

The frogs were therefore in the best of conditions of vitality and in a state sensibly near that of their normal life.

In one series of experiments, we tried to hypnotize the frog by holding it in the hands and turned upon its back. It is extremely difficult to get the gaze of the frog. The color of the skin and eyes and the absence of expression in the look render the fixation of the latter difficult. It is necessary to perform the experiment as far as possible under conditions of uniform light. We experimented with both daylight and artificial light. This often constitutes a source of error in acting as an element of fatigue. Some precautions have to be taken by the experimenter for holding the frog in the hands. It gesticulates, as it were, its heart beats rapidly and its body easily slips between the fingers, and these are so many coefficients that have an influence upon the success of the experiments. The frogs go to sleep quite easily after some resistance. We have had frogs in our hands that we could not put to sleep until the end of an hour, and others that we could put into merely a slight slumber. The gaze, therefore, acted, as in human subjects, outside of any special experimental condition.

In a second series of researches we tried to produce sleep in frogs in a state of liberty, and that, too, under two different conditions. The frog was placed upon the laboratory table or was swimming in a sufficiently deep glass vessel in which we could observe it at our ease. The hypnosis then became more difficult, that is to say, it took a longer time to effect it. As is well known, frogs in a state of rest have an attitude quite well adapted for hypnosis. They look upwardly and the head reminds one of an attitude of ecstasy or admiration. I have succeeded experimentally in putting them to sleep upon the spot and in piercing their skin with a needle or hot iron without their manifesting the least reaction. The hypnosis, although profound, does not last long. It is short, in fact, and the animal often awakens, making an abrupt leap.

Hypnosis is likewise possible when the animals are swimming in a glass crystallizing pan, but it requires time and a dexterity that experiment alone can give. It is quite a characteristic fact that, although able to hypnotize frogs, we never could succeed in making them jump into the water. The hypnosis was not profound, although the sensitiveness became obtuse; it seemed as if the animal was automatically master of its kinesthetic attitude. The changes of position were delicate, although possible, and were incapable of extending to changes of the whole body. What characterized the profoundest state of hypnosis that we were able to obtain was a slight plunge into the water with a few "cat-naps," generally followed by an awakening. If the water was slightly heated, the hypnosis was interrupted; but Mlle. Stefanowska has, on the contrary, observed this fact in other states. When the temperature lowered progressively it appeared as if the frogs ceased, in a certain measure, to be master of their position in the water.

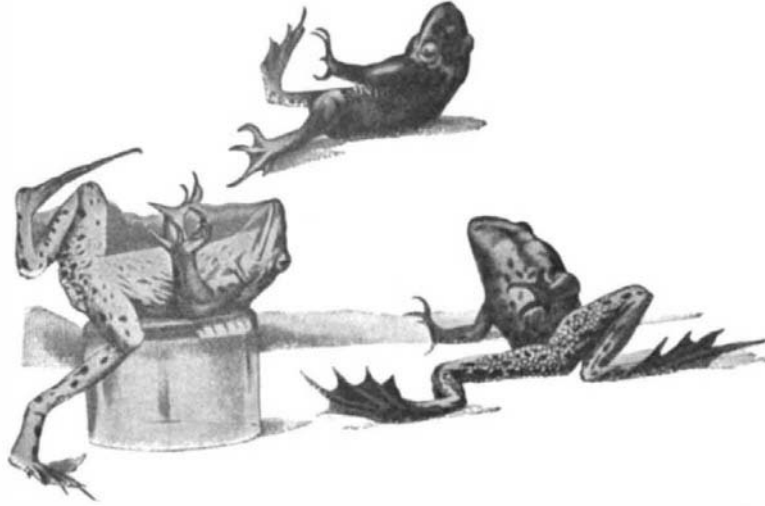
These facts, similar to those observed by Mlle. Stefanowska, but of the complete details of which we are ignorant, and especially to those observed by Gley, speak peremptorily in favor of the possibility of hypnosis in frogs, and demonstrate once more the anæsthetic power, so to speak, of the human gaze, that complex factor which seems to synthesize our whole dynamic cerebrality when it is in action. It must be concluded, then, that such gaze acts not only upon man, but upon frogs. There are here some important psycho-physiological approximations that make us reflect upon the nature of that mysterious force which slips through the windows of our psycho-organic life and acts as a true anæsthetic in fixing the attitude of animals like those of man and paralyzing all cerebral life.—This description was written by N. Vaschide, in *La Nature*.

H.M. Consul-General reports that it has recently been stated that the German government has contributed a certain sum toward the costs of experiments which are being made in Germany for providing fishing (sailing) vessels with auxiliary screw propellers worked by petroleum as motive power. Such an arrangement would, it is thought, be of great advantage, for the fishing vessels would thus be able to fish during complete calm, and, while earning more in this way, would also be able to convey their catch more quickly than at present to market.

A RARE FISH.

BY C. F. HOLDER.

From a zoological point of view the island of Santa Catalina, which lies eighteen miles off the coast of Los Angeles County, Southern California, is very interesting, many rare animals being found there. Every winter the dwellers of the island find numbers of Argonaut shells and several living specimens have been secured, one for a time living in the aquarium which is maintained here for the benefit of students and the entertainment of visitors. A number of rare and interesting fishes wander inshore from time to time. Several years ago I found various Scopeloid fishes, which up to that time had been considered rare, and during the past few years I have

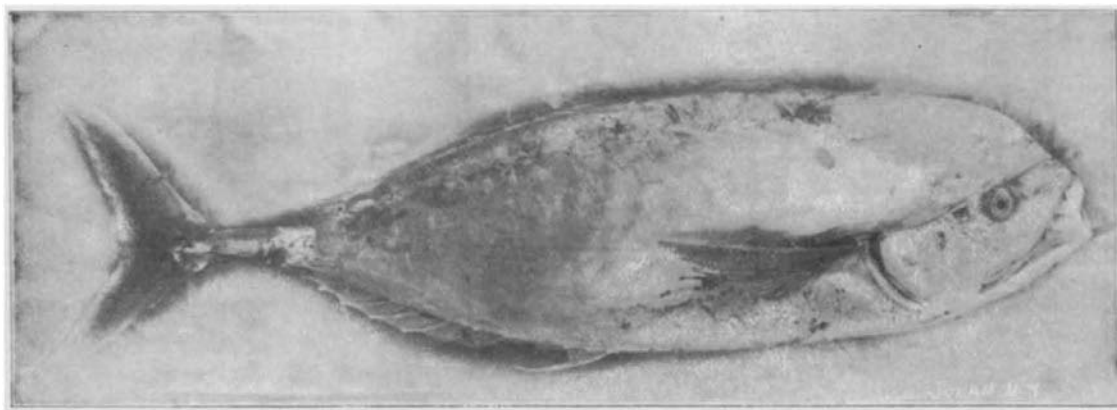


DIFFERENT ATTITUDES OF HYPNOTIZED FROGS.

seen one oarfish (*Regalecus russelli*) alive, while another was brought to me dead. From reports I judge that a number of these very rare fishes have been observed here. The first was of small size, not over two feet in length, and was discovered swimming in shallow water along the beach of Avalon Bay. I had an opportunity to observe the radiant creature before it died. Its "topknot"—it can be compared to nothing else—was a vivid red or scarlet mass of seeming plumes—the dorsal fins, which merged into a long dorsal fin, extending to the tail. The color of the body was a brilliant silver sheen splashed with equally vivid black zebra-like stripes, which gave the fish a most striking appearance.

The fish was a fragile and delicate creature, a very ghost of a fish, which swam along where the water gently lapped the sands, with an undulatory motion, looking like one of its names—the ribbon fish. The fortunate finder of this specimen could not be persuaded to give it up or sell it, and it was its fate to be pasted upon a piece of board, dried in the sun as a "curio," where, as if in retaliation at the desecration of so rare a specimen, it soon disappeared.

This apparently was the first oarfish ever seen in the United States, so at least Dr. G. Brown Goode wrote me at the time that it had not been reported. In 1899 another oarfish was brought to me, evidently having been washed in after a storm and found



A VERY RARE FISH—LUVARUS IMPERIALIS.

The first specimen ever seen in America, found at Santa Catalina, Cal.

within a few yards of the former at Avalon. The discoverer of this specimen also refused to allow it to be properly preserved, or to donate or sell it to any one who would have sent it to some museum, but, believing it valuable as a curio, also impaled it, the delicate creature evaporating under the strong heat of the semitropic sun.

This, as stated, was the second fish discovered, and during the past winter (1900) a fine large specimen came in at Newport Beach, being reported by H. J. Forgy, of Santa Ana. The newspapers announced that a Mexican had found a young sea serpent at Newport, and investigation showed that, as in hundreds of similar instances, the man had found a valuable prize without being aware of it. Accord-

ing to the account, the discoverer first saw the fish alive in the surf and hauled it ashore. Being ignorant of its value he cut it up, bringing in a part of the scarlet fins and a slice of the flesh. This he showed to some men, and led the way to where lay the mutilated remains of one of the finest oar or ribbon fishes ever seen. The specimen was twenty-one feet in length, and its weight estimated at five hundred pounds. The finder had so mutilated it that the fish was ruined for almost any purpose. If he had packed it in salt the specimen would have returned him the equivalent of several months' labor. Apparently the man had cut it up in wanton amusement.

This recalls a similar incident. I was on one occasion excavating at San Clemente Island, and had remarked that it was a singular fact that all the fine stone ollas were broken. "Nothing strange about that," said a half-breed, one of the party. "I used to herd sheep here, and we smashed mortars and ollas to pass away time."

One of the most interesting visitors to Catalina came ashore at what is called the Isthmus. It was somewhat mutilated, as shown in the accompanying illustration, and was entirely new to the fishermen, some of whom were Venetians. The fish was evidently allied to the mackerels, and when found displayed evidences of great beauty of coloring, at its best undoubtedly being an active and beautiful fish. In response to a photograph sent to Dr. C. W. Gilbert, of Stanford University, he wrote; "It was not until recently that I have had opportunity to examine carefully the photograph, which obviously represented no species known to the Californian coast. I find now that it represents an undoubted specimen of a form hitherto known only from the Mediterranean and neighboring waters—*Luvarus imperialis*. It is said to be rare in its home waters, and is yet unreported from our Atlantic coast."

This wanderer was injured in some way, possibly cast up by a winter storm. According to Goode and Bean, "Oceanic Ichthyology," the type specimen was about two feet long, observed by Rafinesque at Solanto, Sicily, June 15, 1808. It is a rare fish, but has been seen at Nice, at Malta, Elba and at Cete, and a fine specimen can be seen in the Museo Civico at Genoa; but so far as known none of the American or any of the other museums of Europe have specimens. The fish has been observed at Madeira, both old and young, according to the same authorities, and Steindachner reported it from the coast of Spain. In 1866 a small specimen came ashore on the Cornish coast, and from this Day made the figure to be found in "Fishes of Great Britain and Ireland." Giglioli has pointed out the interesting series of metamorphoses by which *Astrodermus* and *Diana* develop into *Ausonia* and *Luvarus*. But one species and a single genus are known.

The Current Supplement.

The front page article of the current SUPPLEMENT, No. 1355, describes both verbally and graphically the progress of the work on the Simplon Tunnel, one of the most stupendous engineering works of our time. Another engineering article, both timely and interesting, is a comparison between the proposed Nicaragua and Panama canals, in which the former is shown to be distinctly inferior to the latter. A simple form of differential gear for bicycles in use in France is described and illustrated. Rear-Admiral George W. Melville's address at the unveiling of the monument to Robert Fulton, erected in New York, is published in full. "The Economic Position of Japan" chronicles the progress made by the most enterprising of Eastern peoples

during the short period of its modern commercial existence. The director of the Blue Hill Meteorological Observatory, A. Lawrence Rotch, discourses instructively on the use of kites in obtaining meteorological observations, supplementing his written work by illustrations of rare value. Among the technological articles will be found a treatise on the "Enameline Process—Etching on Zinc," which contains information that, probably, cannot be obtained in any of the books on process engraving. Something new about Carthage, a city whose historical interest is rivaled only by that of Rome, is told in a fully illustrated article bearing the title "The True Carthage." A concise and thorough resumé of "Batrachia and Reptilia" will prove of interest to our zoological readers.