

BIOLOGICAL SECTION REPORT.

Very few records of new plants or of plants found in hitherto unrecorded localities have been sent in; the following may be noted. (From Col. W. A. Payn.)

- VI (1). *Crépis setosa*, Andover.
- VI (1). *Galeopsis Tetrahit*, var *bifida*, Hurstbourne Priors.
- VI. *Delphinium ajacis*, Enham, recorded before but not in this area.
- XI. *Cotyledon umbilicus*, Yateley (Stilwell).
- XI. *Epipactis latifolia*, Sandhurst (Stilwell).
- VI (2). *Himantoglossum hircinum*.

Miss E. F. Chawner reports that a single specimen of the above (the Lizard Orchid) was found in flower on 15th June at Leckford, near Stockbridge, and she states that on 18th February, 1945, it seems to be permanently established and showing leaves. This plant was first observed in this neighbourhood by two school girls near Stockbridge in 1925.

Mr. H. T. White writes that it may be of interest to note that *Erigeron acre*, reported two years ago by the roadside at Ampfield, has spread very considerably. He adds that a very rare form of Mushroom *Psalliota (agaricus) augusta* appeared by the side of a lane in Ampfield for the first time.

Nature Reserves Investigation Committee.

A small Sub-Committee was formed for this purpose; the work took a long time as everything had to be done by correspondence. The whole of Hampshire has been carefully considered and every spot and district where rare plants, birds, insects, etc., were known to exist have been marked on the map and schedules prepared; these are now in the hands of the Central Committee at the Natural History Museum, London; and copies of the schedules have been sent to the various Town and Country Planning Committees for their consideration. Favourable replies have been received and it is greatly to be hoped that these special areas may be preserved.

A BIBLIOGRAPHY OF THE BRITISH FLORA.

With a view to eventual publication, it is proposed to compile a Bibliography of the British Flora. One section of this, on local botany, would comprise all publications, which it is possible to trace, dealing wholly or partly with the flora of any area within the British Isles. This section would include local floras and works on topographical botany, and all publications, such as local and county histories, guide books, periodicals, and newspapers, etc., in which plant lists of particular areas have appeared; manuscripts of sufficient importance and authenticity would also be listed. Where, however, only incidental mention is made of plant localities, as in many of the standard floras of Britain and in monographs, these would be omitted from this section.

The compilation will entail a large amount of research and will only be possible with the willing co-operation of helpers who have the requisite local knowledge of the literature of their areas.

We should be grateful if those willing to help would communicate with Mr. N. Douglas Simpson, Maesbury, 3 Cavendish Road, Bournemouth,

Hants, indicating (i) when they can begin work, and (ii) in what areas they are interested and to what libraries and periodicals they have access.

When we see what response is received to this appeal, detailed plans for carrying out the work can be drawn up.

HORNETS.

During the late summer of 1944 Hornets (*Vespa Crabro*) appeared in considerable numbers in various districts around and in Winchester; in many of these they had not been seen for years. Why this sudden influx took place it is very difficult to explain. From a request in the local paper I had specimens for identification sent to me from the following places:—Winchester, Sparsholt; Twyford, Hursley, Shawford, Chandlersford, Brambridge, Littleton, Alresford, Ampfield, Romsey, Andover, Wootton St. Lawrence, Longstock, Sutton Scotney, King's Somborne, Woodlands; this shows how widely spread they were. May I request observers to let me know during 1945 whether they re-appear in these various places? Specimens (accompanied by coloured plates showing the differences between Hornets and Wasps) were exhibited for several weeks in the *Hampshire Chronicle* office window, and proved to be of great interest. I had carefully chosen and arranged the six best specimens and placed the case on a shelf, but next morning they had all disappeared; the kitten had discovered them and had devoured the lot! Mr. F. H. Haines told me that around Ringwood and the neighbouring Forest, where there is usually a pretty good supply, they seemed to be below the average in numbers in 1944.

FUNGUS FORAY AT CHAWTON PARK WOOD.

Mr. and Mrs. H. T. White arranged a Fungus Foray for 19th October. Mr. A. A. Pearson, F.L.S., and Mr. E. W. Swanton, F.L.S., very kindly came and acted as Directors. Owing to the uncertain weather very few members turned out, but those who did were very well satisfied with the results. The list of fungi found is given below:—

<i>Amanita mappa</i> .	<i>Tricholoma saponaceum</i> .
" <i>muscaria</i> .	" <i>panaeolum</i> .
" <i>rubescens</i> .	" <i>album</i> .
" <i>phalloides</i> .	<i>Clitocybe nebularis</i> .
<i>Lepiota procera</i> .	" <i>flaccida</i> .
" <i>rachodes</i> .	" <i>fragrans</i> .
" <i>amianthina</i> .	" <i>clavipes</i> .
<i>Armillaria mellea</i> .	" <i>vibecina</i> , Fr.
" <i>mucida</i> .	<i>Laccaria laccata</i> .
<i>Tricholoma nudum</i> .	" <i>amethystina</i> .
" <i>sordidum</i> .	" <i>fusipes</i> .
" <i>rutilans</i> .	<i>Collybia platyphylla</i> .

Collybia butyracea.	Hygrophorus pratensis.
" confuens.	" virgineus.
Claudopus variabilis.	" conicus.
Mycena galericulata.	" coccineus.
" polygramma.	Lactarius turpis.
" galopus.	" torminosus.
" inclinata.	" pyrogalus.
" epipterygia.	" subdulcis.
" pura.	" blennius.
" vitilis.	" quietus.
Entoloma Bloxami.	" mitissimus.
" prunuloides.	Russula fragilis.
" porphyrophaeum.	" cyanoxantha.
Nolanea cetrata.	" xerampelina.
" staurospora Bres.	" atropurpurea.
Inocybe asterospora.	" emetica.
" Cookei.	Marasmius peronatus.
" geophylla.	Panus stypticus.
Hebeloma mesophaeum.	Boletus chrysenteron.
" crustulineforme.	" versicolor.
Flammula lenta.	" badius.
Psalliota arvensis.	" elegans.
" villatica Brond.	Fomes annosus.
Stropharia semiglobata.	Polystictus versicolor.
" aeruginosa.	Trametes gibbosa.
Hypholoma fasciculare.	Stereum hirsutum.
" hydrophilum.	" purpureum.
" lachrymabundum.	Clavaria corniculata.
Fr. non Bull.	" vermicularis.
Psilocybe semilanceata.	" cristata.
Psathyra gossypina.	" cineria.
Coprinus comatus.	Auricularia auricula-Judae.
Cortinarius glandicolor.	Calocera viscosa.
" caninus.	Phallus impudicus.
Daedalea quercina.	Lycoperdon perlatum.
Hygrophorus calyptraeformis.	" umbrinum.
" eburneus.	Scleroderma vulgare.
" puniceus.	Peziza aurantia.

H. PUREFOY FITZGERALD,
Secretary of the Biological Section.

SOME NOTES ON VIPERS.

By BRIAN VESEY-FITZGERALD, F.L.S.

THE Viper or Adder (*Vipera berus*), our only poisonous snake, is widely distributed throughout England, Scotland and Wales. It does not occur in Ireland owing, it is said, to the interference of St. Patrick. In Hampshire it is common, and in especially suitable localities, of which there are several, it is plentiful. Despite this, the viper is comparatively rarely seen even by those whose occupations, one would imagine, would provide many opportunities for observation. Because of this lack of observation in the field, coupled with the unreasoning fear of snakes that is common to most men, all sorts of misconceptions have arisen around the viper and are widely believed.

Some snakes have vestiges of limbs left, but our three snakes have none. Their skeletons consist only of skull, backbone and ribs. Their skulls are notable for their elasticity. The lower jawbones are not fused together, but are joined at the point of the chin by an elastic muscle and are also hinged to a bone which is loosely connected with the skull instead of being hinged to a fixed part of it. They are thus able to swallow objects much larger than their heads. The teeth, which are recurved sharp hooks (all alike save for the poison fangs of the viper) do not grow round the jaws but on a number of bars of bone which run lengthwise down the mouth. The two outermost bars, which can be moved independently and work backwards and forwards, form the lower jaws. The hooked teeth of one bar rake the prey down the gullet with their backward movement, and when the bar is moved forward again the teeth disengage because the prey is held fast by the other bars. Each bar in turn performs in a like manner until the victim disappears. The teeth (the number varies with the species) do not grow in sockets but in a groove along the bone, and when they are grown they are fused to the bone itself. If they wear out or are broken they are replaced by others, and this process can be continued indefinitely. This pattern is common to each of our three species, but in the viper there is the addition of poison fangs. These are two large hooked fangs on the front of the upper jaw and are bored with a channel from near the top to near the tip. When the jaws are shut they lie horizontally pointing backwards. The opening of the mouth pushes down the part of the upper jaw on which they grow, thus cocking them ready for use, and the same movement (the opening of the mouth) squeezes the gland in which the poison is retained so that it runs down the channel in the fang.

The poison, by the way, is a saliva which digests the prey as well as paralysing it.

The backbone of all our snakes has three types of vertebrae : the neck vertebrae which carry the skull, the body vertebrae each of which carry two ribs and extend all the way down to the vent, and the tail vertebrae which do not carry ribs, but which do have at the vent end a number of projections which look rather like short ribs. There is no breastbone. The ribs are attached to the backbone by cup and ball joints so that they can be moved freely and can be opened wide (particularly the forward ones) to allow bulky food to pass. They can also move backwards and forwards and when they do so, as each pair is connected with a band across the belly overlapping the one behind it, the snake moves forward.

The skin is very strong and elastic, and is covered on the top and the sides with small lozenge-shaped scales, but there are no scales on the belly where the skin is in bands stretching right across. On the head the scales are larger, and their number and the position in which they are set are of some help in determining the species, but the design is not constant : extra scales are sometimes grown and sometimes adjoining scales become fused. Outside the skin and the scales there is a horny, but transparent, layer of outer skin, which covers the whole snake, including the lidless eyes. As there is no opening in this outer envelope at the eyes the tears come away through the nostrils. This outer skin does not grow, and as snakes grow throughout their lives it has to be shed periodically, a process which is known as "sloughing." The outer skin loosens around the mouth and the owner then rubs its head against a stone or some suitable object, frees its head, and then crawls out of the skin. All snakes are irritable when they are due to slough and extra-irritable during the actual process. The ears are also hidden under the skin, but they are rudimentary anyhow and it seems probable that snakes are deaf to sounds. They make up for this by being extraordinarily sensitive to vibration, which is one of the reasons why man, being normally a heavy-footed and clumsy creature, so rarely sees them. In addition, they have in the long, forked tongue a very sensitive organ of touch and their sight is extraordinarily keen.

The internal organs are arranged in pairs, but instead of being placed side by side come one behind the other. The right lung, which is the larger, is cellular in front only, the back part being no more than an air sac. Snakes breathe by moving the ribs. There is only one vent, which is a crosswise slit that serves the use of bowels, kidneys and sex. The males have two sex organs in this vent, but only one is used at a time. All our three snakes produce eggs, soft membranous things, but the actual process of birth differs in each of our three species. The grass-snake lays its eggs in some heap of decaying vegetation or perhaps in a manure heap and leaves them to hatch : in the case of the smooth snake the

egg membrane breaks at the moment of birth : in the case of the viper the membrane is broken just before extrusion and the young are born alive. In all three species no attention whatever is paid to the young, who are born able to look after themselves and immediately go off by themselves. In the case of young vipers, they show some eagerness to do so, being anxious to put as great a distance between themselves and their parent as possible in the shortest time possible; since the female viper is a creature of uncertain temperament and large appetite.

There is a story that the female viper, when danger threatens her young, will open her mouth into which the young will jump to be swallowed, and that when the danger is over she will open her mouth again and out will come the young vipers unharmed. It is a story that is widely believed, and you may even meet men who will swear that they have actually witnessed such an incident. It is, of course, an optical delusion. Quite apart from the fact that no female viper would recognise its young, quite apart from the fact that no young viper would be so foolish as to remain in close proximity to mother, quite apart from these and many other very good reasons why such a thing could not happen, there is the question of time. A female viper at her first motherhood produces five or more young, the number increases with her size and she may produce as many as twenty. The time taken to swallow even five would be too long for the safety of the family or the parent. And if this is not sufficient to disprove the legend, consider the description of the snake's mouth and swallowing apparatus given above and think what would in fact happen to the young. Young vipers, I fancy, have just as rooted an objection to committing suicide as young humans.

Vipers are subject to extreme variation, both in size and colour, so much so in fact that after many years of fairly intimate experience I should hesitate to define a typical viper. Females are commonly said to be longer than males. It is true that long vipers are almost always females—the longest yet recorded in Britain, a positive giant of 35 inches, was a female—and it would probably be true to say that a viper of 26 inches or more is a female. Taking an average through a long series females are undoubtedly longer than males. But in the field one does not see a long series, and it does not follow that the longer of a pair is always the female. Not many vipers exceed 24 inches and most are 22 inches or less. I have known females of 20 inches and males of 22 inches to consort together, and I have known a male of 25 inches, a bigger beast than most of the females I have known. But if length is not a very safe guide to sex, it is, I think, true to say that the female is always stouter than the male. A female of 20 inches will be stouter than a male of the same length, even than a male of 21 inches and probably than a male of 22 inches. And the females are always more sluggish than the males.

Variation in colour is even more extreme—a point that is not sufficiently stressed in the books. Indeed the books suggest that on the whole all vipers are much alike and that all have a prominent dark zig-zag line down the back, by which marking they may be known at once. This is not so. The zig-zag is usually, but not always, present, but it is by no means always prominent and is not always recognisable at a glance. And vipers, so far as colour, is concerned, are most certainly not much alike. I have known (and I am writing only of Hampshire) a number of black vipers of both sexes—there is one spot in the New Forest near Puck Pits where on most suitable days you may rely on seeing a black viper or even, if you are in luck, several at once—and I have seen a male (also in the New Forest) that was as nearly white as could be. Between these extremes you will find brown, golden, brick-red, gray, olive, violet, blue and fawn; and the depth and consistency of the markings also varies enormously. In general, I think, but I would not be dogmatic about it, the males have the brighter colouring and the darker markings. Another point about colouring that the books do not stress (in fact most of them do not mention it at all) is that the underparts are quite often different in colour from the upper parts, and sometimes much more brilliant. W. H. Hudson is the only author I know who has really brought this point out, and he mentions it only once. Hudson watched and handled most of his vipers in the New Forest and he mentions particularly a golden female with a pronounced black zig-zag whose belly was brilliantly blue: a striking combination, but one which he did not consider uncommon though few were quite so brilliantly blue as this particular female. Blue of varying shades is, in my experience, the most common colour for the underparts when the ground colour of the upper parts is different, but I have also found green, pink, black and yellow. The colour of the underparts fades very rapidly after death and to see it properly you must lift the living animal up by the tail and hold it away from you. Can this be why the books do not mention it?

We commonly associate snakes, and especially poisonous snakes, with tropical climates. This has given rise to the quite erroneous idea that the viper loves the hot sun and is, with rare exceptions, to be seen only when the sun is hot. Probably the fact that the viper hibernates has leant added weight to this idea. However that may be it is widely, indeed commonly, held. A viper seen in February or early March is considered sufficiently extraordinary to be worth a letter to the Press every time it happens—which is every year! Actually the viper dislikes a hot sun as heartily as it dislikes a cold wet day, and it will take shelter from a hot sun as eagerly as from rain. It is a creature that loves moderate warmth. A short survey of its distribution is sufficient to prove the truth of this assertion. Our viper is found throughout northern Europe even to the sixty-seventh degree of latitude. In the far north of

its range it is found at sea level, but in the south, where the climate is warmer, it is found as a rule only in the hills. In southern Germany it is rare to find it below 1000 feet, while in Switzerland it is rarely below 2500 feet but may be found from that elevation to more than 9000 feet. Further south it simply does not occur. And when in the southern part of its range it does occur at a low altitude—and this is most uncommon—it will always be found that there are factors present to counter-balance the greater heat. This dislike of real heat holds good for the vipers of Britain. You will not see a viper on a really hot summer's day: on the other hand you will see them on the warm days of early spring. February, so far from being unusual, is the month in which the vipers of the Isle of Wight normally leave hibernation. Early March, given a few days of sunshine, is the normal month for leaving hibernation in the New Forest. Being a hill snake the viper throughout the greater part of its range is accustomed to snow, and it is not realised in this country how very fond of the combination of snow and sunshine it is. Snow on the ground and a bright sun overhead are quite irresistible to English vipers, and on such a day in February or March, if I am in suitable country, I expect to see vipers basking and am rarely disappointed. They love to find a stone or some patch of ground clear of snow and to lie and dream in the sun, and they will cross snow and burrow into snow without hesitation, and, indeed, with obvious enjoyment. Rain is another matter. The grass-snake has a definite fondness for water, the viper a definite loathing. It will always shelter from rain, always endeavour to avoid sodden ground, never enter water unless compelled to do so. And yet it is a thirsty creature. It will go to water to drink (in one garden of mine, one of my bird baths, an old Cotswold stone sink, placed in the ground but not flush to the ground, was a favourite drinking place for the vipers of the neighbourhood) and they will drink from dock leaves after rain and even from puddles in the roadway.

Vipers are mainly nocturnal. In the daytime they lie up in holes or in thick cover, or spend the time basking in the sun. They have favourite basking spots, and if you find a snake basking you may be fairly sure that you will find it or another in the same spot on any suitable day. A favourite basking-lie is never deserted for long, and seems to be as jealously sought after as a favourite station in a trout stream is sought by trout. But the real business of living, which is the capture of food, begins for the viper at dusk. The chief prey is made up of small mammals—mice, voles, shrews and the like—and small birds. The victim is paralysed by the bite and is swallowed whole. If this sort of food is not readily obtainable lizards, frogs, toads, slow-worms, newts and even caterpillars and other insect larvae are taken. It is often said that the viper does not climb trees. It is quite true that it is not an habitual tree climber like the grass-snake, but it will climb trees on occasion.

The occasion is usually the presence of a nest of young birds. No doubt vipers do take eggs—all the books say so anyway—but it is not an egg-eater in the sense that the grass-snake is. The latter climbs trees for nests of eggs, but, though I have no proof to offer in support of my contention and though I am well aware that individual vipers will vary in their tastes, I do not believe that the viper climbs trees for this purpose. No doubt it would not pass by a nest of eggs, but it likes, I fancy, more substantial food and would be far more likely to await the return of the parent bird. A viper's hunting is not a haphazard affair. Each one has a definite territory which it beats in a regular manner in search of food, and some individuals will cover considerable distances during the course of a night, returning at daybreak or when the light strengthens, to their chosen spot for lying-up. This is not guesswork. It is comparatively easy of proof, provided that a little trouble is taken. Both the grass-snake and the smooth snake are immune to viper's poison. I do not know about the latter, which is a small but powerful reptile (I have had smooth snakes in captivity), but the former will on occasion eat vipers that are not fully grown or too large. They begin at the tail end and go on until there is no more. The grass-snake, however, cannot be considered an enemy of the viper. The chief enemy is man. Man—he should not be proud of it—kills at sight, and rarely bothers to find out if the animal he is killing is a viper or not. All snakes in the eyes of most men are dangerous. The next most dangerous enemy is the hedgehog. Hedgehogs are not immune to viper's poison, but they are adept at killing snakes and are very rarely bitten. Their method is interesting: they bite the tail and then roll up, allowing the snake to kill itself on their spines. After the hedgehog comes, I should say, domestic poultry. The ordinary barn-door fowl, cock or hen, is extremely skilful in killing snakes. Some years ago when I was working a poultry farm in viper country I watched a Rhode Island Red hen kill a viper that got into the run. The hen jumped in the manner of a cock fighting, landing on the snake and pecking behind the head at the same time. The process was repeated some half-dozen times and the snake was dead. I found a number of vipers and grass-snakes killed by the poultry, and did not have a single fatality among the birds. Other birds, I believe, will also kill vipers. On the other hand there have been one or two records of birds—in one case a rook, in another a kestrel—killed by them. Goats kill them by stamping, and cats have also been known to do so. I have no record of goats being killed by them, but cats have been recorded as dying from viper bites. Dogs, foxes, badgers, stoats and weasels seem to avoid them whenever possible, but some dogs seem impelled to investigate vipers too closely and as a result get bitten, sometimes with fatal results. It is often said that sheep and even cattle are killed by vipers. I have been unable to verify a single instance of this, and

I have little doubt that the accusations are based not on fact but on fear. No doubt sheep and cattle are occasionally bitten—for example, when they inadvertently tread on a basking snake—but neither the sheep nor the cow is clumsy in this way: both, indeed, tread warily and delicately when feeding.

I have mentioned "viper country," but I am not at all sure that it would be possible to define such country accurately. The New Forest is viper country and so is Dartmoor Forest, but it would be most unwise to regard either as typical of the sort of ground that vipers frequent. In general they are to be found most frequently, I think, on heath land and rough common. But the thick hedgerows of Hampshire are favourite resorts, especially the hedge bottoms along the lower slopes of the downs. They may also be found on the very tops of the downs—there is a particularly good place outside Winchester—and in ordinary meadow land. Waste land, even when in or near towns, is also inhabited on occasion. I once was brought a viper that had been killed on a slag heap at Coalville in Leicestershire. Altogether I do not think the viper is so particular as the grass snake.

Hibernation is sometimes undertaken in colonies of considerable size, and I am inclined to doubt if in the wild it is ever undertaken singly. Some of these colonial hibernacula have, I imagine, been used for many years and the inhabitants return to them from considerable distances. I have personal knowledge of two in Hampshire: one not far from Holmesley Station and the other in the Cheriton neighbourhood. I have spent hours in the spring watching these two, but chiefly the one near Holmesley which I have known for at least twenty years. Vipers mate in the spring, not very long after emerging from the winter sleep. In the New Forest mating occurs, as a rule, during the last week in March and the first week of April (young in the New Forest are usually born in August which gives a four months' gestation), and it is at this time that a visit to a known resort of the snakes is very well worth while.

During the mating season there is a certain amount of competition between the males for particular females, but the females never show the slightest concern as to which male bestows his favours upon them. The females at this time lie out in suitable spots, never far from a hole, and bask, and the males move about among them. I have watched a smallish male paying court to a large female, lying alongside her and playing his small black tongue in light flickering caresses all over her body—this is the invariable prelude to mating—when a much larger male appeared. So soon as he saw the other two he stopped, then after a moment approached more closely, stopped again, drawing back his head to strike. At this moment the small male became aware of him, and was gone so quickly that I could not follow the movement. Whereupon the large male glided up to the female and commenced to caress in

just the same manner, the female accepting the change with, so far as a human could see, complete indifference. In due course the tails linked, and the male, moving the whole length of his body gently against that of the female, mating was accomplished.

On another occasion while a large male was caressing a comparatively small female another male, a little smaller, appeared and made straight for the courting couple. In a flash the female was alone, and the one male was racing after the other towards a hole in the bank some yards away. This is the only occasion on which I have seen vipers moving at top speed and it was with interest that I noticed that the head, and an appreciable length of the body, was held clear of the ground. They moved at a quite amazing pace, and shot down the hole one after another. After a few seconds the original large male reappeared and returned immediately to the female. She had, however, moved a little away to make room for another and much larger female. With the newcomer the male was most cautious, and after one or two tentative caresses moved away, came upon the original female from whom he had been driven and in due course mating was accomplished. I stayed for another two hours watching the big female as she lay coiled in the sun. During this time three males approached her, each very cautiously. As each came up she appeared absolutely indifferent, accepted the few tentative caresses with absolute indifference, but as each moved away she turned her head sharply after them. Finally, she uncoiled, glided unconcernedly past me and disappeared down a hole. The following afternoon in exactly the same spot I watched her mating with one of the males that had visited her the previous day.

Vipers are not savage creatures, and they do not attack man on sight. Nor are they short-tempered and apt to strike at the slightest provocation. They will always avoid man and trouble if they possibly can, and almost always they will give warning that they may have to strike, if conditions do not improve, by hissing. In fact, I have found them to be gentle and inoffensive creatures so long as they are treated with proper consideration. It must not be thought that I am suggesting that the viper is harmless: far from it. But I am suggesting that the fear with which it is widely regarded reflects little credit on man. The viper is not a creature that one can take liberties with, its bite is not a thing to be disregarded, but, provided consideration is shown, vipers are not dangerous.

I have handled many vipers, with and without gloves. I have picked them up by the tails in the open—you do not want to hold them by the tail for long—and I have picked them up by the neck in the open. I have had vipers in captivity and out of cages. I have had them basking on my hand—the human hand is warm and warmth is the way to the viper's heart—and I have had them coiled around my neck and crawling here and there about me as

I have sat in a chair reading a book. I have even teased a viper and been astonished at the amount of teasing it would stand before it struck at my heavily-gloved hand. I do not know how many vipers I have handled, a considerable number, and I have only been bitten twice. The first time on the little finger of my left hand and the second time on the thumb of my right hand. The first bite occasioned me some discomfort. To be honest, I was extremely frightened, and made a large cut in the finger with my knife, sucked the wound and generally behaved in the approved Red Indian-cum-Boy Scout manner. I was sixteen years old at the time and was convinced that I was going to die. As I was some miles from anywhere I sat on the ground and resigned myself to this, feeling frightened and heroic. As nothing happened at all I walked the five miles or so home. I had a headache for a day or so, and the finger (owing entirely to my own misguided efforts, I have a large scar to this day) was painful for a long while—beyond that nothing. The second occasion was four years ago. By this time I had learned that whisky was a good thing to drink when bitten by a viper, so I drank quite a lot. I cannot say that I felt anything at all, beyond a slight headache—and that might have been the whisky. That has been my experience of viper bites. On the other hand a friend of mine who was bitten above the ankle was seriously ill for three weeks (he was an apparently strong man of forty) : a girl I know was bitten in the thumb and was dangerously ill for four days and ill for a month : and a boy of thirteen I know was bitten and died the day after. A good deal, I fancy, must depend upon one's physical condition at the time of being bitten. Very few people in Britain die as the result of being bitten : in France about eight per cent. of bites are fatal. No explanation so far as I know has been given for the difference. French vipers are not, in my experience, any more difficult to handle.

The viper is not easy to keep in captivity. Its first reaction to being captured is to disgorge its last meal, and it will generally refuse to eat in captivity, and will ultimately die of starvation. I should not recommend anyone to keep a viper for more than three weeks. During that time it should become very tame, but if it will not accept food then it should be released. To begin with it should always be handled with heavy gloves (I do not always practise what I preach, but the advice is sound), but, once it is used to one, gloves may be discarded and provided sudden movements are avoided there is little risk of being bitten. Both my bites were my own fault : one was from a snake in the open, the second from a captive, and both struck in response to sudden movement on my part. If a captive will take food—this has only happened once in my own case—it should be fed once a week. I think some fail to feed because they are given dead food, but even live mice will not tempt the majority of the vipers I have known. If they will feed, however, the food should be presented

to them alive. This may sound cruel, but is not. Certainly less cruel than allowing the snake to die of starvation. Never try to feed a snake forcibly. A snake's mouth is delicate and easily injured.

I have not made a detailed study of the distribution of vipers within our boundaries for the simple reason that the animal occurs almost everywhere in Hampshire. It would probably be easier to detail the places in which it is not known to occur. (The case of the smooth snake—about which I hope to contribute a paper in the future—is very different.) Probably it will be said by many who read this paper, "Well, I never see a viper around here." Of course, the density of population varies from place to place and all Hampshire is not so plentifully supplied as the New Forest, the stretch of country between Alresford and Exton, the area along the Berkshire border by Silchester, or the ground between Chawton Park Wood and the railway, but I am convinced that the number of places in the county—excluding marshy or permanently wet areas—where it is not known to occur at all is very limited. They are not as thick on the ground as sparrows, but they are very far from being uncommon. Nor is it difficult to prove whether or no you have adders with you. Choose what you think would be a likely spot, choose a night in summer, and light a fire. If there are vipers in the neighbourhood they will almost certainly come to the fire, and may be easily secured. I have noticed this on more than one occasion when I have been with Gypsies.