

from the regions north of Kashmir, but two days before the first shock was felt in India the Punjab stations reported the arrival of storms bearing large quantities of dust and ash. Natives arriving at Simla from the interior declare that a volcanic eruption has occurred in the hills in Bashahr State.

The earthquake was clearly registered by the seismograph in the observatory at Göttingen, and a record was also obtained at the Royal Observatory, Edinburgh. The record began with some very minute tremors about 1 a.m., while the larger waves began about eight minutes later. The *maximum* disturbance was recorded about 1.30, and was followed by one of almost equal severity a minute and a half later. From that point the tremors were gradually reduced until 4.43 a.m. The difference of time between Edinburgh and Dharmasala is about five hours. Seismograms recording the earthquake were also obtained by Prof. Milne at Shide, Isle of Wight, and at the hydrographic station at Pola.

A severe earthquake shock, lasting six seconds, was felt at Benevento, Italy, at 8.20 p.m. on April 9, and fresh shocks were experienced at Simla on April 10 and 11.

The following particulars of the effects produced by the earthquake in various parts of India have been extracted from the extensive reports which have appeared in the daily papers.

**Dharmasala.**—All houses and buildings throughout the entire station, including cantonment and bazaars, totally destroyed, with loss of many lives. About 80 per cent. of the population killed or injured, and from 20 per cent. to 30 per cent. in the neighbouring villages.

**Kangra Valley.**—Kangra and Jowala Mukhi and other villages in Kangra Valley reported totally destroyed, and many hundred lives lost. Every building, without exception, in Kangra and Bhawan in ruins. Of a total population of nearly 5000 in Kangra town it is believed that only about 500 remain alive. Similar state of affairs in most other villages in the neighbourhood. At Palampur, in the Kangra district, all the houses, including the Government buildings, reported totally destroyed, and many hundred lives lost.

**Lahore.**—A succession of violent shocks caused a panic. The inhabitants rushed from their houses to seek safety in the open. Almost every house suffered by the earthquake, and much serious damage was done to public and private property, and twenty-five people were killed. The shock created an extraordinary uproar at the zoological gardens. The shrieks of the pea-fowls were heard all over the station, while crows and other birds flew in alarm from the swaying trees.

**Mussooree** suffered severely. Two slight shocks were felt during the night of April 3. A succession of shocks began at 6.10 a.m. on April 4, the first, which lasted three minutes, being the severest. In all eleven shocks were felt. Every house in the city more or less injured. Several small landslips occurred, and many casualties reported. This is the fourth severe earthquake that has happened at Mussooree, and the second worst as regards its effects. Four or five slight shocks were felt during the night of April 4-5.

**Simla.**—Much damage done to buildings. The Vice-regal Lodge is so badly damaged that the re-building will occupy several months. Other estate houses have been seriously damaged. **Delhi.**—The shock was severely felt, and damage was done to buildings, but no reports of injury to monuments. A further shock occurred at midnight on April 4-5. **Agra.**—A violent shock lasting several minutes, and travelling from west to east, was experienced at 6.10 a.m. No reports of injury to architectural monuments.

**Jalandhar.**—Much damage done. **Amritsar.**—Extensive damage, and several lives lost. **Ambala.**—A large number of houses thrown down. **Srinager.**—Much damage, and several lives lost. **Mudki.**—Serious damage. **Sialkot.**—Not a house escaped damage of some sort, but no lives lost. **Dalhousie.**—Property damaged, but no deaths.

**Kashmir.**—Communication interrupted by landslips and accidents to telegraph lines.

Slight tremors appear to have been recorded at Calcutta and Bombay, but no decided disturbance was felt.

#### PROF. PIETRO TACCHINI.

THE death of Prof. P. Tacchini on March 24, at the age of sixty-seven years, has caused much regret among men of science interested in celestial and terrestrial physics. Italy has thus lost a representative man of science who especially devoted himself to the cause of astronomy with zeal and patience. For many years, as director of the Observatory of the Collegio Romano, he proved himself an indefatigable observer of planets and comets; but recently this position has been filled by Prof. Millosevich, and Prof. Tacchini had been known as the director of the Central Office of Meteorology and Geodynamics. But the especial work with which his name will ever be connected has been upon lines that have long commended themselves to Italian observers. Secchi made his reputation in the domain of spectroscopy and solar observation, and the example he set has been followed with no less eagerness and success by the distinguished astronomer whose death we have now to regret. All that related to sun-spots, faculae, or protuberances had a fascination for Tacchini, and for years past our columns have borne witness to his continuous devotion to this subject. He was particularly interested in the heliographical distribution of solar phenomena, and every three months, in the pages of the *Mem. degli Spettroscopisti Italiani* or the *Comptes rendus*, he recorded the variations and gave comparative tables showing the growth or decline of solar activity as testified by these outbursts. Researches carried on so long and so industriously cannot but prove of eminent service, and we may well hope that the work he inaugurated will be carried on with equal zeal by his successors. Prof. Tacchini's work in this direction well deserved the Janssen prize which was awarded him by the Paris Academy of Sciences in 1892.

To a solar observer of such ardour, eclipses of the sun especially appealed, and he took part in several expeditions to observe these phenomena. He was present on the Caroline Island reef, where he associated himself with the French party organised by Janssen. Again in Egypt, and later on in 1886, he visited the American continent for the purpose of observing the great eclipse in that year. On this occasion he showed, by comparing the forms and appearances of the prominences seen during the eclipse with the images ordinarily seen in the spectro-scope, that it is only the vaporous cores of these objects which are rendered visible by the usual methods of observation. In many other ways he showed not only his skill as a spectroscopist, but his anxiety to promote astronomical knowledge. He laboured long and diligently in the cause of science, and left a reputation that his countrymen will cherish; while his memory will be held in esteem by the astronomers of many nations. He was elected a foreign member of the Royal Society in 1891, and was awarded the Rumford medal of the society. He was also a foreign associate of the Royal Astronomical Society in 1883, and many other societies have been proud to enrol his name among those of their honoured fellows.

The progress of solar physics is largely due to Prof. Tacchini's unremitting labours; and the numerous papers published by him on solar phenomena stand as an enduring monument of work done by a pioneer in a fruitful field of scientific inquiry.