

striking testimony to the rapid development of telephony. Thirteen years ago the first rude model of a telephone was brought from America by Sir William Thomson. One year later, Graham Bell himself brought to Scotland and exhibited first in Glasgow, and Mr. Preece brought to England, the telephone receiver (then also used as transmitter), almost exactly as it is now constructed. But a vast amount of practical work of a most important kind remained to be done before telephony could be made a commercial success. Without, however, waiting for this to be accomplished, a telephone line was immediately installed by Sir William Thomson between his house at the University and his laboratory, and between both and the workshop of his instrument-maker, Mr. White, in Sauchiehall Street, and this (now merged in the Telephone Exchange) has been in daily use ever since. From this very appropriate first practical beginning has developed the present immense and continually extending system, whose wires form a network above all our great cities, which plays so great a part in the transaction of business, and even of ordinary domestic affairs, and which now enables men in different cities at great distances apart to converse with one another by the living voice. All this has taken place in little more than ten years. Who knows what scientific wonders we may not see before A.D. 1900? But it is mournful to reflect that, as the applications of a scientific principle or invention become more and more wonderful, the thing itself excites so little interest among the people at large who continually use it. This is, no doubt, in part due to our curiosity- and admiration-stifling systems of education, and in part to other causes, about which it is useless to speculate. But true it is, "Familiarity breeds contempt," and, by the ordinary member of the British public, the telephone will soon be as much used, quite as little understood, and regarded with just as little curiosity, as the wonderful machine which he carries in his pocket from his boyhood to the end of his life.

A. GRAY.

#### OUR BOOK SHELF.

*Morocco.* By H. M. P. de la Martinière, F.R.G.S. (London: Whittaker and Co., 1889.)

In this book, which has been translated directly from the author's manuscript, M. de la Martinière records the impressions produced upon him during journeys in the kingdom of Fez, and to the Court of Mulai Hassán. He had exceptional opportunities of making himself acquainted with the facts of social life in Morocco; and in a simple, graphic, and clever narrative he describes exactly what he saw, and the inferences that may be reasonably drawn from his observations. Upon the whole, his account of the condition of the people is most unfavourable, and everyone who studies the evidence he brings forward will admit that the regeneration of Morocco, by whomsoever or in whatever way it may be undertaken, will be no easy task. One of the few bright spots in the author's picture is a passage in which he praises what he calls the refined taste of the Arabs of Morocco. This reveals itself in the industrial products of the country, in the decoration of the pavements and ceilings of their houses, and in the skill with which they match colours in dress. They by no means display the same aptitude for science, which is generally regarded, from a religious point of view, as a forbidden subject. On the other hand, alchemy flourishes, and M. de la Martinière says there are many rogues who

trade upon the credulity of the public. Some good route-maps and plans illustrate the text, and a preface is contributed by Colonel Trotter.

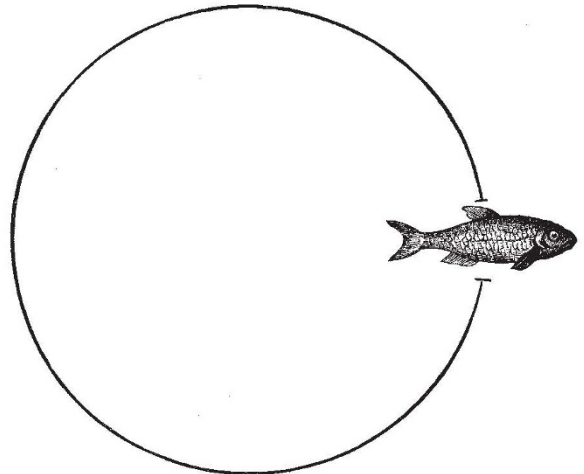
#### LETTERS TO THE EDITOR.

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#### The "Hatchery" of the Sun-fish.

I HAVE thought that an example of the intelligence (instinct?) of a class of fish which has come under my observation during my excursions into the Adirondack region of New York State, might possibly be of interest to your readers, especially as I am not aware that anyone except myself has noticed it, or, at least, has given it publicity.

The female sun-fish (called, I believe, in England, the roach or bream) makes a "hatchery" for her eggs in this wise. Selecting a spot near the banks of the numerous lakes in which this region abounds, and where the water is about 4 inches deep, and still, she builds, with her tail and snout, a circular embankment 3 inches in height and 2 thick. The circle, which is as perfect a one as could be formed with mathematical instruments, is usually a foot and a half in diameter; and at one side of this circular wall an opening is left by the fish of just sufficient width to admit her body, thus:—



The mother sun-fish, having now built or provided her "hatchery," deposits her spawn within the circular inclosure, and mounts guard at the entrance until the fry are hatched out and are sufficiently large to take charge of themselves. As the embankment, moreover, is built up to the surface of the water, no enemy can very easily obtain an entrance within the inclosure from the top; while there being only one entrance, the fish is able, with comparative ease, to keep out all intruders.

I have, as I say, noticed this beautiful instinct of the sun-fish for the perpetuity of her species more particularly in the lakes of this region; but doubtless the same habit is common to these fish in other waters.

WILLIAM L. STONE.

Jersey City Heights, N.J., U.S.A., May 30.

#### Black Rain.

ON Friday, April 12 last, the rain is stated to have come down black during a thunderstorm at places distributed over a considerable area in the County of Galway, King's County, and County of Tipperary.

I was in England at the time, and after my return to Ireland, on hearing of the rain-water being black in the tanks at a friend's house, I was at first sceptical as to its origin, as a heavy shower after a spell of tolerably dry weather might have brought down much dirt from the roofs, and hence I missed several opportunities of obtaining samples at once.