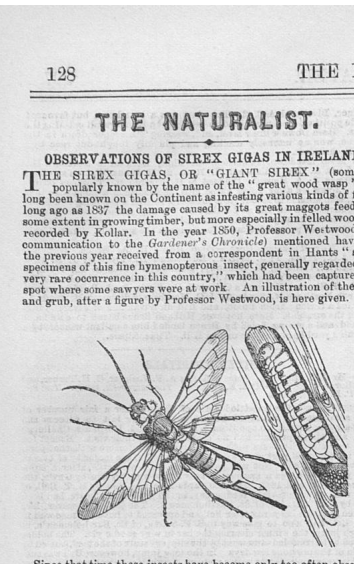
THE NATURALIST.

OBSERVATIONS OF SIREX GIGAS IN IRELAND.

THE SIREX GIGAS, OR "GIANT SIREX" (sometimes popularly known by the name of the "great wood wasp"), has long been known on the Continent as infesting various kinds of fir. So long ago as 1837 the damage caused by its larvæ feeding to some extent in growing timber, but more especially in felled wood, was recorded by Kollar. In the year 1850, Professor Westwood (in a communication to the *Gardener's Chronicle*) mentioned having in the previous year received from a correspondent in Hants "several specimens of this fine hymenopterous insect, generally regarded as of very rare occurrence in this country, which had been captured at a spot where some sawyers were at work. An illustration of the insect and grub, after a figure by Professor Westwood, is here given.



Since that time these insects have become only too often observable in England, but I am not aware of their presence being recorded in Ireland as a really destructive timber infestation until the year 1890. In that year specimens were sent me in consequence of an attack which was doing much harm in the woods at Kilruddery, Bray; also from timber at Gorey, co. Wexford; and also from Woodside, Hacketstown, Carlow, with the remark (amongst other observations) that "from the quantity of timber destroyed they must be very numerous this year." These localities, it will be noticed, are all not far from the east coast of Ireland; and in each case the insect and its method of attack appeared to have been quite unobserved previously in the locality. In the same year also, Mr G. H. Carpenter, the entomologist of the Royal Dublin Society, reported inquiries having been sent to him regarding the infestation from various localities (specified in his report for 1890), with the remark: "It is hence well distributed along our eastern coast." During the present season, the number of inquiries sent by correspondents of the *Field*, together with specimens of this fine but destructive insect forwarded for identification to myself, suggest that the infestation is spreading in Ireland to an extent which makes it desirable to put owners of fir plantations on their guard.

The female insect (which is most frequently observed, or at least most frequently forwarded) is cylindrical, usually about 1½in. long, and the general colour black and yellow; the head black, with a large yellow patch on each side behind the eyes; body between the wings black; abdomen with two lowest and three terminal rings yellow, and those between black; at the tip, the abdomen has a strong, hard point, and beneath it is the ovipositor, like a long, hard, black bristle, lying in a long yellowish or tawny sheath, projecting about ½in. or more beyond the spiny abdominal tip. The legs have the shanks and feet yellowish; the fore tarsi transparent and strongly veined wings are of a pale tawny colour; the horns yellow, long, and threadlike. The male is smaller than the female, with the abdomen flatter, and yellow or reddish yellow, excepting the lowest and the terminal segment, which are black.

The method of infestation is for the female sirex to bore a hole through the bark of the attacked tree with her ovipositor; one hole for each egg. The maggots which hatch from these are soft, whitish, and cylindrical, with a scaly or horny head, furnished with strong jaws, a pair of very minute feet on each of the three segments next the head, and a short point at the end of the tail. These grubs bore into the solid wood, feeding until they are full grown, which is considered to be in about seven weeks from date of hatching; and, as they grow to a length of from 1½ to 2 inches, they have a power of spoiling a deal of timber. How long they may continue in grub state—that is, whether they customarily change to chrysalis state on being full fed, or that some time may possibly elapse before the change takes place—appears uncertain; but whether in grub, or in chrysalis, or in perfect state, they may possibly remain for a few years in the infested wood, appearing from it when cut up or manufactured, to the no small surprise of observers.

Trees to which attention is directed either by presence of the sirex, or by the large holes from which the perfect insect has issued, should be cut down, sawed up, and burnt. Where there are a few insects noticeable, it is very likely that there are many more in some stage or other in the tree. I have myself helped at securing twelve to twenty specimens, taken in a few hours from a single larch trunk.

Silver fir, larch, and spruce are the trees most mentioned as liable to infestation; but it is not confined to these, as, for instance, in Professor Westwood's paper above quoted, he records an observation of a female S. gigas inserting her eggs in the stem of an American Arbor-vitæ, which had been cut down only a few days before.

A great deal has been written as to whether the sirex attacks healthy standing timber; but, however this may be, the attack obviously takes place to trees which (but for this) might have continued to live and grow both for useful and ornamental purposes. There is no doubt, however, that sickliness, tending to check the full flow of sap, attracts the female sirex, and puts the attacked trees *more* under its power, as in these cases the punctures for egg laying or the small commencing galleries are *not* so liable to be choked, together with their insect contents, by the sap exuding into them.

The best methods of prevention, therefore, are to clear away trees which have been injured by accident, or diseased, or that are weakened by old age, or disease, or attacks of insects; and also those which have been blown over, or those which have been felled, as the sirex lays its eggs in felled as well as in standing fir timber.

Any trees which are seen to be infested as above mentioned by the sirex leaving been noticed escaping, or by the large holes in the trunk which show escape to have taken place, or in any other way, should be fell d, and so dispo ed of as to prevent further mischief. Recently felled trunks are particularly liable to infestation; and in a year or so, possibly less, their condition is some times shown by the presence of great parasite flies, commonly known as ichneumon flies, piercing into the bark with their long ovipositors to reach the wood wasps within. I have myself seen these so busily at work as sometimes to be unable to retract their ovipositors. If, in the case of a badly infested felled trunk, it was not possible to cut it up at once, it would be worth while to heap rubbish over it and fire it, to kill the pests before emergence.

There is another kind of sirex, known as the steel-blue or common sirex, the S. juvencus—of which the female is commonly dark blue—that is very mischievous in England; but I am not aware of this having been as yet recorded as mischievous in Ireland.

ELEANOR A. ORMEROD.

Torrington House, St. Albans, July 16.

WHITE RHINOCEROS.

SIR,—Mr Tegetmeier and others appear to be at a loss to know why the rhinoceros horns should be called "white." If they will examine the colour of the horns of this species, they will find the prevailing colour to be whitish; while the colour of the horn of the prehensile-lipped variety is quite black.

As the horns of these animals are composed of agglutinated hairs, it is fair to infer that, if they had hair, their prevailing colour would be similar to the grain of the horn.

The above is the explanation I got from the veteran hunter, old Hartley, in Mashonaland in 1867. The late Mr Thomas Bain was of opinion that this explanation is correct. The old Boer hunters Viljoin and Swaartz could give no other reason for the name "white rhinoceros."

Our old loading rods, made out of rhinoceros horn kerries, were all lightish in colour, and only kerries made out of white rhinoceros horns were long enough for this purpose. When we made our pipes out of rhinoceros horn, we always chose the black "borélé" horns, as we fancied black looked better in a pipe.

P. MCGILLEWILL (late elephant-hunter).

Whittlesea, S. Africa, June 23.

NOTES AND QUERIES ON NATURAL HISTORY.

THRUSHES BREEDING IN AVIARY.—Will Miss Edith Rogers kindly say if the thrushes to which she referred in the last *Field* built a nest similar to that which they would have made if in a wild state?—GEORGE J. DUNVILLE LEES (Woodhill, Oswestry).

MOCK NESTS.—I suppose it is not generally known that the male moorhen makes a convenient flat stage well above the water for the accommodation of the hen to brood her young upon at night. Perhaps the mock nests of the blackcap, mentioned by Col. T. M. Ward in last week's *Field*, may be for a similar purpose.—J. T.

RAT STALKING A MOORHEN.—Last November I saw a large brown rat cleverly stalk a moorhen that was sitting outside a reed bed. Just as it sprang at the neck of the bird I shot them both dead. A wonderful fisherman, too, is the brown rat. During the spawning season I found large quantities of perch, and afterwards roach, brought on the banks. As to mussels, I have constantly known rats in the winter to dive 5ft., or 10ft., and hand them.—J. T.

NESTING OF THE LESSER REDPOLL.—I do not know if the fact has been previously recorded—I have never met with it in any natural history books—but I found many nests of this species in North Wales this year, and also found that the hen bird invariably commenced to sit after laying her first egg, the consequence being that on the fifth day a clutch would contain slightly incubated as well as perfectly fresh eggs.—H. S. DAVENPORT.

COMMON SNAKES TAKING TO WATER.—I have always regarded the common ringed snake as a semi-aquatic animal, abundant near rivers and watercourses, resting on the water like a dry stick, and tak ng to it on hot days for pleasure, yet unable to dive or sink. When fishing last week, a snake swam up to my boat (perhaps mistaking it for an island), and, after lying on the water within reach of my hand for two or three minutes, it moved leisurely off to the river's bank. This kind of snake will live a long time in confinement, and becomes attached to a kind owner.—J. T.

WILD SWANS IN IRELAND IN JUNE.—In reply to the query of Mr A. Parker, whether it is unusual to see wild swans in Ireland in summer, and as late as June 28, I believe, as your footnote states, that it is "quite exceptional," and unless one intended bird, or one only, all and weak to migrate, very improbable. But is it not possible that they may have been tame swans? Some years ago, in the middle of June, I saw seven tame swans (all adult birds) on the estuary here; and last year a friend of mine saw five on the Palmerstown river near Kilala, many miles from the nearest place where swans are kept. Of course, when swans are seen on the sea coast, they are nearly always considered wild ones, especially if the black knob on the bill is not observed, which so unerringly marks the identity of the tame swan.—ROBERT WARREN (Moyview, Ballina).

CUCKOO CALLING ON THE WING.—With regard to the question of cuckoos calling on the wing, my experience has led me to the conclusion that this habit is not so uncommon as some correspondents think. On a Sunday morning early in the May of 1893 (strange to say, I have neglected to enter the date in my naturalist diary), I was out on Ainswick Scar, Westmorland, and heard the cuckoo's note faintly, and evidently high up. I saw a pair of birds, cock and hen, the former about a dozen yards in advance, at an elevation of probably a hundred yards, raising away in the direction of Kentmere, and even after they were out of my sight I could hear the call faintly. On Sunday, April 22, this year, I watched a cuckoo flitting from bush to bush of a large mixed hedge dividing a plantation and arable field on the estate of Mrs W. Wilson, of High Park, near my residence. I noticed that the best of time of the call note was very irregular, which was not so in the case referred to when the bird was fairly on the wing, and that it only called after resting on a bush or tree.—G. W. M. (The Farm, Oxenholme, Westmorland).

CHIFFCHAFF NESTING AT A HEIGHT FROM THE GROUND.—In *Field* of July 14, Mr Howard Saunders asks if anyone can go "one better" than a second nest recently treasured Saunders' Manual," I find a marginal note "see *Field*, May, 1892; for chiffchaffs breeding 20ft. high." This is more than one better, but I did not preserve exact date or name of contributor.—ALFRED C. CHAPMAN (Moor House, Leamside).

—I notice this subject has again cropped up, and as it is, I think, pretty generally stated that the chiffchaff usually nests on the ground. I wish to state that after many years of careful observation, and by catching the birds on the nest in most cases, I have long since come to the firm belief that the chiffchaff rarely, if ever, nests on the ground; at least, I have never found its nest so placed. On the contrary, I believe the willow warbler never makes of the ground—that is, it nests as close to the ground as the herbage will allow, and never in a bush like the chiffchaff. Throughout all the parts of Yorkshire and Lincolnshire I have visited, the chiffchaff is a scarce species compared with the willow warbler.—F. BOYES (Beverley).

—Will you allow me to add my evidence to that of your correspondent Mr F. J. Cade, in the *Field* of July 7, that the chiffchaff has been observed to build at an altitude of 8ft. from the ground; nevertheless, I should say that such an occurrence is extremely rare, for during a period extending over more than fifty years I have only once seen the nest of the bird at such an elevation, and it was built on the branch of a large yew bush in the grounds at Clifton Castle, the country seat of Sir John and Lady Cawell. I may mention that I once found a nest of the chiffchaffs on the frond of a fern, which, if I remember rightly, was that of Lastræa filix-mas, and I have observed a wasp's nest similarly situated.—JAMES CARTER (Burton House, Masham, July 16).

—What are supposed to be abnormal sites for the nesting of the chiffchaff has recently been causing some discussion in the *Field*, but a question I would like to ask is, Are ornithologists generally agreed as to what is the normal site for the nest of this little bird? At all events, my own experience of the matter is wholly at variance with what is laid down by Dr Bowdler Sharpe in his recently published work, "A Handbook to the Birds of Great Britain." With regard to the nest of the chiffchaff, he writes: "This is generally placed on the ground." I have been an assiduous nest-hunter all my life, and have naturally found scores of nests of both chiffchaffs and willow warblers. I have never once known a chiffchaff's nest to be built on the ground, and only once have I known a willow warbler's to be built off it. It may seem presumption on my part to call in question the statement of such an eminent authority, but it couldn't be being very curious to know if others can confirm my observations.—H. S. DAVENPORT.

ZOOLOGICAL SOCIETY.

ADDITIONS TO THE MENAGERIE, REGENT'S PARK, FROM JULY 9 TO JULY 15.

Date.	Name.	Country.	How obtained.	Where located in the Gardens
July 9	1 Thar (Capra jemlaica)	.....	Born in the Menagerie	Markhors Yard
"	1 Brush-tailed Porcupine (Atherura africana)	W. Africa	Presented by Mr W. H. Boyle	Small Mammals House
10	1 Mona Monkey (Cercopithecus mona) ♂	Ditto	Presented by Mr C. Gardiner	Monkey House
"	2 Lesser White-nosed Monkeys (Cercopithecus petaurista) ♂ ♀	Ditto	Presented by Mr W. H. Boyle	Ditto
"	1 Campbell's Monkey (Cercopithecus campbelli) ♀	Ditto	Ditto	Ditto
"	1 Bland (Oreas canna) ♂	S. Africa	Purchased	Antelope House
"	1 Livingstone's Bland (Oreas canna livingstonii) ♂	Transvaal	Ditto	Ditto
11	1 Crowned Lemur (Lemur coronatus) ♀	Madagascar	Deposited	Monkey House
12	1 Giant Tortoise (Testudo gigantea)	Aldabra Islands	Presented by Rear-Admiral W. R. Kennedy	Tortoise House
"	1 Smooth Tortoise (Testudo holohisa)	Ditto	Ditto	Ditto
13	1 Japanese Deer (Cervus sika) ♀	Ditto	Born in the Menagerie	Pad-docks
14	1 Wapiti Deer (Cervus canadensis) ♀	Ditto	Ditto	Wapiti Deer House
"	2 Short-toed Hedgehogs (Erinaceus brachydactylus)*	Somaliland	Purchased	Marsupial House

♂ Male. ♀ Female. * New to Collection.

THE VETERINARIAN.

ON THE DISAPPEARANCE OF THE BACILLUS OF ANTHRAX AFTER THE DEATH OF THE AFFECTED ANIMAL.

IN THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY for June last there is an important communication from the Principal and the Professor of Pathology at the Royal Veterinary College on the subject of the disappearance of the anthrax organism, on which the infectivity of the disease depends, from the blood and tissues of an animal which has died of the disease. The question is discussed with special reference to the most simple and safe method of detecting the bacilus of anthrax, *i.e.*, without making the ordinary kind of post mortem examination, and also with the view to determine the best method of disposing of the carcases of animals dead of the disease.

For some time past there has been a good deal of correspondence in favour of cremating carcases instead of burying them. The alleged objections to the latter mode of disposal being the risk of contamination of the soil, and the consequent spreading of the disease.

In the following extracts these points are considered:

"When a cow or a sheep, dead of anthrax, is opened immediately after death, the bacilli, which are the cause of the disease, are found unmixed with other germs in the blood all over the body, and in special abundance in the spleen. It is mainly during the last few hours of life that the complete invasion of the blood takes place, and it might be supposed that the germs in the blood would continue to multiply, even after death. Such, however, is not the case. As soon as the breath has left the animal, growth and multiplication of the bacilli ceases, because the presence of anthrax bacilli in the blood has the effect of so-called antibodies, for the growth of which oxygen is strictly necessary. During the life of the animal that harbours them the bacilli obtain the necessary oxygen from the same source as the animal cells, viz., from the blood which becomes charged with oxygen in passing through the lungs. But as soon as respiration ceases the supply of oxygen is cut off, and the growth of the bacilli is promptly arrested.

"But in the blood of an animal dead of anthrax the bacilli do not merely cease to grow and multiply, they degenerate and die. The alimentary canal of the sheep or, and horse contains large numbers of putrefactive bacteria, which, during life, are unable to penetrate into the blood or tissues; but immediately after death these bacteria rapidly make their way into the wall of the bowel, and gain access to the blood vessels, along which they soon spread through the whole body. Chief among these putrefactive germs is the so-called malignant œdema bacillus, which, as regards size and shape, is so like the anthrax bacillus that the one may readily be mistaken for the other. The malignant œdema bacillus belongs to a class of anaerobic organisms—that is to say, it will not grow or multiply in the presence of free oxygen—and hence the deoxygenated blood of the dead animal is a most excellent medium for its propagation. As soon as the breath is cut of an animal that succumbs to anthrax, the invasion of the blood and organs by putrefactive germs begins, and, *post mortem*, the anthrax bacilli disappear. The invasion always starts from the bowel, and it proceeds with great rapidity to the chest and belly, as these parts cool slowly after death, and warmth is favourable to the growth of bacteria.

"When an anthrax carcase is left unopened, the invasion by putrefactive bacteria is sometimes so complete within twenty-four hours that not a single anthrax bacillus can be detected by microscopic examination in any of the organs in the chest or abdomen; but in the blood of the ears or the feet the anthrax bacilli may be recognisable on the third day after death. These statements are based on observations that have been made in the Research Laboratory during the last three months, and they indicate that when an animal is unexpectedly found dead, and anthrax is suspected, if the carcase is already partially putrid, blood from the ear or foot ought to be examined in preference to spleen-pulp or blood from one of the large veins of the body. At the present time the material sent to the laboratory for examination in suspected cases of anthrax is almost always the spleen or part of it, and in a considerable proportion of cases a positive opinion cannot be given because of putrefactive charges.

"The destruction of anthrax bacilli which takes place during the putrefaction of a carcase is very important in another respect. When one follows step by step the invasion of the blood by putrefactive bacteria, and the disappearance of the anthrax bacilli which accompanies putrefaction, one cannot help surmising that putrefaction may in this case be a valuable means of disinfection. The experiments circuitor given which that this surmise is correct. They appear to warrant the conclusion that in certain conditions putrefactive putrefaction renders an anthrax carcase innocuous. The conditions are those that exclude the possibility of spore-formation on the part of the anthrax bacilli before putrefaction sets in. The conditions necessary for his spore-formation are: (1) Free exposure to the air; and (2) a mean temperature (about 70° Fahr.). It is obvious, therefore, that prompt burial at even a moderate depth, since it puts the carcase in conditions under which the formation of spores is impossible, and in conditions which are eminently favourable for putrefaction, is a perfectly safe method of disposing of an animal dead of anthrax. The experiment furnish good grounds for believing that soil contamination is much more frequently brought about by the shedding of blood in making post mortem examinations or by the discharge of anthrax bacilli from the body before death (in urine, &c.) than by the liberation of the bacilli from buried carcases."

It will be observed that the destruction of the activity of the virus by the death of the organism is secured by avoiding any dissection of the carcase, which will permit of the introduction of the oxygen of the atmosphere through the artificial openings made by the knife of the operator. The entrance of air by the natural respiratory passages ceases with the life of the animal. For the purpose of examination for the detection of the bacillus it is necessary to cut off a portion of the ear, or, in the case of a small animal like a sheep, the foot may be cut off, and a drop of blood placed under the microscope, or either or both structures may easily be packed securely and transmitted to a laboratory for inspection; and, considering the serious accidents which have occurred in connection with made post mortem examinations in the ordinary way, it is at least satisfactory to be able to suggest a means of escaping a palpable danger to human life, and the risk, almost amounting to a certainty, of contaminating the soil by the blood which escapes during an ordinary post mortem examination. At the same time the portion of the ear or the foot will supply all that is required for purposes of investigation.

The statements made in the above extracts are based on a series of experiments, eleven in number, which are described in the article.

From the result of the first experiment, it would appear that, under circumstances which induce rapid decomposition, a few hours only are necessary for the destruction of the activity of the virus. A rabbit inoculated with the spleen removed from a sheep eighteen hours after death, at which time the carcase was in a state of advanced decomposition, remained unaffected.

In a third experiment the spleen was taken from a cow shortly after death, and was kept for five days before being used for inoculation. In this case the rabbit inoculated died of anthrax five days afterwards—an unusually long period, showing that the virus had sustained some loss of power. The further experiments tend to prove that if a carcase is left uncut until it has become putrid, there is no danger from the bloodless organs; but the essential conditions are that the interior of the body shall not have been brought in contact with the air.

Referring to the disposal of carcases, the following extracts include the chief points to which attention should be directed:

"Alternative methods of disposing of carcases are permitted by the Anthrax Order, viz., burying, burning, and destroying by chemical agents. High temperature, of course, refers to the processes of burning or boiling, or the employment of high pressure steam in a digester. The use of chemical agents is only practicable in the immediate vicinity of a chemical manure manufactory.

"All the above processes have common objection to be urged against them, that they necessitate the removal of the carcase to a convenient place for the purpose of destruction, and in the majority of instances cutting would be required before burning, boiling, or steaming could be effected. Under all the circumstances—of the different methods of getting rid of a dangerous carcase—burial, under proper precautions, appears to be the safest. It is obvious that the burial should take place as near to the spot where the carcase is found lying as possible. When removal is necessary, the soil which is contaminated by blood which may flow from the carcase should be covered with quicklime or commercial carbolic acid.

"In selecting a place for burial, the possible contamination of water courses with septic matter must be considered. This caution is necessary, as it has more than once happened that carcases have been buried in such a position as to be dangerous to public health, and it has been necessary to exhume and rebury them under the supervision of a sanitary authority."