LETTERS TO THE EDITOR.

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Earthquake in Guatemala.

THOUGH I have been a subscriber and devoted reader of NATURE for about twenty years, I have not hitherto troubled you with any communications. Now I think it will interest you to obtain some data about a very disastrous earthquake which recently shook nearly the whole of the republic of Guatemala and the neighbouring countries, destroying many towns and causing immense loss of property and of many lives.

At 8.25 p.m. of April 18 an earthquake of more than thirty seconds duration affected a large part of Guatemala, eastern

machinery and the aqueducts ruined. The total number of lives lost may be about 800 to 900.

At the port of Ocos, only three houses remained standing and the big landing-pier was broken near the land.

In the city of Guatemala most of the churches and some houses sustained slight damages; the same happened in Antigua (Guatemala). Escuintla and Amatitlan suffered considerably.

The railways between Retalhuleu and the port of Champerico, and the one between Ocos and Coatepec were interrupted by the falling of bridges and damage to the road. The railway between Guatemala and the port of San José remained unaffected and intact.

In the eastern portions of Guatemala the shock was only weak. I was at the time on my plantation "Germania," and did not feel anything at all.

Until May 5 earthquakes of small intensity were still frequent from the city of Guatemala to the west.

A commission of engineers has been sent by the Government to Quezaltenango and San Marcos, to select new places for the rebuilding of these towns.

During the night of April 11-12 a severe thunderstorm did considerable damage to houses and other property at San Salvador, the capital of the republic of El Salvador, and at 7.25 p.m. on April 16 a powder explosion blew up the military barracks at Managua, the capital of Nicaragua, destroying a number of houses and killing many people. I mention this because later on these events might get mixed up with the earthquake.

EDWIN ROCKSTROH.

Gualan (Guatemala), May 7.

Earthquake, 8.25 p.m., April 18.

- Limits of Guatemala.
- ~~~~~ Region of greatest intensity.
- Region where buildings were destroyed.
- + Quezaltenango. Towns completely destroyed.
- Escuintla. Towns which suffered damage.
- Region from which notices about the earthquake have reached me.
- ◇ Nenton. Places where the shock was felt distinctly.

From Chiapas there is only one report about Tapachula, and from Honduras about Comayagua. It is not possible to say how far to the east and to the west the movement was felt.

Chiapas and western Salvador and Honduras. The intensity of the movement was greatest in western Guatemala, where the second and richest city of the country, Quezaltenango, was completely destroyed, with the loss of about 500 lives. Completely ruined also were Sololá, San Marcos and its sister town San Pedro Sacatepequez (more than 200 lives being lost), and the same happened to Retalhuleu and Mazatenango, important towns on the Pacific coast-plain, to the south of Quezaltenango. The places before mentioned are situated on the highlands, a little to the north of the great volcanoes.

Besides the cities named, nearly every town and hamlet in the Departamentos of San Marcos, Quezaltenango, Retalhuleu, Suchitepequez and several in Chimaltenango are ruined, and perhaps every one of the many important coffee- and sugar-plantations in the western coast-region has had its buildings,

quite perceptible, difference in the *timbre* of the instrument; but this difference is not a measure of the intensities of the particular tones to which the difference is due.

If I is the intensity of the fundamental tones of the two strings, Σi the sum of the intensities of the overtones of the gut string, and $\Sigma i'$ the sum of the intensities of the overtones of the silk string, then what we distinguish in the consonant note of the instrument is

$$(I + \Sigma i) - (I + \Sigma i') \\ = \Sigma i - \Sigma i';$$

but we form no idea as to the absolute values of I , Σi and $\Sigma i'$. We cannot, in fact, say in what proportion they contribute to the intensity of the consonant note of the instrument.

(The difference observed in the *timbre* of the gut and silk strings is not, of course, necessarily due only to a difference of