It has been calculated by Mallet that since the earth was a molten mass its diameter has been shortened by about 189 miles. The cooling, shrinking, chemical changes, heating from compression, internal vapor pressure, &c., can easily be conceived to have brought about enormous changes during this immense contraction in volume.

In modern earthquakes the magnitude of the displacement of the ground during a convulsion is generally much exaggerated. Seismometers indicate that, when the motion is as much as a quarter of an inch, brick and stone chimneys are shattered. It is the sudden change of the direction and velocity which causes the loss of property. In an actual earthquake, for example, the recording pencil of a seismometer described a curve somewhat resembling that of a fish-hook, the total period of the earthquake vibration not exceeding three seconds. The velocity of a wave has been variously calculated, according to the character of the soil through which it passes.

The increase of pressure caused by rise of the tides contributes to some extent to the fixing of the line of disturbance, for we know that the great increase of water along the shores when the tide comes in, which amounts to about 1,800,000 tons per square mile, causes a slight but measurable tilting of the shores. Hence, earthquakes generally follow the shore line.

In some cases volcanic eruptions cause, by evisceration, the depression or disturbance of limited areas; although, in general, volcanoes act rather as safety valves in the prevention of earthquakes.

The sea is the seat of great seismic disturbances, and the downward rush of water through crevices in the sea-bottom and its contact with red hot rocks must be a constant source of such disturbances.

The gradual cooling of the interior of the earth, and its consequent shrinkage, must, however, be looked upon as the main element in the production of earthquakes.

Earth tremors can be readily detected by the delicate seismometers now constructed, and it is found that these tremors constantly occur even in localities remote from affected regions.

Geology gives no evidence of increase or decrease in seismic phenomina since the earliest epochs. It is probable, too, that no great alteration in the lines of disturbance have taken place. These are two lines nearly at right angles to each other; one passing down the western shore of America and up the eastern shore of Asia, the other more or less coincident with the equator.

S.

Rouge et Noir.

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EDITORS:

W. DAVIS, R. B. MATHESON, M. A. MACKENZIE.

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LENT TERM, 1887.

Every student of philosophy has doubtless been interested by the recent passage at arms between Mr. Lilly and Prof. Huxley in the pages of the *Fortnightly Review*, begun by the former in the number for November last.

Mr. Lilly's article "Materialism and Morality," is somewhat unique in its way, full of a rhetorical splendour and warmth of expression, it sweeps along and carries the reader over many a statement which he would else stigmatize as untrue and unjust. With a bold hand the writer has held up the theories of the late Professor Clifford, Professor Huxley, and Mr. Herbert Spencer, to criticism in the light of his own heartfelt convictions, for whatever Mr. Lilly's errors of judgment may be he is certainly in earnest. These men he is determined to stamp with materialism, not perhaps with "the crass materialism of the savage," but with a form more dangerous as it is more refined and subtle. Picking out passages here and there in their works, and passing in silence most of their noblest utterances, he strives to bend their words to suit his theory that they are materialists, and therefore dangerous. There can be no doubt in the mind of anyone who reads his articles that Mr. Lilly is honestly striving to do what he regards as just and right, but there can also be no doubt in the mind of the careful student that at least his conception of expediency is here at fault. He has laid himself open to the same answer from these eminent scientists that they so frequently have to return to the self-styled Defenders of the Faith, who with a blundering stupidity rush against the well established facts of science, and try to drag all Christianity with them, just as if it all depended for its existence upon the disproof of what every scientist knows to be objectively true. Such men as Clifford, Huxley, and Spencer, must carry weight with them, and when an average Christian sees an inferior man take up the cudgels for the Church against them he is placed in a false position with himself, for he cannot help feeling that they know more on these matters, and are more probably right than their opponent, who presumptuously claims to be defending