

EARTHQUAKE IN THE MIDLANDS.

EARTHQUAKE shocks were felt at many places in the midland counties about 1.30 p.m. on Tuesday. The reports which have been received up to the time of going to press show that the counties of Derby, York, Stafford, Cheshire, Notts and Leicester were affected by the disturbance. Two shocks were felt at most places, one a few minutes after the other. Though no very serious damage was done, the rumbling noise and the vibrations due to the earthquake caused much alarm, and people ran from their houses into the streets. We give below a summary of the reports which have appeared in the daily papers, and the report of an interview with Prof. Milne, published in Wednesday's *Daily Mail*.

DERBYSHIRE.—*Derby*. Shocks felt at 1.10 p.m. Duration, 5-10 seconds. Houses shaken, windows rattled, and crockery overturned. Rumbling noises heard. Second shock at 1.29 less severe.—*Matlock Bath*. Two shocks at about the same time as Derby. Duration, about 45 seconds. Slight rumbling sound.—*Alfreton*. Three shocks. Many buildings shaken and cracked. Chimney overthrown.—*Ashbourne*. Chimney overthrown.—*Buxton and Bakewell*. Pictures and ornaments displaced by vibration of walls of houses, and crockery overthrown.

NOTTINGHAMSHIRE.—*Nottingham*. Time about 1.30 p.m. Duration, 5-6 seconds. Large buildings in centre of city seen to sway.

YORKSHIRE.—*Sheffield*. Slight shocks felt.—*Dore*. Time, 1.30 p.m.-1.40 p.m. Houses shaken, bells rang, windows and crockery rattled.—*Baslow*. Rumbblings heard and houses and objects shaken.

STAFFORDSHIRE.—*Burton-on-Trent*. Two shocks felt at 1.30 p.m. Windows violently shaken, and crockery and furniture rocked by prolonged vibrations.—*Stafford*. Time, 1.40 p.m. Two shocks. Vibration of ground felt, and objects overturned.—*Uttoxeter*. Time, 1.32 p.m. Duration, about a minute. Tables and chairs moved several inches. Doors and windows rattled. Bells rang.—*Hanley*. Time, 1.40 p.m. Duration, 30-40 seconds. Tables and chairs rocked, and many objects overthrown.—*Leek*. Time, 1.35 p.m. Rumbling noise heard, followed directly afterwards by vibration. Second shock of greater intensity felt a few seconds later. Shocks also felt at Stoke, Longton and Kids Grove.

CHESHIRE.—*Northwich*. Time, 1.30 p.m. Decided movement. Objects displaced.—*Comberbach*. Chairs rocked as though heavy traction engine was passing.

EAST LANCASHIRE.—*Blackburn*. Time, 1.15 p.m. Crockery overthrown. Second but less severe shock at 1.35.

Prof. Milne's Views.

"My seismograph photographic films are not yet developed, but they will be to-night, and I shall see whether vibrations of this shock reached as far as the Isle of Wight. It is very doubtful whether they did, because my instruments are not constructed to record the exceedingly rapid vibrations which we get from local shocks.

"The probability is that this earthquake is similar to those which from time to time have had their origin in Leicestershire and the Severn Valley, the last of which was on December 16, 1896. That occurred about 5.30 a.m., and about Hereford did a considerable amount of damage in shattering buildings. In fact, its destructive effect was felt even as far as Birmingham, while people were awakened at Alderley Edge, Manchester, and in towns further north. The vibrations extended eastwards, certainly as far as London.

"This latest earthquake probably means that there has been some adjustment or slight slip on the line of a pre-existing fault or fracture in the earth's crust. Careful observation of the times at which this has been felt in different parts of Great Britain will no doubt lead to the determination of the extent of such fault, and thereby help the work of the Geological Survey.

"A very feeble trace of the last Severn earthquake was obtained in the Isle of Wight, but it was difficult to distinguish between what were earthquake and what artificial

disturbances. In order to make this distinction in regard to local shocks, it will be necessary for some enthusiast to isolate himself in the centre of a district like Dartmoor, and live the life of a hermit."

NOTES.

THE investigation of the properties of radium salts has led to many remarkable results, among which those contributed by MM. P. Curie and A. Laborde to the current number of the *Comptes rendus* are not the least remarkable. They adduce evidence to show that radium salts give off heat continuously. The experiments were made in two ways. Two small bulbs, one containing 1 gram of a radiferous barium chloride containing about 1/6 of its weight of radium chloride and the other containing a similar weight of ordinary barium chloride, were placed under similar thermal conditions with a junction of a thermocouple in each bulb. The bulb containing the radium preparation proved to be 1°5 hotter than the other, and this temperature difference was maintained. An independent confirmation was obtained with the Bunsen ice calorimeter. At the moment the radium bulb was introduced, the mercury, which was previously stationary, commenced to move along the tube with a perfectly uniform velocity, and on the bulb being taken out the mercury stopped. From these experiments, which are given as preliminary and only roughly quantitative, the authors conclude that a gram of pure radium would give off a quantity of heat of the order of 100 calories per hour, or 22,500 per gram-atom per hour, a number comparable with the heat of combustion in oxygen of a gram-atom of hydrogen. The disengagement of such a quantity of heat cannot be explained by the assumption of any ordinary chemical transformation, and this excludes the theory of a continuous modification of the atom. The heat evolution can only be explained by supposing that the radium utilises an external energy of unknown nature.

REPORTS of the following volcanic eruptions and earthquakes have appeared since we went to press last week:—*Vienna*. Violent earthquake shocks were experienced during the night of March 19 and early in the morning of March 20 in the Semmering district and the Mürz Valley, in Styria. March 21. *St. Thomas*. Mont Pelée emitting dense clouds. March 22. *St. Thomas*. There was a violent eruption of the St. Vincent Soufrière. Kingstown was covered with a dense black cloud, the sun being completely obscured. Three inches of sand and rock fragments have fallen at Georgetown and Château Belair. *Barbados*. Complete darkness caused by fall of volcanic dust from the Soufrière. *Dominica*. Frequent loud detonations heard to the south-east, and clouds of dust seen to westward. *Kaiserslautern*. At 6 a.m., and again at 2 p.m., violent earthquake shocks were felt almost everywhere in the south of the Bavarian Palatinate from Landau to Wörth. *Cuneo (South Piedmont)*. Earthquake shocks felt, but no damage done. March 23. *Grenada*. Eruption of the Soufrière began 6.30 a.m.; immense clouds, comparative absence of lightning a feature; no injury beyond heavy fall of sand and small stones two to three inches at Georgetown; quieted down during afternoon. March 24. Earthquake in the Midland Counties (see adjacent column).

THE West African Company's steamship *Sokoto*, which arrived at Plymouth on March 20, reports having encountered a sandstorm. The report reads as follows:—"The vessel was enveloped for eight days in a sandstorm