1960, two in May 1968, singles June 1971, 1974 and 1975. Clearly an early summer passage bird returning to the few remaining breeding areas in East Anglia.

Goshawk *Accipiter gentilis* One possible escape reported in 1950, one just over the border at Eaton Socon in 1960 (no jesses visible). Not until February 1978 was the first record in the county since 1946 accepted, a further bird being seen in February 1979. With an expanding breeding population in Britain, plus some escapes from falconers, it is hoped more reports will be forthcoming in the future.

Sparrowhawk *Accipiter nisus* One of only two species recorded every year since 1946. Up to 1959 it was recorded to be present in the county in usual numbers then a sharp decline was recorded in 1960 with only two definite sightings, the main blame for the drop in numbers being toxic chemicals. One pair was reported breeding in 1962 and a further pair in 1968. Since that time a slow but steady recovery has taken place, a highlight being four possible breeding pairs in 1969. In 1978 there were 12 separate sightings plus two possible breeding and, finally, I witnessed three young being successfully reared from a nest in 1979. Clearly this bird is recovering strongly in a county which offers much suitable breeding habitat. Hopefully we can consider this bird to be a regular breeding resident.

Buzzard *Buteo buteo* Recorded every year apart from 1949 and 1974. Numbers recorded vary from one per year to an all time record in 1955 of 21 sightings. Breeding has never been

proven in the county with the vast majority of sightings being recorded in the winter although there are several spring and summer records.

Rough-legged Buzzard *Buteo lagopus* Not recorded until March 1967 and then one in October 1973, two in October 1974 and two in January 1975. This bird is a winter visitor to Britain and occasionally has eruption years when abnormally high numbers are recorded. It would appear that more birds have not occurred because of our distance from the East Coast.

Golden Eagle *Aquila chrysaetos* Only one possible sighting in March 1954 over Woburn Park, the bird in question was reported to be "wary". Positive identification was not agreed upon and therefore the record was "bracketed". Another occurrence of an Eagle in Bedfordshire would seem most unlikely.

Osprey *Pandion haliaetus* I consider the Osprey records to be some of the most interesting in the county. The first records since 1946 were in April 1952 – two, with one fishing, at Woburn Abbey and one in May at Southill Lake. Since then a possible in 1954 with definite sightings of singles in May 1960, September 1967, May 1971, August 1972, September/October 1973, October 1975, one in April and two, or possibly four, in October 1976, singles in May, June and October 1977 and finally one in June and two in September 1978 with none in 1979. This bird is clearly a spring and autumn passage migrant and is well worth looking for.

Kestrel *Falco tinnunculus* By far the most common bird of prey in the county being a resident and recorded in every tetrad during the Atlas Survey (Harding 1979). As with Sparrowhawk, Kestrels were apparently badly hit by toxic chemicals in the late fifties and early sixties but happily they now seem to have fully recovered and are a common sight in the county.

Merlin *Falco columbarius* A single bird recorded in March 1946 and then not again until January 1952. Since then a possible in May 1954, single birds only in October 1955, March 1966, October 1976 and April/June 1977. One was seen in November 1958 but the record was not published. It is a great pity we do not see more of this plucky little falcon in Bedfordshire.

Hobby *Falco subbuteo* The records of this beautiful falcon are extremely interesting and it has now established itself amongst the three breeding birds of prey in the county, the others being the Kestrel and Sparrowhawk. First recorded in 1946, it has appeared on the County List every year apart from four, these being 1953, 1954, 1958 and 1963. A pair raised three young in 1950, and further successful breeding was proved with three young in 1967, two in 1968, six from three pairs in 1976, two in 1977, two in 1978 and one in 1979. Apart from proved breeding records (i.e. sighting of young) breeding was strongly suspected in 1951, 1952 and 1973. This summer visitor to the county is undoubtedly my favourite bird of prey, arriving in May and normally leaving by the end of September.

Peregrine *Falco peregrinus* The records of Peregrine form an interesting pattern in that it was recorded in 11 out of the 17 years up to 1962. Since then it has only been recorded once, in June 1976. The records are one in March 1946, and in October 1947, two in March 1948, singles in December 1949, September and November 1952, one possible in January 1953, one in September 1954, one in March plus three possibles over Bedford, one in March and two in May 1958, singles in July 1959, and in March, June and August 1960 and in three locations in 1962, all during September. This bird has been recorded in almost every month outside the breeding season. It is to be hoped that with recent improved breeding success it will once again appear regularly on our yearly County List.

HABITAT

Despite being a relatively small county Bedfordshire has a diverse amount of differing habitats and to a certain extent individual species are reported regularly in particular habitats. Whilst the Kestrel has been recorded in every tetrad in the county for instance, the breeding

Hobbys have mainly occurred along the wooded Greensand belt. The breeding occurrence of the Sparrowhawk is naturally restricted to the wooded areas in the county. The sightings of passage birds such as the Osprey are normally restricted to the lakes, for example Woburn, Stewartby and Southill Park. The two most recent records of Montagu's Harrier were recorded in an area where suitable breeding habitat was available, whilst the four or five wintering Hen Harriers in 1979 were reported from widely differing habitats. Birds of irregular occurrence in the county such as the Red Kite, Goshawk, and Merlin are likely to be seen anywhere throughout the county. It would seem that wherever one might be in Bedfordshire eyes should be kept open for the sighting of a bird of prey.

CONCLUSIONS

It became apparent during my research that nearly all the birds of prey that regularly occur in Britain have, at some time between 1946 and 1979, been recorded in Bedfordshire. With the ban on toxic chemicals there now seems a real chance of increases in the numbers of the present breeding species, Kestrel, Sparrowhawk, and Hobby and hopefully during the coming years they will re-establish themselves in their past breeding areas. The signs for the future are also good for the sighting of the occasional rare bird and hopefully Peregrine, Osprey and Merlin will feature more regularly on our yearly lists. The lasting thrill of seeing a bird of prey is great and hopefully members will, when driving around the county, keep a sharp eye open for that memorable occasion.

ACKNOWLEDGEMENTS

I would like to thank Dr J. T.R. Sharrock for his help and for enabling me to contact T. A. Waddell, and Barry Nightingale for his assistance in checking the records. I would also like to thank Mr T. A. Waddell for allowing me to use his superb photograph of Hobby, and Beryl Rands for the loan of her copies of the *Bedfordshire Naturalist*.

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ARRIVAL DATES OF REGULAR SUMMER MIGRANTS TO BEDFORDSHIRE

by Barry Nightingale, 9 Duck End Lane, Maulden, Bedford.

Although it can be said that, like the pursuit of vagrant species, the interest shown in searching out the first summer migrants is of little scientific value, there is no doubt that this aspect of birdwatching has widespread appeal. The National Press carries claims for the first Cuckoo — beware Collared Doves and practical jokers — and the Young Ornithologists Club has organised a national 'phone-in to record the spread of each species during the spring.

To satisfy some idle curiosity and to give contributors to the Bird Report some lead as to what is likely to be an interesting record, a list of average arrival dates for the county has been compiled from the annual bird reports from 1946 to 1978 published in the *Bedfordshire Naturalist*, 1 to 33, and the records for 1979. Also shown is the earliest accepted record for each species since 1946. Remember that these dates are for the first individuals and not for the main arrival.

In gathering data one problem exists with over-wintering individuals, particularly Chiffchaff and Blackcap. Possibly the earliest records of both these species were wintering birds and not true migrants. Another pitfall is that of weekend bias, and also the effect in the recent

| | AVERAGE | | EARLIEST |
|----------------------|---------|---------|------------|
| | 1946-59 | 1960-79 | Since 1946 |
| Little Ringed Plover | 15-4 | 27-3 | 15-3-64 |
| Turtle Dove | 30-4 | 27-4 | 5-4-73 |
| Cuckoo | 14-4 | 17-4 | 7-4-55 |
| Swift | 26-4 | 26-4 | 12-4-61 |
| Sand Martin | 1-4 | 2-4 | 12-3-78 |
| Swallow | 31-3 | 7-4 | 17-3-78 |
| House Martin | 10-4 | 9-4 | 14-3-65 |
| Yellow Wagtail | 8-4 | 6-4 | 21-3-78 |
| Nightingale | 23-4 | 1-5 | 12-4-61 |
| Wheatear | 28-3 | 23-3 | 5-2-67 |
| Grasshopper Warbler | 21-4 | 21-4 | 2-4-77 |
| Sedge Warbler | 21-4 | 14-4 | 27-3-64 |
| Reed Warbler | 9-5 | 8-5 | 25-4-71 |
| Lesser Whitethroat | 25-4 | 29-4 | 12-4-47 |
| Whitethroat | 17-4 | 20-4 | 8-4-55 |
| Garden Warbler | 28-4 | 30-4 | 15-4-62 |
| Blackcap | 13-4 | 13-4 | 12-3-67 |
| Chiffchaff | 20-3 | 18-3 | 5-3-66 |
| Willow Warbler | 26-3 | 6-4 | 17-3-52 |
| Spotted Flycatcher | 8-5 | 5-5 | 11-4-65 |

growth in birdwatching. This is reflected in the totals of different species in the Bird Report each year, rising from an average of 138 between 1946-59, 147 between 1960-69 and 162 between 1970-79.

Only regular migrants have been included; unfortunately species like Garganey and Red-backed Shrike now only occur as irregular visitors.

Some points of interest come out of the list. One involves the Whitethroat which, up to 1968, was a very common summer visitor. From 1960 to 1968 the average arrival date was 16th April. In 1968-69 the population suffered a severe reduction as a result of the prolonged drought in the wintering quarters in the Sahel area. Since then the average date has been 23rd April. Similarly the Cuckoo, which many observers feel is in decline does, on average, arrive three days later than in earlier years.

The dates shown can, of course, only be taken as typical of Bedfordshire, whilst encounters on the South Coast could be some days or weeks earlier, whereas on the cooler east coasts of Norfolk and Suffolk, some days later. Each year varies from the next, depending on the weather at the migrants' source and spells of mild temperature with encouraging southerly winds are likely periods for finding the first arrivals. Even a few days of these conditions can bring in the advanced guard, only for a return to northerly airstreams to hold up the main arrival for two or three weeks. Such was the pattern during many springs in the 1970's. However, some years provide classic conditions for early, widespread invasion and the first ten days of February 1967 brought many unseasonal records: on the 3rd a Common Tern was found in Norfolk and a Swift in Essex; on the 4th a Swallow in Sussex and on the 5th a Wheatear at Dunstable Sewage Works.

FURTHER READING

HUDSON, R. 1973 Early and Late Dates for Summer Migrants. *BTO Guide* 15.
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REPTILES AND AMPHIBIANS

Report of the Recorder

REPTILES

1979 was a poor year for reptiles, generally speaking, and I think the hard winter may have killed many hibernating animals. There were two highlights during the year which I was very pleased to have reported to me.

First of these was a Slow Worm which was found in Putnoe Wood; this was my first record for North Bedfordshire. The furthest north this species had been found before was Lidlington and Maulden.

Secondly I began to hear of the possibility of Adders in the Rowney Warren and Chicksands Wood area. Alan Outen then told me of a reliable sighting in this area in 1977 and finally, in 1979, Alan Martin found a sloughed skin to provide positive proof.

AMPHIBIANS

The amphibians did not seem quite so sparse as the reptiles. The spawn developed well in spite of being frozen up during a sudden return to cold weather after a mild spell in the spring.

I received eight records of Common Frog although only three proved to be in new tetrads and 19 records of Common Toad, nine of which were new tetrad records.

Newts did not seem very common during 1979 with only four records of Smooth Newt and two of Crested Newt.

I intend to update the tetrad maps first published in 1979 (*Bedf. Nat.* 33:29) in the *Bedfordshire Naturalist* for 1980.

ACKNOWLEDGEMENTS

I would like to extend my thanks to all those who sent in records for the year and look forward to hearing from them in 1980

HELEN M. MUIR-HOWIE

FISH

Report of the Recorder

Although 1979 produced nothing outstanding, in view of the fact that only five people submitted fish reports during the year I am well pleased with the total number of 99 records – 56 of which are new county tetrad records for the 16 species listed below. I should, however, point out that reports confirming existing records are most valuable. It may be noted that on the distribution map for Perch published in last year's Journal, tetrad 93U was marked with an open circle denoting "recorded in tetrad but with some doubt regarding subsequent status." We have now been able to replace this with a full circle thanks to confirmation received this year.

Finally, there is one point of specific interest. The 1976 Fish Report, *Bedf. Nat.* 31:43, mentioned the uncommon occurrence of Chub being found in two still water locations in the county (the Bedford Estates at Woburn and Stewartby Lake) and speculated upon several possible reasons for this. The 1979 records reveal a third still water location for this species – namely Brogborough No. 1 Pit.

I am indebted to the following members who made most valuable contributions during the year:

D. Anderson, V.W. Arnold, A. Muir-Howie, Mrs E.B. Rands and R.B. Stephenson.

NEW TETRAD RECORDS FOR 1979

- Pike** *Esox lucius* – 3 tetrads. 04U, 05DE.
Perch *Perca fluviatilis* – 3 tetrads. 03B, 05DE.
Roach *Rutilus rutilus* – 6 tetrads. 92DJ, 93U, 95T, 05E, 11I.
Rudd *Scardinius erythrophthalmus* – 2 tetrads. 03B, 04U.
Dace *Leuciscus leuciscus* – 3 tetrads. 95T, 05DE.
Chub *Leuciscus cephalus* – 5 tetrads. 93UZ, 95T, 04DE.
Gudgeon *Gobio gobio* – 6 tetrads. 92D, 95TY, 05CDE.
Bleak *Alburnus alburnus* – 1 tetrad. 05E.
Common Bream *Abramis brama* – 7 tetrads. 92DJ, 93U, 95T, 05CDE.
Tench *Tinca tinca* – 1 tetrad. 03B.
Carp *Cyprinus carpio* – 3 tetrads. 92D, 93U, 03B.
Crucian Carp *Carassius carassius* – 3 tetrads. 92J, 03B, 04U.
Eel *Anguilla anguilla* – 1 tetrad. 04U.
3-spined Stickleback *Gasterosteus aculeatus* – 2 tetrads. 05K, 13P.
Minnow *Phoxinus phoxinus* – 5 tetrads. 95Y, 02W, 05CDE.
Ruffe *Gymnocephalus cernua* – 5 tetrads. 95Y, 04U, 05CDE.

TONY PETERKIN

SLUGS AND SNAILS (Mollusca)

Report of the Recorder

During 1979 I was unable to do much personal field work, but I received many valuable records from Dr A. Rundle, especially of small species of snails, and from Mr D. Guntrip.

Records are being entered on tetrad maps and there are now fewer than ten tetrads with no records at all. The total number of species in individual tetrads varies from two to over 80 species. A variation as great as this cannot give a true picture of the distribution of molluscs in Bedfordshire, although the richest squares can be seen to be those through which the River Great Ouse passes. A great deal of field work is still needed to achieve an acceptable level of recording.

The winter floods have produced rich yields of flood litter. This has been collected systematically in polythene bags and is being slowly processed at home. If anyone sees flood litter in which there are plenty of snail shells I would be most grateful if they would fill a polythene bag with the litter, put a label inside bearing the date, grid reference, name of collector and locality, and let me have it.

One notable find during 1979 was of the slug *Milax gagates* (Draparnaud) in Great Barford, under rubbish on a derelict corner site. This slug has been recorded for Bedfordshire only once before, from Bedford. A specimen was sent by the late Dr H.F. Barnes to the late Dr H.E. Quick for dissection. Confirmation is entered in the Record Books of the Conchological Society of Great Britain and Ireland but no details were ever available as Dr Barnes died soon after posting the specimen. As the only information regarding the specimen was that it was from Bedford, it can only be assumed that it came from Dr Barnes' own garden.

I would like to thank all members who sent me records, especially Dr Rundle and Mr Guntrip. The latter has not only brought me batches of snails to identify but has also developed an interest in them and is progressing well with his identification of the land molluscs.

E. BERYL RANDS

DRAGONFLIES (Odonata)

Report of the Recorder

Most of the common species of dragonfly appear to have had a good season in 1979, especially the hawkers and darters that fly late in the summer. However, only one new 10 km square record was added to the County List, and 14 new tetrad records. The worst 10 km square is still TL 06 with only the commonest species of damselfly *Ischnura elegans* recorded at Melchbourne Park lake. I hope to concentrate my efforts in this square in 1980.

In August Miss Ann Doody reported seeing a large brown dragonfly *Aeshna grandis* catch and eat a Small Tortoiseshell butterfly. In 1978, the same species was recorded eating a Small White butterfly. Any similar sightings of dragonflies eating butterflies or moths would be of interest to the recorder.

Learning by experience was illustrated by the small hawker *Aeshna mixta* at Marston Thrift. It was a sultry afternoon in August and the air was full of flying ants. The dragonfly was seen to catch and immediately drop one or two ants, and then repeatedly fly up to other ants but veer off when about half an inch away. It seems that 'once bit, twice shy' applies even to insects!

In Great Britain as a whole, dragonflies are becoming better known. 72 recorders from all over the country met for the first time in April. It was an exciting occasion as many recorders had recently found rare species in new sites, especially in Scotland. It seems definite, however, that *Lestes dryas*, one of the two species of green damselflies, is truly extinct on the British mainland. This is a species that was recorded as recently as 1950 at Heath and Reach in Bedfordshire.

The recorders' meeting reaffirmed the need for a cheap simple booklet covering identification of all the adults and most of the larvae of British Dragonflies, and this is promised soon.

The Biological Records Centre (Monks Wood Experimental Station, Abbots Ripton, Huntingdon) has just issued the second edition of the *Provisional Atlas of Insects of the British Isles*, Part 7 (Odonata), which costs £3 and includes all 10 km square records up to December 1978.

Could I implore members to send Bedfordshire Dragonfly records to me. Records outside the county should be sent direct to the national recorder, David Chelmick, whose new address is 'Bredon', High Beech Lane, Haywards Heath, Sussex.

NANCY DAWSON

BUGS (Hemiptera-Heteroptera)

Report of the Recorder

In this 8th annual report on this group it is again possible to announce additional species for the County List. Full details are set out below but they include three plant bugs which appear to be fairly widely distributed where their various host plants are found and one (*Psallus massei*) whose status is not yet clear. The lace-bug (*Piesma quadratum*) is possibly a vagrant although suitable food-plants exist in the county. The two pond-skaters (*Gerris lateralis* and *G. argentatus*) will both probably prove to be very restricted in distribution in Bedfordshire.

Despite the exceptionally severe winter both new British species reported last year survived and were seen in 1979. *Placochilus seladonicus* (Fall.) was in good numbers at the Leighton Buzzard site in August (the disused railway near the Billington road crossing). *Campylomma annulicornis* (Sig.) was found at two new sites: by the R.Ivel at Blunham and by the disused railway south of Sandy Warren, both times on Osier although elsewhere I searched this shrub without success (Cople, Clophill, and Linslade). I also found this species in the Isle of Wight and in Herts during the year, both times on Osier.

Other interesting records include the second Juniper Shield-bug (*Cyphostethus tristriatus* (Fab.)); in a Clapham garden in January (per A.Muir-Howie). *Alloeotomus gothicus* (Fall.) has previously been spasmodic in occurrence but was found as an established population on Scots Pines at Fox Corner, Heath and Reach, both adults and nymphs being present. The single record of the Spruce bug *Plagiognathus vitellinus* (Sch.) is now supported by records of the bug in numbers at Stockgrove Park, Heath and Reach, and at Worleys Wood, Knotting. The latter was also the site for the first *Orthops rubricatus* (Fall.) since Leston's 1961 record from Woburn Sands. Tiny shield-bug nymphs under Forget-me-nots in a fallow field by Wilstead Wood might have become my first *Sehirus luctuosus* (M. and R.) in Beds, but later in the summer the field had been ploughed and there was no sign of the bugs.

My 10km-square based survey of the county is proceeding well. Eight species are now known from all 22 squares, whilst no less than 62 are known from half or more. By contrast, there are still 46 with only single squares to their credit. The richest square remains TL03 (Maulden) with 222 species, followed some way behind by SP92 (Heath and Reach) and TL14 (Shuttleworth) each with 165 species; it is notable that each of these three includes part of the Greensand Ridge, which adds greatly to the potential.

Once again I would like to thank those who have helped by providing records or specimens for identification; particularly Dr N.F. Janes, Mrs E.B. and Mr D.G. Rands.

ADDITIONS TO THE BEDFORDSHIRE LIST

PIESMATIDAE

Piesma quadratum (Fieber) – one was beaten from a tangle of Clematis and shrubs at the roadside edge of Sheerhatch Wood, Moggerhanger, on 9th Sep. Southwood and Leston, in *Land and Water Bugs of the British Isles* (Warne, 1959), say: "The inland distribution is local, reaching no further N than East Anglia, and the bug is rare except in saltmarshes". The host plants are Oraches of the Beet family.

MIRIDAE

Brachyarthrum limitatum Fieber – a male was found on Aspen in Potton Wood on 8th July; a female in Maulden Wood on 14th and a male in Wilstead Wood on 22nd July. The British distribution is south-eastern, Beds. being at the northern limit.

Plesiodema pinetellum (Zett.) – found on Scots Pine at Shire Oak (Heath and Reach), Aspley Heath, Maulden Wood, Hasell Hall (Sandy), and Stockgrove Park (H. and R.); all in July.

Psallus masseei Woodroffe – a male taken on Oak in Maulden Wood on 14th July. It was with *P. diminutus*, *P. varians*, and *P. variabilis*. The specimen was confirmed by dissection.

Camptozygum pinastri (Fall.) – an adult taken on Scots Pine in Campton Plantation on 8th July, and nymphs were also present. Later it was found in Potton Wood, Shuttleworth Warren, and at Fox Corner (H. and R.); all in July and early Aug.

GERRIDAE

Gerris lateralis Sch. – Dr Janes found this rare pondskater at Flitwick Moor on 14th April. The habitat was typical for this northern species – partly shaded stagnant water with scattered Phragmites. This is an exceptionally southern record.

Gerris argentatus Sch. – in company with Dr Janes, I found this fairly common around *Juncus inflexus* at the margin of a small flooded clay-pit near Cox's Hill (Sandy) on 29th April. The ubiquitous *G. lacustris* was also present. *G. argentatus* is not common in this part of England.

ADDITIONS TO BIBLIOGRAPHY (*Bedf. Nat.* 31:56-57 and 32:33)

NAU, B.S. 1979. Two plant bugs new to Britain, *Placochilus seladonicus* (Fall.) and *Campylomma annulicornis* (Sig.) (Heteroptera, Miridae). *Ent.mon.Mag.* 144, 157-159.

B.S. NAU

GRASSHOPPERS AND CRICKETS (Orthoptera/Saltatoria)

Report of the Recorder

The highlight of the year was receiving a specimen of an adult female Wart-biter (*Decticus verrucivorus*) from Clive Banks. This Bush-cricket had been found at the bottom of a grassy bank inside the grounds of Electrolux Ltd., Luton, in early August.

The specimen is now in the British Museum (Natural History) who have confirmed its identification and from measurements believe it is of continental origin. The size was larger than British specimens. There is a remote possibility that eggs may have been laid. There are only five localities in the British Isles where it has been found.

The name 'Wart-biter' is derived from the fact that Swedish peasants have used them to bite off their warts. Electrolux is a Swedish firm.

This year has seen the publication by the Biological Records Centre, Monks Wood, of the second edition of the *Provisional Atlas of the Orthoptera of the British Isles*. All the Bedfordshire 10km records have been incorporated in this edition.

My report last year indicated there would be fewer new records in future, as the county had now been very well searched. I was wrong, the new records are at the same level as last year.

The following records are additions this year to the maps published in the *Bedf. Nat.* 32:25-30.

Oak Bush-cricket – 15 tetrads. 93U, 01H, 05FS, 06KNPT, 11P, 14EY, 15RS, 16F, 24I.

Dark Bush-cricket – 5 tetrads. 94Y, 95U, 96V, 15L, 16F.

Speckled Bush-cricket 25 tetrads. 93U, 96W, 02ST, 05NPSUXY, 06T, 11I, 12C, 13AN, 14PQV, 15C, 16A, 23D, 24BCNP.

Common Green Grasshopper – 1 tetrad. 02X.

Meadow Grasshopper – 2 tetrads. 14E, 15B.

Common Field Grasshopper – 5 tetrads. 93F, 95P, 14V, 15L, 16F.

Lesser Marsh Grasshopper – 2 tetrads. 15KL.

The only other additional record for a species was the Mottled Grasshopper where a new site was found at Shire Oak, Heath and Reach, map ref. SP 917284 where they were abundant.

The Common Green Grasshopper is not widespread in the county, often it is only when it is singing that you become aware of its presence.

The record for the Lesser Marsh Grasshopper this year had 'green sides' and becomes the third specimen that was not the 'brown variety'.

Since the publication of the distribution maps in 1978 there have been more additional records for the Bush-crickets than for the Grasshoppers. These records have not changed the distribution patterns or altered the conclusions I made at the time.

ACKNOWLEDGEMENTS

I would like to thank Mrs E.B. Rands, B.S. Nau, V.W. Arnold, A. Muir-Howie, M.B. Rowland and N. Janes for their records.

D.G. RANDS

LACEWING FLIES (Neuroptera)

Report of the Recorder

I have been unable to visit the county to collect during the past year but hope to do so eventually. So few records have come to hand since my original list, mostly made in 1978, that it is easy to list them in their entirety; nearly all are due to Bernard Nau (B.S.N.) or Mr and Mrs Rands (D.G.R. and E.B.R.). It may be worth pointing out that dead lacewing flies can be found in houses on window-sills etc. which enables records to be made without killing any specimens. At least the county distribution of *C. carnea* could be mapped in this way.

Coniopteryx? parthenia Navás & Marcet. Maulden Wood, oak and Scots Pine, 27.6.78, B.S.N.

New record if confirmed by collection of males.

Hemerobius humulinus L. Cockayne Hatley, 20.9.78, D.G.R. and E.B.R.

H. stigma Stephens. Maulden Wood, oak and Scots Pine, 27.6.78, B.S.N.

H. micans Oliv. Maulden Wood, 27.6.78, B.S.N.; Shuttleworth TL 148442, 22.5.78, E.B.R.

Symphorobius pygmaeus (Rambur). Maulden Wood, 27.6.78, B.S.N.

S. fuscescens (Wallengren). Maulden Wood, 27.6.78, B.S.N. (new to the wood).

Chrysopa carnea Stephens. Cockayne Hatley, 20.9.78, D.G.R. and E.B.R.; Chicksands Woods, 5.5.79, N.F. Janes; Clarendon School TL 084419, 10.6.78, D.G.R.; Suburban garden TL 082232, D.G.R. and E.B.R.

In the related group Megaloptera an apparently new record has been made.

Raphidia notata Fabr. Maulden Wood, oak and Scots Pine 27.6.78, B.S.N.

The specimens are in the British Museum (Nat. Hist.) and have been confirmed by Dr P.C. Barnard.

B. VERDCOURT

BUTTERFLIES (Lepidoptera)

Report of the Recorder

During the past three years the combination of cold, wet summers, mild winters and late springs have caused a decline in the numbers of butterflies. This decline seems to have abated, and while we still had a late spring and cool summer, the hard winter seems to have removed many of the small birds and by so doing has reduced the excessive predation that had occurred in these past two or three breeding seasons.

There were fewer overwintered butterflies on the wing than normal in the spring, as was expected, but they were very productive and the resulting broods of Brimstone, Peacocks, Commas and Small Tortoiseshell were very plentiful. The Small White even managed to produce a very sizeable third brood because the autumn was so mild. This also assisted the Small Heath which enjoyed similar brood success.

The Wood White was seen again in Maulden Wood on a number of occasions and was rediscovered after many years of apparent absence from Odell Wood. West Wood also produced records for this species.

The White-letter Hairstreak was found again in Maulden Wood this year, after an absence of some two years, so allaying fears of its disappearance from this locality, but despite an intensive search of another of its old haunts, Marston Thrift, it could not be found there.

The wood at Marston Thrift does still contain the White Admiral however, it was seen by a number of visitors there this year. It also turned up in Wilstead Wood, this being a new site according to recent records. It is very difficult to assess the size of these two colonies because of the dense undergrowth in both woods, but it is unlikely that they will ever be commonly seen at either site as Bedfordshire is just about the northern limit for this beautiful

butterfly.

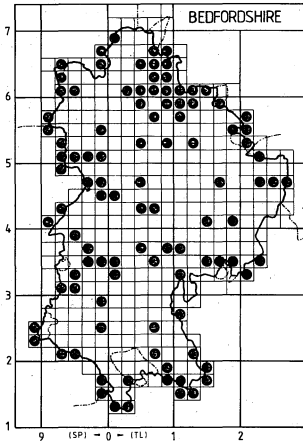
The Green Hairstreak was commonly seen at its known localities, mainly Warden Tunnel and Bison Hill but no new sites were discovered. The Purple Hairstreak also seems to have had a productive year with very many eggs laid on the oak trees. On closer examination of these eggs however they seem to have been heavily predated by a tiny wasp that lays its eggs inside those of the butterfly, so the 1980 population may well be depleted.

The Chalk downs were once again productive hunting grounds with Grizzled Skipper and Duke of Burgundy showing good populations on Dunstable Downs. The Chalk Hill Blue and Small Blue, on the other hand, only seem to be holding a very tenuous grip on these slopes. The grass is becoming rather too long thus preventing the growth of the necessary food plants for these species. Unless the rabbit population returns to a sizeable one, so that the grass will be eaten down, there is a distinct danger that these two species will disappear from Bedfordshire.

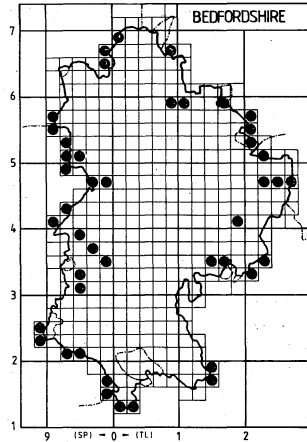
The tall growth of grass is responsible in the main for the increase in population of the Marbled White which is continuing to move northwards. It is now only a few miles from the River Ouse at Bedford and according to the size of the population will reach it in a few years.

Other grass feeding species fared well with Meadow Brown, Ringlet and Gatekeeper being commonly seen, and with a few days of southerly winds the migrant Red Admiral and Painted Lady put in an appearance, but not in any great numbers. Even one Camberwell Beauty was found near Ampthill but that was the only sighting for this species reported during 1979.

Once more I searched in vain for the Brown Hairstreak. It is unlikely that this species still exists in this county, which was the extreme northern edge of its distribution. A national survey revealed that this species is on the retreat southward, so there is now little hope for it in the Bedfordshire list of species.



Dots indicate the tetrads with no records up to the end of 1977.



Dots indicate the tetrads with no records up to the end of 1979.

The butterfly census is progressing well thanks to a band of dedicated recorders. My sincere thanks go to Mr and Mrs K. Weeden, Dr. B. Nau, D. Manning, N. James, V. Arnold, A. Smith, A. Peterkin, C.W. Burton, H.E. Hutson, Miss A. Doody, D.J. King, Dr. A. Rundle, T. Thomas, D.G. and Mrs E. B. Rands and A. Muir-Howie for their help and as evidence of their diligent work I here show the tetrads from which no butterfly records existed in 1977 and the situation as it is now in 1979.

ALAN J. MARTIN

MOTHS (Lepidoptera) Report of the Recorder

Despite the weather of 1979 it turned out to be an interesting year and it was possible to do much field work at both old and new sites of interest within the county.

Trapping was carried out at both Flitwick Moor and Maulden Wood, although it was not possible to spend as much time at Flitwick Moor as was originally planned. However, Mrs B. Jarvis supplied me with a list of species that she had recorded for Flitwick Moor since 1976, this list provided me with a total of eight new species that, although considered common, had not been reported before.

Two new sites were also examined, Shire Oak, Heath and Reach and Bramingham Wood, Luton. Out of these two sites, the former provided the best results as Bramingham Wood, despite being of obvious antiquity, is very overgrown and presents difficulties in getting heavy equipment into it. So far, the only moths of interest that have turned up are (433) Vine's Rustic and (466) Rosy Minor.

Among the species of day-flying moths recorded for Shire Oak was (667) Common Orange Underwing found flying around Birch in April (also recorded by A.J. Martin from Flitwick Moor). On the 2nd June a specimen of (342) Beautiful Yellow Underwing was captured while flying over heather. This is the second county record for this attractive moth, the first coming from W.J. Champkin for Amphill Firs, August 1965. Among the species coming to light were (95) Small Elephant Hawk, (129) Least Satin Lutestring, (264) Wood Leopard – a good year for this species, (752) Sharp-angled Carpet and (903) Tawny-barred Angle – both the normal version and the sooty brown form, ab. *nigrofulvata*.

Some of the interesting moths recorded from Maulden Wood were (104) Lobster Prominent, (128) Poplar Lutestring, (268) Map-winged Swift and (553) Deep Brown Rustic.

During the year, two of my regular contributors left the county – T. Hollingworth to Germany and Dr R. Munday to New Zealand, their help and encouragement will be missed. To help offset this, however, K. Webb, who has been running a trap in Kingsdown Avenue, Luton, for some time, has provided me with some records of interest. Some of the species recorded by other contributors include (223) Poplar Hornet Clearwing, from Bromham Road, Bedford in July by A. Muir-Howie, (559) Common Merveille-du-Jour, from Sharnbrook, in October by Dr R. Munday. T.J. Thomas reported that (218) Narrow-bordered 6-Spot Burnet was so common at Old Warden Tunnel, that he was walking through clouds of them, and indeed my observations at Totternhoe Knolls in July showed the pupae to be so numerous that it appeared they were on every grass stem!

R. Revels, who during the 1960's ran a moth trap at his home at Topfield Farm, Dunton Lane, Biggleswade has provided me with some interesting records, amongst which was a record of (83) Convolvulus Hawk for 30/8/65.

In the north of the county, D.V. Manning has continued recording at both Sharnbrook and Felpersham Nature Reserve, as well as carrying on his work with the Microlepidoptera of the county. Included in his records for these two sites were (172) Muslin Footman, July, both sites, (179) Dingy Footman, July, Felpersham N.R. and (728) Flame Carpet, Felpersham N.R. On the evening of 12th October 1979, a single specimen of (783) Juniper Carpet turned up at light at Sharnbrook – this being the first county record for this species. The identity of the moth was confirmed by I. Woiwod at Rothamsted. It is assumed that the larvae of this moth must be feeding on either a cultivated species of Juniper, or on Cupressus – it will be interesting to see if it turns up anywhere else in the county in the future. (See *Bedf. Nat.* 31 : 54 report by B.S. Nau on the Juniper Shield-bug).

According to an article in the *Luton News*, caterpillars of the Large Tortoiseshell butterfly reached plague proportions in the Tophill Estate district of Luton; however, upon investigation, they turned out to be the larvae of (145) Common Lackey. These had been identified by an 'expert' from Luton Town Hall – the *Luton News* did admit half-heartedly that they were wrong!

During the year, Volume 9 of *The Moths and Butterflies of Great Britain and Ireland* was eventually published. This book contains a wealth of information, including distribution

maps etc. of the species covered. The main criticism that I have heard is that the colour plates are not as good as was hoped for. Nevertheless it has produced evidence of some species that are shown to occur in Bedfordshire that were unknown to me, and these will appear in the Journal when more information is received about them.



Emperor Moth (*Saturnia pavonia*). A bilateral gynandromorphic specimen bred by V. W. Arnold. The left hand side is female and the right hand side is male. Note the smaller size of the male and the difference between the antennae, (Photo: A. J. Martin)

The most unusual event of the year must be without doubt the occurrence of a genetic aberration of the Emperor moth. While on Bison Hill, Whipsnade on the 8th June 1978, I collected twelve larvae of this species which were feeding on a small hawthorn bush. These all eventually pupated in August 1978. On the 8th May 1979, I was surprised to find that one of the moths that had just emerged was different from the others in that the right side was male and the left side was female. Such moths are known as bilateral gynandromorphs and are very rare. The cause of this is considered to be a chromosome malfunction during the first cell division in the egg. According to the *Entomologists Record* 91 (7-8) : 219, this is only the third known British specimen, and only the second with full data. The specimen is now lodged with the National Collection of British Lepidoptera, from where it will eventually be transferred to the British Museum (Natural History). There is also a note published by R. Revels in the *Hertfordshire Countryside* 35 (249), complete with a photograph.

ACKNOWLEDGEMENTS

My thanks go to the following for records and assistance: W.J. Champkin, R. Collings, J. Gould, N.F. Janes, Mrs B. Jarvis, D.V. Manning, A.J. Martin, A. Muir-Howie, R. Munday, A.R. Outen, Mrs E.B. Rands, R. Revels, A.J. Rundle, R.B. Stephenson, T.J. Thomas, K.F. Webb and I. Woiwod and his staff at Rothamsted. Special thanks go to D.G. Rands for all his help and the continued use of his generator.

SPECIES LIST

The following list contains species of particular interest, and have not been recorded in the Journal before.

Numbers and English names as per *Checklist of the British Lepidoptera* by I.R.P. Heslop (1964 Library Edition).

- 114* **Great Prominent** Recorded from The Lodge, Sandy, during the 1960's and also at light by R. Revels, Topfield Farm, Biggleswade July 1969. It could also occur in the future at Hardwick Spinney, Stagsden, as some larvae reared by W.J. Champkin escaped there in 1978
- 167* **Small Black Arches** Taken by R.F. Bretherton in Kings Wood, Leath and Reach in 1945. Record supplied by J. Heath from Vol 9 of *The Moths and Butterflies of Great Britain and Ireland*.
- 294* **Dotted Rustic** Hardwick Spinney July 1974 by W.J. Champkin; Sharnbrook and Maulden Wood in 1975 by D.V. Manning and V.W. Arnold. This appears to be a very under-recorded moth.
- 301* **Barred Chestnut Clay** The only records for this moth come from W.J. Champkin – 1964 Cople Pit, Bedford; 1965 Ampthill Firs, Souldrop Tunnel, Sandy; 1974 Hardwick Spinney. It has probably been overlooked in the past due to it resembling other closely related species.
- 340* **Dark Bordered Straw** Taken by R. Revels, Topfield Farm, Biggleswade, 27/5/65 at M.V. light. This is the only known record for this moth for the county.
- 421* **Reed Wainscot** Shown on a checklist of moths recorded at the Lodge Reserve, Sandy between 1961-1976. Although it was reported taken in 1961 by B.B. West, I have been unable to get confirmation from him of its authenticity. In view of this and the fact that the habitat is not right, this record must be considered doubtful.
- 531* **Pale Wormwood Shark** During 1964, W.J. Champkin discovered the larvae of this species feeding on Mugwort in Barkers Lane Pit and Cople Pit, Bedford. Moths hatched in July of that year. Since then, the only other record comes from a specimen taken at M.V. light, Topfield Farm, Biggleswade in July 1969 by R. Revels.
- 767 **Large Phoenix** Taken by the recorder at light, 14th July 1976 at Flitwick Moor. This is the first county record since V.C.H., when it was recorded from 'gardens in Luton'.
- 845* **Haworth's Pug** At light at a B.N.H.S. field meeting to Bromham Park, 24/7/74, by W.J. Champkin and D.V. Manning. As most of the Pug family are hard to identify with certainty, this species has probably been ignored in the past. Since its larval food plant is Clematis (both wild and cultivated) it is probably common. According to D.V. Manning the point to look for in this species is the presence of an orange colouration at the base of the abdomen.

Species marked * are new county records.

REFERENCE

BARRETT, C.G. 1904. Lepidoptera, *Victoria County History of Bedfordshire* 1, 78-88 (Abbreviated V.C.H.).

V.W. ARNOLD

AN EXPERIMENT ON THE ASSEMBLING OF THE EMPEROR MOTH (*SATURNIA PAVONIA*)

by Alan J. Martin, 18 Aragon Road, Ampthill, Bedford.

One of the many wonders of the natural world concerns the ability of certain species of moth to call each other over long distances by the emission of scent pheromones, for the purpose of mating. A species renowned for this assembling, as it is called, is the Emperor Moth (*Saturnia pavonia*). The scent emanates from the posterial end of the female and appears to be dispersed by a pulsating of the tail. Many authors state that the female can call the male from distances of a mile or more but there are very few written accounts of such experiments.

It was with such an experiment in mind that a few specimens were bred from larvae taken at Bison Hill (TL 002184). It was from this stock that V.W. Arnold bred a bilateral gynandromorphic specimen (see p. 43). Four females and six males were successfully reared, the sexes being isolated to ensure that the females remained unpaired. Within two hours of emerging the females started to call. This was apparent from the reaction of the males who having been previously released, returned to the caged females. The scent was hardly discernible at this stage, even when the nose was held a few inches from the females.

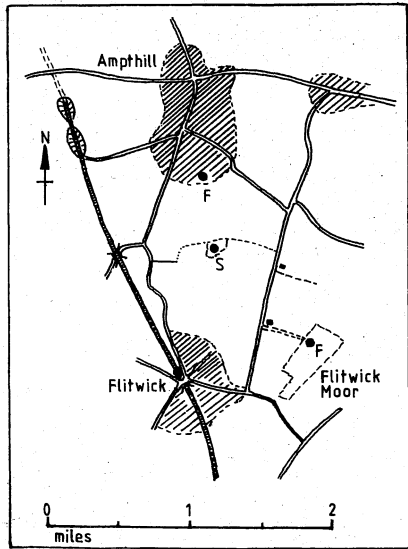
The caged females were then taken by car to Flitwick Moor (TL 045 355), F on the map, a journey of some ten minutes, by which time the scent was overpowering, being best described as a sweet putrid smell. Flitwick Moor was chosen as it was known to have a thriving colony of Emperor Moths. The cage was placed on the car roof and within five minutes it was surrounded by several males. 12 of these were captured and a small mark placed on the right hand hind wing of each. The marked males were released and the caged females taken to Ampthill (TL 037372), A on the map, a distance of about 1 1/3 miles, where the cage was hung in the garden.

Within ten minutes males started to arrive and continued to do so for the next hour. Of the 12 marked at Flitwick Moor, four turned up at times of 21 mins, 25 mins, 40 mins and 43 mins from the hanging up of the cage. The males, which were flying very fast indeed, never overshoot the cage by more than five feet, most turning back within three feet and landing on or flying around the cage.

All but one of the caged females were allowed to mate and they were subsequently returned to Bison Hill. The remaining female ceased calling the next day and laid her infertile eggs the following evening.

The date and time of the experiment is as shown below along with the meteorological conditions –

| | |
|---------------|---------------------------|
| Date | Monday 30th April 1979 |
| Time | 0900 to 1200 hours |
| Temperature | 8°C |
| Wind | Light NW (approx.) |
| Precipitation | nil |
| Cloud | 4/8 3000ft thin (approx.) |



Dr E.B. Ford in his book *Moths* (New Naturalist, Collins 1955) refers to the female becoming active during the evening and night. The present experiment was carried out during the morning from 0900 to 1200 hours. He also refers to the highly specific response of the male to the scent of the female. The males from Flitwick Moor had to fly close to a sewage works, S on the map. The smell associated with these works might be described as similar to that of the moth's scent, i.e. sweet and putrid, so the specific response would appear to be accurate on this evidence.



Female Emperor Moth (*Saturnia pavonia*) calling (Photo: A. J. Martin)

MOTHS CAUGHT IN ROTHAMSTED LIGHT TRAPS IN BEDFORDSHIRE, 1969-78

by V.W. Arnold, 96 St. Augustine Avenue, Luton, Beds.

Now that ten years of records are available, it seems appropriate to write a brief note on the use of Rothamsted traps within the county. Details of the four traps that were running during this period are contained in Table 1.

| Location of trap | O.S. Grid Reference | Dates traps operational | No. of years run | Total number of species |
|---|---------------------|-------------------------|------------------|-------------------------|
| R.S.P.B. Reserve, The Lodge, Sandy | TL 187478 | 1969-1975 | 7 | 315 |
| Whipsnade Park Zoo | TL 002179 | 1972-1973 | 2 | 212 |
| *Shuttleworth Agricultural College, Old Warden | TL 148444 | 1974-1978 | 5 | 277 |
| *South Lodge, Cockayne Hatley | TL 253494 | 1976/1978 | 3 | 234 |

Table 1. Details of the four Rothamsted traps (* indicates those still in operation)

Throughout the British Isles, there are about 150 traps controlled by members of the Rothamsted Insect Survey, based at Harpenden, Herts. This scheme started in the early 1960's, but it was not until 1969 that the first permanent Bedfordshire trap was started at Sandy.

These traps attract moths and other insects (see *Bedf. Nat.* 31: 51-57 and 66-67), by means of a 200-watt tungsten lamp. Insects entering the trap are instantly killed by tetrachloroethane vapour and fall into a collecting jar. This catch is collected each day and sent to Rothamsted to be sorted and identified. The data obtained are fed into a computer which is used by Rothamsted to build up an overall picture of distribution, flying times and population fluctuations over the whole of the British Isles. This information also enables them to observe the presence of species that are regarded as agricultural and horticultural pests, and is being used to develop fundamental ecological principles concerning the diversity and stability in natural populations.

Due to the fact that a tungsten lamp is used as opposed to the more powerful mercury vapour lamp, it is considered that the small sample of moths killed has no effect on population numbers, and careful analysis of the long runs of data from traps at Rothamsted confirms this. As an example, over a three year period at Old Warden, the average catch per night was seven moths.

Since I became recorder, Ian Woiwod of Rothamsted has very kindly provided me with a copy of each year's computer report for every site. This contains not only a complete list of species, but also numbers caught and flying times. As these traps have been run, in most cases every night of the year, from dusk to dawn, they have added a number of new species to the county Check List, and in some instances provided confirmation of old records (see *Bedf. Nat.* 32: 36-39 and 33: 53-56).

So far these traps have produced records of 378 species, and it has been possible by an examination of the data available to see clearly which are the most common species to be found in the county. From this figure of 378, 112 (30%) were found to be very common, appearing year after year at most of the sites.

Using these figures as a rough guide, it should be quite possible for anyone in the county who is running a moth trap over a complete year, to expect this sort of minimum total. I will be pleased to provide anyone who is interested with a list of these common species, upon request.

| English names and numbers as per Checklist of the British Lepidoptera by I.R.Heslop, (1964) | SANDY | | | | | | WHIPS -NADE | | OLD WARDEN | | | | COCKAYNE HATLEY | | | | |
|--|-------|------|------|------|------|------|----------------|------|---------------|------|------|------|--------------------|------|------|------|------|
| | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1976 | 1977 | 1978 |
| 87 Pine Hawk | | | | • | | | | | | | | | | | | | |
| *132 Yellow-horned Lutestring | | • | • | • | • | • | • | | | | | | | | | | |
| 144 Black-arched Tussock | | | | | | | | | | | | | • | • | | | |
| *169 Least Black Arches | • | | | | | | | | | | | | | | | | |
| *178 Buff Footman | • | • | | | | | | | | • | | | | | | | |
| *314 Triple-spotted Clay | • | • | • | • | • | • | | • | | • | | | | | | | |
| *320 Green Arches | | | | | | | | • | | | | | | | | | |
| °396 Southern Wainscot | | | • | | | | | | | | | | | | | | |
| *415 Mere Wainscot | | • | | | | | | | | | • | • | • | | • | • | |
| *419 Fen Wainscot | | | | | | | | | | | | | | • | | | |
| *425 Brown-veined Wainscot | | | | | | | | | | • | | • | • | | | | |
| °454 Dusky Brocade | | • | • | | | | | • | • | | • | • | | | | | |
| *463 Tawny Minor | • | | | | | • | | • | • | | • | • | • | • | • | • | • |
| 465 Middle-barred Minor | • | • | • | | • | | | • | • | | • | • | • | • | • | • | • |
| 538 Tawny Pinion | | | | | | | | | | • | | | | | | | |
| 552 Minor Shoulder-knot | | | | | | | | | | • | | | | • | • | • | • |
| 594 Creamed-bordered Green | | | | | | | | | | | | | • | | | | • |
| 641 Four-spot | | | | | | | | | | | | | • | | | | |
| °656 Buttoned Snout | • | | | | | | | | | | | | | | | | |
| *683 Dingly Mocha | • | | | | | | | | | | | | | | | | |
| 699 Greater Cream Wave | | • | • | | | | • | | | | | | | | • | | |
| *701 Least Carpeted Wave | | | | | | | | | | | | | | | • | | |
| 702 Dwarf Cream Wave | | | | | • | | | | | • | • | | • | • | • | • | • |
| *711 Satin Wave | | | | | • | • | | | | | | | | | | | |
| *716 Plain Wave | • | • | • | • | • | • | | | | | | | | | | | |
| *718 Treble-spot Wave | | | • | | • | | | | | | | | | | | | |
| 719 Small Fan-footed Wave | • | • | • | • | • | • | | • | • | | • | • | • | • | • | • | • |
| *731 Narrow-barred Carpet | • | | | | | | | | | | | | | | | | |
| 736 Small Twin-spot Carpet | | | | | • | | | | | | | | | | • | | • |
| 746 Large Rivulet | | | | | | | | | | • | | | | • | | | |
| *750 Barred Rivulet | • | | | | | | | • | • | | | | | | | | |
| *769 Northern Spinach | | | • | | | | | | | | | | | | | | |
| °775 Autumn Green Carpet | | | • | | | | • | | | | | | | | | | |
| °790 Scarce Tissue | | | • | | • | • | | | | | | | | | | | |
| 815 Oblique Carpet | | | | | | • | | • | | | | | | | | | |
| °817 July Lead-belle | | | | | | | | • | | | | | | | | | |
| *823 Dark Spinach | • | | | | | | | • | | | | | | | • | • | • |
| *825 Small Autumnal Carpet | | | | | | | | | | | | | | | | | |
| *829 Northern Winter | • | • | | • | | | | • | | | | • | • | | • | | |
| *847 Toadflax Pug | • | • | • | • | | • | | • | | | | | | | | | |
| *848 Foxglove Pug | • | • | | • | | • | • | | | | | • | • | | | | |
| 864 Common Pug | | • | | | • | | | | | | | | | | | | |
| *949 Brindled White-spot | | | | | | | | | | • | | | | | | | |
| *952 Horse-chestnut Longwing | | | • | • | | • | | | | | | | | | | | |

Table 2. The more interesting species recorded from the four Rothamstead traps.

- * indicates a new county record
- indicates not recorded since 1934 (*The Natural History of the Hitchin Region*, pp 120-140)
- indicates not recorded since 1904 (*Victoria County History of Bedfordshire 1*, 78-88)

The species shown in Table 2 in most cases have not been recorded in the Journal before, apart from (87) Pine Hawk, (144) Black Arched Tussock, (552) Minor Shoulder Knot, (594) Cream-bordered Green and (641) Four Spot. These have been included as they are generally uncommon species. A number of the species in Table 2 are small, unimpressive-looking moths which are normally either ignored or misidentified – but not usually by Rothamsted! As there are plans for new sites to be set up in the county, it will be interesting to see what the next ten years bring.

HOVERFLIES (Diptera – Syrphidae)

Report of the Recorder

Recording in 1979 was mostly of species taken with a hand-net, but the use of Malaise and water traps gave additional information. After a late start, spring hoverflies were rich in diversity of species (but not in number) yielding over 170 new 10 km square records and 23 additions to the post-1960 county species list (see below). Maulden Wood was a particularly rewarding area (10 additions) followed by Flitwick Moor (3) and Stockgrove Park (3). A notable record was *Sphegina verecunda* (listed as rare) at Flitwick Moor. In contrast, few unusual species were observed later in the season.

A water trap in Maulden Wood was maintained and emptied weekly throughout the year. From partial analysis of the catch, concentrating on Diptera, seasonal trends are becoming clearer.

I am indebted to Mr V.W. Arnold, Dr B.S. Nau and Mr D.G. and Mrs E.B. Rands for samples, and to Mr A. Stubbs for confirming the identity of several specimens.

SPECIES LISTS

Species found in 1944-49 and in 1979 (10 species).

Chrysotoxum festivum

C. verralli

Metasyrphus latifasciatus

Cheilosia antiqua

C. intonsa

Chrysogaster hirtella

Parhelophilus frutetorum

Pipiza austriaca

P. noctiluca

Xylota xanthocnema

Species found only in 1979 (13 species)

Epistrophe grossulariae

Parasyrphus annulatus

P. lineolus

Platycheirus angustatus

P. fulviventris

P. tarsalis

Sphaerophoria menthastri

Syrphus torvus

Cheilosia albipila

Eumerus ornatus

E. tuberculatus

Helophilus hybridus

Sphegina verecunda

CORRECTION

Cheilosia vulpina in last year's report (*Bedf. Nat.* 33 : 61) should read *C. honesta*.

N.F. JANES

BEDFORDSHIRE EUCOILIDS (Hymenoptera – Cynipoidea)
 by V.H. Chambers, Ph.D., 50 Shefford Road, Meppershall, Shefford, Beds.

Roughly one half of the species of superfamily Cynipoidea comprise the Cynipinae, small wasps which cause the formation of the familiar plant galls, especially on oak, or their inquilines; the other half have quite different life histories, being internal parasites of aphids, or beetle or fly larvae. Of these the Eucoilidae is a small family, sharply defined morphologically and in biology, several species being known to be parasites of fly (Diptera) larvae which burrow in grass stems and roots e.g., the frit fly and cabbage root fly. A few years ago I lent my small collection to Mr J. Quinlan of the British Museum (Natural History), who named them in course of preparation of his *Handbook*, Vol. VIII, Part 1(b) of the Royal Entomological Society's series, published in 1978. I have now named material collected in later years.

With the exception of two of them, none of the species appears to be numerous in individuals, usually being taken singly or in twos or threes – at least by the collecting methods that I have used. Since I adopted sweeping as a method around the year 1949 only some 300 individuals have been taken, and all have been preserved. It is possible that more material could be secured by sweeping, or pootering off leaves, the grassy headlands of arable fields – where these still exist! – and some *Trybliographa* may prove to have much wider distributions. As I am not paying especial attention to this group I am now putting these on record: other species of the 50-odd recorded for the UK may turn up in the future.

Trybliographa rapae (West.). By sweeping grass and low herbs, May–October. Deadmansea Wood; Whipsnade Heath; Dunstable Downs; Hockliffe; Greenfield; Steppingley; Eversholt; Chicksands Great Wood; Maulden Wood; King's Wood, Houghton Conquest; Cockshoot Hill Wood, Southill; Warden Cutting; Forty Foot Lane, both ends, Souldrop and Hinwick; Yelow Lane, Colworth; White Lane, Odell; Kempston West End. SP 92, 93, 94, 95, 96; TL 01, 03, 04, 13, 14.

T. scotica (Cam.). As for *T. rapae*. Luton; Ravensdell Wood; Whipsnade Heath; Eaton Bray Downs; Sharpenhoe Clappers; Barton Springs; Maulden Wood; Flitwick Moor; Eversholt; Samishill, Westoning; Steppingley; Gravenhurst; Kempston West End; Hanger Wood, Stagsden; Aspley Heath; King's Wood, Houghton Conquest; Shefford Canal; Sutton; Forty Foot Lane, both ends; White Lane, Odell. SP 91, 93, 94, 95, 96; TL 01, 02, 03, 04, 13, 24.

T. scutellaris (Hart.). Yelow Lane, SP 95. A single 1958 capture.

T. gracilicornis (Cam.). By sweeping low plants in the ground/field zones, August–October. Maulden Wood; Flitwick Moor; Moor Plantation, Steppingley; King's Wood, Houghton Conquest; Sutton. TL 03, 04, 24.

T. diaphana (Hart.). June–October: by sweeping and at honeydew. Luton, and Warden Hill; Ravensdell Wood; Barton Springs; Pegsdon; Eaton Bray Downs; Maulden Wood and Pennyfather's Hills; Chicksands Great Wood; Flitwick Moor; Harlington; Greenfield; King's Wood, Heath and Reach; Steppingley; Kempston West End; Eversholt; King's Wood, Houghton Conquest; Hanger Wood, Stagsden; White Lane, Odell; Souldrop; Felmersham NR; Green Lane, Dunton. SP 91, 92, 93, 94, 95, 96; TL 01, 02, 03, 04 12, 14, 24.

T. cubitalis (Hart.). Deadmansea Wood; a single 1954 capture. TL 01.

T. ciliaris (Zett.). Luton; Pegsdon; Pennyfather's Hills; Green Lane, Dunton. TL 02, 03, 12, 24.

T. atra (Hart.). July–October. Barton Springs; Sharpenhoe Clappers; Pegsdon; Chicksands Great Wood; Flitwick Moor; Green Lane, Dunton; Sharnbrook Summit NR. SP 96; TL 02, 03, 12, 14, 24.

Pseudopsichacra sericea (Thoms.). Abundant, by low sweeping, July–October, in Maulden Wood and King's Wood, Houghton Conquest; Pegsdon. TL 03, 04, 12.

Psichacra rufula (Foerst.). Single examples taken in October, Barton Springs and Flitwick Moor. TL 02, 03.

Kleidotoma psiloides West. Sallow Spring, Whipsnade; Flitwick Moor; Briar Stockings, Eversholt: all in August. SP 93; TL 01, 03.

Hexacola hexatoma (Hart.). May–September. Sallow Spring, Whipsnade; Maulden Wood and Pennyfather's Hills; Steppingley; Sutton; Green Lane, Dunton; TL 01, 03, 24.

Eucoileia crassinerva West. This is the largest species, but is evidently not common. Pegsdon; near Flitwick Plantation; Eversholt. SP 93; TL 03, 12.

Disorygma depile (Giraud). In April and May. Whipsnade Heath; Pennyfather's Hills. TL 01, 03.

Diglyphosema conjungens Kief. Totternhoe Knolls; Barton Hill, old road; Pegsdon; Maulden Wood. SP 92; TL 02, 03, 12.

Chrestosema antennale Kief. A single male from Yelow Lane, Colworth, 12.7.59. SP 95.

Glauraspidea microptera (Hart.). From low vegetation under trees, August–October. Sallow Spring, Whipsnade; near Flitwick Plantation; Hangman's Wood, Old Warden; abundant in Maulden Wood and Flitwick Moor. TL 01, 03, 14.

SOME ANT RECORDS FROM BEDFORDSHIRE

by A.J. Rundle, Ph.D., 29 Burlington Avenue, Kew, Surrey

The purpose of this note is to put on record a summary of the ant records obtained by the author during the past five years whilst studying woodlice, etc. Table 1 gives the 10 km. distribution of these records as well as including additional records (not necessarily from Bedfordshire) published recently (Barrett, 1979). Figure 1 gives a summary of the tetrad coverage to date. The following species deserve special note:

Myrmica sabuleti – only two records to date;

SP 971622 nests common amongst grass by side of track, Sharnbrook Summit (26-8-78)

SP 985218 one worker sieved from soil on Chalk downland, Totternhoe Knolls Picnic Area (21-5-78)

Myrmica lobicornis – one record;

SP 985218 one worker sieved from soil on Chalk downland, Totternhoe Knolls Picnic Area (21-5-78)

Stenammina westwoodi – this is a small rare unobtrusive species and is not often recorded. Sixteen records have been obtained in Bedfordshire. The best way of finding the species is by sieving soil and litter, especially from under roadside hedges, and watching the fine sievings for several minutes as workers usually do not start to move immediately as do most other ants. A small nest was found at TL 165395 (21-7-79) under a piece of asphalt under roadside sycamore trees – it contained a queen and about 50 workers.

Myrmecina graminicola – two records of this very distinctive ant;

SP 985218 foraging workers common on soil in Chalk downland, Totternhoe Knolls Picnic Area (21-5-78)

TL 077417 two workers in soil in flower bed in grounds of Clarendon School, Haynes Park (10-6-78)

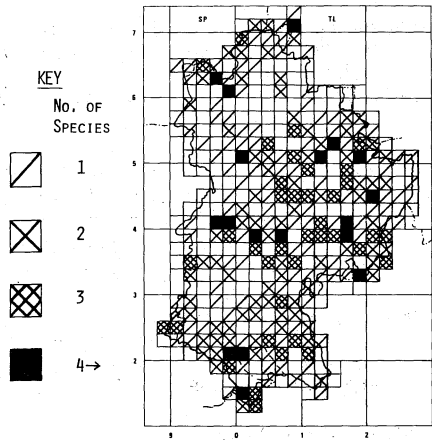


FIGURE 1
ANT SUMMARY MAP

TABLE 1: DISTRIBUTION OF ANTS BY 10 KM. SQUARES

| Grid Square | TL | SP | TL | TL | SP | TL | TL | SP | TL | TL | SP | TL | TL | SP | SP | TL | TL | SP | TL | TL | No. of tetrad records | | | |
|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----------------------|-----|----|-----|
| | 07 | 06 | 16 | 95 | 05 | 15 | 25 | 94 | 04 | 14 | 24 | 93 | 03 | 13 | 23 | 82 | 92 | 02 | 12 | 91 | | 01 | 11 | |
| <i>Myrmica rubra</i> | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 124 | | |
| <i>Myrmica ruginodis</i> | x | x | x | . | . | x | x | x | x | x | x | x | x | x | . | x | x | x | x | x | x | 61 | | |
| <i>Myrmica scabrinodis</i> | . | x | x | . | x | . | x | x | x | x | x | x | x | x | x | x | x | x | . | x | . | 24 | | |
| <i>Myrmica sabuleti</i> | . | x | . | . | . | . | . | . | . | . | . | . | . | . | o | . | o | x | . | . | . | 2 | | |
| <i>Myrmica schencki</i> | . | + | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | - | | |
| <i>Myrmica lobicornis</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | x | . | . | . | o | 1 | | |
| <i>Stenamma westwoodi</i> | . | . | . | x | . | . | . | x | x | x | x | . | . | o | x | x | . | x | x | . | x | 16 | | |
| <i>Leptothorax acervorum</i> | x | x | x | o | . | . | . | . | . | . | . | . | . | o | x | x | . | . | x | o | . | 6 | | |
| <i>Leptothorax nylanderii</i> | . | . | . | . | . | . | . | o | . | . | . | . | . | . | . | . | . | . | . | . | . | - | | |
| <i>Myrmecina graminicola</i> | . | . | . | . | . | . | . | . | x | . | . | . | . | . | . | . | . | x | . | . | . | 2 | | |
| <i>Lasius fuliginosus</i> | . | . | . | . | . | x | . | . | . | . | . | . | o | . | x | x | x | . | . | o | . | 5 | | |
| <i>Lasius niger</i> | x | x | x | o | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 133 | | |
| <i>Lasius alienus</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | o | . | . | . | . | . | o | x | 1 | | |
| <i>Lasius brunneus</i> | . | . | . | . | x | . | . | . | . | . | . | . | . | . | o | . | . | . | . | . | . | 1 | | |
| <i>Lasius flavus</i> | x | x | x | o | x | x | x | . | x | x | x | x | x | x | x | x | x | x | x | x | o | 67 | | |
| <i>Lasius umbratus</i> | . | . | . | . | . | . | . | . | x | . | . | . | . | . | o | x | . | . | . | x | . | 4 | | |
| <i>Lasius mixtus</i> | . | . | . | . | . | x | . | . | . | . | . | . | . | . | o | . | . | . | . | x | o | 3 | | |
| <i>Formica rufa</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | o | x | . | . | . | . | . | 1 | | |
| <i>Formica sanguinea</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | o | - | | |
| <i>Formica fusca</i> | . | . | . | . | . | x | o | . | x | x | x | x | o | . | . | . | . | . | . | o | o | 9 | | |
| <i>Formica cunicularia</i> | . | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 | | |
| Totals: | 5 | 8 | 6 | 1 | 5 | 6 | 7 | 3 | 8 | 8 | 8 | 7 | 6 | 9 | 8 | 6 | 3 | 10 | 7 | 4 | 5 | 6 | 2 | 461 |

o Additional records given in Barrett (1979). These are not necessarily Bedfordshire records and are excluded from the totals given above.

+ Record given by Chambers (1977) (also excluded from the totals above).

Lasius alienus – only one record;

SP 999188 one worker under thyme, etc. on Chalk scarp, Dunstable Downs (7-6-77 – collected by Mrs E.B. Rands)

Lasius brunneus – one record of this rare wood-living species;

TL 010507 several workers under close-fitting dry bark of dead willow stump, Bromham Mill (7-5-79)

Lasius mixtus – three records of this rather uncommon ant;

TL 111201 large nest under bricks on roadside verge containing many males and alate females – unusual for so late in the year (9-11-75)

TL 203559 nest under piece of concrete on roadside verge (2-4-78)

SP 991536 two workers in moss litter, Stevington Church (26-8-77 – collected by Mrs E.B. Rands)

Formica cunicularia – one site;

SP 971622 foraging workers common amongst grass and on tracks, Sharnbrook Summit.

One nest was found occupying the lower part of a mound nest of *Lasius flavus* in addition to a small nest of *Myrmica sabuleti* confined to one corner.

ACKNOWLEDGEMENTS

The author would like to thank Mr K.E.J. Barrett (the National Recorder for the group) for help with identification and to various members of the Society who have supplied records or specimens.

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SOME INSECT RECORDS FROM BEDFORDSHIRE DURING 1979

by B.S. Nau, Ph.D., 15 Park Hill, Toddington, Dunstable

The following are mainly my own observations; authors of the scientific names have been omitted for brevity but the sources are listed in the references.

On 4th Feb the Great Ouse was in flood at Radwell and had spread a few yards up a sloping meadow. Dr Janes, his daughter and I were struck by the amount of flotsam being swept along by the flood-waters and began to look for beetles on the water. In the space of fifteen minutes we managed to catch, by hand, a rich variety of species – at the end of this time imminent risk of frostbite brought operations to a close, it was a very cold day. We concentrated on two families, rove beetles and ground beetles; of the former our catch included at least five species and of the latter nine. The ground beetles were, remarkably, all of two genera: *Agonum* (*fuliginosum*, *marginatum*, *moestum*, and *ruficorne*) and *Bembidion* (*biguttatum*, *dentellum*, *guttula*, *lunulatum*, and *obtusum*).

A nice example of a community of Heather insects was noted at Sandy Warren on the occasion of the Field Meeting on 25th March. This included such beetles as *Lochmaea suturalis* and *Bradycellus ruficollis*, both common; the Cicadellid hopper *Ulopa reticulata*, also common; and the predacious bug *Nabis ericetorum*.

At Flitwick Moor on 16th April there were exceptional numbers of Stoneflies on the wing along the south edge of the wood, in the meadow, one specimen collected keyed out to *Nemoura cinerea*. This is a common species of still water with emergent vegetation. Another common species of similar habitats was taken on *Carex* in the Willow carr north of Bromham Mill on 7th May.

The supposedly scarce Cicadellid frog hopper (Hemiptera-Homoptera) *Centrotus cornutus* turned up in my sweep net on two occasions: on 2nd June in the roadside chalk-cutting on Sharpenhoe Hill, where I swept it from the turf; and on 9th June from a roadside Gorse bush at Rowney Warren.

Longhorn beetles during the summer included: *Pogonochaerus hispidus* on an ivy-covered tree in Sundon Country Park, a local Holly species; and *Anaglyptus mysticus*, the Wasp Beetle *Clytus arietus* and *Grammoptera ruficornis* at West Wood (Souldrop) on 17th June. The Chrysomelid beetle *Plateaumaris sericea* was found at the river edge during the Bromham Mill Field Meeting on 3rd June, and the scarlet Cardinal Beetle *Pyrrhocroa serraticornis* in the meadow. The latter was also seen in Wilstead Wood on 10th June together with *Clytus arietus*. On this visit larval webs of sawfly larvae seemed unusually common on Spindle bushes.

During the above-mentioned visit to West Wood, the bee-fly *Bombylius major* was seen quite frequently. Interestingly, these attractive insects were invariably at intersections of rides, hovering in the sun. Dr Janes caught several to check the specific identification. The latter also erected a Malaise trap in Maulden for a few days in mid-June, on a small vegetable plot behind the barn, and this produced a variety of beetles including: *Phyllobius pyri* (common on nearby Birches), *Grammoptera ruficornis*, *Aphidecta obliterata* (one of the conifer ladybirds), *Malthodes* sp., *Cantharis haemorrhoidalis*, *C. pallida*, and *C. nigricans*. Also the snake-fly (Neuroptera) *Rhaphidia cognata*.

In the fourth week of July the Summer Chafer, *Amphimallon solstitialis*, was very abundant on the wing at dusk in Stockgrove Park, mainly about the foliage of isolated Oak trees. They were being preyed upon intensively by Foxes which caught them when grounded, by two species of raptor and by Carrion Crows. On nearby Shire Oak Heath I found another chafer species on Bracken on 3rd July, this was *Phyllopertha horticola*.

I came upon a remarkable sight on 7th July. A puddle in ruts at a field entrance on the green lane north of Swineshead Church held an incredible abundance of insect life. *Helophorus* water beetles were ten to the square inch, small Dytiscid water beetles were very numerous and there was a profusion of the water-boatman *Sigara nigrolineata*. An adjacent puddle had dried up and was lined with the corpses of the immature stages of the water boatman, which are wingless. The mud bug *Saldula saltatoria* was common on the wet mud.

The occasion of the BNHS Field Course at Shuttleworth on 15th July produced an interesting observation on the behaviour of one of the largest of British insects, the Larch-borer,

Urocerus gigas. A group of 'entomologists' was working along the edge of the east lake when a large female Larch-borer zoomed in towards us across a field of cabbages, as it came within reach I netted it, expecting a Hornet, but was surprised at its true identity since we were about half a mile from the Larches in The Warren. However, in the morning we had been sweeping Larches and it seems likely that the insect had picked up the scent from our nets. An interesting illustration of the ability of insects to detect their host plants. Another specimen of this insect was investigated and confirmed by Mrs E.B. Rands in Woburn Park, north-west of the Abbey.

Early in September I was examining an isolated Tamarisk bush in my Toddington garden and noticed that there were numbers of the Cicadellid hopper *Opsius stactogalus* on it. This is usually regarded as a coastal insect although it does occur inland. In the same month, on the 4th, one of the more striking of the Digger Wasps came to my attention by the old railway below Sandy Warren, this was a male *Crabro cribrarius*. The male has a massive curved plate on each front leg and the female provisions the nest with flies paralysed by its sting, as a food supply for the larvae when the eggs hatch.

On 7th Oct. I obtained, with no little difficulty, one of a group of some fifty or more Whirligig Beetles circulating at high speed in a fast flowing runnel below Sharnbrook Mill. Notwithstanding the somewhat unusual habitat the beetle proved to be the ubiquitous species *Gyrinus natator*.

Another interesting community of beetles was collected from dead *Sparganium* and *Rorippa* in an old channel by the Great Ouse at Willington Lock. The species included: *Stenus palliarsus*, *Phaedon armoraciae*, *Lathridium angusticollis*, *L. nodifer*, and *Poophagus sisymbrii*.

Finally, on 30th Dec, a record in an order of insects rarely met outdoors in Bedfordshire. This was a silverfish, *Dilta hibernica*, which I found in a grass tussock on a steep bank bordering a lane running NE from Heath and Reach, near Overendgreen Farm (SP 928288). The south facing bank was sandy with little vegetation and was very well drained.

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WOODLICE, CENTIPEDES AND MILLIPEDES (Isopoda, Chilopoda and Diplopoda) Report of the Recorder

Although at least as much time was devoted to fieldwork in the county as in the previous year the number of new records shows a marked decrease — the law of diminishing returns is now evident. The level of recording is now good for all three groups and future recording will be aimed at filling gaps. Records have been obtained from all 383 Bedfordshire tetrads. One woodlouse and one millipede are recorded for the first time from the vice-county (v.c. 30 Beds).

WOODLICE AND WATER LICE (Isopoda)

A field course devoted to finding the rarer woodlice and studying their preferred habitats was held in October and was attended by people from as far away as Cardiff, Liverpool and Maidstone. The course was a great success and the day spent in Bedfordshire was crowned by the discovery by Mr P.T. Harding of frequent *Porcellio spinicornis* under roofing tiles, bricks, etc. on waste ground just W. of Keysoe Row. The site was one previously visited by the Recorder in 1978. One bad piece of news from this course is that the only known Bedfordshire site for *P. laevis*, a large manure heap near Cople, no longer exists and specimens of the species could not be found in the vicinity. The species undoubtedly occurs in farm buildings in this area and an effort will be made to refind it. There has been a large increase in the number of records of *Trachelipus rathkei* which seems to be particularly frequent on wet ground near the River Great Ouse. *Oniscus asellus* has acquired the distinction of being the first organism to have been recorded from all 383 Bedfordshire tetrads. *Philoscia muscorum* is a close second with 381 tetrads.

The following new 10 km. records were obtained during the year (bringing the total to 273): *Asellus meridianus* – TL 13; *Platyarthrus hoffmannseggii* – TL 23, SP 82 and TL 12; *Cylisticus convexus* – TL 06, TL 05 and SP 92; *Porcellio dilatatus* – TL 24; *P. spinicornis* – TL 06; *Trachelipus rathkei* – TL 05, TL 04, TL 23 and SP 82; *Trichoniscoides albidus* – SP 92; *Androniscus dentiger* – TL 15 and TL 25; *Haplophthalmus danicus* – TL 25, TL 24, TL 23 and SP 82; *H. mengei* – TL 15.

348 tetrad records were obtained during the year, bringing the total to 2,471 (see Figure 1).

CENTIPEDES (Chilopoda)

No particularly noteworthy finds were made in 1979. The following new 10 km. records were obtained during the year (bringing the total to 226): *Schendyla nemorensis* – SP 82; *Strigamia crassipes* – SP 93 and TL 02; *S. acuminata* – SP 92; *Geophilus carpophagus* – SP 92; *G. electricus* – TL 05; *G. insculptus* – SP 93; *Brachygeophilus truncorum* – TL 25; *Cryptops hortensis* – TL 13; *Lithobius crassipes* – SP 82; *Lamyctes fulvicornis* – TL 14.

296 tetrad records were obtained bringing the total to 1,278 (see Figure 2).

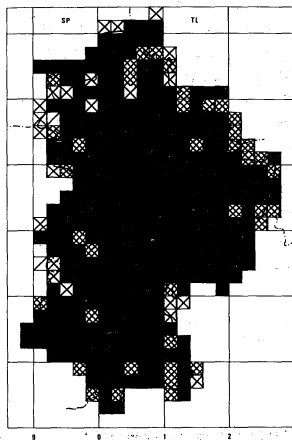


FIGURE 1
ISOPOD SUMMARY MAP

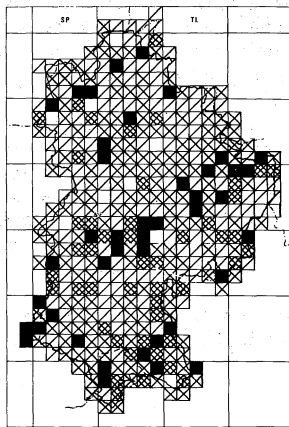


FIGURE 2
CHILOPOD SUMMARY MAP

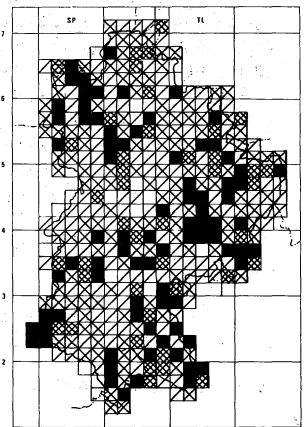


FIGURE 3
DIPLOPOD SUMMARY MAP

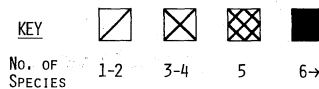


TABLE 1: DISTRIBUTION OF DIPLOPODS BY 10 KM. SQUARES

| Grid Square | TL | SP | TL | TL | SP | TL | TL | SP | TL | TL | TL | SP | TL | TL | TL | SP | TL | TL | SP | TL | TL | TL | No. of tetrad records |
|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----------------------|
| | 07 | 96 | 06 | 16 | 95 | 05 | 15 | 25 | 94 | 04 | 14 | 24 | 93 | 03 | 13 | 23 | 82 | 92 | 02 | 12 | 91 | 01 | |
| <i>Polyxenus lagurus</i> | x | . | x | . | x | x | . | . | . | . | x | x | . | x | x | . | . | x | . | x | . | . | 16 |
| <i>Glomeris marginata</i> | . | x | x | x | x | x | x | x | x | x | x | x | x | x | x | . | . | x | x | x | x | x | 111 |
| <i>Geoglomeris jurassica</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 7 |
| <i>Chordeuma proximum</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| * <i>Brachychaeteuma</i> sp. | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 |
| <i>Polymicrodon polydesmoides</i> | . | . | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 79 |
| <i>Polydesmus angustus</i> | x | x | x | . | x | x | x | . | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 102 |
| <i>Polydesmus coriaceus</i> | . | . | x | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 11 |
| <i>Polydesmus denticulatus</i> | . | x | x | x | . | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 20 |
| <i>Polydesmus gallicus</i> | . | . | x | x | x | x | x | x | x | . | x | x | x | x | . | . | . | . | . | . | . | . | 109 |
| <i>Brachydesmus superus</i> | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 189 |
| <i>Macrosterodesmus palicola</i> | . | . | x | . | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 26 |
| <i>Ophiodesmus albonanus</i> | . | . | . | . | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 14 |
| <i>Blaniulus guttulatus</i> | . | x | . | . | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 46 |
| <i>Archiboreoiulus pallidus</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 |
| <i>Boreoiulus tenuis</i> | . | . | . | . | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 10 |
| <i>Choneiulus palmatus</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 |
| <i>Isobates varicornis</i> | . | . | . | . | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 6 |
| <i>Proteroiulus fuscus</i> | x | . | x | . | x | x | x | . | x | x | x | x | x | . | x | x | x | x | x | x | x | x | 37 |
| <i>Iulus scandinavicus</i> | x | x | . | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 13 |
| <i>Ophiulus pilosus</i> | . | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 85 |
| <i>Cylindroiulus nitidus</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1 |
| <i>Cylindroiulus teutonicus</i> | . | x | . | . | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 45 |
| <i>Cylindroiulus punctatus</i> | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 177 |
| <i>Cylindroiulus britannicus</i> | . | . | . | . | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 22 |
| <i>Cylindroiulus parisiorum</i> | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 6 |
| <i>Brachyiulus pusillus</i> | . | x | x | . | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 24 |
| <i>Ommatoiulus sabulosus</i> | . | . | . | . | x | x | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 24 |
| <i>Tachypodoiulus niger</i> | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | 254 |
| Totals: | 7 | 12 | 15 | 8 | 21 | 17 | 17 | 10 | 8 | 18 | 20 | 13 | 15 | 23 | 18 | 11 | 12 | 20 | 20 | 14 | 2 | 16 | 1,441 |

* Species new to the vice-county in 1979.

MILLIPEDES (Diplopoda)

The discovery of two female *Brachychaeteuma* sp., one from under a piece of concrete by the side of a track at Legrave and the other from under a piece of pottery pipe in roadside ditch, Woburn, brings the vice-county total to 29. The eye pattern on each of these specimens clearly differentiates them from *B. melanops* and places them in the species pair *B. bradae*/*B. bagnalli*. It is necessary, unfortunately, to examine a male in order to separate these two species. Two species showed a disproportionate increase in the number of records during 1979. These were *Cylindroiulus britannicus* which generally occurs under the bark of dead trees and *Brachyiulus pusillus* which is most often found in litter, under pieces of dead wood, etc. on wet ground and, like the woodlouse *Trachelipus rathkei*, seems to be most common in the vicinity of the River Great Ouse. The sharp decline in records for *Polydesmus denticulatus* over the last couple of years makes one suspect that many of the earlier records for the species may be due to mis-identification. An attempt will be made to revisit previous sites to check these records.

419 tetrad records were obtained bringing the total to 1,441 (see Figure 3). The addition of 44 new 10 km. records brings the total to 329 (see Table 1).

ACKNOWLEDGEMENTS

The author thanks the Rands' household for all their help. The following supplied records or specimens during 1979: Mr V.W. Arnold, Mr P.T. Harding, Dr N.F. Janes, Dr. B.S. Nau, Mr K.O. Pressland, Mr D.G. Rands, Mrs E.B. Rands and unnamed members of the woodlouse field course.

A.J. RUNDLE

PLANT GALLS IN THE MAULDEN WOOD STUDY AREA

by Mrs E.B. Rands, 51 Wychwood Avenue, Luton, Beds.

INTRODUCTION

Between 1950 and 1954 several articles by various authors appeared in the *Bedfordshire Naturalist* on the subject of Galls. The authors were inspired by the work of the late Dr H.F. Barnes, an invaluable member of the Society at the time, who wrote, not only in the *Bedfordshire Naturalist*, but also seven volumes of a series of eight books about Gall Midges.

Since 1954 no mention has appeared in this Journal on the subject of galls and it seems timely to issue an account of some work which was carried out in the Maulden Wood study area between 1975 and 1977.

My interest in plant galls was sparked off by sheer chance when I purchased a book on Plant Galls by A. Darlington and I then decided to take a close look at the galls in the Maulden Wood Study Area. During 1975 it was a matter of learning about galls, where to look, how to look and, when found, how to identify. I found many strange and weird growths that turned out not to be galls and I must also have missed many real galls through total inexperience during those first months of searching.

In the following tables the host plants are listed in the order according to Clapham, Tutin and Warburg's *Flora of the British Isles* (Cambridge 1962) and the places mentioned are shown on the map. The galls themselves have been identified with the help of the books listed at the end of this article.

WHAT IS A GALL?

A gall is an abnormal growth on a plant caused by the intrusion into the plant tissue of another living organism, usually in egg form. The intrusion causes the plant tissue to react violently in an attempt to expel the intruder, to cover it up and try to forget its presence or to isolate it in such a way as to prevent the intruder invading further along the plant tissue. The net result is an abnormal amount of cell growth which usually hardens and thus effectively protects and isolates the intruder.

The gall is formed by the host plant itself but is caused by an intruder, usually an insect which is henceforth called the causer. The host plant itself does not appear to suffer unduly, apart from looking rather odd, and the causer benefits by having its egg protected until it hatches and the resulting larva is ready to emerge. This can be a somewhat lengthy process as the cell tissues of the gall can be extremely hard and the larva has to eat its way through to reach the atmosphere.

Galls are extremely host and causer specific and it is possible to say categorically that a gall on a specific plant was in fact caused by a specific causer. However, once the gall has been formed, many other insects can make use of it as a home and, indeed, many do so. Some parasitise the original causer but many live in complete harmony together and if a specific gall is studied and watched to maturity, many different insects may eventually emerge, although possibly none of the original causer may survive.

BOOKS FOR IDENTIFICATION

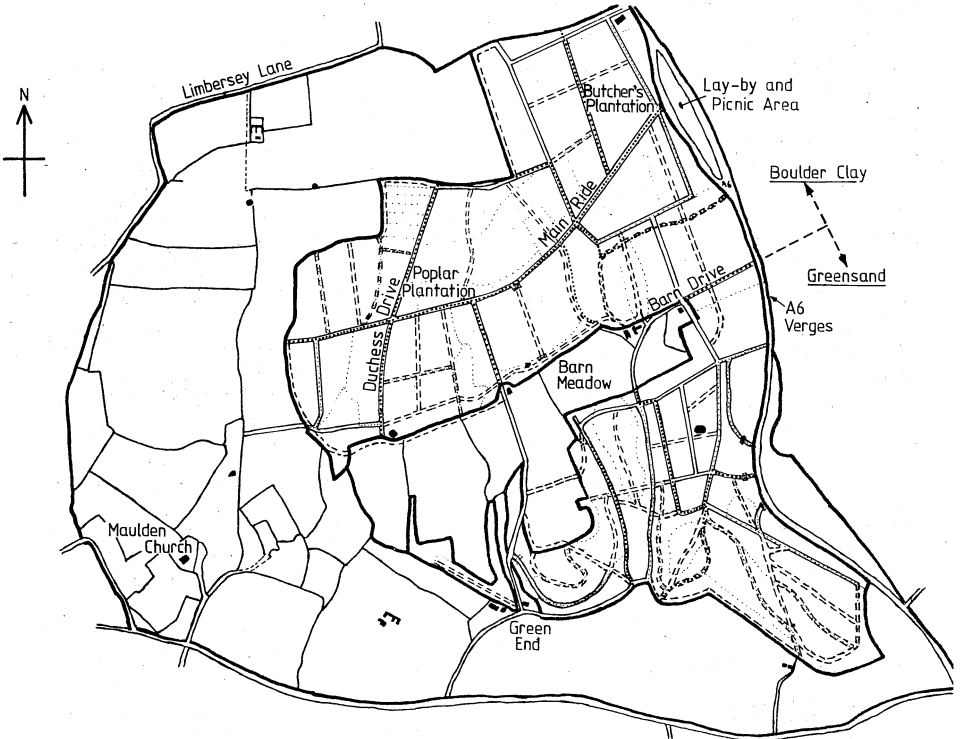
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The above list is not exhaustive, references to plant galls are made in many other books but the above are those which have proved most useful to a beginner.

ACKNOWLEDGEMENTS

Many members of the Society have helped in looking for galls in Maulden Wood but I would especially like to thank Dr B.S. Nau for his continued interest and help and also Mr D.G. Rands, who has not only found galls but has also photographed so many of them for me.



Maulden Wood Study Area

GALLS CAUSED BY HEMIPTERA

| <u>HOST PLANT</u> | <u>PART OF HOST GALLED</u> | <u>CAUSER</u> | <u>REMARKS</u> |
|---|---|---|---|
| <i>Picea abies</i> Norway Spruce | Bases of leaves | <i>Adelges abietis</i> Aphid | Fairly common where spruce is found |
| <i>Buxus sempervirens</i> Box | Terminal buds | <i>Psylla buxi</i> Psyllid | Hedge in Limbersey Lane garden |
| <i>Ulmus glabra</i> Wych Elm | Edges of leaves rolled | <i>Eriosoma ulmi</i> Psyllid | Not common in 1976 Fairly common in 1977 |
| <i>Populus canescens</i> Grey Poplar | Petiole spiralling | <i>Pemphigus spirothecae</i> Aphid | Few in 1975 None seen in 1976/1977 |
| <i>Fraxinus excelsior</i> Ash | Leaf margins rolled | <i>Psyllopsis fraxini</i> Psyllid | Few seen in 1976 Common along wood edges in 1977 |
| <i>Artemisia vulgaris</i> Mugwort | Terminal leaves contorted to form dense spike | <i>Cryptosiphum artemisiae</i> Aphid | Few on A6 Nature Reserve each year |
| <i>Juncus effusus</i> Soft Rush | Inflorescence distorted | <i>Livia juncorum</i> Psyllid | Patch in wet depression NW end of Butcher's plantation in 1975 only |

GALLS CAUSED BY LEPIDOPTERA

| <u>HOST PLANT</u> | <u>PART OF HOST GALLED</u> | <u>CAUSER</u> | <u>REMARKS</u> |
|--|----------------------------|------------------------|--|
| <i>Plantago lanceolata</i> Ribwort Plantain | Fruiting spikes | <i>Tortrix paleana</i> | Common on A6 verges in 1975, none seen in 1976, common in 1977 |

GALLS CAUSED BY HYMENOPTERA

| <u>HOST PLANT</u> | <u>PART OF HOST GALLED</u> | <u>CAUSER</u> | <u>REMARKS</u> |
|--|---|--------------------------------------|---|
| <i>Papaver rhoeas</i> Common Poppy | Seed head ovules enlarged | <i>Aylax papaveris</i> | Few found by A6 entrance and near houses in wood |
| <i>Rubus caesius</i> Dewberry | Stems enlarged and swollen | <i>Diastrophus rubi</i> | Widespread in north of wood |
| <i>Rubus fruticosus</i> Bramble | Stems enlarged and swollen | <i>Diastrophus rubi</i> | Very few found |
| do | Stems enlarged as above but very distorted and knobly | <i>Lasioptera rubi</i> | Rare, mainly at junction of main ride and Duchess drive |
| <i>Potentilla reptans</i> Creeping Cinquefoil | Globules on petiole and creeping stems | <i>Xestophanes potentillae</i> | Edges of main drive |
| <i>Rosa arvensis</i> Field Rose | Smooth pea gall on leaves | <i>Diplolepis eglanteriae</i> | Very few on Field Rose |
| do | Leaves tightly rolled | <i>Blennocampa pusilla</i> Sawfly | Fairly common throughout the wood |
| <i>Rosa canina</i> Dog Rose | Smooth pea gall on leaves | <i>Diplolepis eglanteriae</i> | Fairly common in north of wood in 1975, scarce in 1976, few in 1977 |
| do | Spiked pea gall on leaves | <i>Diplolepis nervosus</i> | Fairly common in 1975, none seen in 1976, fairly common in 1977 |
| do | Leaves tightly rolled | <i>Blennocampa pusilla</i> Sawfly | Fairly common throughout the wood |
| do | Bedeguar gall on stems and leaves | <i>Diplolepis rosae</i> | Common throughout the study area |
| <i>Quercus cerris</i> Turkey Oak | Swellings on acorns | <i>Andricus quercus-calicis</i> | Found only on <i>Quercus cerris</i> in 1975 Found only on <i>Quercus robur</i> in 1976 |
| <i>Quercus robur</i> Pedunculate Oak | Swellings on acorns | <i>Andricus quercus-calicis</i> | Found only on <i>Quercus robur</i> in 1977 |

NOTE:- The above gall is supposed to have alternate generations on *Quercus robur* and *Quercus cerris*. In Maulden Wood this was very true during 1975 and 1976 but during 1977 no such galls were observed by me on *Quercus cerris*.

| | | | |
|---|--|------------------------------------|--|
| <i>Quercus robur</i> Pedunculate Oak | Oak apple gall on terminal or axillary buds | <i>Biorhiza pallida</i> | Common in 1975 and 1977 but none observed in 1976 |
| do | Marble galls on terminal or axillary buds | <i>Andricus kollari</i> | Very common on young trees at the edge of wood or in hedges |
| do | Artichoke galls on terminal or axillary buds | <i>Andricus fecundator</i> | Fairly common on young trees at edge of wood |
| do | Pea galls on leaves | <i>Cynips divisa</i> | Very common in north of wood |
| do | Cherry galls on leaves | <i>Cynips quercus-folii</i> | Common in north of wood |
| do | Currant galls in staminate catkins | <i>Neuroterus quercus-baccarum</i> | Common in 1976 and 1977. They can easily be overlooked as season is short before they fall to ground |
| do | Common spangle galls on leaves | <i>Neuroterus quercus-baccarum</i> | Very common. Several dozen can be found on one leaf |
| do | Silk button spangle galls on leaves | <i>Neuroterus numismalis</i> | Very common |
| do | Smooth spangle galls on leaves | <i>Neuroterus albipes</i> | Local. Only one or two per leaf being usual |

| HOST PLANT | PART OF HOST GALLED | CAUSER | REMARKS |
|---|---|-------------------------------|--|
| <i>Quercus robur</i> Pedunculate Oak | Twig gall on shoot tip | <i>Andricus inflator</i> | Found once at edge of Butcher's plantation in 1976 |
| do | Blotched marbles on veins on undersides of leaves | <i>Cynips longiventris</i> | Fairly common but difficult to find and recognise |
| do | Cotton wool gall on staminate catkins | <i>Andricus ramuli</i> | Found in June 1976 and 1977 on west edge of Butcher's plantation. Hard to spot as they have very short season of a few days each |
| <i>Glechoma hederacea</i> Ground-ivy | Globular galls at leaf end of petiole | <i>Liposthenus lacreillei</i> | Few found in Butcher's plantation in June 1977 |
| <i>Hieracium</i> sp. Hawkweed | Stems enlarged and swollen | <i>Aulacidea hieracii</i> | Very common in barn meadow in 1975, very few in 1976 and 1977 |

GALLS CAUSED BY DIPTERA

| HOST PLANT | PART OF HOST GALLED | CAUSER | REMARKS |
|---|--|--|---|
| <i>Pteridium aquilinum</i> Bracken | Pinnule margin rolled | <i>Dasyneura filicina</i> | Fairly common on the Greensand |
| <i>Dryopteris filix-mas</i> Male Fern | Rachis coiled into a complicated ball | <i>Chirosia parvicornis</i> | Common in south of wood on Greensand |
| <i>Dryopteris dilatata</i> | Rachis coiled into a complicated ball | | Common in south of wood |
| <i>Taxus baccata</i> Yew | Artichoke galls on terminal buds | <i>Taxomyia taxi</i> | Common on only Yew tree in wood |
| <i>Tilia vulgaris</i> Lime | Bulge on leaf petiole | <i>Contarinia tiliarum</i> | Fairly common at Maulden church |
| do | Edges of leaves rolled | <i>Dasyneura thomasiana</i> | Few at Maulden church in 1976 few along barn drive in 1977 |
| <i>Ilex aquifolium</i> Holly | Blotch galls on leaves | <i>Phytomyza ilicis</i> | Common throughout the area on most Holly trees |
| <i>Filipendula ulmaria</i> Meadowsweet | Encrustations on leaves like warts | <i>Dasyneura ulmariae</i> | Fairly common in 1975, few in 1976 and common in 1977 again |
| <i>Rosa canina</i> Dog Rose | Leaf rolled | <i>Wachtliella rosarum</i> | Few seen in 1975, none seen in 1976 or 1977 |
| <i>Urtica dioica</i> Stinging Nettle | Petioles and leaf axils swollen | <i>Dasyneura urticae</i> | Few seen in 1975, none seen in 1976, few seen in 1977 |
| <i>Fagus sylvatica</i> Beech | Nails on leaves | <i>Hartigiola annulipes</i> | Few spotted every year. They appear suddenly and drop off quickly |
| <i>Quercus robur</i> Pedunculate Oak | Nails on leaves | <i>Macrodiplosis dryobia</i> | Appear suddenly and drop off quickly few seen every year |
| <i>Populus tremula</i> Aspen | Globules on leaves | <i>Harmandia globuli</i> | Common in 1976 |
| do | Petioles twisted | <i>Syndiplosis petioli</i> | Few seen in 1976, only one in 1977 |
| <i>Fraxinus excelsior</i> Ash | Longitudinal furrow along leaf mid-rib | <i>Dasyneura fraxini</i> | Common in 1976, very common in 1977 |
| <i>Veronica chamaedrys</i> Germander Speedwell | Terminal buds swollen and hairy | <i>Jaapiella veronicae</i> | Local along A6 verges |
| <i>Galium aparine</i> Cleavers | Bases of terminal leaves bunched and distorted | <i>Cecidomyia gallicola</i> | Only found once |
| <i>Artemisia vulgaris</i> Mugwort | Leaves encrusted | <i>Cecidomyia foliarum</i> | Local on A6 Nature Reserve |
| <i>Cirsium arvense</i> Creeping Thistle | Stems swollen | <i>Euribia (Urophora) cardui</i> | Scarce in 1975, very common in 1976 and fairly common in 1977 |
| <i>Centaurea nigra</i> Common Knapweed | Seed heads galled and very hard to the touch | <i>Euribia (Urophora) solstitialis</i> | Very common in 1975 Less common in 1976 and 1977 |
| <i>Sonchus oleraceus</i> Smooth Sowthistle | Round blotches on leaves | <i>Cystiphora sonchi</i> | Few along the main ride |
| <i>Carex pendula</i> Pendulous Sedge | Fruiting spikelets with shaggy appearance | <i>Ferrisia muricata</i> | Local |

GALLS CAUSED BY ACARINA

| HOST PLANT | PART OF HOST GALLED | CAUSER | REMARKS |
|--|----------------------|---|--|
| <i>Tilia vulgaris</i> Lime | Nail galls on leaves | <i>Eriophyes tiliae typicus</i> | Seen at Maulden Church 1975 and 1976 and in Barn Drive in May 1977 |
| <i>Acer pseudoplatanus</i> Sycamore | Nail galls on leaves | <i>Eriophyes macrorhynchus aceribus</i> | Common in 1975 and 1977, few in 1976 |
| do | Pouches on leaves | <i>Eriophyes megalonyx</i> | Common in wood |
| <i>Acer campestre</i> Common Maple | Blobs on leaves | <i>Eriophyes macrochelus</i> | Common on clay soils |

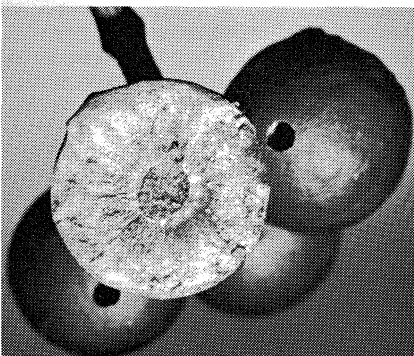
| <u>HOST PLANT</u> | <u>PART OF HOST GALLED</u> | <u>CAUSER</u> | <u>REMARKS</u> |
|---|----------------------------|---|---|
| Acer campestre Common Maple | Red spots covering leaves | <i>Eriophyes macrorhynchus</i> <i>cephalodes</i> | Very common, especially in 1975 |
| <i>Rosa arvensis</i> Field Rose | Round knobs at nodes | <i>Eriophyes rosae</i> (some doubt as to causer) | Fairly common on Field Rose |
| <i>Prunus spinosa</i> Blackthorn | Blobs on edges of leaves | <i>Eriophyes similis</i> | Common along north edge of barn meadow and fields |
| <i>Crataegus monogyna</i> Hawthorn | Leaf margins rolled | <i>Eriophyes goniothorax</i> <i>typicus</i> | Few in picnic area, easily overlooked |
| do | Terminal rosettes | <i>Dasyneura crataegi</i> | Fairly common in hedges, none seen in wood |
| <i>Juglans regia</i> Walnut | Convex bulge on leaf | <i>Eriophyes tristriatus</i> <i>typicus</i> | On the only Walnut tree in area at bottom of Green End Lane |
| <i>Corylus avellana</i> Hazel | Big bud on terminal buds | <i>Eriophyes avellanae</i> | Common wherever there is Hazel |
| <i>Fraxinus excelsior</i> Ash | Galls on inflorescence | <i>Eriophyes fraxinivorus</i> | Common on one tree in lay-by |
| <i>Viburnum lantana</i> Wayfaring Tree | Furry blobs on leaves | <i>Eriophyes viburni</i> | Few in 1976 and 1977 but very common in 1975 |

GALLS CAUSED BY NEMATODA

| <u>HOST PLANT</u> | <u>PART OF HOST GALLED</u> | <u>CAUSER</u> | <u>REMARKS</u> |
|--|------------------------------------|-----------------------------|------------------------|
| <i>Plantago lanceolata</i> Ribwort Plantain | Small pouches along length of leaf | <i>Anguillulina dipsaci</i> | Common on verges of A6 |

GALLS CAUSED BY FUNGI

| <u>HOST PLANT</u> | <u>PART OF HOST GALLED</u> | <u>CAUSER</u> | <u>REMARKS</u> |
|---|---|-------------------------|--|
| <i>Populus canescens</i> Grey Poplar | Leaves have small pouches yellow on underside | <i>Ascomyces aureus</i> | Common and conspicuous along edge of Poplar plantation |



Two common galls of the Pedunculate Oak

- Left: Marble Galls caused by *Andricus kollari* The holes show where the emerging insect escaped and one gall has been cut in half.
- Right: Silk Button Spangle Galls caused by *Neuroterus numismalis*.
(Photos: D. G. Rands)

FLOWERING PLANTS, FERNS AND FERN ALLIES (Spermatophyta and Pteridophyta) Report of the Recorder

Following a long cold spring the delayed summer brought a wealth of plant growth and another profitable year of recording in which 471 new tetrad records were made. In the four years since the *Bedfordshire Plant Atlas* (1976) was published the average number of records for tetrads having the whole of their area in the county has been increased to 272.75 giving an increased estimated cover of 89.9% (see *Bedfordshire Naturalist* 30, 61-2). It does not follow that, having obtained an increase in cover of 3.9% in four years, a full cover may be expected in another ten years as it is now becoming increasingly difficult to make additional records. During 1979 my wife and I sometimes spent a whole day site recording in a well-recorded tetrad making no further records for that tetrad.

The most interesting discovery of the year was a new colony of Musk Orchids (*Herminium monorchis*) by Mark Simmonds at Moleskin, giving us now three stations for this attractive rare orchid. A new county record was made with the finding of Oak-leaved Goosefoot (*Chenopodium glaucum*) in some quantity in a small arable field near Shefford. It was reported as growing near Bedford by Charles Abbot in a letter to J.E. Smith in 1802 but there has been doubt with regard to the validity of the record. It is hoped that this rare native species will prove to be a permanent member of the county flora.

Three plants feared to have become extinct in the county were found in new sites. Long-stalked Yellow-sedge (*Carex lepidocarpa*), lost in its previously known stations at Cow Common when this was ploughed in 1953 and at Blue Water near Bidwell when this was filled in about ten years ago, was found in a marsh near Toddington. *Eleocharis palustris* subsp. *palustris* (subsp. *microcarpa* of the *Flora of Bedfordshire* (1953)) one of the rare species of the Eaton Socon water meadows and lost when these were filled in about 12 years ago, was found by the side of a pond near Woburn. Southern Marsh-orchid (*Dactylorhiza praetermissa*), also lost from the Eaton Socon water meadows and not seen at Flitwick Moor for about ten years, was found in a new site to the south of Luton.

Some of the rarer species of the county were found in new sites. Marsh Speedwell (*Veronica scutellata*), known in recent years only in two places near Tempsford, was found in a marsh near Milton Bryan. Wood Club-rush (*Scirpus sylvaticus*), a feature of Flitwick Moor and thought to be now in only one other site in the county, was found in two more – one in Washers Wood and the other in a marsh near Maulden. Dr H.J.M. Bowen, travelling through the county, found Mousetail (*Myosurus minimus*) on a roadside near Clophill. My attention was drawn to two sites of Fritillary (*Fritillaria meleagris*), one by W.J. Drayton in a woodland ride near Toddington and the other in a garden at Clapham where it appeared spontaneously. As neither is the normal wet-meadow habitat of this now rare native species each record demands further investigation.

No additional wool aliens were found but one species of alien origin appears to have become a permanent member of the flora. The North American *Bidens connata*, closely allied to the familiar native Trifid Bur-marigold (*B. tripartita*), has recently been found to be a feature of the banks of the Grand Union Canal in the London area. It has now been found, also by the canal, at Old Linslade, v.c. 24 [Beds.]. Time will tell whether it will also invade the banks of the Ouse as so many other plants of the canal system have done.

JOHN G. DONY

MOSSES AND LIVERWORTS (Bryophyta)

Report of the Recorder

1979 was again a good year for Bryophyte recording and tetrad records continued to accumulate. No species were recorded as new to the county but on a Bryological field meeting which I led for the Hertfordshire Natural History Society to Sewell *Aloina aloides* var. *aloides* was found in some quantity. This is only the second Bedfordshire record for this species. A small amount of *Phascum floerkeanum* was recorded at the same site. This tiny species is also very infrequently recorded for the county.

One further species, *Cirriphyllum crassinervium*, can be added to the list for Flitwick Moor (Outen 1975).

REFERENCE

OUTEN, A.R. 1975 The Mosses and Liverworts of Flitwick Moor. *Bedf. Nat.* 29 40-43.

ALAN R. OUTEN

LICHENS

Report of the Recorder

Lichens occurring on trees may be divided into two categories, corticolous species found growing on and penetrating the outer dead layers of bark and lignicolous species found growing on barkless wood. Lichen assemblages may differ on various parts of a single tree and this can be related to conditions prevailing in each particular microhabitat.

Although Bedfordshire has few old natural deciduous woodlands many corticolous and lignicolous lichen species may be found in the parkland sites that surround large houses and stately homes. In the late 17th century and during the 18th century many landscaped gardens were created around large houses. Often these consisted of formal layouts around the house with avenues of elm or lime trees and a more natural or contrived landscape beyond. Capability Brown was responsible for much of this landscaping and good examples of his work can be seen in the county. The trees planted in these schemes were often native trees and these mature trees now provide good substrates for lichen growth. The later parks of the 19th century, however, are usually poor in lichen species as often exotic trees and shrubs were planted, many of these being conifers. These trees are either unsuitable or still too young to support many lichen species.

Both Woburn Park and Wrest Park are good examples of mature parkland sites and the total number of corticolous and lignicolous species for these areas are 58 and 25 respectively. These include lichens such as *Anaptychia ciliaris*, *Evernia prunastri*, *Parmelia acetabulum*, *Parmelia caperata*, *Ramalina farinacea* and *Usnea subfloridana*, all species which are declining due to sulphur dioxide pollution and are now rare in the county. However, when compared with other parkland sites in other regions of the country, for example Brampton Bryan Park (Herefordshire) 101 species, Melbury Park (Dorset) 171 species, Ashburnham Park (Sussex) 150 species, the figures for Bedfordshire are fairly low. It has been found that established parkland in areas affected by low levels of sulphur dioxide pollution may be expected to have 80-130 or more corticolous and lignicolous species. It has also been shown that species numbers decline as major polluted areas are approached and sulphur dioxide pollution is probably the main factor for the small number of lichens in the county's parklands.

I am indebted to the following members for specimens and records, Mrs H. Muir-Howie, R.A. Porter, Mrs E.B. Rands and M.C. Williams.

FRANCES B.M. DAVIES

FUNGI

Report of the Recorder

Attention is drawn to a report by the recorder in the *Bulletin of the British Mycological Society* 11, 134 (1977) of the exceptional abundance of the morel – *Verpa conica* in the spring of 1977. This account includes a number of Bedfordshire records from the Luton – Dunstable – Whipsnade area. Indeed no fewer than 1250 specimens were seen in hawthorn scrub on chalk downland mostly by Alan Outen and the late Alf Ford, and no doubt many more specimens escaped detection.

In the same article there is a record of *Paxina acetabulum* [Syn: *Acetabula vulgaris*] from Ampthill collected by Alan Outen on 4 May 1977. A personal letter from Alf Ford also noted that it was found at Ampthill by Mr D. Rands around the same date.

Two records of another morel were also received this time referring to *Mitrophora semilibera*: Sewell, Dunstable, coll. D.R. Grant, April 1977; Totternhoe, coll. A. Ford, April 1977. This species is distinguished from *Morchella esculenta* in being less robust and in having a free, pendulous, campanulate or conical, pitted head attached to the stalk only by its apex.

The first two species mentioned were previously recorded by Abbot in his *Flora Bedfordiensis* and it is interesting to note that Ampthill is one of the localities he noted for what we now call *Paxina acetabulum*. *Mitrophora semilibera* has not previously been reported from the county.

All the above fungi may well prove to be more widespread in the county than records suggest since they are vernal and easily overlooked at a time of year when fungi are not being actively sought.

Scutellinia trechispora, a small, flat, bright red cup-fungus clothed with stiff brown hairs, and with globose spores 18-20 μ m, ornamented with low rounded warts, was last found in the county in 1954. It has since been collected at Sewell, by Alan Outen, 15 May 1976, but regrettably no material was kept.

Reports of a number of agarics have also been received:—

Agaricus subperonatus – Hanger Wood, Kempston, coll. Mr Ginger, 30 September 1979. A fine specimen of this fungus was brought to the foray. It is a robust species with brown scaly cap, 8-12 cm. diam., a cylindrical stem, usually short, but in this instance fairly tall and cylindrical with thick, well-developed ring. The flesh is white but becomes dull pinkish when broken, especially in the stem. Spores are roundish, 5-7 x 4-5 μ m and cheilocystidia are tufted, clavate and often brown. New to the county.

Conocybe subovalis – Wrest Park, Silsoe, coll. A. Outen, 14 October 1979. No material kept. A species similar to *G. tenera* but with base of stem abruptly bulbous and cap almost without striae, further the cheilocystidia have larger heads, 5-6 μ m wide. New to the County.

Entoloma clypeatum – Bradgers Hill, Stopsley, under hawthorn, coll. Alf Ford, 6 May 1977. A vernal agaric associated with members of the Rosaceae having a campanulate cap, up to 8 cm. diam., with a central umbo, and showing the following features: cap pale horn colour streaked with darker brown, stem pallid with brownish streaks, gills dirty pink, flesh with a smell of meal and spores roundish-angular. This species has not been reported for some years.

Galerina graminea – Wrest Park, coll. A. Outen, 14 October 1979. A very common species of lawns and short turf but new to the county lists. One of those small nebulous brown agarics with cap 7-15 mm. diam., and yellowish-fawn gills. Distinguished amongst other members of the genus by lack of clamp connexions on the hyphae and very fragile, thin-walled, brown spores, 7-10 μ m long. (No material kept.)

Hygrophorus lucorum – Kingshoe Wood, Flitwick, coll. A. Outen, 28 October 1979. A species found in association with larch. Cap sticky, pale yellow; gills decurrent, yellowish-cream; stem pallid with a fibrous veil when young, leaving the lower portion fibrillose and cortinate in mature specimen. Related to *H. hypothejus*. New to the county.

Laccaria purpureo-badia – Flitwick Moor, coll. A. Outen, 7 October 1979. It is satisfactory to be able to record that this species still occurs in the type locality. It was described by the recorder in 1966 from material collected at Flitwick Moor and was not subsequently seen again until 1978 when it was collected in similar swampy localities at

Ockham Common, near Wisley, Surrey (although only dried material was seen, so a certain doubt attaches to the determination), Thursley Common, Surrey and Windsor Great Park. In 1979 it was still present in quantity at Thursley.

Lepiota setulosa – Kingshoe Wood, Flitwick, coll. A. Outen, 28 October 1979. A small species with cap 1.0-1.5 cm. diam. in which the surface disrupts into minute brown pilose scales on a white ground. The stem is whitish, with minute scattered brown floccose scales below the brown annular zone. The spores are ovate, 5.0-5.5 x 4.0 μm . New to the county.

Panellus serotinus – Kingshoe Wood, Flitwick, coll. A. Outen, 28 October 1979. A fleshy pleurotoid fungus with dingy olive coloured cap, short yellowish rudimentary lateral stem finely sprinkled with brown flecks, and pale yellowish to orange gills. Microscopically it is well characterized by having tiny hyaline, amyloid, sausage-shaped spores, 4.0-5.5 x 1.0-2.0 μm . It is found on rotting wood of deciduous trees, often rather late in the season, sometimes persisting well into winter. New to the county.

Russula pumila – Flitwick Moor, coll. A. Outen, 7-9 October 1979. [det. R. Rayner, a poorly preserved specimen in Herb. Kew]. This small *Russula* with cap 2-4 (-6) cm. diam., resembles *R. fragilis*, *R. verisolor* and *R. puellaris*, but is found in alder bogs and has a whitish stem which becomes yellowish at the base, then greyish and finally blackish. Further the taste only slowly becomes acrid. This is an extremely rare species in Britain and new to the county.

The recorder wishes to thank all who have contributed data and especially Mr Alan Outen for his numerous records.

DEREK A. REID

THE FUNGUS FORAY

The annual fungus foray was held at the Lodge, Sandy on September 30th with Dr D.A. Reid as leader. The meeting was well attended, but fungi were sparse.

An interesting find was that of *Lepiota gracilentia* which confirms an old county record. This species is similar to, and no doubt often confused with *L. procera*. However, it has a paler cap with a very prominent umbo, and the surface disrupts into minute, densely crowded pale ochre-brown granular scales especially around the disc, quite unlike the large dark brown scales of *L. procera*. The stem is also covered below the movable ring with similar scales which never form snake-like markings so characteristic of the latter species.

Amanita gemmata, one of the less well-known members of the genus, has been found in the grounds of the Lodge on previous occasions. It grows with conifers and has a pale yellowish cap with grooved margin and a stem with a short saccate volva. It is unusual, however, in sometimes producing a ring although more often found in the exannulate condition. Specimens lacking a ring are distinguished from the members of the section *Amanitopsis* in having elliptic as opposed to globular spores.

Three species of *Coprinus* deserve mention. *C. sclerocystidiosus*, new to the county, was found in grass. It is a small species with cap 0.6-1.2cm high before it expands, having a pale to moderately dark brown colour and a sulcate margin. The surface is densely but minutely hairy under a lens due to numerous pilocystidia of two types (1) thin-walled, hyaline, elongated cylindrical with obtuse apex and slightly enlarged base (2) thick-walled, yellowish-brown narrowing toward the apex and also somewhat enlarged at the base. The latter type strongly predominated in this collection. Spores are blackish, ellipsoid, with an oblique germ-pore and measure 10-13 x 6-7.5 μm . The other two species, *C. domesticus* and *C. radians* are both close relatives of *C. micaceus* but usually occur in smaller clusters and often on wood, but like that species they have the cap sprinkled with tiny mica-like particles. In *C. domesticus* the cap is pale ivory with a brownish disc and the spores are bean-shaped, blackish, 6.5-10.0 x 3.5-4.0 μm . This fungus has not been reported from the county in recent years. *C. radians* has differently shaped elliptic spores which are scarcely depressed, 8.0-11.0 x 5.0-7.0 μm , further it is often found in association with its orange-brown moss-like state – *Ozonium aureum* on wood.

Hebeloma strophosum, another addition to the county is similar to *H. mesophaeum* but has a thick cottony veil covering the stem below the ring-zone.

A comment on finding *Tricholoma sulphureum* might seem superfluous since this distinctive species, which is entirely yellow, is usually regarded as common. It has rather distant gills and a very strong and characteristic smell of gas-works. Strangely there are very few records of its occurrence in Bedfordshire.

All three British species of *Paxillus* were collected during the foray. Everyone is familiar with the ubiquitous *P. involutus*, but *P. atrotomentosus* and *P. panuoides* are less well-known. These two species occur on or around conifer stumps. *P. atrotomentosus* is a robust, fleshy species with enrolled margin; the cap, 10-15cm diam., is rusty to cinnamon-brown with a dusty pruinose surface, born on a strongly excentric to lateral stem which is 2-3cm thick, blackish-brown, and conspicuously velvety. The fruitbodies which may be clustered are produced at the base of conifer stumps. *P. panuoides* has much thinner, flaccid, bracket-like, yellowish fruitbodies, often with lilac tomentum towards the point of attachment, and yellowish gills which are irregularly forked, interveined and wavy. This fungus may also occur on stumps but also on fallen branches and wood chips.

The total number of species collected was 84, of which two are new to the county and two confirm old records. Those wishing to compare the list of finds with those of the previous foray to this same locality in 1970 should consult *Bedf. Nat.* (1971) 25, 7-8.

Amanita fulva; *A. gemmata*; *A. muscaria*; *A. phalloides*; *A. rubescens*; *Boletus edulis*; *Clitocybe clavipes*; *C. bicolor*; *C. odora*; *Collybia atrata*; *C. erythropoda*; *C. maculata*; *C. peronata*; †*Coprinus domesticus*; *C. radians*; **C. sclerocystidiosus*; *Cortinarius semisanguineus*; *Cystoderma amianthina*; *Deconica crobula*; *Eccilia sericeonitida*; *Galerina hypnorum*; *Gymnopilus penetrans*; *Hebeloma crustuliniforme*; **H. strophosum*; *Hygrophoropsis aurantiaca*; *Hygrophorus nigrescens*; *H. pratensis*; *Hypholoma fasciculare*; *Laccaria laccata*; *Lactarius pubescens*; *L. quietus*; *L. rufus*; *L. turpis*; †*Lepiota gracilentia*; *Marasmius oreades*; *M. undatus*; *Mycena galericulata*; *M. leucogala*; *M. vitilis*; *Paxillus atrotomentosus*; *P. involutus*; *P. panuoides*; *Pholiota carbonaria*; *P. squarrosa*; *Psathyrella candolleana*; *P. obtusata*; *Russula betularum*; *R. nigricans*; *R. ochroleuca*; *R. parazurea*; *R. sororia*; *Tricholoma imbricatum*; *T. sulphureum*; *Tricholomopsis rutilans*; *Tubaria autochthona*; *T. furfuracea*.

Chondrostereum purpureum; *Coniophora puteana*; *Coriolus versicolor*; *Fistulina hepatica*; *Ganoderma applanatum*; *Heterobasidion annosum*; *Hirschioporus abietinus*; *Phaeolus schweinitzii*; *Piptoporus betulinus*; *Schizopora paradoxa*; *Sparassis crispa*; *Stereum hirsutum*; *S. sanguinolentum*; *Thelephora terrestris*.

Crucibulum laeve; *Lycoperdon foetidum*; *L. perlatum*; *Phallus impudicus*; *Scleroderma citrinum*; *S. verrucosum*; *Vascellum pratense*.

Calocera viscosa; *Dacrymyces stillatus*.

Rhizina undulata; *Rhytisma acerina*.

Ptychogaster albus; *Sepedonium chrysospermum*.

Fuligo septica.

* = new county record

† = confirmation of ancient record

DEREK A. REID

GEOLOGY

Report of the Recorder

No requests were received from members to identify any fossils or to examine temporary exposures. Re-grading of the A6 road banks south of Wilstead provided exposures of the Corallian (Amphill Clay and Oakley beds).

The evening lecture on the Oxford Clay and its Fossils held at the Village Hall in Flitwick was well attended and much interest was shown. The follow-up field trip to a London Brick Company pit was very successful, with many varied fossils being found. One member was lucky enough to find a centrum of an Ichthyosaur.

Will members please let me know if they see any temporary exposures in their travels around the county. By this I mean deep excavations for pipe lines, sewage pipes etc. I would be glad of the opportunity to visit these whenever possible as they are of an ephemeral nature and quickly get filled in again as soon as the pipeline has been laid. I am always pleased to receive fossils for identification with details of where found.

KEN BAKER

WHERE YOU ARE ON THE TETRAD MAP OF BEDFORDSHIRE

A regular feature of articles in the *Bedfordshire Naturalist* is the inclusion of distribution maps of various species. For readers who may not be familiar with the system of recording the distribution of species the map overleaf has been specially drawn by Derek Rands. On this are shown the principal towns and villages of the county so the reader can locate where he lives on the tetrad map.

The system of recording is based on the National Grid. A description of how to obtain a grid reference for a site is given on the two most common series of Ordnance Survey (O.S.) maps, the 1 in 50,000 and the 1 in 25,000. The basic unit, for areas of county size, is the 10km grid square – shown in thick lines on the map. On the O.S. maps each 1km square is shown but for species recording the smallest unit of area used is a 2 x 2km square, called the tetrad. There are 25 tetrads to one 10km square. Tetrad divisions are shown by the thin lines on the map.

Species lists in the Recorders' reports often give updated lists of the tetrads in which each species has been recorded. So that the designation of a tetrad is not just a number each of the 25 tetrads in a 10km square has been given an identifying letter. The notation for this is shown in the lower right hand corner of the map.

The letters SP and TL shown on either side of the vertical zero grid line are the National Grid designations for the 100km squares which are the largest units of the grid system.

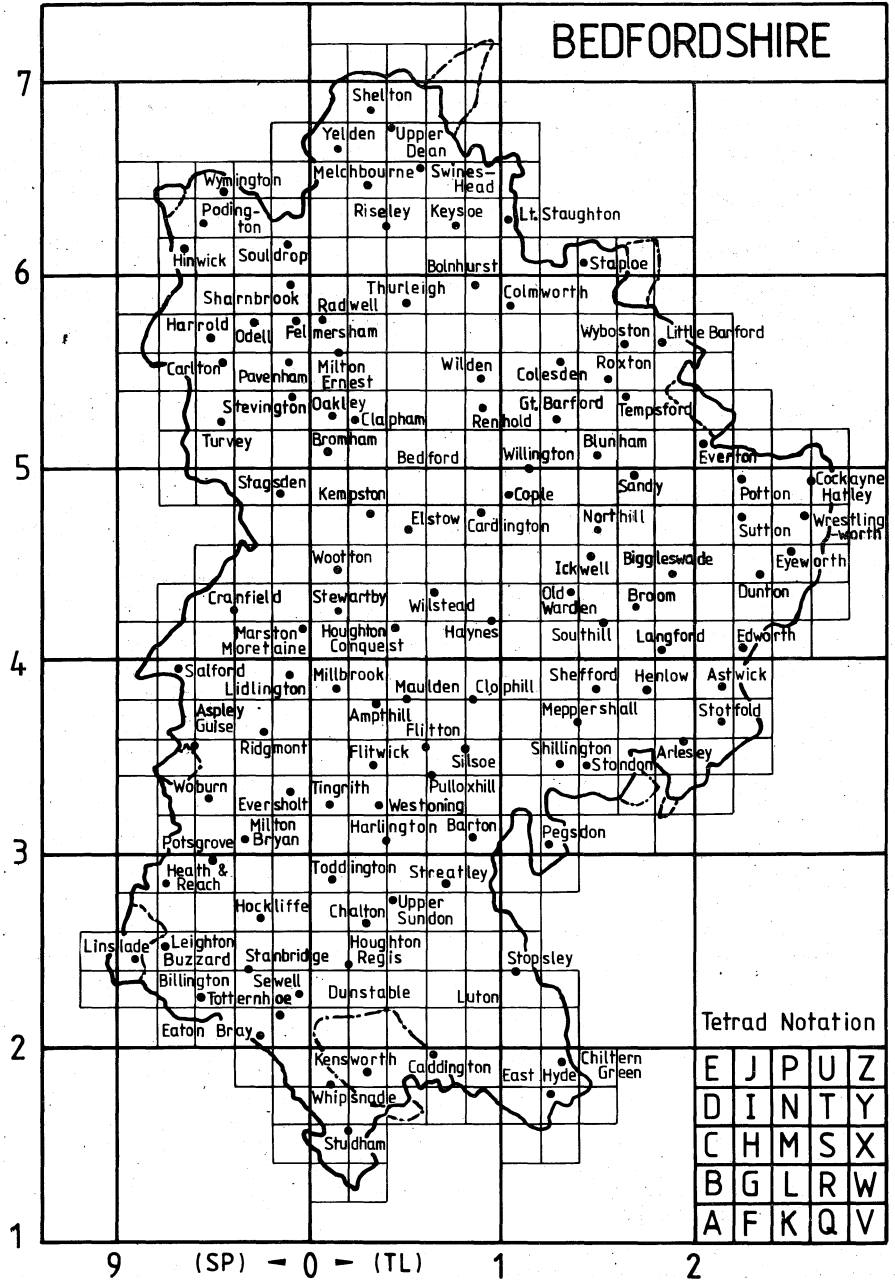
As an example near the middle of the county is Wilstead. This is to the right of the 0 grid line and thus is in the TL 100km grid square. It is in the 10km square designated by 04 and the tetrad R. The complete designation of the Wilstead tetrad is therefore TL 04 R. Because the 10km numbers do not repeat within the county it is not absolutely necessary, when referring to Bedfordshire records, to include the prefixes SP or TL.

Before the adoption of the National Grid as the basis for recording species distribution the system used was that devised by H.G. Watson in the middle of the 19th century. He divided Great Britain into 112 vice-counties with Bedfordshire being called vice-county 30 (v.c. 30). Over the succeeding years there have been several modifications to the administrative county boundary which now differs from v.c. 30. The dotted lines on the map show where these changes have occurred – some being additions to the county and some losses to adjoining counties. These changes are important when studying old records. Full details can be found in the two articles referred to below.

DONY, J.G. 1947. What Bedfordshire Is. *J. Bedf. Nat. Hist. Soc.* 1: 8-12

DONY, J.G. 1973. A New System of Recording for Bedfordshire. *Bedf. Nat.* 26: 12-15.

C.R.B.



Tetrad Notation

| | | | | |
|---|---|---|---|---|
| E | J | P | U | Z |
| D | I | N | T | Y |
| C | H | M | S | X |
| B | G | L | R | W |
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Tetrad map of Bedfordshire showing the main towns and villages.

RECORDERS

Meteorology: Mr A. W. Guppy, 22 Poplar Avenue, Bedford.

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Birds: Mr B. J. Nightingale, 9 Duck End Lane, Maulden, Bedford.

Amphibians and Reptiles: Mrs H. M. Muir-Howie, 24 Mowbray Close, Bromham, Bedford.

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Slugs, Snails and Leeches: Mrs E. B. Rands, 51 Wychwood Avenue, Luton, Beds.

Dragonflies: Dr N. Dawson, The Old House, Ickwell Green, Biggleswade, Beds.

Grasshoppers and Crickets: Mr D. G. Rands, 51 Wychwood Avenue, Luton, Beds.

Bugs: Dr B. S. Nau, 15 Park Hill, Toddington, Dunstable, Beds.

Lacewing Flies: Dr B. Verdcourt, The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey.

Butterflies: Mr A. J. Martin, 18 Aragon Road, Ampthill, Bedford.

Moths (macro): Mr V. W. Arnold, 96 St. Augustines Avenue, Luton, Beds.

Hoverflies: Dr N. F. Janes, 82 Marston Gardens, Luton, Beds.

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Fungi: Dr D. A. Reid, The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey.

Sites: Mr A. B. Tomczynski, 3 Shepherds Close, Harlington, Dunstable, Beds.

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