

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.

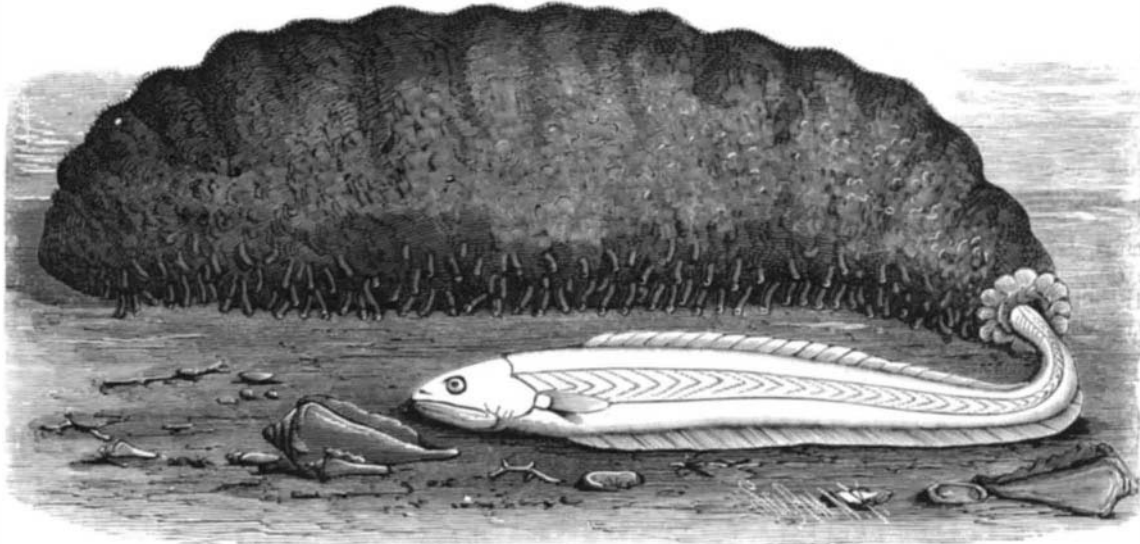
The existence of this branch is interesting on account of the light it throws on certain physiological relations between the medulla and the retina, and may constitute the hitherto undiscovered link between certain diseases of the spinal cord and of the optic nerve.

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.

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



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

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 (*Culcita*.)

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."

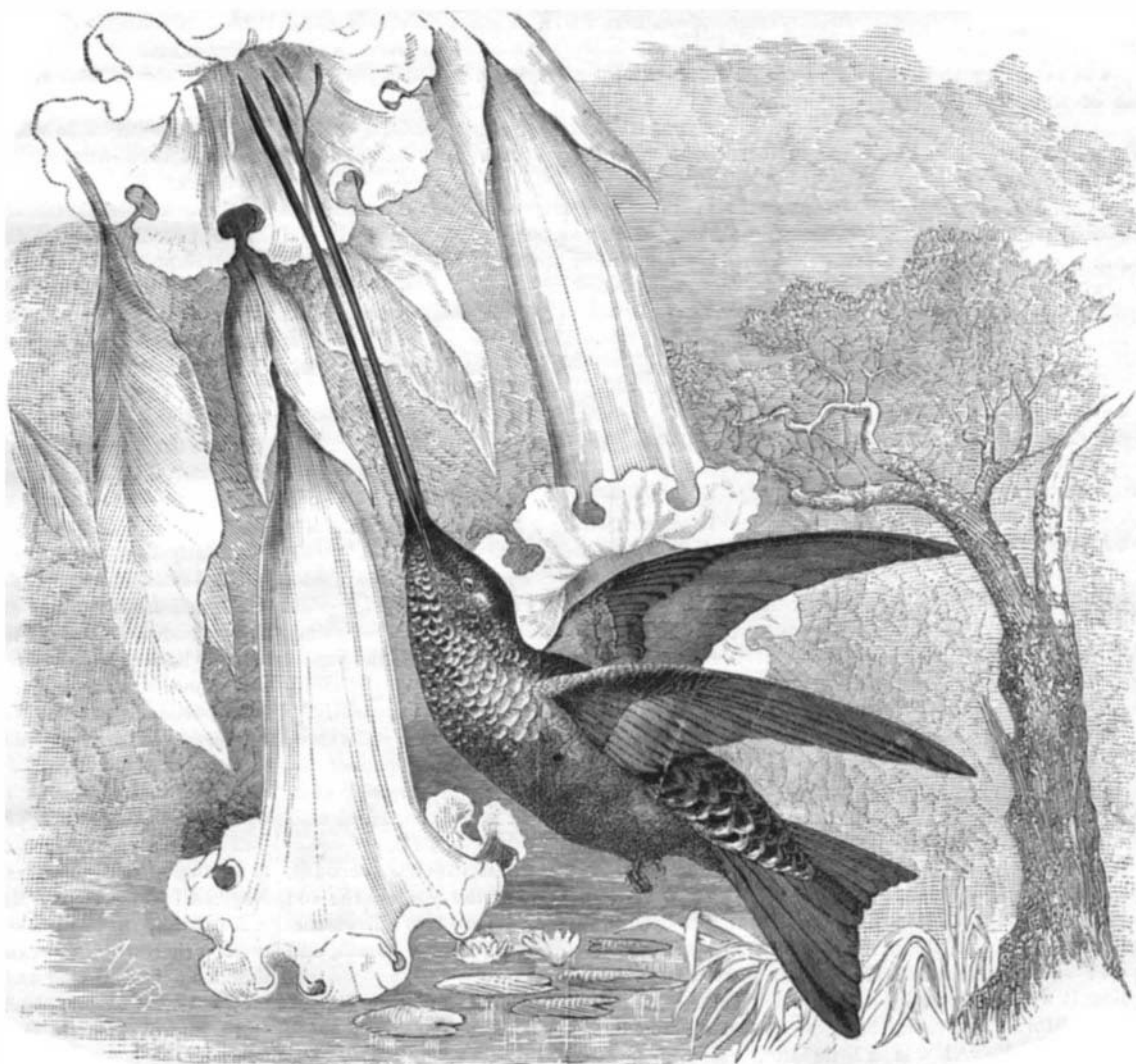
THE SWORD BILL HUMMING BIRD.*

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 Bogóta, 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

air with a tremulous movement of the wings. Its movements are singularly elegant, and while engaged in feeding it performs the most graceful maneuvers as it probes the pendent blossoms, searching to their inmost depths. The nest of this species is hung to the end of a twig, to which it is woven with marvelous skill, and its whole construction is very beautiful.

The adult male bird is colored as follows: The head and the upper part of the body are green, glossed with gold in some parts and with bronze in others, the tints changing according to the light. The wings are dark black-brown with a purple gloss, and the tail is dark black, bronzed on the upper surface. Behind each eye is a small but conspicuous white spot slightly elongated, and there is a broad crescent-shaped mark of light green on each side of the neck. The under parts are of a bronze green, and the under tail coverts are flecked with a little white. The female is of much the same color as the male upon the upper parts of the body, except that there is a little white upon the lower part of the back and a narrow white line behind the eye. The throat is brown, each feather being slightly edged with gray, and there is a very faint indication of emerald green on part of the throat. The young male is much like the female, but is more coppery in his hues. The throat is white, speckled with brown, because each feather is white with a brown tip. At each side of the throat there is a large patch of green intermingled with white.

Correspondence.

Colored Lights in Parlor Theatricals.

To the Editor of the Scientific American:

Having occasion to assist in getting up a series of tableaux, considerable difficulty was encountered in securing a satisfactory light. Living at some distance from New York, a calcium light was difficult to procure, and, moreover, too expensive. The use of gas and reflectors had been suggested. Procuring two 14 inch glass reflectors, I experimented with gas, with poor success. While the amount of light reflected was unsatisfactory, the interposition of a sheet of colored glass, or even a film of gelatine, sensibly diminished its volume.

Compelled to fall back on colored fires, I constructed a furnace of tin at small expense, that succeeded beyond expectation. A tin cylinder, 18 inches in diameter, was opened out at the side to admit a pane of glass, 16 x 24 inches. This glass, fastened securely in its place, constituted one side of the box, the curved inner surface of bright tin served as a reflector. A sheet iron bottom and an 8 inch heater pipe, leading from the top of the cylinder out through a convenient window into the open air, completed the apparatus. At the back of the box was constructed a sliding door large enough to freely admit the hand and closing tightly.

The peculiarity of the apparatus was:

1st. The large smoke pipe which was necessary to conduct rapidly away the large volume of smoke generated; and,

2d. The box was made as nearly as possible *air tight*. The chlorate of potash furnished all the oxygen necessary for combustion, and all the air necessary for draught was admitted through the slide door, which could be closed quickly upon any indication of a back draught.

The following formula for red fire gave the best results:

Powdered nitrate of strontia	8 ounces.
Powdered chlorate of potash	4 "
Shellac in coarse powder	2 "
Lycopodium	½ ounce.

This mixture burns slowly, gives a good light, contains no sulphur, and can be prepared by any druggist.

By placing the fire in tin troughs, 8 or 10 inches long, the amount of light and length of burning can be regulated to a nicety, and by alternating red, blue, and green in the same trough, these colors can be exhibited in any desired succession.

In a furnace of this description I burned colored fires for an hour without the slightest disagreeable odor being perceptible in the room. Hoping my experience might prove of value to some of your many readers, I remain,

Yours truly,

W. K. Roy.

Wappinger's Falls, N. Y., December 11, 1880.

Indian Ethnology.

Major J. W. Powell, Chief of the Bureau of Ethnology, Washington, lately gave to the *Republic*, of Omaha, Neb., information to the effect that there are now eight official parties in the field engaged in making a study of the North American Indians—their condition, their habit of life, their languages, their history, etc., as well as taking a census of them. These parties, who are roughing it with tents, mule teams, etc., are scattered throughout California, Nevada, Utah, New Mexico, and Arizona, and Major Powell was then on his way to visit them all to ascertain personally how they are progressing with their work. The taking of the Indian census was begun October 1, and will probably not be finished until next spring, owing to the scattered locations of the various tribes. The name of every Indian is written out in full, together with age, sex, etc., and other statistics are obtained, just the same as of the civilized citizens of the United States, so far as practicable. Besides these eight ethnological parties who are doing this work, there are special agents of the Census Bureau who are assist-

ing with the various Indian agents. It is estimated that the total number of Indians in the United States will foot up over 300,000. One of Major Powell's parties has just discovered in New Mexico and Arizona a number of old ruins and pueblos, which means old Indian villages. These are now being carefully explored. In New Mexico they have discovered, west of Santa Fé, the largest collection of ruins ever found on this continent.

Sea Elephants at Heard Island.

Heard Island is a barren formation 25 miles long, 6 miles broad, area 80 square miles, a considerable portion covered with glaciers. It is situated in about lat. 53° 10' S. and long. 73° 30' E., being about 2,500 miles southeast of the Cape of Good Hope, and 300 miles south of Kerguelen's Land. Heard Island is of volcanic origin. In the central part of the island a mountain, known as Big Ben, rises to a height of 7,000 feet. The island was visited by the steamer Challenger in 1874, and Mr. H. N. Moseley, in his "Notes by a Naturalist on the Challenger," gives the following particulars relating to sea elephants, which are found there in great abundance.

The sealers said that the climate of Heard Island was far more rigorous than that of Kerguelen's Land.

In winter the whole of the ground is frozen and the streams are stopped, so that snow has to be melted in order to obtain water.

In December, at midsummer, there is plenty of sunshiny weather, and Big Ben is often to be seen.

It is possible to land in whaleboats, on the average of the whole year, only once in three days, so surf-beaten is the shore, so stormy the weather.

We saw six sealers. Two were Americans, and two were Portuguese, from the Cape Verde Islands.

They were left on the island by the whaling vessels which we met with at Kerguelen's Land, their duty being to hunt sea elephants.

The men engage to remain three years on the island, and see the whale ships only for a short time in the spring of each year. On the more exposed side of the island there is an extensive beach, called Long Beach.

This is covered over with thousands of sea elephants in the breeding season, but it is only accessible by land, and then only by crossing two glaciers, or "icebergs," as the sealers call them.

No boat can live to land on this shore, consequently men are stationed on the beach, and live there in huts, and their duty is constantly to drive the elephants from this beach into the sea, which they do with whips made of the hide of the elephants themselves.

The beasts thus ousted swim off, and often "haul up," as the term is, upon the accessible beaches elsewhere, and there they are killed, and their blubber is taken to be boiled down.

In very stormy weather, when they are driven into the sea, they are forced to betake themselves to the sheltered side of the island, hence the men find that stormy weather pays them best.

Two or three old males, termed "beach masters," hold a beach to themselves, and cover it with cows, but allow no other males to haul up.

The males fight furiously; and one man told me that he had seen an old male take up a younger one in his teeth and throw him over, lifting him in the air.

The males show fight when whipped, and are with great difficulty driven into the sea. They are sometimes treated with horrible brutality.

The females give birth to their young soon after their arrival. The new-born young are almost black, unlike the adults, which are of a light slate brown, and the young of the Northern bladdernose, which are white.

They are suckled by the female for some time, and then left to themselves lying on the beach, where they seem to grow fat without further feeding. They are always allowed by the sealers thus to lie, in order to make more oil.

This account was corroborated by all the sealers I met with. I do not understand it. Probably the cows visit their young from time to time unobserved. I believe similar stories are told of the fattening on nothing of the young of Northern seals.

Peron says that both parent elephant seals stay with the young without feeding at all, until the young are six or seven weeks old, and that then the old ones conduct the young to the water and keep them carefully in their company. The rapid increase in weight is in accordance with Peron's account.

Charles Goodrich gives a somewhat different account, namely, that after the females leave the young, the old males and young proceed inland, as far as two miles sometimes, and stop without food for more than a month, and during this time lose fat.

The male elephants come on shore on the Crocets for the breeding season at about the middle of August, the females a little later.

There was said to be forty men in all upon Heard Island. Men occasionally get lost upon the glaciers.

Sometimes a man gets desperate from being in so miserable a place; and one of the crew of a whaler that we met at Kerguelen's Land said, after he had had some rum, that occasionally men had to be shot; a statement which may be true or false, but which expresses, at all events, the feelings of the men on the matter.

The men that we saw seemed contented with their lot. The "boss" said, in answer to our inquiries, that he had

only one fur seal skin, which he would sell if he was paid for it; but he guessed he'd sell it anyhow when he got back to the States.

He had been engaged in sealing about the island since 1854, having landed with the first sealing party which visited the island.

For his present engagement his time was up next year, but he guessed he'd stay two years more.

He'd make five hundred dollars or so before he went home, but would probably spend half of that when he touched at the Cape of Good Hope on the way. The men had good clothing, and did not look particularly dirty.

They lived in wooden huts, or rather under roofs built over holes in the ground, thus reverting to the condition of the ancient British.

Around their huts were oil casks and tanks, and a hand barrow for wheeling blubber about. There were also casks marked molasses, flour, and coal.

The men said they had as much biscuit as they wanted, and also beans and pork, and a little molasses and flour. Their principal food was penguins (*Eudyptes chrysopleus*), and they used penguin skins with the fat for fuel.

Captain Sir G. S. Nares saw five such skins piled on the fire one after the other in one of the huts.

MISCELLANEOUS INVENTIONS.

A tool for holding small articles or pieces of jewelry while being soldered, so as to dispense with binding wire, plaster of Paris, and the various inconvenient, troublesome, and dirty contrivances hitherto used in such work, has been patented by Mr. Louis G. Grady, of Halifax, N. C. This invention consists in a bar or plate provided with articulated arms that carry tweezers, the parts being so constructed and arranged that the articles or parts can be placed in the tweezers and brought together and held in any required position for being soldered.

An improved time signal for railways has been patented by Mr. Horace A. Wayne, of Manlius Station, N. Y. The invention consists in the combination of a clock with hands and dial as usual, and a clock movement without an escapement, that moves the hands of the indicating dial, and having a stop lever that is released by the passing train, the two clocks being so connected that the indicator remains immovable until a train passes, when it is released and moves until its hands catch up with or indicate the clock time, and it is again stopped.

Mr. Oliver Bryan, of New York city, has patented a hot air furnace, so constructed that the air when heated will be pure, the heating surfaces can be readily inspected and cleaned, and the fire will act instantly and uniformly upon all the heating surfaces, making the expansion equal and the radiation of heat quick and regular.

Mr. Abraham Mayer, of New York city, has patented an improved optometer or instrument for ascertaining the number and kind of glasses required by persons having an impaired sight, making the use of spectacles necessary. The invention consists in a case containing one or more sets of lenses arranged on an endless band in such a manner that a standard card, which is held on the end of an adjustable pivoted arm, can be read through the several lenses successively, so that the lenses suiting the eyes of the experimenter can be determined very easily and rapidly.

An improved furnace for burning chaff, etc., has been patented by Mr. Alonzo Moore, of Bangkok, Siam. In ordinary furnaces fuel is usually supplied at intervals, which chokes to a considerable extent the evolution of gases from the combustion. In so supplying the fuel the boilers are exposed to sudden changes of temperature, causing injurious expansions and contractions. To overcome these objections is the object of this invention.

Mr. H. L. Warren, of Alma, Ohio, has patented a fan blower for thrashers, by the use of which the feeders and band cutters will be protected from the cloud of dust that constantly issues from the mouth of the machines.

Mr. James R. Barry, of Yonkers, N. Y., has patented a combination puzzle and game apparatus, which consists of a short rod, a stationary handle, and four or more balls or short cylinders having alternate numbers and letters formed upon them in such an order that when the balls are arranged in a particular position the sum of the various columns of numbers will be the same, and the various columns of letters will spell words.

A harness buckle, the tongue of which may be locked upon the buckle frame, and of such construction that the pull of the engaged trace or strap shall be straight, and not at an angle thereto, has been patented by Messrs. Casper L. Marschall and Anthony Marschall, of Evansville, Ind.

A calendar, to be attached to a clock and operated in connection therewith, and exhibits but one number or date at a time, and that number or date in large or plain figures, has been patented by Mr. Peter Wagner, of New York city.

An improvement in the tunnels of base burning stoves, whereby the coals can be retained in the tunnel in case a weak fire is desired or in case the fire has gone out and the ashes and cinders are to be removed, so that the coal in the tunnel can be dropped on to a fresh fire, has been patented by Mr. Edward C. Smith, of Lincoln, Neb.

Mr. Charles L. Shaw, of Nora, Ill., has patented an improvement in flood gates for streams, hollows, and lowlands liable to be overflowed by a sudden rise of water. They are so constructed that they will not wash away, and will allow the water, and any rubbish being carried down by the water, to pass freely.