The plains of S. Africa are characterised by numerous animals generally known to the Boers as "Mierkatjes" (not little monkeys as Burchell renders it, but literally "ant cats"). Most of these are Viverrine Herpestes, Suricates, &c., and all have nearly similar habits. Early in the morning these pretty animals may be seen in numerous groups sitting up on their hind legs warming themselves in the sun, and, when startled, scampering away to their holes, with their tails cocked high up in the air. They are likewise more or less coloured like the Karoo soil, although when individually examined their colours, of course, differ.

All these feed on mice, small reptiles, and grasshoppers and locusts. They likewise greedily devour birds' eggs. Equally common with these in some parts, but especially noticed by me near Cradock, is the *Xerus setosus* Gray, or ground squirrel. It is likewise known as a Mierkatje by the Boers. Unlike the other Mierkatjes it feeds on small bulbs and tubers called "limtjes" by the Boers. Its colour, habits, and long tail, cocked up in the air, gives it a striking resemblance to its Viverrine neighbours; while in common with them it forms burrows in the ground. Of reptiles there is a species of *Dasypheltis*, a snake almost devoid of teeth, very common about Algoa Bay, but with whose specific name I am not acquainted. When irritated this species coils itself up and darts angrily at the intruder, puffing and hissing loudly. When I first met with it I was rather cautious in handling it; but discovering its harmlessness I have kept several in confinement.

A few years ago I was examining some Bushman caves in the Nuncazana Valley, Bedford District, when my Hottentot servant told me that there was a "Groste Nacht-adder" in the cave, and I found what I also took to be a large Night adder. It sprang at us, and nearly escaped. On examining it when dead I was much surprised to find it was a very fine specimen of my old friend the *Dasypheltis*, as I had not met with the species since I had left Port Elizabeth. Night adders are common in the Nuncazana, as also here. On comparing the two snakes I was much struck by their general resemblance, although, of course, the *Dasypheltis* has a very dissimilar head; but the curious way it has of blowing itself out, and distending its neck, and darting at intruders, heightened the resemblance. I cannot help thinking that these habits must be serviceable to so harmless a snake.

In general protective resemblance Reptiles and Batrachians offer countless examples, and it is especially noticeable amongst the *Agamidae*, one species of which varies throughout the eastern part of the colony and Free State.

With respect to butterflies I need not enlarge, Mr. Trimen having done his work most thoroughly. I may mention, generally, that *Philognoma varanes*, when its wings are closed, strikingly resembles a dead leaf, and two of its varieties, ♂ and ♀ *P. Agathina*, are found in forests, and their flight strongly resembles falling leaves, as does also that of *P. poppea*. In his work on the "Rhopalocera" he mentions the resemblance between the larva of *Diadema bolina* and *Danaüs chrysippus*. Amongst birds which I have noticed capturing Lepidoptera I may mention that I have seen *Tchitrea cristata* darting at *P. Agathina*; *Cypselus caffer* I have seen take small moths from the grass, and dart at *Terias Rahel* on our open flats; *Motacilla capensis* I have seen take moths and *P. hellica*; *Daururus musicus* is a voracious bird amongst insects, and takes moths, though I cannot state I have seen it capture Rhopalocera, yet I think it also attacks *Pierida*.

Mantide and some species of flies are, together with spiders, I believe, the greatest persecutors of Rhopalocera. One large kind of fly pursues *Satyridæ* and *Tulbaghia menensis*. I have found a Phasma in the crop of *Strix affinis*.

The most perfect cases of mimicry I know of are two spiders (specific nature unknown to me) which bear the closest resemblance to ants. They belong to the *Salticidæ*, and are, apparently, related to *Salticus formicarius*. The one is smooth, black, and shining, and runs rapidly on the ground and bark of trees, and resembles the ant which builds its nest in *Acacia horrida*, and is used by the Kafirs for the purposes of torture. The other is larger and has its cephalothorax dull black, and its abdomen covered with short yellowish hairs. It is generally found running on the stems of herbaceous plants and small bushes, and closely resembles an ant found in similar situations. The fore legs in both species are larger than the second pair, and are frequently held up, when they closely resemble the antennæ of ants. So exceedingly close is the resemblance that, at first sight, I have almost always taken them for the imitated ants.

The most singular cases of protective resemblances in other orders are those of *Pephricus paradoxus* Sparr.; particularly re-

marked on in that traveller's work on South Africa; of another Heteropter in my possession apparently allied to the genus *Phleæa*, and which I discovered by the greatest fluke, so closely did it resemble a knot of the twig on which it was; of two species of Phasma, one believed by Mr. Trimen to be *Palophus Haworthii*, Gray, both of which were found in the Karoo on dead branches. *Acacia horrida*, known as the "Doom Boom," or Mimosa throughout the Eastern province, is a perfect museum of protective resemblances.

I have the larva of a moth, which forms a case so exactly like the thorns of that tree that no one could detect it when not in motion; Mr. Trimen will, I hope, determine the species. A caterpillar belonging to a geometric moth, which piles the blossoms on its back, and doubles itself up so as exactly to resemble the flower heads; a larva of a species of *Neera*, which exactly resembles the young thorn leaves on which it feeds, and which forms a pupa in a case resembling an excrescence of the bark; an *Epeira* which has two excrescences on its abdomen exactly resembling two old broken thorns. I could recount a number of other similar instances, but for the fear of trespassing too much on your space.

Lastly, I would remark how long it often is before frugivorous birds discover fruit not indigenous to the country.

In the drought of 1865 I was much struck by this. We had a solitary damson tree, which had not previously borne much fruit, but which that year had abundance. The mousebirds (*Colius*) and the Red-wing (*Inida morio*) had devoured the almond and peach blossoms and the figs. With two double-barrelled guns we could not keep them from the latter. Meanwhile the damson tree was never touched, but ripened its fruit beautifully. On the morning of Christmas Day my friend intended taking them to his sister-in-law. Two hours later there was not a damson on the tree; the birds had just found them out, and had strewn the ground with their stones.

Now it has struck me that slight variations in insects may be of much greater value than one might at first sight imagine, and such would Mr. Weir's experiments lead one to expect, the birds selecting certain kinds of dull coloured larvæ from amongst others.

The beautiful instances afforded by the plants and insects I have enumerated can surely be only interpreted by Natural Selection. There can be no hybridism nor instinctive accumulation of resemblances in plants or between plants, grasshoppers and stones, and why should we go out of the way to call in a theory or theories, for which there are no facts as supporters, when we have at hand an explanation so much simpler, and which readily embraces every case?

I have myself no doubt that instinct may come into play, as in the case of the thorn imitator, &c.; and I believe something of the kind is noticeable in savage man, in the disguises he uses. It is a well-known fact that our soldiers often fired at aloes in the Fish River bush, mistaking them for Kafirs, as their red paint is an excellent disguise in the bush. The North American Indian and the Bushmen adopted numerous disguises in hunting their prey, or in tracking their enemy, and no one who has not seen the latter can appreciate his wonderful power of imitating all kinds of animals.

In conclusion, I may remark that whilst many species of Rhopalocera are most abundant in S. Africa, it is very rarely that one finds their larvæ or pupæ. I have been astonished at the small success I have had in cases where the imagines are most abundant.

J. P. MANSFELD WEALE

Brooklyn, near King William's Town, Kaffraria

Sexual Selection

MR. DARWIN in his recent work on the "Descent of Man" has shown that throughout the animal kingdom the male generally displays the stronger passions and is always the most eager. The males, moreover, whenever secondary sexual characters occur, are, as a rule, the possessors of weapons for defence or offence, brilliant colours, or other ornamental appendages, all of which Mr. Darwin supposes to have been acquired through sexual selection, either for the purpose of charming the female or for struggling with other males for the possession of the females. In a few exceptional cases among birds, the females are the wooers, and these are then more brilliantly coloured than the males. In Westwood's work on insects* I met with the following passage:—"M. Donzel has published a curious memoir upon

* "An Introduction to the Modern Classification of Insects." Vol. ii. p. 336.

the flight of butterflies whilst coupling (Ann. Soc. Ent. de France, 1837, p. 77.) showing that whilst the males of *Pontia Brassicae*, &c., *Colias*, and *Polyommatus* support the females, it is the latter which support their partners in the genera *Thais*, *Thecla*, *Argynnis*, *Melitæa*, *Hipparchia*, and *Pieris*." Now this is strictly analogous to these exceptional birds, because, among our British representatives of these genera whenever a considerable sexual difference of colour occurs, the female is always the more brilliantly coloured. Thus, the female *Thecla Quercus* has the bright purple patch, and the female *Thecla Betula* the brilliant orange blotch on the fore wing, while the females of *Hipparchia* (*Satyrus*), *Janira*, and *H. Semle* are considerably brighter than their partners. The female *H. Megara* is rather brighter than the male, and the same is true of *Colias Edusa* and *C. Hyale*, since the females of these species have orange or yellow spots in the black marginal border, represented in the males by thin streaks only. The females of the whole genus *Pieris* also are ornamented with black spots on the fore wings, which are only partially present in the males. I must confess that I am not convinced of the action of sexual selection in producing the colours of insects, but it cannot be denied that these facts are strikingly corroborative of Mr. Darwin's views. With few exceptions the rule holds good throughout the exotic species of these genera.

R. MELDOLA

The Irish Fern in Cornwall

OWING to an accident I did not see NATURE for the 23rd of February till yesterday. In a note which appears in it, on the report of the Cheltenham College Natural History Society, a doubt is expressed as to the accuracy of the statement that the fern, *Trichomanes radicans*, has been found in Cornwall. Knowing that it had not yet been recorded from that county, I have, for some years past, intended to take an early opportunity to make the following facts public; time has, however slipped away, and I have never yet done it.

In August of the year 1867, at St. Knighton's Kieve, a romantic ravine and waterfall on the northern coast of Cornwall, about two miles from Tintagel Castle, I obtained an undoubted specimen of this fern. It grew on a rock overhanging the water, about a quarter of a mile below the fall. It was an exceedingly small patch, and I accordingly contented myself with a small root bearing two fronds. Wishing to grow this specimen instead of drying it, and having unfortunately placed it in a hot-house, the plant died. I have, however, preserved it, withered and dried up as it is, and when I return to London, where my herbarium is, I shall be glad to produce it for the satisfaction of any sceptics. In the following year (1868) I paid an exceedingly hurried visit to the same spot, but failed to find the fern; never having been in the neighbourhood since, I have been unable to confirm or to dispel my fear that the plant has been discovered by some ruthless collector. I may add that I have long since mentioned this fact to various friends interested in Botany.

Morebattle, Kelso, April 6

EVERARD F. IM THURN

Fertilisation of Hazel

IN a recent number of NATURE Mr. Bennett makes some remarks on the above. What he says leads to the belief that the male flowers of any one plant discharge their pollen just at the very time the stigmas of the female flowers of the same plant are receptive. My observations made this spring, and extending over a number of specimens, quite agree with those of Mr. Marcus Hartog, and therefore break through Mr. Bennett's law, and show that although the hazel is apparently monoecious, yet, practically, it is dioecious. On one plant which I pointed out to several gentlemen, the fertile flowers had their pretty red styles protruded beyond the scales and the receptive stigmas long before a grain of pollen was discharged from the adjoining catkins, whilst on another plant a hundred yards distant from the first all the barren flowers were withered up and ready to fall before the females could be seen.

Lexington, Kentucky

JOHN DUNCAN

Thunderstorm at Preston

ON the 25th of last month a violent thunderstorm occurred at Preston, in Lancashire. The spire of St. Walburge's Church, which is, perhaps, the highest point in the town, was struck by lightning, some curious phenomena resulting. The lightning

conductor, a rope composed of forty-two copper wires in six strands, was ruptured at about sixty feet from the ground. The wires were untwisted and spread out, the ends fused, and some of them turned up like hooks. The discharge passed obliquely through the tower wall for a distance of about three yards to a gas-pipe inside. In its passage it wrenched a piece of stone weighing 66lb. from an immense block, casting it to a distance of a hundred feet, besides literally tearing off other large masses. Before reaching the gas-pipe it projected some bricks against the opposite interior wall, shattering them to pieces. The gaspipe was severed and the lower portion curled completely round. Thence it passed to the gas-meter and dislocated many pipes beyond. The effect upon one leaden pipe was singular, holes were fused into it, in some cases right through, the molten metal being scattered about. Another discharge passed down a conductor at the west end of the church. The conductor itself was not ruptured, but a gas-pipe close to it was broken and a piece about a yard long was projected to a distance of forty feet, the gas meanwhile having ignited. Within the church, too, where there happened to be a leakage, the gas also ignited. It was further observed next morning that round about the church hundreds upon hundreds of worms were dead or dying.

Stonyhurst College

STEPHEN WILLIAMS

Meteorology in Asia

IN NATURE, vol. iii. p. 473, it is said, "from Asia Minor we get no scientific records of weather." Perhaps you will pardon my informing your readers that the Turkish Government has eight telegraphic meteorological stations, besides its Central Observatory at Constantinople, under M. Aristide Coumbary. The stations are Sulina, Varna, Salonika, Fao, Bagdad, Smyrna, and Beyrout.

Two of these are in Asia Minor, and Beyrout is not far off. The observations are published monthly. In addition Mr. E. Purser, C.E., of the Smyrna and Aidin Railway Company, has published his observations for several years.

ROBERT H. SCOTT

A Wind Direction Rain Gauge

REFERRING to the paragraph in your number of March 30, p. 433, and Mr. Lyall's letter, April 6, p. 488, on Mr. Napier's "Wind Direction Rain Gauge," I beg to say that a gauge of a similar construction is in use at the Meteorological Observatory, Army Medical Department, Aldershot Camp. It was devised by the observer, Mr. John Arnold, A.H.C., F.M.S., about three years ago, so it would appear that the credit of the invention, if I may so term it, is due to no less than three parties, to each of whom I believe the matter was entirely original.

JOHN JAMES HALL, F.M.S.

Meteorological Observatory, Fulwell, near Twickenham, April 20

Spectra of Aurora, Corona, and Zodiacal Light

WHILE I am glad on my part to see Mr. Henry R. Procter's letter on the spectra of terrestrial aurora and solar corona in NATURE, p. 468, he may not be displeased on his to receive a confirmatory statement from an independent observer; and to this effect, viz., that whereas, firstly, the spectra of nineteen out of twenty auroras this winter have practically shown me nothing but one bright green line, and secondly, the spectrum of the solar corona, as seen during total eclipses, is said to be mainly characterised also by a similarly single vivid green line, yet it is not the same green line in the two cases, but a something widely, absolutely, physically, different.

I shall be glad, however, to be allowed still further on a branch of this subject, to ask, through the medium of NATURE's useful columns, whether anyone can kindly supply me with recent observations of the spectrum of the zodiacal light?

I have been trying for it in vain all this spring-time, and have now in despair given it up for the season. M. Angström—to whom be all honour for his first observation and correct description of the ordinary auroral spectrum—says that the zodiacal light spectrum shows the same green line as the aurora, viz., 1249 (Kirchhoff); but the eclipse observers, after proving that