

THE CONTENTS OF A COD'S STOMACH.

Mr. Frank Buckland publishes in *Land and Water* the remarkable engraving herewith reproduced. The curious object is a mass of horsehair and string, the fibers of which are matted and intertwined well together by means of no less than ten fish hooks. All these are small hooks except two; these, as can be seen by the engraving, are much larger. It is a remarkable thing that the points of all these hooks are turned upwards. He cannot quite account for the presence of so many hooks in the stomach of this cod, except that the cod who owned the stomach had somehow or another managed to get hold of haddocks or whiting caught on hooks, and in whose bodies the hooks still remained. The flesh of the whittings or haddocks had been entirely digested by the juices of the cod's stomach; the horsehair and metal of the hooks, however, resisted its action. That whiting and haddock have frequently hooks left in them is well known to all those who have the care of seals. Sea fish hooks are very cheap; and the fishermen, rather than take the trouble to extract the hook from the fish's mouth, very frequently cut off the "snood" or line to which the fish is attached, and let the hook remain *in situ*. The seal swallows the fish, hook and all, the hook gets entangled in the poor seal's intestines, and of course proves fatal.

"The cod is what is generally called a voracious fish. I have now in my museum," says Mr. Buckland, "a portion of a tallow candle, about seven inches long, also a pair of sailor's mitts, both taken from a cod's stomach."

THE MYGALES--DOOR BUILDING SPIDERS.

In the Paris *Jardin des Plantes*, says *La Nature*, there is a curious spider belonging to the mygale species, and commonly known as avicular, owing to the supposition that the insect finds its prey in small birds. Like all spiders, this curious creature has eight eyes. Its mandibles are armed with sharp teeth, and its feet have retractile claws, resembling those of a cat. The cephalo-thorax is of a velvety black with an olive luster; the abdomen and feet are covered with long reddish hair. Its length is about three inches and its breadth seven inches. Only the larger members of the species attack birds, as they overcome their victims by sheer strength and not by poisonous injection; for although they possess venomous capabilities, the quantity of venom is not sufficient to affect large prey. Their favorite food is crickets and insects of large size, which they capture at night, lying torpid during daytime.

The most curious member of the species is a mygale indigenous to Corsica, a light brown spider which lies in tubes dug in clay banks. These passages run in a straight line for two thirds of their length, and then become slightly oblique at their inner extremity. A close examination of these remarkable habitations proves the existence in the spider of an instinct wonderful in its minuteness. The tubes are vaulted from end to end with a hard mortar, and this in turn is lined with a soft, silky web. Before, however, covering his walls with their finest hangings, the spider fastens up a coarse fabric, and on this, as a foundation, the more delicate material is secured. Then he begins the construction of his door, in which operation it would seem that almost reasoning faculties are employed. At a hasty glance, the cover appears to be merely a little disk of mortar lined within with web, hinged to one side of the aperture so as to open outward, and supported by a prolongation of the lining mortar. Close examination, however, shows the door to be far from carelessly constructed. Although scarcely one tenth of an inch thick, it is constructed of upwards of thirty alternate layers of web and mortar, each layer being imbedded in another, like a series of cups.

The web layers are extended to form the hinge, so that the latter is stronger in proportion to the thickness of the door. On scrutinizing the edges of the latter, it further appears that they are beveled obliquely inwards, and that a corresponding bevel exists in the orifice of the passage. The use of this arrangement is obvious; for were the edges of the door straight, the hinge would be the only barrier to breaking in the cover from outside, and its delicate material would quickly yield before a strong attack. With the beveled edges, it is, of course, impossible to force the door inwards. In order to hide his dwelling, the mygale covers his door with rough clay so that it cannot be distinguished from the adjacent soil, while the asperities allow him to open it easily in making a sudden retreat. Once in his den, however, it would be supposed that he would be powerless before an

enemy knowing enough to force open his door in the proper direction. But the mygale provides for that contingency, and, being unable to make a lock for his portal, converts himself into that necessary means of security.

The interior of the cover, instead of being perfectly smooth, is pierced with, perhaps, thirty deep holes; and most of these are located just where a lock would be placed, that is, opposite to a hinge. When the spider finds himself besieged, he pokes his claws into these holes and fastens his sharp mandibles into the walls of his dwelling. Then, contracting

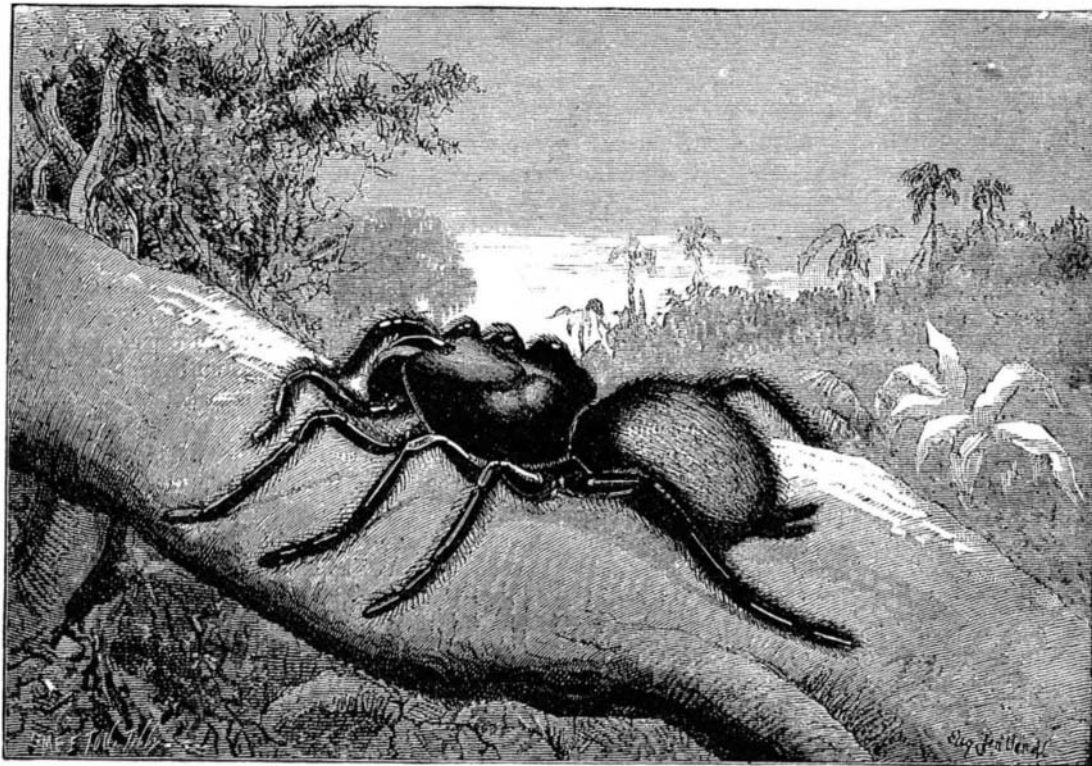


FISH HOOKS AND LINES FOUND IN A COD'S STOMACH.

his body, he pulls his door tightly shut, and so defies the inroads of his enemies.

During the day the mygale closes his portal, but at night he opens it slightly, and watches; should a fly or cricket come within proper distance, he leaps out, the prey is grasped, and the spider is back again in his den, with the door shut, before hardly a fraction of a second can escape.

It is said that only the females build and occupy these marvelous nests, since males have never been found in them. The lords of the spider creation have no fixed habitation, but live under stones and in crevices of trees, and prowl around in search of their precarious existence. It is probable that they meet the fate of all bachelor spiders, to whom matrimony is death; for it is a peculiarity of the arachnid bride to devour her loving helpmate at the earliest possible moment, and unceremoniously to throw the shell of his used-up carcass out of her nest, when she cleans house in preparation for a new husband.



DOOR-BUILDING SPIDERS.

The mygale carries its eggs inclosed in a closely woven cocoon of white silk, forming two rounded pieces, united at their border.

Happy Accidents.

It is a fact, patent to every one conversant with the progress of inventions, that the most useful discoveries are generally the result of accident. These columns have borne witness to a great number of individual cases of this kind. In the May number of *Chambers' Journal*, a writer says:

Seldom do men sit down with a steady resolve, a determined purpose, to discover some new principle or invent some new process. When they do so, there is a lurking idea of the kind of thing they want, a dim perception of the direction in which success may most reasonably be sought. Generally speaking, something is concerned which, for want of a better term, we call accident. An appearance presents itself, or an effect is produced, which the observer neither designed or expected: an accident, certainly, so far as he is personally concerned. It may be a manifestation, until then

unknown, of some natural force or property; or it may be an action of one substance on another, susceptible of useful practical application. This is, briefly expressed, the distinction between a discovery and an invention. But the important point to notice is that the value of the accident depends on the kind of man or kind of mind, by whom or by which it is first observed. If the soil is not sufficiently prepared, the seed will not grow. Thousands of men had seen light reflected from distant windows, and variations in the light according to the angle of reflection; but a well prepared mind, on one occasion, suddenly drew from this phenomenon an idea which established the beautiful science of the polarization of light. It is pleasant to read of the manner in which shrewd minds have turned an accidental observation to practical advantage.

The reflecting apparatus for lighthouses arose out of a wager, if the facts are correctly recorded. Somewhat more than a century ago, some one in Liverpool offered to wager that he would read the small print of a newspaper by the light of a farthing candle placed ten yards or thirty feet distant. The wager being accepted, he coated the inside of a wooden board with pieces of looking glass, forming a rough substitute for a concave mirror: placing a small lighted candle in front of this mirror, the rays of light were reflected, and converged to a focus ten yards on the other side of the candle, and the light at that focus was sufficient to enable the experimenter to read a newspaper. An observant practical man was present. The idea flashed

upon him that, if the light of a farthing candle could in this way be thrown out to a distance, the light of a large lamp could similarly be projected to a mile or miles away. The idea grew into form, and resulted in the invention of the reflecting apparatus for lighthouses.

One day, Lundyfoot, a snuff manufacturer, was drying some snuff. Through a little neglect, the snuff was allowed to be overheated, till it became charred. Noticing the pungent character of the snuff, and how it tickled the nose, and knowing that some men like to have the nose tickled more than others, he resolved to try whether high-dried snuff could be brought into favor. It not only did so, but proved a source of wealth to him.

The writer has seen a piece of calico being printed at one of the great Manchester establishments, become a little displaced. The effect was very singular. The diagonal repetition of the pattern produced a forked lightning effect, of a kind which a designer would not have been likely to hit upon. The master printer suggested the engraving of a design in which the forked lightning effect should be utilized. It proved to be one of the most successful patterns ever introduced by the firm.

One of the producing causes of prosperity of the Staffordshire pottery manufacture was the discovery of a cheap durable glaze. The discovery was due purely to accident. At Stanley Farm, a few miles from Burslem, a maid servant was one day heating a strong solution of common salt, to be used in curing pork. During her absence from the kitchen, the liquid boiled over. Being in an unglazed earthen vessel, the solution, spreading over the outside, produced a chemical action which she little understood, and which did not compensate her for the scolding she received. Some of the elements of the liquid combined with some of those of the highly heated brown clay surface to produce a vitreous coating or enamel, which did not peel off when the vessel was cold. The humble brown ware vessel acquired historical celeb-

erty. A Burslem potter, learning what had taken place, saw that glazed ware might possibly hit the taste of the public; he introduced the system of glazing by means of common salt, a system at once cheap, easy, and durable; and England has made many a million pounds sterling by the accidental discovery.

When maidens are doing their hair, an important element of daily duty in many a household, they may perhaps be gratified in learning that this process led accidentally to a very useful invention. Joshua Heilman, engaged in the cotton manufacture at Mulhouse, in Alsace, was long meditating on the possibility of inventing a combing machine for long-staple cotton. Brooding over the matter, he watched his daughters combing their hair, and noticed how they drew the long tresses between their fingers, alternately with drawing the comb through them. The thought struck him that, if he could successfully imitate by a machine this twofold action, so as to comb out the long fibers of cotton, and drive back the shorter by reversing the action of the comb, his long-sought object would be pretty nearly attained