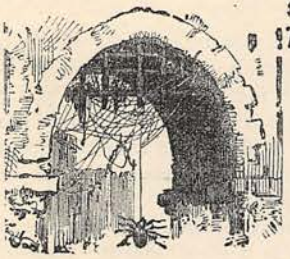
HOW I WATCHED A SPIDER.



SOME time ago I was fortunate enough to capture an unusually large specimen of the common house-spider tribe, and placing her under a common glass beaker, determined to study her habits in the prison in which she was confined.

To atone in some way for the liberty of which I had deprived her, I resolved to supply plenty of food, and proceeded at once in pursuit of flies in a garden at the rear of the house. I found some in an ivied wall which had afforded them shelter and protection from the nipping winds of the spring, where half-drowsily, half-dreamingly perched on the upper surface of a glistening leaf, they basked in the reviving rays of an evening sun; and plucking one from a leaf, I soon after introduced it into the spider's prison-chamber. The spider, apparently nothing grieved at her confinement, gave chase to the fly, which was enabled by the use of its wings to soar far above her reach. Another fly and yet another eluded her in the same way, and walked anxiously around and around the upper walls, and on, or rather *under*, the ceiling of their prison, but still far above the reach of the spider. The beaker was of small size, and not more than three inches high; and with three flies within three inches of her I felt sure the spider would not die of starvation, and that the capture of the flies was but the work of time.

By a very strange coincidence, the flies, by occupying such a position, gave me an opportunity of observing the tactics adopted by the spider in laying the foundation of its web under exceptional circumstances.

It is generally believed by naturalists that the spider when it wishes to lay the foundation of a web seeks some favourable position, and unfolding a thread from its spinnerets, leaves to the wind the task of fixing it to some terrestrial object. As soon as the foundation threads are fixed, the completion of the web is easily accomplished. In the open air this is probably so; but underneath my beaker no aërial currents could possibly exist. The spouted mouth afforded an opportunity for the ingress and egress of air, but even this small opening had to be contracted to prevent the escape of the flies. No current entering here could possibly lift the spider's web to the ceiling. The only other possible source from which an aërial current could proceed was the wings of the flies; but from the ceiling the flies could only cause by the use of their wings a downward current, which might possibly counteract the effect of any currents from the opening below, and would certainly increase the difficulty of fixing a thread by means of an upward aërial current. Be this as it may, however, it was certain that on this occasion a web had to be made under exceptional circumstances, and practically without the aids of laying the foundations of which spiders are said by naturalists to avail themselves largely. The spider made some attempts to climb up the glass sides of the beaker, but was unable to succeed; and the flies still clinging round the top, it soon became evident to her that in order to reach them the construction of a ladder was a work of necessity.

After several hours' watching and waiting, night at length came, and the spider having made no preparations for an ascent, I concluded that I might with safety forego my observations till the morrow. To my very great surprise, however, no less than three threads were securely fixed near the centre of the ceiling, and several in the middle of one side, on the following morning. These latter gave the only probable key to the mode of formation. Her long legs enabled her to reach far up the side of the beaker, and here she probably fixed a few threads which were afterwards used as supports to enable her to reach the top. It need hardly be said that I was very much disappointed, and felt disposed to upbraid myself for not having watched through the night; but I made the best of it, and continued my observations. Apparently the spider had only begun her work a little before, for only three threads were at the top, and the flies were still alive, continuing to elude their pursuer, which feared to trust the yet fragile web to the strain of a contest. She now commenced to cover with web the layer of paper on which the beaker stood, and carefully closed the tiny opening caused by the spouted mouth of the beaker. By degrees she rose higher, and soon formed near the bottom a regular meshwork of web.

The flies, in their attempts to get out through the little orifice, were soon helplessly entangled in this web, and the spider had her first meal. After a few days the web was complete, and when finished presented the appearance of a cone whose base was limited by the circumference of the beaker, whose apex was fixed to the centre of the prison ceiling, and whose sides were bound to the side of the beaker by three bands of attachment near the middle. The spider seemed now to be quite at home, and so far as could be observed nothing the worse for her confinement. She had plenty of food—more, perhaps, than she could have procured at this season had she had liberty; and though she sometimes had some long chases after flies, always managed to kill them in the end.

Once my attempts were very nearly foiled by the kind-heartedness of a lady, who in my absence lifted the prison and set the captive free. After a vigorous search in the room (for I knew few ladies would have the courage to handle such a monster for the purpose of taking it outside) I succeeded in recapturing it; and not desiring the recurrence of this misadventure, affixed to the beaker a label bearing the words

"Please do not touch." This earnest appeal saved me from future annoyances, and my observations were continued unbroken forthwith.

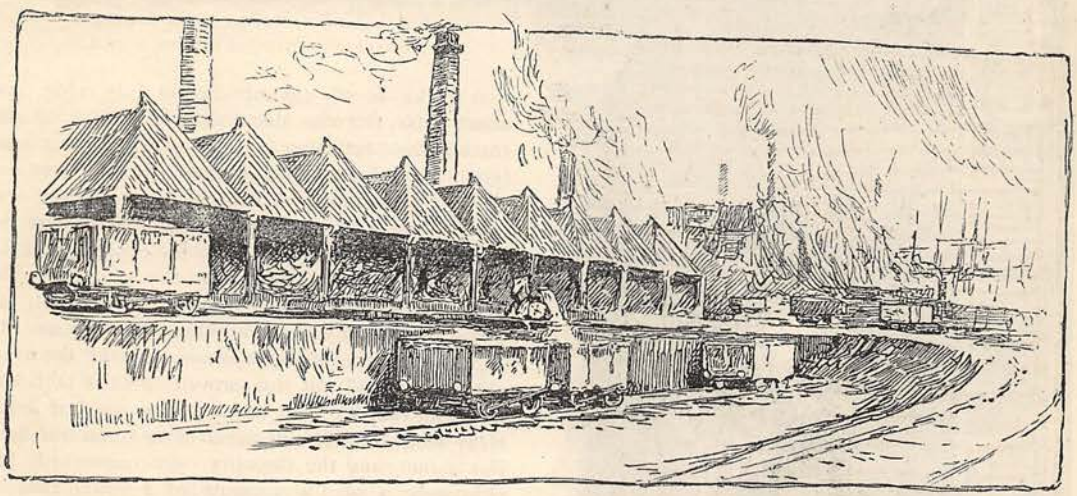
I was now compelled to take a journey, and, unwilling to leave the spider behind, packed her away, shut up in her crystal prison, and after five days' close confinement she seemed to suffer nothing for want of fresh air.

I had now more leisure and better opportunities for feeding the captive; the sun being warmer brought forth an abundance of flies. I have seen her kill as many as eight large flies in an afternoon, and have come to the conclusion that, like many beasts and birds of prey, even when satisfied with food the spider is not satiated with slaughter. Dead flies were as welcome to her as live ones, though she did not (so far as my observations went) care to feed a second time on long-dead flies so long as live ones were supplied to her. She would invariably kill, but not eat, other spiders; and owing to their agility it was often a long task to catch them.

One day she remained suspended half-way up the web at a part which was very thick, and no inducements I could offer, not even the introduction of fat, tempting flies, could remove her from that spot. For hours she remained motionless, and I feared she must be dying. Presently, however, she appeared very energetic, and tapping with the hinder part of her body the surface of the web, was evidently engaged in a work of importance. She moved about, working as in a circle; and looking closely I saw the part of the web on which she was working with her spinnerets gradually assume a flocky appearance. She worked unceasingly for about an hour, and when a sufficient quantity of fresh web had been spread on this patch, rested for a few minutes. I afterwards found on this patch a cluster of eggs, which adhered firmly to the fresh web, and which the spider at once proceeded to cover up with more web, crossing and recrossing the threads in a most scientific manner. This heavy task over, the spider killed her prey and lived as before. At intervals, a second and third bag of eggs were deposited on other parts of the web in exactly the same manner.

The spider now undertook the return journey with me, being, as before, for five days without air or food. The first batch of young spiders appeared after an incubation period of about seven weeks. Returned to London, my supply of flies considerably diminished, and, soon after the young spiders began to crawl about, the mother died, having lived with me for upwards of three months.

SALT-MAKING IN SOUTH DURHAM.



GENERAL VIEW OF THE WORKS.

AN ancient industry has been revived under new conditions in the salt manufacture of South Durham. There are traces on the shore and near the little village of Greatham of older salt works; and there are records of olden payments in connection with the working of salt at that and other villages near the present town of West Hartlepool. Indeed, seaward along the coast of Durham salt was largely extracted from sea-water and brine-springs, and South Shields salt is described as "the most celebrated salt in the kingdom." But the production of salt ceased, Cheshire's vast supplies not only meeting household needs, but also those of the great chemical industries that have long been carried on in the county of Durham. Some twenty years ago, however, salt was discovered on the south bank of the river Tees. Messrs. Bolckow and Vaughan, in search of pure water for their great