

The direction from which they are heard is constant, and that is the south or south-east. I have heard them west of me when down in the extreme south of the district, but never north of me. On the other hand, I have been told by captains of river-going steamers that they have heard these reports to their north. These gentlemen, however, ply along waters outside the range of my observations, which lie on the mainland and its adjacent waters.

These Guns are always heard in triplets, *i.e.* three guns are always heard, one after the other, at regular intervals, and though several guns may be heard the number is always three or a multiple of three. Then the interval between the three is always constant, *i.e.* the interval between the first and the second is the same as the interval between the second and the third, and this interval is usually three seconds, though I have timed it up to ten seconds. The interval, however, between the triplets varies, and varies largely, from a few seconds up to hours and days. Sometimes only one series of triplets is heard in a day; at others, the triplets follow with great regularity, and I have counted as many as forty-five of them, one after the other, without a pause.

The report is exactly like the firing of big guns heard from a distance with this peculiar difference, that the report is always double, *i.e.* the report has (as it were) an echo. This echo is so immediate that I can best describe its interval by an illustration. Suppose a person standing near the Eden Gardens heard the 9 o'clock gun fired from Fort William, he would first hear the report of the gun and its immediate echo from the walls of the High Court. The Barisal Guns sound exactly like this, only as if heard from a distance of several miles, very much the same as the sound of the Fort gun heard at Barrackpore on a clear night in the cold weather.

The report varies little in intensity, and I cannot recollect that there was much difference in the sound, whether heard at Barisal itself or some 70 or 80 miles to the south at the extreme end of the district. The state of the atmosphere may affect it, but to no appreciable extent.

The Backergonian peasant is celebrated for the bombs he is in the habit of firing at his weddings and festivals, and many residents have asserted they can distinguish no difference between the reports of these festive bombs and the so-called "guns"; but to any one with a fairly acute sense of hearing, who listens attentively, the difference is very marked, and their assertions are completely refuted by the facts—

(1) that wedding bombs vary very noticeably in the intensity of their sound;

(2) are wanting in the very marked feature of the triplets, and

(3) are naturally confined to the wedding season, a very short season in each year, whilst the Barisal Guns are heard almost throughout the year, and very noticeably during the annual fast—the Roza—when, of course, there can be no festivals of any kind.

Letter from Geological Surveyor-General, Bengal.

I HAVE to thank you for your most interesting report on the Barisal Guns. What you say about following the sounds in a launch is very interesting, and points to a Seismic origin, that is to say, that wherever the sounds came from they really originated locally, wherever you were at the time. In this case, following them would be like trying to reach the foot of a rainbow, whereas if they originated in surf on the sea-shore, or the falling-in of river-banks, they should be traceable to their source.

R. D. OLDHAM.

Butterfly Shadows.

WHILE photographing insects lately in the hills above Pegli (Italy), I was much struck by the curious way in which many of the butterflies turned and shifted their position after they had settled, their apparently eccentric behaviour making it difficult to obtain a good picture. It suddenly struck me that this turning and shifting was the result of an endeavour to settle in such a position as would cast no shadow, thereby ensuring to themselves less risk of detection. This seemed to be a motive particularly with such butterflies as Circe, Semele and Janira; and its success as a method of concealment was very striking in the case of Circe, which constantly settles on the bark of trees or on the rocky ground.

I submit this observation with the hope that it may attract the notice of others who are able to give more attention to the

NO. 1571, VOL. 61]

matter; it may, too, be of interest in connection with the recent letters which have appeared dealing with the capture of butterflies by birds.

Continental butterflies appear to be remarkably tame. I was constantly able to catch *Podaliarius* and other kinds with the hand.

D. WILSON-BARKER.

Greenhithe, November 27.

A Canadian Lake of Subterranean Inflow.

IMAGINE a cliff about 180 feet in height, rising almost perpendicularly from the steamboat landing at Glenora on the south side of the Bay of Quinte, a great arm of Lake Ontario, and perched immediately on the top of the cliff, within 300 feet from the edge, a lake of clear fresh water about one and a half miles long, with a width of about three-quarters of a mile, its waters continually flowing out to give the power which operates the Glenora mills, but its inflow invisible, and yet steadily maintained from month to month and from year to year. This is the Lake-on-the-Mountain.

Various origins have been suggested in accounting for the inflow. That its source is not attributable to springs from any possibly higher grounds in the same county seems established by the fact that during the long drought in the months of August and September of this year the level of the lake was well maintained. The source is, I think, rather to be sought in the Trenton limestone area twenty-five or thirty miles to the north-eastward of the Bay of Quinte. The dip of the rocks is favourable, and for the whole distance and into the Laurentian area beyond there is a steady rise until at about fifty miles away a height of nearly 400 feet above Lake Ontario is reached. A fair amount of rain fell in this higher country during the drought elsewhere.

To ascertain their bearing on the origin of the inflow, I this past summer took a series of depths and temperatures in the lake. Whilst a considerable part of its area was shallow, not exceeding a few feet, the lake was found to have, close alongside its southern boundary, a great rent, as it were, in its bottom, of towards a mile long, one-third of a mile or more wide, and varying from 75 to 100 feet deep. That this rent is due to a widened fault in the Trenton limestone here is very probable, and the same forces which gave rise to this fault may also account for a subterranean connection with higher ground many miles away. The temperature readings were equally interesting. In Lake Ontario, at its outlet opposite Kingston, during August, the surface of the water ranged in temperature around 72° F., and at a depth of 78 feet (the bottom) it was 56½° F., which latter was very much colder than during last and some previous years. At the Lake-on-the-Mountain, whilst the temperature of the surface was 74¼° F., at 30 feet depth it was 69½° F., at 45 feet 47° F., at 60 feet 43° F., and at 99 feet 42° F. Thus, whilst during the first thirty feet there was not very much change in the temperature, between thirty feet and forty-five feet there was a rapid fall of twenty-two and a half degrees, and between the latter depth and the bottom at ninety-nine feet a further fall of only five degrees.

ANDREW T. DRUMMOND.

Cause of Recent Sunset Colours.

MAY I suggest to your readers that the striking colours of the recent sunsets are possibly due to the dust in the air from the Leonid meteors?

They certainly remind one of the sunsets after the Krakatoa eruption.

HORACE DARWIN.

The Orchard, Huntingdon-road, Cambridge,
December 4.

Substitute for Gas in Laboratories.

IT is proposed to extend the modern side of a large secondary school by the erection of chemical and physical laboratories and lecture-rooms. The school, however, is some miles distant from any town which has a gas supply, so that it is necessary to consider what is the best substitute. I am interested in the arrangements, and shall be thankful if any of your readers will give me their experience on this point. It is proposed that the laboratories will accommodate forty boys working at one time.

WILLIAM GANNON.

County Technical School, Stafford, December 4.