M.O. 430.
(Kew)

Air Ministry

METEOROLOGICAL OFFICE

THE OBSERVATORIES' YEAR BOOK 1937

Comprising the meteorological and geophysical results obtained from autographic records and eye observations at the observatories at Lerwick, Aberdeen, Eskdalemuir, Valentia, and Kew, and the results of soundings of the upper atmosphere by means of registering balloons.

KEW OBSERVATORY

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METEOROLOGICAL COMMITTEE

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1939

KEW OBSERVATORY

Latitude	51° 28′ N.
Longitude	0° 19′ W.
G.M.T. of Local Mean Noon	12h. 1m.

Heights in Metres above Sea Level

Barometer	10·4
Raingauge Site	5·5
Dines Pressure Tube Anemometer	28

Heights in Metres above Ground

Thermometer Bulbs	3·0
Sunshine Recorder	13·3
Dines Pressure Tube Anemometer	23
Beckley Raingauge Rim	0·53

INTRODUCTION

The observatory was built in 1769 as the private observatory of King George III. Since 1842 it has been devoted to physics and meteorology. The meteorological records are continuous from 1854. The Observatory is in the Old Deer Park, Richmond (Surrey), about 10 miles (16 km.) to the west of the City of London. The Observatory stands on a low artificial mound whose level is about 1½ metres higher than that of the surrounding park. Round the Observatory a golf course has been laid out. The River Thames is distant about 300 metres on the north and west. Kew Gardens, which are extensively wooded, lie to the east-north-east, the nearest point of the Gardens being about 600 metres away. The town of Richmond, to the south-east, is about 1,100 metres distant. On the east side of the Park is the main road from Richmond to Kew; on the south side the railway from Richmond to Twickenham. An open area partly wooded, Syon Park, lies to the north-north-east across the river. Richmond Park is about 1½ miles (2½ km.) to the south-east. A general view of the Observatory building and the exposure lawn, an aerial photograph, a plan of the surrounding country and a site plan are to be found in the 1935 volume. The photographs were taken in 1935. For the early history of the Observa-

ATMOSPHERIC POLLUTION

The Owens atmospheric pollution recorder or air filter No.1* is situated in the Clinical House, and the level of the intake is about $1\frac{1}{2}$m. above that of the adjacent ground. The weight of the pollution is not obtained directly but is deduced from shade numbers 0,1,2, etc., assigned to the deposit left on the filter paper through which the air is drawn. The equivalents of the shade numbers are allotted in accordance with the results of an investigation carried out for the Atmospheric Pollution Committee by Mr.J.G.Clark. † When the normal volume of air, 2 litres, is aspirated (it is drawn through a hole 3·2 mm. in diameter) shade number 1 answers to 0·32 milligrams per cubic metre. The Owens apparatus was designed in the first place for dealing with the air of cities, and the amount of pollution at the Observatory is usually so small that the shade recorded when the 2 litres are aspirated is either 0 or 1.

Preliminary experiments with a spare recorder having justified the assumption that increasing the volume of air would increase the shade number in proportion, an auxiliary tank was brought into use at the beginning of July, 1928. With this tank in operation each spot on the filter paper corresponds with 6·4 litres of air. The unit shade is therefore equivalent to 0·1mg/m^3 When fog prevails the auxiliary tank is put out of action and the unit shade reverts to the value 0·32 mg/m^3.

Special attention is paid to the maintenance of consistency in the standard of shades. Each new scale of shades is compared directly with the standard preserved by Dr. Owens. New scales of shades were taken into use on the following dates:-

January 1, 1936 and November 1, 1937.

During 1937 the highest estimate of pollution was 3·2 mg/m^3, this value occurring on November 28th from 23h to 24h. There were 25 days on which the pollution reached 1·0 mg/m^3; the number of hours credited with 1·0 mg/m^3. or more being 95. The months in which these days and hours occurred are given in the accompanying table. It may be noted that of the 60 hours credited with 1·0 mg/m^3 or more in November, 12 occurred on the 21st, 11 on the 26th and 15 on the 28th.

	days	hours
Jan.	1	2
Feb.	4	4
Mar.	1	1
Apr.	1	1
Oct.	2	2
Nov.	8	60
Dec.	8	25
Year	25	95

Table 544 gives for each month mean hourly values derived from all the days for which complete records were obtained. There were 364 such days in the year. The highest and lowest of these hourly values are underlined.

Table 545 gives diurnal inequalities derived from the data in Table 544 after the application of non-cyclic corrections. The principal reason for computing the diurnal inequalities was to facilitate comparison with the corresponding diurnal variations in barometric pressure and in the potential gradient of atmospheric electricity.

The mean values computed for recent years are given in the following table, together with the means for successive pairs of months. The unit is 1 mg/m^3

* A description of the instrument is given in the "Report of the Advisory Committee for Atmospheric Pollution", 4th Report, 1917-1918, p.20

†"Report of the Advisory Committee for Atmospheric Pollution", 3rd Report, 1916-1917, p.20

Kew Observatory. Atmospheric Pollution. Mean values mg/m^3

	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Jan.-Feb.	·29	·25	·22	·40	·18	·24	·32	·25	·44	·19	·39	·12
Mar.-Apr.	·30	·10	·18	·27	·13	·15	·26	·17	·19	·15	·19	·12
May-June	·08	·07	·09	·05	·05	·06	·09	·10	·10	·05	·09	·06
July-Aug.	·07	·05	·05	·06	·07	·07	·05	·08	·08	·05	·04	·03
Sept.-Oct.	·19	·17	·15	·10	·13	·25	·15	·21	·10	·07	·13	·13
Nov.-Dec.	·26	·21	·25	·21	·29	·33	·29	·43	·30	·27	·21	·29
Year	·20	·14	·15	·18	·14	·18	·19	·21	·20	·13	·17	·12

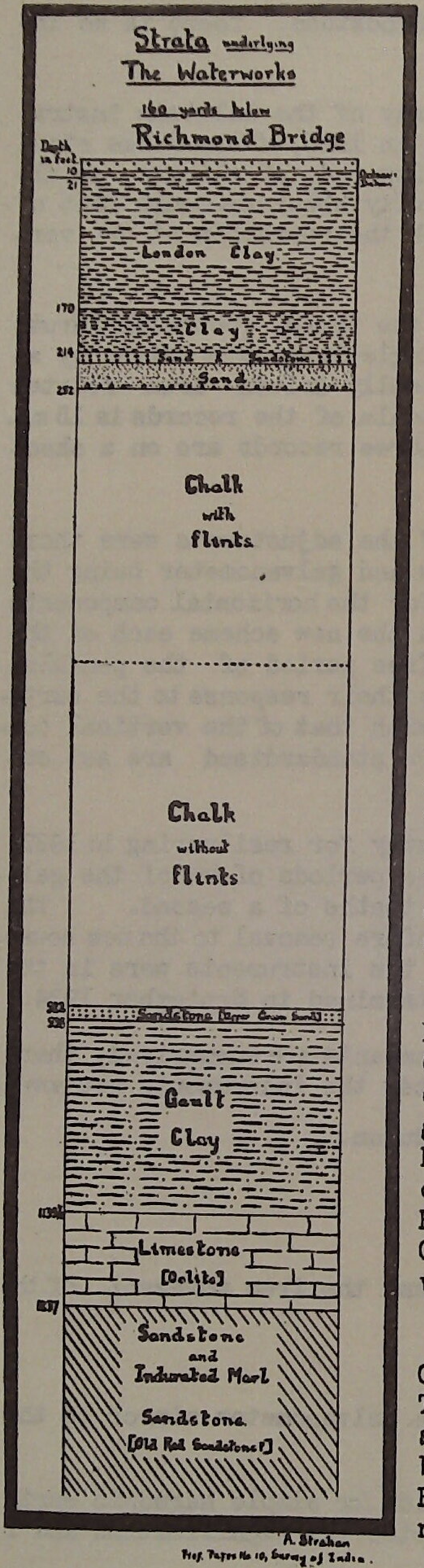
The nature of the diurnal variation is most easily recognised in Table 545. There is always a well defined minimum during the night and another in the early afternoon. The first maximum of the day usually occurs about 9h and the second one follows about 12 hours later. This double oscillation is apparently due to two causes, the variation in human activity in producing pollution and the variation in the wind which disperses it. In 1937 the principal maximum was in the evening from February to May and from September to December; in the forenoon in the remaining months. The principal minimum occurred in the afternoon in April and from June to September; in the early morning in the remaining months. Curves illustrating the diurnal variation of atmospheric pollution will be found in the Annual Reports of the Advisory Committee on Atmospheric Pollution and in a paper‡ by Dr. Whipple on the relation between Atmospheric Pollution and Potential Gradient.

SEISMOLOGY

The Galitzin seismographs which were transferred from Eskdalemuir Observatory during the latter part of 1925 have been in regular operation at Kew since the beginning of 1926. Earth movements in the north, east and vertical directions are recorded. A pair of modified Wood-Anderson seismographs, recording the two horizontal components, have recently been added to the equipment. The seismographs were installed until 1937 in the basement of the main Observatory building. The behaviour of the Galatzin instruments indicated that the building and the ground on which it stands are rocked whenever there is an appreciable wind. Some experiments were made during 1932 which showed that the disturbed region did not extend far from the main building, and a scheme was put forward for the construction of a new underground seismograph house about 100 yards away. The new building was ready for use early in 1937. The Wood-Anderson seismographs were transferred in February; the Galitzin horizontal seismographs were moved in April, and the vertical in September, 1937. The removal of the seismographs presented a suitable opportunity for making a number of improvements in the installation. A full description of the seismographs and the new building has been published, together with a discussion concerning the operation and standardisation of Galitzin seismographs, in a Geophysical Memoir.* It is satisfactory to note that the records obtained from the seismographs in the new building are not disturbed during strong winds.

‡London, Quart. J.R. met. Soc., 55, 1929, pp. 351-361

*"Seismology at Kew Observatory", A.W.Lee, London, Meteorological Office, Geophysical Memoir, No. 78, (1938)



The walls of the new building are of brick carried on a floor of reinforced concrete about 15 inches in thickness; the main walls of thickness $13\frac{1}{2}$ inches are separated by a 2 inch cavity from $4\frac{1}{2}$ inch inner walls. The surfaces are rendered waterproof by a thick coating of asphalt. The floor is some 5 feet below the level of the surrounding paddock. The ceiling is covered by soil to a depth of about 2 feet and turfed, the level of the turf being about 5 feet above the surroundings. The entrance to the building is reached from a flight of steps; the paddock in the vicinity is liable to flooding when the Thames is exceptionally high and a barrier is provided at the top of the steps to prevent flood water from entering the building. Rainwater which drives beneath the cement cover over the steps collects at the bottom in a sump and is removed when necessary. The building contains two rooms opening from a small entrance lobby on the east side. The rooms are ventilated, and they are heated by electric radiators which can be controlled by thermostats. The south room, 20 feet by 15 feet, contains the Galitzin pendulums and the Wood-Anderson seismographs; the galvanometers and recording drum for the Galitzin instruments are set up in the north room which is smaller, 10 feet by 15 feet. Concrete pillars for the seismographs stand on the floor in the south room; the galvanometers and recording drum in the north room are placed on slate slabs cemented to concrete pillars.

A small transformer in the north room supplies low tension electric current for recording with 6 volt, 6 watt, bulbs. The low tension supply is cut off automatically for two seconds at the beginning of each minute and for 4 seconds at the hour by an Isenthal Vertex switch; the operation of the switch is controlled by a synchronome clock, Hope-Jones, No.1901, which is rated daily from the Greenwich wireless time-signals relayed by Droitwich.

The geological strata in the vicinity of the Observatory are shown on the diagram on this page. The diagram is based on the results obtained* in sinking a well near Richmond Bridge. The Richmond boring terminated at a depth of 440 metres in Old Red Sandstone. At Stonebridge Park, 8 km. to the north, a boring was carried down† to a depth of

*London, Quart. J. Geol. Soc., 40, 1884, p. 274; 41, 1885, p. 523
†Records of London Wells, Mem. Geol. Surv. Eng., London, 1913

600 metres, the last 280 metres being in Old Red Sandstone. There is no information as to deeper strata near Richmond.

The first important alteration to be made to any of the Galitzin instruments after they came to Kew was the replacement, in 1928, of the large steel spring supporting the vertical pendulum, by a spring made of elinvar, an alloy which has a temperature coefficient of elasticity about one-tenth that of steel.* The difficulties usually associated with the operation of the vertical pendulum have been greatly diminished.†

A further improvement was made in 1937 when the three recording drums driven by clock-work motors were replaced by a single large drum driven by an alternating current electric motor. The electrically driven drum rotates more uniformly than the older drums. The time scale of the records is 15 mm. per minute and the traverse 4 mm. per hour. The three records are on a sheet 93 cm. x 43 cm.

Until the removal of the instruments in 1937 the adjustments were those adopted by Galitzin, the free periods of pendulum and galvanometer being the same for each seismograph, but the free periods for the horizontal components were twice as long as those for the vertical. In the new scheme each of the horizontal seismographs is adjusted to have the free period of the pendulum one-third of the galvanometer period; in this way their response to the earth-movements is brought into approximate agreement with that of the vertical component. The methods by which the instruments are standardised are set out in the Memoir.

The mirrors of the galvanometers were sent away for resilvering in 1937; when they were replaced it was found that the free periods of two of the galvanometers differed from the old values by a few tenths of a second. The seismographs were not standardised during 1937 before removal to the new house, and it has been assumed that the constants while the instruments were in the main building has not changed from the values determined in September 1934.

In the following table the values of the constants are summarised; there is some uncertainty about the values obtained after the instruments were moved.

ℓ is the length of the simple equivalent pendulum.

T_0 is the free period of the pendulum.

T_1 is the free period of the galvanometer.

μ^2 is a damping coefficient which vanishes when the free movement of the pendulum is just aperiodic.

k is the "transmission" factor.

A is the length of the beam of light from the galvanometer mirror to the recording drum.

$\frac{kA}{\pi\ell}$ is the factor for obtaining the magnification for simple harmonic earth waves of very short period; i.e., if V denotes the magnification and T the period of the earth-waves, $\frac{kA}{\pi\ell} = \left(\frac{V}{T}\right)_{T \to 0}$.

*Y. Dammann, Bur. Cent. Seis. Int., Strasbourg, Ser. A. Fasc. No. 5, 1927, pp. 122-129

†F.J. Scrase, London, Inst. Physics, J. Sci. Instr., 6, 1929, p. 385

Component	ℓ	T_1	1937	T_o	μ^2	$\frac{KA}{\pi\ell} = \left(\frac{V}{T}\right)$ T → o
	mm.	sec.		sec.		sec.$^{-1}$
N	118	24·7	Jan. 1 - June 3	24·5	+0·01	46·7
		24·2	June 3 - Dec.31	8·1	0·00	77·3
E	118	24·8	Jan. 1 - Apr.18	24·8	-0·01	42·6
		24·8	Apr.18 - Dec.31	8·3	0·00	76·3
Z	360	13·0	Jan. 1 - Sep.15	13·1	+0·01	109·
		13·1	Sep.15 - Dec.30	13·0	+0·05	48·2
		13·3	Dec.30 - Dec.31	13·0	-0·01	75·4

A complete description of the Wood-Anderson seismograph appears in the Bulletin of the Seismological Society of America, XV, 1, March, 1925. In this seismograph the moving system is very small, weighing about 0·7 gram, and the control is due to the torsional reaction of the suspension. The Kew instruments were copied from the Wood-Anderson design but some alterations have been introduced. The moving system in the Kew type consists of a copper bar, 3 mm. by 5 mm. by 20 mm., and weighing about 3 gram; this mass is attached near the middle of a tungsten wire 0·025 mm. in diameter. These instruments are set up with the axis inclined slightly to the vertical and the controlling force is chiefly due to gravity. The damping is magnetic. Direct optical registration is employed, the image of an illuminated slit reflected from a small mirror attached to the mass being focussed on the photographic sheet. The two horizontal components (N-S and E-W) are recorded using an electrically driven recording drum. The approximate constants during 1937 were:- Magnification 700, Free period 2·5 seconds, Damping ratio 20:1.

Table 546 contains the particulars of the earthquakes recorded at the Observatory. The notation employed is as follows*:-

In the second column of the diary the entries N, E, Z, refer to the records from the north-south, east-west and vertical seismographs respectively.

P is the normal first phase (longitudinal waves). PKP is a longitudinal wave which has passed through the earth's central core, and PcP one which has been reflected from the core.

PP, PPP... are longitudinal waves reflected once, twice ... near the earth's surface.

S is the normal second phase (transverse waves). The waves which penetrate the central core and pass through it as longitudinal vibrations are designated by the symbol SKS.

PS and PPS are waves which suffer a change or changes from longitudinal to transverse oscillation or vice versa, on reflection near the surface.

SS, SSS...are transverse waves reflected once, twice... near the surface.

The notations adopted for the supplementary reflected waves from deep focus earthquakes and for the waves from near earthquakes, are those of F.J. Scrase† and H. Jeffreys‡ respectively.

L indicates long waves (surface waves).

i is the sudden commencement of a phase. e means a gradual or indistinct commencement. These letters are used as prefixes to the phase symbols, but where the character of the phase is not assignable the letters are used as independent symbols. When the commencement of a phase is moderately clear the prefixes are not used.

*The notation was amended from the beginning of 1933, the most important change being the adoption of a special letter, K, for the compressional waves through the core. This symbol, taken from the Georgetown bulletins, is now used in the International Seismological Summary. Previously a pulse which started and finished as a transverse wave but passed through the core as a compressional wave was denoted by ScPcS. In the new notation such a pulse is denoted by SKS.

†Proc. roy. Soc., A. 132, 1931

‡London, Mon. Not. R. Astr. Soc., Geophys. Supp., 1, No.8, 1926

All times entered against the above phases are the times of arrival of the phases at the station. The phases denoted by M are successive prominent maxima occurring during the principal or surface phase.

The period is the duration of a double oscillation (to and fro movement).

The entries under A are the amplitudes, in microns (1 =0·001 mm.), of the components of the true displacement of the ground from the position of rest. Displacement to the north, east and upwards are regarded as being positive. When successive positive and negative displacements have the same magnitude the time of occurrence is given for the positive one.

The times of the maxima and the amplitudes of sinusoidal waves are computed from the standard formulae given by Galitzin, c.f. Observatories' Year Book, 1936, p. 367.

Δ is the distance in kilometres of the epicentre measured along the arc of a great circle. For earthquakes of normal focal depth located within 10,000 km. of Kew, the distance is generally derived from the interval between P and S by the table, due to Zeissig, given in Klotz's "Seismological Tables" (Publication of the Dominion Observatory, Ottawa, Vol. III, No.2). For greater distances other phases are considered and Δ is obtained from the travel curves given by Gutenberg.* In the case of deep focus shocks both Δ and the depth of focus are determined from the Brunner diagram†. The azimuth of the epicentre (0° to 360°) is measured from north through east. When an estimation of the azimuth is possible, it is used, together with Δ , for provisional determination the co-ordinates of the epicentre. The co-ordinates given in the Diary have generally been received at a later date; the authorities for these determinations are inserted in brackets. Here the letters J.S.A. signify the Jesuit Seismological Association of America, U.S.C.G.S., the United States Coast and Geodetic Survey, and U.R.S.S. the bulletins issued by the United Soviet States.

Brackets enclosing figures or phase symbols indicate that the interpretation is uncertain.

The total number of shocks recorded during the year was 211. The phases being sufficiently well defined, estimates of the epicentral distances were obtained for 64 shocks, whilst in 8 cases the records of the initial impulses were sufficiently sharp to allow of computations of azimuth and so of estimates of the co-ordinates of the epicentres. There were 7 earthquakes which produced at the observatory a disturbance in which the maximum amplitude of the surface waves exceeded 0·1 mm. in one or more of the components. These earthquakes originated, in Tibet (January 7th), in the Kurile Islands (February 21st), in Oceania (April 16th), in Alaska (July 22nd), in the Philippines (August 20th), in the Aleutian Islands (September 3rd) and in Mexico (December 23rd).

The British earthquakes were recorded during the year, one near Birmingham on 9th July and the other near Horsham, Sussex, on 8th September.

For comparison the statistics for all the years in which the Galitzin seismographs have been in operation at Kew Observatory are given:-

Year	Shocks recorded	Epicentral distances	Azimuths estimated	Shocks exceeding 0·1 mm.
1926	306	55	-	10
1927	314	76	6	9
1928	339	97	19	18
1929	320	74	6	12
1930	301	56	6	8
1931	274	53	11	16
1932	246	57	8	8
1933	263	71	8	8
1934	269	59	10	9
1935	232	72	10	13
1936	256	72	6	8
1937	211	64	8	7

*Handbuch der Geophysik, Berlin, 1929, p.212

†The Brunner Focal Depth-Time-Distance Chart, G.T. Brunner and J.B. Macelwane, New York, 1935

The following table shows the number of occasions on which the initial movements recorded at Kew and originating in different parts of the Globe were recognised as anaseismic or kataseismic.

Types of initial movements recorded at Kew Observatory
1926-1936 and 1937

Region of Epicentre	1926-1936		1937	
	Ana-seismic (Com-pression)	Kata-seismic (Dilat-ation	Ana-seismic (Com-pression)	Kata-seismic (Dilat-ation
Southern Europe and Mediterranean	17	21	0	0
Central and Southern Asia with Formosa	35	10	3	0
North Siberia	0	3	0	0
Indian Ocean	4	4	2	0
Japan	21	3	1	0
East Indies and Polynesia	18	8	3	6
Australia and New Zealand	4	3	1	0
Kurile Islands	14	5	2	1
Aleutian Islands and Alaska	16	8	2	2
North America	4	3	0	0
Central America	29	8	7	0
South America	11	4	2	0
North Atlantic Ocean, Baffin Bay and North Sea	19	9	2	1
South Atlantic Ocean	1	1	0	1
Africa	1	0	0	0
	194	90	25	11

It will be seen that in 1937 as in the earlier years there were twice as many anaseisms as kataseisms.

__Microseisms__.- The routine tabulations of microseisms recorded at Kew from 1926 to 1934, and at Eskdalemuir from 1911 to 1925, were taken from the north-south component for each day at 0h, 6h, 12h and 18h. The results obtained from a comparison of the microseisms recorded by the three components during a complete year (1932) having shown* that the vertical is more reliable than either of the horizontal components for such tabulations, the vertical component was adopted from the beginning of 1935.

The advantages of the vertical component are:-

(a) The amplitude recorded does not depend upon the direction of travel of the waves.

(b) The effects of the local geological structure are smaller.

(c) For oscillations with the period of microseisms the vertical Galitzin seismograph has, with the tuning adopted at Kew, the higher magnification.

(d) Freedom from wind disturbance.

The hours of tabulation are the same as for the north-south component in earlier years. The group of waves of greatest amplitude occurring in the 30 minutes centring at the hour in question is selected, and the amplitude tabulated is the mean obtained from the three largest complete waves in that group. The period is obtained from a measurement made on the same group. The total time, to the nearest second, for a number of complete consecutive waves is measured, the number of waves being chosen so that the time is between 23 and 30 seconds. The period is then derived from the following division table:-

* A.W.Lee, London, Met. Off., Geophys. Mem., 7, No.66, 1935

Number of Waves	Time interval in seconds							
	30	29	28	27	26	25	24	23
3	10·0	9·7	9·3	9·0	8·7	8·3	8·0	7·7
4	7·5	7·3	7·0	6·7	6·5	6·3	6·0	5·7
5	6·0	5·8	5·6	5·4	5·2	5·0	4·8	4·6
6	5·0	4·8	4·7	4·5	4·3	4·2	4·0	3·8
7	4·3	4·1	4·0	3·9	3·7	3·6	3·4	3·3
8	3·7	3·6	3·5	3·4	3·3	3·1	3·0	2·9
9	3·3	3·2	3·1	3·0	2·9	2·8	2·7	2·6
10	3·0	2·9	2·8	2·7	2·6	2·5	2·4	2·3
11	2·7	2·6	2·5	2·5	2·4	2·3	2·2	2·1
12	2·5	2·4	2·3	2·3	2·2	2·1	2·0	1·9

On the occasions of failure of the Z record, gaps in the tabulations (Table 547) have been filled in by interpolation or from measurements of the microseisms recorded by the horizontal seismographs. By use of the data of 1932 (Geophysical Memoir No. 66) it was found that there was a linear relation between the ratio of horizontal to vertical amplitude and the period of the oscillations, the ratio varying from 1·2 for microseisms of period 4½sec. to 0·85 for those of period 9 sec. Allowance is accordingly made for the difference between the amplitudes recorded by the horizontal and vertical components. Values obtained by interpolation or from the horizontal seismograms are bracketed in the tables.

The mean values of amplitude and period, together with the maximum amplitudes, for each month of 1937 are given below:-

Kew Observatory. Microseisms of Vertical Component, 1937

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Mean period (sec)	6·8	6·1	5·7	6·0	5·2	4·7	4·5	4·8	5·8	6·1	5·9	5·9	5·6
Mean Amplitude (μ)	3·4	1·9	1·2	0·8	0·5	0·3	0·3	0·3	0·9	1·0	0·7	0·7	1·0
Maximum Amplitude (μ)	7·9	6·2	3·3	2·5	2·2	1·3	0·8	0·7	3·0	2·7	2·2	2·3	7·9 Jan.
Maximum Amplitude (day and hour)	25:18	17:0	2:18	1:0	20:0	29:0	19:0	25:6	30:12	1:0	4:0	7:18	25:18

The greatest amplitude of the year was 7·9 μ on 25th January at 18h. Amplitudes of 5 μ or more were recorded on the following dates:- January, 12th, 15th, 16th, 21st, 22nd, 24th, 25th and 26th; February, 16th and 17th.

For comparison, the following table gives for Kew the monthly and annual means of amplitude and period of the north-south component microseisms from 1926 to 1934, and of the vertical component microseisms from 1935 to 1937.

Kew Observatory. Microseisms, 1926-37

Component	Years			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.	Year
N-S	1926-34	Mean Period	(sec)	6·5	6·1	5·9	5·4	4·9	4·7	4·4	4·6	5·0	5·4	6·0	6·4	5·5
		Mean Amplitude	(μ)	2·3	1·6	1·4	0·9	0·5	0·4	0·3	0·5	0·6	1·1	1·6	2·0	1·1
Z	1935-37	Mean Period	(sec)	6·4	6·2	5·7	5·6	5·1	4·8	4·7	4·8	5·3	6·1	6·3	6·2	5·6
		Mean Amplitude	(μ)	2·4	2·3	1·1	0·8	0·4	0·3	0·3	0·2	0·7	1·3	1·4	1·8	1·1

The means of amplitude and period for the several hours are given in the following table. The values entered are those for the vertical component during 1937, together with averages for the vertical component from 1935 to 1937 and for the north-south component from 1926 to 1934.

Component	Years		0h.	6h.	12h.	18h.
Z	1937	Amplitude (μ) Period (sec)	0·99 5·65	0·98 5·60	1·03 5·62	1·01 5·61
Z	1935-37	Amplitude (μ) Period (sec)	1·08 5·62	1·07 5·61	1·10 5·61	1·09 5·61
N-S	1926-34	Amplitude (μ) Period (sec)	1·10 5·46	1·09 5·45	1·06 5·42	1·08 5·45

It may be noticed that there is no regular diurnal variation in the amplitude or period of the microseisms when recorded by frictionless seismographs.

The results obtained from the special investigation for 1932 showed that, within the accuracy of the measurements, the annual means of amplitude and period were equal for the three components. Accordingly the value of the data for determining secular variations was not impaired by the change from the north-south to the vertical component. The annual means of amplitude and period from 1926 to 1937 are:-

	N-S Component									Z Component		
Year	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Mean amplitude (μ)	1·1	1·3	1·3	1·3	1·1	0·9	0·9	0·8	0·9	1·1	1·2	1·0
Mean period (sec)	5·5	5·4	5·5	5·3	5·4	5·3	5·6	5·5	5·6	5·7	5·6	5·6

SEISMOLOGICAL DIARY

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
Jan.			h. m. s.	s.	μ	km.	
2		e	14 18	...	...	...	Mediterranean Sea.
		F	... 25	...	...	...	32.5° N., 23.5° E.
							(Strasbourg.)
2		e	23 22	...	...	...	
		F	30	...	...	...	
5	E	eS	22 1 42	...	...	...	
	NE	eL	20	...	...	...	South of Japan.
	Z	eL	27	...	...	...	31° N., 132° E.
	N	M	30 22	20	−12	...	(Zinsen.)
	E	M	38 3	23	−18	...	
	Z	M	38 5	11	+11	...	
		F	23 5	...	...	...	
7	NE	eL	6 53	...	...	...	East of Japan.
	Z	eL	7 0	...	...	...	39° N., 142 E.
	N	M	3 32	22	−13	...	(Zinsen.)
		F	20	...	...	...	
7	Z	iP	13 31 37	...	...	7490	NE, e. Compression.
	Z	i	31 40	...	...	...	
	ZNE	iPP	34 10	...	...	...	Confused by micro-
	ZE	iPPP	35 57	...	...	...	seisms.
	Z	i	40 3	...	...	...	Eastern Tibet.
	N	iS	40 31	...	...	...	35° N., 97° E.
	E	i	40 37	...	...	...	(U.S.C.G.S.)
	ZE	iSP	40 40	...	...	...	
	N	iSS	44 43	...	...	...	
	E	i	44 51	...	...	...	
	Z	i	46 17	...	...	...	
	ZNE	iSSS	48 5	...	...	...	
	ZNE	L	50	...	...	...	
	N	M	14 3 9	19	>260*	...	*Maxima passing be-
	Z	M	3 34	18	−350	...	yond limits of
	E	M	6 33	20	>200*	...	registration.
	ZNE	eL_2	15 49	...	...	...	Via antipodes.
	N	M	59 7	20	+ 8	...	
	Z	M	59 20	20	+15	...	
	E	M	59 27	20	+16	...	
		F	17 15	...	...	...	
8	ZNE	eL	16 8	...	...	...	
		F	30	...	...	...	
11	—	—	14 12 to	...	...	...	No records.
			14 31	...	...	...	
19		e	23 2	...	...	...	Confused by micro-
		F	15	...	...	...	seisms.
23		eSS	11 33	...	...	...	
	NE	L	50	...	...	...	Confused by micro-
	Z	L	59	...	...	...	seisms.
	E	M	12 0 30	31	−36	...	North of Solomon
	N	M	4 56	28	−54	...	Islands.
		F	13 25	...	...	...	1° S., 157° E.
							(Strasbourg.)
25	Z	iPP	6 56 12	...	...	15000	Confused by micro-
	Z	i	56 27	...	...	...	seisms.
	NE	ePS	7 6 29	...	...	...	
	NE	ePPP	8 26	...	...	...	By path greater than
	N	eSS	14 4	...	...	...	180°. Solomon
	E	iPSS	14 26	...	...	...	Islands.
	NE	iSSS	19 25	...	...	...	11° S., 163° E.
	ZNE	L	39	...	...	...	(J.S.A.)
	N	M	49 56	25	+61	...	
	E	M	58 36	20	+29	...	
		F	9 35	...	...	...	
Feb.							
1	NE	eL	10 14	...	...	...	
	Z	eL	21	...	...	...	
		F	55	...	...	...	
1		e	21 47	...	...	...	
		F	22 22	...	...	...	
7	NE	eS	5 3 13	...	...	...	Pacific ocean near
	ZNE	eL	19	...	...	...	Northern California.
		F	50	...	...	...	40° N., 125° W.
							(J.S.A.)
10	ZNE	eL	8 22	...	...	...	
	N	M	24 56	14	+ 9	...	Tunis.
	E	M	25 44	13	+11	...	34° N., 11°E.
		F	45	...	...	...	(U.R.S.S.)

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
Feb.			h. m. s.	s.	μ	km.	
12		e	6 5	...	...	...	Very small.
		F	30	...	...	...	Gilbert Islands.
							3° N., 173° E.
							(U.R.S.S.)
18	—	—	9 31 to	...	...	...	No records.
			16 58	...	...	...	
21	Z	iP	7 14 53	...	...	8850	Dilatation. NE, e.
	ZNE	iP_cP	15 1	...	...	...	
	ZNE	i	15 18	...	...	...	Kurile Islands.
	Z	i	16 51	...	...	...	45° N., 148° E.
	ZNE	iPPPP	21 23	...	...	...	(U.S.C.G.S.)
	N	iS	24 56	...	...	...	
	ZE	i	25 8	...	...	...	
	NE	i	25 12	...	...	...	
	ZNE	iPPS	26 4	...	...	...	
	ZNE	i	27 8	...	...	...	
	N	i	30 50	...	...	...	
	ZE	i	31 16	...	...	...	
	NE	eL	36	...	...	...	
	Z	i(SKKP)	36 43	...	...	...	
	Z	eL	40	...	...	...	
	Z	M	55 52	20	+120	...	
	N	M	8 2 39	15	+125	...	
	E	M	12 39	20	+125	...	
		F	12 0	...	...	...	
21	NE	eS	22 51 24	...	...	...	Kurile Islands.
	NE	eL	23 13	...	...	...	45° N., 151° E.
	Z	eL	17	...	...	...	(U.R.S.S.)
		F	45	...	...	...	
22	E	eS	3 16 27	...	...	...	No "Z" record.
	NE	eL	37	...	...	...	East of Japan.
		F	4 15	...	...	...	41° N., 146° E.
							(U.R.S.S.)
22	NE	eL	5 19	...	...	...	No "Z" record.
		F	50	...	...	...	Kurile Islands.
							47° N., 155° E.
							(U.R.S.S.)
22	Z	eP	13 36 12	...	...	...	Horizontal compon-
	NE	eL	14 4	...	...	...	ents disturbed by
	E	M	8 33	27	+ 6	...	wind.
	Z	eL	10	...	...	...	KurileIslands.
		F	50	...	...	...	45° N., 152° E.
							(U.R.S.S.)
23	Z	iP	1 0 30	...	...	9050	Compression. NE, e.
	N	iSKS	10 33	...	...	...	
	E	iS	10 43	...	...	...	Kurile Islands.
	N	eSS	16 27	...	...	...	45° N., 152° E.
	NE	eL	30	...	...	...	(U.R.S.S.)
	E	M	33 31	24	−14	...	
	Z	eL	34	...	...	...	
	N	M	38 21	18	+12	...	
	Z	M	44 13	16	+ 8	...	
		F	2 55	...	...	...	
27	ZNE	eL	2 7	...	...	...	East of Japan.
		F	20	...	...	...	39° N., 146° E.
							(U.R.S.S.)
Mar.							
9	E	iP	15 52 24	...	...	9030	Wood-Anderson record.
	E	eP	52 25	...	...	...	Galitzin record.
	Z	iP	52 26	...	...	...	Compression.
	ZE	i	52 33	...	...	...	
	NE	eS	16 2 36	...	...	...	SS Large movement.
	E	eSS	7 56	...	...	...	Caribbean Sea.
	ZNE	eL	14	...	...	...	11° N., 83° W.
	E	M	20 4	24	+15	...	(J.S.A.)
	Z	M	23 3	19	+12	...	Focal depth at least
		F	17 25	...	...	...	50 km.
10		e	5 30	...	...	...	Very small.
		F	45	...	...	...	
14	E	iSKS	12 19 56	...	...	11000	Destructive in Taltal,
	ZE	iSP	22 12	...	...	...	Chile.
	NE	eL	35	...	...	...	24° S., 71° W.
	Z	eL	41	...	...	...	(J.S.A.)
	E	M	48 0	25	−14	...	Focal depth about
	Z	M	48 16	26	−16	...	80 km.
		F	13 35	...	...	...	

SEISMOLOGICAL DIARY

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
			h. m. s.	s.	μ	km.	
Mar. 16	ZNE	eL	16 42	...	...	...	Felt in Northern Luzon.
		F	17 0	...	...	...	21° N., 124° E. (U.R.S.S.)
17		e	14 46	...	...	...	Very small.
		F	15 0	...	...	...	
19	ZNE	eL	19 3	...	...	...	Pacific coast of Chile. (J.S.A.)
		F	40	...	...	...	
21		e	16 47	...	...	...	Felt in Assam.
		F	17 15	...	...	...	25° N., 91° E. (U.R.S.S.)
21	ZNE	eL	20 12	...	...	...	Japan.
		F	40	...	...	...	40° N., 142° E. (Zinsen.)
23	ZNE	eSP	1 14 54	...	...	13500	West of Cape Horn.
	E	eSS	21 49	...	...	...	57°S., 75° W. (U.R.S.S.)
	NE	eSSS	26 19	...	...	...	
	ZNE	eL	42	...	...	...	
	E	M	45 46	28	+ 5	...	
	Z	M	48 36	20	+ 5	...	
	N	M	49 6	21	+ 3	...	
		F	2 25	...	...	...	
24	—	—	9 23 to	...	...	...	No records.
			11 23	...	...	...	
24	Z	eL	14 44	...	...	...	Very small.
		F	55	...	...	...	
25	ZNE	eL	17 30	...	...	...	Felt in Southern California.
	N	M	33 35	17	+ 4	...	33.5° N., 116.6° W.
		F	55	...	...	...	(Pasadena.)
28	ZNE	eL	19 1	...	...	...	
		F	15	...	...	...	
29	ZNE	eL	6 56	...	...	...	
		F	7 20	...	...	...	
29	ZNE	e	8 13 0	...	...	...	
	ZNE	e	13 51	...	...	...	
	ZE	e	15 23	...	...	...	Surface waves very small.
		F	55	...	...	...	
April 1	ZNE	eL	18 36	...	...	...	Felt in Apia.
		F	19 0	...	...	...	
3		e	4 54	...	...	...	Bismarck Archipelago
		F	6 5	...	...	...	6° S., 150°E. (U.R.S.S.)
3		e	12 7	...	...	...	Felt at Taihoku,
		F	25	...	...	...	Formosa.
3		e	22 0	...	...	...	Felt in Western
		F	20	...	...	...	Luzon.
5	Z	iPP	7 16 26	...	...	13000	Dilatation. NE, e.
	Z	iSP	26 5	...	...	...	Felt in New Guinea.
	NE	iPS	26 8	...	...	...	2° S., 134° E.
	Z	iPPS	27 13	...	...	...	(J.S.A.)
	N	iSS	32 35	...	...	...	
	NE	iPPP	33 26	...	...	...	By path greater than 180°.
	NE	eSSS	38	...	...	...	
	NE	eL	43	...	...	...	
	Z	eL	49	...	...	...	
	E	M	55 32	28	+48	...	
	N	M	56 25	30	−61	...	
	Z	M	8 11 55	16	+18	...	
		F	9 55	...	...	...	
7		e	18 47	...	...	...	Persia.
		F	19 15	...	...	...	35° N., 51° E. (U.R.S.S.)
9		e	14 55	...	...	...	Very small.
		F	15 10	...	...	...	Felt at Taihoku, Formosa.

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
			h. m. s.	s.	μ	km.	
April 11		e	6 25	...	...	...	
		F	55	...	...	...	
11		e	16 48	...	...	...	Felt at Taihoku, Formosa.
		F	17 0	...	...	...	
12	—	—	8 37 to	...	...	...	No records.
			14 18	...	...	...	
16	ZNE	ePKP$_1$	3 20 42	...	...	16000	South of Fiji Islands.
	Z	i	20 52	...	...	...	22° S., 179° E.
	N	iPKP$_2$	20 58	...	...	...	(J.S.A.)
	ZN	i	21 6	...	...	...	Focal depth about
	Z	ipPKP$_2$	22 34	...	...	...	390 km.
	ZNE	iPP	24 32	...	...	...	PKP$_2$ and pPKP$_2$ by
	Z	ipPP	25 54	...	...	...	path of greater
	Z	iPPP	28 6	...	...	...	deviation.
	Z	i	33 8	...	...	...	PP Large movement.
	Z	iPSKS	34 30	...	...	...	
	N	iSP	34 43	...	...	...	
	Z	iPS	35 55	...	...	...	
	NE	iSS	43 6	...	...	...	
	N	i	43 43	...	...	...	
	NE	isSS	45 13	...	...	...	SS Large movement.
	E	i	45 54	...	...	...	
	N	i	47 2	...	...	...	
	NE	iSSS	48 38	...	...	...	
	ZNE	eL	51	...	...	...	
	E	M	4 1 47	22	(+120)	...	L poorly developed.
	N	M	14 41	26	+65	...	
	Z	M	40 17	19	−17	...	
		F	7 15	...	...	...	
28		e	2 48	...	...	...	Asia Minor.
		F	3 0	...	...	...	37° N., 31° E. (Strasbourg).
29		e	1 16	...	...	...	
		F	55	...	...	...	
29	ZNE	iP	18 16 13	...	...	2370	Atlantic Ocean.
	Z	i	16 17	...	...	...	53° N., 34° W.
	NE	iS	20 8	...	...	...	(J.S.A.)
	ZNE	L	21	...	...	...	
	E	M	22 41	17	(−30)	...	
	Z	M	22 55	16	+18	...	
		F	— — —	...	...	...	Overlapped by next shock.
29	ZNE	iP	19 4 6	...	...	8150	
	NE	iS	13 33	...	...	...	Aleutian Islands.
	NE	iSS	18 24	...	...	...	54° N., 161° W.
	NE	L	22	...	...	...	(J.S.A.)
	Z	L	29	...	...	...	
	E	M	30 23	30	(−53)	...	
	Z	M	34 31	24	−35	...	
		F	— — —	...	...	...	Overlapped by next shock.
29	NE	i(S)	20 39 18	...	...	...	Maritime Province,
	ZNE	eL	21 16	...	...	...	Siberia.
		F	22 30	...	...	...	47° N., 136° E. (Chiufeng.)
May 1	ZNE	eL	13 21	...	...	...	
		F	45	...	...	...	
1	ZNE	eL	16 13	...	...	...	Very small.
		F	30	...	...	...	
1/2	ZNE	eL	23 55	...	...	...	South Atlantic Ocean.
		F	0 35	...	...	...	15° S., 26° W. (U.R.S.S.)
4	E	eS	5 28 47	...	...	...	
	NE	eL	36	...	...	...	South of Alaska.
	Z	eL	41	...	...	...	59° N., 153° W.
	E	M	42 34	30	(−8)	...	(J.S.A.)
	Z	M	51 5	17	+ 4	...	
		F	6 50	...	...	...	
7	Z	eP	14 22 26	...	...	...	Compression.
	ZNE	eL	51	...	...	...	South of Alaska.
		F	15 20	...	...	...	58° N., 161° W. (J.S.A.) Focal depth 80-90 km.

International Seismological Centre

SEISMOLOGICAL DIARY

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
			h. m. s.	s.	μ	km.	
May 7		e	18 53	...	...	...	Very small.
		F	19 20	...	...	...	
7	ZNE	eL	22 47	...	...	...	
		F	23 5	...	...	...	
9	ZN	iP	14 58 58	...	...	8850	Compression.
	NE	eS	15 9 1	...	...	...	
	E	i	9 10	...	...	...	Z, e.
	NE	eL	28	...	...	...	Kurile Islands.
	Z	eL	31	...	...	...	46° N., 149° E.
	E	M	31 47	23	(+12)	...	(J.S.A.)
	Z	M	39 41	19	− 6	...	
		F	17 45	...	...	...	
12	Z	iPP	3 5 34	...	...	13000	Compression. NE, e.
	E	ePS	15 8	...	...	...	Onset doubtful.
	NE	eL	36	...	...	...	North of New Guinea.
	Z	eL	44	...	...	...	3° S., 144° E.
		F	4 25	...	...	...	(U.R.S.S.)
12		e	13 55	...	...	...	Very small. West of
		F	14 45	...	...	...	Sumatra.
							1° S., 97° E.
							(U.R.S.S.)
13		e	10 0	...	...	...	Very small.
		F	20	...	...	...	
16	Z	e(PKP)	11 59 14	...	...	...	
	ZNE	eL	13 0	...	...	...	
		F	14 15	...	...	...	
21	NE	e(SKS)	2 21 23	...	...	...	East of Japan.
	NE	eL	42	...	...	...	35° N., 147° E.
	Z	eL	50	...	...	...	(U.R.S.S.)
		F	3 10	...	...	...	
23	Z	eP	8 22 33	...	...	6600	Atlantic Ocean.
	NE	iS	30 41	...	...	...	0°, 25° W.
	NE	eL	35	...	...	...	(Strasbourg).
	Z	eL	40	...	...	...	
		F	9 20	...	...	...	
23	Z	eP	11 2 38	...	...	2670	Asia Minor.
	ZNE	iS	6 56	...	...	...	38° N., 28° E.
	ZNE	L	10	...	...	...	(U.R.S.S.)
		F	40	...	...	...	
24	E	e	1 4	...	...	...	
	NE	eL	8	...	...	...	
	Z	eL	16	...	...	...	
		F	55	...	...	...	
27	NE	eL	5 16	...	...	...	South of Japan.
	Z	eL	26	...	...	...	29° N., 137° E.
		F	6 0	...	...	...	(U.R.S.S.)
28	Z	iP	15 47 42	...	...	9000	Compression. No "N-S"
	Z	epP	48 20	...	...	...	or "E-W" records.
		F	16 40	...	...	...	Surface waves very small.
							Gulf of Tehuantepec.
							15° N., 93° W.
							(U.R.S.S.)
							Focal depth about
							120 km. (St. Louis.)
28	NE	i(S)	20 18 30	...	...	...	South of Japan.
	NE	i	19 18	...	...	...	24° N., 143° E.
	NE	eL	44	...	...	...	(Hukuoko.)
	Z	eL	52	...	...	...	
		F	21 30	...	...	...	
29	ZNE	eL	15 32	...	...	...	South of Asia Minor.
		F	50	...	...	...	36° N., 30° E.
							(Strasbourg.)
31		e	6 13	...	...	...	Very small.
		F	20	...	...	...	South of Persia.
							28° N., 57° E.
							(U.R.S.S.)
31	ZNE	e(PPS)	16 4 10	...	...	...	North of Solomon
	NE	eL	29	...	...	...	Islands.
	Z	eL	34	...	...	...	3° S., 159° E.
		F	17 35	...	...	...	(U.R.S.S.)

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
			h. m. s.	s.	μ	km.	
June 1	ZNE	eL	15 49	...	...	...	Very small.
		F	16 15	...	...	...	
2	ZNE	iP	1 26 34	...	...	2360	
	ZE	eS	30 28	...	...	...	
	ZNE	L	31	...	...	...	
		F	2 10	...	...	...	
7		e	16 45	...	...	...	
		F	17 10	...	...	...	
7		e	22 6	...	...	...	Felt in Switzerland.
		F	10	...	...	...	46.5° N., 10.3° E.
							(Strasbourg.)
8	ZE	iP	22 41 27	...	...	9000	Compression.
	ZE	ipP	42 12	...	...	...	South of Mexico.
	E	isP	42 30	...	...	...	16° N., 93° W.
	NE	iS	51 9	...	...	...	(J.S.A.)
	E	isS	52 25	...	...	...	Focal depth about
	ZNE	eL	23 2	...	...	...	200 km.
		F	55	...	...	...	L poorly developed.
13/14	ZNE	eP	23 36 20	...	...	9230	Pacific Ocean south of
	Z	ePP	39 33	...	...	...	Mexico.
	ZNE	eS	46 42	...	...	...	15° N., 98° W.
	NE	eL	0 7	...	...	...	(J.S.A.)
	Z	eL	10	...	...	...	
		F	45	...	...	...	
14	Z	e(PKP)	13 30 9	...	...	...	Loyalty Islands.
	ZNE	eL	14 24	...	...	...	22° S., 171° E.
		F	15 50	...	...	...	(Manila)
19	Z	ePKP	17 26 8	...	...	...	New Hebrides.
	NE	e(SSS)	49 2	...	...	...	12° S., 171° E.
		F	18 15	...	...	...	(Chiufeng.)
							Probably deep focus.
21	ZNE	iP	15 26 2	...	...	9800	Compression.
	ZNE	i	26 14	...	...	...	Amplitudes of iP as
	ZNE	eSKS	36 28	...	...	...	read in mm :—
	ZNE	iS	36 51	...	...	...	Z. N. E.
	Z	iSP	38 0	...	...	...	+3·8 +0·3 +1·0
	E	iSS	43 7	...	...	...	Azimuth about WSW
							Destructive in northern Peru.
	Z	i	43 27	...	...	...	Possibly SPSP.
	N	L	51	...	...	...	
	ZE	L	56	...	...	...	7° S., 79° W.
	E	M	58 47	29	+90	...	(Strasbourg.)
	N	M	59 20	27	+70	...	
	Z	M	16 5 57	18	−83	...	
		F	20 30	...	...	...	
22		e	6 2	...	...	...	Very small. Turkestan
		F	45	...	...	...	41° N., 71° E.
							(U.R.S.S.)
24	ZE	iP(I)	13 23 47	...	...	8820	Compression.
	ZE	iP(II)	25 38	...	...	...	
	Z	i	25 50	...	...	...	Two shocks over-
	NE	iS(II)	35 39	...	...	...	lapping : epicentres
	N	L	47	...	...	...	in the Pacific Ocean
	ZE	L	52	...	...	...	near Costa Rica.
	Z	M	14 1 4	17	− 4	...	8° N., 84° W.
		F	55	...	...	...	(U.S.C.G.S.)
24	ZE	iP	20 6 8	...	...	3160	Compression to ENE.
	ZNE	iS	11 2	...	...	...	
	E	i	12 52	...	...	...	North Atlantic.
	NE	i	13 22	...	...	...	36° N., 36° W.
	N	i	13 37	...	...	...	(U.S.C.G.S.)
	ZNE	L	15	...	...	...	
	Z	M	16 11	16	− 7	...	
		F	21 30	...	...	...	
26		e	19 33	...	...	...	Felt in Apia.
		F	50	...	...	...	
28	ZNE	eL	20 39	...	...	...	
		F	50	...	...	...	
30		e	14 55	...	...	...	East of Mindanao.
		F	15 30	...	...	...	7° N., 127° E.
							(U.R.S.S.)

SEISMOLOGICAL DIARY

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
July			h. m. s.	s.	μ	km.	
1		e	6 42	...	...	...	
		F	7 10	...	...	...	
1	ZE	iP	9 59 34	...	...	2330	Dilatation.
	N	iS	10 3 25	...	...	...	North Atlantic Ocean.
	ZNE	L	4	...	...	...	
		F	40	...	...	...	
1	ZE	iP	12 2 52	...	...	9970	Compression.
	Z	iPP	6 34	...	...	...	North-west Sumatra.
	E	iSKS	13 25	...	...	...	5° N., 95° E.
	NE	iS	13 49	...	...	...	(Strasbourg.)
	ZN	eSP	14 40	...	...	...	
	NE	eL	33	...	...	...	
	Z	eL	44	...	...	...	
	Z	M	53 27	17	+ 5	...	
	ZNE	eL_2	14 9	...	...	...	Via antipodes.
		F	40	...	...	...	
2	ZN	iPKP	2 56 38	...	...	15900	Dilatation.
	Z	iPP	59 40	...	...	...	New Hebrides.
	N	iPKS	3 0 19	...	...	...	15° S., 168° E.
	Z	iPPP	11 44	...	...	...	(J.S.A.)
	NE	eSS	18 20	...	...	...	PPP By path greater
	NE	eL	37	...	...	...	than 180°.
	Z	eL	45	...	...	...	
	E	M	59 36	23	+ 8	...	
	N	M	4 3 25	19	− 9	...	
	Z	M	9 2	19	+10	...	
		F	5 35	...	...	...	
4	Z	iPKP	6 15 4	...	...	15000	Dilatation.
	Z	iPP	17 47	...	...	...	Solomon Islands.
	N	iPKS	18 17	...	...	...	13° S., 163° E.
	ZN	i	18 33	...	...	...	(U.S.C.G.S.)
	N	eL	40	...	...	...	
	ZE	eL	45	...	...	...	
		F	– – –	...	...	...	Overlapped by next shock.
4	Z	i	7 1 32	...	...	...	
	ZNE	eL	15	...	...	...	
	N	M	19 26	20	−10	...	
	Z	M	19 50	18	+ 9	...	
		F	10 40	...	...	...	
6		e	7 3	...	...	...	Not very distant.
		F	15	...	...	...	
9	NE	i(Pg)	1 43 45	...	...	(180)	Very small. Felt
	NE	i(Sg)	44 7	...	...	...	around Birmingham.
		F	45	...	...	...	
9		e	17 50	...	...	...	Very small.
		F	18 5	...	...	...	
10	Z	e(PP)	21 2 22	...	...	...	
	N	eL	35	...	...	...	
	ZE	eL	43	...	...	...	
		F	22 30	...	...	...	
11	Z	eP	13 52 31	...	...	9830	Japan. (Hukuoko.)
	Z	ePP	56 2	...	...	...	
	N	eSKS	14 2 55	...	...	...	
	ZE	eS	3 21	...	...	...	
	NE	ePS	4 32	...	...	...	
	ZNE	eL	26	...	...	...	
		F	15 40	...	...	...	
11	Z	eP	17 32 4	...	...	9410	Pacific Ocean west of
	NE	iS	42 35	...	...	...	Mexico.
	N	eL	48	...	...	...	21° N., 108° W.
	ZE	eL	56	...	...	...	(J.S.A.)
		F	18 45	...	...	...	
12	Z	e	0 26 (11)	...	...	...	
	N	e	35 11	...	...	...	
	N	eL	49	...	...	...	
	ZE	eL	56	...	...	...	
		F	1 25	...	...	...	
12	N	e(S)	12 23 6	...	...	...	North Aegean Sea.
	ZNE	e	23 19	...	...	...	(Strasbourg.)
	ZNE	L	26	...	...	...	
		F	40	...	...	...	
July 14	Z	iP	22 41 13	...	...	(10500)	Compression.
	E	eSKS	52 1	...	...	...	Japan. (Hukuoko.)
	ZNE	eL	23 15	...	...	...	
		F	45	...	...	...	
16	N	eL	11 9	...	...	...	Japan. (Hukuoko.)
	ZE	eL	13	...	...	...	
		F	45	...	...	...	
17		e	17 19	...	...	...	Very small.
		F	30	...	...	...	Felt in central Italy.
19	NE	e	3 33	...	...	...	
	N	eL	50	...	...	...	
	ZE	eL	56	...	...	...	
	Z	M	4 7 35	15	+ 2	...	
		F	55	...	...	...	
19	Z	eL	10 52	...	...	...	No records of horizontal components.
	Z	M	11 2 13	20	+5	...	
		F	45	...	...	...	
19	ZNE	iP	19 47 32	...	...	9300	Compression.
	ZNE	ipP	48 14	...	...	...	
	NE	iS	57 34	...	...	...	Azimuth about west-
	Z	i	57 39	...	...	...	south-west.
	ZE	ipS	58 26	...	...	...	South of Columbia.
	ZE	isS	59 6	...	...	...	0°., 77° W.
	E	i	2 0 27	...	...	...	(U.S.C.G.S.)
	E	i	2 28	...	...	...	Focal depth about
	E	iSS	3 0	...	...	...	200 km.
	NE	isSS	4 14	...	...	...	
	N	i	5 52	...	...	...	
	E	i	7 20	...	...	...	
	E	i	8 1	...	...	...	
	ZNE	eL	10	...	...	...	
	Z	M	17 23	18	+11	...	Surface waves small.
		F	21 45	...	...	...	
20	NE	i	7 7 33	...	...	...	Felt in Yugo-Slavia.
	ZNE	i	7 50	...	...	...	44° N., 17° E.
	E	e	8 19	...	...	...	(Strasbourg.)
	Z	i	8 34	...	...	...	
	N	i	9 4	...	...	...	
	N	i	9 21	...	...	...	
	N	i	9 34	...	...	...	
	ZNE	L	10	...	...	...	
		F	20	...	...	...	
22	NE	e	13 21	...	...	...	
	ZNE	eL	36	...	...	...	
		F	14 0	...	...	...	
22	ZNE	iP	17 19 47	...	...	6830	Dilatation. Amplitudes of iP as read in mm :—
	ZNE	i	20 13	...	...	...	Z. N. E.
	ZNE	iPP	22 1	...	...	...	−2·3 +1·1 −0·2
	ZNE	iPPP	23 33	...	...	...	
	N	e	26 16	...	...	...	
	ZNE	i	26 56	...	...	...	Azimuth about north
	ZNE	iS	28 7	...	...	...	by west.
	ZE	iSP	28 17	...	...	...	Felt in Fairbanks,
	E	i	28 52	...	...	...	(Alaska).
	N	i	29 12	...	...	...	65° N., 147° W.
	N	iSS	31 56	...	...	...	(Strasbourg.)
	Z	i	32 27	...	...	...	
	N	i	33 4	...	...	...	
	E	i	35 12	...	...	...	
	E	i	35 32	...	...	...	
	ZNE	i	36 32	...	...	...	
	ZNE	L	38	...	...	...	
	E	M	39 52	32	−450	...	
	N	M	44 28	22	+200	...	
	Z	M	47 5	18	+140	...	
		F	21 50	...	...	...	
25	Z	e(P)	13 23 49	...	...	...	
	Z	e(PP)	26 13	...	...	...	
	ZNE	eL	46	...	...	...	
		F	14 40	...	...	...	
26	ZNE	iP	3 59 10	...	...	8800	Compression.
	ZNE	ipP	59 34	...	...	...	Amplitudes of iP as
	NE	iS	4 9 2	...	...	...	read in mm :—
	Z	iS	9 4	...	...	...	Z. N. E.
	E	iSKS	9 16	...	...	...	+4·2 (−0·3) +1·9

SEISMOLOGICAL DIARY

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
July			h. m. s.	s.	μ	km.	
26	Z	i	9 53	...	...	...	Azimuth about west
cont.	E	isS	10 1	...	...	...	by north. Destructive
	N	eL	20	...	...	...	in Maltrata and
	ZE	L	24	...	...	...	Jalapa, Mexico.
	Z	M	33 53	18	+21	...	20° N., 96° W.
	E	M	34 0	18	−22	...	(U.S.C.G.S.)
		F	6 55	...	...	...	Focal depth about
							100 km.
26		e	9 25	...	...	...	
		F	10 10	...	...	...	
26	Z	iP	20 9 3	...	...	9300	Compression. NE, e.
	ZNE	iPcP	9 10	...	...	...	Amplitudes in mm of
	ZNE	ipP	9 28	...	...	...	movements at
	ZNE	iPP	12 22	...	...	...	20h. 9m. 10s.
	ZNE	iPPP	14 16	...	...	...	Z. N. E.
							−6·2 +1·1 +0·7
							Azimuth about north-
							east by north.
	N	iS	19 25	...	...	...	Small.
	NE	ipS	19 31	...	...	...	
	ZNE	isS	19 50	...	...	...	Japan.
	Z	ePS	20 11	...	...	...	37° N., 141° E.
	N	eSSS	28 35	...	...	...	(Strasbourg.)
	NE	L	36	...	...	...	Focal depth about
	Z	L	39	...	...	...	100 km.
	E	M	42 12	28	+ 25	...	
	Z	M	48 17	23	+ 58	...	
	N	M	48 24	22	+ 50	...	
		F	22 35	...	...	...	
30		e	14 23	...	...	...	
		F	16 35	...	...	...	
31		e	11 40	...	...	...	Very small.
		F	12 10	...	...	...	
31	ZNE	eP	20 47 39	...	...	8540	Felt in Kiang-Si Pro-
	Z	e	57 13	...	...	...	vince, China.
	NE	iS	57 26	...	...	...	38° N., 114° E.
	NE	e	21 5 55	...	...	...	(Bombay.)
	Z	e	13 28	...	...	...	
	NE	L	14	...	...	...	
	Z	L	19	...	...	...	
	N	M	19 2	17	+ 53	...	
	E	M	19 51	15	+ 49	...	
	Z	M	24 44	13	+ 41	...	
		F	23 20	...	...	...	
Aug. 1	ZNE	eP	10 52 57	...	...	8500	
	Z	e	11 2 (33)	...	...	...	
	ZNE	iS	2 42	...	...	...	Repetition from
	E	e	11 33	...	...	...	Chinese earthquake
	Z	e	18 44	...	...	...	of July 31d. 20h.
	NE	L	19	...	...	...	
	Z	L	24	...	...	...	
	N	M	24 18	17	+ 42	...	
	E	M	28 1	15	− 20	...	
	Z	M	29 56	13	+ 23	...	
		F	13 5	...	...	...	
2	ZNE	eL	10 31	...	...	...	Sicily. (Strasbourg.)
		F	11 5	...	...	...	
2	ZN	iP	15 57 40	...	...	8550	Compression.
	NE	eS	16 7 28	...	...	...	
	ZNE	eL	23	...	...	...	Sea of Okhotsk.
	Z	M	37 7	20	+ 4	...	(Hukuoko.)
		F	17 20	...	...	...	
4/5	ZNE	iP	23 48 11	...	...	9170	Compression.
	Z	ePP	51 46	...	...	...	
	NE	iS	58 30	...	...	...	Bay of Bengal.
	NE	i	58 51	...	...	...	10° N., 95° E.
	N	iPS	58 59	...	...	...	(Strasbourg.)
	ZNE	eL	0 30	...	...	...	
		F	1 25	...	...	...	
5	ZNE	e	15 2 50	...	...	...	
	Z	i	5 3	...	...	...	New Guinea.
	ZNE	i	5 26	...	...	...	7° S., 149° E.
	Z	i	7 2	...	...	...	(Strasbourg.)
	Z	e	8 10	...	...	...	
	Z	e	13 43	...	...	...	

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
Aug.			h. m. s.	s.	μ	km.	
5	Z	i	15 59	...	...	...	
cont.	N	e	23 7	...	...	...	
	N	e	27 36	...	...	...	
	ZNE	eL	30	...	...	...	
	Z	M	52 59	25	+ 7	...	
		F	17 20	...	...	...	
9		e	13 30	...	...	...	Very small.
		F	14 10	...	...	...	
9		e	14 53	...	...	...	Near Bonin Islands.
		F	16 15	...	...	...	26° N., 140° E.
							(Bombay.)
11	Z	iP	1 9 32	...	...	12000	Dilatation. NE, e.
	ZE	epP	11 42	...	...	...	
	ZNE	iPP	14 20	...	...	...	East of Java.
	ZE	ipPP	16 18	...	...	...	7° S., 116° E.
	NE	iSKS	19 12	...	...	...	(Strasbourg.)
	NE	i	20 20	...	...	...	Focal depth about
	ZNE	ipSKS	22 48	...	...	...	600 km.
	ZNE	iPS	24 0	...	...	...	SKS Large movement.
	Z	isPS	26 38	...	...	...	
	NE	i	26 51	...	...	...	
	Z	i	27 48	...	...	...	
	ZNE	iSS	28 52	...	...	...	
	ZNE	eL	33	...	...	...	
	Z	M	2 6 45	18	- 13	...	
		F	4 15	...	...	...	
12		e	1 10	...	...	...	Very small.
		F	35	...	...	...	
13		e	12 8	...	...	...	Very small.
		F	13 50	...	...	...	
15	NE	e	5 16	...	...	...	China Sea. (Bombay.)
	ZNE	eL	21	...	...	...	
	Z	M	26 20	17	+ 5	...	
		F	45	...	...	...	
15		e	12 18	...	...	...	Very small. Tibet.
		F	40	...	...	...	30° N., 89° E.
							(Bombay.)
16*	Z	e	11 55	...	...	...	
		F	12 35	...	...	...	
17*	Z	eL	14 1	...	...	...	
		F	40	...	...	...	
18*	Z	eP	15 16 0	...	...	...	
	Z	eL	33	...	...	...	
		F	16 10	...	...	...	
20	ZN	iP	6 51 43	...	...	11000	Compression.
	ZN	iPP	55 45	...	...	...	
	N	ePS	7 4 39	...	...	...	Indian Ocean.
	N	eSS	9 24	...	...	...	24° S., 71° E.
	Z	e	10 5	...	...	...	(Bombay.)
	ZNE	eL	27	...	...	...	Surface waves small
		F	8 20	...	...	...	and irregular.
20*	Z	eP	12 12 51	...	...	...	
	Z	i	13 23	...	...	...	
	Z	i	14 52	...	...	...	
	Z	i	17 54	...	...	...	Destructive in Manila.
	Z	i	23 5	...	...	...	
	Z	i	25 46	...	...	...	
	Z	i	27 12	...	...	...	14° N., 122° E.
	Z	i	34 28	...	...	...	(Manila.)
	Z	i	36 59	...	...	...	
	Z	i	38 13	...	...	...	
	Z	e	38 49	...	...	...	
	Z	i	44 42	...	...	...	
	Z	L	47	...	...	...	
	Z	M	13 0 7	19	>300	...	Maximum exceeded
		F	16 55	...	...	...	limits of registration.
21		e	7 13	...	...	...	Very small.
		F	8 10	...	...	...	
21		e	11 20	...	...	...	Very small.
		F	12 15	...	...	...	

* No records of horizontal components during standardisation, etc.

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
			h. m. s.	s.	μ	km.	
Aug. 21/22	NE	e(S)	23 26 4	...	...	...	No "Z" record.
	NE	eL	43	...	...	...	Japan. (Hukuoko.)
		F	0 20	...	...	...	
22	Z	eP	11 40 59	...	...	5930	
	NE	eS	48 31	...	...	...	
	Z	eSP	48 35	...	...	...	
	ZNE	eL	54	...	...	...	
		F	12 45	...	...	...	
23	Z	e(PP)	16 57 7	...	...	...	
	ZNE	eL	17 55	...	...	...	Very small.
		F	19 15	...	...	...	
24	Z	iPKP$_1$	18 47 34	...	...	(17000)	Dilatation. NE, e.
	Z	i	47 47	...	...	...	
	NE	i	47 54	...	...	...	Tonga Islands.
	ZNE	iPKP$_2$	48 18	...	...	...	(Pasadena.)
	Z	i	48 56	...	...	...	
	Z	i	49 8	...	...	...	
	Z	eSKSP	19 1 53	...	...	...	
	N	eL	35	...	...	...	
	ZE	eL	42	...	...	...	
	Z	M	51 24	19	+ 6	...	
		F	21 25	...	...	...	
24	ZNE	eL	23 19	...	...	...	
		F	55	...	...	...	
26	ZNE	e	19 30	...	...	...	Japan.
	ZNE	eL	39	...	...	...	31° N., 131° E.
	Z	M	48 47	24	+ 9	...	(Hukuoko.)
		F	20 20	...	...	...	
31	Z	e(PKP)	2 48 17	...	...	...	
	ZNE	eL	3 40	...	...	...	
		F	4 50	...	...	...	
31	Z	iP	14 26 49	...	...	...	No records of horizontal components.
	Z	eL	44	...	...	...	
	Z	M	15 2 19	20	− 20	...	Upper Burma.
		F	16 45	...	...	...	25° N., 96° E. (Bombay.)
Sept. 1	Z	iPKP$_1$	8 58 42	...	...	17500	Compression.
	Z	i	58 54	...	...	...	
	Z	iPKP$_2$	59 26	...	...	...	By path of greater deviation. Kermadec Islands.
	Z	i	59 38	...	...	...	
	Z	iPP	9 3 6	...	...	...	
	Z	e	21 6	...	...	...	31°S., 179° W.
	N	eL	46	...	...	...	(U.S.C.G.S.)
	ZE	eL	52	...	...	...	
	N	M	10 10 23	21	+ 12	...	
	Z	M	10 28	21	− 20	...	
		F	11 20	...	...	...	
1		e	18 45	...	...	...	Japan. (Hukuoko.)
		F	55	...	...	...	
1	ZNE	eL	23 5	...	...	...	
		F	50	...	...	...	
3	Z	iP	18 59 56	...	...	8300	Dilatation. NE, e.
	ZN	iP$_c$P	19 0 16	...	...	...	
	ZNE	ipP	0 30	...	...	...	
	ZN	isP	0 53	...	...	...	Aleutian Islands.
	ZNE	iPPP	5 12	...	...	...	52° N., 177° W.
	NE	iS	9 36	...	...	...	(U.S.C.G.S.)
	E	iSP	9 54	...	...	...	Focal depth about
	Z	ipS	10 29	...	...	...	170 km.
	Z	isS	10 43	...	...	...	
	ZNE	isSP	10 59	...	...	...	
	N	isSS	15 27	...	...	...	
	E	eL	21	...	...	...	
	N	M	25 23	34	+ 71	...	
	ZN	iL	25 27	...	...	...	
	Z	M	25 36	38	−130	...	Very large.
	E	M	29 19	30	+ 54	...	
	N	M	35 59	23	+ 47	...	
	Z	M	36 17	24	+ 54	...	
	Z	eL$_2$	21 2	...	...	...	Via antipodes.
		F	22 15	...	...	...	
Sept. 4	Z	iPKP	6 34 3	...	...	...	
	NE	eL	7 23	...	...	...	
	Z	eL	27	...	...	...	
	Z	M	39 12	20	+ 10	...	
		F	8 25	...	...	...	
8	NE	i	0 11 59	...	...	...	From records of Wood-Anderson instruments. Very small. Felt around Horsham Sussex.
		F	13	...	...	...	
8	Z	eP	0 54 49	...	...	12250	
	NE	i	1 4 43	...	...	...	
	NE	iSKS	5 41	...	...	...	
	NE	eS	7 19	...	...	...	South Atlantic Ocean.
	ZN	i	8 15	...	...	...	55° S., 30° W.
	ZN	iPS	9 14	...	...	...	(Pasadena.)
	N	i	11 33	...	...	...	
	ZNE	eL	25	...	...	...	
	E	M	32 46	19	− 19	...	
	N	M	38 1	22	+ 16	...	
	Z	M	40 31	18	− 13	...	
		F	3 30	...	...	...	
9		e	17 8	...	...	...	Very small.
		F	25	...	...	...	
15	E	iP	12 44 5	...	...	(15000)	Manihiki Islands.
	NE	iPP	49 34	...	...	...	9° S., 161° W.
	E	i	49 48	...	...	...	(U.S.C.G.S.)
	NE	iPKS	50 21	...	...	...	
	E	iSS	13 6 22	...	...	...	
	NE	eL	13	...	...	...	
		F	− − −	...	...	...	
15**	—	—	13 23 to 16 58	...	...	...	No records.
16	ZE	iP	0 0 57	...	...	8900	
	E	i	7 50	...	...	...	
	NE	iS	10 44	...	...	...	Pacific Ocean near Guatemala.
	E	iS$_c$S	10 57	...	...	...	
	E	ipS	11 13	...	...	...	14° N., 92° W.
	E	iSP	11 41	...	...	...	(J.S.A.)
	N	eL	22	...	...	...	Depth of focus about
	ZE	eL	27	...	...	...	100 km.
	N	M	41 21	16	+ 10	...	
		F	1 15	...	...	...	
16†	—	—	8 25 to 17 38	...	...	...	No records.
17†	—	—	8 20 to 16 25	...	...	...	No records.
18†	—	—	8 20 to 12 53				No records.
20†	—	—	8 38 to 16 3	...	...	...	No records.
21		e	10 6	...	...	...	Celebes.
		F	11 40	...	...	...	4° N., 125° E. (Bombay.)
23	ZNE	iPKP	13 25 9	...	...	14500	Dilatation.
	ZNE	iPP	27 18	...	...	...	Solomon Islands.
	NE	i	27 39	...	...	...	7° S., 154° E.
	NE	iPKS	28 33	...	...	...	(J.S.A.)
	ZNE	i	28 41	...	...	...	
	ZNE	L	14 6	...	...	...	
	N	M	15 54	27	−35	...	
		F	16 45	...	...	...	
24†	—	—	10 30 to 12 0	...	...	...	No records.
25	ZNE	iP	4 33 57	...	...	2000	Compression. Azimuth slightly south of west.
	ZNE	iS	37 20	...	...	...	North of the Azores.
	ZNE	L	38	...	...	...	45° N., 25° W.
	N	M	39 33	11	+23	...	(Strasbourg.)
	Z	M	40 42	11	−36	...	
		F	5 25	...	...	...	

** Removal of Z seismograph to new underground house.

† Adjustment and standardisation of Galitzin instruments.

SEISMOLOGICAL DIARY

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
			h. m. s.	s.	μ	km.	
Sept. 27	NE	iSKS	9 20 16	...	...	12000	Tabulations from Wood - Anderson records. Galitzin instruments under adjustment
	NE	iS	21 11	...	...	...	
	NE	eL	48	...	...	...	
		F	11 45	...	...	...	
							Destructive in Java. 7° S., 110° E. (Strasbourg.)
27	NE	e	20 45	...	...	...	Very small.
		F	55	...	...	...	
28	NE	eS	6 43	...	...	...	Pacific Ocean near Guatemala. 14° N., 92° W. (J.S.A.)
	ZNE	eL	58	...	...	...	
	E	M	7 6 35	38	+18	...	
		F	50	...	...	...	
28	ZNE	eL	19 1	...	...	...	
		F	35	...	...	...	
29		e	12 1	...	...	...	Pacific Ocean near Columbia. 50° N., 130° W. (Pasadena.)
	ZNE	L	9	...	...	...	
		F	25	...	...	...	
30	ZNE	eL	22 58	...	...	...	South Pacific Ocean. (Pasadena.)
		F	23 25	...	...	...	
Oct. 1		e	16 22	...	...	...	Very small.
		F	35	...	...	...	
1	ZNE	eL	20 38	...	...	...	
		F	21 35	...	...	...	
5	NE	eL	6 58	...	...	...	Gulf of California. 22° N., 108° W. (U.S.C.G.S.)
	Z	eL	7 3	...	...	...	
		F	40	...	...	...	
6	—	—	9 36 to 11 40	...	...	...	No records.
6	ZNE	ePP	17 26 20	...	...	14000	New Guinea. 10° S., 150° E. (Strasbourg.)
	NE	iPKS	27 22	...	...	...	
	NE	eL	18 2	...	...	...	
	Z	eL	13	...	...	...	
		F	19 50	...	...	...	
9	ZNE	eL	19 25	...	...	...	Very small.
		F	50	...	...	...	
11	ZNE	eL	22 22	...	...	...	South America. (Pasadena.)
		F	50	...	...	...	
12	ZNE	eL	16 35	...	...	...	Central America. (Pasadena.)
		F	17 10	...	...	...	
12	ZE	eP	21 4 20	...	...	10500	
	ZE	ipP	4 46	...	...	...	
	NE	iSKS	14 46	...	...	...	
	N	iS	15 36	...	...	...	Northern Chile.
	NE	eL	30	...	...	...	24° S., 68° W.
	Z	eL	40	...	...	...	(Pasadena.)
		F	22 15	...	...	...	Depth of focus about 120 km.
17	ZNE	iP	4 59 48	...	...	9400	Japan. 36° N., 141° E. (Strasbourg.)
	ZNE	eSKS	5 10 11	...	...	...	
	NE	eL	29	...	...	...	
	Z	eL	36	...	...	...	
	E	M	39 36	23	−13	...	
		F	6 25	...	...	...	
20		e	1 53	...	...	...	Felt in northern India. 30° N., 78° E. (Bombay.)
		F	2 20	...	...	...	
23	ZNE	eL	18 21	...	...	...	Felt in New Zealand. 38° S., 179° E. (Strasbourg.)
		F	19 0	...	...	...	
24	ZNE	eL	12 0	...	...	...	Alaska. 62° N., 150° W. (U.S.C.G.S.)
		F	30	...	...	...	
25		e	12 0	...	...	...	Very small. Felt in New Zealand. Repetition from Oct. 23d. 18h.
		F	25	...	...	...	
Oct. 26		e	0 1	...	...	...	Very small. South of Kamtchatka. 48° N., 154° E. (Pasadena.)
		F	20	...	...	...	
29	N	eS	7 42 11	...	...	...	Bokhara. 39° N., 69° E. (Strasbourg.)
	ZNE	eL	53	...	...	...	
		F	8 5	...	...	...	
Nov. 10		e	7 50	...	...	...	
		F	8 15	...	...	...	
11	ZNE	eL	0 35	...	...	...	Arabian Sea. 23° N., 62° E. (Bombay.)
		F	1 20	...	...	...	
13	ZNE	eL	10 25	...	...	...	
		F	11 40	...	...	...	
14	Z	iP	11 6 56	...	...	5700	NE, e. Compression. Destructive in Chitral, North-west India. 36·5° N., 70·5° E., with focal depth 220 km. (Strasbourg.)
	ZE	iPcP	8 12	...	...	...	
	ZN	iPP	8 56	...	...	...	
	NE	iS	13 56	...	...	...	
	N	iScS	16 20	...	...	...	
	N	eSS	17 45	...	...	...	
	ZNE	L	20	...	...	...	
	N	M	26 33	13	+62	...	
		F	12 40	...	...	...	
15	NE	e(S)	21 55	...	...	...	No "Z" record. North-western Tibet. 35° N., 82° E. (Strasbourg.)
	NE	eL	22 7	...	...	...	
	N	M	10 27	13	+13	...	
		F	55	...	...	...	
18		e	3 53	...	...	...	
		F	4 20	...	...	...	
21	ZNE	L	19 39	...	...	...	Felt in Santa Maria, Azores. 37° N., 25° W. (Strasbourg.)
		F	55	...	...	...	
26	ZNE	eL	11 27	...	...	...	China. 27° N., 122° E. (Bombay.)
		F	12 0	...	...	...	
27	ZNE	eL	14 30	...	...	...	
		F	15 10	...	...	...	
28	NE	eL	6 15	...	...	...	No "Z" record. Near Sumatra. 2° S., 97° E. (Bombay.)
		F	7 0	...	...	...	
30	N	iS	1 3 43	...	...	...	Indian Ocean. 5° N., 90° E. (Strasbourg.)
	NE	eL	21	...	...	...	
	Z	eL	30	...	...	...	
	N	M	41 11	18	+10	...	
		F	2 15	...	...	...	
30	ZE	eP	13 7 31	...	...	6200	Eastern Abyssinia. 7° N., 45° E. (Strasbourg.)
	E	i	7 58	...	...	...	
	N	iS	15 18	...	...	...	
	ZNE	L	23	...	...	...	
	N	M	32 42	16	+ 29	...	
	Z	M	32 44	16	+ 21	...	
		F	14 25	...	...	...	
Dec. 4	—	—	11 8 to 13 8	...	...	...	No records.
8	Z	iP	8 45 9	...	...	9800	Observations of N and E from Wood-Anderson instruments. Horizontal Galitzin instruments not recording. Destructive in Formosa. 23·2° N., 121·3° E. (Taihoku.)
	N	i	45 24	...	...	...	
	Z	iPP	48 46	...	...	...	
	NE	eL	9 15	...	...	...	
	Z	L	22	...	...	...	
	Z	M	30 24	16	+ 99	...	
		F	10 30	...	...	...	
8	—	—	14 47 to 16 55	...	...	...	No records.

Galitzin Seismographs, three components

546 KEW OBSERVATORY Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres **1937**

Date	Compt.	Phase	G.M.T.	Period	Amplitude	Δ	Remarks
Dec.			h. m. s.	s.	μ	km.	
8	ZN	eL	21 27	...	...	...	No "E-W" record.
		F	55	...	...	...	Repetition of the
							shock at 8d. 8h.
10		e	14 9	...	...	...	
		F	– – –	...	...	...	
10	—	—	14 30 to	...	...	...	No records.
			16 51	...	...	...	
10	ZNE	i(S)	18 8 6	...	...	...	Confused by micro-
	E	i	8 44	...	...	...	seisms.
	ZNE	i	9 6	...	...	...	Northern Italy.
	ZE	i	10 50	...	...	...	Possibly L.
	E	M	10 51	14	+ 22	...	
	N	i	11 13	...	...	...	
		F	15	...	...	...	
13	—	—	9 12 to	...	...	...	No records.
			16 11	...	...	...	
13	E	iSKS	19 17 21	...	...	10500	South of Formosa.
	NE	iS	17 57	...	...	...	23° N., 120° E.
	ZNE	ePS	19 5	...	...	...	(Strasbourg.)
	NE	e	30 35	...	...	...	
	NE	eL_Q	35	...	...	...	
	E	M	43 15	22	+ 35	...	
	ZNE	L_R	44	...	...	...	
	E	M	48 36	17	+ 63	...	
	Z	M	52 18	16	+ 55	...	
		F	20 40	...	...	...	
13	ZNE	eL	23 12	...	...	...	
		F	45	...	...	...	
14	—	—	9 55 to	...	...	...	No records.
			16 50	...	...	...	
16	E	iP	17 40 35	...	...	2530	No "Z" record.
	NE	iS	44 42	...	...	...	
	NE	L	49	...	...	...	Ionian Sea.
	E	M	51 7	20	+ 10	...	36° N., 21° E.
		F	18 0	...	...	...	(Athens.)
17		e	9 50	...	...	...	Felt in Formosa.
		F	– – –	...	...	...	
17	—	—	10 15 to	...	...	...	No records.
			16 50	...	...	...	
18	ZE	iP	13 26 38	...	...	5370	Compression.
	Z	i	27 29	...	...	...	
	E	iPP	28 34	...	...	...	
	E	iS	33 40	...	...	...	Turkestan.
	NE	iSS	37 27	...	...	...	41° N., 73° E.
	NE	L_Q	44	...	...	...	(Strasbourg)
	N	M	45 55	15	− 42	...	
	E	M	45 55	15	+ 18	...	
	ZNE	L_R	46	...	...	...	
	N	M	48 52	15	− 32	...	
	E	M	48 52	15	− 41	...	
	Z	M	48 54	15	+ 48	...	
		F	14 25	...	...	...	
22	ZNE	eP	3 50 16	...	...	9400	Confused by micro-
	NE	iSKS	4 0 41	...	...	...	seisms.
	NE	L	17	...	...	...	Pacific Ocean near
	Z	L	22	...	...	...	Mexico.
	E	M	26 18	18	+ 17	...	17° N., 106° W.
		F	5 10	...	...	...	(U.S.C.G.S.)
Dec. 23	ZNE	iP	13 30 20...	...	...	9230	Compression. Ampli-
	ZNE	i	30 33	...	...	...	tudes of iP as read in
	ZNE	iPP	33 30	...	...	...	mm :—
	NE	iS	40 42	...	...	...	Z N E
	Z	i	40 53	...	...	...	+4·8 (−0·7) +2·7
	ZN	i	41 5	...	...	...	Azimuth about West
	E	iPS	41 15	...	...	...	by North. Destruc-
	Z	iPPS	41 37	...	...	...	tive in Mexico.
	N	i	45 14	...	...	...	15° N., 98° W.
	E	iSS	45 54	...	...	...	(U.S.C.G.S.)
	NE	L	49	...	...	...	
	ZNE	i	53 34	...	...	...	
	Z	L	56				
	N	M	14 5 14	23	+125	...	
	E	M	5 27	21	+330	...	
	Z	M	5 33	21	+330	...	
		F	16 45	...	...	...	
24		e	0 2	...	...	...	Repetition of preced-
		F	20	...	...	...	ing shock
24	E	e	6 36 11	...	...	10000	Confused by micro-
	E	eSKS	44 2	...	...	...	seisms.
	ZNE	iS	44 28	...	...	...	Destructive in Peru.
	N	eL	58	...	...	...	10° S., 76° W.
	ZE	eL	7 3	...	...	...	(U.S.C.G.S.)
	E	M	9 38	19	− 23	...	
	Z	M	9 52	19	+ 29	...	
		F	8 15	...	...	...	
25	ZNE	eL	10 28	...	...	...	
		F	55	...	...	...	
26	NE	eL	22 27	...	...	...	
		F	23 5	...	...	...	
27	ZNE	eL	0 21	...	...	...	
		F	50	...	...	...	
28		e	3 55	...	...	...	
		F	4 35	...	...	...	
28	ZNE	iP	6 29 8	...	...	6250	Dilatation.
	Z	ePP	31 6	...	...	...	
	N	iS	36 58	...	...	...	Atlantic Ocean.
	ZE	i	37 8	...	...	...	
	E	iS_cS	39 7	...	...	...	
	NE	e	43 22	...	...	...	
	ZNE	L	45	...	...	...	1° N., 28° W.
	Z	M	46 38	26	+ 26	...	(U.S.C.G.S.)
	N	M	47 33	14	− 17	...	
	E	M	47 46	15	+15	...	
		F	8 5	...	...	...	
30	E	e	2 13 12	...	...	...	Near Alicante, Spain.
	E	i	13 45	...	...	...	(San Fernando.)
	N	i	13 52	...	...	...	
	E	i	14 7	...	...	...	
	E	i	14 26	...	...	...	
	NE	i	14 37	...	...	...	
		F	16	...	...	...	
30	—	—	10 28 to	...	...	...	No records.
			13 4	...	...	...	
31	ZE	iP	17 53 45	...	...	9280	Compression.
	Z	iPP	56 56	...	...	...	Pacific Ocean south of
	NE	iS	18 4 9	...	...	...	Mexico.
	ZNE	eL	20	...	...	...	15° N., 98° W.
		F	19 15	...	...	...	(Strasbourg.)

MICROSEISMS OF VERTICAL COMPONENT: AMPLITUDE (μ = ·001 mm.) AND PERIOD (seconds)
Derived from readings for the period of thirty minutes centring at the exact hours, Greenwich Mean Time

1937

547 KEW OBSERVATORY:

Month	JANUARY							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	3·0	6·7	2·1	7·5	2·2	7·3	1·6	7·0
2	2·0	6·5	2·2	6·5	2·4	6·7	2·5	6·7
3	1·7	6·5	2·2	7·0	3·0	6·7	3·0	6·7
4	2·6	7·0	3·3	7·0	3·0	7·3	4·8	8·3
5	4·9	9·0	4·9	8·3	4·0	8·0	2·5	7·5
6	1·9	7·7	2·2	6·7	2·9	6·7	3·1	6·7
7	3·3	6·5	3·5	7·0	3·2	6·5	2·4	6·3
8	2·0	6·0	1·3	6·0	1·3	6·3	1·5	5·8
9	1·2	6·0	2·1	6·0	3·4	6·3	2·1	6·3
10	2·1	6·3	1·5	6·7	2·2	6·7	2·3	6·5
11	2·9	6·7	3·0	7·0	3·5	6·7	3·8	7·0
12	3·3	7·0	5·1	7·3	3·5	7·5	3·4	7·3
13	3·5	7·3	4·3	6·5	4·0	6·7	3·8	6·7
14	3·1	7·3	3·3	6·7	2·7	6·5	3·2	6·5
15	3·0	7·3	3·3	6·5	5·2	7·0	4·0	7·3
16	4·8	7·5	4·1	7·3	5·0	8·7	4·2	7·7
17	3·6	8·0	3·1	8·0	2·7	5·7	1·2	6·7
18	1·7	6·3	1·6	5·4	2·7	5·8	2·4	6·3
19	2·5	5·7	3·2	5·7	3·0	6·3	4·2	6·7
20	3·8	7·0	3·7	7·5	3·8	6·7	4·1	6·7
21	4·8	7·5	5·1	7·0	5·7	7·0	5·5	6·7
22	4·8	6·5	5·2	6·5	4·5	6·7	5·1	6·7
23	3·9	7·0	4·4	6·7	4·1	7·5	4·3	7·0
24	5·7	7·7	4·5	7·3	5·7	7·7	5·7	6·7
25	5·3	7·3	6·8	7·5	6·0	7·5	7·9	7·3
26	7·3	7·0	5·9	7·7	4·1	8·3	4·2	6·7
27	4·2	7·5	3·5	7·3	3·7	7·3	2·8	7·0
28	3·1	6·3	2·9	5·8	3·4	5·2	3·3	5·7
29	2·7	6·0	3·0	5·6	2·4	5·0	2·5	5·4
30	2·1	5·2	2·5	5·2	1·8	5·4	2·5	5·8
31	2·0	5·2	2·4	6·0	3·0	6·3	1·9	6·5
Mean	3·3	6·8	3·4	6·7	3·5	6·8	3·4	6·7
Mean for Days	A = 3·4μ ; Tp= 6·8s							

Month	FEBRUARY							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	1·2	6·3	1·6	6·0	1·5	5·7	1·3	5·8
2	1·1	5·8	0·8	6·7	1·2	7·0	1·1	7·5
3	1·2	6·7	1·0	6·0	1·3	7·3	1·7	7·8
4	2·1	7·7	2·1	7·7	2·1	7·5	2·1	6·7
5	2·3	6·5	2·3	5·6	3·2	5·6	2·8	6·0
6	2·0	6·0	1·9	6·0	2·0	5·2	1·6	5·0
7	1·7	4·8	1·1	5·0	0·9	5·6	1·1	4·8
8	0·9	5·4	1·4	5·4	1·4	4·7	1·4	5·0
9	1·8	6·0	2·1	6·3	2·2	6·0	2·7	4·8
10	2·1	6·0	1·5	5·4	1·3	5·8	1·0	5·6
11	0·9	5·6	0·8	5·2	1·0	5·0	0·7	5·0
12	0·9	4·5	0·6	6·0	0·6	4·8	0·6	4·8
13	0·5	5·2	0·6	5·0	0·7	5·8	0·8	6·0
14	1·8	5·7	2·2	7·0	3·2	6·7	2·8	6·5
15	2·4	7·0	2·3	7·0	3·0	6·7	2·1	6·9
16	2·5	7·0	2·7	6·7	3·9	7·0	5·9	8·0
17	6·2	7·7	4·0	7·5	3·3	7·5	2·5	7·7
18	1·2	7·7	0·8	7·3	1·2	6·7	1·6	6·3
19	2·5	6·7	2·6	6·3	2·4	6·7	1·8	6·7
20	2·7	6·5	3·3	7·0	2·9	7·5	2·1	7·0
21	2·6	6·5	1·3	6·7	1·3	6·0	1·3	5·5
22	1·3	5·0	0·8	5·7	1·0	5·0	0·8	5·2
23	0·7	5·6	0·8	5·4	1·0	6·0	1·0	5·8
24	1·2	5·2	1·3	6·0	2·0	5·8	2·0	5·8
25	2·5	5·4	2·4	5·7	2·2	5·6	2·4	6·0
26	3·3	5·6	2·9	5·6	2·7	5·7	2·5	5·4
27	3·1	6·3	4·0	5·7	3·4	6·3	3·5	6·5
28	3·2	7·0	3·3	6·3	2·5	6·7	2·9	6·7
Mean	2·0	6·1	1·9	6·1	2·0	6·1	1·9	6·1
Mean for Days	A = 1·9μ ; Tp= 6·1s							

Month	MARCH							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	2·3	6·3	2·5	6·5	3·1	7·0	2·2	6·7
2	2·6	6·5	3·3	7·0	3·1	6·7	3·3	6·7
3	2·1	6·3	1·9	5·7	2·1	6·0	1·6	6·5
4	1·6	6·0	1·3	5·7	1·1	5·0	1·1	5·7
5	0·8	5·0	0·8	6·0	0·9	4·8	0·6	4·6
6	0·3	5·7	0·3	5·4	0·5	7·5	0·4	8·0
7	0·4	7·7	0·9	4·5	0·7	4·0	0·7	4·3
8	0·9	4·8	0·9	4·2	1·4	4·5	1·0	5·4
9	1·1	5·2	1·0	5·0	0·8	5·8	1·1	6·3
10	1·3	7·0	1·2	6·5	1·1	6·3	0·9	6·0
11	1·0	6·5	1·1	6·0	1·6	5·0	1·8	5·2
12	1·8	5·6	1·5	5·6	1·5	5·8	1·6	6·0
13	0·9	6·0	0·9	5·6	1·0	5·6	0·9	4·8
14	1·3	5·2	2·4	5·0	2·5	5·0	1·2	5·7
15	1·2	5·0	1·3	5·7	0·8	5·2	1·0	5·8
16	1·1	5·6	1·3	5·4	2·0	5·4	1·9	5·2
17	2·6	5·4	2·2	5·8	2·8	6·7	2·1	6·5
18	1·9	6·3	1·9	6·3	1·2	6·3	1·0	5·4
19	0·9	4·8	0·7	4·8	1·2	5·0	1·0	5·0
20	0·6	4·8	0·4	4·8	0·4	5·0	0·4	4·8
21	0·5	4·6	0·4	4·3	0·6	5·0	0·5	5·0
22	0·4	6·3	0·6	5·6	0·7	5·6	0·6	5·2
23	0·8	5·6	0·6	5·6	0·5	5·0	0·4	4·8
24	0·4	5·0	0·4	4·8	0·4	5·0	0·6	5·7
25	0·8	6·3	1·1	5·7	1·0	5·6	0·7	5·2
26	0·5	5·4	0·5	5·0	0·5	6·3	0·8	6·0
27	0·7	6·5	0·5	5·8	0·4	6·0	0·6	6·0
28	0·5	5·0	0·5	4·8	0·5	5·0	0·5	4·8
29	0·4	6·7	0·4	6·0	0·3	5·7	0·5	6·3
30	0·7	5·4	0·9	6·0	1·7	5·8	2·2	6·5
31	2·5	6·7	2·5	6·7	2·4	7·0	2·5	7·3
Mean	1·1	5·8	1·2	5·5	1·3	5·6	1·1	5·7
Mean for Days	A = 1·2μ ; Tp= 5·7s							

Month	APRIL							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	2·5	6·7	1·4	6·7	1·3	6·5	1·1	7·0
2	0·9	6·5	1·0	4·6	1·3	5·4	1·3	5·2
3	1·0	5·4	0·8	5·2	0·8	5·4	0·8	5·8
4	0·9	6·7	1·0	6·7	0·6	7·3	0·8	7·0
5	0·6	7·3	1·0	8·3	2·2	8·3	2·1	9·0
6	2·3	9·0	2·2	8·0	1·2	7·3	1·9	7·5
7	1·0	8·0	0·9	6·7	0·9	6·5	1·0	7·3
8	1·1	7·0	1·3	6·7	1·2	6·3	0·9	5·7
9	0·8	6·5	0·9	6·3	0·5	5·2	0·5	5·4
10	0·4	4·3	0·5	4·6	0·5	4·7	0·5	4·6
11	0·6	4·8	0·7	4·6	0·5	5·0	0·5	4·8
12	0·5	4·8	0·5	5·2	0·5	5·3	0·5	5·4
13	0·5	5·2	0·5	5·7	0·6	5·2	0·5	5·5
14	0·3	5·7	0·5	5·7	1·2	8·0	1·6	7·7
15	1·7	7·7	1·3	7·0	1·3	7·0	1·2	6·7
16	1·2	6·5	1·1	6·3	1·0	6·0	1·1	5·2
17	1·4	5·4	1·1	6·3	1·1	5·7	0·7	5·7
18	0·8	5·7	0·9	5·2	0·6	5·7	0·6	5·3
19	0·5	5·0	0·7	5·3	0·1	4·8	0·2	5·2
20	0·4	7·7	1·3	7·3	1·2	7·0	1·1	7·0
21	1·2	7·0	1·1	6·7	1·0	7·0	1·1	6·7
22	1·0	6·3	0·7	6·0	0·8	6·0	0·8	6·0
23	0·6	5·4	0·8	5·6	0·4	5·2	0·5	5·6
24	0·2	5·6	0·2	5·2	0·4	5·0	0·2	5·2
25	0·3	5·4	0·2	5·4	0·4	4·3	0·2	4·8
26	0·3	5·6	0·3	5·4	0·5	5·0	0·4	5·8
27	0·3	5·6	0·6	5·8	0·7	5·8	0·8	6·5
28	0·9	6·3	0·6	6·0	0·4	6·3	0·4	6·0
29	0·3	6·0	0·3	6·3	0·3	5·8	0·2	5·4
30	0·2	5·6	0·1	5·2	0·2	5·0	0·1	5·0
31								
Mean	0·8	6·2	0·8	6·0	0·8	5·9	0·8	6·0
Mean for Days	A = 0·8μ ; Tp= 6·0s							

Month	MAY							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·1	5·2	0·2	5·0	0·4	5·0	0·3	5·4
2	0·4	5·0	0·4	5·2	0·5	5·0	0·7	6·0
3	0·7	5·8	0·7	6·3	0·5	5·0	0·6	5·2
4	0·6	5·4	0·6	5·8	0·6	5·6	0·5	5·4
5	0·4	5·2	0·4	4·8	0·2	4·7	0·2	4·8
6	0·2	4·8	0·3	4·0	0·3	4·3	0·3	4·5
7	0·4	4·6	0·3	4·5	0·3	4·6	0·2	4·7
8	0·2	4·7	0·1	4·3	0·2	4·7	0·1	4·3
9	0·1	4·5	0·1	4·6	0·3	6·7	0·6	6·7
10	0·8	6·7	0·9	6·5	0·8	6·5	0·7	7·3
11	0·4	6·7	0·4	6·5	0·8	4·0	0·5	4·3
12	0·4	4·2	0·3	4·6	0·2	4·7	0·1	5·0
13	0·1	4·7	0·1	4·5	0·1	3·6	0·1	4·2
14	0·1	4·0	0·3	3·9	0·4	4·2	0·4	4·0
15	0·4	4·0	0·1	3·7	0·1	4·3	0·1	3·7
16	0·1	4·0	0·1	4·0	0·1	4·5	0·1	5·0
17	0·1	5·4	0·2	7·0	0·6	7·0	0·9	7·5
18	0·8	6·5	0·7	6·5	0·6	6·7	0·5	6·3
19	0·9	6·5	0·9	6·3	0·9	6·0	1·1	6·3
20	2·2	7·0	1·6	7·3	1·2	7·3	1·0	7·0
21	0·8	7·0	0·8	6·7	0·6	7·3	0·6	6·7
22	0·4	6·3	0·4	4·5	0·4	5·0	0·4	4·8
23	0·4	4·7	0·4	4·5	0·4	4·6	0·5	4·5
24	0·6	4·7	0·7	4·6	1·1	5·0	1·4	5·0
25	1·5	5·2	1·3	5·0	1·2	5·2	1·0	4·8
26	0·8	5·0	0·7	4·7	0·5	4·5	0·4	4·3
27	0·1	4·2	0·1	4·5	0·1	4·6	0·1	4·3
28	0·1	4·3	0·1	4·3	0·1	4·3	0·2	4·7
29	0·3	4·5	0·4	5·0	0·5	6·5	0·4	6·0
30	0·4	6·0	0·5	5·4	0·5	4·8	0·4	4·8
31	0·4	4·7	0·4	5·0	0·4	5·0	0·4	4·8
Mean	0·5	5·2	0·5	5·1	0·5	5·2	0·5	5·2
Mean for Days	A = 0·5μ ; Tp= 5·2s							

Month	JUNE							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·4	5·0	0·4	5·2	0·2	4·8	0·3	4·6
2	0·2	4·8	0·4	5·2	0·4	5·2	0·6	5·4
3	0·8	5·2	0·7	5·2	0·9	5·2	1·0	5·0
4	0·9	4·8	0·7	4·8	0·6	4·8	0·4	4·6
5	0·3	4·3	0·2	4·7	0·3	4·5	0·1	5·0
6	0·1	4·5	0·1	4·5	0·1	4·6	0·3	4·6
7	0·1	4·5	0·2	4·7	0·2	4·8	0·2	4·8
8	0·2	4·7	0·2	4·7	0·2	4·7	0·2	5·0
9	0·2	5·0	0·2	4·8	0·2	4·7	0·3	4·5
10	0·3	4·6	0·1	4·8	0·4	4·7	0·2	4·7
11	0·3	4·5	0·3	4·5	0·3	4·3	0·1	4·5
12	0·1	4·3	0·1	4·0	0·1	3·8	0·1	3·8
13	0·1	4·0	0·1	4·0	0·1	4·0	0·1	3·8
14	0·1	3·8	0·1	4·3	0·1	4·0	0·1	4·6
15	0·1	4·6	0·1	4·5	0 1	4·8	0·1	4·3
16	0·1	4·5	0·1	4·6	0·1	4·6	0·1	4·7
17	0·1	4·3	0·1	4·6	0·1	4·6	0·1	4·3
18	0·1	4·5	0·1	4·6	0·2	5·0	0·2	5·0
19	0·1	4·8	0·1	4·5	0·1	4·0	0·1	4·8
20	0·1	4·2	0·1	4·0	0·1	3·8	0·1	4·6
21	0·1	4·0	0·1	4·0	0·1	4·0	0·1	4·3
22	0·1	4·6	0·1	4·2	0·1	4·0	0·1	4·0
23	0·1	4·0	0·3	4·3	0·1	4·2	0·1	4·0
24	0·1	4·2	0·1	5·4	0·2	5·4	0·1	5·2
25	0·1	4·8	0·1	5·0	0·1	4·8	0·2	5·0
26	0·2	5·4	0·2	5·4	0·3	5·6	0·4	5·2
27	0·5	5·4	0·6	5·0	0·6	5·2	0·6	5·2
28	0·8	6·0	0·9	6·3	1·0	6·3	1·2	6·3
29	1·3	5·8	1·1	6·0	1·0	5·6	0·9	5·8
30	0·6	5·4	0·3	5·4	0·2	5·4	0·2	5·0
31								
Mean	0·3	4·7	0·3	4·8	0·3	4·7	0·3	4·7
Mean for Days	A = 0·3μ ; Tp= 4·7s							

Note.- The Symbol ... indicates that microseisms were not measured, either by reason of occurrence of earthquake or lack of record

MICROSEISMS OF VERTICAL COMPONENT: AMPLITUDE (μ = ·001 mm) AND PERIOD (seconds)
Derived from readings for the period of thirty minutes centring at the exact hours, Greenwich Mean Time

1937

547 KEW OBSERVATORY

Month	JULY							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·2	4·8	0·3	4·3	0·3	4·2	0·1	4·2
2	0·1	4·6	0·1	4·3	0·1	4·2	0·1	4·2
3	0·3	4·3	0·3	4·2	0·4	4·8	0·4	5·0
4	0·5	4·3	0·5	5·0	0·5	4·3	0·4	4·6
5	0·2	5·0	0·2	4·8	0·2	5·0	0·2	5·2
6	0·2	5·0	0·2	5·0	0·2	4·8	0·3	4·6
7	0·3	4·6	0·3	4·5	0·3	4·6	0·2	4·8
8	0·1	4·6	0·1	4·3	0·1	4·5	0·1	4·2
9	0·1	4·7	0·1	4·5	0·1	4·3	0·1	4·2
10	0·1	4·3	0·1	4·2	0·1	3·4	0·1	3·7
11	0·1	4·0	0·1	3·6	0·4	5·2	0·2	5·2
12	0·2	5·0	0·1	4·6	0·1	3·6	0·1	3·7
13	0·1	4·2	0·2	4·8	0·3	4·6	0·2	5·0
14	0·2	4·8	0·3	4·6	0·2	4·8	0·3	4·6
15	0·3	4·5	0·3	4·5	0·3	4·5	0·2	4·7
16	0·1	4·5	0·1	4·6	0·4	2·7	0·3	2·9
17	0·3	3·3	0·1	4·3	0·1	4·0	0·1	4·2
18	0·1	4·6	0·3	4·5	0·3	7·0	0·5	6·3
19	0·8	6·5	0·8	6·0	0·6	6·0	0·5	5·4
20	0·4	5·2	0·2	5·4	0·2	4·8	0·2	4·8
21	0·4	4·8	0·4	4·6	0·4	4·6	0·5	5·0
22	0·6	5·8	0·6	5·6	0·5	5·4	0·3	5·3
23	0·2	5·2	0·3	3·6	0·3	3·3	0·3	3·6
24	0·3	3·8	0·3	3·4	0·3	3·3	0·1	3·4
25	0·2	3·1	0·2	3·0	0·2	2·9	0·1	3·6
26	0·1	4·2	0·1	3·8	0·3	4·3	0·4	4·3
27	0·3	4·5	0·3	4·5	0·3	4·3	0·2	4·8
28	0·4	4·8	0·4	4·8	0·5	4·5	0·5	4·7
29	0·4	4·7	0·4	4·5	0·3	4·6	0·3	4·5
30	0·1	4·3	0·1	4·3	0·1	4·6	0·1	4·0
31	0·1	3·8	0·1	3·9	0·1	4·5	0·1	4·7
Mean	0·3	4·6	0·3	4·5	0·3	4·4	0·2	4·5
Mean for Days	A = 0·3μ; Tp = 4·5s							

Month	AUGUST							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·1	4·8	0·1	4·5	0·1	4·6	0·1	4·5
2	0·1	4·6	0·1	4·8	0·1	4·6	0·1	4·8
3	0·1	4·3	0·1	5·0	0·3	4·6	0·2	4·8
4	0·1	4·7	0·1	4·7	0·1	4·7	0·1	4·8
5	0·1	4·8	0·1	4·5	0·1	5·0	0·1	5·0
6	0·1	5·2	0·1	5·0	0·1	4·6	0·1	4·7
7	0·1	4·5	0·1	4·5	0·1	4·5	0·1	4·5
8	0·1	4·5	0·1	4·5	0·1	4·3	0·1	4·3
9	0·1	4·3	0·1	4·3	0·3	4·3	0·1	4·6
10	0·1	4·5	0·1	4·6	0·1	4·3	0·1	4·3
11	0·1	4·3	0·1	4·6	0·1	4·8	0·1	4·3
12	0·1	4·6	0·1	4·3	0·3	4·6	0·1	5·0
13	0·1	5·0	0·1	4·6	0·2	5·0	0·3	5·4
14	0·3	5·6	0·5	5·6	0·6	5·8	0·6	5·6
15	0·6	5·6	0·6	5·6	0·4	5·8	0·6	6·0
16	0·3	5·4	0·3	5·4	0·2	5·0	0·4	4·2
17	0·3	3·8	0·4	4·6	0·4	4·8	0·4	4·8
18	0·4	4·5	0·2	4·8	0·2	4·7	0·2	4·7
19	0·3	4·6	0·2	4·7	0·4	4·8	0·4	4·3
20	0·4	4·3	0·2	4·7	0·3	4·5	0·5	4·5
21	0·4	4·2	0·4	3·9	0·3	3·8	0·1	3·7
22	0·1	4·3	0·1	4·0	0·1	4·0	0·1	4·3
23	0·1	4·8	0·2	4·8	0·2	5·4	0·2	5·0
24	0·3	6·7	0·3	6·0	0·4	6·0	0·5	5·4
25	0·5	5·4	0·7	5·2	0·7	5·6	0·7	5·6
26	0·6	5·6	0·6	5·5	0·6	5·4	0·6	5·2
27	0·5	5·0	0·5	5·0	0·5	5·2	0·6	5·2
28	0·6	5·4	0·5	5·4	0·5	5·6	0·4	4·8
29	0·2	4·8	0·1	4·6	0·3	4·5	0·1	5·0
30	0·3	4·3	0·1	4·5	0·1	4·3	0·1	5·0
31	0·1	5·0	0·1	5·0	0·2	5·0	0·2	4·8
Mean	0·3	4·8	0·2	4·8	0·3	4·8	0·3	4·8
Mean for Days	A = 0·3μ; Tp= 4·8s							

Month	SEPTEMBER							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·4	4·8	0·5	5·4	0·5	5·0	0·7	5·4
2	0·9	6·3	1·2	6·7	1·2	6·7	1·1	6·5
3	0·9	5·8	1·1	6·7	1·1	6·3	1·3	6·3
4	1·1	6·5	1·0	6·3	0·9	6·0	0·8	5·8
5	0·6	5·0	0·5	5·2	0·5	5·0	0·4	4·8
6	0·4	4·5	0·4	5·0	0·4	5·0	0·4	5·0
7	0·9	7·3	1·6	6·5	1·7	6·3	1·2	7·0
8	1·0	6·3	0·9	6·0	1·0	5·6	1·0	5·8
9	0·9	5·7	0·9	6·0	1·0	6·0	0·8	5·6
10	0·8	6·0	0·9	6·3	0·9	6·3	1·0	6·3
11	1·0	6·5	1·1	5·6	1·1	5·8	0·9	5·2
12	1·0	5·8	0·7	5·4	0·8	5·4	0·9	7·0
13	1·0	6·3	1·1	6·5	0·9	6·0	0·8	5·6
14	0·7	5·4	0·6	5·6	0·6	5·8	0·7	5·7
15	0·6	5·4	0·8	5·6	1·1	6·5	1·7	6·5
16	2·1	6·5	2·1	7·0	1·6	7·0	1·2	7·0
17	1·1	6·7	1·0	6·7	2·0	7·0	1·7	7·0
18	1·3	6·3	0·7	6·5	0·6	4·3	0·6	4·3
19	0·6	3·8	0·6	3·8	0·4	2·9	0·6	4·2
20	0·6	3·8	0·6	4·0	0·6	4·0	0·9	4·2
21	0·9	4·2	0·6	4·3	0·9	4·3	0·6	4·3
22	0·8	6·0	1·0	6·3	1·5	6·5	0·7	6·7
23	0·7	6·7	0·5	5·7	0·5	5·0	0·6	4·8
24	0·5	5·4	0·3	4·2	0·8	5·0	1·1	5·4
25	0·5	5·4	1·3	5·6	2·1	5·6	2·3	5·6
26	1·1	5·4	1·1	5·0	0·8	5·4	1·6	5·6
27	2·0	6·3	1·3	5·2	1·8	6·0	0·5	5·6
28	0·3	6·0	0·2	6·5	0·3	5·6	0·3	4·8
29	0·5	6·5	0·5	6·5	0·5	7·0	1·0	6·5
30	0·5	6·7	0·7	8·0	3·0	8·7	2·7	8·0
31								
Mean	0·9	5·8	0·9	5·8	1·0	5·7	1·0	5·7
Mean for Days	A = 0·9μ; Tp= 5·8s							

Month	OCTOBER							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	2·7	7·7	2·7	8·0	2·5	8·0	2·0	8·3
2	1·7	6·7	1·7	6·3	1·2	6·7	1·7	8·0
3	2·0	7·0	1·7	7·3	1·7	8·3	1·7	7·7
4	2·2	7·7	2·2	7·0	2·2	7·0	1·7	6·7
5	1·0	7·5	0·5	6·5	1·0	7·0	1·2	7·3
6	2·0	7·0	2·0	6·5	1·5	6·5	0·7	6·5
7	0·7	5·7	0·5	6·0	0·5	5·7	0·8	5·6
8	0·8	6·0	0·5	5·6	0·5	6·0	0·8	5·8
9	0·5	5·0	0·5	5·4	0·5	6·0	0·6	4·7
10	0·5	6·5	0·6	4·3	0·6	4·0	0·6	4·3
11	0·6	4·0	0·6	4·3	0·6	4·0	0·8	3·0
12	0·6	4·0	0·5	5·0	0·3	4·2	0·3	4·7
13	0·3	4·2	0·3	3·8	0·3	4·0	0·3	4·0
14	0·6	4·5	0·3	4·0	0·8	6·0	0·8	6·0
15	0·8	5·6	0·5	5·4	1·0	5·6	1·3	6·0
16	1·2	6·7	1·7	6·5	1·0	6·7	1·0	6·0
17	1·0	6·5	0·4	6·3	2·0	8·0	1·5	6·7
18	1·3	6·0	1·0	7·0	1·7	8·0	1·9	7·3
19	1·0	8·0	1·0	6·5	1·0	7·0	1·0	6·5
20	0·7	7·3	0·7	7·0	1·5	8·0	2·2	8·0
21	1·5	7·5	1·7	7·3	1·5	6·7	1·0	7·0
22	1·0	7·0	0·7	6·5	0·5	6·0	0·5	7·0
23	0·3	5·0	0·5	5·5	0·8	6·0	1·5	6·0
24	1·2	6·5	1·0	7·0	1·0	7·0	0·8	4·8
25	0·5	6·0	0·5	6·7	1·2	7·0	2·0	8·0
26	1·5	8·0	1·5	6·0	1·8	5·6	1·2	6·4
27	1·0	6·0	0·8	6·0	0·5	6·4	0·5	6·4
28	0·3	6·0	0·6	4·5	0·6	4·8	0·5	5·0
29	0·5	5·0	0·6	4·7	0·3	4·6	0·3	5·0
30	0·3	5·0	0·3	5·6	0·3	4·0	0·6	4·5
31	0·3	5·0	0·3	5·0	1·0	6·5	1·3	5·6
Mean	1·0	6·1	0·9	5·9	1·0	6·2	1·1	6·1
Mean for Days	A = 1·0μ; T = 6·1s							

Month	NOVEMBER							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·3	4·5	0·3	5·3	0·3	5·6	0·5	6·5
2	0·7	7·0	0·7	7·5	1·2	6·7	1·2	7·0
3	1·0	7·3	0·7	6·7	1·0	8·0	1·5	7·0
4	2·2	7·0	1·5	7·3	1·3	6·0	1·3	5·6
5	1·5	6·3	1·0	5·6	0·8	5·4	0·8	6·0
6	0·5	6·5	0·5	5·7	0·6	4·8	0·5	6·2
7	0·3	5·0	0·5	6·0	0·5	6·0	0·5	5·4
8	0·3	6·0	0·5	6·3	0·6	3·8	0·6	4·8
9	0·6	4·6	0·5	5·0	0·3	5·0	0·3	4·6
10	0·5	5·0	0·8	5·4	1·1	5·4	1·1	5·4
11	0·8	5·2	0·8	5·8	0·8	5·6	0·9	4·6
12	0·5	6·3	0·5	5·6	0·5	5·4	0·8	5·5
13	0·5	5·4	0·5	5·2	0·5	6·7	0·6	4·8
14	0·5	5·4	1·0	6·6	0·5	5·3	0·8	5·8
15	0·8	6·0	0·7	6·7	0·7	6·7	0·7	6·7
16	0·7	6·5	0·7	6·5	0·7	6·3	1·0	6·0
17	1·3	5·5	1·4	5·0	1·8	5·8	1·8	5·4
18	1·5	6·0	1·6	5·4	1·6	5·6	2·0	5·8
19	1·9	5·2	1·0	6·0	0·5	5·2	0·5	5·5
20	0·9	4·5	0·7	6·5	1·0	8·0	0·7	6·5
21	0·5	6·0	0·2	7·3	0·5	6·0	0·5	5·7
22	0·5	6·0	0·5	5·2	0·5	6·0	0·2	7·0
23	0·2	7·3	0·2	7·0	0·2	6·6	0·2	6·7
24	0·3	6·3	0·3	5·5	0·3	4·5	0·3	4·0
25	0·3	5·3	0·3	5·6	0·2	6·4	0·3	5·6
26	0·3	5·8	1·0	5·5	0·5	5·6	0·8	5·6
27	0·8	6·0	0·8	6·0	0·5	6·3	0·5	6·5
28	0·5	6·3	0·8	6·0	0·8	6·0	0·5	5·6
29	0·3	6·0	0·3	5·0	0·3	5·6	0·3	5·0
30	0·5	6·0	1·0	6·3	0·5	5·0	0·3	5·0
31								
Mean	0·7	5·9	0·7	6·0	0·7	5·8	0·7	5·7
Mean for Days	A = 0·7μ; Tp= 5·9s							

Month	DECEMBER							
Hour G.M.T.	0h		6h		12h		18h	
	A	Tp	A	Tp	A	Tp	A	Tp
Day	μ	s	μ	s	μ	s	μ	s
1	0·3	5·0	0·2	6·5	0·8	6·0	1·1	5·4
2	0·8	5·0	1·3	5·2	1·0	7·5	1·3	6·0
3	1·0	5·7	0·5	5·5	0·5	5·5	0·3	5·7
4	0·3	5·2	0·3	5·4	...	...	...	...
5	...	...	...	...	...	...	...	...
6	...	...	...	...	1·7	6·7	1·5	7·0
7	0·8	6·0	0·7	6·5	0·5	6·3	2·3	4·5
8	2·0	4·7	1·4	4·7	0·8	6·0	0·5	6·3
9	0·3	6·3	0·3	5·2	0·3	4·6	0·3	5·0
10	0·3	4·5	0·3	4·8	0·5	5·2	0·5	5·6
11	0·7	6·5	1·0	6·3	0·8	5·7	0·8	5·6
12	0·6	4·8	0·5	5·0	0·6	4·8	0·3	4·5
13	0·3	4·0	0·3	4·6	0·6	4·5	0·9	4·0
14	0·5	5·2	0·8	5·5	0·8	5·0	1·0	4·8
15	1·4	4·7	1·8	4·7	1·5	5·0	1·4	4·7
16	1·3	5·0	0·8	4·5	1·2	5·5	1·2	5·7
17	1·1	6·0	0·8	5·5	0·5	6·0	0·2	6·3
18	0·3	5·5	0·3	5·5	0·7	6·0	0·2	6·3
19	0·7	6·0	0·9	6·7	1·4	7·3	0·5	7·3
20	0·5	7·0	0·5	6·0	0·7	6·0	0·5	5·0
21	0·8	4·8	0·8	5·0	0·5	5·0	0·3	4·8
22	0·3	5·5	0·3	5·2	0·3	5·2	0·3	5·5
23	0·5	6·0	0·5	6·0	1·2	6·5	1·9	7·0
24	1·4	7·0	1·2	7·0	0·5	7·3	0·5	7·7
25	0·7	7·0	1·6	7·0	1·6	7·0	1·4	6·5
26	1·7	6·5	1·7	6·5	1·9	6·3	1·4	6·7
27	0·9	6·5	0·7	7·0	0·9	7·0	0·2	7·0
28	0·2	6·3	0·2	6·7	0·2	6·3	0·2	6·0
29	0·2	6·7	0·2	6·3	0·5	7·3	0·2	8·7
30	0·7	8·0	0·9	7·7	0·8	7·3	0·3	7·0
31	0·3	7·0	0·2	7·5	0·3	6·7	0·3	6·3
Mean	0·7	5·8	0·7	5·9	0·8	6·1	0·7	6·0
Mean for Days	A = 0·7μ; Tp= 5·9s							

Note.- The symbol ... indicates that microseisms were not measured, either by reason of occurrence of earthquake or lack of record

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