

with a smaller one growing out from the bottom or root close to the sun's limb. There was another tongue of flame a little to the right, which appeared to be detached from the larger flame and also from the sun's limb.

On September 20, 1872, I saw a red flame which went up a little distance from the sun's limb and then divided in three. Close to this, on the edge of the sun's disc, was a group of nine small spots, and a large space was covered with faculae. The flame—which was of a deep red colour—did not appear to be projected against the sky, but upon a very delicate purple background.

No coloured glass was used in either of these observations, but a sheet of letter paper was held between the eye and the telescope which was removed the instant the sun was brought into the centre of the field of view.

R. LANGDON

The Huemul

IN the number of NATURE for July 24, p. 253, I see it is stated that "the Chilian Exploring Expedition has discovered a specimen of the Huemul, an animal that has been altogether lost sight of."

The late Earl of Derby received a female specimen of this animal from Port Famine, in the Straits of Magellan, described and figured by me in the Proc. Zool. Soc. 1849, p. 64, t. xii., as *Cervus leucotis*, which is now in the Derby Museum at Liverpool. Mr. Bates has sent to the British Museum a male and female of the Huemul, which were obtained by Don Enrique Simpson in a valley of the Cordilleras, lat. 46 S. These specimens have been described, the horns of the male figured, and the history of the animal given in detail by me, under the name of *Huamela leucotis*, in the Ann. and Mag. Nat. Hist. 1872, x. p. 445; 1873, xi. p. 214, and p. 308.

The animal, like all the American deer, differs from the stags of the Old World in having no tarsal gland.

British Museum, July 24

J. E. GRAY

Colour of the Emerald, &c.

IN the valuable and important paper given on this subject in NATURE (July 24), the writer has not made it quite clear what kind of emerald was experimented on.

Taken in conjunction with the beryl, it may be assumed that reference is intended to the green beryl, a silicate of alumina and glucina, commonly called emerald, from its colour; but the name of emerald is also applied to green varieties of corundum, which is crystalline alumina.

It would be interesting to understand fully the distinction of colour constituents.

July 25

A. H.

Parasites of the House Fly

SOME of your readers may not be aware that the common house fly is at this time frequently found with from one to twenty parasites on its body. To such I recommend the observation of them as an interesting microscopical study. They are usually on the under part of the fly and can be seen with an ordinary lens of high power.

Regent Street, July 23

A. R.

Bees and Aphides

IN his interesting communication respecting the relations supposed to exist between *Trigona* and *Membracis*, Dr. H. Müller appears to have overlooked the Abbé Boisier's observation (Kirby and Spence, "Introduction to Entomology," 7th edition, p. 384) that hive-bees will collect the honey-dew excreted by Aphides. I have also observed the same habit in humble-bees.

Kilderry, Co. Donegal

W. E. HART

Flycatcher's Nest

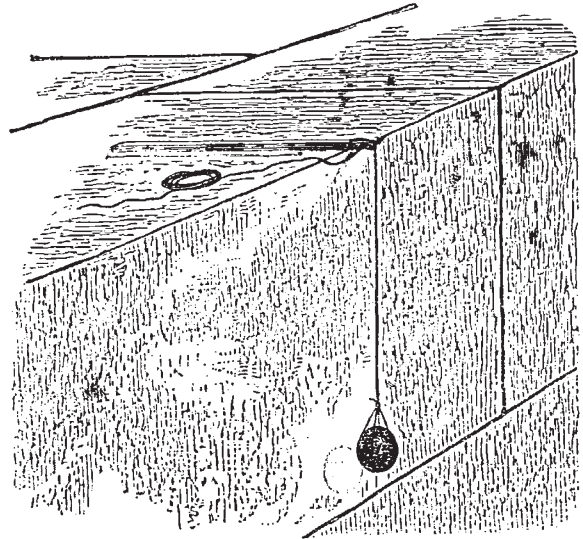
SOME flycatchers have built their nest *inside* a temporary shed erected for the masons at present employed upon the rebuilding of Llanfrefcha Church. The nest is now full of young ones, and the old birds fly in and out of the shed with perfect confidence, carrying food to them, and quite regardless of the carving and sawing going on close to them.

July 16

ELIZABETH H. MITCHELL

Relics of the Pyramids

GLANCING over a number of your periodical I find depicted (vol. vii. p. 147) a grey granite ball, recently discovered in the Great Pyramid, and surmised to be an ancient Egyptian weight. It does not seem to have struck the author of the article that this ball could be anything else than a standard weight, but the description he gives leads me to assign to it quite a different use.



I believe it to be a naturally formed granite pebble, selected on account of its nearly spherical form, for a mason's "plumb-bob." The small white spots of lime found on the ball were probably the result of its impact against the narrow cement joints whilst the masonry was in progress and the mortar not yet set.

The bronze hook and cedar rod may have formed part of the same tool, which possibly resembled the accompanying sketch.

Mangalore, June 20

E. H. PRINGLE

FISH DISTINGUISHED BY THEIR ACTION

AS the trained eye of a constant resident in the country enables him to recognise the various species of birds that cross his path by their flight, irrespective of their form and colour, so the observer of fish as they wander at will in the tanks of a large aquarium soon learns to invest them with an additional marked individuality imparted by their mode of action. In some instances these distinctive characters are instructive, as illustrating the varied mechanical principles on which locomotion is effected, while in others they are highly valuable as affording accessory means of discriminating the zoological affinities of the different races and species.

Commencing with the Plagiostomous order, we find in the two primary sub-groups, including respectively the Sharks and Rays, that progression is effected on very distinct principles. With the *Selachoida*, or shark tribe, the fish move by the even, powerful swaying from side to side of the largely developed and unsymmetrical caudal fin and whole posterior part of the body, the other fins remaining quiescent and being merely subservient as balancers. Descending to the species we find again that each form exhibits a peculiarity of action distinct from its congeners, and one which readily enables us to discriminate between them. Thus in the Smooth Hound, *Mustelus*, the pectoral fins are so largely developed that their balancing powers are highly augmented; comparatively slow motion of the caudal extremity suffices to propel the fish through the water, and the whole body being flexible, it pro-

gresses with a measured grace of action surpassed by no other species of its tribe. In the Picked Dogfish, *Acanthias*, the general contour of the body is very similar to that of the last species, but the pectorals being much smaller, more rapid action of the caudal extremity is requisite for supporting it in the water, and to this has to be added a great rigidity of the anterior half of the vertebral column, causing the fish to swerve from side to side with each stroke of the tail, the same cause preventing it also from turning corners with ease and rapidity, and altogether imparting to it a want of grace of action compared with that of other members of its tribe. For the foregoing reason this species requires a tank of larger size for its preservation in good health than other Dogfish, as if confined within the boundaries of a small one, it beats its head against the sides and rockwork to such an extent, that the cartilage of the skull is frequently exposed to view. In the Spotted Dogfish, *Scyllium*, the whole body is more elastic even than in *Mustelus*, a character admirably fitting it for its ground-loving habits, and enabling it to explore, and adapt itself to every sinuosity of the ground while hunting for its prey. When swimming in open water, it is distinguished by a more rapid action and swifter progress than *Mustelus*, though at the same time the greater amount of force expended in its movements deprives it of the peculiar grace associated with that species.

One anomalous form standing as it were between the Sharks and Rays, the Monk, or Angel fish, *Rhina squatina*, affords in its locomotive characters an interesting link further indicating its close affinity rather with the former than the latter group. The habits of this fish are essentially nocturnal, and throughout the daytime it usually reclines sluggishly at the bottom of its tank. Its depressed body and broadly expanded pectoral fins, resemble those of a Ray more than a Shark, and like the former fish it seeks concealment by burying itself beneath the sand or shingle, excavating a hole with the shovel-like action of these broad fins, and thus waits in ambush for passing prey. Immediately the Monk fish rises above the surface of the ground, its true affinities become apparent, progression being effected entirely by the lateral action of the caudal extremity, as in the Sharks, though in a more slow and clumsy manner. The lateral position of the gill openings in this fish forms its chief shark-like anatomical character, and to this has to be added its viviparous habits.

In the Batoidea, or Ray tribe, onward motion is accomplished by a singular, even, and wing-like action of the broad pectoral fins, the attenuated caudal extremity remaining perfectly quiescent, and serving only to preserve the fishes' equilibrium. Swimming towards the surface of the water, these fish present a most remarkable bird-like aspect, their large flapping fins reminding the observer of the flight of the heron or some other unwieldy representative of the Grallian order, while the slender tail dependent in the rear suggests the characteristic mode in which those birds hold their long legs, while pursuing their course through the more subtle medium which they inhabit.

Proceeding to the Teleostean group, we find the means by which the same organs are made subservient to the faculty of locomotion, still more highly diversified; space, however, will only admit of a few selections.

In the Gurnards, *Trigla*, during rapid movement, all the fins are pressed closely against the body, the broad wing-like pectorals being shut up like a fan, while the fish is propelled swiftly through the water by the vigorous undulations of the tail; when the fish moves leisurely the pectorals are opened to their full extent, acting as balances. In many species, such as the Striated Gurnard, *T. lineata*, these fins are brilliantly coloured, reminding the observer, especially when regarding them from above, of gorgeous tropical butterflies, gliding along with the smooth action

characteristic of the Vanessa tribe. Yet a third property of motion is possessed by these remarkable fish. Settling on the ground at the bottom of the water, they are capable of literally walking over it by means of the three free rays of the pectoral fins, which are situated a little in advance of the others, and are curved and especially thickened, to adapt them for their anomalous office.

The Gemmeous Dragonet, *Callionymus lyra*, a small and beautiful fish somewhat resembling the Gurnards in outward appearance, is distinguished by an essentially different mode of progression. The habits of this species are rather sluggish; it spends much time reclining on the ground, occasionally moving for short distances just above its surface, by the flitting action of the delicate pectoral fins. On ascending towards the top of the water, its swimming capacities are shown to be very limited, being restricted to the weak vibrations of the pair of fins above mentioned, and which impart to it a peculiar jerky action. The male in this species is recognised by the extraordinary length of the first ray of the anterior dorsal fin, which is raised and depressed at pleasure like the latteen sail of a Mediterranean fishing yawl. This singular appendage appears, from my own observations of the species in confinement, to be subservient to the same end as the wattles, crests, and other abnormal adjuncts of the male in the Gallinaceous birds—for the purpose of fascinating their mates; to this is added a similar heightening of the colour, which is carried to such an extent in this fish, that the two sexes were long regarded and described as separate species, under the respective titles of *Callionymus lyra* and *dracunculus*.

In the Pipe-fish and Sea-Horses, *Syngnathus* and *Hippocampus*, representatives of the Lophobranchii, the organs of locomotion are reduced to their minimum, being often restricted, in the former genus, to a single median dorsal fin, and being at the most supplemented by a pair of diminutive pectorals and a rudimentary caudal. In all cases this dorsal fin is the chief propelling instrument, and in motion, rapidly undulating from end to end, illustrates the action of the Archimedian screw, driving the fish through the water on the same principle. Dr. J. E. Gray was the first to point out this remarkable peculiarity, in the case of *Syngnathus*, from observing these fish in the Aquarium at the Zoological Gardens. In both *Syngnathus* and *Hippocampus* the animal usually assumes a vertical position while progressing through the water.

The John Doré, *Zeus faber*, affords us an example of the same principle noticed in the Syngnathidæ, applied to the purposes of locomotion, though to a still more remarkable and extensive degree.

One of these singular looking fish added to the Brighton tanks about two months since, has continued in perfect health up to the present time; and although of shy and retiring habits, has already yielded many points of interest in connection with its life history. The ordinary position assumed by this fish is the neighbourhood of some projecting rock near the bottom of its tank, and against which it sometimes inclines in a leaning posture, remaining motionless for hours together. Its ordinary progress from place to place is remarkably slow, and it is only when on rare occasions it rises high in the water, that the beautiful mechanism that guides its movements can be appreciated. It may then be seen that the only organs called into action are the narrow and delicate membranes of the posterior dorsal and anal fins, each of which vibrates in a similar manner to the single dorsal of the pipefish; the long filamentous first dorsal, pectorals, ventrals, and caudal fins meanwhile remaining perfectly motionless. Thus this wary fish, with an almost imperceptible action, silently and stealthily advances upon its intended prey, engulfing it in its cavernous mouth almost before the hapless victim is aware of its enemy's approach.

W. SAVILLE KENT