

Brighton Aquarium

I ADDRESSED a letter some weeks ago to the chairman of the Brighton Aquarium Company, in which, amongst other matters, I suggested that a stand with a few microscopes exhibited therein, which had been offered by a London maker, would be a source of great additional attraction, without being any expense to the company.

I also suggested that it might very likely be the nucleus of a school of marine zoology, if for a separate subscription the directors could set aside a room to be used by students, who might form themselves into a kind of club, and work with their microscopes and tanks in quiet. The nearness to London of the Brighton Aquarium might, I remarked, prove the inducement to many non-residents to join; whilst a library, and a few demonstrations, would give increased means of gaining information.

I think, sir, that the importance of my suggestions warrants my requesting you to make them public, since other aquaria might also take the matter up, without damage to the Brighton Company, in the success of which I take the warmest interest.

MARSHALL HALL

New University Club, March 7

General Travelling Notes

I BELIEVE F. G. S. P. would find some of the information he wishes, in a small pamphlet which is to be obtained at the Royal Geographical Society, 1, Savile Row, price 1s. There is also an excellent little work (very portable) which has been recently published by some Fellows of the Anthropological Institute for the use of travellers, which would be found useful; price 1s.

J. RAE

New Guinea

THE *Academy* for July 15, 1872, contains a note on New Guinea, from *Petermann's Mittheilungen* in which there are two slight mistakes. Perhaps you will allow me to correct them in your journal.

It is said, "The London Missionary Society founded a number of stations on the south-eastern peninsula" in 1871, and that these stations were "in charge of educated natives of the Tongan Archipelago."

The stations founded by the agents of the London Missionary Society in 1871 were not on the large island of New Guinea, but on the small islands of Erub, Tauan, and Saibai in Torres Straits. The Society's vessel has, however, sailed this year with a staff of English and Polynesian missionaries on board, who hope to be able to occupy stations on New Guinea itself.

The "educated natives" placed as pioneers in the first settlements are not "natives of the Tongan Archipelago," but of the Loyalty Islands near to New Caledonia, and they belong to the black Polynesian, or Papuan race. The Tongan Islands are entirely under the care of the Wesleyan Missionary Society.

The missionaries who touched at New Guinea in 1871 believe they saw people similar to the brown Polynesians as well as the black frizzly haired Papuans proper. Hence, evangelists from both races of Polynesians have been sent to New Guinea this year.

S. J. WHITMEE

Samoa, Nov. 6, 1872

Flight of Projectiles

YOUR correspondent, "Robert Reid," asks for an impossibility. There is no impossibility in calculating the theoretical deflection in the flight of a bullet due to a theoretical wind pressure, but the formula could not be "simple." However, Mr. Reid need not be distressed, for it is difficult to conceive any intellectual occupation which would be a more complete waste of ingenuity. Let us consider the real conditions of the problem.

Mr. Reid has not stated them with completeness. It is not sufficient to know the time of flight of the bullet, its size, and weight, the theoretical pressure of the wind, and the angle at which that pressure is exerted. It would be necessary, also, to know the angle at which the rifle is fired, the initial velocity of the bullet, and the space travelled over in its flight. It is obvious at once that the vertical line of flight, if I may be permitted the expression, is not a straight line, but a curve, rapidly accelerating towards the end. If we assume certain arbitrary theoretical figures for initial velocity and strength of wind, there would be no great difficulty in calculating the curve, but it would

be a purely imaginary curve, and an utterly useless and deluding calculation. Let us consider the disturbing elements. First, the powder. It would be difficult, if not impossible, to get two charges of precisely and absolutely the same strength. Then the state of foulness would vary. Then the pressure of the wind would always vary in a distance of 500, or 1,000, or 1,500 yards, and in a flight of several seconds; even its very direction would vary at different points in the line of flight, unless in the case of a perfectly open exposed plain.

To all soldiers tempted to indulge in calculations of this nature I would venture to say that there is nothing so likely to mislead. Science and practice should be one and the same thing. If what professes to be science cannot be carried out in practice, it is not true science but bastard science, or pedantry, and the unpractical pedant is even more mischievous in war than the so-called "practical man" in matters of civil life.

Army and Navy Club, March 10

W. HOPE

Glacial Action

IN NATURE of vol. vii. p. 241, you say, "Dr. Dawson thinks that the fiords on coasts, like the deep lateral valleys of mountains, are evidences of the action of waves, rather than that of ice. No glacialist, as far as we know, holds the extravagant belief that fiords have been cut out by ice. They are undoubtedly submerged valleys, and were hollowed out by streams and other atmospheric influences in ages long anterior to the glacial epoch."

A true fiord, like those of Norway, Scotland, and, we may add, the west of Ireland, is nothing but a mountain valley sufficiently depressed for the sea to enter it. I am not a practical geologist, but I have read what appeared to be strong arguments in favour of the belief that the valleys of the Alps have been hollowed out by glaciers. I do not see how any one who sees the quantity of mud that glacier streams bring down, can doubt the great power of glaciers as excavating agents; and the argument is strengthened by the vast moraines, thousands of feet below the present lower limit of the glaciers, and now overgrown with trees, which are to be observed throughout the Alps.

If mountain valleys have not been, in at least a great proportion of cases, excavated by glaciers, how are we to account for the fact that fiords and mountain lakes are almost, if not quite, confined to the higher latitudes? This is especially observable on the west coast of America, which is remarkably unbroken from Vancouver's Island to Chiloe, but broken into fiords from Vancouver's Island northward, and from Chiloe southward.

This observation throws no light on the very different question of the origin of great lowland lakes like those of North America and Africa.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim

The Feeding Habits of the Belted Kingfisher

ON page 48 of Mr. Darwin's "Expression of the Emotions," I find the assertion, "Kingfishers when they catch a fish always beat it until it is killed." We have, in New Jersey, one species of kingfisher, the *Ceryle alcyon*, which is exceedingly abundant for about seven months of the year. For several years I have observed them carefully, both feeding and breeding about the banks of Crossweksen Creek, and I feel certain that I am correct in saying that I have never seen a kingfisher take its food otherwise than by swallowing it whole, while yet upon the wing. The fish having been swallowed, or at least, having disappeared, the kingfisher will then alight upon the branch of a tree, and will then, frequently, stretch out its neck, and go through a "gulping motion," as though the fish was not entirely in the bird's stomach, or perhaps was only in the oesophagus. In the thousands of instances that I have witnessed, of these birds catching small fish, I never once saw a fish taken from the water, and killed, before being devoured.

So far as my recollection serves me, in the large majority of instances, the kingfisher, after darting into the water and securing a small cyprinoid, will emerge from the stream, uttering its shrill cacophonous scream, as if rejoicing over the delicate morsel it had captured and not scolding at its ill-success, as has been thought; for we have frequently shot them as they rose from the water, and invariably found a fish, still alive, in the stomach or oesophagus. Indeed, I cannot see how this characteristic cry of the kingfisher could be accomplished with a fish struggling in its beak. When the fish, from its size or other cause, is retained in the oesophagus until the bird alights, the movements of the bird, to effect the swallowing, are very