

Between 11.45 and 12 the south-east octant of the outer halo (red inside) was also visible.

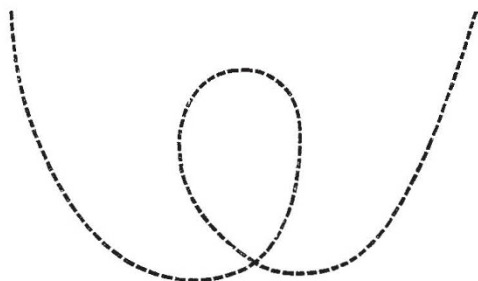
Until 1 o'clock the figure was practically circular, the inner space being remarkably free of colour, the blue of the sky assuming an ashy grey tint. By 2 the figure was elliptical, the long axis horizontal, and the halo *not complete*. The ellipticity increased as the sun sank. Hence the visible part was evidently formed of the *tangent arcs*. No doubt the intense brilliancy near noon was due to these arcs practically coinciding with the ordinary halo, because of the sun's great altitude.

J. EDMUND CLARK.

4 Lorne Terrace, Edinburgh, June 30.

The Electric Current.

DURING the thunderstorm last evening, in the middle of the brilliant flashes which illuminated the south-eastern sky, I noticed the electric current assume the following remarkable form:—



Burlington Fine Arts Club, EDWARD HAMILTON.
17 Savile Row, W., June 29.

Are the Solpugidæ Poisonous?

AT a recent meeting of the Linnean Society (June 2), I had the honour of exhibiting the jaws, claws, and hairs of a species of Galeodes from Tashkend, in order to show certain peculiarities, which perhaps throw light on the question as to whether these animals are poisonous or not.

Murray, in "Economic Entomology," says: "Their bite is said to be venomous, and even dangerous, but proof of this is wanting."

It is, further, always the natives in both the Old and New Worlds where this "spider" occurs who give it its bad reputation, and always the European immigrant or settler who either doubts or even positively denies it.

In spite of the well-known fact of the persistence of groundless terrors in the minds of uncivilized peoples, I should still be inclined to think that, in a case of this kind, which is one of raw experience, the natives would probably be in the right.

Dufour, in his monograph of the Algerian species (*Mem. p. à l'Institut de France*, xvii.), after describing a serious case arising from a Galeodes bite, having failed to find any poison-glands or apparatus, leaves the mystery to be solved by others.

Croneberg (*Zool. Anzeiger*, 1879) claimed to have discovered the poison gland in a long coiled gland, which he says opens at the tip of a lancet-shaped process at the junction of the palp with its basal or maxillar portion. As far as I can make out, this gland is the homologue of the coxal gland of the other Arachnids. This would not preclude the possibility of its being a poison gland. On the face of it, however, I should not expect to find the opening of the poison gland in this comparatively awkward place. In a creature so armed for attack as Galeodes, one would expect the venom to take a more prominent place in the offensive armoury.

Examination, on immersion in clearing media, shows—

(1) That the tips of the jaws are not only traversed by a canal opening to the exterior, but are covered with multitudes of fine pores, which can be traced with a low power through the thick chitin.

(2) The claws are also open at the tip, while the shaft of the claw seems filled with a glandular mass of tissue provided with tracheæ. These claws are terrible weapons of offence; the articulating joint at the end enables them to anchor themselves in the body of the prey.

(3) Around these claws are sharp hairs, which appear, like the claws, to be open at their tips. It is obvious that the tighter the

claws draw themselves into the flesh, the deeper would the pointed hairs at their base penetrate, and, if poisonous, increase the deadly nature of the attack.

(4) Leaving the spines on the limbs, and the long, thin apparently tactile hairs out of account, the hairs on the legs and back are, as a rule, forked at the tip, as has been already described by Dufour. Up to the fork they are hollow, like those round the claws. My suggestion is that these are like buttoned rapiers. They are harmless until the animal is seized. The fork prevents the hair from penetrating until the pressure is great enough to snap off the tip. Small mammals and birds would soon learn not to try to chew up or swallow a Galeodes. If this suggestion is correct, the action of the forked hairs may be compared with that of the stinging hairs of the common nettle.

(5) Here and there are long hollow hairs, with the tips swollen out into a thin bubble-like expansion of the chitin. These hairs may be abnormal. I found five or six in all, and chiefly on the palp. They seem to indicate a tendency of fluid to flow down the hairs.

The openings at the tips of the claws are quite in keeping, morphologically, with those at the tips of the hairs. Claws are but highly developed hairs. The jaws, however, are modified joints of limbs. We have, therefore, to interpret the central canal (?) and the pores which open at and around their tips, as the canals which run through the cuticle into the hairs. We find that, as we recede from the tips of the jaws, the open pores cease, and the hairs commence, each with its central canal continued through the cuticle.

As to the nature of the poison which I suggest flows through these apertures, I am inclined to consider it, in the presumed absence of specialized glands, as a product of the hypodermal cells, perhaps even of those which secrete the hairs themselves. At the tips of the jaws, where the hairs have disappeared and only their pores remain, these cells could be specialized for this purpose alone. In the claws there seems to be a mass of cellular tissue, which would also be a derivative of the hypodermis, and may be solely taken up with the secretion of poison.

One other point remains to be mentioned, viz. the mechanism for the movement of the end joint of the claw. Articulated hairs are common among the Polychæte Annelids, but the exact mechanism is not visible. This large claw of Galeodes may explain these cases. We should naturally not expect a muscle fibre in a hair. The actual mechanism is very simple. Along one side of the claw the chitin splits, for, say, three-fourths of its proximal length, to form an inner and an outer layer. A very slight differentiation of the flexor muscles of the claw would allow of a few fibres being attached to the inner layer. A pull at the inner strip of chitin bends round the tip of the claw, invaginating a small portion of the outer layer, which thus forms a collar round the base of the joint or "nail" as some call it. The bending of the claw would almost necessarily compress its fluid contents, some of which might escape through the opening at its tip.

Until the question as to the poisonous nature of Galeodes has been *experimentally* settled, these observations seem to have some weight in the affirmative scale.

HENRY BERNARD.

Streatham.

Death from Paraffin, and Members of Parliament.

NOTWITHSTANDING the enormous development which has taken place in recent years in gas and electricity, there can be no doubt that oil lamps light the homes of a larger number of persons *throughout the world* than any other illuminant. Even in the United Kingdom alone it has been estimated that over 10,000,000 lamps are in use. No wonder, then, that newspaper readers are every now and again startled by the recital of terrible accidents, too often resulting in agonizing death. Mr. Alfred Spencer, of the London County Council, stated at the inquest on the late Lord Romilly that he estimated that there were 300 deaths a year caused in this country by unsafe lamps. Mr. Shean, of the Fire Brigade Association, expressed the opinion that 10 per cent. of fires are caused by paraffin lamps; and Captain Shaw, the former Superintendent of the London Fire Brigade, reported 156 fires in one year caused by the upsetting of lamps in London. Will a friend to humanity in each constituency ask the candidates, whether Liberal or Conservative, to pledge themselves to support a short Act of Parliament compelling every lamp to have affixed to it an automatic extinguisher, as recommended in the reports of Sir Frederick Abel, Mr. Boverton Redwood, and Colonel Majendie, or must we wait until a Bishop or a Royal Princess is burnt to death?

HUMANITY.