VII. — *A Description of a new form of Hair from a species of Tarantula.* By GEORGE SHADBOLT, Esq.

(Read April 25th, 1849.)

IN examining the hairs and other cuticular appendages of animals, we cannot fail to be struck with the beauty and variety of the forms disclosed by the aid of the microscope; and as it is to be presumed that every modification of form and structure is intended to serve some particular end, it would be a highly interesting study, to endeavour to trace out the purpose for which each variation in these appendages is designed. In order to attain this end, it is advisable to collect as many facts relating to the subject as possible, for the purpose of comparison, and it is much to be regretted that so few have been placed upon record.

For such as we *are* acquainted with, we are chiefly indebted to the researches of our worthy president (Mr. Busk), and secretary (Mr. Quekett); and as regards that branch relating to the scales of butterflies, &c., we have recently been favoured with a highly interesting paper by Mr. De la Rue: but there are doubtless many points of interest connected with this very extensive class of objects, which are known to individual observers, but which, for want of being communicated otherwise than by mere conversational remark, are lost to all but the immediate parties concerned; and thus, those who might otherwise be desirous and able to consider this subject as a whole, are deterred from doing so, it being almost impossible for *one* observer to make researches into every branch of it.

In offering this paper to the Society, I do so chiefly with a view of inducing others, acquainted with any facts relating to hairs in general, to communicate them in a written form; for as our president truly remarked in his address on the occasion of our anniversary meeting, no *facts*, however trivial they may individually appear, are unworthy of being recorded, as in the aggregate they become of considerable value. It is simply with the purpose of aiding in carrying out this object, that I offer these remarks, and my communication is nothing

more than the description of what I believe to be some forms of hair not hitherto noticed.

The specimen, from which the hairs I am about to describe were taken, is one of the *Tarantulidæ*, and was brought to me for examination by my friend, Mr. G. E. Newth (a member of the medical profession), in whose possession it has been for several years. It was originally found alive amongst some logwood, from what precise locality I am unable to learn; it is, however, unquestionably a native of the tropical parts of the western hemisphere.

The animal is entirely covered with short, closely set hairs, so as to appear as if formed of velvet, of a dark brown colour, except the abdominal portion, which is of a dark red tint, and interspersed pretty numerous amongst the short hairs are some longer ones, of a light brown.

On examining these various hairs with a good quarter-inch object-glass, they are seen to be of a very compound character; those from the thorax or limbs of the animal, as shown in Plate X. fig. 1, consisting of a central shaft, most probably cylindrical, around which are disposed an immense number of small hairlets, generally covering the whole length of the hair, so as to make it resemble in appearance a mouse's tail or a lady's boa. The small hairlets are arranged in longitudinal rows, but whether in their transverse direction the points of attachment are in whorls, or alternate, or spiral, I have not been able to determine.

The longer hairs appear to be of a precisely similar character to the above, but of larger diameter and with a greater number of hairlets, and both kinds appear to have either a central cavity, or at any rate a structure admitting of the passage of fluid. I am also disposed to think, that the number of longitudinal rows of hairlets on each of the smaller hairs, is four, but of this point I am not yet quite certain.

I stated previously, that the dorsal part of the abdomen is of a dark red colour: the hairs from this part are also of a very compound character, which for peculiarity of conformation I have never seen surpassed, even by the scaly hairs of the Indian bat, or the arrow-headed variety from the larva of the *Dermestes*. They are perhaps more like feathers than hairs, and consist, as shown in Plate X. fig. 2, of a central shaft, formed somewhat like a flattened cylinder, tapering to a point at the base where it is inserted into the cuticle. This basal portion, consisting of about one-sixth part of the total length of

the hair, has some slight lateral appendages in the form of very obtuse pointed projections, so as to give that part a somewhat crenated appearance at the edge. On viewing these edgewise, they are seen to be confined to the thinnest edges of the flattened cylindrical shaft. From the point where these slight projections terminate, to about five-eighths of the length of the hair from the base towards the other extremity, there are also attached to the shaft, in the same plane with the projections just described, a number of flattened blades, having their free ends pointed, something in the form of a lancet. These incline at an acute angle with the shaft, the points being towards the terminal extremity of the hair, and there are about sixteen or seventeen of these blades on each edge of the central shaft. There is an internal passage up the shaft, and I am pretty certain that it extends also up the blades. Beyond these sixteen or seventeen blades the shaft is continued for the remaining three-eighths of the length, but instead of being smooth on the broader surfaces as hitherto, it is covered by a considerable number of slightly elevated, obtusely pointed projections, having their apices turned towards the base of the hair. The most remarkable feature, however, is, that within a short space of the termination of each hair, there are on each side of the central shaft, six more blades, each formed like those at the lower part as regards their sectional shape, and lancet-like point, and they are also in the same plane with them, but these latter six pairs of blades are curved and point towards the base of the hair, that is in a reverse direction to the others, and thus appear like so many barbs. Those nearest the end of the hair are somewhat longer than the others, so that the whole twelve together have an oval-formed outline. There is a slight projection beyond the last pair of blades, as if the shaft were continued a slight distance beyond them.

All the dark red hairs on the dorsal part of the abdomen appear to be of this remarkable construction, and it is the only part of the animal on which I have found this last described form; the other parts being all covered with those previously adverted to.

Now the brown hairs seem, from their construction, to be beautifully adapted for preventing the sudden alteration of temperature affecting the parts protected by them, and also for opposing the access of parasitic enemies from without, in consequence of the compact manner in which they fit together, and the peculiar arrangement of the small hairlets, and it is therefore probable they

may answer one or both of these purposes ; but with regard to the red hairs, which I last described, I am totally at a loss to conjecture a probable purpose they may be designed to serve, and I shall be glad to hear any suggestions on the point.

Both kinds of the shorter hairs are from the tenth to the eighth of an inch in length.

EXPLANATION OF PLATE X.

Fig. 1. Hair from the upper surface of the body of a *Tarantula*.

Fig. 2. Hair from the under surface of the body of the same *Tarantula*.