New catalogue of earthquakes for Peninsular India during 1839-1900

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ABSTRACT: Based upon the recommendations of the UNESCO experts after the Koyana earthquake of December 1967, a new catalogue of earthquakes for Peninsular India has been prepared for the period 1839-1900. The data has been extracted from the microfilms of *Times of India*, *Statesman* and *Hindu* for the period commencing with their publication (1839) to installation of seismological instruments in the country (1900).

It is interesting to note that the region where significant earthquakes have occurred, tremors of felt intensity have been reported several years preceding the main events. Also through this catalogue, the first case of unusual animal behaviour in the Indian region about one hour prior to an earthquake of intensity V in Manbhoom district on 19 February 1892 is brought to light.

1. Introduction

Occurrence of Koyana earthquake of December 1967 (Magnitude, 6.5) in the hitherto considered stable region attracted the attention of seismologists throughout the world. The Government of India thereafter appointed an experts committee consisting of scientists from India and UNESCO. This committee which published its report in 1968 called for a number of investigations to be undertaken by the various organizations like Geological Survey of India and Meteorological Department of India. Of these, an important item of work assigned to India Meteorological Department was collection of historical data on past earthquakes in the Peninsular India.

A number of catalogues of past Indian earthquakes are available but none of them is up to date and comprehensive. The earliest publication is by Oldham (1883) which gives a list of significant Indian earthquakes up to 1869. Similar catalogues published later are largely based on data supplied in this catalogue for this period. Kelkar (1968) brought to light a number of new events recorded in Maharashtra during the past two hundred years. Gubin (1968) published a list of significant earthquakes of the Peninsular India up to 1968. Tandon and Srivastava (1974) published a catalogue of earthquakes in India of magnitude 5 and above based on available historical data before 1969 and instrumental & macroseismic data up to 1970. More recently Chandra (1977) has compiled a catalogue of Indian earthquakes up to 1975 based on different sources. In this catalogue earthquakes with maximum intensity less than V M.M. have not been included. There are also some noteworthy omissions. For example, earthquakes of magnitude 5 which occurred on 1 September 1862 and 9 April 1909 (Tandon and Srivastava 1974) have not been reported. It appeared from a study of these catalogues that earthquake events which occurred in India during 1869 to 1900 have not been properly listed. The only source of information which appeared to be easily accessible was collection of earthquake reports for this period from files of old newspapers. Consequently files of the *Times of India* (1839 to date), the *Statesman* (1875 to date) and the *Hindu* (1907 to date) were scanned for earthquake reports. This study brought forward a larger number of events, not reported by anybody earlier. In this paper all the new earthquakes reported in these newspapers for the period 1839-1900 have been listed. The period after 1900 has been omitted as instrumental data for this period is available in published form. It is proposed to publish a more comprehensive & up to date catalogue of earthquakes in Peninsular India and other Indian regions after studying instrumental data.
Fig. 1. Tectonic map of Peninsular India (after Valdiya 1973). Blank part in Karnataka and Andhra Pradesh are mostly peninsular gneisses.

Fig. 2. Epicentral map of Peninsular India (after Chandra 1977)

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Description of earthquake</th>
<th>Intensity</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Apr 1839</td>
<td>Deesa (Gujarat)</td>
<td>Most distinctly felt with an upward motion; accompanied by a loud noise resembling discharge of heavy artillery at a great distance. A bright thing appeared a couple of minutes before the earthquake near Proogin and moving towards the western horizon exploded very near the Dassirrus,</td>
<td>IV</td>
<td>TOI/11-5-39</td>
</tr>
<tr>
<td>10 Nov 1840</td>
<td>Ahmedabad (Gujarat)</td>
<td>Felt by persons awake; direction appeared to be from NW to SE. A hollow rumbling crashing noise, followed by shaking of bed; doors, windows and padlocks on boxes began to rattle.</td>
<td>V</td>
<td>TOI/1-12-40</td>
</tr>
<tr>
<td>Mar 1848</td>
<td>Colombo (Ceylon)</td>
<td>Rumbling noise and tremor; caused panic among people; lamps started vibrating to and fro and furniture were shaking; direction appeared to be west to east.</td>
<td>IV</td>
<td>TOI/1-4-48</td>
</tr>
<tr>
<td>Date</td>
<td>Place</td>
<td>Description of earthquake</td>
<td>Intensity</td>
<td>Source</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>02 Jan 1849</td>
<td>Erinporeah (Rajasthan)</td>
<td>Severe shock experienced; rumbling noise loud and continued; direction of motion appeared north to south; pieces of plaster shaken from walls. A second rumbling after half an hour and the third after 7 hours.</td>
<td>VI</td>
<td>TOI/13-1-49</td>
</tr>
<tr>
<td>21 Feb 1853</td>
<td>Visakhapatnam (A.P.)</td>
<td>Rumbling noise resembling the rolling of heavy gun carriage. Direction of movement appeared from SW to NE, breaking some of the walls and rattling of bottles and glasses; people aroused from sleep.</td>
<td>IV</td>
<td>TOI/9-3-53</td>
</tr>
<tr>
<td>08 Dec 1854</td>
<td>Bombay (Maharashtra)</td>
<td>Rumbling noise like passing of heavy wagon. Direction appeared to be from NE to SW. Tumblers, glass lamps, furniture etc. shake. Lasted for 4-5 sec. Felt at Tardeo, Fort, Mazagaon, Chinchpokli and Girgaon in Bombay city.</td>
<td>IV</td>
<td>TOI/11-12-54</td>
</tr>
<tr>
<td>18 Nov 1862</td>
<td>Dhulia (Maharashtra)</td>
<td>Smart shock. Direction appeared to be from SW to NE, duration 3-4 secs., roofs and terraces quivered.</td>
<td>IV</td>
<td>TOI/22-11-62</td>
</tr>
<tr>
<td>04 Jun 1865</td>
<td>Mysore (Karnataka)</td>
<td>Deep hollow rumbling noise like passing of a laden carriage; cot rocked from side to side; doors, windows, furniture vibrated perceptibly. Direction appeared to be from east to west, no damage done.</td>
<td>IV</td>
<td>TOI/20-6-65</td>
</tr>
<tr>
<td>24 Jun 1865</td>
<td>Coimbatore (Tamilnadu)</td>
<td>Felt by a number of persons, direction appeared to be from NE to SW, sensation like passing of a heavy goods train.</td>
<td>IV</td>
<td>TOI/3-8-65</td>
</tr>
<tr>
<td>20 Dec 1855</td>
<td>Kishanganj (W.B.)</td>
<td>Smart shock, closed doors opened; open doors banged.</td>
<td>IV</td>
<td>TOI/30-12-65</td>
</tr>
<tr>
<td>01 Jan 1871</td>
<td>Deesa (Gujarat)</td>
<td>Duration about 15 secs, shock the plaster from ceilings.</td>
<td>V</td>
<td>TOI/30-1-71</td>
</tr>
<tr>
<td>31 Jan 1871</td>
<td>Baroda (Gujarat)</td>
<td>Rumbling noise followed by shaking of the whole house. Doors and windows rattled with a cracking noise. Direction appeared to be south to north; fall of tiles, duration about 10 secs, table, chairs rattled.</td>
<td>IV</td>
<td>TOI/3-2-71</td>
</tr>
<tr>
<td>Do.</td>
<td>Surat (Gujarat)</td>
<td>Rumbling noise accompanied by uneasy rolling motion of ground and shaking of trees overhead. Duration about 4-5 secs. Direction appeared to be west to east.</td>
<td>IV</td>
<td>Do.</td>
</tr>
<tr>
<td>Do.</td>
<td>Malegaon (Maharashtra)</td>
<td>Distinctly felt, duration about 4 secs, tiles of the roofs began to rattle and walls of the building began to shake.</td>
<td>IV</td>
<td>Do.</td>
</tr>
<tr>
<td>Do.</td>
<td>Amroli (Gujarat)</td>
<td>Felt distinctly, duration about 30 secs. Bungalows shook perceptibly.</td>
<td>IV</td>
<td>Do.</td>
</tr>
<tr>
<td>14 Apr 1872</td>
<td>Bhavnagar (Gujarat)</td>
<td>Sharp shock felt in the neighbourhood of Bhavnagar; a large portion of the dam of a large tank which was in the course of construction, fell down.</td>
<td>VI</td>
<td>TOI/19-4-72</td>
</tr>
<tr>
<td>22 Nov 1872</td>
<td>Sironcha (Upper Godavari Dist)</td>
<td>No loss of life and no serious damage but the earthquake caused great alarm, many persons ran out of their houses and several were thrown down, direction appeared to be from south to west.</td>
<td>VI</td>
<td>TOI/3-12-72</td>
</tr>
</tbody>
</table>
| Oct/Nov 1876 | Secunderabad (A.P.)         | Felt throughout the city. Caused general alarm, glass panes broken in some of the houses, a number of sparrows found dead after the earthquake. Barracks in cantonment area were more or less in an oscillating condi-


<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Description of earthquake</th>
<th>Intensity</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 1877</td>
<td>Bombay (Maharashtra)</td>
<td>Smart shock felt at Thana and Parel, feeling like passing of heavily laden wagons, glass drops of a chandelier jingled and glasses on a table knocked together.</td>
<td>IV</td>
<td>TOI/19-12-77</td>
</tr>
<tr>
<td>Jan 1879</td>
<td>Chicacole (Orissa)</td>
<td>Felt around midnight, appeared to come from the side of Bay of Bengal. The shock was preceded by a loud noise, tents etc. shock considerably, felt by many including a sub-judge and several policemen.</td>
<td>IV</td>
<td>TOI/13-1-79</td>
</tr>
<tr>
<td>28 Apr 1879</td>
<td>Bagapully (A.P.)</td>
<td>Felt at Bagapully and surrounding villages, loud noise followed by a rumbling noise like passing of a train. Lasted for about a minute but no damage done. At nearby Kodikandli the supporting bamboos of a pandal appeared to be lifted off the ground and replaced.</td>
<td>IV</td>
<td>TOI/8-5-79</td>
</tr>
<tr>
<td>17 Jun 1879</td>
<td>Hosur (Tamilnadu)</td>
<td>Loud crumbling sound resembling passage of a railway train awakened many sleepers. A distinct vibration was also felt. Sound lasted for 15 secs. Direction appeared to be from SW to NE.</td>
<td>IV</td>
<td>TOI/23-6-79</td>
</tr>
<tr>
<td>Apr 1882</td>
<td>Bangalore (Karnataka)</td>
<td>Severe felt. Direction appeared to be from east to west; extent of damage unknown but little tiles were shaken from roofs; window panes smashed. Splits visible in almost every building, the domed ones being the worst. Distant rumblings continued for few days. Felt at Virangam and Deesa also, though slightly. Generally felt over western Rajputana and western portion of Narmada valley.</td>
<td>IV</td>
<td>TOI/15-4-82</td>
</tr>
<tr>
<td>15 Dec 1882</td>
<td>Mount Abu (Rajasthan)</td>
<td>Severe shock felt; direction appeared from west to east; extent of damage unknown but little tiles were shaken from roofs; window panes smashed. Splits visible in almost every building, the domed ones being the worst. Distant rumblings continued for few days. Felt at Virangam and Deesa also, though slightly. Generally felt over western Rajputana and western portion of Narmada valley.</td>
<td>VI</td>
<td>Sta/20-12-82</td>
</tr>
<tr>
<td>21 Aug 1885</td>
<td>Monghyr (Bihar)</td>
<td>Severe shock felt; duration about 7 secs; direction appeared be to from west to east; preceded by a low rumbling sound like distant thunder; shutters of windows made a rattling noise; Chandeliers started moving.</td>
<td>IV</td>
<td>TOI/28-8-85</td>
</tr>
<tr>
<td>19 May 1886</td>
<td>Bhagirathpur (W.B.)</td>
<td>Smart shock (a previous shock had been felt in July 85); large masonry buildings rocked to and fro, but without being damaged; lasted for about 60 secs; people alarmed. The shock was also felt at Sridipore, Burdwan and Tantil with lesser intensity.</td>
<td>IV</td>
<td>TOI/27-5-86</td>
</tr>
<tr>
<td>31 Mar 1889</td>
<td>Mangalore (Karnataka)</td>
<td>Two distinct shocks within a few seconds, Rumbling sound accompanied by the severe shaking of houses. Felt throughout the city, no damage done.</td>
<td>IV</td>
<td>TOI/ 6-4-89</td>
</tr>
<tr>
<td>12 Aug 1889</td>
<td>Madras (Tamilnadu)</td>
<td>Slight shock direction appeared west to east; duration 3-4 secs. Felt in Sridapet, Pallavaram, St. Thomas Mount (suburbs of Madras within a radius of 10 km) where</td>
<td>IV</td>
<td>Sta/17-8-89</td>
</tr>
</tbody>
</table>
### TABLE 1 (contd)

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Description of earthquake</th>
<th>Intensity</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 Feb 1891</td>
<td>Bangalore (Karnataka)</td>
<td>Severe shock felt throughout the district. Duration about 20 secs. Direction appeared to be from west to east.</td>
<td>IV</td>
<td>Sta/ 22-2-91</td>
</tr>
<tr>
<td>19 Feb 1892</td>
<td>Govindpur (Marthamo Dist)</td>
<td>Severe earthquake shook the whole district. No damage except cracking of a few houses. Animals became restless about an hour before the earthquake. They were noticed to sniff the ground and exhibit nervousness such as dog shows in the presence of an &quot;unaccustomed object,&quot; while the air had distinctly sulphurous smell. A loud roaring sound was also heard prior to the earthquake followed by a cracking like the sound of distant musket firing. Caused great panic among people.</td>
<td>V</td>
<td>Sta/ 21-2-92</td>
</tr>
<tr>
<td>03 Jan 1896</td>
<td>Barakur (Orissa)</td>
<td>Smart shock accompanied by heavy rumbling noise. Direction appeared to be from SE. Furniture and crockery in houses rattled. Duration of quake about two secs.</td>
<td>IV</td>
<td>Sta/9-1-96</td>
</tr>
<tr>
<td>22 Jun 1897</td>
<td>Berhampore (Orissa)</td>
<td>Strongest shock after the main earthquake of 12 th. Four persons killed and three hurt by falling houses. Seven or eight more persons died. People scared and started living in tents, gardens and lower stories of houses.</td>
<td>VII</td>
<td>Sta/25-6-97</td>
</tr>
<tr>
<td>Oct 1898</td>
<td>Ahmedabad (Gujarat)</td>
<td>Distinct oscillations felt for 10-15 secs. Felt by a sitting person; window shaking slightly on the hinges. Atmosphere appeared to be electrified. Direction appeared from east to west. No loss of life or property.</td>
<td>IV</td>
<td>TOI/17-10-98</td>
</tr>
<tr>
<td>07 Feb 1900</td>
<td>Alleppey (Kerala)</td>
<td>Everyone felt the shock. Duration about 30 secs. Buildings violently shaken; windows, doors rattled in pronounced fashion; pendulum clocks stopped.</td>
<td>V</td>
<td>TOI/14-2-1900</td>
</tr>
</tbody>
</table>

### TABLE 2

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Intensity (M.M.)</th>
<th>Source</th>
<th>Date</th>
<th>Place</th>
<th>Intensity (M.M.)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-2-1839</td>
<td>Deesa</td>
<td>III</td>
<td>TOI/6-3-39</td>
<td>21-2-1853</td>
<td>Visakhapatnam</td>
<td>IV</td>
<td>TOI/9-3-53</td>
</tr>
<tr>
<td>30-4-1839</td>
<td>Deesa</td>
<td>IV</td>
<td>TOI/11-5-39</td>
<td>26-2-1853</td>
<td>Burdwan</td>
<td>III</td>
<td>TOI/13-3-53</td>
</tr>
<tr>
<td>9-11-1840</td>
<td>Ahmedabad</td>
<td>V</td>
<td>TOI/1-12-40</td>
<td>26-7-1854</td>
<td>Calcutta</td>
<td>II</td>
<td>TOI/8-8-54</td>
</tr>
<tr>
<td>1844</td>
<td>Luckput</td>
<td>V</td>
<td>Earthquakes by N.H. Heck.</td>
<td>8-12-1854</td>
<td>Bombay</td>
<td>IV</td>
<td>TOI/11-12-54</td>
</tr>
<tr>
<td>March 1848</td>
<td>Colombo</td>
<td>IV</td>
<td>TOI/1-4-48</td>
<td>7-1-1857</td>
<td>Allahabad</td>
<td>II</td>
<td>TOI/31-1-57</td>
</tr>
<tr>
<td>2-1-1849</td>
<td>Erinpura (Near Abu)</td>
<td>VI</td>
<td>TOI/13-1-49</td>
<td>12-3-1859</td>
<td>Calcutta</td>
<td>II</td>
<td>TOI/23-3-59</td>
</tr>
<tr>
<td>3-6-1852</td>
<td>Deesa</td>
<td>III</td>
<td>TOI/16-6-52</td>
<td>Sep/Oct 1859</td>
<td>Darbhanga</td>
<td>III</td>
<td>TOI/22-10-59</td>
</tr>
<tr>
<td>10-6-1852</td>
<td>Deesa</td>
<td>II</td>
<td>TOI/10-7-52</td>
<td>27-4-1860</td>
<td>Surat</td>
<td>III to IV</td>
<td></td>
</tr>
<tr>
<td>22-10-1852</td>
<td>107 km north of Calcutta.</td>
<td>III</td>
<td>TOI/13-11-52</td>
<td>13-11-1861</td>
<td>Vizianagaram</td>
<td>III</td>
<td>TOI/23-12-61</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18-11-1862</td>
<td>Dhulia</td>
<td>IV</td>
<td>TOI/22-11-62</td>
</tr>
<tr>
<td>Date</td>
<td>Place</td>
<td>Intensity (M.M.)</td>
<td>Source</td>
<td>Date</td>
<td>Place</td>
<td>Intensity (M.M.)</td>
<td>Source</td>
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</tr>
<tr>
<td>Sep. 1864</td>
<td>Oudh</td>
<td>III</td>
<td>TOI/10-9-64</td>
<td>29-12-1878</td>
<td>Bhovani</td>
<td>II</td>
<td>TOI/6-1-79</td>
</tr>
<tr>
<td>4-6-1865</td>
<td>Mysore</td>
<td>IV</td>
<td>TOI/20-6-65</td>
<td>Dec. 1878</td>
<td>Chicocole</td>
<td>IV</td>
<td>TOI/13-1-79</td>
</tr>
<tr>
<td>24-6-1865</td>
<td>Coimbatore</td>
<td>IV</td>
<td>TOI/3-8-65</td>
<td>28-4-1879</td>
<td>Bagapully</td>
<td>IV</td>
<td>TOI/8-5-79</td>
</tr>
<tr>
<td>20-12-1865</td>
<td>Kishanganj</td>
<td>IV</td>
<td>TOI/30-12-65</td>
<td>17-6-1879</td>
<td>Hosur</td>
<td>IV</td>
<td>TOI/23-6-79</td>
</tr>
<tr>
<td>31-12-1865</td>
<td>Sholapur</td>
<td>III</td>
<td>TOI/31-1-66</td>
<td>30-7-1879</td>
<td>Mhow</td>
<td>III</td>
<td>TOI/2-8-79</td>
</tr>
<tr>
<td></td>
<td>Bombay</td>
<td>III</td>
<td></td>
<td></td>
<td>Indore</td>
<td>II</td>
<td>6-8-79</td>
</tr>
<tr>
<td>1867</td>
<td>Lingsugar</td>
<td>III</td>
<td>8-1-68</td>
<td>01 Nov 1880</td>
<td>Gopalpore</td>
<td>II</td>
<td>TOI/3-4-80</td>
</tr>
<tr>
<td>Aug 1868</td>
<td>Calcutta</td>
<td>II</td>
<td>TOI/4-7-1930</td>
<td>16-3-1881</td>
<td>Nanguneri Taluk (Tirunelveli Dist.)</td>
<td>III</td>
<td>TOI/25-3-81</td>
</tr>
<tr>
<td>16-11-1868</td>
<td>Jubbulpur</td>
<td>III</td>
<td>TOI/25-11-68</td>
<td>10-12-1881</td>
<td>Malda</td>
<td>III</td>
<td>TOI/5-1-82</td>
</tr>
<tr>
<td>1-1-1871</td>
<td>Deesa</td>
<td>V</td>
<td>TOI/30-1-71</td>
<td>27-12-1881</td>
<td>Hazaribagh</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>31-1-1871</td>
<td>Baroda</td>
<td>IV</td>
<td>TOI/3-2-71</td>
<td>28-2-1882</td>
<td>Rajkot</td>
<td>II</td>
<td>TOI/5-1-82</td>
</tr>
<tr>
<td>31-1-1871</td>
<td>Surat</td>
<td>IV</td>
<td>TOI/3-2-71</td>
<td>28-2-1882</td>
<td>Ootacamund</td>
<td>III</td>
<td>Sta/6-3-82</td>
</tr>
<tr>
<td>31-1-1871</td>
<td>Bursar</td>
<td>IV</td>
<td></td>
<td></td>
<td>Calicut</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>31-1-1871</td>
<td>Malegaun</td>
<td>IV</td>
<td>4-2-71</td>
<td></td>
<td>Felt in other parts of Madras State</td>
<td></td>
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</tr>
<tr>
<td>31-1-1871</td>
<td>Amrooee</td>
<td>IV</td>
<td>6-2-71</td>
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<td>Bardolee</td>
<td>III</td>
<td>7-2-71</td>
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<tr>
<td>15-2-1871</td>
<td>Barrackpore</td>
<td>III</td>
<td>TOI/21-2-71</td>
<td>10-6-1882</td>
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</tr>
<tr>
<td>27-7-1871</td>
<td>Calcutta</td>
<td>III</td>
<td>TOI/31-7-1</td>
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<td></td>
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Sta—Statesman, Calcutta  
TOI—Times of India, Bombay
2. Procedure adopted

Microfilms of three newspapers were scanned at Bombay, Calcutta and Madras and description along with the date and time (if available) including felt reports were noted. The shocks were then assigned intensity in modified Mercalli Scale based on the description reported. In the case of larger events attempts were made to draw isoseismals to fix the epicentre which was taken as centre of the meizoseismal region. For earthquakes with insufficient data, the zone which suffered the most was taken as the epicentre. Table 1 gives the description of earthquakes of intensity IV or more. Table 2 includes all the new earthquakes felt in different parts of Peninsular India. It may be mentioned that in this catalogue, events reported or published earlier by Oldham (1883), Gubin (1968), Tandon and Srivastava (1974) and Chandra (1977) have been excluded.

3. Discussion

Some significant points which have been brought to light as a result of this compilation are given below:

(1) An earthquake of intensity VI M.M. occurred on 17 May 1903 (Turner et al. 1912) near Jabalpur. The new catalogue has reported a felt earthquake at the same place on 16 November 1868.

(2) In the region of damaging earthquake of 8 February 1900 near Coimbatore, an earthquake (intensity IV) was reported earlier on 24 June 1865.

(3) Near Ongole, where an earthquake of magnitude 5.4 occurred on 27 March 1967, earthquakes of slightly lesser intensity were reported on 1 September 1869 and later. In this case, two of the felt earthquakes reported in the new catalogue on 10 and 11 September were the after shocks of the main event of 1 September but with decreasing intensity.

(4) An earthquake of intensity VII M.M. occurred at Bhavnagar on 21 April 1919. The catalogue events an earthquake (intensity VI) on 14 April 1872 at the same place.

(5) Recently an earthquake of magnitude 5 caused minor damage near Hyderabad on 30 June 1983. The new catalogue shows an event of similar intensity in 1876 with its epicentre near Secunderabad.

(6) The catalogue contains reports of earthquakes of intensity V or more felt at Ahmedabad, Ernpoorah, Deesa, Mount Abu, Govindpur and Alleppy.

(7) Animals were reported to have become restless about an hour before the earthquake of 19 February 1892 in Govindpur (Manbhoom district), which had an intensity of V M.M. The animals were noticed “To sniff the ground and exhibit nervousness such as a dog shows in the presence of an unaccustomed object while the air had distinctly sulphurous smell” (Table 1, Statement dated 21 February 1892). This event has therefore, brought to light the first documented case of unusual animal behaviour in the Indian region.

Acknowledgements

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References