

"Fiat." Had it not been for the exceptionally heavy tempest, there is no doubt that they would have reached Toulon.

DO ANIMALS REASON?

BY NELSON R. BRIGGS.

There is much diversity of opinion on the question "Do animals reason?" even among scientists. But so long as scientists and doctors disagree, it is an open question as to how much more learned they are upon many subjects than the common, every-day man with equally as good reasoning powers, and neither with facts to prove his assertions other than reasoning powers.

I take great pleasure, however, in presenting to the readers of the SCIENTIFIC AMERICAN, that they may judge for themselves, an illustration to this article of a photograph of a cat opening a door, and thus gaining an entrance to the house. I took this photograph on March 17 last, about three P. M., after first watching the cat open the door two or three times, that I might the better judge of the best location for my camera, and, as I had no shutter to my lens, I was obliged to make the exposure by uncapping and capping the lens.

The photograph speaks for itself. The cat is of the yellow type, of good size, and belongs to Lanson Wiswall, a farmer living about three miles from Ballston Spa, N. Y. Mr. Wiswall says the cat was not taught to do this trick, if such it may be called; and how it came to understand or reason out that, even though the door was fastened with the old-fashioned thumb-latch, it could gain admittance to the house at will, by simply jumping up and grasping hold of the handle of the latch with one paw, and striking the thumb-piece with the other until the door swung open, is as much a mystery to him as it is to strangers who have witnessed the act.

Now, does this act not show reasoning powers on the part of the cat, when, finding that it could not push the door open with its nose or paw, it looks about and discovers that there is a latch, by climbing up to and striking which with its paw, it can open the door?

My experience and study of animals of the higher order of intelligence has induced me to maintain that most, if not all, animals do possess reasoning powers, and the above act simply adds to and strengthens my belief.

I am not disposed to agree with Mr. Burroughs, who says: "Such traits in animals are simply physical."

But there is, however, considerable philosophy in Mr. Deacon's statements. He says: "Whenever we find an animal able to learn by its own individual experience, we have the same right to predicate mind as existing in such an animal, that we have to predicate it as existing in any human being other than ourselves. Huxley observes that 'a race of dumb men deprived of all communication with those who could speak, would be little indeed removed from the beast.'"

Thus, it would appear that the mind of man in childhood, or in savagery, is not by any means so superior to that of the higher animals as is claimed by some. Such animals are speechless by reason of an anatomical accident, and not from an absence of ideas or ignorance of words.

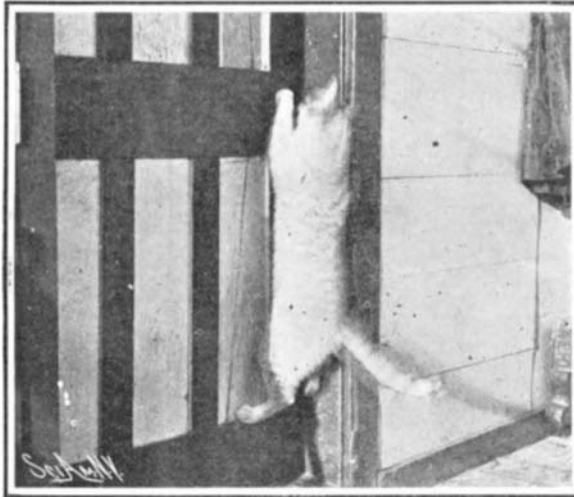
AN UNUSUAL INCIDENT OF CABLE WORK.

BY MAJOR EDGAR RUSSELL.

The submarine cable between Valdez, on Prince William Sound, Alaska, and Sitka, Alaska, was suddenly interrupted on November 6, 1904. The cable had been laid about a month before by the cable ship "Burnside," operating under direction of officers of United States Signal Corps, and had been in perfect working order up to the time of its interruption. Tests from the Sitka office located the trouble about ten miles out from Sitka. The cable ship proceeded to Sitka to make repairs on January 24, 1905. While heaving in the cable toward the fault, the dynamometer began to show considerable strain. At first it was thought the cable was caught under a rock, and the ship was accordingly maneuvered to loosen it. Heaving in was slowly continued, when the carcass of a whale appeared, with a loop of the cable fastened around the lower jaw, as shown in the photograph. The loop was twisted, as well, thus securely holding the whale. The carcass was badly decayed, and the stench made the task of loosening the cable from the jaw most trying. During its struggles the huge animal had badly twisted and torn the cable in its vicinity, making sev-

eral breaks in the conductor, thus interrupting communication. The steel armor wires, with the exception of three, were broken at the twist of the loop, and had the cable not possessed great tensile strength (20,000 pounds) it would undoubtedly have been broken. A splice was soon made, and communication between Valdez and Sitka restored.

One theory as to this peculiar accident is that the whale in feeding along the bottom was swimming



A CAT THAT HAS LEARNED HOW TO OPEN A DOOR.

slowly with jaws open. The cable being suspended on irregularities of the bottom, it came across the whale's open mouth, and the animal in its endeavor to disengage itself threw a loop in the cable. The whale was about fifty feet long. The depth at the place where it was found is sixty-five fathoms.

One other case of interruption of a cable by a whale is on record. This occurred in the Red Sea many years ago, and was caused by a loop of the cable being caught around the whale's tail. This, and interesting cases of interruption of cables by fishes, are described in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 46, 113, and 114.

The Misunderstood Inventor.

BY W. D. GRAVES.

By a very large class, one who attempts anything new, with a view to getting material returns therefor,

is looked upon with good-natured contempt, on account of the large percentage of failures in that line; yet, in most born mechanics there is an ingrowing desire to create some new thing or process, or to improve some old one. If he fails, he is laughed at; if he succeeds, he is pronounced "lucky."

For a mechanic, however, there is little chance, other than this, for any very material advancement.

Invention is one of the very few fields in which one can give a man his money's worth and still make more than wages for himself; and, as in other fields, the only road to success is through repeated trials.

Worth is often difficult to ascertain, an unknown quantity, generally only to be judged by what one can get; but, whether it is known or not, there always is a real value; and, in buying and selling, one must buy for less or sell for more, or both, in order to make a profit above actual living wages for work done.

An inventor is, in a worldly sense, a creator, and may justly claim as recompense the value of his invention to others (though he rarely gets anything like that) without consideration of its cost to him; which cost is, by the way, generally much more than the average observer is likely to guess.

The cost of an invention consists not only of the actual time and money spent on that one device, but may justly include a portion of the expenditure on the many previous and unsuccessful ones, the bleaching bones of which ornament, or deface, the walls of the workshop of every inventor who has attained any measure of success.

A business man, conversing with the writer a few days since, commented on the remarkable sale of a recent invention, and observed that the inventor was probably making a fortune as the result of a happy thought. The writer happened to know that the inventor in question was not making any fortune, because he had not the business ability nor the capital necessary to make the device the success which it is, and that he sold his patent for a sum far under a fortune.

The writer well remembers, too, the Monday morning when he came to the shop with the "happy thought" shining through his countenance.

The invention, while a "happy thought" indeed, was not instantaneous, but was the outcome of many years of thought and practical work along those lines which lead to successful invention; and, after the thought came, there were many days of work, study, and experiment before the thing was in practicable form.

At the time of making this invention he was a man whose hair was well sprinkled with gray, a thorough mechanic in his line, and the owner of half a dozen patents on really practical devices, none of which had paid expenses.

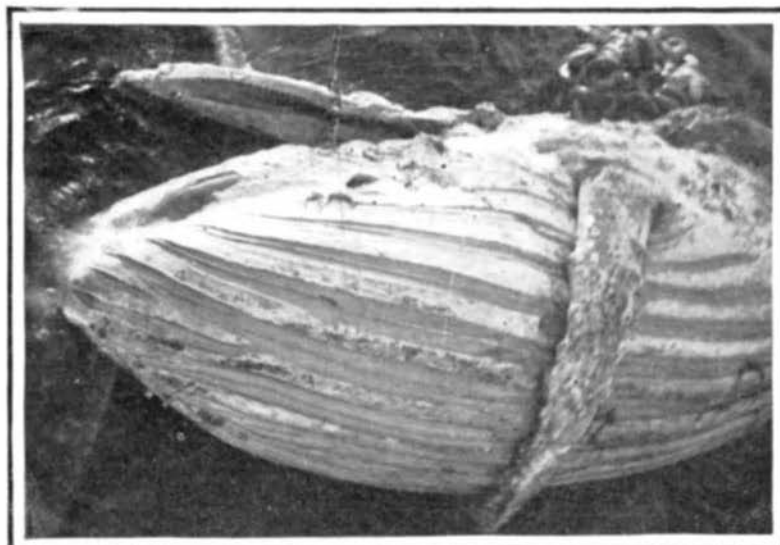
Say who will, that he knows, yet no man knows or can do more than to guess whether an invention will or will not sell; and the inventor knows least of all, till he tries.

In reckoning the cost, then, is it not just to reckon those years of work and study which he devoted to unsalable inventions and which led up to the salable one?

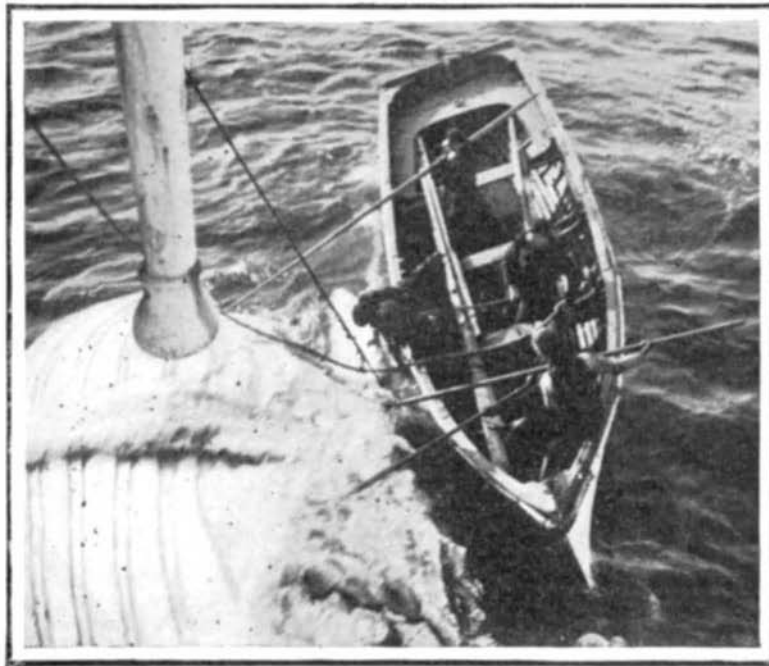
Many writers of note, and of technical education, hold that, given the demand, a machine or mechanical device may be very readily worked out by fixed mechanical rules; and, while this is to a certain extent true, it is often the case that a man with the mechanical "knack" makes a short cut which leaves the calculator far behind, and the demand is often created by the device, or aroused to an extent which surprises the longest-headed prognosticators.

How often we see little things put on the market and sold in phenomenal quantities, for which we never dreamed of a demand till we saw them, but which we find absolutely essential to our comfort and wonder why we didn't think of them ourselves.

The sugar industry has made considerable progress in Japan of late. The extensive plantations of sugar cane in the island of Formosa are to be remarked in this connection and show the efforts which are being made toward home production. It is thus expected to diminish the imports from foreign countries. At present there are two large sugar refineries near Osaka and Tokio, which produced on an average 3,000 tons per month in 1903. The financial results are said to be very favorable, seeing that the cost of production is but \$1 per picul (130 pounds). A third refinery is soon to be installed at Dairu in the island of Kyshu and it will suffice for the consumption in the south of Japan. The capital employed will be about \$500,000. The works are favorably located near large coal mines.



Whale Caught in Sitka-Valdez Submarine Cable.



Untangling the Whale from the Cable.
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