LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

The "Earthquake House" at Comrie.

I RECENTLY visited the "Earthquake House" at Comrie, and was sorry to find that, in the matter of repairs, it had been neglected for a long time, and was in a very dilapidated condition.

It may be remembered that this small building was erected in 1872, through the combined efforts of the British Association and Mr. Drummond, for the purpose of carrying on observations on the, then, frequent manifestations of seismic activity experienced in that district, and I believe the investigations made there, with the simple apparatus and methods employed, represent some of the earlier attempts to obtain definite data respecting the direction, duration, and intensity of seismic vibrations. From these and other early observations, I suppose, the modern science of experimental seismology has been evolved, and for this reason the building should always be regarded as of great scientific and historical interest, and its preservation a matter of common desire. Though the original wooden pins which were used have disappeared, some of the white sand that was placed on the floor some forty years ago is still to be seen there.

Mr. J. J. Macdonald, of the Commercial Bank, Comrie, has most kindly associated himself with me in an endeavour to obtain permission to place this property in the hands of a committee, and to raise funds for the purpose of protecting it and putting it in a proper state of repair. We propose to fence it in so that it may be preserved from the depredations of children and others (who now have free access to it) for all time.

Without now entering into the details of the trouble and correspondence our negotiations have entailed, I may say that the owner has kindly given us full permission to take such steps as may be necessary for the restoration and protection of the building, and that we hope to place it, as far as possible, in its original condition without delay.

An estimate has been submitted to us, and the sum required to carry out all the necessary work is about 30l.

May I ask those of your readers who are interested in this matter to subscribe towards this sum? Mr. Macdonald has kindly consented to act as treasurer, and all donations should be sent to him without delay. The names of those forming the committee, a list of subscribers, and the details of the work done, will be published later.

CECIL CARUS-WILSON.

Preston Vicarage, Faversham, September 11.

The Upper Trade-winds.

RECENTLY Herr Peppeler¹ directed attention to the fact that the air-pressure gradient from the equator towards the subtropical zones, which is positive at the heights at which the anti-trade-winds blow, must be negative in still higher layers (± 20 km.).

Owing to the low temperature of the stratosphere above the equator, the mean temperature of the whole air-column up to these heights is lower above the equator than above the subtropical zones, and Herr Peppeler accordingly supposes that the air pressure at the top of the column is also lower.

Consequently, we may expect to meet above the anti-trade a wind blowing towards the equator, and it would be reasonable to call this wind the *upper trade-wind* (*Oberpassat: Vent alizé supérieur*). The ascents of registering and pilot balloons made during the last two years at Batavia Observatory have given some proof of the existence of this upper trade-wind.

Regarding the air-pressure gradient, I compared the pressures recorded during the balloon ascents made on the *Otario* cruises in the North Atlantic, in $\pm 30^\circ$ N. latitude, with those found at Batavia in the corresponding southerly

season. These mean pressures and differences follow hereunder:—

Height	Batavia		N. Atlantic		Difference
	6° S	mm.	$\pm 30^\circ$ N.	mm.	
12	...	164	...	157	7
13	...	139	...	136	3
14	...	119	...	117	2
15	...	100	...	99	1
16	...	86	...	85	1
17	...	74	...	74	0
18	...	63	...	65	-2

Though the records are few in number, the decrease and reversal of the gradient are conspicuous.

The numerous balloon-flight observations now made in Batavia (the results of which are just going to the press) have proved that the anti-trade reaches a maximum at a height of 12–15 km. (in the dry season lowest and in the rainy season highest). Higher up its strength decreases, and at heights of ± 17 km. feeble southerly and westerly winds blow. Berson was the first to observe these winds in Central Africa.

The height at which I found them above Batavia, viz. ± 17 km., corresponds exactly with that in which the pressure gradient passes the zero value.

Still higher up we must expect to meet the upper trade, and the explanation of the occurrence of these southerly and westerly winds simply is that they are feeble winds of variable direction occurring between two great overlying air currents, similar to those which are often observed in the layers between trade and anti-trade, or monsoon and trade.

Recently the ascent of a balloon of 2 kg.,¹ which reached 22 km., gave fair evidence of the existence of the upper trade, as may be seen from the wind directions and velocities given hereunder:—

Height	Wind blowing from	Velocity in m. p. sec.	Height	Wind blowing from	Velocity in m. p. sec.
13	E 15 N	12.8	17.5	E 8.5 S	4.6
13.5	E 22 N	15.2	18	E 25 S	8.8
14	E 32 N	15.2	18.5	E 7 S	13.6
14.5	E 35 N	20.8	19	E 9 S	15.0
15	E 34 N	21.2	19.5	E 4 S	21.1
15.5	E 23 N	28.8	20	E 11 N	28.5
16	E 4 N	24.0	20.5	E 3 S	27.2
16.5	E 16 N	26.9	21	E	27.2
17	E 15 N	7.5	21.5	E 9 S	30.4
			22	E 10 S	30.8

The present dry season is not advantageous for the discrimination of the upper trade from the upper easterly counter-wind, because, according to the difference observed between the dry and wet season, in this season pressure at those heights is lowest probably over Java and not over the equator. Consequently, the southerly components by which the upper trade differs from this counter-wind will be small.

In the rainy season (December–February), however, the contrary will be the case, and accordingly I expect to obtain in those months observations which will give stronger evidence of the existence of the upper trade-winds.

W. VAN BENMELEN.

Batavia Observatory, August 20.

Rainfall in the Summer of 1911.

ONE does not hear much of effort on the part of official meteorologists to supply long-range forecasts of months, seasons, &c. It may be said, the thing cannot be done; better to say, it cannot be done infallibly. My own experience leads me to think a beginning might now be made with what will no doubt some day be a familiar institution, like the useful but imperfect daily forecast.

¹ This balloon reached as a registering balloon a height of 15.5 km. on July 18; at that height it burst, was found again and brought back, and after being carefully pasted, it was sent up again on August 3 as a pilot balloon, being observed from two points 1.9 km. apart.

¹ Beiträge zur Physik der freien Atmosphäre. Bd. iv., Heft 1.