

# JOURNAL

OF THE

## BEDFORDSHIRE

### NATURAL HISTORY SOCIETY

### AND FIELD CLUB

EDITED BY RAY PALMER, F.R.E.S., F.Z.S.

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VOL. I.—1946

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# BEDFORDSHIRE NATURAL HISTORY SOCIETY & FIELD CLUB

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*(Photograph by Oliver G. Pike.)*

#### BOBBIE, THE PRESIDENT'S OTTER

Otters are of frequent occurrence along our Bedfordshire rivers, and our President tells an interesting story of one that frequented a water-filled sand-pit near his house and stole fish from his garden pond. Using dead fish as bait, Mr. Pike was remarkably successful in taming this otter and got him to answer to the name of "Bobbie" and come from a distance to the call that he knew meant more fish, which he would eventually take from the hand. Over a hundred photographs of Bobbie were taken, but he came to a sad end. An angler fishing for pike with live bait in the old pit hooked the otter by mistake, and after being played for over an hour poor Bobbie was eventually landed and killed. His remarkable death made him famous, for the press told the story far and wide, under the headline, "Fishing for pike, caught Pike's otter!"

## FOREWORD

By THE PRESIDENT

No excuse is needed in these days for any attempt to promote the better study of nature. In the distant past, Hippocrates (460 B.C.) may be termed the first regular writer of natural history, and in the ages that have followed, right down to the present day, the study of nature has held a high place among intelligent people, but at no time in this period has it been more popular than now.

There are, however, still large numbers of people who unfortunately miss many of the good things of life, including the joy and wider outlook to be derived from an appreciation of the plant and animal life of the countryside.

The numerous natural history societies that have been formed in many of our English counties have done great work in encouraging the systematic study of nature in all its aspects. Our own county of Bedfordshire, with its variety of woodlands, river valleys, hills and plains is one that ought to be thoroughly worked, and it was this idea that induced several enthusiastic naturalists to promote the formation of the present Society.

The original "Bedfordshire Natural History Society and Field Club" was founded on May 4th, 1875, with fifty-nine members. The proceedings of this Society were published in three volumes covering the years 1875 to 1884. Though commencing its career very successfully, and having influential support in the early years, this Society appeared gradually to dwindle, and ceased its existence about ten years later. On looking through the three volumes of the Transactions I find that the papers read at the meetings covered many branches of natural history, and the writers showed a very sound knowledge of their subjects. During the whole of its career it is remarkable that only two papers on bird life were read; but botany and entomology were well covered, while out of sixteen meetings held during 1877 and 1878, eight were devoted to microscopy. The plant life of the county was very thoroughly examined, and the large list of species then found should be full of interest when compared with those of the present day. Why a Society that held such promise should have ceased to exist after such a short life is a matter of which we have now no record.

On October 14th, 1946, a meeting was held in Bedford to which people known to be interested in natural history had been invited, and after an interesting discussion it was unanimously agreed to form a new county Society, reviving the old name of the "Bedfordshire Natural History Society and Field Club". The objects of this Society are to further the interest of nature study in all its branches, and especially to encourage this among the schools; to compile lists of the flora and fauna of the county; to record and protect rare and interesting species, and promote the establishment of local nature reserves; to hold meetings at which papers will be read or lectures given on all aspects of natural history; to hold field meetings and rambles, and to do everything possible to make the Society one worthy of the county.

I feel it a great honour to have been elected the first president of this new Society, and I should like to take this opportunity of asking all residents in the county who are interested in nature—even those who have little knowledge of our mammals, birds, insects and flowers, yet wish to learn more of the wild life around them—to join us. They will be given a warm welcome at all our meetings, and no matter in what branch of nature they are interested, all will receive the greatest encouragement.

OLIVER G. PIKE

## REPORT OF THE HONORARY SECRETARY

Since the inception of the Society in September, 1946, events have moved rapidly, and much valuable ground work has been accomplished.

The Working Committee or Acting Council first met in the St. John Ambulance Brigade Headquarters in Cauldwell Street, Bedford, on the evening of Saturday, October 12th, when questions of membership were debated, and several Recorders were appointed. This Meeting was followed by a second one, held in the same hall, on Sunday, October 27th. Mr. Keith Piercy was appointed to be Chairman at these Council Meetings, and a large measure of the success of these deliberations is due to his leadership.

Questions regarding stationery were discussed, producing among other items, the now familiar membership proposal forms, and the desire to publish an Annual Journal resulted in the appointment of Mr. Ray Palmer, of Flitwick, to the position of Editor. The Council then turned its attention to the matter of Public and Ordinary Meetings. Through the agency of Mr. Piercy, the well-known broadcasting naturalist Mr. James Fisher, M.A., expressed his willingness to address, at an early date, a public meeting in Bedford, on the functions of a Natural History Society, and the Council, eager to take advantage of such an opportunity provisionally arranged for the meeting to take place sometime in mid-November. A draft of proposed Ordinary Meetings to be held in the new year was also prepared.

One further Council Meeting was held during 1946. This time the members assembled at the Luton Borough Museum, by kind permission of the Management. Again, the first items for debate were the programme for the new year, and the matter of the JOURNAL, and in order to assist the Editor, and to form with him the JOURNAL Committee, Dr. V. H. Chambers of Luton and Dr. H. F. Barnes of Bedford were appointed. Finally came the arduous task of drafting the proposed rules. These were prepared, read, altered and amended, until at length there gradually emerged what the Council felt was an excellent and comprehensive list for the guidance of members. Despite difficulties, the Council felt gratified at the close of the year, that so much of the basic work had been successfully concluded in such a short space of time. The average length of these Council Meetings had been some four hours of earnest debate.

Arising out of these efforts, came two important Public Meetings, which in turn contributed greatly to the firm establishment of the new Society. The first event, as mentioned in the foregoing, was held on the evening of Thursday, 14th November, 1946, in the St. John Ambulance Brigade Headquarters in Cauldwell Street, Bedford, when Mr. James Fisher, M.A., addressed, in his usual witty and instructive manner, some hundred or so members and friends. The speaker outlined the functions of a modern Natural History Society, and taking his favourite subject, namely Ornithology, as an example, dealt very ably with it from every aspect. Much lively discussion resulted from his speech, and an atmosphere of keen interest prevailed. An exhibition of specimens prepared by Dr. J. G. Dony, and the pupils of the Froebel Training College under the supervision of Miss E. Proctor, B.Sc., added further to the great success of the evening, while nature photographs, kindly loaned by Mr. Oliver Pike, Dr. Metcalfe, Mr. Ray Palmer and others, were much appreciated.

The second Public Meeting was held at 7 p.m. on Thursday, December 5th, in the Friends' Meeting House, Castle Street, Luton. Owing to the indisposition of Sir Frederick Mander, M.A., who was to have taken the Chair, His Grace the Duke of Bedford kindly consented at short notice to officiate. The address was given by Mr. John S. L. Gilmore, M.A., Director of the Royal Horticultural Society's Gardens at Wisley in Surrey, who took as his subject, The History of British Botany, and outlined in an extremely fascinating manner, the growth of the study of Botany in Britain. More than one hundred members and friends listened with evident interest and when opportunity for discussion was given afterwards, some interesting points were raised. On this occasion also, another exhibition of specimens provided by members, and arranged by Dr. Dony, was much admired and stimulated interest.

Reviewing the first three months of the Society's existence, I feel that we can all look forward to a great future. The membership at the close of the year was one hundred, and I would appeal to all members to do their utmost to interest friends in our project, to the ultimate benefit of the County. The one criticism perhaps at this stage, and a defect that time and experience will erase, is that members seem shy in debate.

On behalf of the Council, I should like to thank everyone, including the press, who has assisted in any way to make our efforts so fruitful; and given such a start, I feel that we are well on the way to gaining our rightful place among the similar County Societies up and down the Country.

HENRY A. S. KEY

## THE STUDY OF NATURAL HISTORY AND ARCHAEOLOGY IN BEDFORDSHIRE

(From 1798 to 1945)

By F. G. R. SOPER

1. The Reverend Charles Abbot, under-master at Bedford Grammar School and Vicar of Oakley, Reynes and Goldington, published his "Flora Bedfordiensis" in 1798. His herbarium is preserved at Turvey Abbey, and his copy of his own book, with numerous important MS. additions, is at present in the possession of Mr. Reginald Hine, of Hitchin.

2. The Bedford General Library was formed in 1830, with rooms in St. Mary's Street opposite the "King's Arms." It acquired on 5th October, 1830, a collection of minerals and fossils presented by the Reverend Williamson, Mr. Anthony, and Mr. Nash, but Cary-Elwes, writing in 1881 (*Bedford and its Neighbourhood*) says:—"The Museum . . . has been dispersed, many of its treasures being now in the Blackmore Museum at Salisbury."

3. The Bedford Rooms were built in 1834, and in 1836 the Library moved into them. In 1864 the latter amalgamated with the Literary Institute founded in 1846, under the comprehensive title of "Bedford Literary and Scientific Institute and General Library" and it still survives under the same title in the rooms at the north-west corner of the same building.

4. The Reverend William Crouch, curate of Lidlington from 1841 to 1846, formed a herbarium during these years. He died in 1846 at the early age of 28. His herbarium eventually passed to his nephew, Charles Crouch of Ampthill, who died in 1944 and who was a lifelong authority on the botany of mid-Beds., and has recently been presented to Luton Museum by Major A. G. Wade.

5. John McLaren, a native of Methven, Perthshire, came to Bedfordshire in 1846, at the age of thirty. His position as steward on the Whitbread Estate at Southill gave him ample opportunity to study the local flora. In 1864 he was awarded a medal by the Royal Horticultural Society for his collection of Bedfordshire plants. This collection was carefully preserved by his family, having been in the possession of his daughter, Mrs. Dynes, since his death in 1888. Mrs. Dynes died at Bedford in 1944 and the herbarium was presented to Luton Museum by her son, Mr. S. McLaren Dynes of Weybridge. A further collection by John McLaren was in the possession of the Whitbread family, but was presented to the British Museum some years ago.

6. The Bedfordshire Architectural and Archaeological Society was formed in September, 1847, at a meeting held in the Bedford General Library.

"The Society has evidently never received that amount of support from the residents of either the town or county that might have been

expected, though at the commencement many valuable papers were read, some of which are to be found in the Publications of the different Societies with which in the year 1850 it became united. It possesses a valuable Library of its own, and a very fine collection of coins as well as a very fair quantity of material towards forming a good museum, in the shape of pottery, etc. It is unfortunately at present rather overlooked from the fact of its being packed away at one end of the Library of the Literary and Scientific Institute." (Cary-Elwes, *loc. cit.*)

Its collections are presumably still housed in the Bedford Rooms.

7. The first Bedfordshire Natural History Society and Field Club was founded on 4th May, 1875, with 59 founder members of whom four are noteworthy:—

Mr. F. W. Crick and his son Mr. G. C. Crick;

Mr. J. McLaren, previously mentioned;

Mr. William Hillhouse, F.L.S., the first Treasurer, who was responsible for initiating the Botanical Survey of the county for which purpose the Society had principally been formed. He later left the town to take the position of Professor of Botany and Vegetable Physiology at Mason College, Birmingham.

The Proceedings of this Society were published in three volumes covering the years 1875 to 1884. Although started with influential support, it is clear that its active existence did not greatly exceed 10 years. During that time three other persons of note joined it:—

Mr. Arthur Ransom, third Botanical Secretary;

Mr. John Hamson, the fourth Botanical Secretary, who became a member on 12th January, 1882;

Mr. James Saunders, a Luton hat manufacturer, joined the Society on 25th January, 1883. He was, since Abbot, the best and most consistent botanist of the county, his work extending over the years 1879 to his death in 1925, although his most useful contributions to the county flora were made before 1885.

The most important contributions to natural history were the publication of the following papers:—

January, 1876.—*Hillhouse List of Bedfordshire Plants.*

*Land and Freshwater Shells of Bedford Gravels.*

and four papers by James Saunders:—

1881.—*On the Wild Flowers of South Beds.*

1882.—*List of South Bedfordshire Mosses.*

1882.—*South Bedfordshire Plant List for 1881.*

1882.—*Additional Cryptogamic Notes on South Beds.*

The herbarium and other properties of this Society passed to the custody of the Bedford General Library, after its active existence ceased. The herbarium is still at the Library, but its bad state of preservation, and complete neglect for over 50 years, give it a very



limited value. It was inspected and partially overhauled in 1944 by Dr. J. Dony of Luton assisted by Miss G. H. Day and General Foss.

8. On 1st November, 1888, the Bedford Amateur Natural History Society was formed by Mr. F. W. Crick, his son, and six members, of whom Mr. H. Darrington survived until 1946. The virtual disappearance of the older Society is shown by the fact that Mr. John Hamson joined the new Society in 1889, while Mr. Arthur Ransom joined six years later, in July, 1895.

From the beginning of the Society until his death on 23rd April, 1895, Mr. F. W. Crick acted as President, and the meetings were held almost weekly at his house in Gwyn Street.

Between April and September, 1895, the meetings were held in rotation at various members' houses.

At the 7th Annual Meeting in November, 1895, the name of the Society was changed to "Bedford Natural History Society," thus proving the complete extinction of the former organisation. The meetings were thenceforward held at Dr. Nash's house until 19th October, 1898.

After a succession of irregular meetings, new premises were secured in the Y.M.C.A. building at the south-east corner of the Harpur Street—Silver Street crossing, and the meetings were held here until 1906. It was evidently thought that the membership would benefit from the association with the Y.M.C.A., but apparently no increase of membership did, in fact, occur. Between 1906 and 1914, the Society met at No. 34 High Street, now the "Dujon" cafe.

In 1912 Mr. W. N. Henman undertook the duties of Secretary, and has continued in that office until the present time with the exception of the year 1925, when he filled the office of President.

The Society first met at the Bedford General Library in January, 1914, and has continued to do so ever since. The membership was at that time 29, but rose very rapidly during the war years to 139 in 1918 and on to 178 in 1921. It has varied between 150 and 200 to the present time.

Up to the year 1914, the papers read had been exclusively upon natural history subjects, but on the 20th May, 1914, the name of the Society was changed to "Bedford Natural History and Archaeological Society" and the scope of the lectures was considerably widened in consequence.

9. *The Victoria County History of Bedfordshire* was issued in 1904; the botanical section was compiled by Mr. James Saunders, Mr. John Hamson, and Dr. G. C. Druce, and was the most comprehensive treatment of the county flora up to that time.

In the zoological section the vertebrates were adequately dealt with by Mr. J. Steele-Elliott; but the only orders of insects which had been studied by resident workers were the Coleoptera and Lepidoptera,

the remainder having to be hurriedly dealt with by a few visits of well-known experts to the county in order to compile lists for publication. The latter are consequently meagre in detail, and of doubtful value.

10. Mr. John Hamson published *An Account of the Flora of Bedfordshire* as a small pamphlet in April, 1906.

11. Mr. James Saunders published *Field Flowers of Bedfordshire* in 1911 and this must form the basis of any future work in the botanical field. The work has many shortcomings; no attempt was made to suggest the distribution of the various species, and the book was largely a compilation of records dating back to a quarter of a century previously. The north and west of the county received wholly inadequate treatment.

Saunders' herbarium of 18 volumes was presented to Luton Public Library in 1906 and transferred to Luton Museum in 1938.

12. Dr. John G. Dony of Luton began to form a herbarium of Bedfordshire plants at Luton Museum in 1935, and was joined in 1937 by Dr. Victor Chambers, also of Luton. The whole collection has now been amalgamated with the herbaria of Crouch, McLaren and Saunders, and Luton Museum thus possesses the whole of the extant botanical material relating to the county, with the exception of the dilapidated Natural History Society collection at Bedford Public Library previously referred to.

13. The MS. records of the Bedfordshire flora, compiled by Mr. J. Hamson in four volumes, were presented to the Bedford Natural History and Archaeological Society at his death in 1929. They have been transcribed and typewritten by Mr. A. W. Guppy, and all the records have been incorporated with those at Luton in a comprehensive card index maintained by Dr. Dony. Since 1939, there has been increasing contact between Dr. Dony and botanists in the north of the county, to the mutual advantage of both, and the number of species known now greatly exceeds anything previously recorded during the past 150 years.

14. The Lepidoptera of the district were very intensively studied by Dr. W. G. Nash and Mr. Harry Nicholls, but there are few active workers in this field at present.

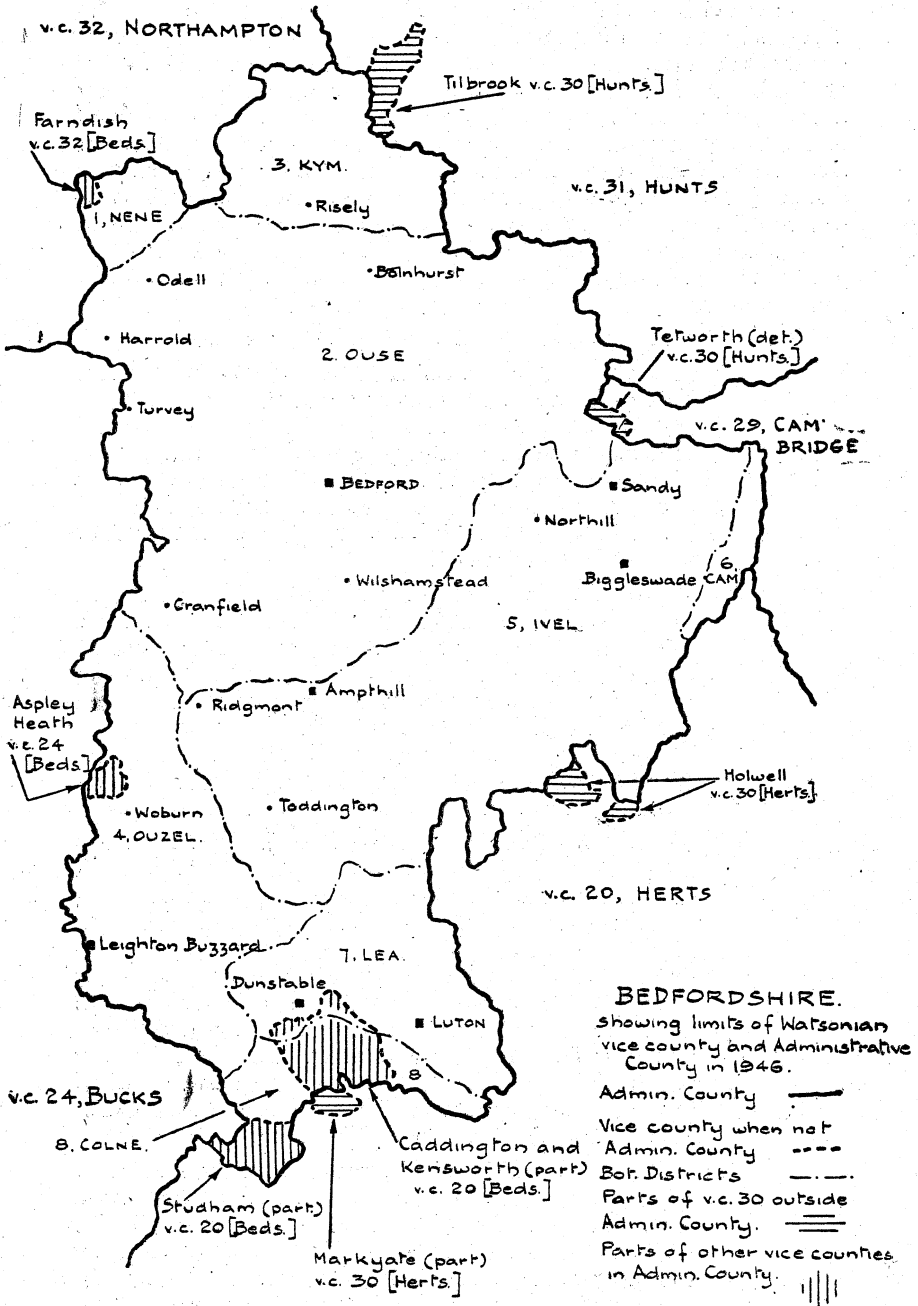
15. The Hymenoptera are being intensively studied by Dr. V. H. Chambers, while Mr. C. McK. Jarvis is busy with the Coleoptera, assisted by Mr. Milne-Redhead of Kew—a temporary resident in the county.

## WHAT BEDFORDSHIRE IS

By J. G. DONY

British naturalists, especially botanists, have, almost from the beginning of their studies, considered the distribution of species on the basis of counties. They have always realised that this is artificial but a more natural basis acceptable to all has not yet been devised. Some counties are of course much larger than others which adds to the unsatisfactory nature of a county basis. This and other related questions first received serious attention when, in the middle of the 19th century, H. G. Watson in his *Cybele Britannica* and *Topographical Botany* divided Great Britain into 112 vice-counties. He used the term vice-county as his divisions did not always coincide with the geographical counties, Yorkshire, for instance, was made into five vice-counties and most of the other large counties into two vice-counties while Rutland was combined with Leicestershire to make one vice-county.

In the Watsonian system Bedfordshire is known as vice-county 30, abbreviated v.c. 30, Bedford; the adjoining counties are v.c. 20, Herts; v.c. 24, Bucks; v.c. 29, Cambridge; v.c. 31, Hunts; and v.c. 32, Northampton. I have adopted the abbreviations Beds., Herts., Bucks., Cambs., Hunts., and Northants., for the administrative counties to distinguish them from the vice-counties. Watson made it clear that any portions of counties detached by land, and they were frequent in his time, should form part of the vice-counties they adjoined or in which they were situated. It is then a simple problem to determine, from a study of contemporary maps the exact limits of Watsonian vice-county 30, Bedford, but a more difficult problem arises in determining whether any useful purpose is served in retaining it as a basis of field study. Changes in county boundaries have been frequent in some areas and are likely to be more extensive as the functions of local government change. This has meant that portions of the Bedfordshire as we know it were at one time in adjoining counties and similarly portions of the Bedfordshire of the past are now in other counties. We are then faced with two alternatives, the first of constantly revising our concept of the county and the second of allowing the Watsonian vice-county to remain unchanged. The one would consider these portions as changing from one county to another the other, would allow them to stay always in one vice-county irrespective of changes in the boundaries of the administrative counties. The first raises many difficulties especially where old and unlocalized records which cannot be checked in the field are concerned and even when a check can be made each change in county boundary would necessitate considerable research and emendations in such lists as the *Comital Flora*, the modern counterpart of Watson's *Topographical Botany*. The second which creates no difficulty with past records but demands increasing care with present records has been adopted by most botanists and many entomologists. There is still, however, some confusion and to avoid this I adopted a plan in my paper *Additions and Emendations to the Comital Flora for v.c. 30*, in B.E.C. Rep. 1943-4 (April, 1946), of describing those parts of vice-county 30, Bedford now in the administrative county of Hertfordshire as v.c. 30 [Herts] etc.



It would be well for our society at the outset to decide upon the area it is to study. It is naturally more interested in the administrative county than in the vice-county but there is much to commend a study of Bedfordshire in its widest sense; that is the administrative county as it is now with any future changes which may appear and those parts of the vice-county which are outside the administrative county. In any case care should be taken in recording species, whether plant or animal, in those parts where any doubt is likely to arise as to the vice-county in which they have appeared. A list of these parts is appended with a description of their boundaries and brief notes on the topography and plants of special interest which have already been recorded from them.

Parts of v.c. 30 now in other administrative counties:—

- (a) The whole of the parish of Tilbrook, v.c. 30 [Hunts]. Area 1,342 acres. Tilbrook was in Bedfordshire until 1888 when it was exchanged for Swineshead, which until then had been in Huntingdonshire. Swineshead, however, formed an "island" within Bedfordshire and by Watson's system must be considered as part of v.c. 30. The area is worth study but is not likely to add much to the county flora or fauna.
- (b) The detached portion of Huntingdonshire forming part of the parish of Tetworth, v.c. 30 [Hunts]. Area about 900 acres. According to Watson's system this must be part of either v.c. 30, Bedford, or v.c. 29, Cambridge; as, however, slightly more of its boundary coincides with Bedfordshire it must be included in v.c. 30. It needs to be searched thoroughly as it contains part of White Wood and adjoins Gamlingay Heath both of which have proved most profitable to Cambridgeshire naturalists.
- (c) The parish of Holwell, v.c. 30 [Herts]. Area about 900 acres. This is in two parts, the larger adjoining the parish of Shillington and a smaller detached portion adjoining Arlesey and Stotfold. The parish was transferred to Hertfordshire in 1897. It is largely devoted to arable farming, but contains chalky exposures which repay study. The proximity of Hitchin and Letchworth has attracted many naturalists to the parish and J. E. Little was very familiar with its botany. The Icknield Way which forms the southern boundary of the detached portion is our only station for the Purple-stalked Cat's-tail Grass (*Phleum phleoides* (L.) Karst.).
- (d) Part of the parish of Markyate, formerly hamlet of Humbershoe, v.c. 30 [Herts]. Area about 370 acres. This was transferred to Hertfordshire in 1897. Its limits are the main road (A.5) from the county boundary to Markyate where the road to Whipsnade is followed for about half a mile when the footpath to Buckwood Stubs forms the boundary. It may be easily followed on the

Ordnance Survey Map. It is not likely to add much to the natural history of the county.

Parts of the administrative county of Bedfordshire in other vice-counties:—

- (a) A large area comprising (1) the whole of the parish of Kensworth; (2) that part of the Borough of Dunstable lying south of the railway for a distance of a mile west of Skimpot Farm and then following the footpath and track to a point on the main road (A.5)  $\frac{3}{4}$  mile south of the centre of Dunstable and from thence following the track and footpath opposite for  $\frac{3}{4}$  mile and then a wavy line to a point about 700 yards east of Five Knolls. National Grid Reference 013210, 020208, 024210, 030216, 037220, 040220, 044220; (3) that part of the parish of Caddington, west of an almost straight line passing from Skimpot Farm through the centre of Caddington village and following the footpath to a point  $\frac{1}{4}$  mile S.W. of Slip End on the road to Markyate. National Grid Reference 044220, 047220, 050217, 056210, 060203, 063200, 064198, v.c. 20 [Beds]. Area about 4,200 acres.

This was transferred to Bedfordshire in 1897. It contains Blow's Downs and a small amount of woodland. It has been well botanised but would repay still further study. The Mountain Goosegrass (*Galium pumilum* Murr.) was found near Blow's Downs in 1944 by E. Milne-Redhead.

- (b) Part of the parish of Studham lying south of a line continuing the county boundary from Dagnall to the bend in the footpath south of Studham village, then following this footpath to Studham Common and continuing along the southern boundary of the Common to a point  $\frac{1}{2}$  mile south of Byslip Bottom. National Grid Reference 008158, 010158, 017155, 020156, 030156, v.c. 20 [Beds]. Area about 1,000 acres. This was also transferred to Bedfordshire in 1897. It is well wooded country largely on clay with flints and has proved most interesting botanically. Long Wood is our only known station for Wood Barley (*Hordeum europaeum* (L.) All.) and White Beam and Holly have every appearance of being native at Greencroft Barn.
- (c) The whole of the parish of Aspley Heath except the area shown uncoloured in the north-west corner on the Ordnance Survey Map (New Popular Edition) Sheet 146, v.c. 24 [Beds]. Area about 510 acres. This was transferred to Bedfordshire in 1885. Although largely planted with pines this area, known as Wavendon Heath, is still to the naturalist one of the most interesting parts of the county. The Lower Greensand here gives us our only station for Whortleberry (*Vaccinium Myrtillus* L.),

Heath Rush (*Juncus squarrosus* L.) and Hard Fern (*Blechnum Spicant* (L.) Roth.). See also Report of Recorder for Botany, p. 14.

- (d) The part of the parish of Podington lying to the north-west of the road from Irchester through Farndish to the western county boundary, v.c. 32 [Beds]. Area about 150 acres. This was added to Bedfordshire in 1884 although before this there was some doubt as to its county. It is devoted wholly to farming and is not likely to add to our flora and fauna.

The area of the administrative county is about 303,000 acres. The area of the vice-county is somewhat smaller, about 301,000 acres, and that of Bedfordshire in the widest sense of the term about 307,000 acres.

I wish to express my thanks to Mr. J. E. Dandy, M.A., of the Department of Botany, British Museum (Natural History), who has studied this question and helped me considerably, and Miss J. Godber, M.A., the County Archivist, for many useful suggestions.

## THE WEATHER IN 1946

By A. W. GUPPY

The most conspicuous features of the weather of 1946 were the low sunshine figures and consequent low temperatures; the rainfall, although above average, was not remarkably so, and it is a mistaken idea that the summer of 1946 was wet.

The following figures refer to the writer's own observations at Bromham, taken in an open situation at a height of 170 feet above sea-level.

### TEMPERATURE

The spring was unusually chilly. An anticyclone brought a remarkable rise of temperature during the last week of March and the first week of April, culminating in a maximum reading of 75° on the 4th, the warmest April day in England for 90 years. This was followed by an abrupt collapse, and it was not until the 23rd June that the temperature again exceeded 70°. The May temperatures were remarkably low, the highest being only 67°, and there were air frosts on the 14th and 16th. July produced 7 days of 80° or more, the hottest day of the year being the 24th July with 84°. August had but one day, the 5th on which 80° was exceeded. Thereafter, the temperature steadily declined, with the exception of a warm spell at the end of September (75°), and a remarkable period on the 4th and 5th November when 63° was recorded.

The lowest reading was 17° on the 21st December, with 18° on the previous day.

Air frost occurred on 67 days.

The average monthly temperatures were:—

January	...	...	37.1°	July	...	...	62.8°
February	...	...	42.2°	August	...	...	60.3°
March	...	...	41.3°	September	...	...	58.0°
April	...	...	51.3°	October	...	...	49.7°
May	...	...	51.3°	November	...	...	46.0°
June	...	...	57.6°	December	...	...	35.8°

Average for the whole year ... 49.45°

#### PRESSURE

The highest pressure recorded was during the anticyclone just before Christmas; a reading of 30.65", uncorrected for altitude, occurred on the evening of the 15th December.

The lowest pressure was 28.55" on the evening of the 9th December.

During the period of 52 days from 1st August to 21st September inclusive the barometer never rose above 30".

#### THUNDERSTORMS

Thunder was recorded on 19 days. The most noteworthy storms were:—

1. On the evening of 23rd June; rainfall slight.
2. In the early morning of the 4th July, with very vivid lightning.
3. In the early morning of 25th November accompanied by heavy rain and hail.

#### RAIN AND SNOW

Precipitation occurred on 166 days, the total amount being 23.19". This is conspicuously less than that noted by some other local observers. Comparisons of readings taken by the writer with those of Mr. E. H. Lock of Hurst Grove, Bedford, over a number of years, suggests that Bromham is remarkably free from thunderstorms, and that, whereas ordinary frontal rain associated with the passage of a depression will give very closely similar readings at both stations, yet in thundery weather, Bromham receives less than Bedford on nearly every occasion. Thus, during 1945, a thunderstorm which gave 18 mm. of rain in north-west Bedford left Bromham completely dry. As much of our summer rainfall accompanies thunderstorms, it is easy to see that freedom from them may cause a much lower annual total. It would be interesting to have other observations showing similar discrepancies between places only a short distance apart. A theory that thunderstorms show a tendency to follow low-lying country and to avoid high ground would certainly account for the rainfall at Bromham being lower than that at Bedford, Kempston or Great Barford.

The following table summarises the monthly totals as recorded by the undermentioned observers:—

1. Mr. J. Arnold Whitchurch at Great Barford House.
2. Mr. E. H. Lock of Hurst Grove, Bedford.
3. Mr. C. S. Payne of Kempston.
4. Cranfield Aerodrome (Air Ministry Daily Weather Report).
5. Mr. C. J. Kilby of Hockliffe.
6. The writer at Bromham.



It will be seen that for the three months of May, June, and July, which were more than usually thundery in 1946, Bromham received only 4.89" compared with 5.89" at Kempston, 6.00" at Great Barford, and 7.01" at Bedford. Cranfield's total of 5.58" also suggests that a hill-top station receives less than the low-lying ones.

	Great Barford	Bedford	Kempston	Cranfield	Hockliffe	Bromham
January ... ..	1.14	1.04	1.02		1.49	0.87
February ... ..	1.89	2.00	1.97		2.32	1.60
March ... ..	1.24	1.27	1.29		1.33	1.06
April ... ..	1.01	1.21	1.24		0.90	1.00
May ... ..	2.19	2.61	2.26	2.27	2.33	1.93
June ... ..	2.33	2.87	2.41	2.16	3.41	2.12
July ... ..	1.48	1.53	1.22	1.15	2.11	0.84
August ... ..	2.97	3.29	3.04	3.78	3.34	3.04
September ... ..	2.95	3.19	3.16	2.76	3.35	3.06
October ... ..	1.44	1.48	1.81	1.56	1.40	1.51
November ... ..	4.41	4.17	4.30	4.63	5.07	4.32
December ... ..	2.21	1.80	1.78	1.90	1.89	1.84
Total ... ..	25.26	26.46	25.51		28.94	23.19

The wettest day was on 20th September when a vigorous depression crossed the country, the Bromham total for the 24 hours being 27.9 mm. or 1.10". Prolonged rain of nearly 30 hours duration on the 14th and 15th November produced a total of 28.7 mm. or 1.13" in the two days.

Snow fell on nine days during the year, but was generally slight in amount, the heaviest fall on 19th December being equivalent to a rainfall of 7.9 mm. or 0.31".

There were no periods of drought during 1946 (i.e. continuous periods of 14 days without measurable rain); the nearest approximation were the 13 dry days between 23rd March and 4th April.

## REPORT ON BOTANY FOR 1946

### (Flowering Plants and Vascular Cryptogams)

By J. G. DONY

The nomenclature used in this and subsequent reports is where possible that of the *Check List of British Vascular Plants* issued by the British Ecological Society (Cambridge University Press, 2/-). Synonyms are used when the name given in this list may be confusing.

This has been a most successful year, for while the weather did not allow many pleasant outings it produced a most luxuriant vegetation. Many plants have been added to the county flora, but this has not been unusual in recent years as readers will realise from reading Abstracts from Literature in this JOURNAL. I have thought it better not to list all these here as readers will have no recent flora of the county to which to add them; but will, until a revised Bedfordshire Flora is published,

continue to list all additions in the B.E.C. Reports where they may be compared with previous additions by members who are interested. Notwithstanding this members would no doubt like to know the nature of the additions to the county flora.

The most interesting "natives" added are some vascular cryptogams (ferns, etc.), by Mr. P. Taylor who is giving considerable attention to this group. They include the Rusty Back Fern (*Ceterach officinarum* DC.) from Stevington, Mountain Shield Fern (*Thelypteris Oreopteris* (Ehrh.) C. Chr.) and Marsh Club Moss (*Lycopodium inundatum* L.) at New Wavendon Heath v.c. 24 [Beds.] and *Dryopteris Borreri* Newm. at Kidney Wood, Luton Hoo and King's Wood, Heath and Reach. Another welcome discovery was that of the Tuberous Pea (*Lathyrus tuberosus* L.) by Mr. F. L. Chesham between Luton and Dunstable. It was found on the same day by some members of the Hertfordshire Natural History Society at Barton. The Tuberous Pea was at one time to be found only in Essex but is now extending its range.

A number of plants have been rediscovered after a number of years absence from the county list. Margaret Dawes found the Water Violet (*Hottonia palustris* L.) near Tempsford and Miss I. J. Allison found Water Plantain (*Baldellia ranunculoides* (L.) Parl.) at the same place. Other re-appearances include Musky Stork's Bill (*Erodium moschatum* (L.) Ait.) and Heath Rush (*Juncus squarrosus* L.). In a different category was the discovery by Mr. T. Blundell of a fine colony of Lizard Orchids (*Himantoglossum hircinum* (L.) Spreng.) known previously in the county only by isolated specimens.

The study of Brambles in the county had long been neglected largely because we had no one competent to deal with them; but this year Mr. W. Watson one of our leading batologists spent eight days visiting various parts of the county and has named a number of specimens collected since his visit. We have now a list of about 70 brambles including some great rarities. It is hoped that with still further collecting, Mr. Watson may be persuaded to write an account of this group for a future issue of the JOURNAL.

The alien flora has received considerable attention and appears to be rich and increasing in the county. Members would do well to collect any unusual plants they see on rubbish tips, railways sidings and in any place where "shoddy" may have been used or deposited.

Bedford was the headquarters of a week-end excursion organised by the Botanical Society and Exchange Club. This attracted a number of competent botanists. In addition members of the staff of the Royal Botanic Gardens, Kew and the British Museum (Natural History) have done field work in the county. Mr. C. E. Hubbard has added considerably to our knowledge of the grasses and Mr. G. M. Ash to that of our willow-herbs.

## ADDITIONS TO THE KNOWLEDGE OF BEDFORDSHIRE MOLLUSCA

By BERNARD VERDCOURT

Since the publication of a preliminary account of the Mollusca of the county (Verdcourt<sup>1</sup>) several new species have been found. A considerable increase in the knowledge of the distribution of previously recorded species has also been made and it is the object of this paper briefly to tabulate this information. More precise information is also given concerning the previously published localities. Conchological Census records are now available and these are denoted by the abbreviation C.C. The writer is following the nomenclature of Ellis<sup>2</sup>, together with those changes recommended in a recent paper by H. Watson<sup>3</sup>. Species are omitted if no further information has become available and it must be stressed that this paper is only a supplement to the author's previous list.

*Pomatias elegans* (Müll).—Four living specimens have now been found in the county and a short note has already been published (Verdcourt<sup>4</sup>). The localities are as follows: Leete Wood, Barton, top of Palm Wood, Luton, long beech wood perpendicular to the Barton Cutting (on the left as one approaches Barton), and New Mill End Road, near Luton Hoo (remnants of beech wood remain here).

*Viviparus viviparus* (L.).—A single old shell was found on the bank of the River Ousel at Leighton Buzzard. It cannot, however, be satisfactorily added to the county list since it does not seem to occur in the river, but is abundant in the canal just over the boundary. A bird no doubt dropped this shell.

*Valvata piscinalis* (Müll).—Rare in Leighton Buzzard Pond. This is so far the only record from the south of the county, though it should occur in the pits at Leighton Buzzard.

*Carychium* spp.—All of the Bedfordshire records are referable to what is now called *C. tridentatum* (Risso). This was formerly regarded as a variety of *C. minimum* Müll and several workers including the writer are still a little dubious of its specific validity. Research into their anatomy is in progress. There is certainly a difference in the choice of habitats of the two forms, *minimum* being found in marshes. The best locality in the county for *tridentatum* is Long Wood, Studham, where it occurs in thousands.

*Lymnaea truncatula* (Müll).—This species must still be looked upon as local, which is fortunate since it is the intermediate host of the liver-fluke. Three localities may be added—ditches in Odell Wood (now extinct), frequent on the "Boggy Bank" near Hipsey Spinney, Fancott, and also at Totternhoe. (The writer is indebted to Mr. B. R. Laurence, who is making a very detailed study of the Fancott area for bringing this most interesting locality to his notice.)

*L. auricularia* (L.).—Two further localities may be cited—Fancott Lake (B.R.L.), and Leighton Buzzard Pits (B.V.).

*Ancylastrum fluviatile* (Müll).—This was found in the river Ouse by E. D. Marquand in 1911 (actually the white variety) (C.C.). Wyatt<sup>5</sup> mentions this species as occurring in Bedford gravels (recent fossil).

*Aplecta hypnorum* (L.).—This species may now be added to the county list, but must be regarded as rare. It is, however, well known to be sporadic in occurrence. A few specimens were found in small puddles bordering the streamlet which runs through the "Hummocky Field" at Totternhoe. One was also found in an aquarium at the Luton Museum Wild Flower Exhibition and Dr. J. Dony assures me that the water and plants contained were collected locally, some at Totternhoe from whence the specimen most probably came.

*Planorbis leucostoma* Mill.—Extinct in the Fancott locality which was only a tiny ditch. Bedford, E. D. Marquand, 1911, C.C.

*P. crista* (L.).—Further localities are: Leighton Buzzard Pond and Pertenhall Pond. The species is common in the latter small pond, and specimens approach the variety *laevigata* of Adami but this is nothing more than a phase.

*Testacella haliotidea* Drap.—Bedford (garden in Waterloo Road), E. M. Langley, 1911, C.C. This species now occurs in the Rothsay Road-Rothsay Place-Rothsay Gardens area where Dr. H. F. Barnes has collected it in five out of seven gardens he has visited after dark during September–November, 1946. During these months specimens of all sizes from apparently newly hatched individuals to fully mature individuals have been found. A careful watch for this animal which is nocturnal and feeds on earthworms would probably reveal its presence elsewhere in the county. There is an old record which states abundant in south of the county, F. W. Phillips, May, 1890, but this was never verified.

*Succinea elegans* Risso.—This species is recorded in the Victoria County History as mentioned in the previous paper. No locality is given. The C.C. record is as follows: "Harlington, J. Saunders, 4–9–1888 and Limbury, J. Saunders, Nov. 1888". In the Luton Museum accessions book there appears a list of snails which were formerly in the J. Saunders collection in the museum. This collection was unfortunately destroyed, but the list contains the following entries under *S. elegans*: "type Limbury 1888, var. *minor* Totternhoe, 1888". Although these records were authenticated by so famous a malacologist as the late J. W. Taylor, they cannot be relied upon, since dissection is the only sure means of identification. The anatomy has only been worked out comparatively recently and true *elegans* is so far only known from Norfolk. The author found a recently dead shell by the stream in the "Hummocky Field" (1945) which Dr. Quick said "might well be *elegans*" but unfortunately no living specimens could be found though other species of the genus abound there.

*Vertigo pygmaea* (Drap.).—Abundant under old logs in a field above Stevington Wood (September, 1946). This would appear to be the only record for north Beds.

*Columella edentula* (Drap.).—There appear to be no records on which the "local and rare" entry in the V.C.H. could have been based. Seeing that no locality is given this cannot be accepted as the first county record. The latter would appear to be a specimen found at Turvey by the late Charles Oldham in 1923, C.C. The author's only local specimen was found on a log beneath beech leaves at Deadmansey Wood Beech Ridge in December, 1945 (this wood was called Studham Wood in a previous paper).

*Lauria cylindracea* (da Costa).—This species has not yet been found in the county south of Bedford, but is common on walls made of oölite at Bedford, Knotting, Pavenham, Biddenham and Stevington.

*Pyramidula rupestris* (Drap.).—Further records of this species are needed. It occurs at Bedford where it was first found by E. D. Marquand in 1911, C.C. This species is notably absent from East Anglia and would appear to be rare on the edge of its range.

*Vallonia costata* (Müll.).—This species has proved to be widely distributed and besides occurring at Barton may be found plentifully on walls at Biddenham and Pavenham. *Helix pulchella* var. *costata* is mentioned in the list of J. Saunders' shells in the Museum accessions book, the localities being Luton and Barton.

*Acanthinula aculeata* (Müll.).—Bedford, E. D. Marquand, C.C. The author's only county specimen is the one previously recorded, i.e., on a log in Long Wood, Studham. This wood contains a small area of old beechland. The species occurs rarely under moss near an old beech copse on Butts Hill, which is just over the county boundary. The V.C.H. records it for the county so there may be a record which predates that of 1911.

*Azeca goodalli* (Fér.).—In the previous account the author omitted to state that all the records given were from the V.C.H. and that at that time no recent records were available. J. Saunders does not mention it in his Midland Naturalist list (see <sup>1</sup>) but the accessions book previously alluded to, contains the following entry under this species—"Welche's Lane Luton". This accounts for one of the localities given in the V.C.H., the others being Barton, Ampthill and Bedford. The writer has found the species sparingly in two localities in the south of the county. These are amongst mossy logs in Hipsey Spinney, and amongst mossy elder logs and also on beech roots on the steep lower part of Leete Wood.

*Ena obscura* (Müll.).—Besides occurring commonly in the type of habitat noted previously it has also been found in the following places: dead juvenile shell in a hedge at Eaton Bray, juveniles under elm bark at the back of Tingrith gravel pit (7-9-46), and Hipsey Spinney (frequent). An almost adult specimen was found climbing on *Heracleum* in the latter locality. Though the species does ascend trees it is exceptional to find it on green plants. The species is often remarkably abundant on grassy roadsides on Butts Hill, Hexton, an area which was formerly entirely beech woods. An ecological account of this and certain other species will be published at a later date.

*Discus rotundatus* (Müll). (= *Gomiodiscus rotundatus*) variety *alba* Moq. occurs sparingly under leaves in the "beech ridge" in Deadmansey Wood.

*Arion circumscriptus* Johnston.

Half-grown specimens were found in the last mentioned locality (13-1-46) of an *Arion* which Mr. D. Thomas has identified as a pale form of this species. The dorsal surface is much more rugose than is usually the case. Old records are: hedgebank near Luton, November, 1886 and in Luton general Cemetery, April, 1889—both due to James Saunders.

*A. intermedius* (Normand).—Woburn, 1908, C. Oldham, C.C.

*A. subfuscus* (Drap).—Woburn, 1908, C. Oldham, C.C.

*Balea perversa* (L.).—Bedford, 1911, E. D. Marquand, C.C.

*Cochlodina laminata* (Mont.) (= *Marpessa laminata*).—A complete list of southern Bedfordshire localities is given. No ecological details are available for the Bedford record so far the only one from the north of the county. Dead shells occur in old beech hedges on the Luton Downs, and also in dells at Ravensdell Wood near Whipsnade (rare in both localities). J. Saunders found it in Luton Church Cemetery in 1889, and also at Limbury in June, 1888. The species is rare in the top part of Leete Wood, but not uncommon in the elder scrub at the bottom. It has not been found in woods nearby, though it is common on stumps in the portions of escarpment beechwood which remain in the village of Hexton (Hertfordshire). A few specimens were found on mossy logs in a small but steep-sided dell in Bluebell Wood. This a mixed wood and the snail also occurs in Hipsey Spinney which is a mixed oak-ash wood with a considerable ground flora. The best locality is probably Long Wood, Studham, where it occurs amongst debris at the base of beech trees in the escarpment areas. A single juvenile was found at the base of an uprooted tree in Maulden Wood (14-4-43), and a very young juvenile discovered on an old log by a sandy roadside at Clophill (5-8-46). A sandy roadside is one of the last places where one would expect to find this species, but specimens were no doubt transported with the logs which probably came from Maulden Wood. In ancient beechwoods particularly, the adults are frequently found crawling on trees and shrubs in rainy weather. The writer counted a hundred specimens mostly six feet or so above the ground, on twenty trees in Ditcham Wood, Hampshire, which used to be a very fine beechwood, but only three specimens have been found on trees in Bedfordshire. The young are more often found in colonies under loose bark and less often in the open. The following records together with dates all refer to young individuals. Two have already been noted above. Hexton, adults and "very nearly adult" (3-11-46); Long Wood, Studham—very young juveniles under log bark (27-10-46); Hexton, all stages of growth (19-4-45); Hipsey Spinney (nearly adults and "half adult" 14-4-46), (adults 5-1-46) and small juveniles (9-8-45). The species takes two years to attain adult size.

*Helicella itala* (L.).—The following northern records may be added: Roadside at Pertenhall. A colony of very small sized individuals

occurs at the top of Stevington Wood. These shells are the smallest examples of this species which the writer has found in the county, being smaller than the so-called *va. minor*, which is to be found in colonies of normal individuals on the Markham Hills. Measurements are as follows:—

<i>Typical range</i>	<i>var. minor</i>	<i>var. minor</i>
<i>in size</i>	<i>Markham</i>	<i>Stevington</i>
17–25 mm.	12 mm.	10 mm.

*H. heripensis* Mabile.—The C.C. record is one of C. Oldham's who found this species at Studham in 1916. The writer has found it by roadsides at Pertenhall, and it occurs together with *H. virgata* (da Costa) on downs in the Hexton area.

*H. caperata* (Mont.).—This species is characteristic of the small flat beechwoods in the south, but as previously stated it occurs throughout the county in various habitats.

*Trichia liberta* (West).—Though specimens found in the county have been named as this species and are common at Bedford it is probably best to look on this species as a form of the very plastic *T. hispida* (L.). Mr. H. Watson has failed to find any specific anatomical differences.

*Ashfordia granulata* (Alder).—Two localities for this scarce snail may be added: The C.C. record is as follows: "Totternhoe, C. Ashford, 1886." The author has found it by sweeping marsh herbage just south of the Butterbur patch at the Stevington Holy Well (1946).

*Helicigona lapicida* (L.). This species which is so common in the beechwoods of southern England is practically if not quite extinct in Beds. The dead shells are rare in hillwash deposits and possibly the species has never been common in this district. Old dead shells may be found in small numbers at Leete Wood, Pegsdon Hills and Luton Downs (in old beech hedges), Leagrave (Long Wood), Long Wood, Studham, Whipsnade and Totternhoe Hills. The writer would be very pleased to hear of any recent records (it may be added that the species is by no means confined to beech woods and careful searching on old walls in the north of the county might yield results). The first record was that of James Saunders—Limbury, April, 1885, but there is no record of whether live specimens were found.

*Helix pomatia* L.—It is to be feared that this species has also become extinct, as living specimens have not been seen for some time. Its habitat was in Luton Hoo, but building and re-forestation have rendered this locality unsuitable. Probably the first record from the Hoo is one found there by J. Saunders (or his son) on 29–6–1890. The species is still to be found in some of the adjoining parts of Hertfordshire (Kimpton, etc.). The species was first recorded for the county by W. Whitwell, who found it in a chalk hollow near Luton in June, 1868.

*Euconulus fulvus* (Müll.).—Additional records for this snail are as follows: Woodcock Wood (scarce in old stump), frequent among beech leaves in Long Wood, Studham. Of the previously recorded localities

—it is scarce in Worley Wood and Studham Wood amongst dead oak and beech leaves. The Old Warden record is based on a specimen found in rejectamenta from the lake overflow.

*Retinella radiatula* (Drap).—The following record may be added: Woburn Sands, September, 1905, F. H. Sikes (the greenish variety *viridula*).

*Oxychilus alliarius* (Miller).—This is fairly generally distributed throughout the county but is almost invariably found singly. Favourite habitats are beneath bark and under leaves in beech and oak woods.

*O. helveticus* (Blum).—This species has proved to be more widely distributed than was previously supposed. Besides occurring in many of the oakwoods in the north and hedgerows at Woburn it is frequent in Deadmansey Wood and fairly common in Long Wood, Studham, which is a beech wood. It is also common under leaves in the remnants of Luton Hoo (beechwoods) which border the London Road. It was first found in the county at Sharnbrook by J. W. Wood in 1874, and James Saunders found it in the Luton Cemetery (September, 1888) and by Barton Cutting (April, 1888).

*Oxychilus lucidus* (Drap).—The author found a few specimens of this species on debris by the River Lea in Luton Hoo. Though usually stated to be only active at night, these specimens were fully extended and apparently searching for food. The excessive rainfall previous to the day of capture (30–11–46), probably accounts for this. The identification was confirmed by dissection. The only other record for the county appears to be some specimens collected by Mr. J. E. Cooper at Bedford in 1940. These have been previously mentioned.

*Milax soweryi* (Fér).—This species is common in gardens at Luton and Bedford, but has not as yet been found in a wild habitat. One from Luton which was sent to Mr. Watson for dissection was found to have a brilliant orange internal shell. It usually has a whitish one and this specimen appears to be exceptional. Dr. Barnes' assistant, Miss Joan Eastop, has recently dissected a deep orange shell from a *Milax gracilis* found in Harpenden.

*M. gracilis* (Leydig).—This slug was added to the British list in 1930, but was confused for many years with other species in the genus. It is however, abundantly distinct from these, even in its external characteristics. Messrs. Barnes and Weil<sup>6</sup> have found it to be the commonest slug in gardens at Harpenden (just over the county boundary). The first county specimen appears to have been one found by the writer under beech leaves in Long Wood Studham. Subsequent observations have shown that it is not uncommon there. A pair were found *in cop.* under wood chips in this locality. This observation supports those of Barnes whose observations seem to show that the species mates during daylight under cover, or underground. During three months sampling in several Bedford gardens, Dr. Barnes has found only one adult specimen and the writer has yet to find it in Luton gardens.



*Agriolimax* spp.—All specimens of so-called *agrestis* examined from the County are referable to what is now recognised to be *A. reticulatus* (Müll).

*A. agrestis* proper is now known to be a much rarer species which was confused with this.

*Limax maximus* L.—Scarce in gardens at Luton and scarce in decaying wood at Ampthill. A beautiful variety of this slug was found under logs in the field above Stevington Wood (22-9-46). This specimen was strikingly marked with white and black and had just laid about 30 eggs. It is probably generally distributed but scarce.

*L. marginatus* (Müll).—This species which is so abundant in most beech woods has so far only turned up in Bedfordshire as follows: The writer found several on the oldest beech tree in Leete Wood, and also on beech trees in parts of Deadmansey Wood.

*L. cinereoniger* Wolf probably occurs but has not yet been verified.

*Sphaerium rivicola* (Leach).—This species may be added to the Beds. list on the strength of a juvenile specimen taken in the River Ouse at Bedford by the writer in 1942. Mr. A. E. Ellis has kindly verified the identification. Boycott<sup>7</sup> states that the species fails in East Anglia, though Brindley records it for Cambridgeshire.

The following additional information concerning the distribution of the genus *Pisidium* may be given. The River Ouse is very rich in species if not in numbers. C. Oldham during his intensive research into the ecology of the group found that of the 466 localities which he investigated, the Ouse at Bedford was the richest in species, nine being discovered there. The following is a list of these species: *P. ammicum* (Müll), *P. cinereum* Alder, *P. henslowanum* (Shepp.), *P. hibernicum* West., *P. milium* Held, *P. nitidum* Jenyns, *P. subtruncatum* Malm, *P. supinum* Schmidt and *P. moitesseriaenum* Palad. (see A. E. Boycott.<sup>7</sup>)

*Pisidium personatum* (Malm).—This species has been found at Silsoe and Millbrook (A. E. Ellis).

*P. milium* Held.—Ampthill (A. E. Ellis).

*P. subtruncatum* Malm.—River Flit at Hollington and Ampthill (A. E. Ellis). This species is common on debris at the bottom of Bramingham Pond. The latter is small but bears a prolific fauna.

*P. nitidum* Jenyns and *P. obtusale* (Lamarck) occur in Fancott Lake. Of the three species of *Pisidium* not recorded for the county, two namely *P. conventus* Clessin and *P. liljeborgii* Clessin will not occur but *P. tenuilineatum* Stelfox, a rare species, may possibly occur.

The total number of species recorded for the county now stands at 110, including one unsatisfactorily recorded and two doubtful records. The present total of recorded British Mollusca is 181, which includes nine semi-marine forms and 14 aliens, leaving 158 as the relevant total. There are thus many species which remain unrecorded from the county, some of which are not likely to occur by virtue of the fact of their known distribution. Compared with such counties as Sussex, Buckinghamshire and Gloucestershire, Bedfordshire is a

poor county for land Mollusca. This is due to the lack of old untouched woodland. The woods most suitable for molluscan life are without doubt beechwoods and very few of these remain in the county. Those which do occur are either small or have been completely ruined from a zoological point of view. Thus snails which are to be found in thousands in other counties are now rare if not extinct in Bedfordshire. Several used to occur in the past. Further species will undoubtedly be discovered in the county when more time is devoted to the group. The writer has only been able to spend a week or so collecting in the county during the past three years, so the additions are of necessity meagre. There are at present insufficient records to produce an ecological account, though certain aspects of this subject will be treated in future articles. Unfortunately Mollusca are seldom observed unless they are specifically looked for (this generalisation of course excludes certain well known pests) and it is unlikely that many new records will result from non-specialist collecting. The author is very willing to receive specimens, particularly of slugs, from all parts of the county. These should be sent alive in tins and not cardboard containers, since most slugs will make short work of paper products.

The author wishes to thank Mr. H. Watson, M.A., for verifying certain materials and Dr. H. F. Barnes for helpful suggestions.

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## BEDFORDSHIRE WATER BUGS

By BERNARD VERDCOURT

It is impossible to give a complete account of the recent additions to the Bedfordshire list of Hemiptera, since a great many specimens remain to be identified; but the sections which comprise the water bugs, in which the records are up-to-date, may be dealt with here.

Butler<sup>1</sup> listed one water bug from the county in 1923, and apparently no more were found until the writer<sup>2 3</sup> published short notes in 1944-5. Several new records of the writer's were included in Bedwell's recent comital charts<sup>4</sup> and precise locality details are published here for the first time, together with one new record. Of the 60 known species of British water bugs, 31 are now recorded for the county and it is certain that many species, particularly of *Corixa* and *Gerris*, remain to be found.

A complete list follows:—

## HEBRIDÆ

*Hebrus ruficeps* Thoms. Occurs amongst vegetation in ponds at Woburn (B.R.L. and B.V.). Further specimens remain to be checked.

## HYDROMETRIDÆ

*Hydrometra stagnorum* L. Widely distributed on medium to large lentic environments, and has also been taken on the stiller parts of the River Ouse. Usually in small numbers though it is common on Fancott Lake.

## VELIIDÆ

*Velia currens* Fab. Widely distributed and abundant on both still and running water throughout the county. It is often found in large numbers on very small patches of still water, e.g. Stevington Holy Well, and is less often found in environments of large size.

*Microvelia reticulata* Burm. Locally abundant on the River Ouse in sheltered places. One specimen of the rather rare macropterous form was found in a colony on this river at St. Neots (B.V. 20.7.46). Other records are: Fancott Lake (common B.R.L.), Leighton Buzzard Pond (single nymph 16.9.44 B.V.). (This name is applied to the pond with map reference 373,439 on Sheet 95 of the 1" Ordnance Survey).

## GERRIDÆ

*Gerris thoracicus* Schum. This usually common species has so far only been found at Fancott and on several small ponds at Woodside.

*Gerris lacustris* Linn. This is the commonest species of water bug in the county and may be found on nearly every pond and on slow running water. Artificial aquatic environments are also suitable for the species, which like other members of the family feeds on floating debris and therefore does not have to wait until the water has been colonized by small animals and algae. It occurred on many of the static water tanks which were erected during the war, and the writer also observed the species to be remarkably abundant on rain water contained in an old bath used as a cattle trough (near Bluebell Wood, Luton).

*Gerris najas* Deg. Very local but extremely abundant where it occurs; canal at Shefford, and River Flit at Flitwick.

## NEPIDÆ

*Ranatra linearis* L. Mr. E. Milne-Redhead and Dr. J. G. Dony took an insect which answers to the description of this species, amongst vegetation in Great Drakelow pond Woburn. Unfortunately, the specimen escaped. The writer has, however, taken a single nymph of this species amongst submerged vegetation in the River Ouse at St. Neots (20.7.46). As is usual with this species, it is probably widely distributed, but very scarce (This is a new county record).

*Nepa cinerea* L. Generally distributed amongst vegetation and under stones in ponds, streams and slow rivers throughout the county. It never occurs abundantly and is usually found singly or in small groups.

## NAUCORIDÆ

*Ilyocoris cimicoides* (L.) (= *Naucoris*). Widely distributed in ponds and slow running water throughout the county. It is usually rather scarce, but is common in some of the pits at Leighton Buzzard and has also been taken commonly by B. R. Laurence in Warren Wood Pond, Silsoe.

## NOTONECTIDÆ

*Plea leachi* McGrey and Kirk. This is commonest in the middle of the county where it is fairly generally distributed. Leighton Buzzard (B.V.), Kings Wood Pond (B.R.L.), Warren Wood Pond (B.R.L.), Fancott Lake (B.R.L.) and Tilsworth (F. C. Minns). The writer has taken nymphs in the River Ouse at St. Neots (20.7.46).

*Notonecta glauca* Linn. This is the only water bug recorded for the county by Butler. It is generally distributed and often common in ponds throughout the county and also occurs in the River Ouse.

*Notonecta obliqua* Gall. So far this has only been taken in Maulden Wood Pond by the writer. It is not usually an uncommon insect and further records for the county are desirable.

*Notonecta maculata* Fab. Single specimens have been taken in small artificial ponds at Luton on several occasions.

## CORIXIDÆ

Various subgenera of *Corixa* have recently been raised to generic rank, but since the differences involved are all rather small this is not a wise procedure.

*Corixa punctata* Illig. Widely distributed throughout the county in small to medium sized ponds. It is often found in the most foul looking ponds devoid of any higher vegetation.

*Corixa panzeri* Fab. A single specimen of this species was found in the now well-known Eaton Socon gravel pits when these were first discovered (from a natural history point of view) by the writer on 18th September, 1944.

*Corixa linnei* Fieb. One specimen of this has been taken in the county—Fancott district (precise locality unknown).

*Corixa sahlbergi* Fieb. In ponds at Westoning and also in the lake at Old Warden.

*Corixa lateralis* Leach. Common in small ponds in the south of the county and in the River Ousel. No records are available north of Fancott, though it is probably common throughout the county. Occurred in quite small static water tanks at Luton.

*Corixa striata* Linn. Common in the River Ouse and River Ousel and also in large ponds throughout the county. Several were found swimming under the ice in Fancott Lake (30-12-45).

*Corixa fallenii* Fieb. The writer has taken this species in the River Ouse and the River Ussel. Many specimens from the former locality in the author's collection bear only six pale pronotal lines and thus resemble *C. striata*. Mr. China has kindly identified them as *C. fallenii*.

*Corixa nigrolineata* Fieb. Abundant in the River Ussel and Farley Pond.

*Corixa venusta* D. and S. One specimen from the Luton District, but precise locality unknown.

*Corixa praeusta* Fieb. Local. Farley Pond, Luton (B.V.).

*Cymatia coleoprata* F. Local. Old Warden Lake (B.V.), Fancott Lake (B.R.L.), and Tingrith.

*Micronecta scholtzii* (Scholtz). This species was found rarely by the writer in very shallow sandy pools near one of the pits at Leighton Buzzard. This is so far the only record.

#### ADDENDUM

Several additional species are recorded in the charts prepared by the late E. C. Bedwell and edited by A. M. Masee<sup>4</sup>. So far the writer has not been able to obtain details of the localities of these, so they are not included in the above list.

The species in question are:—

*Notonecta viridis* Delc.

*Corixa limitata* Fieb.

*Corixa moesta* Fieb.

*Corixa fossarum* Leach.

*Micronecta poweri* D. and S.

These raise the total of recorded species to 31 and more information will be published when available.

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<sup>1</sup> 1923, "A Biology of the British Hemiptera-Heteroptera", 644-71.

<sup>2</sup> 1944, Ent. mon. Mag. 80 : 75.

<sup>3</sup> 1945, Ent. mon. Mag. 81 : 12.

<sup>4</sup> 1945, Ent. mon. Mag. 81 : 253-273.

## NOTE ON BEDFORDSHIRE HEMIPTERA

By BERNARD VERDCOURT

It has already been pointed out in the introduction to the article on *Water Bugs* (see p. 23), that a complete list of Hemiptera cannot at present be compiled. This is due to the fact that large numbers of specimens are in the hands of collectors mostly living in other counties. The great majority of these have yet to be identified, and a complete list of Bedfordshire Hemiptera will not be available until the return of several entomologists still absent abroad.

The writer would, however, like to amplify one of the most interesting county records in this group, which was included without

locality in the comital charts of the late E. C. Bedwell (1945, Ent. Month Mag. 81. pp. 253-273).

The locality for this has not yet been published. A single specimen of the scarce *Ischnodemus sabuleti*, Fall (the form with undeveloped elytra) was taken in a crevice of an old stump at East Hyde, just inside the county boundary. This stump is situated in the hedge bordering a meadow through which runs the River Lea. The main flora of the field consists of the commoner Junci. The insect was taken on the 29th July, 1945, but subsequent visits proved fruitless, although both the original locality and the roots of large numbers of Junci were examined.

## BEDFORDSHIRE NEUROPTERA AND ALLIED ORDERS

By BERNARD VERDCOURT

This order of insects has never been worked in the county, and the few records that follow are the result of casual collecting. The order as it is now restricted contains 53 British species, belonging to five families. So far only 11 species belonging to two families have been recorded for the county.

### ORDER NEUROPTERA

The following is a complete list. First county records (so far as is known), are indicated by the letters "F.C.R." All records are based on specimens taken by the writer, except where otherwise stated.

#### HEMEROBIIDÆ (Brown Lacewings)

*Hemerobius lutescens*, F. Common in Luton during September and October, when it may frequently be taken at light. The writer has so far taken only males at light. Two females only have been taken, both drowned in a water butt during October. (F.C.R. Luton, 6.10.45.) This species favours deciduous woods and hedgerows. Killington (1936, *Monograph of Brit. Neur.* Vol. 1, p. 5), gives April to September as the months during which imagines may be found. He also omits gardens from the list of habitats; all the writer's specimens were taken in a residential garden.

*H. humulinus*, L. Common in Woodcock Wood at Fancott, which is a mixed oak wood. (F.C.R. Fancott, 9.4.45, B. R. Laurence.)

*H. micans*, Ol. Fancott. (F.C.R., B. R. Laurence.) Oakley Hill Wood (mixed beech), 17.8.46.

*Kimminsia subnebulosa* (Steph). Commonly taken at light in Luton gardens from August to October, but less common during other months. The larvæ frequent rose bushes, etc. (F. C. R. Luton, 10.10.45.)

## CHRYSIDÆ (Green Lacewings)

The insects of this family are familiar to most people, being known as lacewing flies. The colouring varies from yellow-green to blue-green, and the eyes are conspicuously golden in colour.

*Chrysopa albolineata*, Kill. This species is recorded for the county in Killington's monograph. The writer has also taken two specimens in a Luton residential area. (30.7.45 and 22.8.45). The larvæ are not attached to any particular plants.

*C. carnea*, Steph. This species would appear to be the commonest member of the order in the county. It is common in deciduous woods and has been commonly taken at light in Luton. This species overwinters in the adult state, and during this period the body and wing veins assume a reddish tint. Red forms have been taken on the following dates: 30.3.46, 11.3.46, 17.4.46. (F.C.R. Luton, 1942.)

*C. ciliata*, Wesmael. One on oak, Deadmansey Wood, 8.6.46. (F.C.R.)

*C. ventralis*, Curtis. One at light in Luton garden, 3.8.45. Not recorded for gardens by Killington.

*C. perla*, L. This beautiful blue-green species is frequent in oak woods with a bush layer. (F.C.R. Deadmansey Wood, 23.5.43.)

*C. septempunctata*, Wesmael. Common in Luton from May to August. Frequently comes to light.

*Nathanica fulviceps*, Steph. This rare insect is recorded for the county in Killington's monograph without further details.

Neuropterous larvae are invariably carnivorous, the food most favoured being Aphididae. The group is therefore of some economic importance. The larvae of the three British species of Sisyridae are parasites on freshwater sponges; Since the latter are recorded from the River Ivel, a close watch should be kept for *Sisyra* spp. in this area.

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The report is concluded with notes on two small orders closely related to the Neuroptera and formerly included therein.

## ORDER MECOPTERA (Scorpion Flies)

Two of the four British species—*Panorpa communis*, L., and *P. germanica*, L., occur and are common, particularly amongst nettles.

## ORDER MEGALOPTERA (Alder Flies and Snake Flies)

*Sialis lutaria*, L. is common near most rivers.

*Raphidia xanthostigma*, Sch. has been taken by B. R. Laurence near Bramingham Pond, and a further species of this genus awaits determination.

## REPORT ON BEDFORDSHIRE HYMENOPTERA FOR 1946

By V. H. CHAMBERS

HYMENOPTERA ACULEATA. An account of the bees, wasps, ants and related hymenoptera captured in the county—a total of 297 species excluding Bethyridae and Dryinidae—will shortly be published in the *Transactions of the Society for British Entomology*. Since this list was completed two species have been added to the county list during 1946. On July 7th the writer took the pretty little green Chrysid wasp *Omalus aeneus* (F.) on elder at the Litany, Totternhoe, where it was probably parasitic on the Sphecid wasp *Psenulus atratus* (F.), a species known to build its nests in the pith of elder twigs, also taken on the same day. On August 18th, Mr. D. O. Boyd captured a male *Tiphia femorata* F. at Sandy, a little known wasp which lays its eggs on various beetle larvæ after temporarily paralysing its prey by stinging. The related species *T. minuta* V.d. Lind. was again taken by the writer this year on *Anthriscus* at the Litany. Apart from the fine weather in April which produced great activity for a short period in the solitary bees of the genus *Andrena* on the fruit blossom, the continued lack of sunshine throughout the summer made a poor season for these sun- and warmth-loving insects.

HYMENOPTERA SYMPHYTA. On the other hand the season was an extraordinarily good one for sawflies. The gregarious larvæ of the sallow sawfly *Pteronidea pavidus* Lep. were to be found on almost every bush of the two sallows *Salix caprea* L. and *S. atrocinerea* Brot. One substantial tree at Clophill had already suffered almost complete stripping of its leaves by thousands of the caterpillars by June but continued the unequal struggle by putting forth new leaves throughout the summer thus providing food for this voracious sawfly larva until October. The related gooseberry sawfly *P. ribesii* Scop. was also abundant in many places and probably caused havoc in some gardens. Many species were abundant on birch trees especially the two species of *Hemichroa* taken wherever birch and alder are to be found. *H. alni* L. has a green larva which feeds singly curled up within an L-shaped slit in the leaf; while the gregarious grey black-spotted larvæ of *H. crocea* Geoffr. were very abundant in the autumn on their two host plants. The introduced pine sawfly *Neodiprion sertifer* Geoffr. was located in small numbers on the Forestry Commission pines at Clophill: it has, of course, occurred for some years in varying abundance at Aspley Heath, doing considerable damage. Several rare species were taken, including *Rhadinoceraea gracilicornis* Zadd. (at Whipsnade), a species only recently added to the British list and *Neurotoma mandibularis* Zadd. (at Heath and Reach), both species whose life-history is unknown. A list of species taken by the writer in the county will shortly be published in the *Entomologist's Monthly Magazine*.



## NOTES ON BEDFORDSHIRE DIPTERA

By B. R. LAURENCE

There are at least 5,199 Diptera in Great Britain and so far as I know 302 species have been recorded from Bedfordshire. At first sight this figure appears to be very low, but certain factors have to be taken into account.

(1) Entomologists collecting this order are very rare, and I am unaware of any previous attempt at systematic collection of the flies of the county. A few species were collected by the late Dr. F. W. Edwards and possibly others have collected when visiting the county.

(2) I began collecting in 1943 as a beginner, with no previous knowledge of the order.

(3) All species have to be sent away for verification and over 200 specimens collected in 1946 still require identification.

(4) Half of the total recorded for the county are distributed amongst the three families *Tipulidae* (Crane flies), *Syrphidae* (Hover flies) and *Tachinidae* (Parasites). Many families have not yet been recorded at all.

(5) 85 per cent of the species are recorded from a small area at Fancott where my collecting has been concentrated.

(6) During the past three years no attempt has been made to produce a lengthy and not very useful list of "county" species. My efforts have been rather to find more about the habits of these species which occur regularly at Fancott.

Because of this last method of approach the results obtained find no comparable ground as yet with those of any other county. At Fancott there is a recognisable distinction between species which are met with regularly in their appropriate seasons and those which are found only sporadically. This division corresponds in general with the normal distinction, "widely distributed and common" and "rare" of other workers, but it is felt that the term "widely distributed and common" is often applied through too little evidence and that, on the other hand, species described as rare may often be found after careful searching once their habits are understood. *Tipula lunata* L. and *Leptogaster cylindrica* Deg. in a superficial county survey would probably be described as widely distributed and common species, but an analysis of the various habitats at Fancott show that the former is distinctly a woodland species and that the latter is restricted mainly to ungrazed or "rough" grassland.

The following species are described as "rare", although eight of them are regularly met with at Fancott.

TIPULIDAE: *Limonia maculipennis* Mg., *Gnophomyia lugubris* Zett.

STRATIOMYIDAE: *Solva (Xylomyia) marginata* Mg., *Odontomyia argentata* F., *Oxycera analis* Mg.

SYRPHIDAE: *Zelima lenta* Mg., *Z. xanthocnema* Coll., *Vohucella inflata* F., *Epistrophe compositarum* Verr., *Chrysotoxum verralli* Coll., *Xanthogramma citrofasciatum* Deg.

TACHNIDAE: *Phryno vetula* Mg., *Chaetolyga amoena* Mg., *Blepharomya amplicornis* Zett.

ORTALIDAE: *Ptilonota guttata* Mg.

In our commonly encountered species it is possible to go further and to make a numerical assessment of the actual numbers of individuals occurring. An attempt was made in June, 1946, to determine the numbers of a regular species, namely *Empis tessellata* F., on a small area of umbellifers in the cottage garden at Fancott. On June 1st a hundred individuals were marked with a small spot of Indian ink on the wings, and of these nine were recovered in an examination of 150 specimens collected at random on June 2nd. Unfortunately, further experiments were prevented by extremely bad weather conditions and by June 8th numbers had been considerably reduced, and none of the original marked batch were to be found. These observations indicate a population on the flowers of approximately  $2,000 \pm 700$ . The population was probably much higher, since only a dark variety of the species was caught and examined. More observations would reduce the possible error, in this case  $\pm 700$  which is large, but the observations do show that the numerical method is of practical application with large populations, and can be used to make a numerical assessment of our commonly occurring species. Details of the method can be obtained from *Butterflies*, E. B. Ford, 1945. This type of work is fascinating and I hope to continue this investigation and also apply the methods to other species.

A record has been kept of species visiting flowers and 64 out of 118 visitors (62 species) were not recorded in Müller (1883 *Fertilisation of Flowers*). The results obtained, although limited, show a significant correlation between size of flower and size of dipterous visitor. The predacious species have not been neglected and seven predacious species have been recorded with 21 species of prey. *Empis grisea* Fl. has been recorded 19 times with *Dilophus femoratus* Mg. males as prey. This indicates considerable selection of food since *D. femoratus* males are by no means abundant in the locality. In this, and other *Empiidae*, prey plays a considerable part as stimulation to mating. Relations of Diptera to other predacious insects also require examination and at Fancott relations have been recorded with Hymenoptera (including a sawfly), Hemiptera and Mecoptera. Unfortunately, I have no useful observations on spiders and this study would be of great interest (*vide* Bristowe *The Comity of Spiders*). A possible Opilionid predator has been recorded.

This type of work has occupied the major part of my time and possibly the working out of the seasonal and habitat ranges of the species is most laborious. A great deal of work remains to be done on the Diptera and observations on common behaviour such as the significance of swarming in *Hilara* and *Sepsis* would be of great value and would almost certainly quickly repay study. Work would be particularly valuable if carried out in some other area of the county, and then the results obtained could be compared. In this way a detailed general account of the Diptera of the county could be worked out.

## THE STUDY OF COLEOPTERA With Special Reference to Bedfordshire

By C. MACKECHNIE JARVIS

In designing his classification of the animal kingdom, Linnaeus separated the insects into a series of Orders according to their obvious external characteristics, or as he would have said, "natural affinities". For beetles he compounded the term "Coleoptera", from the Greek *koleos* (a sheath) and *pteron* (a wing), thus departing from the classical name "scarabaeus", by which they had been known since ancient times. Most appropriately, however, the latter name is perpetuated in that of an important Family of the Order, viz. *Scarabaeidae*, which contains the two sacred beetles of the Egyptians (*S. sacer* Linn. and *A. aegyptorum* Latr.), whose images adorn almost every monument and papyrus and are found in most tombs as porcelain or carved stone replicas, from about B.C. 3800 until the decline of the civilisation of ancient Egypt in Roman times.

The tenth edition of Linnaeus' *Systema Naturae*, published in 1758, forms the basis of our zoological nomenclature and contains descriptions of 22 genera and 500 species of coleoptera, of which 337 species are now known to occur in Great Britain. Although a work on British coleoptera (Martin Lister *Scarabaeorum Anglicanorum*, London, 1685) appeared before the publication of Linnaeus' binomial nomenclature and another based upon the latter, in 1792 (Thomas Martyn *The English Entomologist*), our insects received their first comprehensive treatment in Marsham's monograph *Coleoptera Britannica* which, though undated, was published in 1802. Thomas Marsham, sometime treasurer of the Linnean Society, had access to the principal collections and writing under the patronage of Sir Joseph Banks and with the support of the best naturalists in the country at the time, his work reflects the considerable accumulation of knowledge at this period, as well as the fact that the precise habitat of some 75 per cent of the 1,307 species described was unknown.

The study of coleoptera in the 19th century appears to fall naturally into two distinct epochs linked by the activities of one of the greatest of our field workers, Dr. J. A. Power, who spent his declining years in Bedford and died here in 1886.

The first period commences with the publication of Marsham's book and terminates with the death of James Francis Stephens in 1852. During the first 30 years of last century some 300 insects were added to our lists, but in the monumental *Illustrations of British Entomology-Mandibulata*, 1828-35, Stephens increased our modest 1,600 species to 3,650, representing an enormous advance. With growing knowledge it came to be realised that a number of these insects were varieties of others already described, foreign importations or errors of determination on the part of the entomologists claiming to possess them. In spite of all this, Stephen's efforts must have raised the number of species of coleoptera recorded as indigenous to Great Britain from 1,600 to at least 2,700, a number of them new to science.

Stephen's books, in common with most others of the period, contained no diagnostic keys, without which determination of many specimens becomes impossibly tedious if not altogether impracticable and many of his descriptions (and those of his contemporaries) were too incomplete to stand the test of time. Clearly there existed a need for a good diagnostic handbook of British coleoptera with details of habitat and life history, but before such a task could be undertaken the formation of an extensive working collection was a desideratum and close examination of all doubtful records a *sine qua non*.

Dr. John Arthur Power, to whom brief reference has been made, was born at Market Bosworth in Leicestershire in 1810, his father and grandfather both being members of the medical profession. He entered Clare Hall, Cambridge, graduated in 1832 and entered upon his medical studies at Addenbrooks Hospital, Cambridge. Power acquired from his grandfather with whom as a boy he had collected, a love of natural history and throughout his student days, collected insects, more or less. It is known that he was early acquainted with the veteran J. F. Stephens and joined him in an expedition to Holm Fen in 1833, when between them they netted 57 specimens of the beautiful and now extinct large copper butterfly, *Lycaena dispar*. About 1834, Power commenced his collection of Coleoptera and Hemiptera in earnest and in the ensuing years established a reputation which has never been equalled, for his amazing and almost uncanny discernment in the field, of some of our most elusive insects. Miss Power of Bedford, his daughter, possesses a pen and ink sketch by another well known coleopterist, E. C. Rye, showing the "little Doctor" in action. The scene is a glade in the New Forest with "JAP" at the foot of an ancient tree, looking upwards, top-hatted as he always was. A rare beetle which he alone had found is peering down and is made to say "Don't dig, Doctor, we'll come down!" Such was his reputation—and little wonder is it that his collection, now in the British Museum, has been for 50 years the standard reference collection of British Coleoptera at South Kensington.

Doctor Power collected in most parts of the country and thought little of making a number of visits in search of some particular insect. His work paved the way for that of his friend, Canon W. W. Fowler, whose *Coleoptera of the British Islands* (5 vols. 1887-91) is still the standard work on the Order.

Much of Power's hunting was done in the Fen district and the following account of a collecting expedition of a century ago is taken from *The Natural History of Wicken Fen*, 1923, where it is quoted from the minutes of the Swaffham Prior Nat. Hist. Soc.: "June 18th, 1836—Mr. J. A. Power, Mr. Broome, Papa (Rev. Jermyn), Hugh, Tenny and me (R. F. Jermyn, secretary, aet 9) went to Reach Chalk Pits and though we went there as soon after 9 a.m. almost all the petals of Glaucium were fallen off. Then we went into a beer shop and took two gallons of beer into Burwell Fen in a boat with Jem Retchy to punt us along and Papa fell into a ditch up to his neck and Tenny fell out of the boat into the water and Hugh also fell into a ditch but not in consequence of the beer, by no means. The worthy patron, Mr. Power, also got bogged which was great fun . . ."

Unfortunately, Dr. Power's health did not permit him to continue his active interest in entomology after his retirement to Bedford in 1882, but he was able to assist Canon Fowler who was at this period a frequent visitor to the Power household.

During the war, the writer frequently visited a house in Ashburnham Road, Bedford, then the Headquarters of a Home Guard Unit. Only later did he discover that the house originally belonged to Canon Fowler and, more remarkable still, that the illustrious Dr. Power formerly resided next door!! Fowler drew extensively upon Power's records of localities and it is interesting to reflect that the 3,250 species recorded in his book had increased little by 1904 when Beare and Donisthorpe catalogued 3,270 beetles as indigenous. During the last 40 years the number of workers has increased appreciably and the use of genetal characters as an aid to diagnosis has come to be regarded as essential in many genera. The latest figures from *A Check List of British Insects* (Kloet and Hincks, 1945) show a sharp rise to 3,690, but are not truly comparable with the 1904 list owing to the inclusion of a number of admittedly disputed species.

#### COLEOPTERA IN BEDFORDSHIRE

From the standpoint of the coleopterist, the county of Bedford cannot be said to excel either in respect of good collecting grounds or in the variety of insect life breeding therein. The land is largely agricultural and in general, the woodlands where they exist, are of small compass and recent growth. The destruction of hedgerows and spinneys has been widespread and thorough, whilst the dredging of the river has destroyed both reed beds and banks. In this way, our only known locality for the marsh loving *Blethisa multipunctata*, L. has been shovelled away, while the habitat of the reed feeding *Donacia impressa*, Payk. always something of a rarity, has been obliterated with tons of black mud.

The most productive areas in the northern part of the County are centred around the Ouse Valley and here remain a few unspoilt localities which, on a much reduced scale, resemble parts of the Fens. These will repay a close and continuous survey, which must extend over several years before any definite conclusions can be drawn concerning their relationship to similar areas in the counties of Cambridge and Huntingdon, the fauna of which has undergone very considerable change during the past hundred years. Excellent lists and indeed complete collections of Cambridgeshire insects are in existence and from them we can trace the gradual replacement of certain species by other closely allied insects of similar structure and habits. This has been pointed out by J. Omer Cooper, M. G. L. Perkins and C. E. Tottenham in their paper on the *Geodephaga* of Wicken Fen (*loc. cit*) which might well form the basis for a similar investigation of the fauna of the Ouse valley covering its entire length (at suitable intervals!) in the County. One marshy strip by the river has been regularly visited during the past two years and has already produced many typical fenland insects, though unfortunately neither *Odacantha melanura*, L. nor *Demetrias imperialis*, Germ. have yet been found though it is difficult to believe that they will not ultimately find a place in our lists.

In the present article it is not possible to survey all our collecting grounds, but some reference might be made to previous workers in Bedfordshire. Among the earliest recorded localities known to the writer are those in J. W. Dawson's *Geodephaga Britannica* (1854) which include, *inter-alia*, *Harpalus discoideus*, Er (now *smaragdinus*, Duft.) from Sandy, where it is still to be found. The late Rev. G. A. Crawshay, Rector of Melchbourne, N. Beds., did excellent work in the early years of the present century and it remains a matter for great regret that his collection cannot now be traced. Much of his field work was done in the Leighton Buzzard district (Heath and Reach) but Melchbourne Woods produced some interesting species. Details of his more outstanding discoveries are given in the Supplement (vi) of Fowler's work (1913) and more fully in the *Entomologist's Monthly Magazine* 1905-07, and Trans. R. Ent. Soc. 1907.

According to Fowler's introduction to the list of Beds. coleoptera in the *Victoria County History* (1902, Vol. I) the species recorded are largely based upon the observations of Mr. Willoughby Ellis, but unfortunately localities have in most cases been omitted. The late Mr. B. S. Williams of Harpenden, collected intensively in the Luton, Barton and Sharpenhoe areas between 1920 and 1928 and a list of his captures was published posthumously by Mr. P. J. L. Roche (E.M.M. 1942). Mr. F. H. Day spent a holiday at Tempsford in 1923 and contributed a list to the E.M.M. Mr. Roche's second list (E.M.M. 1944) recorded captures by Messrs. Gimingham, Tebbs and Verdcourt in addition to his own. Roche left the district in 1944 and passed his local lists to the author who with the assistance of Dr. Chambers and Messrs. Milne-Redhead and Verdcourt published a further list of additions (E.M.M. 1945) which brought the total number of beetles recorded from the County to 1,052.

Since this date, a further 100 insects have been identified and will be incorporated in a list which it is hoped to publish at the end of the present year. The formation of our new Society should result in an increase in the number of field workers available and perhaps with their assistance a sound ecological survey of the County's coleoptera can be attempted. For those ambitious enough to face the difficult task of carrying out breeding experiments there is almost unlimited scope, and without this type of research we can never hope to answer the vexed question of what is a species. For many years, the existence of insect hybrids has been suspected and in but few instances proved. Among our English fauna certain ladybirds are particularly suspect and the hybrid of the common *Coccinella bipunctata*, L. x *C. 10-punctata*, L. = *C. biabilis*, Marr. now finds a place in the catalogues. The interesting study of the migration of insect populations is one deserving greater attention than it commands. Unfortunately coleopterous insects are not so conspicuous as lepidoptera, but the subject is no less important and is capable of being handled by a group of observers with a minimum of technical supervision. Specimens taken as evidence must, of course, be carefully labelled with complete data and passed to a specialist for determination.

## THE BIRDS OF BEDFORDSHIRE

By HENRY A. S. KEY

That the bird-life of the County is not so well-known as it might be, is due to a variety of factors. Firstly, the literature on the subject is very sparse, and such as exists deals mainly with the period prior to the dawn of the twentieth century. Apart from general remarks by Davis in his *History of Luton*, published in 1855, the only work of note is that of the late J. Steele Elliott, who undertook the task of writing the *Vertebrate Fauna of Bedfordshire*, the bird-section of which he arranged to be printed in five separate parts, for private circulation.

To him we are greatly indebted for this work, which contains many important records and observations, the collecting of which must have been an onerous business, considering that at the time of writing, he was residing in the Birmingham area, his extensive personal knowledge of the County having been gained by his schooling and early life in Bedford and by such trips to Bedfordshire as business would permit.

As may be understood, recounting the days when many field naturalists were mainly occupied with shooting any bird they did not recognise, in order that it might be preserved, the work contains lists of specimens, which were shot, recovered, and fortunately came into the hands of such past-masters of taxidermy as the late A. Covington; many such specimens constituting the sole County-record of a species. Today, with the supplanting of the firearm by the optical instrument, "bird-watching" has acquired a new meaning, resulting in the consequent preservation and increase in numbers of many species. This brings me to the second reason for this lack of knowledge. I refer to the absence of any County-wide organised Society, providing direction for studying natural history, a gap which our new venture has now set out to bridge, in the hope that the birds of Bedfordshire will become increasingly familiar to all.

The total number of species and sub-species past and present on the County list is 231. Of these some 140 species are either residents, or regular visitors to the County, either in summer or winter, in varying numbers each year, the remainder being very infrequent wanderers, chiefly driven inland by inclement weather, or of rare occurrence. The number of species which annually nest with us is over 90, and several further species have done so during the last quarter century, and may do so again. With the formation of the new Society, and the consequent stimulus to study our bird life more closely, I have no doubt that the next few years will see many important additions to our County-list. The reasons for this will become apparent, when the several factors which decide the variety and distribution of species, are taken into account.

A knowledge of our geographical position, both in relationship to the Country as a whole and to the adjacent counties, is most important. Bedfordshire is situated in the East Midland area of England, and it is therefore reasonable to assume that an average of the ordinary inland

birds of the country will be found with us; and such is the case. In addition to this, the County lies at the intersection of two main migration routes; one, principally used by wildfowl, being roughly on a line drawn from the regions of the Wash, in a South-westerly direction, towards Somerset and the Bristol Channel; and the other, the route taken by many summer visitors and passage-migrants, being more or less in a direction from the Sussex and Kent Coastline, obliquely across England to the Western side of the Pennine range (as shown on the map). Most of the species that one would expect to find along these routes do occur and are seen in suitable localities annually, while others, which have so far not been recorded with us, are suspected of passing through our region, as watchers in adjoining Shires have frequently observed them not far beyond our borders. Such places for example as Northampton Sewage Farm, Tring Reservoirs and the Cambridgeshire Fens, will serve to illustrate the point, and our County ornithology must properly be studied in its close relationship to that of our neighbours.

The shape of Bedfordshire is an irregular oblong, with hill-ranges running approximately from east to west across the Northern, Southern and Westerly half of the central region, as well as along the Western boundary of the county, thus forming a rough letter "E". Along the Northern valley so formed, flows the River Ouse, first in a northerly loop, then proceeding in a southerly direction, before resuming its passage eastwards; while in the southern lowland, the Ivel tributaries take for a time an easterly course, before turning northward, through flat market-garden country, in the eastern part of the county, to join the Ouse at Tempsford. From thence the united streams pass northwards, and so out of the county into Huntingdonshire near Eaton Socon, and on to the Wash.

Along these "lanes", as the map will show, pass the migrating wildfowl, many of which pause to rest at the various flooded clay and gravel pits and artificial lakes, such as those at Southill, Tingrith and Woburn, while others frequent various stretches of the main river and its tributaries. Along these flight-lines, and on these pools, may occasionally be seen in rough and wintry weather, flights of geese, and the various more common species of gulls, with occasionally other sea-fowl such as Cormorants, Divers and the like.

In the spring, Waders pass up the river valleys and may be observed feeding by the margins of streams, in marshy meadowland, or in specially noted areas such as the Bedford Sewage Farm. Here from time to time may be observed Common, Green and, occasionally, Wood Sandpipers; Dunlin; Redshank; Greenshank; Ringed Plover; Black-Tailed Godwit; Lapwing and Golden Plover; Curlew; Snipe, etc. Of these, Lapwing, Snipe and Redshank nest in varying numbers with us, the two latter in these marshy situations, but the Lapwings for the most part, resorting to the higher plough-land.

The sluggish nature of our streams, and the abundant growth on their margins and banks, which harbours miriads of insects, attracts many species of Warblers to these haunts. Such species as the Common



and Lesser Whitethroats, Sedge, Reed and Garden Warblers and the Blackcap, together with the Reed-Bunting, in addition to the ordinary birds of the countryside, are very common; here also the Cuckoo is fairly plentiful, each pair of birds choosing a suitable stretch of the river, where occur the nests of selected foster parents.

By these waterways also nest an abundance of Moorhens, some Mallard and Coot, many pairs of Mute Swans, and a few Dabchick; while the Great-Crested Grebe favours the artificial lakes as its breeding grounds. Herons are also attracted to these localities, and whereas in the days of Steele Elliott's "Avifauna" there were no heronries of note within our boundaries, yet today colonies of varying size, from two nests to upwards of twenty, occur at Turvey, Bromham, Goldington, Sandy, and on the island in Southill Lake.

A large part of the County consists of a gravel subsoil, and the various workings, which have been added to considerably in consequence of the recent war, and many of which are partly flooded and overgrown with willow scrub, invite Sand Martins to nest in their banks, while on the gravel floor nest waders, such as Lapwing and Redshank. It is in these localities, such as Felmersham, Willington, Arlesey and the like, that careful investigation in due season may yield new County-records, both of breeding birds and passage migrants.

Of our original Fenland, only a vestige remains at Flitwick Moor, and as this is now almost completely drained, its ornithology calls for no special comment, save that the Grasshopper-Warbler still visits the locality in Summer, as it does also infrequently to other widely separated areas throughout the County.

Of the hilly regions, the area that commands our attention, if chiefly because of its elevation, is that of the most Southerly portion of Bedfordshire. From Hertfordshire, the hill-range of chalk enters the County as the Pegsdon Hills, and stretches across in broken line to the Herts. border again near Whipsnade, attaining in places a height of almost eight hundred feet. Here in Spring and Autumn migration time, Pipits, Larks, Whinchats, Stonechats and Wheatears may be seen in some quantity, while at all times the Kestrel may be seen hovering daily over the escarpment, in search of voles and the like, and the Buzzard is an infrequent visitor. If properly protected, the area could, and possibly does still, hold some interesting species. Unfortunately owing to the deprivations of egg collectors, "sportsmen", and a variety of other causes, the Stone-Curlew has not nested, or even been observed, for upwards of twenty years; but an interesting event took place here in 1945, when what is certain to have been a pair of Montagu's Harriers, nested on the downland slopes, and had the misfortune to lose their eggs to a party of schoolboys, without the latter being aware of the identity of the birds.

Most of the wooded districts are to be found in the Northern and Central regions. In both these areas Hawks and Owls are to be found, their numbers depending on the relative activity of the various game-keepers. The Kestrel and the Sparrow Hawk are comparatively common, the latter probably not so much as formerly; and the Hobby is still occasionally met with in summer, though one chiefly hears of it

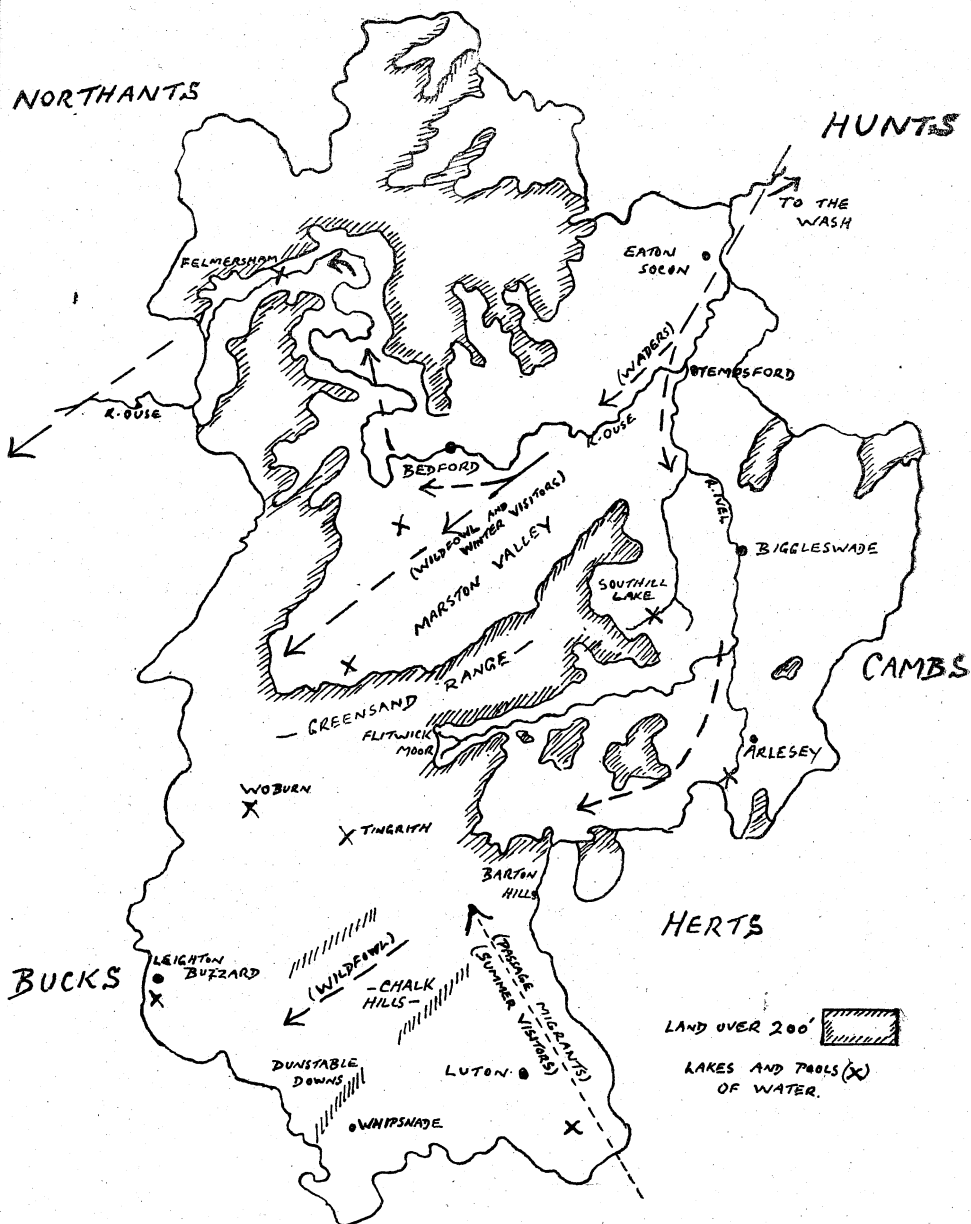


Chart showing the main bird migration routes across Bedfordshire.

only after wanton destruction by shooting. To these areas, on occasion, the Buzzard and Peregrine Falcon still come during winter, yet never staying for more than a few days. These woods were, a century ago, the haunt of the former species, as also of the Kite, which ceased to nest here about 1820-1840.

Of the smaller birds, most of the common British woodland species are widely distributed. The Great, Blue, Marsh- Coal- and Long-Tailed Titmice all occur fairly generally, but the Willow Tit has only been recorded on one or two occasions. Warblers are common, but the range of the Wood Warbler, which is never very plentiful, is chiefly confined to the Southern portion of the County. Tree Creepers are plentiful, and the three species of Woodpeckers are well distributed, though not very abundantly, the Green being the most prolific, and the Lesser Spotted the least plentiful, even allowing for it being overlooked. Odd pairs of Redstarts occur here and there in the woods of the greensand belt, and in this area especially, the Nuthatch is far from rare, while the birch and bracken-covered tracts between the pine woods are the chief haunts of the Nightjar.

Of the Crow family, the Jay holds its own and is tending to increase, while the Magpie is becoming somewhat of a nuisance, and straggling parties of thirty or more, may be seen at dusk on winter evenings, fighting to the sanctuary of some thorny blackthorn-copse. Rooks and Jackdaws are seemingly on the increase and little attempt in recent years has been made to prune their numbers, especially those of the former species, which is attempting to increase its range. According to the 1945 Census of these birds, some 11,000 pairs were nesting in the County. Woodpigeons are also far too plentiful, while the Stock Dove, so often referred to as the "blue rock", and the summer-visiting Turtle Dove, are relatively common.

Of the game birds, the Pheasant and Partridges have probably suffered during the war from lack of protection and the cessation of artificial rearing; but it is interesting to note that during several recent summers we have been visited by the Quail, and judging from the frequency and duration of its calls, this species must have nested in the northern portion of the County, as it did in neighbouring Huntingdonshire. A bevy of ten was recorded in *British Birds* as flushed on Bedford Sewage Farm in the autumn of 1943. It is a great pity that we do not hear the Corncrake nowadays; reports in recent years being unconfirmed.

Referring once more to the woodlands, I must finally remark on the increase of that splendid songster, the Nightingale. Almost every coppice during the last few years has held one or two pairs of these birds, and Hanger Wood, Stagsden, and the spinneys between Sandy and Everton are places where on most evenings during May, much vocal competition may be heard.

As for the rest of the countryside, this consists of typical Midland agricultural scenery, with an abundance of hedgerows, in all except the eastern portions of the Shire, where I regret the extension of market-gardening has caused many hedgerows to be either cut down almost

to ground-level, or completely uprooted. In the typical country, all the common birds occur. Of the Finches; the Hawfinch, so shy in nature, is chiefly confined in the nesting season to the gardens of large estates, where it manages to hold its own; the Goldfinch has of late years greatly increased in numbers, while the Chaffinch, Greenfinch, Linnet and the Sparrows are all abundant. The Bullfinch, though by no means rare, is somewhat local.

Pied Wagtails frequent some of the farms, but the Yellow Wagtail chiefly haunts the low lying meadows and market-garden lands, particularly potato fields, while the Grey Wagtail, has on one or two occasions been known to nest in widely separated localities.

So much for the spring and summer. In the autumn, many birds retrace their flight, moving down the river valleys in the reverse direction to that taken during the spring migration, and at such places as the Bedford Sewage Farm, may be seen gatherings of Swallows and Martins, Warblers, and sometimes Turtle Doves. The returning migrants and summer visitors here pause for a somewhat longer period than in the spring, when breeding duties urged them on to their nesting grounds.

As winter approaches, the visitors from Northern Europe begin to arrive: Fieldfares and Redwings at first, followed by flocks of Finches and Starlings, from the Central Continent. Wildfowl make their appearance about the beginning of November, when first a slight increase in the numbers of Mallard becomes apparent. These are followed by small parties of Teal, then Wigeon and a few Tufted Duck arrive, and finally Pochard. A small mixed party is usually in residence at the Bedford Sewage Farm, from now on until March, and at this place when floods occur, the numbers of duck may increase to a total of about a thousand birds, the maximum approximate number of each species being Mallard 300; Teal 500; Pochard 150; Wigeon 100; Tufted Duck 30. Skeins of Grey Geese are occasionally seen flying down the valleys, though if birds do occasionally alight, they are usually injured specimens and few in number.

That birds of prey also migrate from Europe to our region was confirmed when, in December, 1946, a Kestrel was shot at Dunton, near Biggleswade, and from its leg was taken a ring marked with an identification number and the words "STAVANGER MUSEUM, NORWAY".

The hard weather of January and February brings small numbers of Goldeneye, Goosander, Smew, Scaup and Pintail to our inland waterways, and these are usually seen as single specimens or, at most, parties of not more than six or seven. In addition, Bramblings occur fairly regularly in the South of the County and Siskins in the region of Southill and Shefford, where the Alder trees offer some attraction. Mention must also be made of the Waxwings which are infrequently recorded, but when severe weather forces the species to extend its winter range an "invasion" usually occurs in these islands—as in the present winter—and the reports begin to arrive, not only from the countryside, but from the larger towns, as the birds which are normally very tame, come into residential areas to search for the berries on ornamental trees and shrubs.

Before passing to the detailed lists of the species observed in the County during 1946, it will be well to list the various species, which occur, or have occurred, in Bedfordshire. These may be classified as follows according to their status:—

A. *Residents*—the species which stay with us, for the most part, throughout the year.

Carrion Crow; Rook; Jackdaw; Jay; Magpie; Starling; Greenfinch; Hawfinch; Goldfinch; House and Tree Sparrows; Chaffinch; Linnet; Lesser Redpoll; Bullfinch; Crossbill; Corn-Bunting; Yellow-Hammer; Cirl-Bunting; Reed-Bunting; Skylark; Woodlark (?); Pied and Grey Wagtails; Meadow Pipit; Tree-Creeper; Nuthatch; Goldcrest; Great, Blue, Coal-, Marsh-, Willow and Long-Tailed Titmice; Mistle and Song Thrushes; Blackbird; Robin; Stonechat; Hedge-Sparrow; Wren; Green, Greater and Lesser Spotted Woodpeckers; Kingfisher; Barn, Tawny, Long-eared and Little Owls; Sparrow Hawk; Kestrel; Canada Goose; Mute Swan; Mallard; Teal; Heron; Woodcock; Common Snipe; Lapwing; Great Crested Grebe; Little Grebe; Water-Rail; Moorhen; Wood Pigeon; Stock Dove; Pheasant and Common and Red-legged Partridges.

B. *Summer Visitors* (nesting with us).

Yellow Wagtail; Tree-Pipit; Red-backed Shrike; Common and Lesser Whitethroat; Sedge, Reed, Garden, Grasshopper, Willow and Wood Warblers; Chiffchaff; Blackcap; Redstart; Nightingale; Whinchat; Wheatear; Spotted Flycatcher; Swallow; House- and Sand-Martins; Cuckoo; Swift; Nightjar; Hobby; Redshank; Turtle Dove; Quail.

C. *Winter Visitors*

Siskin; Brambling; Twite; Crossbill; Waxwing; Redwing; Fieldfare; Short-Eared Owl; various Geese; Gadwall; Pintail; Goldeneye; Smew; Wigeon; Shoveller; Pochard; Scaup; Tufted Duck; Goosander; Red-breasted Merganser; Woodcock; Jack Snipe; Great Snipe; Golden Plover; Black Headed, Herring, Lesser Black-Backed and Greater Black-Backed Gulls.

D. *Passage Migrants* (i.e., Species which pass through our territory to and from their breeding-grounds).

White Wagtail; Ring-Ouzel; Wheatear; Stonechat; Garganey; Shoveller; Knot; Little Stint; Temminck's Stint; Dunlin; Curlew-Sandpiper; Sanderling; Ruff; Spotted Redshank; Greenshank; Common, Green and Wood-Sandpiper; Bar and Black-Tailed Godwits; Whimbrel; Ringed Plover; Little Gull; Kittiwake; Arctic, Common and Black Terns.

E. *Species of infrequent occurrence, Rare Visitors, and former Visitors and Residents.*

Raven; Hooded Crow; Rose-Coloured Starling; Golden Oriole; Meally Redpoll; Two-barred Crossbill; Snow Bunting; Shore-

Lark; Firecrest; Bearded Tit; Great Grey and Lesser Grey Shrikes; Marsh Warbler; Black Redstart; Dipper; Pied and Red-Breasted Flycatchers; Wryneck; Hoopoe; Snowy Owl; Marsh, Hen and Montagu Harriers; Buzzard; Rough-Legged Buzzard; White-Tailed Eagle; Kite; Honey-Buzzard; Peregrine Falcon; Merlin; Osprey; Cormorant; Shag; Gannet; Grey-Lag, Barnacle, Brent, Canada, White-front, Bean and Pink-footed Geese; Whooper and Bewick's Swans; Shelduck; Long-Tailed Duck; Common and Velvet Scoters; Bittern; Little Bittern; Spoonbill; Great Bustard; Stone-Curlew; Red-necked and Grey Phalaropes; Black-winged Stilt; Dotterel; Oyster-Catcher; Great Skua; Pomartorhine Skua; Razor-bill; Little Auk; Guillemot; Black Guillemot; Puffin; Storm and Leach's Petrels; Manx Shearwater; Fulmar; Red-necked, Black-necked and Great Northern Divers; Red-necked and Slavonian Grebes; Corncrake; Little and Spotted Crakes; and Pallas' Sand Grouse.

Many species properly belong to more than one of the above categories, e.g. the Pied Wagtail is a Resident, Winter Visitor and Passage Migrant.

#### REPORT FOR 1946

It is most probable that after the publication of this article, more reports may be sent in by interested persons, and these will be received gratefully and, if sufficiently important, will be published at a later date. Also, as many of the species have already been referred to in the foregoing text, no further mention will be made of them, except for some special reason, and these species may be accepted as being fairly common and generally distributed.

#### CIRL BUNTING (*Emberiza c. cirrus*)

One male seen on 31.8.46 at Whipsnade Zoo. Three seen at Bedford Sewage Farm 17.1.46 (F. C. Gribble).

#### WHEATEAR (*Oenanthe o. oenanthe*)

One male and two females seen on 8.9.46 at the Oakley Gravel Pits. (H. A. S. Key.). Seen at Bedford Sewage Farm on 13.9.46. —(D. W. Snow.)

#### WHINCHAT (*Saxicola rubetra*)

Bred in 1946 on Flitwick Moor and at least one pair raised a brood on Bedford Sewage Farm. Also seen commonly in the Barton Hills area.

#### STONECHAT (*Saxicola torquata hibernans*)

Breeds on the railway banks in the Flitwick area, in addition to being seen in the breeding-season at the Barton Hills, and near Roxton.

#### REDSTART (*Phoenicurus p. phoenicurus*)

One pair with two young seen at Keepers' Warren, Southill on 27.7.46—(K. Piercy).

**SWALLOW** (*Hirundo P. rustica*)

First arrivals noticed at Felmersham Gravel Pits on 31.3.46—(Lady Wells). Seen at Bedford Cemetery on 1.4.46—(F. G. R. Soper).

**NIGHTJAR** (*Caprimulgus e. europæus*)

Early arrival heard near Southill Lake on 21.4.46—(H. A. S. Key).

**LONG EARED OWL** (*Asio e. etus*)

Frequents the pine-woods of the Greensand range. Last nest found in the Flitwick area in 1945 and some evidence of nesting since.—(W. G. Sharpe).

**WHITE-BREASTED BARN-OWL** (*Tyto a. alba*)

There has been some increase in numbers during the last few years. Prior to this the species had become almost rare in certain areas.

**PEREGRINE FALCON** (*Falco p. peregrinus*)

A female seen at Bedford Sewage Farm in flight, and feeding, on 17.3.1946—(H. A. S. Key).

**HOBBY** (*Falco s. subbuteo*)

One shot at Priestly Wood, near Flitwick, in the autumn of 1946.—(W. G. Sharpe).

**MERLIN** (*Falco Columbarius œsalon*)

One female seen on a hedge at Aspley Guise, and viewed at close range with binoculars, by J. B. Parrington on 22.3.1946.

**COMMON BUZZARD** (*Buteo b. buteo*)

One frequented the Felmersham district in March 1946.—(Lady Wells). One seen on the Barton Hills, June 1946.—(F. G. R. Soper).

**GEESE**

Several flights observed during the autumn mostly leading westwards along the valley of the Ouse in V formation. One flock of forty passed over Chimney Corner on the afternoon of 21.12.46 flying over Marston Valley.—(R. Burr).

**GOOSE, WHITE FRONTED** (*Anser a. albifrons*)

Two birds seen at Bedford Sewage Farm on 2.1.1946.—(Bedford School).

**SHELD-DUCK** (*Tadorna tadorna*)

One seen at the Drakelow Pond, Woburn, during the spring of 1946.—(Duke of Bedford).

**TEAL** (*Anas c. crecca*)

Largest estimated flock seen during the season was at Bedford Sewage Farm during the floods on 2.1.46. These birds numbered over 500. First winter visitors to the Bedford Sewage Farm (four) seen on 4.11.46. From then onwards there was a general increase in numbers.—(H. A. S. Key).

GARGANEY (*Anas querquedula*)

One pair frequented the Bedford Sewage Farm from 28.4.46 to 6.5.46—the duck disappearing first.—(H. A. S. Key). Pair at Kempston Hardwick 9.12.46.—(Bedford School).

WIGEON (*Anas penelope*)

Largest flock seen during the year was one of over 150 birds during the floods at Bedford Sewage Farm on 2.1.46. The first arrival in the autumn was one drake seen here also on 17.11.46.—(H. A. S. Key).

PINTAIL (*Anas a. acuta*)

A male at Goldington on 27.11.46.—(Bedford School). Two or three seen at Kempston on 15/16.12.46.—(Bedford School). One pair at Felmersham Gravel Pits 15.12.46.—(H. A. S. Key). Two and then one at Goldington from 21/30.12.46.—(Bedford School).

SHOVELER (*Spatula clypeata*)

One pair at Bedford Sewage Farm on 2.1.46.—(H. A. S. Key). Two pairs at Bedford Sewage Farm on 30.3.46.—(F. C. Gribble). One pair seen at Bedford Sewage Farm on 12.12.46.—(H. A. S. Key).

COMMON POCHARD (*Aythya n. nyroca*)

Several parties of over forty seen during December 1946, at the Bedford Sewage Farm.—(H. A. S. Key). First arrivals (three) seen at Southill Lake 10.11.46.—(K. Peirce). One pair stayed at Kempston Hardwick Clay Pit till 7.5.46.—(F. C. Gribble).

TUFTED DUCK (*Aythya fuligula*)

Have not bred at Southill Lake for many years.—(F. White). First winter visitors (one bird) noted at Southill Lake on 27.10.46.—(K. Peirce). Eighteen seen at Bedford Sewage Farm on 28.12.46.—(H. A. S. Key).

GOLDENEYE (*Bucephala c. clangula*)

First winter arrivals (six) seen at Kempston on 15.12.46.—(Bedford School). From then on parties up to seven in number, and single birds, were seen at various localities, including Felmersham Pits, Cardington Mill, Lidlington Clay Pits, Wyboston, Bromham, etc.—(H. A. S. Key, H. A. W. Southon and Bedford School).

COMMON SCOTER (*Melanitta n. nigra*)

One seen in Woburn Park in August, 1946.—(Duke of Bedford).

GOOSANDER (*Mergus m. merganser*)

Four seen in flight near Roxton on 29.12.46.—(D. W. Snow).

CORMORANT (*Phalacrocorax c. carbo*)

One bird seen flying over Great Barford Bridge on October 26th 1946. A bird of this species was reported to have frequented the neighbourhood of the River Ouse near Eaton Socon during this same Autumn.—(F. G. R. Soper and C. F. Tebbutt). One bird seen at Southill Lake on 2.3.46.—(I. J. N. Ferguson Lees).



**GANNET** (*Sula bassana*)

An immature bird of this species was picked up near the Dunstable Downs after severe easterly gales early in January 1946, and taken to Whipsnade Zoo (Reported in *The Sunday Express*, 6.1.46).

**GREAT CRESTED GREBE** (*Podiceps c. cristatus*)

Eleven pairs of breeding birds were reported during the season from various localities in the County.

**BLACK THROATED DIVER** (*Colymbus a. arcticus*)

One discovered by the Recorder and D. W. Elliott, at Southill Lake on 24.2.46, following north-easterly gales. Careful investigation on this and several subsequent dates, confirmed that the bird was an immature specimen of this species. The bird, which stayed at the Lake for nearly a fortnight, was also seen and identified by I. J. N. Ferguson Lees and K. Piercy.

**WHIMBREL** *Numenius p. phaeopus*.

Two birds remained at Bedford Sewage Farm from 30.4.46 to 5.5.56.—(H. A. S. Key).

**WOODCOCK**

Known to have nested in certain woods in the neighbourhood of Flitwick in 1946 and in previous years.—(W. G. Sharpe).

**JACK SNIFE** (*Lymnocyptes minimus*)

A few birds visit the Bedford Sewage Farm annually and remain until April. Seen on several occasions.—(H. A. S. Key).

**RUFF** (*Philomachus pugnax*)

One juvenile bird "flushed" at Bedford Sewage Farm on 15.9.46.—(H. A. S. Key).

**GREEN SANDPIPER** (*Tringa ochropus*)

One bird at Bedford Sewage Farm till 12.12.46.—(H. A. S. Key).

**BRITISH REDSHANK** (*Tringa totanus britannica*)

First party of summer visitors (twelve) seen on 21.3.46 at Bedford Sewage Farm.—(H. A. S. Key).

**GREENSHANK** (*Tringa nebularia*)

One at Bedford Sewage Farm in January, 1946.—(Bedford School).

**RINGED PLOVER** (*Charadrius h. hiaticula*)

One caught and ringed at Riseley on 3.8.46.—(Bedford School).

**GOLDEN PLOVER** (*Pluvialis apricaria*)

First winter visitors (300) noted at Bedford Sewage Farm on 2.11.46.—(H. A. S. Key).

**BLACK TERN** (*Chlidonias n. niger*)

About eight seen at Felmersham Gravel Pits in company with a party of Common Terns, on May 10th and 11th, 1946.—(Lady Wells).

LESSER BLACK BACKED GULL—(*Larus fuscus*)

Two immature birds at Felmersham Gravel Pits. 5.5.46.—(H. A. S. Key).

SPOTTED CRAKE (*Porzana porzana*)

One bird picked up at Hockliffe on 13.8.1946, having been killed by flying into telegraph wires, and sent to the reporter.—(O. G. Pike).

*Note.*—Readers may like to know that a more complete and detailed list of occurrences of Bedfordshire birds during 1946, will be found in the new combined *Northants.-Beds.-Hunts. Bird Report* which will appear shortly (obtainable from the Secretary).

## THE MAMMALS OF BEDFORDSHIRE

By RAY PALMER

Out of a total of 76 land mammals on the British list, (27 of which are merely local races), 32 species have been recorded in the county. It is possible that further species may yet be recorded, particularly in the Chiroptera, while the present status of a number of others needs investigation. Great changes have taken place in the mammalian fauna of the county during the past fifty to eighty years.

The basis of the present list is J. Steele Elliott's account of Bedfordshire mammals in the *Victoria History of Bedfordshire*, published in 1904. I have also received valuable notes on certain species from our President, Mr. Oliver G. Pike; as well as much useful information from Mr. J. Saunderson, pest control officer to the Bedfordshire Agricultural Executive Committee.

I shall be glad to receive observations of interest on even well known mammals, as well as occurrences of the rarer species. In particular, any specimens of bats would be of interest, and a look-out should be kept for the Yellow-necked Mouse, which is absent from our list, but has been found in the adjoining county of Hertford.

The arrangement and nomenclature is that of the British Museum (Nat. Hist.) *List of British Vertebrates*, 1935.

### Order: INSECTIVORA

COMMON MOLE. *Talpa europaea* Linn. Common.

COMMON SHREW. *Sorex araneus castaneus* Jenyns. Common.

PIGMY SHREW. *Sorex minutus* Linn. Mr. Pike reports one found dead in his garden at Leighton Buzzard in 1945. This appears to be the only record.

WATER SHREW. *Neomys fodiens bicolor* (Shaw). Probably not uncommon, but needs looking for. J. Steele Elliott gives records from Biddenham, Clapham, Goldington, Harrowden, Ravensden, Renhold and Stagsden.

HEDGEHOG. *Erinaceus europaeus* Linn. Common.

## Order: CHIROPTERA

- NATTERER'S BAT.** *Myotis nattereri* (Kuhl). One taken and several seen at Turvey. (*Zoologist*, 1901.)
- DAUBENTON'S BAT.** *Myotis daubentoni* (Kuhl). Known also as the Water Bat, this species frequents lakes and rivers overhung by trees, where it skims low over the water. It is probably common. The first county record was at Cardington Mill in 1893 (*Zoologist*), and J. Steele Elliott says it occurs "along the Ouse". A. H. Foster (*Nat. Hist. Hitchin Region*), records it from Southill Lake.
- PIPISTRELLE BAT.** *Pipistrellus pipistrellus* (Sch.). The commonest species, this is the small bat that flies around buildings in the twilight, constantly uttering its high-pitched squeak. (There is yet no county record of the Whiskered Bat, which is said to be equally common, but flies silently.)
- NOCTULE BAT.** *Nyctalus noctula* (Sch.). The largest British species, and fairly common. It may be seen flying at a great height in wooded country in the early evening, sometimes before sunset.
- LONG EARED BAT.** *Plecotus auritus* (Linn). A very common night flying bat, that frequently enters lighted rooms.
- BARBASTELLE BAT.** *Barbastellus barbastellus* (Sch.). This is one of the rarer species, of which there are no recent Bedfordshire records, although it has been taken in North Herts. in 1922. It is a bat that should be looked for. J. Steele Elliott records one caught in a bedroom in Bedford in 1868, and one picked up alive in Bedford in 1901; also several earlier records.

## Order: CARNIVORA

- FOX.** *Vulpes vulpes crucigera* (Bechstein). Fairly common; but its continued existence is largely due to protection by those interested in hunting. Large numbers have been shot during the war. Mr. Pike reports that vixen brought up seven cubs in his garden in 1945, and that foxes bred in many of the disused sand pits in the Leighton Buzzard area.
- BADGER.** *Meles meles* (Linn). Mr. Saunderson reports "A fair number in the county", and gives a number of localities where Badgers were known to exist in 1946. Mr. Pike says there are a few pairs in the woods and old pits in his district and mentions that two were killed on the roads by cars near Leighton Buzzard in 1945.
- OTTER.** *Lutra lutra* (Linn). Otters are known to be fairly numerous along our Bedfordshire rivers, but for obvious reasons it is not desirable to publish details of their actual haunts.
- PINE MARTIN.** *Martes martes* (Linn). J. Steele Elliott says: "Probably extinct before 1850", mentions a female and four young killed at Odell Wood in 1819, and old records from Sandy, Keysoe, Wootton and Haynes (1840).

STOAT. *Mustela erminea stabilis* Barrett-Hamilton. Common. Partly white individuals are not uncommon in winter.

WEASEL. *Mustela nivalis* Linn. Common.

POLECAT. *Mustela putoris* Linn. Mr. Saunderson reports: "So far as I know there are now none in the county". J. Steele Elliott gives undated records from Bolnhurst, Clapham, Flitwick, Maulden, Melchbourne, Renhold and Wootton. Southill 1850 and 1870, Old Warden 1873, Wilstead 1876, Chicksands 1879, Turvey 1880 and 1883, Henlow Grange 1883, Ickwell 1883, Woburn 1886, Elstow 1898. A. H. Foster mentions one killed at Edworth in 1840; also one killed at Pegsdon in 1882 and preserved by G. J. Buller, of Hitchin, who saw another at Pegsdon in 1895.

#### Order: RODENTIA

RABBIT. *Oryctolagus cuniculus* (Linn). Still abundant in many localities, but less so than formerly, largely due to the war time activities of the county pest control officers.

COMMON HARE. *Lepus europaeus occidentalis* de Winton. Fairly common in the open country, particularly the south of the county.

DORMOUSE. *Muscardinus avellanarius* (Linn). Mr. Pike reports that the Dormouse is found in woods near Leighton Buzzard, but is not common. I have no records from elsewhere.

BANK VOLE. *Clethrionomys glareolus britannicus* (Miller). Probably common. First recorded for Beds. in the *Zoologist*, 1895. J. Steele Elliott says "May exceed the Field Vole in numbers", and gives records based on owls' pellets from Bromham, Clophill, Rowney Warren, Sandy and Sharpenhoe.

WATER VOLE. *Arvicola amphibius* (Linn). Common along most streams and rivers. An albino specimen was obtained at Henlow Park in 1899.

SHORT TAILED FIELD VOLE. *Microtus agrestis hirtus* (Bellamy). Very common.

MUSK RAT. *Ondatra zibethica* (Linn). This American rodent has been bred for fur in this country; individuals escaped from time to time, and in some places established themselves in river banks and did great damage. The only record for Bedfordshire is one found in a granary at Great Bramingham Farm, near Luton, in November 1931. Its origin is unknown.

LONG TAILED FIELD MOUSE. *Apodemus sylvaticus* (Linn). Very abundant, and a great nuisance to gardeners.

HARVEST MOUSE. *Micromys minutus soricinus* (Hermann). I can get no recent records of this species, and it may have died out or become extremely rare. J. Steel Elliott says: "Not uncommon at Blunham about 1830". "Common at Southill, 1870".

BLACK RAT. *Rattus rattus* (Linn). This "Old English rat" does not appear in Steel Elliott's list of 1904, and it is surprising that no old records are available. Mr. Saunderson reports that he shot an

undoubted Black Rat near Bromham Bridge on 20th September, 1942, and is certain it was not a melanic variety of the Brown Rat. This is the only record I am aware of.

**BROWN RAT.** *Rattus norvegicus* (Erxl). Very common. Black varieties are fairly frequent.

**HOUSE MOUSE.** *Mus musculus* Linn. Very common, especially in old corn stacks.

**RED SQUIRREL.** *Sciurus vulgaris leucourus* Kerr. Formerly common in the wooded areas, but has become very scarce within recent years, concurrently with the spread of the Grey Squirrel. J. Steele Elliott (1904) records it as "more or less abundant". Mr. Pike last saw one at Kings Wood, Heath and Reach, in 1936. Mr. Saunderson gives recent records as follows: one at Campton Rectory July, 1945, two at Clapham Park August, 1945, one at Steppingley January, 1946.

**AMERICAN GREY SQUIRREL.** *Neosciurus carolinensis* Gmelin. Introduced at Woburn by the late Duke of Bedford about 1900, and has since spread throughout the county and over large areas of southern England. In the Woburn area melanic varieties are common, and such specimens are usually allowed to survive, while the typical individuals are shot. Black squirrels have been observed in other districts, even as far east as Dunton.

#### Order: UNGULATA

Apart from possible escapes from Woburn Park, there are no wild or feral Ungulates in the county.

## BEDFORDSHIRE NATURALISTS

### I.—WILLIAM CROUCH (1818-1846)

By J. G. DONY

William, the fifth son of James and Alice Crouch, was born at Cainhoe near Clophill in January, 1818 and died there July, 1846. Other members of his family are of some interest to Bedfordshire naturalists. James Frederick (1809-89), the eldest son, was a keen botanist and although most of his life was spent in Herefordshire—he was Rector of Pembridge and a prebendary of Hereford Cathedral—he made some visits to his home county and made new county records in finding Gold of Pleasure (*Camelina sativa* L.) and Yellow Star Thistle (*Centaurea solstitialis* L.). He was an active member of the Woolhope Club and was very interested in mosses (Purchas and Ley, *Flora of Hereford*, 1889, p. vi). The second son, Abraham Wing (1810-65) farmed at Ridgmont and was the father of Charles (1855-1944) still remembered by many of the present generation of Bedfordshire naturalists. Edward (1823-1915), the last survivor of the family, farmed at Cainhoe until his death.

William started life badly. He was christened on 20th February, 1818, but the absent-minded rector forgot to record the fact. There are sworn statements made by the rector and William's father before John Hull, a Stondon magistrate and a close friend of the family, shortly after William's sixteenth birthday to be seen in the Clophill Register of Births. This would indicate that William was about to commence training for some profession but I have been unable to find any details of his education. In 1842 he was appointed curate at Lidlington, a post he was to hold for only four years. In the early months of 1846 he was stricken with tuberculosis and died after a short illness. He was buried in the old churchyard at Clophill, but it is no longer possible to distinguish his grave.

His sole contribution to the knowledge of the natural history of Bedfordshire was the compilation of two herbaria. These are of special value as nearly all the specimens are carefully labelled with the date and place of collection. Abbot's herbarium which is much earlier and larger is not annotated in this way. Crouch's specimens are then, apart from isolated ones in the national collections, the first specimens of many of our Bedfordshire plants. In addition to this the herbaria give a great deal of information on Crouch himself which is very useful as I have been unable to trace any correspondence or publication relating to him.

The smaller and earlier herbarium is bound in one volume, 13" by 11", having on its title page "Dried Specimens of British Plants collected in the years 1841, 1842, 1843 and 1844. W.C. Named from Dr. Lindley's Synopsis of the British Flora. An Alphabetical Index". It has always been supposed by the Crouch family to have been compiled for a cousin and has been known as the "Miss Crouch Herbarium". It contains 176 specimens arranged in no particular order. Of these 143 are Bedfordshire specimens, ten were sent by Miss C. Gage,<sup>1</sup> four came from "Mr. Pennick",<sup>2</sup> eight were collected by his brother James in various parts of the country and seven by William himself, one at Broadstairs, Kent, in 1842 and the rest in September, 1844, during a holiday in Yorkshire and Westmorland. It would appear that he was less interested in flowers when away from Bedfordshire.

The larger herbarium is bound in four volumes 13" by 11". It contains about 440 specimens, all but twelve of which are localised Bedfordshire specimens. The earliest specimens were collected in 1841 and the latest in 1845 except for one specimen, *Centaurea solstitialis*, collected by James in August, 1846. The inclusion of this would indicate that the collection was bound after William's death, probably at James' instructions. This would account for the unusual way in which the specimens are arranged, i.e., alphabetically according to genera, as James

1 Possibly Catherine Gage (1816-92), an Irish botanist. A number of her specimens have no locality, the rest came from Devon and Surrey.

2 Rev. Henry Pennick (1816-62) of Penzance. All his specimens are labelled "Penzance". It is possible that Pennick's herbarium contains specimens sent in return.

was apparently not yet a botanist.<sup>1</sup> Both herbaria, which are still in excellent condition, eventually passed to Charles, becoming his most cherished possession. It was his wish that after his death they should go to Luton Public Museum to be with the other historic collections of Bedfordshire plants, a wish to which the family readily agreed.

Crouch's knowledge of Bedfordshire botany was limited almost entirely to the county between Lidlington and Cainhoe, where apparently he lived during his curacy. There were visits to Aspley Wood, Gravenhurst Moor and Barton Hills and just one specimen collected at Bedford. Bedfordshire has changed greatly since his day, the bog land at Maulden has been drained and much of the Lower Greensand heathland planted with pines. Many of the plants he collected are now extinct. His herbaria contain no specimens of rushes, sedges and grasses and there are just two specimens of Bedfordshire ferns in the Miss Crouch herbarium. It is difficult to know what to deduce from this. If the specimens were selected after his death it is possible that these groups were deliberately excluded. In any case the fourth volume of the larger collection is only half filled, Charles having mounted on the remaining pages specimens of his own and other botanists.

The chief plants William Crouch added to the county flora are Opium Poppy (*Papaver somniferum* L.), Treacle Mustard (*Erysimum cheiranthoides* L.), Alternate-leaved Golden Saxifrage (*Chrysplenium alternifolium* L.), not found since, Wild Gooseberry (*Ribes grossularia* L.), Red Currant (*R. rubrum* L.) Evergreen Alkanet (*Anchusa sempervirens* L.), and Turkey Oak (*Quercus cerris* L.). The value of the herbaria is most realised by the county records which arise from mis-namings: thus *Veronica agrestis* is represented by *V. persica* Poir., *Chenopodium murale* by *C. polyspermum* L. and *Potamogeton perfoliatus* by *P. alpinus* Balb. Further study may reveal more. The Heather (*Erica cinerea* L.) collected by Miss Crouch at Markyate may not have been in Bedfordshire. Other interesting plants represented are some which though recorded earlier by Abbot are not included as localised Bedfordshire specimens in any other collection: Petty Whin (*Genista anglica* L.) and Marsh Helleborine (*Epipactis palustris* L., Crantz.).

I would like to thank Major A. G. Wade, Col. G. R. Crouch, Rev. W. J. B. Crouch, Mr. J. S. Barber, Rev. R. L. R. Bearman and many friends of the Crouch family for useful information.

<sup>1</sup> It is fair to add that at this time the Linnean system was not yet finally discarded and the arrangement according to natural orders universally accepted. A man of William Crouch's obvious knowledge would probably have used one of the two systems. The specimens sent by James are the more obvious plants a person with little training would collect.

## ABSTRACTS OF LITERATURE ON BEDFORDSHIRE NATURAL HISTORY FOR 1946

The following articles relating to the natural history of Bedfordshire were published during 1946:—

1. BOTANICAL EXCHANGE CLUB. Report for 1943-4 (April, 1946).
  - (a) "Plant Notes." pp. 689-90. J. E. Dandy comments on the discovery of *Juncus pallidus* R.Br. by J. G. Dony at Eaton Socon on August 30th, 1944. This rush, which is widely distributed in Australia and New Zealand, is new to the British flora. It is well established at Eaton Socon where it was undoubtedly introduced with shoddy.
  - (b) "Plant Records." pp. 695-778. These contain about 40 records of Bedfordshire plants, many of them new to the county.
  - (c) "Additions and Emendations to the Comital Flora for v.c. 30 (Bedfordshire)." By John G. Dony, PH.D., pp. 803-14. Published separately at 1s. 6d. The Comital Flora, published in 1932, gives the distribution upon a vice-county basis of a number of British plants. This paper, which has a brief historical introduction and a short bibliography, deals with the status of upwards of a hundred plants in Bedfordshire. About two-thirds of these are additions to the Comital Flora for v.c. 30 and the greater part of the remainder are either plants which the Comital Flora lists as native in Bedfordshire but which the writer thinks should be considered otherwise or plants which the Comital Flora would lead one to think still appear in the county but which the writer considers extinct.
2. JOURNAL OF ANIMAL ECOLOGY. Vol. 15 (No. 1, May 1946).
  - (a) "An examination of the pollen loads of *Andrena*: the species that visit fruit trees." By V. H. Chambers, pp. 9-21. The foraging habits, as illustrated by the species composition of pollen loads, of the solitary bees *Andrena haemorrhoa* (F.), *A. varians* (Rossi), *A. armata* (Gmelin), *A. pubescens* Oliv. and *A. thoracica* (F.), more especially with reference to their visits to fruit trees, were studied at colonies at Flitwick, Totternhoe and Clophill.
  - (b) "The coypu (*Myocastor coypus*) in Great Britain." By E. M. O. Laurie, pp. 22-34. This animal, escaped from fur farms, is reported at Turvey in 1943.
  - (c) "A survey of the distribution of the American grey squirrel (*Sciurus carolinensis*) and the British red squirrel (*S. vulgaris leucourus*) in England and Wales in 1944-5." By Monica Shorten, pp. 82-92. A national survey conducted by questionnaire. Returns were received from 106 of the 124 parishes in Bedfordshire, from none of which was the red squirrel reported but all parishes reported the presence of the grey squirrel.
3. JOURNAL OF THE LETCHWORTH NATURALIST'S SOCIETY, No. 5 (December, 1945).
  - (a) "*Pomatias elegans* (Mull) in the Hitchin region." By B. Verdcourt, B.Sc., pp. 6-7. Bedfordshire localities for living examples of this snail, formerly considered extinct in the district, are given.
  - (b) "The year's botany, 1945." By D. and H. Meyer, pp. 8-9. A number of Bedfordshire localities for flowering plants is given.
4. ENTOMOLOGIST'S MONTHLY MAGAZINE. Vol. 82 (1946).
  - (a) "The county distribution of the British Hemiptera-Heteroptera supplement 1." By A. M. Masee, D.Sc., F.R.E.S., pp. 94-5. Eight species are added to the Bedfordshire list, distinguished by their serial numbers as given in the chart by Bedwell (see 1945, *Ent. mon. Mag.*, Vol. 81 pp. 253-73).



- (b) "British Longicorn (Col.) records." By R. R. U. Kaufmann, pp. 103-4. Includes a record of the musk beetle (*Aromia moschata* L.) from Pavenham.
- (c) "*Rhadinoceraea gracilicornis* (Zadd.) and *Neurotoma mandibularis* Zadd, two little-known sawflies in Bedfordshire." By V. H. Chambers, p. 200. Contains notes upon the possible food-plants of these rare insects, the first of which is recorded for the second time in Britain, the second species being previously twice recorded as single examples and seldom in Europe.
- (d) "*Aulonium trisulcum* Geoff. in Fourcr. (Col., Colydiidae) in Bedfordshire." By B. Verdcourt, p. 277. A rare beetle taken in elm bark at Tingrith.
5. ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION, Vol. 58 (1946).  
 "Two scarce moths in Bedfordshire." By B. Verdcourt, p. 155. The larva of *Apatele alni* (L.) taken in King's Wood, Heath and Reach on July, 19th, 1945, and *Myelois cribrella* (Hb.) at Markham Hills, Streatley, in July, 1941.

THE RECORDERS.

## LIST OF MEMBERS

OF THE

### Bedfordshire Natural History Society and Field Club.

a=Associate.      s=Student Member.      j=Junior Member.

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 George, Miss H. C., 27 Waller Avenue, Luton.  
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 Godber, F. L., Crows Close, Hall End, Wootton, Beds.  
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 Gribble, F. C., 42 The Grove, Bedford.  
 Guppy, Arthur W., B.Sc., A.M.I.MECH.E., Powerstock, Bromham, Bedford.  
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 Keelan, C. J., The Spinney, Ravensden, Beds.  
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 a. Key, Mrs. O. G., 61b Goldington Road, Bedford.  
 King, Mrs. Margaret E., 24 The Embankment, Bedford.  
 Knight, K. A., 4a Church Green, Harpenden, Herts.  
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 Laurie, B. B., 1 Balmoral Avenue, Bedford.  
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 a. Lloyd, Mrs., 42 Dunstable Road, Luton.  
 Lucas, E., 20 Clapham Road, Bedford.  
 Lucas, R. L., 20 Clapham Road, Bedford.  
 Lucas, Mrs., 20 Clapham Road, Bedford.  
 Luton High School, Alexandra Avenue, Luton.  
 Luton Public Libraries—Central Library, George Street, Luton.  
 Luton Museum, Wardown House, Luton.  
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 Manning, Mrs., Middle Farm, Streatley, Luton.  
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 Morrison, Alex., 7 Park Avenue, Bedford.

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- Nicholl, Mrs. L., 20 Cardiff Grove, Luton.
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- Nisbit, Miss M., The Rectory, Northill, Biggleswade.
- Norman, C. J., 5 The Old Town Houses, Green End, Great Barford, Beds.
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- Oldfield, Miss Gillian A., The Knoll, Flitwick Road, Ampthill.
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- Palmer, Ray, F.R.E.S., 11 The Avenue, Flitwick, Beds.
- a. Palmer, Mrs. E. P., 11 The Avenue, Flitwick, Beds.
- j. Palmer, Oliver R., 11 The Avenue, Flitwick, Beds.
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- a. Piercy, Mrs. R. M., Clifton Cottage, Clifton, Beds.
- a. Piercy, R. K. C., Clifton Cottage, Clifton, Beds.
- Pike, Oliver G., F.R.P.S., M.B.O.U., The Bungalow, Leighton Buzzard.
- Probert-Jones, Mrs. E., 26 St. Michael's Road, Bedford.
- Proctor, Miss Elsie, B.Sc., 253 Goldington Road, Bedford.
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- j. Pugh, David, 32 South Drive, Shortstown, Beds.
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- Rogers, G. A., Castle Mills, Goldington, Bedford.
- s. Rooms, H. W., 30 Claremont Road, Luton.
- Rose, Miss Olive M., 480 New Bedford Road, Luton.
- Sargent, Howard B., 30 Great Northern Road, Dunstable.
- Sargent, Hugh B., 71 St. Peter's Road, Dunstable.
- Sharpe, W. G., 6 High Street, Flitwick, Beds.
- Sillar, Miss Phyllis B., 58 Newnham Avenue, Bedford.
- Simmons, W. A., 59 Cardington Road, Bedford.
- a. Simmons, Mrs. D. E., 59 Cardington Road, Bedford.
- Skinner, Robert, Bromham Hall, Bedford.
- Snow, D. W., 14 St. George's Road, Bedford.
- a. Snow, T. W., 14 St. George's Road, Bedford.
- a. Snow, Mrs., 14 St. George's Road, Bedford.
- Soper, F. G. R., 102 Chaucer Road, Bedford.
- a. Soper, Mrs. D. I., 102 Chaucer Road, Bedford.
- a. Soper, Miss P. M., 102 Chaucer Road, Bedford.
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- Speed, L. A., 226 Goldington Road, Luton.
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- a. Southon, Mrs. N. H., 67 Beverley Crescent, Bedford.
- Squire, E. O., Basmead Manor, St. Neots, Hunts.
- Stewart, Sir Malcolm, The Lodge, Sandy, Beds.
- Stone, Mrs. Margaret, Osborne House, The Avenue, Bedford.
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- Stubbs, E. J., M.P.S., Kenilworth, Kimbolton Road, Bedford.
- Stephens, Charles Brian, Bank House, Ampthill, Beds.
- Stewartby Secondary Modern School, Stewartby, Beds.—per W. G. Western, B.Sc.
- Swain, Mrs. C. M., 11 St. James Road, Harpenden, Herts.
- a. Taylor, Miss F., 9 Linden Road, Bedford.
- Taylor, Mrs. S. E., 9 Linden Road, Bedford.
- Taylor, Peter, 12 Manton Drive, Luton.
- Tebbutt, C. F., The Ferns, Eynesbury, St. Neots.
- Thomas, Miss Thelma, 19 Broadmead, Luton.
- Timms, Miss E. W., 66 Bromham Road, Bedford.
- a. Timms, Miss J. G., 66 Bromham Road, Bedford.
- Tulley, Miss J., Hawnes School, Haynes Park, Beds.

## LIST OF MEMBERS

- Verdcourt, Bernard B.Sc., 86 Claremont Road, Luton.  
Vevers, Geoffrey M., F.R.C.S., Zoological Society of London, Regents Park,  
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Wade, Mrs. E. L., Bryant Cottage, Dean, Hunts.  
s. Waller, W. D., 204 Old Bedford Road, Luton.  
Wells, Lady, Felmersham Grange, Nr. Bedford.  
West, K. E., 8 St. Loyes Street, Bedford.  
s. West, Bernard B., 8 St. Loyes Street, Bedford.  
a. West, Mrs. Mabel S., 8 St. Loyes Street, Bedford.  
Whitchurch, J. Arnold, Great Barford House, Great Barford, Beds.  
White, F., 30 Southill Village, Biggleswade.  
Whitworth, Miss Dorothy, 58 Burr Street, Dunstable.  
Wright, Mrs. D. A., 18 West Street, Dunstable.  
Young, H., 200 Kimbolton Road, Bedford.  
a. Young, Mrs., 200 Kimbolton Road, Bedford.  
a. Young, H., 200 Kimbolton Road, Bedford.  
a. Young, Mrs. 200 Kimbolton Road, Bedford.
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## BEDFORDSHIRE NATURAL HISTORY SOCIETY & FIELD CLUB

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### RULES

*(Provisional: Subject to approval by Annual General Meeting)*

1. The Society shall be called the Bedfordshire Natural History Society and Field Club.
2. The objects of the Society shall be to encourage the study and investigation of the natural history of the County and to record the results of such investigations, publishing and disseminating such information as may be considered relevant. The Society shall publish a Journal.
3. The Society shall do all within its power to protect and preserve from exploitation and destruction those areas of the County which may be deemed advisable, and shall discourage the extermination or removal of any rare or characteristic species; at the same time using its influence with landowners and others to safeguard the plant and animal life of Bedfordshire.
4. The management of the Society shall be vested in a Council consisting of a Chairman, Secretary, Treasurer, Editor and ten voting members, all of whom shall be elected annually. The President (who shall also be elected annually) and any Vice-Presidents shall be *ex-officio* members of the Council. The Council shall have the power to co-opt members for Special Committees and to fill vacancies.
5. The Council of the Society shall approve each nomination for membership, but subject to this proviso, membership shall be granted on payment of the annual subscription, which shall become due in advance on the first day of January in each year.

Until such subscription is paid no person shall be deemed to be a member of the Society, and shall not be entitled to any of its privileges. Members admitted during the last three months of any year shall be granted membership until December 31st of the ensuing year on payment of the ordinary annual subscription. Members whose subscriptions are twelve months in arrears shall not be eligible for any of the privileges of the Society and may be barred from further membership at the discretion of the Council.

The Society shall consist of Ordinary, Corporate, Associate, Student and Junior Members, defined as follows:—

## RULES

- (a) Ordinary membership entitles a person of any age to all the privileges of the Society, including a copy of the JOURNAL, for an annual subscription of 10/-.
- (b) Any Institution approved by the Council may affiliate to the Society and become a Corporate Member on payment of an annual subscription of 10/-. Such affiliated institutions shall have the privileges of one Ordinary Member.
- (c) A Student Member is a person engaged in whole-time study who, on payment of an annual subscription of 7/6, has the full privileges of an Ordinary Member.
- (d) An Associate Member, on payment of an annual subscription of 5/-, is entitled to the privileges of an ordinary member, but shall not receive the JOURNAL.
- (e) Junior membership is open to all persons under the age of 16 years who, for an annual subscription of 2/6 shall receive the same privileges as an Associate Member, but shall not vote. No ordinary or student member under the age of 16 years may vote.

6. The Annual General Meeting shall be held in Bedford in the month of February, and the Council shall arrange at their discretion Ordinary, Sectional and Field Meetings at suitable intervals.

7. Minutes shall be kept of the Annual General and Ordinary Meetings of the Society and of Meetings of the Council. Such Minutes shall be read as the first business of the next ensuing meeting of the same kind. At the Council Meetings five members shall form a quorum.

8. All Members shall receive due notice of the Annual General, Ordinary and Field Meetings of the Society, and shall have the privilege of attending and introducing (unless otherwise indicated by the Council) two visitors.

9. The Society shall require all members intending to resign at the termination of any year, to give notice in writing to the Secretary not later than November 30th of that year.

10. The Accounts of the Society shall be completed to December 31st of each year, and shall be audited by such approved Auditor as the Council may direct. The Balance Sheet, together with the Secretary's and other Reports showing the progress of the Society, shall be submitted to the following Annual General Meeting.

11. The funds of the Society shall be both utilised and invested by resolution in Council, and the banking account shall be held jointly in the names of the Treasurer and Secretary.

12. The Council shall encourage Members of the Society to undertake special field investigations within the scope of the Society's work, and the Society shall co-operate with other local or national organisations in the carrying out of special surveys or enquiries.

13. No rule shall be altered and no new rules made except by a majority of votes of members present at a Special Meeting called for that purpose. The Council may at any time, and shall upon a requisition signed by not less than twelve voting members, convene a Special Meeting and a notice stating the purpose of the meeting shall be sent to each member not less than seven days before the date of the meeting, at which no business shall be considered except that for which it was convened.

14. The Council of the Society may at their discretion remove from the register of the Society the name of any Member whose conduct is considered prejudicial to the interests of the Society.

15. A copy of these Rules shall be sent by the Secretary to each Member on being admitted to Membership of the Society.