Fig.3. WOOLHAMPTON.

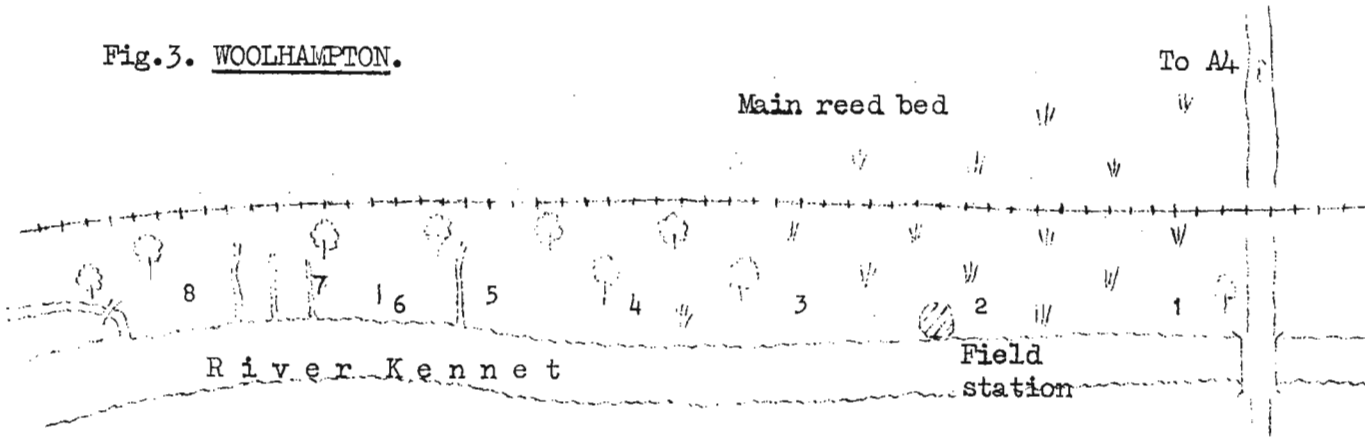


Fig.4. MAPLEDURHAM.

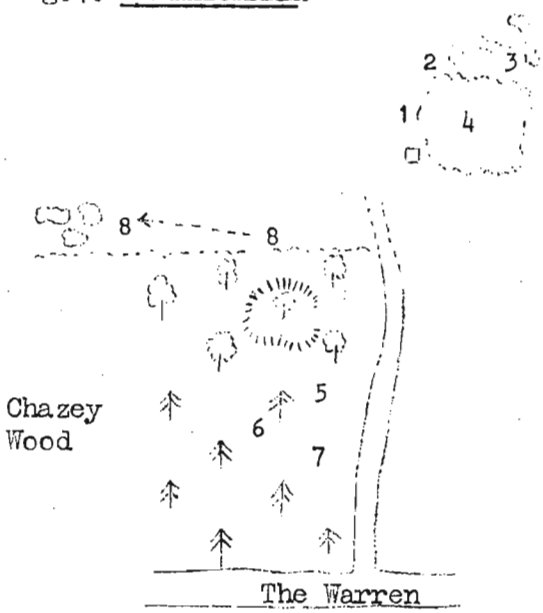


Fig.5. PLAYHATCH.

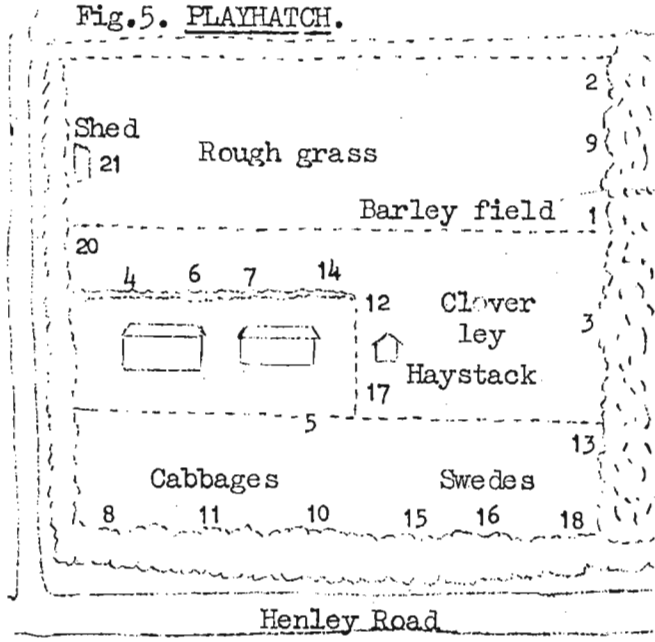


Fig.6. BERRY BROOK.

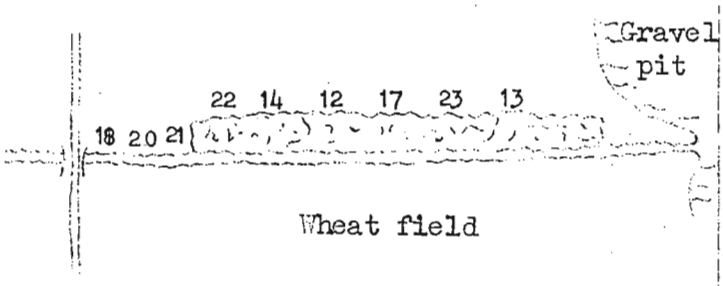
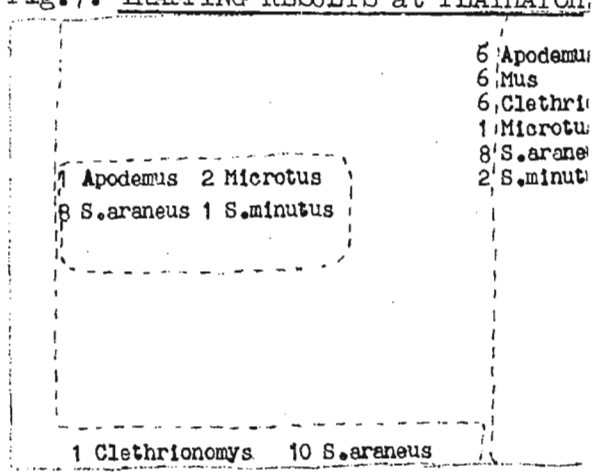


Fig.7. TRAPPING RESULTS at PLAYHATCH.



Figs.3-6. Disposition of traps in the areas.

PURPOSE, METHODS and EQUIPMENT

At Woolhampton our object was to find out as much as possible about the small mammals in the area, especially what species were present and in approximately what numbers. The area was chosen as being part of a prospective Nature Reserve and the trapping formed part of a general survey of its natural history which is being carried out by the Museum. Some trapping on a small scale during March 1960, not recorded in detail, established the feasibility of a more extensive programme. On 29/3/60 two Longworth traps, which catch small mammals up to the size of Long-tailed Field Mice (Apodemus sylvaticus) without injury, were set, and four more were put down on 5/4/60. For the first week these were pre-baited to accustom the animals to their presence. Bait and bedding were supplied and the door fastened up so that they could go in and out freely. On 10/4/60 all the traps were set, and they remained in position until 24/4/60 when they were all removed. Each small mammal when caught for the first time was marked with a waterproof dye and immediately released. If a marked mammal was recaptured it was released without marking again.

The species, date, mark and trap site of every capture and recapture were recorded in the field. From these data the total population can be estimated. It is assumed that the proportion of marked to unmarked animals in each day's catch is representative of the population at large. The total number of marked animals is known from the records. If on any one day a third, say, of the catch, is already marked, the known number of marked animals is taken to be a third of the whole population. In this unrefined form, the technique takes no account of changes due to births and deaths, and when only small numbers are concerned, as in the present survey, the results are not accurate. Even a rough numerical estimate, however, conveys more information than such phrases as "Abundant" or "Not very common."

The eight traps available were spread out at roughly 50-yard intervals along the 400-yard front. Each one was sited in or alongside a well defined runway, and whenever the ground allowed it was set on a slope with the doorway facing downhill as a safeguard against flooding or rainwater. Runs were usually to be found under a swathe of wind-laid reeds or a fallen branch, or alongside a log or other obstruction. Such features offered protection to the traps as well as to the animals. Each site was marked unobtrusively by a stick stuck upright in the ground, a bunch of dead reeds lodged in an overhanging tree, or some similar device, and as far as possible the making of tracks to and from the site was avoided. Bedding in the form of dried vegetation was supplied in the nest boxes of each trap and changed at frequent intervals. It was noticeable that in wet weather, when dry bedding was unobtainable and many animals must already have been wet when caught, the death rate in the traps was high.

Food was provided in the form of sunflower seeds and peanuts. Although this is customarily referred to as bait, its purpose is not so much to attract animals into the traps as to keep them alive after capture.

The trap line was visited daily to release the catch and renew bedding and bait where necessary.

Shrews (Sorex Spp.), which feed mainly on live food, cannot survive for more than about two hours in a box trap. It was therefore desirable to avoid catching them, both in the interests of the shrews themselves and because they occupied traps to the exclusion of other animals which could be marked and released alive, so contributing more to the information gained. By adjusting the tension of the treadle spring, it could be made so stiff that a shrew's weight was not enough to depress it and release the door. Tests were carried out in the Museum with a captive Bank Vole (Clethrionomys glareolus) to ensure that the traps were still effective against this species.

On a number of occasions it was found that a trap had been sprung and the door was closed and barred, but nothing was inside. Nothing could be proved as to the cause of this. Suspicion fell on Field-mice, which in theory could be touching the treadle while their tails still obstructed the descent of the door.

Again tests were carried out in the Museum with a captive specimen, but this individual was so shy of the trap that it stepped over the treadle without ever touching it, and presumably could have returned in the same way. This may account for the small proportion of Field-mice caught at Woolhampton and Mapledurham, where Longworth traps were used. Another suggestion, due to Mr. Owen of Colchester Museum, was that Weasels (Mustela nivalis) might be entering the traps in search of prey, with the same result that the door could not close until the animal had departed.

At Mapledurham the same equipment and methods were used as at Woolhampton, The area was chosen as a contrast to Woolhampton, topographically, and therefore likely to yield a different fauna.

Before the operations here recorded, an attempt was made nearby at Jackson's Lane to catch small mammals in pitfall traps, mainly large glass jars. This met with no success. Some baits were taken, but the catch consisted of one spider (Dysdera crocata ♀) and four queen bumble bees.

Another disappointing piece of equipment was a large wire catch-alive rat trap, set in the northern sub-area along with the Longworths. This caught a hen Chaffinch (Fringilla coelebs) and a cock and hen Blackbird (Turdus merula). The chaffinch was marked, and returned to the trap on two further occasions, on the last of which it shared the cage with the cock Blackbird.

The runs were located chiefly in the fringe of long grass and other herbage surrounding thickets of hawthorn and bramble (northern sub-area) and in the ground cover of ivy at the foot of the conifers (southern sub-area). The ground cover between the beech trees in and above the chalk pit was too scanty to shelter a trap, and two sites on the edge of the wood proved entirely barren. Baiting was done entirely with peanuts.

The marking system was modified here, each trap site being given its own colour code to show the extent of any movements from one part of the area to another. Mortality in the traps was lower than at Woolhampton, and this was probably due to a combination of finer weather and the dry situation. Trapping began on 6/5/60 and ended on 4/6/60.

The Playhatch area was selected as a contrast to Mapledurham in that it was "Man-made" for agriculture, was very flat and had been "Warfarined", and as a contrast to Woolhampton in that it was dry, agricultural and tended.

The purpose of the trapping was primarily to see what kinds of small mammals were there and to compare this with the other two areas; secondarily, for experience in trapping small mammals and as a means by which specimens could be obtained and studied. The types of traps used were as follows:-

4 "Little Nipper" break-back mouse traps with treadle plate;
4 "Victory" break-back mouse traps with bait on tongue;
3 "Selfset" break-back rat traps (modified);
5 "B" four-way break-back rat traps;
5 catch-alive box mouse traps, made by one of the authors;
1 catch-alive box rat trap, made by one of the authors;
1 Young's "Auto" multiple-catch cage mouse-trap.

The "B" four-way trap will catch anything from rats and stoats down to pygmy shrews. It is not selective, but very humane and kills instantly.

The "Self-set" trap is designed for forward action and is wrong in the respect that rodents only pull bait backwards. Thus, if the action is reversed (i.e. made like that of an ordinary mouse trap) it will catch and kill humanely. It is stated by the makers that the action has been changed for easy setting in the dark. But if it will not kill this is of no use! This will catch the same animals as the "B" trap.

The "Victory" trap, the original type of mouse trap, kills more effectively if a notch is filed at the tip of the tang and the bar slightly bent down.

The plate or platform trap is the same as the above, but with a plate set off by the animal's weight as in the old gin trap (now illegal). This is not so effective as the "Victory" trap. Both these traps can catch shrews as well as mice.

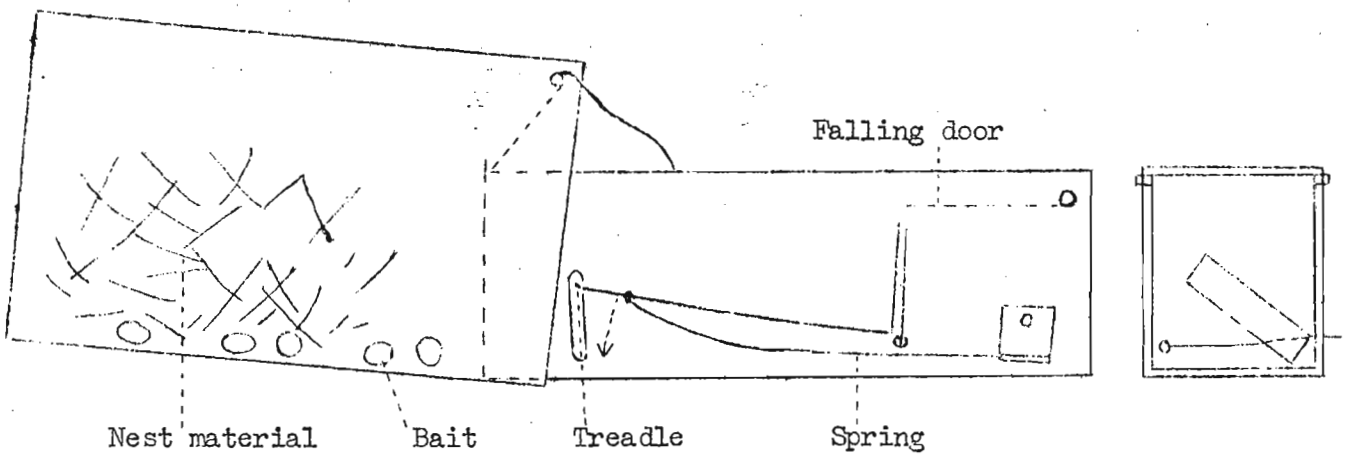
The author's own box trap is illustrated. It catches voles, mice and shrews. The box contains nesting material and is baited with about a dozen peanuts.

The live-box rat-trap is the same as above but for rats, etc., and is usually baited with flesh or fish. When setting these traps, care must be taken to see that the action of the door is not obstructed by vegetation.

The Young's "Auto" trap is a box with perforated zinc sides and a hinged lid, all of which have funnel-shaped entrances of the same material. It will catch all small mammals, but can be made to catch only certain animals by adapting the size of the entrances. It can be well baited and provisioned and left for several days, but this is not very desirable from the inmates' point of view.

The box traps are if possible placed in well-worn runs. This is not essential if plenty of mammals are about, but the best results are obtained if this is attended to. When the traps are of the break-back type they are put in

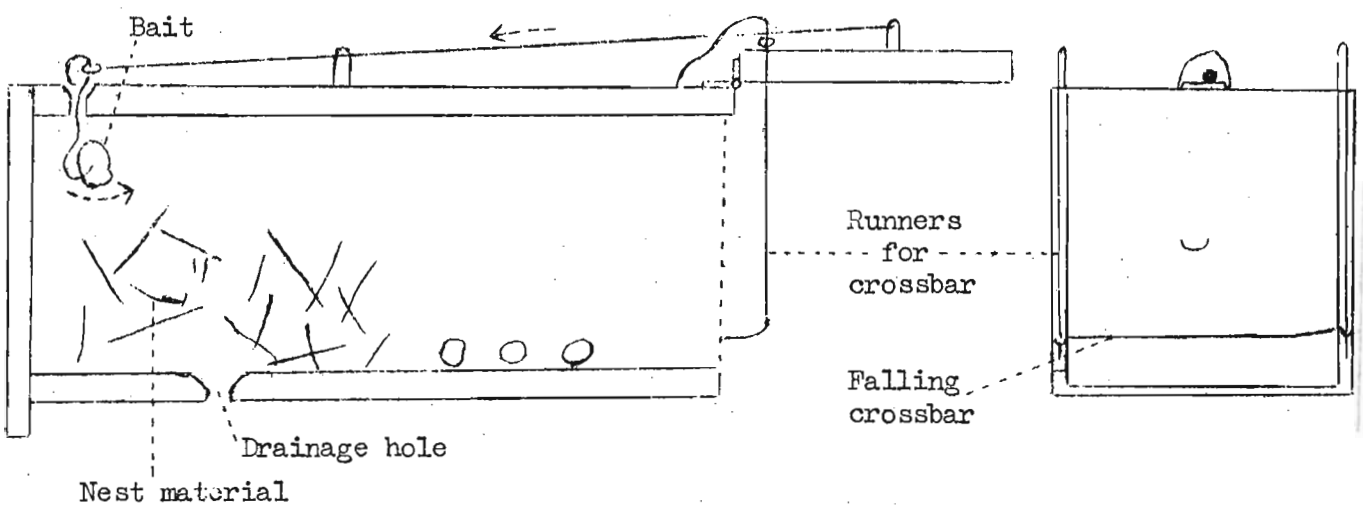
Fig.1. LONGWORTH LIVE MOUSE TRAP.



a) With side and bottom removed.

b) From front with door shut.

Fig.2. AUTHOR'S BOX RAT TRAP.



a) With side cover removed.

b) From front with door shut.

a tunnel as a protection against small birds and also to keep the dead animals dry for specimens.

When using Longworth traps one can set them "hard" against shrews, for it is a matter of weight, but with hook-baited traps one cannot easily control the capture of shrews as they have just as tenacious a pull as voles or mice, perhaps even more so.

Peanuts were used as bait, being a hygienic and convenient food which small mammals like, due to its oil nature. Other baits were tried but with less success.

Here and at Mapledurham the traps were visited usually at about 7 p.m. The results were recorded on a temporary log and put into permanent form in a diary. The recorded trapping lasted from 28/7/60 to 27/8/60.

RESULTS

Species seen or taken		Woolhampton	Mapledurham (N)	Mapledurham (S)	Playhatch			Berry Brook		
Oryctolagus cuniculus	Rabbit	-	present		present			-	-	-
Rattus norvegicus	Brown Rat	-	-	-	present			-	-	-
Apodemus sylvaticus	Wood Mouse	1	1	6	4	♂♂2♀♀1?		2	♂♂-♀♀-	?
Mus musculus	House Mouse	-	-	-	5	1	-	1	1	-
Microtus agrestis	Field Vole	-	1	-	2	1	-	-	-	-
Clethrionomys glareolus	Bank Vole	46	43	41	3	2	2	-	-	1
Arvicola amphibius	Water Vole	present	-	-	-	-	-	-	-	-
Talpa europaea	Mole	present	-	-	present			-	-	-
Sorex araneus	Common Shrew	present	3	4	13	13	-	2	2	-
Sorex minutus	Pygmy Shrew	-	-	1	1	1	-	-	1	-

Estimates of population - Bank Voles.	Woolhampton daily est.	Woolhampton av. to date	Mapledurham (N) daily est.	Mapledurham (N) av. to date	Playhatch daily est.	Berry Brook average to date
13 April	126	126				
22nd	70	98				
23rd.	66	87				
24th.	47	77				
9 May			15	15		
10			7	11		
11			14	12		
12			27	16	NO CENSUS	
13			11	15		
14			17	15		

(See next page)

(Cont. from previous page)

15		16	15
16		22	16
17		32	18
18		64	23
19		18	22
20		27	23
21		38	24
22		21	23
24		46	25
25		24	25
26		24	25
27		38	25
28		26	25
29		26	25
30		26	25
31		25	25
1 June		39	25
2		81	27
3		29	27
4		58	28

Average daily catch of all species	3.2	2.9	2.1
species	in 8 traps	in 7 traps	in 20 traps

Movements at Mapledurham

0 yards	(Same trap)	41 times
30	(Trap 1 to Trap 4)	1
45	(" 6 to " 7)	1
55	(" 5 to " 7)	2
60	(" 1 to " 2)	4
more than 60		0

Interpretation of results.

Woolhampton

Unfortunately time ran out at this site just as results were beginning to come in. The full number of traps were in use only for nine days, and subsequent experience at Mapledurham showed that consistent results did not appear for at least a fortnight, by which time most of the population was marked. The higher rate of trapping at Woolhampton might have shortened the process a little, but the figures had obviously not settled down when trapping ended.

The rapid falls in the estimates, compared with the gradual climb at Mapledurham, may reflect a real drop in the population, confirmed in part by the heavy mortality in the traps and the smaller numbers caught towards the end of the period

6 days	April 5 - 10	12 catches in 2 traps	(100%)	0	deaths.
6 "	" 11 - 14,20-21	37 " " 8 "	(77%)	4	"
3 "	" 22 - 24	15 " " 8 "	(33%)	10	"

Mapledurham

The numbers here apparently built up in successive stages, about 15 voles being present until May 15th. By May 24th, there were 25, and at the beginning of June the numbers again began to rise and were still doing so when trapping ceased. The southern area, which is continuous with Chazey Wood, showed a slightly lower proportion of Bank Voles to the other species, and Wood Mice were much commoner there, while the only Field Vole came from the northern area which is surrounded by pasture. Movements recorded seem to reflect the idiosyncrasies of certain individuals.

Playhatch

No census was taken here. Many observations of ecological interest were made, and these are discussed under their appropriate headings in the following section of the paper.

BIOLOGICAL NOTES

Rattus norvegicus - Brown Rat

This species was still present at Playhatch despite the use of poison last year. This was used only over a small area, and rats may have moved in from outside during the earlier part of the year.

Rats were probably responsible for the gnawing of carcases in the break-back traps.

Apodemus sylvaticus - Wood Mouse (Long-tailed Field Mouse.)

Widely distributed but nowhere abundant, though this species may well be less vulnerable to trapping than others, owing to its ability to enter a Longworth trap without operating the mechanism. At Playhatch, where other types of trap were in use, the proportion of Apodemus was noticeably higher.

The strongly nocturnal habits of this mouse in the wild state may also have some bearing on the results. Mr. B. Baker, of Reading Museum, trapping at Woolhampton in October during the hours of darkness only, took this species regularly to the exclusion of all others - a complete contrast to the results of trapping earlier in the year, when the traps remained in position for 24 hours at a time. It seems possible that Apodemus, appearing on the scene after midnight, may find the most attractive sites already occupied by other species. In this case the much greater number of traps set at Playhatch would account for the larger number of Apodemus taken there. These were all caught in the hedgerow adjoining the barley field.

A wide range of size and colour was observed, but none came within the limits assigned to A. flavicollis wintoni, the Yellow-necked Mouse.

In captivity, Apodemus rapidly becomes tame and is frequently active during the day. It loses no opportunity of escaping, and as it can climb with agility, jump vertically upwards at least 18", and readily throws itself down from a height of 20' or so without injury, it is not easy to recapture.

Mus musculus - House Mouse.

Like the Brown Rat, this was found only at Playhatch, not near the houses and gardens as might be expected, but along with the Wood Mice in the eastern

hedgerow. Both mice also occurred at Berry Brook.

House Mice were attracted by both animal and vegetable baits. As with some of the other small rodents, males were much more often caught than females. Possibly the latter, with litters of young to look after, were less inclined to wander far afield, or they may have been less bold in entering traps. A very sandy-coloured variant occurred at Playhatch.

Microtus agrestis - Short-tailed Field Vole.

This is much less common at Mapledurham than we expected, only one being found. This was in the northern sub-area, where all traps were on the edge of open grassland. Possibly more would have been taken if it had been possible to set traps safely in the middle of the grassy area. Its absence from Woolhampton was less surprising. At Playhatch, two of the three caught were living in the boundary hedges of cottage gardens, and the species is commonly taken in pitfall traps sunk in the grounds of the school at Cholsey. Is Microtus a garden animal in the Reading area?

One of these voles is kept in Reading Museum in the same cage with a Bank Vole. A number of upright twigs and stems are provided to demonstrate the Bank Vole's climbing ability, and are set in a perforated wooden base. Any which have edible bark or berries are felled within 24 hours by the Field Vole, which gnaws through them at any distance up to about 3" above "Ground" level. Some of the felled material is used for nest building.

Clethrionomys glareolus - Bank Vole.

At Woolhampton and Mapledurham, where shrews were not trapped, this was far and away the commonest small mammal. At Playhatch, it took second place to Apodemus among Rodents. As with the two mice, the most productive area was the eastern boundary hedge. The disproportion between the sexes was not detected here, but although the animals taken alive at Woolhampton and Mapledurham were not sexed, the casualties which were preserved as specimens were predominantly male. One of these was subjected to a post-mortem examination by the Veterinary Investigation Department of the Ministry of Agriculture. It appeared to have died from congestion of the lungs caused by infection with Pasteurella haemolytica, a bacterium often found in the blood of small mammals. Two voles were caught with a tick (Ixodes ricinus) attached in each case between the right eye and ear. The first was kept, but died soon after removal of the parasite.

Sorex araneus - Common Shrew

During the preliminary trapping at Woolhampton, Common Shrews were about as frequent as Bank Voles. Since it was impossible to catch them without causing their death by starvation, the traps were later adjusted to catch voles only. These traps were used again at Mapledurham, and despite the stiff setting seven Common Shrews were taken; they were probably abundant. At Playhatch they were easily the commonest small mammal, occuring in numbers all over the area. In contrast to the rodents, the numbers of male and female were equal, but juveniles out numbered adults by about 5 to 1. One of the Playhatch shrews was found to have swallowed a peanut, and another had a piece of tallow in its mouth, but neither had been able to survive on this diet. Crowcroft (The Life of the Shrew, p.27) found that captive shrews need some vegetable food if they are to

remain healthy. His shrews refused to touch "high" meat but would attempt to eat it if it were no longer smelling. In this state they could not digest it, however.

The anatomy of this animal clearly indicates its reliance on the senses of touch and smell, as the following comparison indicates.

Cat (full-grown).		Common Shrew (full-grown)
Body length	c. 6000 mm	c. 60 mm.
Diameter of orbit	125 mm	1.5
Length of nasal bones	125 mm	7 mm
Eye : nose	1 : 1	1 : 4.7
Whiskers (both sides)	70	
do. (Kitten)	30	180 (Juvenile)

The eye : nose ratio in the Fox, which also relies on scent, is 1 : 4.5

S. minutus - Pigmy Shrew.

Although much less common than its larger relative, this species was taken at both Mapledurham and Playhatch, where two were caught in the northern boundary hedge and one near the haystack. Another turned up at Berry Brook.

Weather.

Weather records were not kept at Woolhampton. At Mapledurham it appeared that there were more species about on fine days and that after a wet day it took several days for them to re-establish. However there were "bad days" here even in fine weather. At Playhatch the average day's catch under various weather conditions is shown below:

1st. day of wet weather	1.6
2nd. and later wet days	1.3
1st. dry day after rain	1.9
2nd. dry day	2.0
3rd. and later dry days	2.3
Last dry day before rain	3.7

The last figure is mainly due to shrews. During the month's recorded trapping there were six wet spells and the six dry days which immediately preceded them accounted for 14 of the 30 shrews caught, almost half the total catch.

Harvesting.

There was a marked increase in the numbers caught after the start of harvesting in the adjoining fields. After the normal fine-weather increase has been accounted for, there is still evidence of a movement of animals into the less disturbed areas where trapping was going on.

Flooding.

Since the wet weather (and subsequent flooding of the low marshy ground on the south side of the Henley Road) it has been seen, as recorded by the game-

keeper in other years, that the furred population comes north to higher ground in the autumn. This movement accounts for the large number of rat and mouse carcases on the road at this time.

Acknowledgements.

We would like to acknowledge our indebtedness to the owners and occupiers of the land on which we worked for giving us permission to do so, and for much valuable help and information.

Woolhampton	Tenant:	Mr. S.J. Anglis		
Mapledurham	Tenant:	Mr. Maunders	Head Keeper:	Mr. T. Evans
Playhatch	Tenant:	Mr. E. Low	Head Keeper:	Mr. R. Bushel.

Summary.

An account is given of investigations into the number and composition of the small mammal population of three areas near Reading. The methods used are described and the results tabulated and discussed. Biological observations made in the course of the work on the different species are recorded.

Notes on the Microlepidoptera of the Reading district

I. Hints on Collecting for young Entomologists

By H. L. Dolton.

It is a strange and interesting fact in human nature that among the thousands of people who do not take the slightest interest in anything pertaining to what is commonly called "Natural History", there are here and there, at all events among all cultivated nations, some few to whom it is an all-absorbing passion. Very often it is only a passing phase, affecting young people chiefly between the ages of, say, 12 to 16 and then dying away, but with some it persists through life materially affecting the whole course of their existence. As to Natural History as a regular occupation or means of living, I can say little that is favourable, as it is one of the worst paid and least appreciated of all professions. The only thing that I can say is that prospects are brightening, surely, if slowly. It is, I firmly believe, a profession of the future. To those who have the spare time on their hands to take up the study of Natural History, even those mainly engaged in the most absorbing of money-making pursuits, the refreshment of an occasional excursion into the realms of nature need not be insisted upon. It is perfectly obvious to all who have had the opportunity of observing it.

With an early love of Natural History is almost always associated a love of collecting, and probably there is no better way of becoming familiar with a subject than by making a collection of objects illustrating it. The value of making a collection of any kind of specimens about which one wishes to know more is that one has to spend time and thought on them, look at them carefully, prepare and compare them, arrange and name them. In proportion to which all this has been

done, so will be the value of the collection. That a museum depends for its utility not upon its contents, but upon their mode of arrangement is now a trite saying. An ill-arranged museum has been well compared to the letters of the alphabet tossed indiscriminately about, meaning nothing; one well arranged, in orderly sequence, produces words of counsel and instruction. Far more, however, than the intrinsic value of the collection, is its value as a means of education to the owner, especially to the beginner. The arrangement of a collection teaches not only the nature and properties of the objects contained in it, but also of those to be found in other and larger collections. Still more important as an educator, it calls out many valuable and practical qualities, such as originality, order, neatness, perseverance, taste, and the power of discerning small differences and resemblances, all of which will be found useful in other spheres of life.

It matters less what the contents of the collection are than that there should be some definite object in bringing them together. Suppose, for instance, that our young beginner were to set himself the task of collecting all the species of butterflies and moths to be found in his own locality in a radius of, say, 15 miles. What a wealth of knowledge he would acquire, not only of the appearance of the individual specimens, but also of their natural surroundings and habits, and what delightful rambles in the open air he would enjoy, with eyes intently appreciative of the lovely world in which we live, and which is lost, unfortunately, to so many who pass through it without any of these interests or pleasures. I wonder how many people know that within a radius of 15 miles of Reading there are 42 species of butterflies, to say nothing of the moths? I think you will agree that that is a good percentage of the total for Britain of 68, which includes seven, namely the Milkweed, the Camberwell Beauty, the Long-tailed Blue, the Short-tailed Blue, the Mazarine Blue, the Large Copper and the Bath White that are very rare, or turn up only after long intervals.

Entomology is an intensely interesting hobby, collecting is all very well, and collections have a very real value. If, however, one collects insects for the mere sake of accumulating specimens, one might just as well collect buttons, cigar labels or match-box tops, for one would know after ten to fifteen years as much about true Natural History as one did before one started. This brings me to the point where I wish to say a little regarding the breeding of insects. To my mind the most interesting aspects of Entomology are rearing insects from ova, larvae, or pupae. Females of the various species adopt different methods of oviposition, some depositing their eggs whilst in flight, others looking for the exact plant on which to lay them. Breeding reveals the different ways of feeding adopted by the larvae, some feeding by day, others by night, and the methods of pupation, some larvae spinning cocoons or forming other shelters, some going into the ground to pupate. Lastly, there is the emergency of the imago or perfect insect. If one has never seen a butterfly emerge from the pupa, or chrysalis as it is sometimes called, and then crawl up to some convenient place, there to hang down and expand its wings until dry, one has indeed missed a wonderful sight. Another great advantage of breeding insects is that, if one wishes to make as complete a collection as possible, one will find that bred specimens are always preferred when making an exchange with an entomologist in another part of the country. Some species are so variable, with varieties of one overlapping those of another, that individuals even from the same egg-batch might be regarded as different species if their common parentage were not known. By breeding them, one not only obtains perfect specimens for one's own collection or for exchange, but also saves hours of study in trying to identify them.

Without exchange it is almost impossible to get together anything like a complete collection. Certain magazines publish monthly lists of duplicates and desiderata, and as these publications circulate among thousands of entomologists in all parts of the country, one can often make an exchange even of some of the common species, for some northern forms differ from the southern ones so greatly that they can almost be taken for different species. One may be asked, not for the imago, but for egg, larva, or pupa, and if one has never seen these one cannot make an exchange.

Collectors of Lepidoptera probably outnumber those of all other orders of insects. Nor is this to be wondered at, for the Lepidoptera are the most attractive of all insects, and the most conspicuous of them are, perhaps, more readily distinguished than the species of any other order.

Any hints that will put the new collector on the right track, lead him to adopt good methods, and suggest lines of work that will tend to make his observations of service to science, must be useful in advancing the study of Lepidoptera. Without the collector no really scientific work on certain branches of lepidopterological study can be written, and the man who collects his own insects, makes observations, and records them is a most valuable addition to the ranks of those who study the order. The entomologist's collection should show, wherever possible, data such as the locality and date of capture, relating to the specimens that he has so carefully brought together. A collection which is not studied is of as little use as books which are not read. One piece of advice to collectors of Lepidoptera - collect all Lepidoptera. The large species are often called Macro-Lepidoptera and the small Micro-Lepidoptera, but modern scientific methods have taught us that this subdivision is, on the whole, unsound and unnatural and gives no idea of the real relationship, the actual goal aimed at by all systems of classification. The ardent collector will find much virgin ground in the Micro-Lepidoptera and a careful specialisation of his studies in one of these groups will give him a great reward.

Biological Notes on Some Trypetids (Diptera) in South Oxfordshire and Central Berkshire.

By Donald Leatherdale, F.L.S., F.R.E.S.

The Trypetidae constitute one of the more conspicuous families of Diptera, for their wings are marked with distinctive patterns and the bodies of many species are attractively coloured (at least, when alive: as pinned specimens they soon lose their attraction). Most of them are little larger than the house-fly, and they are often encountered during the summer months as members of the interesting complexes of insects attracted to the flower-heads of Composites and Umbellifers.

Life-histories in the Trypetidae are somewhat varied. Some of the species are gall-causers, particularly in the flower-heads of Composites; others inhabit

flower-heads without causing appreciable distortion; some of them are leaf-miners; and others again live in fruits, and in warmer countries than Britain; some species can be serious pests of such fruits as the cherry, walnut, olive and orange. Two of these fruit-flies, Ceratitis capitata (Wied.) and Rhagoletis cerasi (L.), have now and again been recorded in Britain.

In the following notes, which relate only to Trypetids found in the Reading area in the last two or three years, Collin's (1947) nomenclature has been followed, and Dandy (1958) has been taken as the authority for the names of plants.

Trypetinae

Phagocarpus permundus (Harr.). Larvae were found in many fruits of Crataegus monogyna Jacq. at Pangbourne on 24th August 1959. They pupated in the soil of jars in which specimens were held on 7th-18th November, and adults emerged on 19th-29th May 1960. When the larvae were discovered, many other fruits of C. monogyna and C. oxyacanthoides Thuill. in adjacent localities were examined without success, and none was found in 1960 at the original site.

Philophylla heraclei (L.). Leaf-mines inhabited by larvae of this ubiquitous pest of cultivated celery were noted at Whitchurch on 10th June 1960. The larvae pupate in the soil, and adults were seen on 1st-5th August. This species was also common in previous years, but its mines were not seen in the locality on other known food-plants, such as Heracleum sphondylium L. and Pastinaca sativa L.

Acidia cognata Wied. Larvae were found in leaf-mines on Petasites japonicus (Sieb. & Zucc.) F. Schmidt at Clifton Hampden on 18th September 1959. This is believed to be a new host record, although A. cognata is known from P. hybridus (L.) Gaertn., Mey. & Scherb. The larvae pupate in the soil and give rise to adults in the following year.

Spilographa zoë (Mg.). Larvae were present in leaf-mines on Chrysanthemum maximum Ramond and C. uliginosum (horticultural varieties) at Whitchurch on 18th-24th June 1959. They pupated in soil in glass jars on about 24th August, and adults (12 ♀♀, 3 ♂♂) emerged by 8th September of the same year. A number of Chalcidoids also emerged then and later, up to 23rd October. Although 1959 was such an exceptionally fine year, the emergence of S. zoë was late according to Niblett's (1952) experience. No mined leaves were seen in 1960.

Goniglossum wiedemanni (Mg.). The yellow larvae of this species were found in fruits of Bryonia dioica Jacq. at Goring on 27th August 1959 and at Maple-durham on 17th September 1960. Only one larva occurred in each fruit. This species pupates in the soil, and adults emerge in the early summer of the second year. Fruits examined at Bradfield, Pangbourne, Sulham, Tid-marsh and Whitchurch in 1959 and at Pangbourne and Whitchurch in 1960 were uninfested.

Chaetostomella onotrophes Lw. Three adult females of this species, which lives in the flower-heads of many Composites (Niblett, 1939), were bred on 12th

June - 3rd July 1960 from heads of Centaurea nigra L. collected at Whitchurch in November 1959 for the galls of Urophora jaceana (Hering) they contained. Niblett (1953a) has pointed out that C. onotrophes is double-brooded, adults from over-wintered larvae emerging in April - June and giving rise to the second brood in July - August. He has also shown (1953b) that emergence is sometimes delayed until the following June, and it is not clear in which category the specimens bred at Whitchurch should be placed.

Ceriocera cornuta (F.). From flower-heads of Centaurea scabiosa L. collected at Hardwick in the autumn of 1959 for presumed galls of Urophora cuspidata (Mg.) 2 ♀♀ and 1 ♂ of C. cornuta emerged on 12th June 1960. The flies are pale green when alive. As their presence in the material was unsuspected, no note was made as to whether pupation occurred in the flower-heads or in the soil in the jar containing them. This information would have been of interest, for Niblett (1946) believes that the paucity of records of this species may be attributable to its habit of pupating in the soil.

C. microceras Hering. Larvae, believed to be of this species, were found in stems of Centaurea scabiosa at Hardwick on 12th June 1960. Material was collected, but no adults have emerged to date.

Trypeba colon Mg. 1 ♀ and 1 ♂ emerged on 28th June 1960 from flower-heads of Centaurea scabiosa collected in the autumn of 1959 at Hardwick for presumed galls of Urophora cuspidata. The faintly yellow larvae pupate in cocoons formed of pappus hairs. This species has been shown by Niblett (1942) to be double-brooded.

T. tussilaginis (F.). Having taken several adults at Whitchurch in July 1959, seed-heads of Arctium lappa L. in the vicinity were collected on 18th September 1959 and placed in glass jars. On 6th October 1959, 3 ♀♀ emerged, and a further 3 ♀♀ and 2 ♂♂ appeared during the period 24th May - 17th June 1960.

Xyphosia miliaria (Schrank). Unidentified larvae were found in flower-heads of Cirsium arvense (L.) Scop. at Whitchurch on 18th August 1959. Infested heads were collected in the late autumn from which adults of X. miliaris emerged between the beginning of April and 25th May 1960. The same species was also bred from heads of C. arvense collected at Pangbourne and Tidmarsh in the same autumn, the adults emerging 18th June - 3rd July 1960.

Urophora cardui (L.). This species, the presence of which is easily discerned from the large stem-galls it induces on Cirsium arvense, occurs sporadically. Galls were noted in the autumn of 1959 at Gatehampton, Goring Heath, Henley and Mapledurham, but in no large numbers at any one locality. No material was collected for breeding, but adults usually emerge in June - July of the following year.

U. jaceana (Hering). The woody galls of this species are quickly detected in seed-heads of Centaurea nigra by squeezing the head between the fingers. They were plentiful at Whitchurch (cf. Leatherdale, 1957) in the autumn of 1959 and again in 1960. The larvae pupate within the galls, and adults emerge in May - August of the following year. For many years this species

was erroneously recorded in Britain as U. solstitialis L., which has species of Carduus and Cirsium as its food-plants.

U. stylata (F.). This is not an uncommon species, yet its galls in heads of Cirsium vulgare (Savi) Ten. have been observed once only in the past two years; that was at Tilehurst on 19th September 1959. Adults emerged on 17th June - 2nd July 1960.

Ensina sonchi (L.). Larvae, believed to be of this species, were found in flower-heads of Hypochoeris radicata L. near Pangbourne on 5th August 1960, but they died in situ within three days of the specimens having been gathered. E. sonchi was first recorded from this food-plant in 1934, but its host range is very wide amongst the Compositae (cf. Niblett, 1934, 1939).

Ditrichinae

Ditricha guttularis (Mg.). During the past five years many hundreds of plants of Achillea millefolium L. have been examined without success for the galls of D. guttularis on the roots or at the base of the stem.

Tephritinae

Oxyna flavipennis (Lw.). This species also galls the roots and stem-base of Achillea millefolium, and the same remarks apply to it as to D. guttularis.

Sphenella marginata (Fln.). Many larvae of this species were present in flower-heads of Senecio squalidus L. at Pangbourne, in mid-summer 1957, but none has been found there in subsequent years. S. squalidus may be a new host record for this species: it was not listed by Niblett (1939), but is known to occur on many species of Senecio.

Tephritis vespertina (Lw.). This has been said by Hamm (1918) to be the commonest species of Trypetid. Distorted heads of Hypochoeris radicata at Gatehampton containing pupae on 17th July 1959 yielded adults five days later. These were of the second brood, Niblett (1953b) having shown that there is an earlier one in May.

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A Study of the Heathland Flora of the Reading Area

by John G. Hodgson.

A shortened version of a winning entry for the Laffan Prize for Natural History (Junior Section) 1959.

Heathland accounts for a great deal of Britain's natural vegetation. This is because it is of very little agricultural use. Its very poor soil is almost useless for growing grain and the natural grasses are very coarse and unsuitable for grazing. Therefore it is left more or less alone. It has, however, one major disadvantage in dry spells. The heath may, either through a natural cause or through man's carelessness, catch fire and considerable damage may be done. This is often a decisive factor limiting the growth of trees in certain areas. Man has, however, found a way of making money out of heathland by planting stands of conifers in many places.

The heathlands in the Reading area can be grouped under two main headings, "Dry Heathland" and "Bogs, Marshes and Pools".

Dry Heathland.

This is found where drainage is good and the soil poor and mainly sandy.

It is of little use but for the planting of conifers, but on "grass heaths" a limited amount of grazing may take place. The plants of this type of heathland are very limited and are usually dominant where they are found. The chief dominant is Calluna vulgaris (Heather) but co-dominant are also Erica cinerea (Bell Heather), Ulex minor (Dwarf Gorse) and Betula (Silver Birch). In other places, usually in more fertile spots, Ulex europaeus (Gorse) is dominant or co-dominant with Sarothamnus scoparius (Broom). Pteridium aquilinum (Bracken) is very commonly dominant. These are the main, but by no means the only, plants of dry heathland, for Chamaenerion angustifolium (Rosebay Willowherb) after a fire becomes temporarily abundant. There are few grasses but Agrostis (Bent), Molinia caerulea (Purple Moor Grass) and to a lesser extent, Sieglingia decumbens (Heath Grass) can become dominant. Urtica dioica (Nettle) and Rubus spp. (Brambles) are often abundant, but usually in slightly damper and more fertile spots.

Ulex minor is a semi-prostrate under-shrub with shorter, more yellow-green spines and smaller, paler flowers than U. europaeus. It is in bloom from July to September and its flowers are never prolific. It is not uncommon on heathland but is not usually in such quantity as U. europaeus. P. aquilinum is the commonest and tallest British fern. It was originally a fern of woodland but it has increased considerably and is now very common in dry heathy situations. It has, however, two dislikes: late frosts and water-logged soil, and the latter quickly destroys it. Its fronds can suppress nearly all other plant growth because where it grows it is usually abundant and when well established may reach a height of 8 ft. The spore cases are found all round the edge of the leaflets which are turned back to protect them. The spores ripen in July or August. The only other characteristic dry heathland fern is Blechnum spicant (Hard Fern) which is found fairly commonly on banks at the edges of woods at Silchester, Pamber and Crowthorne. Vaccinium myrtillus (Bilberry) is not uncommon on acid heaths with heather and in woods at Bucklebury, Crowthorne and Pamber. Another member of the same family, Ericaceae, is Calluna vulgaris which is dominant on nearly all dry heathland. A variety of this hardy evergreen perennial, covered with grey hairs and called var. hirsuta, is not uncommon. E. cinerea, an evergreen shrub seldom exceeding 1½ ft., is a very common associate of the last species and is often abundant in small areas. Genista anglica (Petty Whin), although not common, deserves mention as it has the same habitat as the last two species. It is a spiny undershrub with yellow gorse-like flowers and small pointed oval leaves falling in winter. Its pods are inflated and it blooms from May to July. A few plants are found on nearly every heath locally. Luzula multiflora (Heath Woodrush) is often found on heaths and is very typical.

These are some of the interesting plants in the dry heathland zone. There are, however, two other associated zones in this area. They are "Heathland Woods" and "Dry Sand".

Heathland Woods.

These have usually at some time been planted and the dominant trees are Pinus sylvestris (Scots Pine), Quercus petraea (Sessile Oak) and Q. cerris (Turkey Oak), and Castanea sativa (Sweet Chestnut). The shrub layer is often covered by bracken and brambles. In some places Melampyrum pratense

(Yellow Cow-wheat), Holcus mollis (Soft-grass) and Convallaria majalis (Lily of the Valley) are present in some quantity. This is so in Pamber Forest which is the most interesting piece of heathland wood locally. Here too is a grass heath. Other plants found plentifully in the wood are V. myrtillus, Stachys officinalis (Betony), Teucrium scorodonia (Wood Sage) and Lathyrus montanus (Bitter Vetch). Betula usually forms very open woods, so open that Calluna vulgaris usually forms the shrub layer. S. officinalis, an unbranched perennial with toothed leaves and deep bright purple flowers produced from June to September, grows mainly in the Silchester, Pamber and Crowthorne areas. It is typical of open woodland (often woods by oaks). T. scorodonia is a herb with wrinkled leaves that often appears shrubby and is easily recognised by the absence of any upper lip in the flower. It is very common in shady situations and on heathland and it blooms from June to September.

Dry Sand.

This is usually found on paths, in car parks, where there are very poor soils or where there has been wind erosion. Because of constant trampling, poor soil or both the plants are very small and often annuals. Typical plants are Carex ovalis (Oval-headed Sedge), Juncus squarrosus (Heath Rush), J. tenuis (Slender Rush), Filago germanica (Common Cudweed), F. minima (Lesser Cudweed), Aira caryophyllea (Silver Hairgrass), A. praecox (Early Hairgrass), Deschampsia caespitosa (Tufted Hairgrass), Agrostis, etc. , and plants like Rumex acetosella agg. (Sheeps Sorrel) and Cerastium spp. (Mouse-ear Chickweed). The commonest Cerastium is C. glomeratum (Sticky Mouse-ear), which flowers fairly early and is usually over before its habitat becomes too dry. It is very stickily hairy and has many more flowers than C. vulgatum (Common Mouse-ear), which is occasionally found in the same situation. C. glomeratum is very common in dry sandy places not always on stable sand. Aphanes microcarpa (Parsley Piert) is found in slightly more stable sandy soils and is seldom more than 1 in. high with greyish, downy three-lobed leaves. The flowers are very small, green and petal-less. It is fairly frequent and blooms from April to October.

Grass Heath.

Grass heath is not usually grazed on and is found on slightly better soils than a Callunetum heath, but the soil is too poor to support trees like oaks. The main plants are Molinia caerulea, Sieglingia decumbens, Potentilla recta (Tormentil), Galium hercynicum (Heath Bedstraw), Festuca spp. (Fescues), Agrostis and Lotus uliginosus (Greater Birdsfoot Trefoil). P. recta is very common on heathland, often in grassy places. G. hercynicum resembles a rather small procumbent G. mollugo (Hedge Bedstraw) with 4-6 short leaves in a whorl. The buds are a pinkish colour and the white flowers form whorls but the flowers are not nearly so abundantly produced as they are in G. mollugo. This is a common plant of heathland, especially grass heath, and may be found in flower from May to August.

Bogs, Pools, Marshes and Fens.

These sorts of situations are gradually decreasing owing to drainage. However, many such places still exist, the best bog being on Hazeley Heath.

Bogs and Marshes are very similar in many ways and are difficult to define. Marshes have a mineral soil whereas bogs have a vegetable soil (peat). Marshes also have fairly good drainage.

Bogs.

These are found at Crowthorne, Silchester, Hazeley Heath etc. and are formed mainly of Sphagnum moss on an acid soil. Bogs may be divided into three main areas: Sphagnum, Bare Peat and Wet Grass Heath.

Sphagnum

A Sphagnum bog usually floats on water or on very wet mud. Plants of this community are Eriophorum angustifolium (Cotton grass), Drosera rotundifolia (Round-leaved Sundew), Eleocharis spp. (Spike Rushes), Erica tetralix (Cross-leaved Heath) and Narthecium ossifragum (Bog Asphodel). E. angustifolium, whose cottony heads make it the most distinctive local plant in the sedge family, is the only species of Eriophorum found in the area. N. ossifragum is found mainly in Sphagnum. It is a hairless, creeping plant up to about 9 in. high with a tuft of leaves at the base of its stem, which holds a long spike of golden-yellow flowers. It is fairly frequent at Silchester, Hazeley Heath and Crowthorne and flowers from July to August. D. rotundifolia is widely distributed but local, although frequent in some areas. It has rounded, reddish stalked leaves that form a rosette and catch flies and other small insects. It produces a spike of white flowers, which are usually self-pollinated, in June-August. The other two insectivorous plants in the Reading area are Utricularia vulgaris (Bladderwort), which is found at Little John's Farm and Burghfield Gravel Pits, and D. intermedia (Long-leaved Sundew), which is found on Hazeley Heath. I have noticed a few Spike Rushes in this area. They are Eleocharis palustris (Common Spike Rush), E. multicaulis (Many-stalked Spike Rush), Trichophorum caespitosum (Deer Grass) and Eleogiton fluitans (Floating Club Rush) mainly on Sphagnum or Wet Grass Heath.

Bare Peaty Patches.

This habitat is found locally only on Hazeley Heath. Although it forms a rather small percentage of the bog, it has quite a wide range of plants, mostly small perennials or annuals. The main plants are D. intermedia, D. rotundifolia, Angallis tenella (Bog Pimpernel) and Lycopodium inundatum (Marsh Clubmoss). L. inundatum is the only local clubmoss and is found in small quantity. It has a prostrate stem which withstands the winter but its erect stems wither quickly. These stems bear a cone from June onwards and then die off. It is found in the moist, bare, peaty places on Hazeley Heath. D. intermedia grows mainly in bare peaty places that are not usually as damp as those where D. rotundifolia grows. It has smaller narrower leaves and is smaller in its appearance. It has a spike of white flowers which appear from June to August. A. tenella grows on Hazeley Heath and Coleman's Moor. It is a prostrate perennial rooting at the nodes and has very small opposite leaves. Its pale pink flowers are about $\frac{1}{2}$ in. across and may be found from June to August.

Wet Grass Heath

This is found at Hazeley Heath quite abundantly and has numerous plants growing on it, including Scutellaria minor (Lesser Skull-cap), Pedicularis

sylvatica (Lousewort), Rhynchospora alba (White Beak-Sedge), D. rotundifolia, Thelypteris palustris (Marsh Fern), Erica tetralix and Succisa pratensis (Devil's-bit Scabious). T. palustris is a very rare fern in this area. I have only seen it on the grass heath on Hazeley Heath. It is really a plant of fens and peat bogs. The spore cases are in clusters near the edges of the leaves. The spores may be seen from July to August. S. pratensis is a hairy plant, 18-36 in. high, with simple obovate-lanceolate leaves. Its rounded, purple-blue heads are two-thirds of an inch to an inch across. Its root is very short and is supposed to have been bitten off by the Devil, hence its name of Devil's-bit Scabious.

Pools.

The main plants in pools are Eleogiton fluitans, Ranunculus hederaceus (Ivy-leaved Crowfoot), Potamogeton polygonifolius (Bog Pondweed) and Hypericum elodes (Marsh St. John's-wort). These pools are at Hazeley Heath and are gradually draining away. P. polygonifolius does not appear to flower at Hazeley Heath, but its fairly narrow submerged leaves signify its presence clearly. R. hederaceus has ivy-shaped leaves and roots in mud or floats in ponds or pools. It has white flowers and hairless fruits which appear in summer and autumn. It flowers from May to July. H. elodes is a greyish mat-forming perennial with downy roundish leaves and a few bright yellow flowers. It blooms from May to September. Damp patches, and sometimes little pools are formed on woodland paths. The pools often contain Lemna minor (Lesser Duckweed) and Callitriche stagnalis (Water Starwort). The typical plants growing on the damp patches are Peplis portula (Water Purslane), C. stagnalis, J. bufonius (Toad Rush), and Lysimachia nemorum (Yellow Pimpernel). L. nemorum is a creeping plant with yellow-green, oval, pointed leaves and solitary yellow flowers about ½ in. across. It is not uncommon on damp woodland rides and flowers from May to September. At Pamber, on a woodland ride, Viola palustris (Marsh Violet) and Equisetum sylvaticum (Wood Horsetail) also occur.

Marshes

The best marsh in this area is at the "Three Firs" on Burghfield Common. It has a stream running through it and thereby draining it. The vegetation consists of Myosotis secunda (Water Forget-me-Not), V. palustris, Carex laevigata (Smooth Sedge), Callitriche stagnalis, J. articulatus (Jointed Rush), J. kochii, etc. M. secunda is found on acid soils and is easily mistaken for the other, commoner, water forget-me-not, M. palustris, from which it differs in its numerous leafy runners and longer fruit stalks (3-5 times as long as the calyx). It flowers from June to October. V. palustris is abundant at Burghfield. It has almost kidney-shaped leaves, which are hairless, and small pale-pinkish flowers with a very short spur. It flowers from April to June. J. kochii is bigger and more robust than J. bulbosus (Bulbous Rush) and has six instead of three stamens. It is found at the "Three Firs".

Fens

We have only one fen in Berkshire. It is at Cothill and is a nature reserve. Fens differ from bogs in having basic neutral soils. Typical plants there are Parnassia palustris (Grass of Parnassus) and Schoenus nigricans (Black

Bog-rush). P. palustris is a small plant with cordate leaves. Its flowers are white and quite conspicuous. It is probably the prettiest fenland plant and blooms from July to September.

I have dealt very briefly with the local areas of heathland which I know, but there are many others still to be explored and many nice plants which determined searching could find; for heathland is a refuge for animal and plant life undisturbed by man and will, I hope, continue to be so for many years.

Grasses, Sedges and Rushes

Grasses, Sedges and Rushes are very underworked species in this area so I have allotted space for the names and local distribution of the species more typical of heathland. Rushes have more or less rounded stems, usually solid. Sedges have triangular stems, and Grasses roundish hollow stems.

Rushes

Juncus squarrosus (Heath Rush).	Dry acid soils, mainly with little vegetation - common.
J. tenuis (Slender Rush).	Dry or damp, usually sandy, places - very locally abundant, but increasing.
J. bufonius (Toad Rush).	Damp places - very common.
J. effusus (Soft Rush).	Damp and marshy places. Var. compactus is frequent.
J. articulatus (Jointed Rush).	Damp and marshy places - fairly uncommon.
J. acutiflorus (Sharp-flowered Rush).	Damp and marshy places - common.
J. bulbosus (Bulbous Rush).	Wet heathy places - frequent.
J. kochii.	Wet heathy places - overlooked but probably quite frequent.
Luzula campestris (Field Woodrush).	Grassy places - frequent.
L. multiflora (Heath Woodrush)	Dry acid heathland - frequent.

Sedges

Eriophorum angustifolium (Common Cotton-grass).	Boggy places - uncommon, but locally abundant.

Trichophorum caespitosum (Deer-grass).	Boggy places - very rare.
Eleocharis multicaulis (Many-stalked Spike-rush).	Boggy places - rare.
E. palustris (Common Spike-rush).	Boggy and marshy places - common.
Eleogiton fluitans (Floating Scirpus).	Ponds and pools - uncommon.
Rhynchospora alba (White Beak Sedge).	Boggy grassland - locally abundant on Hazeley Heath.
Carex binervis (Moor Sedge).	Dry acid heathland - frequent.
C. demissa (Common Yellow Sedge).	Damp acid places.
C. laevigata (Smooth Sedge).	Only in a marsh at the Three Firs, Burghfield.
C. pilulifera (Pill-headed Sedge).	Dry acid places - not uncommon.
C. nigra (Common Sedge).	Wet acid places - quite common.
C. panicea (Carnation Sedge).	Wet but mildly acid places - common.
C. achinata (Star-headed Sedge).	Damp and dry acid situations - frequent.
C. ovalis (Oval-headed Sedge).	Dry and wet acid soils - frequent.

Grasses

Molinia caerulea (Purple Moor-grass).	Damp acid soils - common.
Sieglingia decumbens (Heath Grass).	Damp acid soils - common.
Festuca ovina ssp. tenuifolia (Fine-leaved Fescue).	Dry heathland - often abundant.
F. ovina (Sheep's Fescue).	Dry heathland - common.
F. rubra (Red Fescue).	Dry heathland - often abundant.
Deschampsia caespitosa (Tufted Hair-grass).	Woods, grassland and roadsides - very common.
D. flexuosa (Wavy Hair-grass).	Dry sandy places - very common.
Aira praecox (Small Hair-grass).	Dry sandy places - very common.

A. caryophyllea (Silver Hair-grass).	Dry sandy places - frequent.
Agrostis spp. (Brown Bent).	This is a very difficult group, but many species seem to be very common, including A. tenuis (Common Bent-grass).

UNNATURAL HISTORY

An address to our members
On a lawn in Swallowfield Park

by

Thomas Vear.

Many natural objects suffer from stupid, misleading or objectional names. Among these are animals, birds, insects and plants, and even man. To take one of the oldest and least happy examples, there is the cameleopard, a combination of leopard and camel. But what similarity is there between the sleek, graceful and perpendicular giraffe and the shaggy, lumpy, horizontal camel? Hippopotamus (river horse) is not much better. Where is the likeness to a horse? True, they both have four legs; so has a hedgehog or a weasel: there the resemblance ends. Rhinoceros (horny nose) and warthog are much better. They are at any rate descriptive.

The birds of paradise were so named by the ornithologists who received the prepared skins from New Guinea and what is now Indonesia. The natives who prepared the skins for export used to cut off the feet. This made the scientists of Europe think the birds had no feet and spent their lives in the air, being unable to perch, so they named them apoda (without feet). The turkey did not come from Turkey, but from North America. The yellowhammer has nothing to do with the familiar tool: ammer is German for finch. Moorhens are oftener seen on lakes than on moors and I imagine that some of the moor-hens must be cocks. The night-jar got its name of goatsucker when it was seen jumping up to the udders of goats and cattle to catch the flies on which it lives. Of course it does not suck milk.

The pineapple was so called because it faintly resembles a cone, and the "apple" part of the name is used for many different fruits and other things, such as oak-apples, potato-apples (the poisonous fruit of the potato plant) and the French pommes de terre and the Dutch aardappelen, earth apples. Grapefruit is an absurd name for a fruit which already has a good name of its own - pomelo. The glow-worm and the wireworm are not worms, the glow-worm is a beetle. The silkworm is the caterpillar of a moth, and woodworms are the larvae of beetles, such as the death watch, which owes its sinister name to the fears of superstitious old women.

Popular books on trees still give "sycamore or false plane". The only false thing about the tree is the name. Sycamore, too, is really an Asiatic figtree; our tree ought to be called the great maple. The Robinia is called the false acacia. Again the only falsity is in the name. The rowan is called mountain ash although it has no particular liking for mountains and no connection with ash. Pencil cedar is a juniper and ground ivy has no affinity with ivy.

It was the herbalists of four or five hundred years ago who gave to our common plants the uncomely names that many of them still bear - such as rotgrass, sheepsbane and scrophularia and scabious, which continue to remind us of scrofula and scabs. They cared nothing for the beauty of a plant but only for its supposed virtues or possible uses and so we get fleabane and lousewort.

The Jerusalem artichoke is not an artichoke and has nothing whatever to do with Jerusalem. It is a sunflower and the Italian name was girasole (turning to the sun), yet it is used to make Palestine soup. Could absurdity further go?

London Pride is not named from the city of London. About 100 years ago there was a well-known firm of nurserymen who laid out and maintained the gardens of the nobility and gentry. The name of the firm was London & Wise. When they introduced this little saxifrage they called it, after one of the members of the firm, London's Pride. In the same way Messrs. Sutton & Sons might produce a flower and call it Sutton's Glory. In after years all the numerous towns and villages named Sutton might think it was their own particular glory.

I am reminded of another "London" story, with local connection. The Bishop of London received a parcel from the Duke of Wellington containing a pair of breeches with a note saying they were the actual pair he wore at Waterloo. He returned them with a very cool note which caused the Duke to look more closely at the original letter. He found it was signed J.C. LOUDON, who was a well-known writer on trees. His chief work, Arboretum et Fruticetum Britannicum (in 8 volumes), was published in 1838. The writer said he would be glad of permission to inspect His Grace's famous BEECHES. I have a profound disbelief in the authenticity of this story for several reasons. Over the years I have personally inspected many hundreds, if not thousands, of trees on the ducal estates (admittedly some eighty years after the date required by the story), but I cannot recollect seeing any beech. Neither of the Iron Duke's successors would be at all likely to fell trees that had become famous. I have talked with the estate foresters about their rare or remarkable trees and have been shown the trees. If there were any famous beeches I am sure I should have heard of them, but I never did. Finally the soil is unsuitable for growing beech. The story is evidently an ingenious and amusing fiction.

"Dog" and "horse" prefixed to names of plants are always depreciatory, as dog violet because it is scentless, dog's mercury because it is a poisonous and troublesome weed, horse chestnut because it is uneatable. I suppose many people know the derivation of the term "chestnut" for an oft-told tale. If so, the following is one! Early last century a play was running in New York in which one of the characters had just returned from Spain, accompanied by a Spaniard. He was fond of telling a story about a tree and he began - "It was a cork tree". "No, no", said the Spaniard, "I have heard you tell that tale twenty-seven times and it was always a CHESTNUT". The word evidently supplied a long-felt want.

The chief sufferers from ill names are men and women. There may have been a certain appropriateness in the bestowal of nicknames such as Fright, Wetherhead or Sheepshanks on the first person to be called by these names, but it is very hard that all down the centuries their thousands of descendants, many of them ladies of perfect face and form should be saddled with such nicknames. There is the historic case of a gentleman named Bugg who naturally wished to change his name. This word has been applied to the insect only in quite modern times. In Shakespeare's day it meant spectre or apparition. It survives in bogey, bogle and bugbear. A dictionary of 1747 brackets bug and bugbear and says "An imaginary monster used to frighten children with". As changing ones name legally is an expensive affair, Mr. Bugg decided to have his money's worth and chose the aristocratic-sounding Norfolk Howard, with the result that the insects were called "Norfolk Howards" for some time.

The briar pipe is not made from briar. About a hundred years ago a French pipemaker went to Corsica for a holiday. He had the misfortune to break his only pipe, a meerschaum. This last word is another absurd designation. It is German for sea foam and is applied to a fine white clay which, when it was first discovered, was thought to be petrified sea foam. About seventy years ago there was a fashion for smoking meerschaum pipes until they acquired a rich brown colour that was highly prized. A friend of mine, a mate on one of the great liners to Australia, was walking down a street in Melbourne smoking a well-coloured pipe, when an Australian offered him a couple of pounds for it, but it was his favourite pipe so he declined the offer. A few days later he dropped it on the pavement and it broke into a thousand pieces. Well he said a thousand but I don't suppose he counted them. (That may have been only an estimate). The same thing happened to the Frenchman, so he sought out a wood-turner and asked him to turn a pipe from the hardest wood he could find. This was done and he was so pleased with the pipe that he enquired what wood it was and was told it was from the root of bruyère, a large heath. He secured a quantity of it and on returning home made it into pipes. These soon became popular, especially in England, where they became English Briars, being neither English nor briar. There is a village or small town in the south of France, whose name I have forgotten, where most of these pipes are made. During the war the Germans looted the whole stock of pipewood, which the owners had counted on to keep them supplied for two or three years. I understand that most of the workmen there are English.

Stilton Cheese has never been made at Stilton, which is a village on the Great North Road. In stage-coach days it was a busy place: horses were changed there and the coach passengers dined at the great inn. One of the landlords had a sister, a farmer's wife in Leicestershire, who made a good cheese and she sent some to her brother. The passengers liked it so much that he had to arrange for a continuous supply. As it could be got only at Stilton it was called the Stilton cheese. If there was any local sale round the farm where it was made, it would no doubt be called Mrs. Lester's cheese, or whatever the lady's name was.

Bath bricks are not made at Bath but at Bridgwater from the silt brought down by the River Parret. Bath being the nearest big town they would be sent thither and distributed from Bath. Bridgwater is a misnomer, too. The name has nothing to do with either bridge or water. It was the Burgh of Walter de Douay, who came over with the Conqueror.

These last examples are of course not Un-natural History, but simply, not natural history.