

With regard to rainless thunderstorms, though no rain falls, is that a proof that no rain has been formed? May not rain have fallen from the clouds, but evaporated before reaching the earth? One sometimes sees after dry weather clouds passing overhead from which rain seems to be falling, yet not a drop reaches the earth. If the thunder clouds be high and the lower air very dry, such as we have lately experienced, we can easily see that raindrops will undergo evaporation while falling and may be dried up before reaching the earth; and as the horizontal direction of the movement of the thunder clouds is generally different from that of the lower air, the falling rain may not get a chance of saturating the lower air, even though the storm may continue some time.

For the benefit of those who may make a study of thunderstorms, it may be of interest to record, as illustrating the influence of the geographical situation of a place on the formation of thunderstorms, that the district round Falkirk has a strange exemption from such storms. So far as I can remember, there has only been one good thunderstorm within my memory, and that goes back a long way, and on that occasion the storm covered a great part of the country. Once or twice in a year a few distant peals may be heard; and once this year we had a storm which lasted half an hour, with about six peals and some lightning, but that storm was an exception. With the one exception above mentioned, there are no great storms in that district such as are experienced in most parts of the country. It should be mentioned that Falkirk lies in the shallow valley connecting the Firths of Forth and Clyde, through which it is proposed to cut the low-level canal, and that there are no high hills near.

JOHN AITKEN.

Loch Awe Hotel, Loch Awe, Argyllshire,
September 5.

A Pseudo-Aurora.

THE explanation which Sir Lauder Brunton calls for in No. 2183 of NATURE seems to be very simple indeed. On the evening of August 21, which he mentions, thunderstorms of extreme violence came over the region of Lugano and its environs. That region is due south-east of Beatenberg, as is also the Mönch. The flashes seen were most certainly those of lightning, and the auroral appearance is very easily explained. Anybody may, in a mountainous country, whenever there is a slight haziness in the atmosphere, remark the shadows thrown on the mist by a light—sun or moon—when still behind a mountain top, *i.e.* rather low down in the sky. Such was the case with the storm over Italian Switzerland, and the intense lightning on August 21 was noticed as far away as the Canton de Vaud. The flashes, lighting up the sky through the gaps between the mountains, with the corresponding dark rays of the shadows, following in uninterrupted succession, may well have given an impression of seeing auroral rays.

J. S. GREY.

Gryon-sur-Bex, Canton de Vaud, September 4.

The Destruction of Kingfishers near London.

I HAVE just received a letter from a man who has been very busy amongst the kingfishers that visit his grounds within ten miles of the Bank of England. I enclose the original letter, and now quote therefrom:—"I have caught sixteen quite lately [apparently since the middle of August]. Six went to ——— alive; the others I have skinned. Would you make me an offer for nine?" Since receiving this letter I have been given three carcasses, and understand that these birds were supplied alive to a dealer by my correspondent; this brings the total up to nineteen birds, *at least*, removed from the bird-population of the London district by one man. A disagreeable fact is that all appear to have been killed not illegally.

The weapon employed was, of course, the deadly "kingfisher net"; and my chief reason in writing this note is to suggest that steps might well be taken to prohibit both the use and the possession of this instrument. It is practically useless for everything except the capture of kingfishers; and so simple is it to buy, or make, or use, and so secret and so certain in its action, that by its means a man destitute of the elements of woodcraft could,

and frequently does, utterly clear a stream of its chief feathered ornaments. I do not know of any fowling engine more effective against its proper quarry than the kingfisher net, nor can I think of one that needs less actual supervision. This latter point explains why it is so often in the hands of the unprivileged collector and the poacher, and I have heard of it being used while its owner and operator was actually under the constant eye of a keeper—of course, one unaware of the intentions of his suspect.

I cannot think that I exaggerate if I say that the kingfisher is the most defenceless of British birds, for no bird is easier to kill. This is with the net; without the aid of a net an organised kingfisher hunt would be unremunerative, if not quite impossible, for many destructive men do not dare to use a gun. Freed from the danger of the net, the kingfisher would be in a peculiarly secure position, and would certainly increase until perhaps common enough to be familiar by sight to all who have the desire to see one alive. Its food consists of small fishes and other aquatic animals, and the pisciculturist is the only person who would suffer from the increase of the bird. No good can come of attempting to ignore the fact that in and about fish hatcheries the kingfisher is an intolerable nuisance, and its destruction becomes at times an economic necessity, for it is not always possible to protect the fish by wire netting. But the prohibition of the net need not prevent the killing of the birds, for the keeper could easily use a gun. The kingfisher provides a simple target, although, fortunately, its habits protect it largely from the casual or wandering gunner. Without loading this letter (which is no more than a hint or a suggestion) with other details, I must end by saying that I have often considered the matter in all its aspects, and I believe that the total prohibition of the kingfisher net would lead at once to an increase in numbers of this ornamental bird, and that this prohibition would entail no hardship on the pisciculturist, who is the only person likely to be affected by the increase of the kingfisher. Perhaps something could be done in this matter by those who have the leisure to occupy themselves with the laudable work of active bird protection.

Stepney Bowough Museums.

FREDK. J. STUBBS.

A Bright Meteor.

WALKING northwards on Saturday evening, September 2, I was looking towards the constellation of Cassiopeia when a bright meteor appeared at a point a few degrees west of η Perseus, and moved slowly westwards, gradually increasing in brightness until its disappearance at a point near α Canes venatici.

Its maximum brilliancy was about four times that of Jupiter, and its colour almost pure white.

The time occupied in its transit was between six and seven seconds, and a bright golden trail persisted for about two seconds more.

The time of the phenomenon was 20h. 27m. (G.M.T.).

WILFRED C. PARKINSON.

The Observatory, Eskdalemuir, Langholm,
Dumfriesshire, September 4.

Non-Euclidean Geometry.

I OWE sincere apologies for carelessness in the latter portion of my letter in last week's issue of NATURE.

In hyperbolic space, the area of a circle of very large radius R appears as

$$2\pi K^2 \left(\cosh \frac{r}{K} - 1 \right),$$

i.e. practically

$$\pi K^2 e^{\frac{r}{K}},$$

which is an *exponential* infinitude.

On the other hand, the area of a regular N-gon inscribed therein appears as something less than

$$\pi K^2 N,$$

which is a *linear* infinitude.

Is not hyperbolic infinity paradoxical?

W. B. FRANKLAND.