

**IMPROVED HAND AND BENCH VISE.**

The tool shown in the annexed engraving is especially adapted to the use of mechanics, inventors, jewelers, and amateurs, and it may be either used as a hand vise or bench vise. The jaws may be thrown by a single movement into any desired angle. As a chuck for the lathe or bit stock, it will hold drills, awls, bits, turning tools, etc. It may also be used as a wrench which is capable of being turned in any position. Pattern makers and metal workers will find it very convenient for holding scrapers, stubs of files, and cutting tools.

The front jaw has a tubular stock at right angles to the face of the jaw; in this the bar of the back jaw slides, and is prevented from turning by a slot and feather. The screw that moves the jaws turns in the tubular stock. A clamping eye surrounds the stock, and receives a screw which presses against a follower in the eye, and clamps the stock in any position in which it may be placed in the clamping eye. The clamping screw is forged in one piece, with the ferrule at the end of the handle by which the vise is held. The clamping stand, by means of which the vise is secured to a bench, is shown in Fig. 3.

In either instance the vise can be made to hold any article that is to be filed, turned, bored, or otherwise worked, or the jaw may be used to hold any cutting or boring tool or bits, so that this tool is of general utility, especially upon all sorts of tool or hand work.

The cavities or countersinks in the clamping eye will receive the inner end of a boring bit or tool, the body being held by the jaws of the vise, and the tool, when used as a chuck in a lathe, can be arranged in line with the axis of motion or at an angle, as may be required, and will perforate, bore, or turn the interior or exterior of a cylinder or other article of greater or less diameter, according to the angle of the tool and its length. Graduations on the tubular stock and clamping eye indicate the angle of the one to the other. The jaws can be quickly and accurately adjusted to any degree of angle required, either above or below the center, right or left, and made ready for work by a quarter turn of the handle.

The solid forged ferrule of the handle of the vise is bored to receive the shank of a drill, and the addition of the drill chuck shown in Fig. 4 makes it a complete drill holder. The shank shown in connection with the drill chuck, in Fig. 4, adapts the device to a common bit brace or lathe, and the same shank may be applied to the vise for heavier work.

All of the parts of the vise are of steel, drop-forged, and milled. It is well made, substantial, and durable.

This useful tool is made and sold by Mr. B. F. Stephens, 95 and 97 Liberty street, New York city.

**IMPROVED AWNING AND VENTILATOR.**

The novel window awning shown in the engraving is capable of being readily put into various positions to shade the window and to effect a proper circulation of air in the apartments.

Window awnings, as commonly made, are only capable of

shading the window, and as they are closed at the top it makes an effective funnel for drawing into the room heated air from the building and pavements and foul air from the street and gutter, without affording any means of exit.

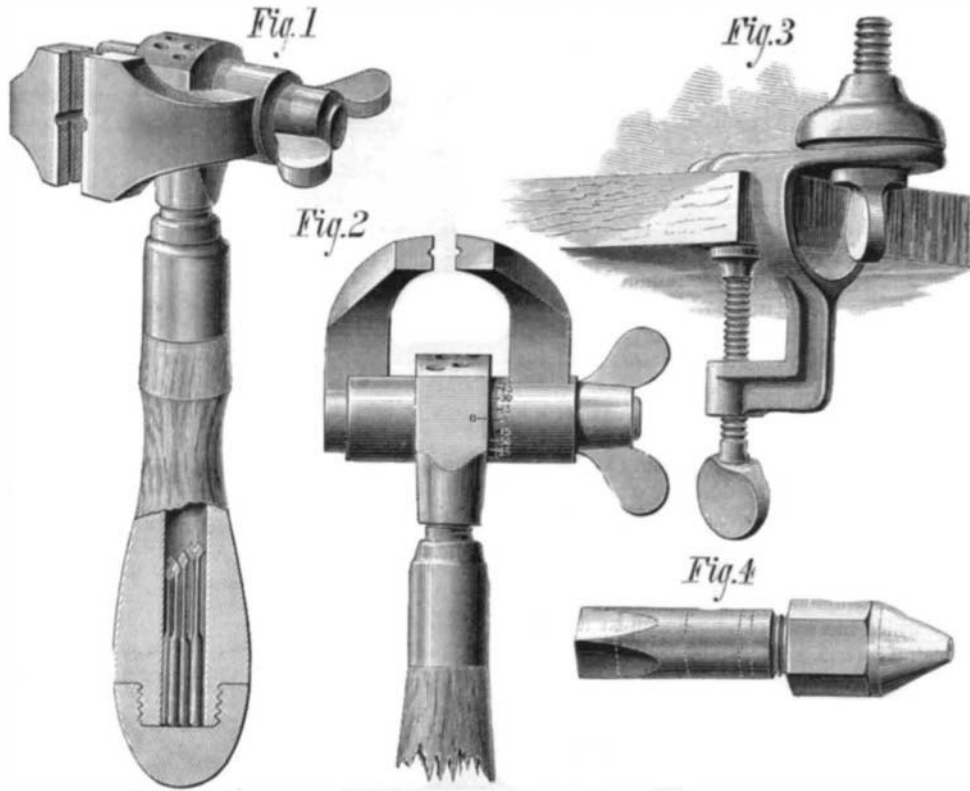
sections, *d e*, either of which can be opened or closed, as may be required. The only difference between the old frame and the new one is, that the latter has two bars instead of one, and is attached to the middle of the window frame instead of the lower quarter. The new awning also has an extra cord and pulley, and requires a little more canvas than the old style, but this is more than compensated for by the readiness with which it may be applied to a window, no fitting, cutting, or nailing being required, and the inventor states that when the durability of this awning is considered it is much cheaper than the common form.

The various ways in which this awning may be arranged are shown in the annexed engraving, which is taken from a photograph, and accurately represents the invention as applied to the building at the corner of Gay and Baltimore streets, Baltimore, Md.

Fig. 2 shows the old style of awning with improvements attached. Fig. 3 shows an adjustment made by loosening a central cord, opening the top, and closing the bottom, placing the awning in an inverted position. Fig. 4 shows the awning having one of its sides dropped on its inner surface. With this arrangement, when the wind blows along the side of the building, it is gathered and directed into the room. Its action in this case is similar to that of a wind sail used on vessels at

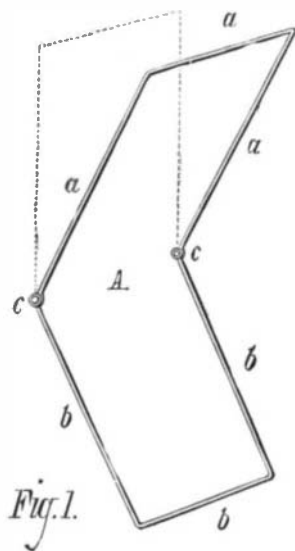
sea. Fig. 5 shows the upper half of the window exposed; the reverse of this is shown in Fig. 11. Fig. 6 shows an arrangement that is often desirable, especially after the awning has been rained upon, as it allows air to pass around its entire surface, drying it rapidly, and thus avoiding mildew and decay. The awning, when drawn up into small compass, is shown in Fig. 7. It may, in the same manner, be drawn down and secured at the bottom. These positions render the awning perfectly secure against any wind storm. In Fig. 8 both sides of the awning are dropped on its inner surface. This arrangement is desirable in many ways, especially when the awning is used on the south side of a business street, as it will effectually protect the eyes from light reflected from the buildings opposite. Fig. 9 shows a desirable arrangement when the sun is at or near the meridian. The central cord, in this case, is fastened on the outside of the awning. Besides the arrangements shown in the engraving, the awning may be placed in eight other positions.

In devising this awning the inventor takes advantage of the tendency of heated air to rise and of cooled air to descend. The awning, when inverted, permits the foul air to escape from the room, and allows the descending column of cooler air to enter the room, thus equalizing the temperature, so that there is but two or three degrees difference between the internal and external air. The inventor has proved the efficiency of the awning when thus arranged, not only in thoroughly ventilating and cooling the apartment, but also in excluding the noxious vapors that rise from the street and gutter at night. The great advantage possessed by this awning over others, in this respect, will be apparent without explanation. It is also effectual in excluding

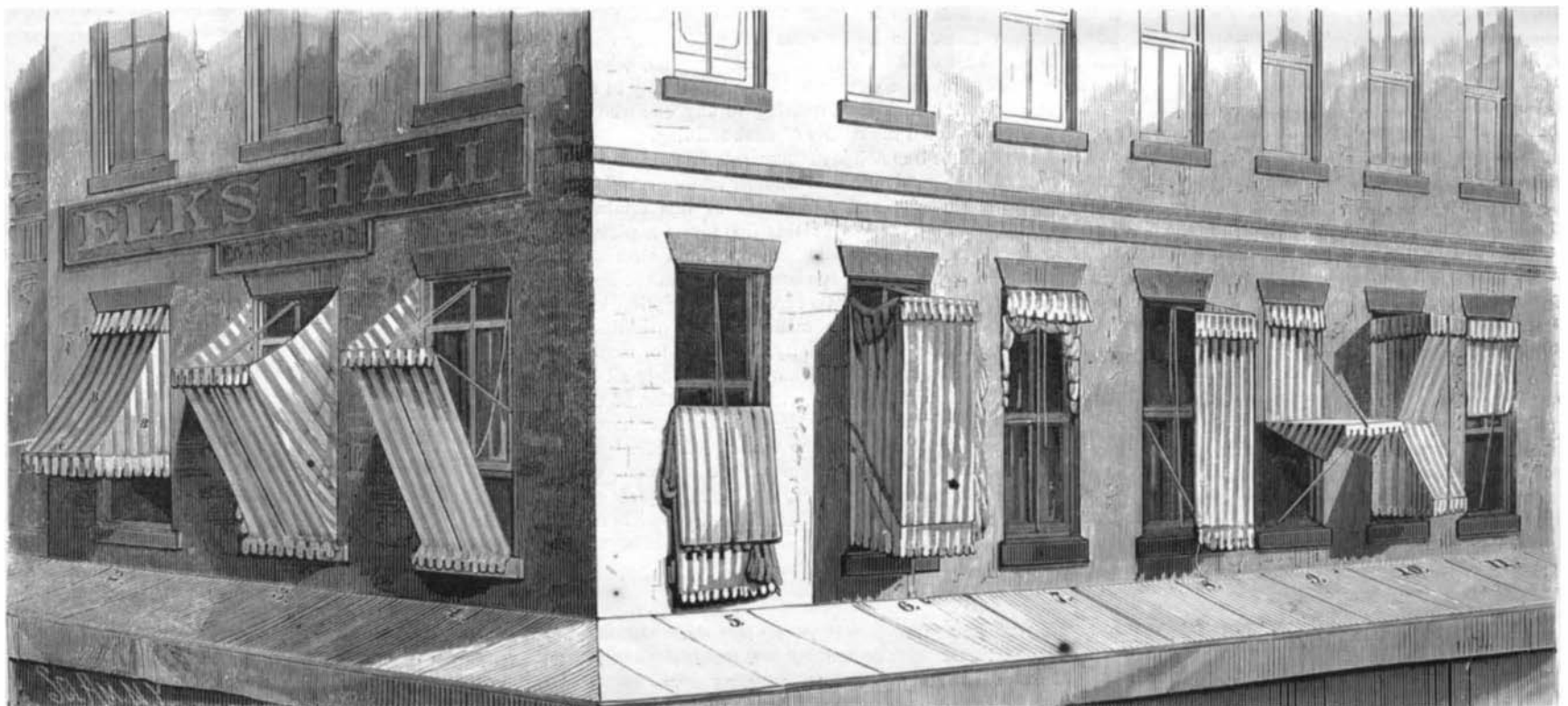


**B. F. STEPHENS' SOLID STEEL HAND AND BENCH VISE.**

The frame, A, of the improved awning, shown in Fig. 1, consists of the upper and lower bent bars, *a b*, pivoted together at their ends, and secured to the window frame by



means of thumb screws, *c*. The awning cover, B, is attached at its upper and lower ends to the bars, *a* and *b*, and at its lateral edges to the window frame by buttons or rings. This construction practically divides the awning into two



**DR. DWINELLES WINDOW AWNING AND ROOM VENTILATOR.**

dust during wind storms while permitting of perfect ventilation.

The inventor says that by the aid of these room "ventilators" every bed-chamber can be made a sanitarium during summer epidemics.

The germs of diseases, animal and vegetable parasites, fungi, albuminoid ammonia, etc., which are swept from the streets and gutters by servants into the air and carried into our sleeping rooms for hours before our waking, will find an effectual check by the use of these inverted "awnings," rendering us many times less liable to sickness, for it is a well known fact among physicians that persons are more liable to take disease during their sleep.

These room ventilators are so constructed that their entire surface can be brought under the immediate inspection of the eye, and within reach of the brush and cleaner. By drawing up the lower part of it and letting the upper bar fall through the lower one, the canvas is turned inside out, bringing its upper outer surface close to the window, where it may be freed from dust, spots, or stains, and cleaned with suitable washes for preserving its colors and making it last three times as long as the old style awnings, which are nailed securely to the top and sides of window frames, putting all of the outer surface of canvas beyond the reach of any protection, and which, too, after it has been rained upon, though the sun may shine for days and dry its outer surface, the space between the awning and upper sash is filled with choke damp air, containing minute fungi, causing the cloth to mildew and decay in a short time, also emitting noxious odors into the room, which is familiar to every one who has had much experience with the common style window awnings. As these "ventilators" are reversible, they can be readily turned inside out, and they may be used in that condition after the outer surface has faded or worn seedy.

A number of letters recommending this invention very highly have been shown us by the inventor; among them we notice one from Dr. James A. Stewart, Health Commissioner of Baltimore, an authority in medical and sanitary science, and another from Mr. George A. Frederick, a well-known architect of Baltimore.

It is needless to refer to the further advantages of this useful invention, as they will be apparent to any one having had experience in the window awnings or ventilators of the ordinary kind. This is a simple device that combines both in a very effective manner.

These improvements were patented August 24, 1880, by Dr. James E. Dwinelle, southeast corner Broadway and Baltimore St., Baltimore, Md., who may be addressed for further information.

**A Spinal Root of the Optic Nerve.**

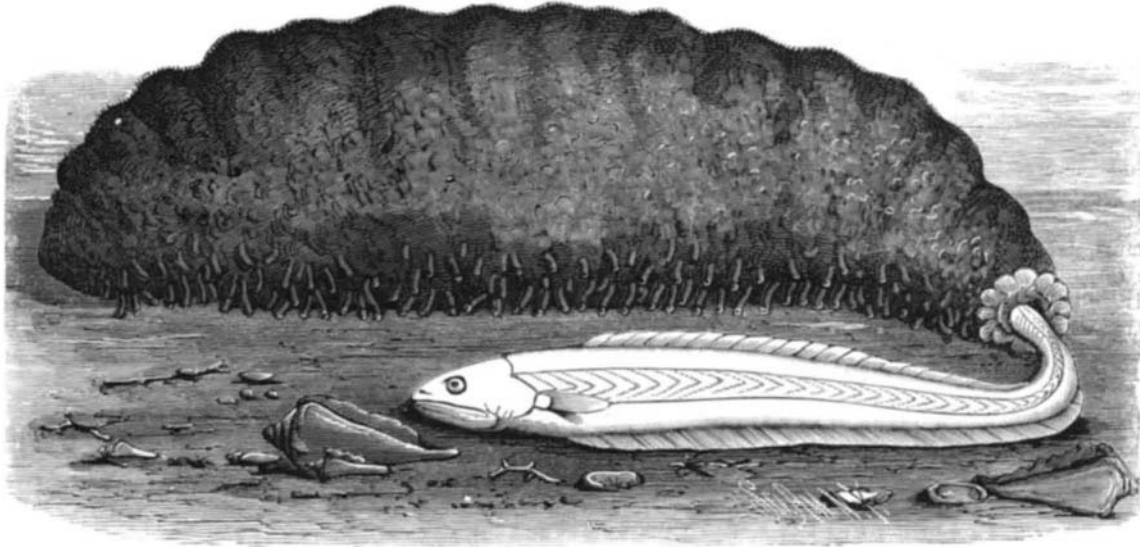
Stilling of Strasburg showed preparations to the International Ophthalmological Congress, at Mailand, in September last, which he believes demonstrate the existence of a spinal root of the optic nerve, which brings the retina into direct connection with the medulla. This root passes from the external corpus geniculatum, in a winding course, deep between the bundles of the crus cerebri, and can be traced into the pons; and it appears to course down in the direction of the medulla, although its further progress cannot be demonstrated.

The existence of this branch is interesting on account of the light it throws on certain physiological relations between the medulla and the retina, and may constitute the hitherto undiscovered link between certain diseases of the spinal cord and of the optic nerve.

**A STRANGE PARASITIC FISH.**

BY C. F. HOLDER.

Among the marine parasites we find several fishes whose peculiar methods in the struggle for existence are worthy of being recorded; one is the fierasfer, found by the writer in the Bêche de Mer, and the other the attendant of the physalia. Between Bird, Long, and Garden Keys, of the Tortugas group, a large shallow reef sweeps away to the south, fringed on the outside with breakers and a submerged wall of dead coral and other debris washed up from time to time.



PARASITE FISH.

The clear water within is rarely over four feet deep, some portions being pure white sandy bottom, while other parts are overgrown with large tracts of coral, astreas, meandrina, etc. Here is the collector's paradise. Among the huge heads of meandrina, numerous rare and beautiful fishes move lazily about. The branch coral swarms with radiates and crustaceans, while the sandy bottom and clear water are peopled severally with hordes of creatures adapted for their various surroundings. In drifting over these submarine gardens, new features appear at every step, and with a small coral hook and a pair of grains, enough specimens can be collected in a day to stock a large museum. The most common objects on the bottom are the large black echinus and the bêche de mer. The latter here attain their largest

fish gradually squirm out of his mouth. It dropped into the water, and after several attempts to swim, sank to the bottom, and shortly died. It was about eight inches long, tapering down to the tail, and in color clearly resembling the fishes from the Mammoth Cave. A delicate dorsal fin extended the entire length of its back, and its whole appearance was eel-like. Suspecting that the fish was a phenomenal parasitic occurrence, we collected other holothurians, and in many of them, after cutting open the thick skin, found the same fish, and in every case it died when exposed

to the open water, showing conclusively that it could not live out of the stomach of its protector. Careful examination of the reef, covering a period of eight or nine years, failed to show one of these fishes in any other condition than the above, and its habits, methods of increase, all are as much an enigma as have been some of the habits of our common eel. The fish, doubtless, takes its position in the holothurian when young; and either feeds upon the entrails of the animal or upon the food it takes in; either conditions are possible, as the holothurian, if deprived of a part of its internal machinery, every day could easily reproduce it, and would probably offer no objection, as we have frequently seen them disgorge their entire internal system, and reproduce a new set.

The holothurian in which this fish is found has for its specific name *Floridana*, and is a large dark-brown sea cucumber, with the feet scattered irregularly over the body, and with smaller tentacles than in *Pentacta* of our northern coast. The alimentary canal is often found filled with pieces of shell, corals, etc. It is about three times as long as the body, with longitudinal small folds, and held in place by a large, broad mesentery, which accompanies the intestine throughout the greater part of its length, terminating suddenly in a cæcum much larger than that of the above-mentioned species. In this canal lies snugly ensconced the fierasfer, now feeding on the pieces of coral or mollusca taken in by its host, or in default of this, tearing and lacerating the sides of its self-constituted prison. Its entrance into the alimentary canal of the cucumber may be attended with some danger, as the pharynx of the *Floridana* is calcareous, while in *Pentacta* it is muscular. Another species is found inhabiting the star fish (*Calcuta*.)

Concerning the methods of reproduction of these animals nothing is known, and the fact that those observed by the writer died upon escaping from the holothurian makes the question still more enigmatical. They undoubtedly seek the protection of the holothurian instinctively when young, and a curious example of quasi-reasoning power in low organisms is evidently shown. The Rev. J. H. Murphy, in his work entitled "Habit and Intelligence," seems to regard instinct as the sum of inherited habits, remarking that "reason differs from instinct only in being conscious. Instinct is unconscious reason, and reason is conscious instinct."

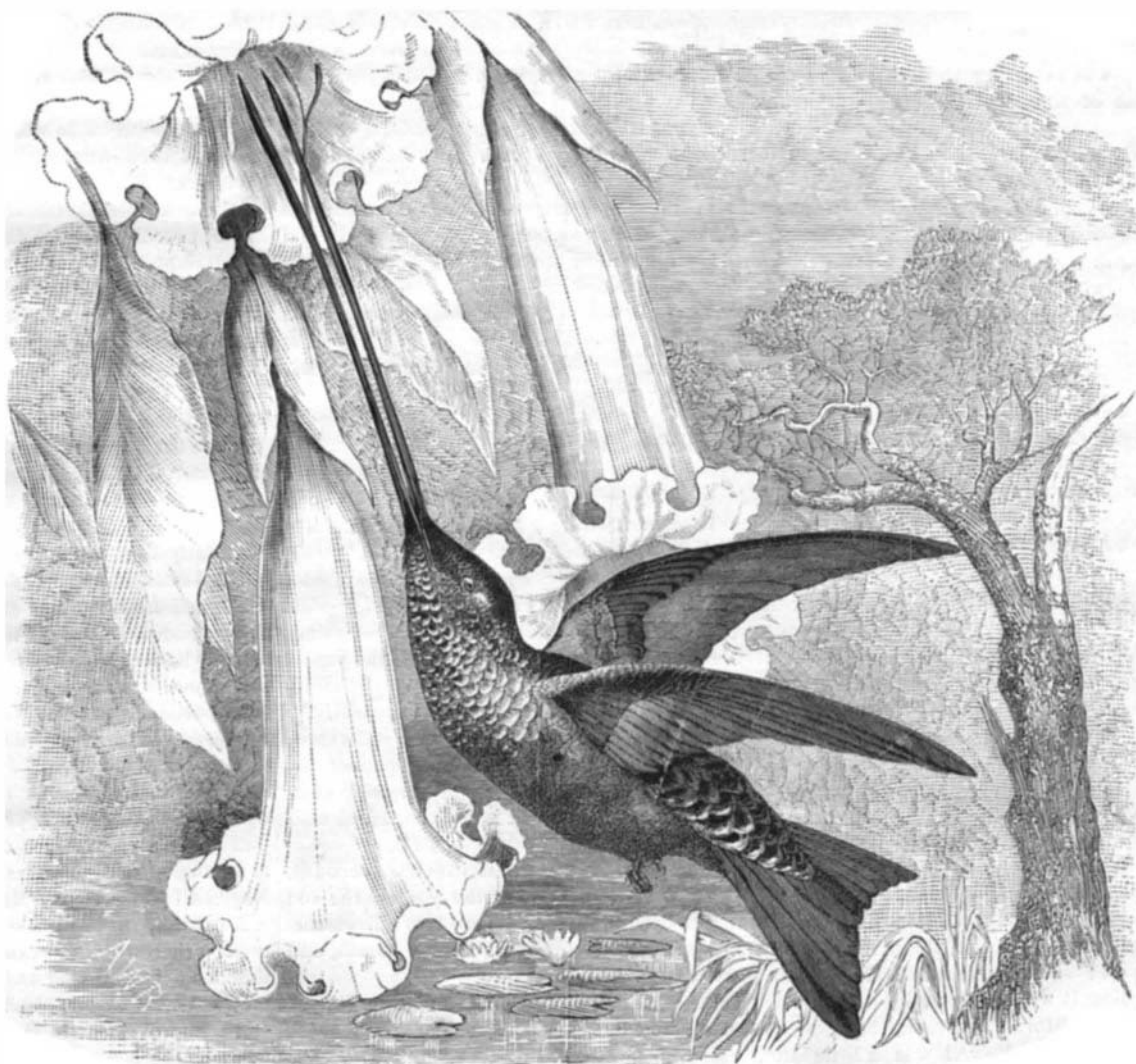
**THE SWORD BILL HUMMING BIRD.\***

This humming bird derives its name from the singular shape and size of its beak, which is very nearly as long as the rest of the body.

This curious species is rather large, as it measures about eight inches in length. It inhabits Santa Fe de Bogotá, the Caraccas, and Quito.

and is generally found at considerable elevations, having been often seen at a height of twelve thousand feet above the level of the sea. The inordinately long bill is given to this bird in order to enable it to obtain its food from the very long pendent corollas of the brugmansia, and, while probing the flowers with its beak, it suspends itself in the

\* Wood's Natural History.



SWORDBILL HUMMING BIRD—(*Docimaster ensiferus*.)

size, and their worm-like forms are seen stretched out in various positions. While drifting over this reef we came upon an extremely large specimen; jumping over, we lifted it from the bottom, and were about to throw it into the boat when our attention was attracted by the end of a fish protruding from the mouth of the holothurian. Holding it over a glass jar in the boat, we saw a long, silvery, eel-like