M.O. 390
(Kew)

Air Ministry

METEOROLOGICAL OFFICE

THE OBSERVATORIES' YEAR BOOK 1935

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

Published by the authority of the
METEOROLOGICAL COMMITTEE

LONDON
HIS MAJESTY'S STATIONERY OFFICE
1937

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 this volume. The photographs were taken in 1935. For the early history of the Observa-

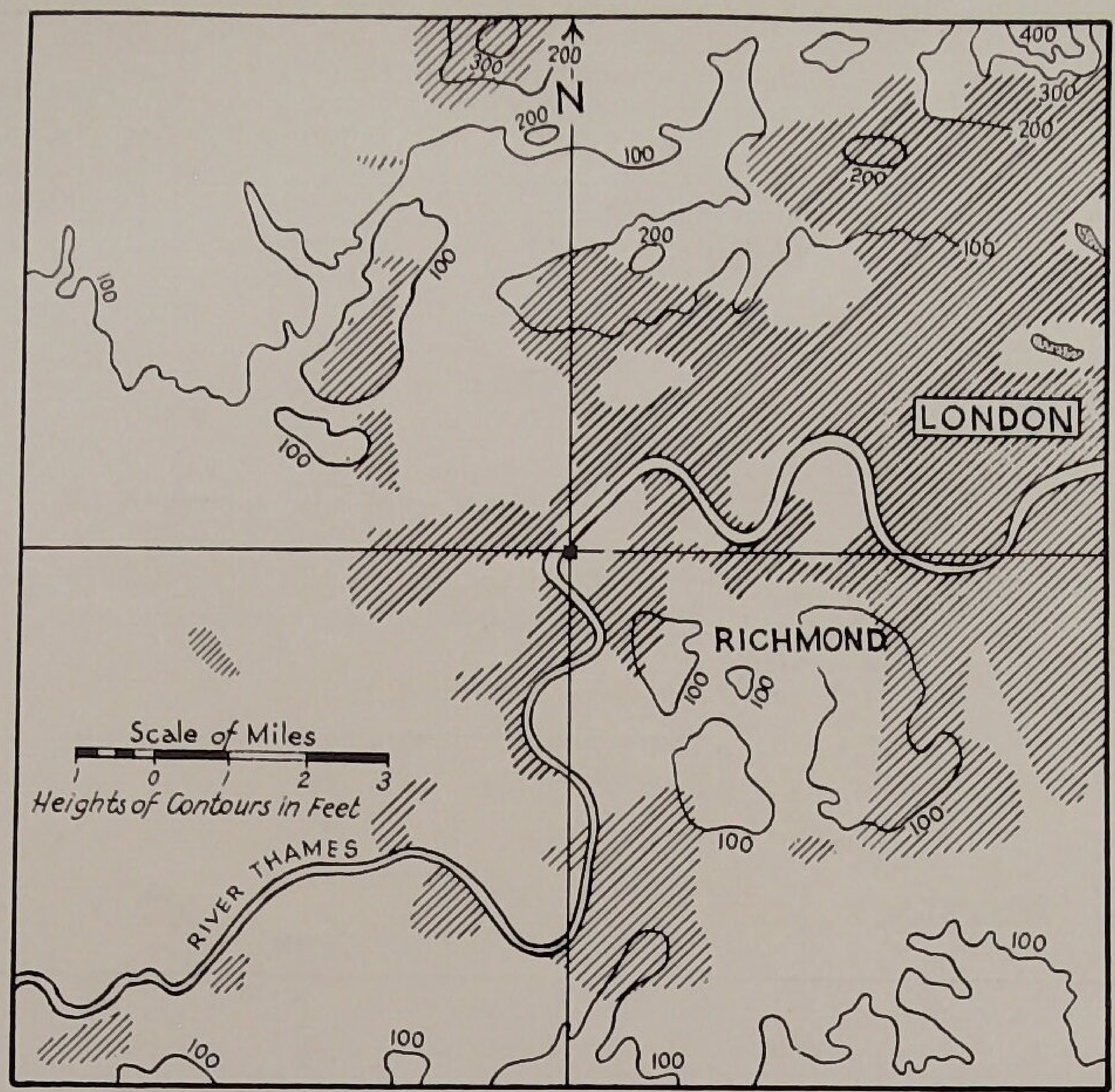

FIG. 19.—CONTOURED MAP SHOWING SURROUNDINGS OF KEW OBSERVATORY.

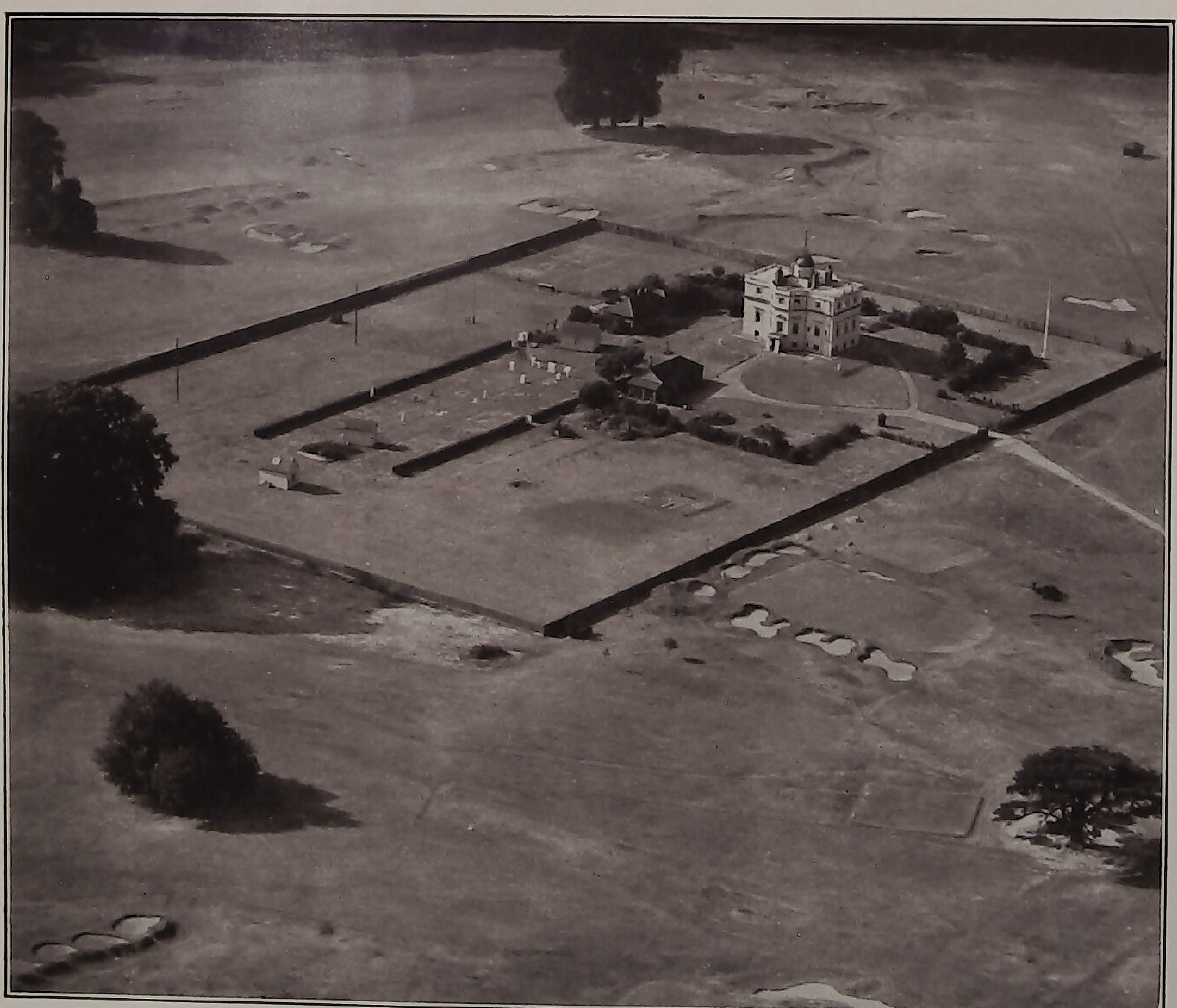

FIG. 20.—AERIAL PHOTOGRAPH FROM S.E., AUGUST, 1935.

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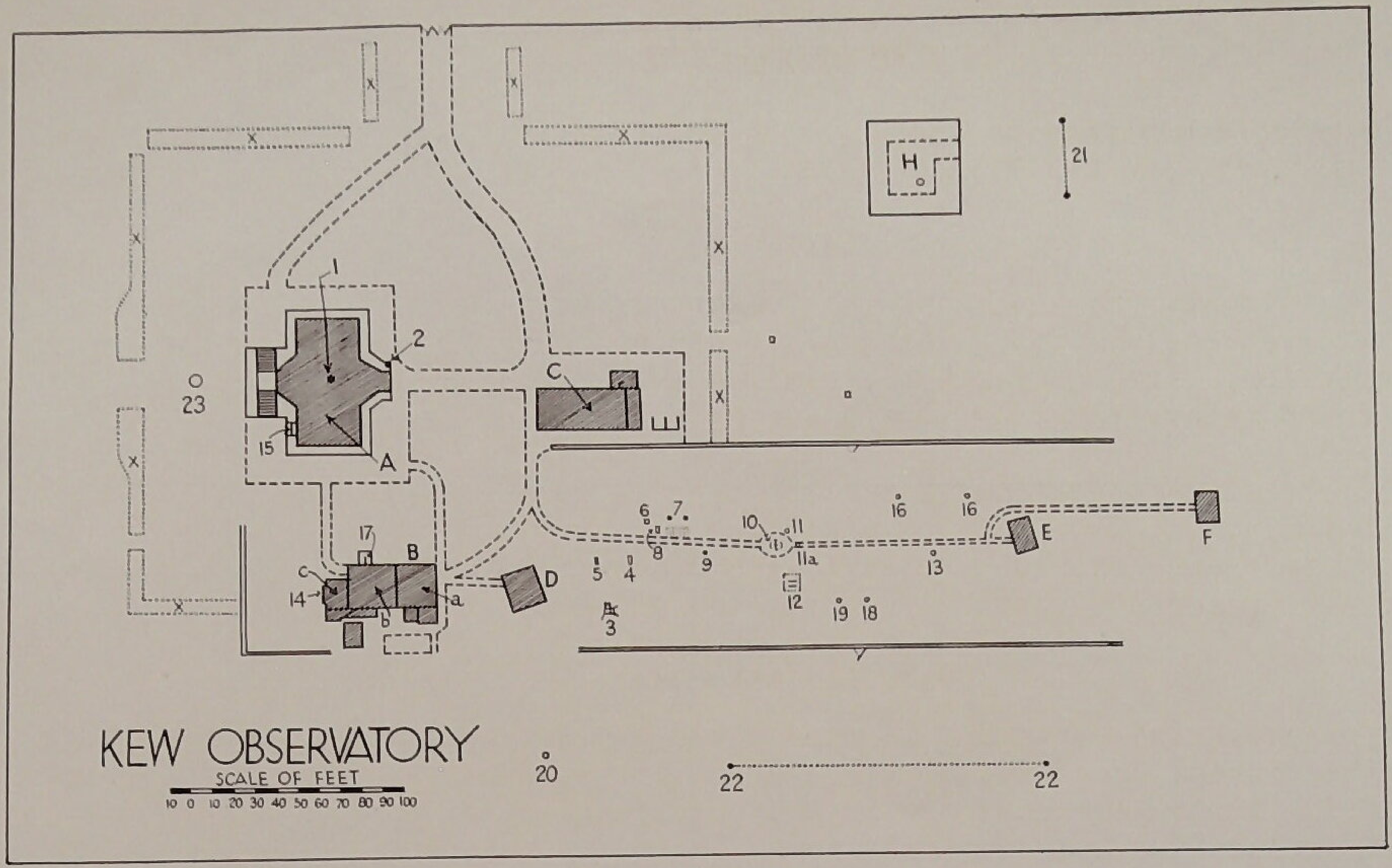

FIG. 21.—SITE PLAN.

FIG. 22.—GENERAL VIEW FROM S.W., SEPTEMBER, 1935.

A.—MAIN OBSERVATORY BUILDING. B.—CLINICAL HOUSE.
a.—UPPER AIR SECTION. b.—ELECTROGRAPH ROOM. c.—NORTH ANNEXE.
C.—WORKSHOP. D.—EXPERIMENTAL HUT. E.—OLD MAGNETIC HUT.
F.—NEW MAGNETIC HUT. H.—UNDERGROUND LABORATORY. X.—SHRUBBERY.
1.—DINES PRESSURE TUBE ANEMOMETER. 2.—CAMPBELL STOKES SUNSHINE RECORDER.
3.—HIGH STEVENSON SCREEN. 4.—STEVENSON SCREEN.
5.—BESSON COMB NEPHOSCOPE. 6.—GLAISHER STAND.
7.—EARTH THERMOMETERS. 8.—EARTH THERMOGRAPH.
9.—PILLAR. 10.—BLACK BULB THERMOMETERS.
11.—RAINGAUGE. 11a.—BECKLEY AUTOGRAPHIC RAINGAUGE.
12.—GRASS MINIMUM THERMOMETERS. 13.—THEODOLITE PILLAR.
14.—OWENS AIR FILTER AND POLLUTION GAUGE. 15.—NORTH WALL SCREEN.
16.—POLLUTION GAUGES. 17.—ELECTROGRAPH COLLECTOR.
18.—STORM GAUGE. 19.—RAINFALL CHRONOGRAPH.
20.—POINT DISCHARGE MAST. 21.—POSTS FOR STRETCHED WIRE APPARATUS.
22.—MASTS FOR POTENTIAL GRADIENT OBSERVATIONS UP TO 10 METRES.
23.—JARDI RATE OF RAINFALL RECORDER.

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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:-

June 7, 1925; July 1, 1926; (retrospectively) January 1, 1928; August 1, 1930; January 1, 1931; June 1, 1931; and March 1, 1933.

During 1935 the highest estimate of pollution was 6·1 mg/m^3, this value occurring on December 23rd from 18h to 19h. There were 20 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 74. The months in which these days and hours occurred are given in the accompanying table.

	days	hours
Jan.	3	13
Feb.	1	2
Mar.	3	7
Nov.	3	3
Dec.	10	49
Year	20	74

Table 544 gives for each month mean hourly values derived from all the days for which complete records were obtained. There were 360 such days in the year. The highest and lowest of these hourly values are underlined.

Table 545 gives diurnal inequalities derived from the date 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/m³.

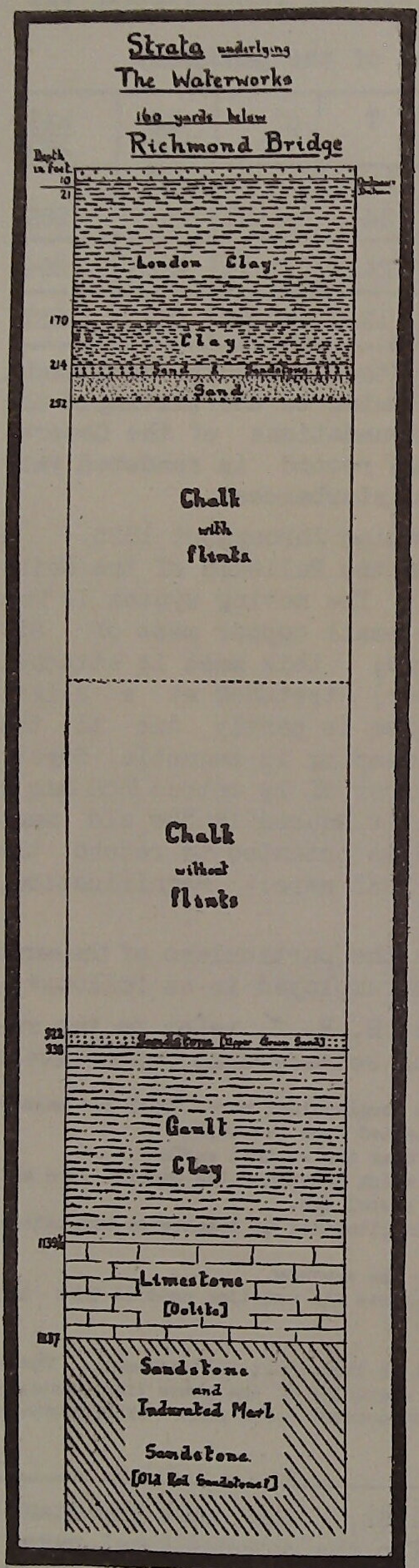
	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
Jan.-Feb.	·29	·25	·22	·40	·18	·24	·32	·25	·44	·19
Mar.-Apr.	·30	·10	·18	·27	·13	·15	·26	·17	·19	·15
May-June	·08	·07	·09	·05	·05	·06	·09	·10	·10	·05
July-Aug.	·07	·05	·05	·06	·07	·07	·05	·08	·08	·05
Sept.-Oct.	·19	·17	·15	·10	·13	·25	·15	·21	·10	·07
Nov.-Dec.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

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 occurrs 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 1935 the principal maximum was in the evening from January to May and from October to December; in the forenoon in the remaining months. The principal minimum occurred in the afternoon from May 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.

Notes on Instruments.- The standard seismographs, three Galitzin pendulums with galvanometric registration, were transferred from Eskdalemuir Observatory during the latter part of 1925 and have been in regular operation since the beginning of 1926. Earth movements in the north, east and vertical directions are recorded. The pendulums, which are in the old magnetograph room, are mounted on a massive concrete pillar, separated from the floor. The galvanometers and recording apparatus are accommodated on slate slabs in the old seismograph room, which housed the Milne instrument until it was put out of action on June 17, 1925. To eliminate temperature variation as far as possible, the windows of the pendulum room are provided with triple glass and also shielded by louvred screens from direct sunshine which might fall on them morning and evening. The annual range of temperature variation is about 10°C. and the mean daily range about 0·2°C. To diminish the sensitivity of the vertical pendulum to temperature changes the steel controlling spring was replaced in May, 1928, by one made of elinvar, an alloy which has a temperature coefficient of elasticity about one-tenth that of steel.* A detailed report on the behaviour of the spring has been published in a paper† by F.J. Scrase. The difficulties usually associated with the operation of the vertical pendulum have been greatly diminished.

‡ London, Quart. J.R. met. Soc., 55, 1929, pp. 351-361.
*Y. Dammann. "Contribution à l'étude des propriétés elastiques de l'élinvar. Son utilisation dans les séismographes, Publ. Bur. Cent. Seis. Int., Strasbourg," Ser. A, Fasc. No. 5, 1927, pp. 122-129.
† London, Inst. Physics, J. Sci. Instr., 6, 1929, p.385.



A. Strahan. Prof. Papers No. 10, Survey of India.

The concrete pillar rests on gravel. The underlying geological strata are shown in 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 600 metres, the last 280 metres being in Old Red Sandstone. There is no information as to deeper strata near Richmond. It may be noted, however that the sandstone beds dip at about 30° and that a boring at Little Missenden, Bucks, entered Silurian rocks at a depth of 370 metres with no evidence of the presence of Old Red Sandstone.

For detailed description of the Galitzin seismograph and for particulars of interpretation of the records, reference may be made to Fürst B Galtizin's "Vorlesungen über Seismometrie" (Leipzig, 1914), or to G.W. Walker's "Modern Seismology" (London, 1913).††

Timing is controlled by a Synchronome clock (Hope-Jones No.1901) which is rated daily from the Greenwich wireless time-signal relayed by Droitwich. Time breaks are made electro-magnetically every minute and seismometric readings can be determined to the nearest second.

The free periods of the Galvanometers (T_1), were determined in November, 1925, and were found to have suffered very little change since the original determinations at Eskdalemuir were made. The lengths of the simple equivalent pendulums (l) are assumed to have remained unaltered.

The Galitzin seismographs were not standardised during 1935, and it has been assumed that the constants had not changed from the values determined in September, 1934. The pendulums were adjusted on January 29th, June 24th and November 1st, 1935 to counter slight tilting of the pillar.

In the following table are summarized the values of the constants. T is the free period of the pendulum, μ is a damping coefficient which vanishes when the free movement of the pendulum is just aperiodic, A is the length of the beam of light from the galvanometer mirror to the recording drum (usually about 1100 mm), and k is the

* London, Quart. J. Geol. Soc. ., 40, 1884, p.274; 41, 1885, p.523
†Records of London Wells, Mem. Geol. Surv. Eng., London , 1913.
††The graphical method adopted at Kew for determining the constants of the pendulums is explained in a memoir by F.J. Scrase, London, Met. Off. Geophys. Mem., 5, No.49, 1930.

"transmission" factor. The factor $\frac{kAT}{4\pi\ell}$ determines the magnification for regular earth movements with a period equal to that of the pendulum.

Component	ℓ	T	Date of Standardisation	T	μ^2	$\frac{kA}{\pi\ell}$	$\frac{kAT}{4\pi\ell}$
	mm.	sec.		sec.		$sec.^{-1}$	
N	118	24·68	Sept. 5, 1934.	24·5	+0·01	46·7	286
E	118	24·80	Sept. 6, 1934	24·8	-0·01	42·6	264
Z	360	13·04	Sept.11, 1934	13·1	+0·01	109	357

In windy weather the seismographs, especially the horizontal components, are affected by slow oscillations, which are attributed to the tilting of the ground, the movement being conveyed through the foundations of the Observatory. On occasions the reading of an earthquake record is rendered very difficult, if not impossible, by these irregular disturbances.

A Wood-Anderson seismograph was also in operation throughout 1935. A complete description of this instrument appears in the Bulletin of the Seismological Society of America, XV,1 Mar. 1925. The moving system is very small, that of the Kew instrument consisting of a small copper mass of dimensions 25·4mm x4·8 mm x 1·6 mm and weighing 1·5 gm; this mass is attached to the side of a tungsten wire (·025 mm in diameter) stretched at a slight inclination to the vertical. The controlling force is partly due to the torsion of the wire and partly to gravity. The damping is magnetic. Direct optical recording is employed, a small concave mirror of 1½ metres focal length being fitted to the moving mass. The instrument is housed in the old magnetograph room beside the Galitzin pendulums, and is oriented to record the N-S component. The approximate constants during 1935 were:- Magnification, 1500; Free period 2 seconds; Damping ratio 20-1.

The Seismological Diary.- 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.

For the supplementary reflected waves from deep focus earthquakes the notation used is that introduced by F.J. Scrase, London. Proc. roy. Soc., A. 132, (1931).

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.

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 (1μ=0·001 mm.), of the components of the true displacement of the ground from the position of rest. Displacements 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 following formulae, due to Galitzin, are employed for computing the times of the maxima and the amplitudes of sinusoidal waves:-

(1) Lag of the displacement shown by the galvanometer after the maximum displacement of the ground

$$= \frac{Tp}{2\pi}\left[\left(\frac{\pi}{2} + \text{Arctan}\,\frac{2u_1}{u_1^2-1}\right) + \text{Arctan}\,\frac{2u(1-\mu^2)^{\frac{1}{2}}}{u^2-1}\right]$$

each inverse tangent being taken as between 0 and π

(2) Magnification of records

$$= \frac{kA\,Tp}{\pi \ell}\;\frac{1}{(1+u^2)(1+u_1^2)\,\{1-\mu^2 f(u)\}^{\frac{1}{2}}}$$

in these formulae T is the period of the earth wave considered, T, T , and μ are as defined on p.367.

$$u = \frac{Tp}{T}\,,\quad u_1 = \frac{Tp}{T_1}\quad \text{and}\quad f(u) = \left[\frac{2u}{1+u^2}\right]^2$$

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, Ottowa, 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 of 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 letter 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 231. The phases being sufficiently well defined, estimates of the epicentral distances were obtained for 72 shocks, whilst in 10 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 13 earthquakes which produced a disturbance at the observatory with an amplitude exceeding 0·1mm. in a horizontal component. These earthquakes originated, in the sea of Marmora (January 4th), in the Mediterranean Sea near the coast of Tripoli (April 19th), in Northern Formosa (April 20th), around Quetta (May 30th), in the Pacific Ocean east of Formosa (September 4th), near Northern Japan (September 11th and October 18th), in new Guinea (September 20th), in the Pacific Ocean off Japan (October 12th), in the Pacific Ocean off Central America (December 14th), in the Solomon Islands (December 15th), south of the Riu-Kiu Islands (December 17th) and in the Indian Ocean off Western Sumatra (December 28th).

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

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

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

Microseisms.- The routine tabulations of microseisms recorded at Kew, and previously at Eskdalemuir, have hitherto been 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) have shown* that the vertical is more reliable than either of the horizontal components for such tabulations. 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 vertical component has therefore been adopted from the beginning of 1935. The results obtained for 1932 shewed that, within the accuracy of the measurements, the annual means of amplitude and period were equal for the three components.

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:-

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 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 amplitudes and the period of the oscillations, the ratio varying from 1·2 for microseisms of period $4\frac{1}{2}$ sec. 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 compo-

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

nents. 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 1935 are given below:-

Kew Observatory. Microseisms of Vertical Component. 1935.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Mean Period. (sec.).	6·5	6·3	6·3	5·2	5·1	4·9	5·0	4·8	5·2	6·1	6·5	6·1	5·7
Mean Amplitude (μ)	1·7	2·6	1·3	0·7	0·2	0·2	0·2	0·2	0·6	1·4	1·8	1·9	1·1
Maximum Amplitude (μ)	(12·1)	6·3	4·8	3·3	0·7	1·1	0·8	1·8	3·6	10·6	8·8	5·1	(12·1)
Day and hour of Maximum Amplitude	25;18	21;12	1;0	11;12	15;0	{8;0 24;12}	{16;6 16;18}	23;12	19;18	19;6	30;12	1;0	Jan 25;18

For comparison, the following table gives the monthly means of amplitude and period of the N-S component microseisms at Kew from 1926 to 1934.

Kew Observatory. Microseisms of North-South Component. 1926-34.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
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

The means of amplitude and period for the several hours are given in the following table. The values given are for the vertical component during 1935, and the average values for the N-S component from 1926 to 1934.

Hour	(G.M.T.)	0h.	6h.	12h.	18h.
Z. (1935)	Amplitude (μ).	1·09	1·05	1·07	1·07
	Period (sec).	5·65	5·66	5·64	5·67
N-S (1926-34)	Amplitude (μ).	1·10	1·09	1·06	1·08
	Period (sec).	5·46	5·45	5·42	5·45

These figures indicate that there is no regular diurnal variation in the amplitude or period of the microseisms recorded by the Z and N-S components at Kew Observatory.†

† F.J.W. Whipple and A.W. Lee, "Studies in Microseisms," "London, Mon. Not. R. Astr. Soc., Geophys. Supp." 2, No. 7, 1931.

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. 1935.

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
Jan. 1	Z	iPKP	13 40 2	...	...	(16000)	Dilatation NE, e.Tonga
	Z	ipPKP	41 15	...	...	...	Islands. 15°S., 175°
	ZNE	ePP	43 21	...	...	...	W., with focal depth
	E	i	14 1 38	...	...	...	300 km. (J.S.A.)
	N	e	2 22	...	...	...	
	NE	e	3 10	...	...	...	
	E	i	3 54	...	...	...	No surface waves.
	E	e	7 13	...	...	...	
		F	15 30	...	...	...	
2		e	23 17	...	...	...	Coast of Northern
		F	35	...	...	...	California. 41° N.,
							124° W. (J.S.A.)
3	Z	iP	2 0 58	...	...	7310	Compression NE, e.
	NE	iS	9 43	...	...	...	
	ZNE	eSSS	16 52	...	...	...	
	ZNE	i	17 10	...	...	...	Tibet. 31·5° N., 88° E.
	NE	L	20	...	...	...	(Strasbourg.)
	Z	L	23	...	...	...	
	E	M	28 33	21	+27	...	
	N	M	28 42	21	+64	...	
	Z	M	32 42	15	+19	...	
		F	3 45	...	...	...	
4	ZNE	iP	14 46 25	...	...	2390	Amplitudes of iP as
	ZNE	i	46 32	...	...	...	read in mm :
	NE	eS	50 21	...	...	...	N E Z
	ZNE	iS	50 25	...	...	...	(−0·3) +1·3 −2·0
	ZN	i	50 32	...	...	...	
	E	i	50 36	...	...	...	Sea of Marmara.
	ZNE	L	52	...	...	...	40·8° N., 28·3° E.
	N	M	54 15	14	+105	...	(Strasbourg.)
	E	M	55 13	21	−76	...	
	N	M	56 22	10	−100	...	
	E	M	56 25	15	+69	...	
	Z	M	57 0	10	+37	...	
		F	16 15	...	...	...	
4	ZNE	eP	16 24 59	...	...	2500	Repetition of preced-
	Z	i	25 2	...	...	...	ing shock.
	ZNE	iS	29 4	...	...	...	Sea of Marmara.
	ZNE	L	31	...	...	...	40·8° N., 29·0° E.
	E	M	33 54	17	−55	...	(Strasbourg.)
	N	M	34 11	17	−76	...	
	Z	M	35 42	11	−34	...	
		F	17 40	...	...	...	
11		e	0 57	...	...	...	Philippine Islands.
		F	1 15	...	...	...	19° N., 120° E.
							(Manila.)
17	ZNE	iPKP	2 27 57	...	...	(16000)	North-West of Loyal-
	N	ePPS	44 43	...	...	...	ty Islands.
	E	ePSS	50 28	...	...	...	19° S., 165° E.
	N	eSSS	56 33	...	...	...	(Manila.)
	NE	eL	3 10	...	...	...	
	Z	eL	20	...	...	...	
	N	M	35 41	25	−10	...	
		F	4 20	...	...	...	
18		e	12 38	...	...	...	Very small.
		F	13 15	...	...	...	
18	Z	e	18 2 23	...	...	...	Possibly microseismic.
	NE	e	6 4	...	...	...	
	ZNE	eL	8	...	...	...	
	N	M	12 44	16	+ 8	...	Southern part of
	Z	M	12 55	16	+ 7	...	Riu-Kiu Islands.
		F	30	...	...	...	(Chiufeng.)
19	ZNE	eS	12 54 59	...	...	...	
	NE	eL	13 1	...	...	...	
	Z	eL	3	...	...	...	
	N	M	3 59	26	+ 7	...	
		F	14 15	...	...	...	
23	ZN	iP	7 35 52	...	...	8420	Amplitudes of iP as
	NE	iS	45 33	...	...	...	read in mm :
	E	i	45 41	...	...	...	N E Z
	N	iPS	45 53	...	...	...	−1·5 0·0 +2·3
	Z	i	46 27	...	...	...	Azimuth about north.
	NE	iSS	51 11	...	...	...	
	Z	e	53 50	...	...	...	Aleutian Islands.
	N	iSSS	54 52	...	...	...	52° N., 170° W.
							(U.S.C.G.S.)

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
Jan. 23 cont.	E	eLQ	56	...	...	...	
	ZN	eLR	8 0	...	...	...	
	E	M	3 56	26	+41	...	
	N	M	13 18	19	+43	...	
	N	M	15 28	19	−66	...	
	Z	M	15 32	19	+77	...	
	E	M	15 37	19	−54	...	
		F	10 55	...	...	...	
26			— — —	...	...	...	No records : 5h—11h 20m.
29			— — —	...	...	...	No records during adjustments ; 14h 10m—14h 50m.
30		e	1 7	...	...	...	Mongolia.
		F	20	...	...	...	48·5°N., 97° E. (U.R.S.S.)
31		e	19 10	...	...	...	2° S., 171° E.
		F	30	...	...	...	(Manila.)
Feb. 3		e	2 25	...	...	...	Felt at Tashkent.
		F	55	...	...	...	37·5° N., 70·0° E. (U.R.S.S.)
4	Z	ePKP	17 44 20	...	...	...	South of Samoa.
	NE	eL	18 40	...	...	...	(Chiufeng.)
	Z	eL	44	...	...	...	
		F	19 45	...	...	...	
6		eL	2 10	...	...	...	Atlantic Ocean near
		F	35	...	...	...	30° N., 40° W. (Strasbourg.)
7	NE	eL	18 19	...	...	...	Philippine Islands
	N	M	24 43	19	+ 3	...	11° N., 121° E.
	Z	eL	27	...	...	...	(U.R.S.S.)
		F	40	...	...	...	
9	NE	eL	20 4	...	...	...	Northern Formosa.
	Z	eL	12	...	...	...	25° N., 122° E.
	E	M	12 45	20	− 8	...	(Taihoku.)
		F	35	...	...	...	
13		e	9 58	...	...	...	
		F	10 10	...	...	...	
22	Z	eP	17 18 (15)	...	...	(8050)	Confused by microseisms
	E	iS	27 37	...	...	...	
	N	iSKS	27 51	...	...	...	
	NE	i	38 24	...	...	...	Aleutian Islands.
	E	i	39 58	...	...	...	51° N., 177° E.
	N	i	41 9	...	...	...	(J.S.A.)
	ZN	i	42 7	...	...	...	
	E	i	42 22	...	...	...	
	ZNE	eL	43	...	...	...	
	N	i	53 30	...	...	...	Large movement.
	N	M	59 19	18	−39	...	
	E	M	18 6 1	17	−41	...	
	Z	M	9 43	16	+35	...	
		F	20 0	...	...	...	
25	ZNE	iP	2 56 34	...	...	2540	Dilatation. Azimuth
	ZN	i	56 58	...	...	...	about south-east.
	E	e	3 0 42	...	...	...	Destructive in Crete.
	NE	iS	0 49	...	...	...	35·5° N., 24° E.
	NE	i	1 10	...	...	...	(Strasbourg.)
	NE	L	3 26	...	...	...	
	N	M	5 3	19	+63	...	
	Z	M	5 14	9	+18	...	
		F	30	...	...	...	
26			— — —	...	...	...	No records ; 10h 4m to 12h 48m.
Mar. 5	NE	eL	10 44	...	...	...	Caspian Sea off Persia.
	Z	eL	48	...	...	...	37° N., 53° E.
	N	M	53 59	22	+10	...	(U.R.S.S.)
		F	11 30	...	...	...	

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
Mar. 5 cont.	NE	eL	22 49	...	...	...	Himalayas. 30·5° N., 80° E. (U.R.S.S.)
	Z	eL	55	...	...	...	
	N	M	55 42	15	+ 9	...	
	E	M	55 52	15	− 8	...	
	Z	M	55 54	15	+12	...	
		F	23 15	...	...	...	
8			— — —	...	...	...	No records ; 5h 15m to 10h 10m.
11			— — —	...	...	...	No records ; 10h 6m to 11h 46m.
				...	...	...	
12	NE	eL	14 5	...	...	...	Horizontal components disturbed by wind.
	Z	eL	10	...	...	...	
		F	25	...	...	...	
14	ZNE	eL	16 55	...	...	...	
		F	17 55	...	...	...	
14	ZN	eP	17 5 43	...	...	(1630)	Felt in Southern Spain. 36° 24′ N., 3° 37′ W. (Granada). Clearly recorded by Wood-Anderson seismograph (N–S component). Masked by coda of preceding shock.
	NE	e	8 19	...	...	...	
	N	e(S)	8 32	...	...	...	
	N	e	8 56	...	...	...	
	ZNE	L	10	...	...	...	
		F	— — —	...	...	...	
15	ZNE	eL	12 43	...	...	...	
		F	13 10	...	...	...	
18	ZNE	eP	8 46 0	...	...	2810	Rhodes (Strasbourg).
	E	iS	50 29	...	...	...	
	ZN	i	50 37	...	...	...	
	NE	i	51 1	...	...	...	
	NE	i	51 27	...	...	...	
	N	iS_cS	56 52	...	...	...	
		F	9 5	...	...	...	
19	N	e(S)	7 30 03	...	...	...	Felt in south-east France.
	NE	e	31 47	...	...	...	
	Z	M	32 41	8	+11	...	
		F	35	...	...	...	
20-21	NE	e	23 43	...	...	...	Solomon Islands. 5° S., 162° E. (Manila.)
	NE	eL	55	...	...	...	
	Z	eL	0 5	...	...	...	
	N	M	43 17	25	+11	...	
		F	1 30	...	...	...	
29	ZN	eL	13 45	...	...	...	Confused by microseisms. No "E–W" record. East of New Zealand. 40° S., 175° W. (Manila.)
	N	M	53 14	20	+ 7	...	
	Z	M	53 47	19	+11	...	
		F	14 55	...	...	...	
30	Z	eP	21 32 10	...	...	9310	Pacific Ocean off Japan. 36·5° N., 141·5° E. (U.R.S.S.)
	ZNE	eS	42 36	...	...	...	
	NE	eL	59	...	...	...	
	Z	eL	22 3	...	...	...	
	E	M	10 23	22	−14	...	
	N	M	11 59	21	+23	...	
	Z	M	14 28	19	−18	...	
		F	23 0	...	...	...	
31	Z	iP	3 25 34	...	...	2000	NE, e. Macedonia. 40·5° N., 21° E. (Strasbourg.)
	NE	eS	28 57	...	...	...	
	ZNE	eL	30	...	...	...	
	N	M	31 33	15	−22	...	
	E	M	34 29	15	−13	...	
	Z	M	35 33	10	+15	...	
		F	4 5	...	...	...	
April 1		e	3 40	...	...	...	
		F	4 30	...	...	...	
3	Z	iP	11 20 44	...	...	5350	Compression. NE, e. Practically no surface waves. Afghanistan. 37° N., 70·5° E. (U.R.S.S.)
	NE	iS	27 45	...	...	...	
	NE	i(SS)	30 10	...	...	...	
	N	i	36 28	...	...	...	
		F	12 5	...	...	...	

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
April 3 cont.		e	12 25	...	...	...	Very Small.
		F	13 10	...	...	...	
3		e	22 7	...	...	...	
		F	30	...	...	...	
5	ZNE	eL	4 14	...	...	...	
		F	40	...	...	...	
5	Z	eL	9 40	...	...	...	Horizontal components disturbed by wind.
		F	45	...	...	...	
11	ZNE	eL	2 10	...	...	...	Confused by wind and microseisms. Indian Ocean. 13° N., 95° E. (U.R.S.S.)
	E	M	12 10	21	+ 4	...	
		F	20	...	...	...	
11/12	Z	iP	23 22 27	...	...	4380	Compression. NE, e. Felt in Persia. 36° N., 51° E. (Strasbourg.)
	ZE	i	22 35	...	...	...	
	ZE	iPP	24 4	...	...	...	
	NE	iS	28 36	...	...	...	
	NE	e	28 50	...	...	...	
	N	iSS	31 15	...	...	...	
	ZNE	eL	34	...	...	...	
	Z	i	41 29	...	...	...	
	N	M	42 8	26	+51	...	
	Z	i	42 34	...	...	...	
	E	i	46 9	...	...	...	
	Z	i	46 13	...	...	...	
	E	i	49 22	...	...	...	
	E	i	49 56	...	...	...	
		F	1 50	...	...	...	
12		e	13 1	...	...	...	Repetitions of shock at 11d 23h.
		F	35	...	...	...	
12		e	22 55	...	...	...	
		F	23 5	...	...	...	
15		e	21 52	...	...	...	Very small.
		F	22 0	...	...	...	
19	ZNE	iP	15 28 30	...	...	2525	Amplitudes of iP as read in mm :— N E Z −10·2 +6·1 −13·8 giving azimuth about 145°. Mediterranean Sea near the coast of Tripoli. 32.5° N. ; 16° E. (Strasbourg). Maxima doubtful ; traces very faint and passing off upper edge of N and E records. Overlapped by next shock.
	ZN	i	28 38	...	...	...	
	ZNE	iPP	28 52	...	...	...	
	ZE	i	30 54	...	...	...	
	NE	iS	32 37	...	...	..	
	ZNE	eL	34	...	...	...	
	E	M	35—38	...	...	...	
	N	M	35 45	25	>+320	...	
	N	M	37 51	20	>+260	...	
	Z	M	38—40	(18)	(290)	...	
		F	— — —	...	...	...	
19		iP	18 2 57	...	...	2540	Times from Wood-Anderson seismogram.
		iS	7 5	...	...	...	Repetition of preceding shock. 32° N., 15·5° E. (Strasbourg.)
		eL	8	...	...	...	
	E	M	10 16	24	− 8	...	
		F	19 35	...	...	...	
19	ZNE	eP	20 36 59	...	...	2360	Further repetition 32° N., 15·5° E. (Strasbourg.)
	NE	iS	40 53	...	...	...	
	Z	i	41 0	...	...	...	
	ZNE	eL	42	...	...	...	
	N	M	44 11	24	−25	...	
	E	M	44 26	22	+29	...	
		F	21 50	...	...	...	
20	ZNE	iP	5 16 8	...	...	2510	Dilatation. Further repetition. 32° N., 16·5° E. (Strasbourg.)
	NE	eS	20 14	...	...	...	
	Z	i	20 18	...	...	...	
	E	i	20 22	...	...	...	
	N	i	20 25	...	...	...	
	ZNE	eL	21	...	...	...	
	N	M	23 33	25	−68	...	
	E	M	23 48	20	+63	...	
	N	M	26 29	15	+52	...	

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
April 20 cont.	Z	M	29 3	11	−42	...	
		F	7 30	...	...	...	
20/21	Z	eP	22 14 52	...	...	10000	Destructive in northern Formosa. 25° N., 121° E. (Strasbourg.)
	NE	eSKS	25 24	...	...	...	
	E	iS	25 50	...	...	...	
	NE	eSS	31 32	...	...	...	
	ZNE	eL	42	...	...	...	
	N	M	49 59	25	−95	...	
	N	M	51 50	18	+135	...	
	E	M	51 50	18	−69	...	
	E	M	54 38	18	+135	...	
	Z	M	55 44	16	−74	...	
		F	0 45	...	...	...	
21		e	8 27	...	...	...	
		F	9 0	...	...	...	
23	Z	iP	16 57 11	...	...	8130	Compression. Assam. 25·5° N., 93·5° E. (U.R.S.S.)
	NE	iS	17 6 37	...	...	...	
	NE	e	15 27	...	...	...	
	ZNE	eL	22	...	...	...	
		F	50	...	...	...	
24	ZE	iP	16 4 36	...	...	(9000)	Compression. Horizontal components disturbed by wind. South-east of Maldive Islands. 0·5° N., 75° E. (Bombay.)
	Z	ePP	7 32	...	...	...	
	ZNE	eL	41	...	...	...	
	Z	M	49 17	16	+ 2	...	
		F	17 10	...	...	...	
24	Z	iP	19 3 51	...	...	8830	
	NE	eS	13 53	...	...	...	
	ZNE	eL	30	...	...	...	
		F	55	...	...	...	
27	ZE	eP	19 9 16	...	...	2550	Felt in the Azores. 37° 41′ N., 25° 21′ W. (Strasbourg.)
	E	eS	13 25	...	...	...	
	ZNE	eL	15	...	...	...	
		F	50	...	...	...	
May 1	Z	eP	10 31 6	...	...	3430	Kurdistan. 38° N., 43° E. (Strasbourg.)
	ZE	iPP	32 28	...	...	...	
	NE	iS	36 19	...	...	...	
	ZNE	eL	38	...	...	...	
	N	M	44 33	18	−17	...	
		F	12 10	...	...	...	
2		e	8 29	...	...	...	Very small.
		F	35	...	...	...	
4/5	NE	eL	23 48	...	...	...	East of Formosa. 24° N., 123° E. (U.R.S.S.)
	Z	eL	51	...	...	...	
	N	M	59 27	17	+ 5	...	
		F	0 25	...	...	...	
7	NE	eL	6 46	...	...	...	Between Mindanao and Pelew Island. 8° N., 131° E. (Peichiko.)
	N	M	54 0	29	− 7	...	
	Z	eL	55	...	...	...	
		F	7 30	...	...	...	
9		e	5 41	...	...	...	Very Small.
		F	50	...	...	...	
10		e	17 50	...	...	...	Bay of Bengal. 20° N., 89° E. (Peichiko.)
		F	18 5	...	...	...	
12		e	5 48	...	...	...	Pamir. 38° N., 74° E. (U.R.S.S.)
		F	6 15	...	...	...	
12		e	13 0	...	...	...	Very small.
		F	10	...	...	...	
12		e	20 55	...	...	...	Very small.
		F	21 20	...	...	...	
13	ZE	eP	20 5 58	...	...	9070	Northern Laos. 20° N., 101° E. (Peichiko.)
	NE	eS	16 12	...	...	...	
	NE	eL	25	...	...	...	
	Z	eL	34	...	...	...	
	N	M	39 1	26	+19	...	

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
May 13 cont.	E	M	39 26	23	− 9	...	
		F	21 40	...	...	...	
14		e	1 5	...	...	...	Very small.
		F	45	...	...	...	
14/15	Z	e(PP)	23 42 41	...	...	(12500)	Horizontal components disturbed by wind. East of Sandwich Islands. 58° S. 25° W., (J.S.A.)
	E	eS	49 59	...	...	...	
	Z	iPS	51 49	...	...	...	
	N	iPPS	52 33	...	...	...	
	Z	i	52 56	...	...	...	
	E	eSS	57 48	...	...	...	
	Z	e	58 39	...	...	...	
	N	i	58 41	...	...	...	
	N	i	0 3 11	...	...	...	
	ZNE	eL	9	...	...	...	
	Z	M	22 35	21	+26	...	
	N	M	22 51	26	+40	...	
		F	— — —	...	...	...	Overlapped by next shock.
15	Z	eP	2 11 7	...	...	(6550)	Horizontal components disturbed by wind. Baluchistan. 29° N., 67° E. (U.R.S.S.)
	N	e(S)	19 13	...	...	...	
	N	e	22 8	...	...	...	
	ZNE	eL	33	...	...	...	
	N	M	35 35	20	−17	...	
	Z	M	42 3	15	−12	...	
		F	3 35	...	...	...	
16	ZNE	eL	17 52	...	...	...	Afghanistan. 36·5° N., 67·5°E. (U.R.S.S.)
		F	18 15	...	...	...	
16	Z	e	21 1 10	...	...	...	
	NE	eL	50	...	...	...	
	Z	eL	55	...	...	...	
	N	M	22 20 40	13	+ 3	...	
		F	23 10	...	...	...	
18	Z	e	21 51 32	...	...	...	
	NE	eL	22 50	...	...	...	
	Z	eL	56	...	...	...	
		F	23 10	...	...	...	
20	NE	eL	6 16	...	...	...	Sea of Celebes. 2·5° N., 124° E. (U.R.S.S.)
	Z	eL	25	...	...	...	
	N	M	31 58	20	+ 3	...	
		F	55	...	...	...	
20		e	18 30	...	...	...	Very small.
		F	40	...	...	...	
21	Z	iP	4 33 21	...	...	...	Very small. China. 34° N., 96·5° E. (U.R.S.S.)
	ZNE	eL	54	...	...	...	
		F	5 15	...	...	...	
21	Z	ePP	7 12 42	...	...	...	Northern Queensland. 14° S., 143° E. (U.R.S.S.)
	ZNE	eL	53	...	...	...	
	Z	M	8 9 35	20	+ 7	...	
	N	M	9 39	21	− 7	...	
		F	9 30	...	...	...	
21		e	12 55	...	...	...	Very small.
		F	13 5	...	...	...	
21		e	14 12	...	...	...	
		F	30	...	...	...	
22		e	8 57	...	...	...	
		F	9 10	...	...	...	
22		e	10 28	...	...	...	
		F	35	...	...	...	
23	Z	iP	18 7 13	...	...	...	Horizontal components disturbed by wind. Atlantic Ocean. 21° N., 45° W. (U.R.S.S.)
	ZNE	eL	19	...	...	...	
	Z	M	21 9	20	+11	...	
		F	19 5	...	...	...	
24	Z	eP	5 50 31	...	...	(11000)	Philippine Islands. 13° N., 125° E. (J.S.A.)
	Z	ePP	54 42	...	...	...	
	N	i	55 17	...	...	...	
	NE	eSKS	6 1 2	...	...	...	
	NE	eL	23	...	...	...	
	N	M	27 10	41	−63	...	

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
May			h. m. s.	s.	μ	km.	
24	E	M	27 34	40	−43	...	
cont.	Z	eL	33	...	...	...	
	N	M	41 48	17	−31	...	
	Z	M	41 53	15	+34	...	
		F	9 30	...	...	...	
25*	Z	ePS	0 35 5	...	...	...	11° N., 125° E.
	ZNE	eL	57	...	...	...	(U.R.S.S.)
	Z	M	1 12 6	18	+ 7	...	
		F	2 10	...	...	...	
26*	Z	e(PS)	22 31	...	...	...	15·5° N., 132° E.
	NE	eL	57	...	...	...	(U.R.S.S.)
	Z	eL	23 2	...	...	...	
	N	M	8 48	20	− 7	...	
	Z	M	12 0	16	+ 7	...	
		F	0 0	...	...	...	
27	Z	e	3 36	...	...	...	Pacific Ocean.
	ZNE	eL	4 32	...	...	...	22° N., 150° E.
		F	5 35	...	...	...	(U.R.S.S.)
28		e	17 42	...	...	...	
		F	18 15	...	...	...	
29		e	20 33	...	...	...	
		F	21 0	...	...	...	
30/31	Z	iP	21 42 14	...	...	6010	Dilatation. E, e.
	ZE	i	42 19	...	...	...	Azimuth about east.
	Z	iPPP	45 21	...	...	...	Destructive at Quetta.
	NE	iS	49 51	...	...	...	30·2° N., 66·9° E.
	Z	iSP	50 5	...	...	...	(J.S.A.)
	N	iPS	50 13	...	...	...	
	E	i	50 22	...	...	...	
	E	iSS	53 49	...	...	...	
	Z	i	54 35	...	...	...	
	N	iSSS	54 46	...	...	...	
	Z	i	57 11	...	...	...	
	ZNE	L	59	...	...	...	
	E	M	22 6–15	(20)	>350	...	
	N	M	12–14	(17)	>300	...	
	Z	M	12–14	(17)	>450	...	
		F	— — —	...	...	...	Overlapped by next shock.
31‡	N	eL	2 32	...	...	...	
	ZE	eL	36	...	...	...	
	N	M	37 23	21	− 8	...	
		F	3 0	...	...	...	
31		e	13 28	...	...	...	
		F	50	...	...	...	
31‡		e	17 44	...	...	...	
		F	18 0	...	...	...	
June 1‡		e	4 52	...	...	...	30° N., 66° E.
		F	5 20	...	...	...	(U.R.S.S.)
2‡	ZNE	iP	9 25 47	...	...	5890	31° N., 67° E.
	E	eS	33 17	...	...	...	(Strasbourg.)
	NE	e	43 38	...	...	...	
	ZNE	eL	46	...	...	...	
	N	M	49 45	19	+14	...	
	E	M	54 26	16	− 7	...	
	Z	M	54 38	15	− 9	...	
		F	11 5	...	...	...	
5	E	e	11 53 15	...	...	...	Apennines.
		F	12 0	...	...	...	44° 15′ N., 12° E. (Strasbourg.)
6		e	12 52	...	...	...	Very small.
		F	14 30	...	...	...	
8		e	1 25	...	...	...	Confused by wind and
		F	35	...	...	...	microseisms.
11		e	22 28	...	...	...	
		F	23 0	...	...	...	

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
June			h. m. s.	s.	μ	km.	
16		eL	7 17	...	...	...	
		F	40	...	...	...	
18/19		e(S)	22 53	...	...	...	East of Philippine Islands.
		eL	23 22	...	...	...	14° N., 129° E.
		F	0 5	...	...	...	(U.R.S.S.)
19/20		eL	23 24	...	...	...	Solomon Islands.
		F	0 20	...	...	...	9° S., 162° E. (U.R.S.S.)
22		e	16 33	...	...	...	Celebes.
		F	17 55	...	...	...	6° S., 120° E. (U.R.S.S.)
24/25	ZN	iPKP	23 42 30	...	...	(15500)	Compression.
	Z	ipPKP	43 6	...	...	...	New Hebrides.
	ZN	PP	45 46	...	...	...	15° S., 167° E. with
	NE	isS	0 4 25	...	...	...	focal depth 140 km.
	NE	L	29	...	...	...	(J.S.A.)
	Z	L	36	...	...	...	
	N	M	40 52	28	−25	...	
		F	3 0	...	...	...	
25	Z	eP	12 45 (48)	...	...	...	Pacific Ocean, east of
		L	13 15	...	...	...	Japan 41° N., 151° E.
		F	14 10	...	...	...	(Peichiko.)
27			— — —	...	...	...	No records, 9h 40m to 17h 52m.
28	Z	e	2 19 22	...	...	...	Pacific Ocean west of
		L	58	...	...	...	Chile.
		F	3 40	...	...	...	34·5° S., 82·5° W. (U.R.S.S.)
28	N	e	9 13 18	...	...	...	Very small. Phases
	N	i	13 28	...	...	...	from record of experi-
	N	i	14 4	...	...	...	mental Wood-Ander-
		F	15	...	...	...	son seismograph. Felt in Southern Germany.
29	ZNE	iP	7 1 25	...	...	9560	Compression. Ampli-
	NE	eSKS	11 47	...	...	...	tudes of iP as read in
	NE	iS	12 2	...	...	...	mm.
	NE	eSS	17 56	...	...	...	N E Z
		L	29	...	...	...	−0·3 +1·0 +3·0
	E	M	38 56	16	+91	...	giving azimuth about
	Z	M	39 6	16	−94	...	287°. Acapulco Deep.
	N	M	39 11	16	−39	...	18° N., 103° W.
		F	9 30	...	...	...	(J.S.A.)
July 5	Z	iP	18 1 31	...	...	5470	Compression.
	Z	ePP	3 32	...	...	...	Bokhara, near
	N	eS	8 39	...	...	...	39° N., 67·5° E.
	E	eSS	12 11	...	...	...	(Strasbourg.)
	N	L	17·5	...	...	...	
	Z	L	21·3	...	...	...	
	Z	M	25 18	15	+27	...	
	N	M	25 22	17	+22	...	
	E	M	25 23	18	+27	...	
		F	19 20	...	...	...	
6		eL	4 9	...	...	...	
		F	15	...	...	...	
6		eL	22 58	...	...	...	
		F	23 10	...	...	...	
7	Z	eP	13 36 25	...	...	(10700)	Felt in N.W. Luzon.
	NE	eSKS	47 6	...	...	...	18° 20′ N., 126° 10′ E.
	NE	L	14 10	...	...	...	(Manila.)
	E	M	23 0	15	+10	...	
		F	15 0	...	...	...	
9		eL	7 30	...	...	...	
		F	8 0	...	...	...	
9	Z	e	12 39 11	...	...	...	South China Sea.
	NE	e	45 55	...	...	...	(Peichiko.)
	NE	L	13 11	...	...	...	
		F	14 15	...	...	...	

* Repetitions from the shock at 24d. 5h.

‡ Repetitions from the shock at 30d. 21h.

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
July			h. m. s.	s.	μ	km.	
11		eL	9 7	...	...	...	Japan. 35° N., 140° E.
		F	45	...	...	...	(U.R.S.S.)
11		eL	14 23	...	...	...	
		F	45	...	...	...	
12		eL	2 12	...	...	...	
		F	40	...	...	...	
15	Z	i	14 32 21	...	...	...	Deep focus type.
	Z	e	34 39	...	...	...	
		F	40	...	...	...	
15		eL	18 42	...	...	...	
		F	55	...	...	...	
16	Z	iP	16 31 52	...	...	9790	Compression.
	E	eS	42 41	...	...	...	Destructive in
	NE	L	17 4	...	...	...	Formosa.
	E	M	11 33	19	+21	...	24·6° N., 120·9° E.
		F	18 0	...	...	...	(Tokyo.)
17		eL	0 12	...	...	...	
		F	25	...	...	...	
17		eL	1 4	...	...	...	Pacific Ocean south of
		F	40	...	...	...	Aleutian Islands.
							47° N., 177° W.
							(U.R.S.S.)
17	Z	eP	4 41±	...	...	(6000)	Atlantic Ocean, near
	NE	eS	48 41	...	...	...	0°, 15° W.
	NE	L	57	...	...	...	(Strasbourg.)
		F	5 50	...	...	...	
17	Z	e(PKP)	11 5 30	...	...	...	Horizontal compo-
	N	e	14 50	...	...	...	nents disturbed by
	NE	L	38	...	...	...	wind.
	N	M	47	...	...	...	Atlantic Ocean south
		F	13 40	...	...	...	of South Georgia.
							58° S., 37° W.
							(U.R.S.S.)
19	Z	eP	1 2 28	...	...	9570	Felt at Tokyo.
	ZNE	iP	2 34	...	...	...	36° 5′ N., 143° E.
	Z	ePP	5 55	...	...	...	(Tokyo.)
	E	eSKS	12 55	...	...	...	
	N	eS	13 6	...	...	...	
	E	iS	13 9	...	...	...	
	N	ePS	14 8	...	...	...	
	N	eSS	19·3	...	...	...	
	NE	L	28	...	...	...	
	Z	L	34	...	...	...	
	E	M	35 4	30	+50	...	
	Z	M	44 38	18	+45	...	
	N	M	44 56	18	−44	...	
		F	3 40	...	...	...	
23		eL	4 26	...	...	...	Indian Ocean.
		F	5 10	...	...	...	1° S., 70° E.
							(U.R.S.S.)
26	Z	eP	4 55 33	...	...	8630	Very small.
	NE	eS	5 5 (25)	...	...	...	
	N	L	17	...	...	...	
		F	50	...	...	...	
26	Z	e	11 1	...	...	...	China.
	NE	L	6	...	...	...	36° N., 105° E.
		F	12 5	...	...	...	(U.R.S.S.)
29	Z	$i[PKP]_1$	7 57 44	...	...	(17000)	South-west of Tonga
	Z	i	57 49	...	...	...	Islands.
	E	$i[PKP]_2$	57 56	...	...	...	23° S., 178° W. with
	Z	$ip[PKP]_2$	59 42	...	...	...	focal depth 490 km.
	ZNE	$eS[PKP]_2$	8 0 38	...	...	...	(J.S.A.)
	Z	iPP	1 29	...	...	...	Long waves indefinite.
	N	e	8 11 0	...	...	...	
		F	10 44	...	...	...	
29/30	NE	L	23 45	...	...	...	Pamir.
	Z	L	49	...	...	...	38° 46′ N., 72° 16′ E.
		F	0 0	...	...	...	(Tashkent.)
July			h. m. s.	s.	μ	km.	
30	NE	L	6 38	...	...	...	
	Z	L	53	...	...	...	
		F	7 20	...	...	...	
31		e	10 30	...	...	...	Very small.
		F	35	...	...	...	Afghanistan.
							37° N., 70° E.
							(U.R.S.S.)
Aug. 1	Z	eP	14 20 28	...	...	(11300)	Confused by
	Z	ePP	24 40	...	...	...	microseisms.
	Z	eSP	33 37	...	...	...	Philippine Deep.
	ZNE	L	15 0	...	...	...	10·5° N., 126·4° E.
		F	45	...	...	...	(Manila.)
1	Z	eP	16 20 25	...	...	8700	Near Pacific Coast of
	E	eS	30 20	...	...	...	Costa Rica.
	N	L	42	...	...	...	10° N., 86° W.
	E	M	54	...	...	...	(U.S.C.G.S.)
		F	17 45	...	...	...	
3*	NE	eP	1 23 8	...	...	9710	Near northern
	E	iSKS	33 37	...	...	...	Sumatra.
	N	eS	33 53	...	...	...	5° N., 97° E.
	NE	iS_cS	34 3	...	...	...	(J.S.A.)
	N	ePS	34 37	...	...	...	
	N	L	52	...	...	...	
	N	M	2 1 11	25	+81	...	
	E	M	8 46	20	+82	...	
		F	5 20	...	...	...	
3*	NE	e(S)	5 40 22	...	...	...	Mediterranean Sea.
		L	44·4	...	...	...	35° N., 20° E.
		F	6 10	...	...	...	(U.R.S.S.)
3*	NE	eL	12 39	...	...	...	Pacific Ocean east of
		F	13 25	...	...	...	Philippine Islands.
							13° N., 128° E.
							(U.R.S.S.)
3*	NE	eL	13 57	...	...	...	
		F	14 10	...	...	...	
4*	E	e	2 47 7	...	...	...	
	NE	L	3 10	...	...	...	
		F	30	...	...	...	
6*	NE	eL	0 39	...	...	...	
		F	1 50	...	...	...	
7*	NE	eL	9 43	...	...	...	Southern Colombia.
		F	10 5	...	...	...	1° N., 77° W. (J.S.A.)
10		eL	18 25	...	...	...	
		F	19 0	...	...	...	
17	Z	ePKP	2 4 23	...	...	(16500)	New Hebrides.
	ZN	ePP	8 7	...	...	...	20° S., 171° E., with
	Z	iPPP	11 34	...	...	...	focal depth 120 km.
	ZN	eSKSP	18 23	...	...	...	(J.S.A.)
	E	eSS	27 26	...	...	...	
	E	eSSS	33 15	...	...	...	
	E	L	48	...	...	...	
	N	L	53	...	...	...	
	Z	M	3 9 45	20	−56	...	
	N	M	10 10	21	−50	...	
	E	M	10 27	23	+43	...	
		F	5 45	...	...	...	
17		eL	21 20	...	...	...	South China Sea
		F	35	...	...	...	17·0 N., 117·5° E.
							(U.R.S.S.)
20	ZNE	e	9 3 53	...	...	...	Very small. Probably
	NE	L	7 30	...	...	...	Asia Minor.
		F	20	...	...	...	(Strasbourg.)
21	Z	e	14 8 7	...	...	...	Very distant.
	Z	L	15 4	...	...	...	Horizontal compo-
	Z	F	16 25	...	...	...	nents disturbed by
							wind.
22†		L	20 48	...	...	...	Baffin Bay.
		F	21 25	...	...	...	73° N., 66° W.
							(J.S.A.)

* No Z component record.

† Earlier phases masked by microseisms.

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
Aug. 23†		eL	14 53	...	...	...	Sumatra.
		F	16 10	...	...	...	4° S., 101° E.
							(U.R.S.S.)
25	Z	eP	5 14±	...	...	...	Barents Sea.
		L	20	...	...	...	74° N., 36° E.
		F	6 15	...	...	...	(Strasbourg.)
25		eL	21 16	...	...	...	
		F	22 0	...	...	...	
26		eL	17 18	...	...	...	Near Formosa.
		F	18 5	...	...	...	27° N., 120° E.
							(Vladivostok.)
27		eL	6 9	...	...	...	China.
		F	25	...	...	...	28·5° N., 117·5° E.
							(Vladivostok.)
29	Z	e	11 24	...	...	...	
		F	35	...	...	...	
31		eL	18 24	...	...	...	Pacific Ocean south of
		F	9 20	...	...	...	Kurile Islands.
							43° N., 150° E.
							(U.R.S.S.)
Sept. 2		eL	8 25	...	...	...	New Ireland.
		F	40	...	...	...	2·7° S., 152·2° E.
							(U.R.S.S.)
3		eL	11 48	...	...	...	
		F	12 5	...	...	...	
3	Z	eP	17 39 52	...	...	2250	Small.
	Z	eS	43 36	...	...	...	Felt around Janina,
	N	e	47	...	...	...	Greece.
		F	18 0	...	...	...	
4	Z	eP	1 38 10	...	...	7050	Alaska.
	E	eS	46 42	...	...	...	63° N., 151° W.
		F	— — —	...	...	...	(J.S.A.)
							Overlapped by next shock.
4	ZE	eP	1 50 42	...	...	9860	Azimuth about east.
	ZE	iP	50 44	...	...	...	Pacific Ocean east of
	Z	iPP	54 22	...	...	...	Formosa.
	NE	iSKS	2 1 9	...	...	...	22·5° N., 121·5° E.
	NE	iS	1 34	...	...	...	(Taihoku.)
	Z	iPS	2 39	...	...	...	
	NE	L	20	...	...	...	
	N	M	36 14	18	+110	...	
	E	M	36 15	16	+100	...	
	Z	M	36 18	15	−125	...	
	NE	L	4 14	...	...	...	Via antipodes.
		F	5 10	...	...	...	
9	Z	iPP	6 37 10	...	...	(12500)	South-west of Caroline
	NE	e	7 4 13	...	...	...	Islands.
	NE	L	7	...	...	...	6° N., 139° E. with
	N	M	17 33	24	+54	...	focal depth 160 km.
	E	M	18 18	23	−56	...	(J.S.A.)
	Z	M	28 4	19	−17	...	
		F	9 10	...	...	...	
11		eL	13 10	...	...	...	
		F	14 5	...	...	...	
11	ZNE	iP	14 16 16	...	...	8960	Amplitudes of iP as
	NE	iPP	19 22	...	...	...	read in mm.
	N	ePPP	21 44	...	...	...	N E Z
	ZNE	iS	26 24	...	...	...	−4·7 −1·8 +14·2
	Z	i	27 13	...	...	...	Azimuth 23°, giving
	N	eSS	32 48	...	...	...	epicentre—43° N.,
	NE	L	40·1	...	...	...	146° E. ; near North-
	Z	L	46	...	...	...	ern Japan.
	Z	M	50 30	27	+250	...	44·5° N., 147·0° E.
	N	M	50 39	26	+290	...	with focal depth 60
	E	M	55 42	20	+175	...	km. (J.S.A.)
		F	18 30	...	...	...	
14		eL	21 32	...	...	...	
		F	40	...	...	...	

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
Sept. 15		eL	4 30	...	...	...	
		F	40	...	...	...	
15		eL	12 19	...	...	...	New Guinea.
		F	13 25	...	...	...	10° S., 146° E.
							(U.R.S.S.)
15		eL	15 8	...	...	...	West of Easter Island.
		F	17 0	...	...	...	29° S., 114° W.
							(U.S.C.G.S.)
18	Z	iP	5 9 34	...	...	9010	Gulf of Panama.
	N	eS	19 45	...	...	...	7° N., 78° W.
	E	L	36	...	...	...	(J.S.A.)
		F	6 10	...	...	...	
18		eL	9 7	...	...	...	Japan.
		F	30	...	...	...	42° N., 143° E.
							(U.R.S.S.)
18		eL	20 57	...	...	...	Confused by wind and microseisms.
		F	21 10	...	...	...	
19		eL	3 34	...	...	...	
		F	4 15	...	...	...	
20	Z	ePKP	2 5 54	...	...	(13500)	Confused by micro-
	ZN	ePP	7 35	...	...	...	seisms.
	E	iPP	7 42	...	...	...	Azimuth about NE.
	Z	i	8 13	...	...	...	Epicentre from Kew
	NE	iSKKS	14 33	..	...	...	and Bombay about
	NE	ePKKP	15 29	...	...	...	4° S., 144° E. New
	ZNE	iPS	17 29	...	...	...	Guinea.
	NE	ePKKS	19 16	...	...	...	4° S., 141° E.
	NE	iSS	24 24	...	...	...	(J.S.A.)
	E	e	33 49	...	...	...	
	NE	e	37·1	...	...	...	
	NE	L	39·6	...	...	...	
	Z	L	52·7	...	...	...	
	N	M	49 51	30	+480*	...	*By extrapolation.
	E	M	50 6	27	+500*	...	
	Z	M	3 2 48	20	−200	...	
		F	5 40	...	...	...	
20‡	ZE	ePP	5 43 47	...	...	(13500)	4° S., 141° E.
	Z	ePPP	46 23	...	...	...	(J.S.A.)
	E	eSKKS	50 44	...	...	...	
	NE	iPS	53 42	...	...	...	
	E	e	53 47	...	...	...	
	Z	ePKKS	55 28	...	...	...	
	NE	eSS	6 0 31	...	...	...	
	E	eSSS	6 18	...	...	...	
	NE	e	14 7	...	...	...	
	NE	L	17·3	...	...	...	
	Z	L	26	...	...	...	
	E	M	31 2	19	−49	...	
	N	M	31 27	21	+64	...	
	Z	M	39 41	18	+52	...	
		F	8 20	...	...	...	
20‡	E	ePS	21 34·7	...	...	...	No N record.
	ZE	L	22 6	...	...	...	
		F	23 15	...	...	...	
23‡	Z	(eP)	9 33 (52)	...	...	(13500)	Confused by micro-
	Z	ePKP	37 14	...	...	...	seisms.
	Z	PP	38 56	...	...	...	4° S., 141° E. (J.S.A.)
	Z	PPP	41 32	...	...	...	
	NE	eSKKS	45 54	...	...	...	
	NE	ePS	48 52	...	...	...	
	Z	e	50 14	...	...	...	
	NE	e	10 9 26	...	...	...	
	NE	L	12	...	...	...	
	Z	L	15	...	...	...	
	Z	M	33 25	22	−22	...	
		F	12 10	...	...	...	
24‡		eL	6 10	...	...	...	
		F	35	...	...	...	
24	Z	eP	22 23 41	...	...	7780	Dilatation.
	N	eS	32 50	...	...	...	Pacific Ocean off Van-
	E	L	45	...	...	...	couver
		M	55	...	...	...	50° N. 130° W.
		F	23 55	...	...	...	(U.S.C.G.S.)

† Earlier phases marked by microseisms.

‡ Repetition of the New Guinea shock at 20d. 2h.

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
Sept.			h. m. s.	s.	μ	km.	
25‡	Z	e(PP)	10 40 20	…	…	…	2° S., 145° E.
	Z	e(PPP)	42 56	…	…	…	(Manila.)
	NE	L	11 19	…	…	…	
	Z	L	25	…	…	…	
		M	34	…	…	…	
		F	12 15	…	…	…	
26/27		eL	23 45	…	…	…	
		F	0 25	…	…	…	
28†	N	iP	16 19 53	…	…	660	Readings from record
	N	iPg	20 24	…	…	…	of experimental Wood-
	N	iS	21 0	…	…	…	Anderson seismo-
	N	iS*	21 24	…	…	…	graph.
		F	26	…	…	…	Felt around Bordeaux.
29		eL	6 34	…	…	…	
		F	7 20	…	…	…	
Oct. 1		eL	11 45	…	…	…	
		F	12 0	…	…	…	
2	ZN	iP	5 45 11	…	…	9100	Dilatation.
	Z	ipP	45 25	…	…	…	Amplitudes of iP as
	NE	iS	55 17	…	…	…	read in mm.
	N††	isS	55 51	…	…	…	N E Z
	N	L	6 11·4	…	…	…	−1·3 (0·0) +4·5
	Z	L	19	…	…	…	Azimuth about north.
	N	M	19 34	27	+34	…	Near Northern Japan.
		F	50	…	…	…	44° N., 147° E. with focal depth 80 km. (J.S.A.)
							†† Wood-Anderson record.
6	Z	e	4 46	…	…	…	
		L	6 3	…	…	…	
		F	25	…	…	…	
6		eL	15 23	…	…	…	
		F	35	…	…	…	
7		eL	5 39	…	…	…	
		F	6 30	…	…	…	
8	Z	(e)	9 39 21	…	…	…	Earlier Phases lost
	N	L	42	…	…	…	during change of
	N	M	47 16	25	+56	…	charts. Bokhara.
		F	10 40	…	…	…	37·5° N., 67° E. (U.R.S.S.)
9	ZE	eP	22 12 42	…	…	1980	Dilatation. Felt in
	ZE	iS	16 3	…	…	…	S.W. Iceland.
	NZ	L	17·0	…	…	…	62·5° N., 22·5° W.
	Z	M	19 27	12	−21	…	(Strasbourg.)
		F	23 10	…	…	…	
10		eL	21 12	…	…	…	Pacific Ocean.
		F	20	…	…	…	17·0° N., 131·5° E. (U.R.S.S.)
11/12	Z	ePP	22 36 46	…	…	(13000)	Bismarck Archipelago.
	E	ePS	46 39	…	…	…	1° N., 145° E.
	NE	L	23 12	…	…	…	(Manila.)
	Z	L	18	…	…	…	
	Z	M	30 51	19	+21	…	
		F	1 0	…	…	…	
12	Z	eP	16 57 53	…	…	9560	Pacific Ocean off Japan
	Z	iP	57 55	…	…	…	41° N., 147° E.
	Z	iPP	17 1 8	…	…	…	(Strasbourg.)
	Z	i	1 30	…	…	…	
	E	eSKS	8 11	…	…	…	Small.
	NE	iS	8 31	…	…	…	Large.
	N	ePS	9 18	…	…	…	
	E	iSS	13 49	…	…	…	
	E	eSSS	17 7	…	…	…	
	NE	L	24	…	…	…	
	Z	L	27·2	…	…	…	
	N	M	34 40	21	+120	…	
	E	M	35 10	20	+130	…	
	Z	M	36 29	23	−120	…	
		L	19 0	…	…	…	Via antipodes.
		F	50	…	…	…	

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
Oct.			h. m. s.	s.	μ	km.	
13		eL	2 41	…	…	…	Japan.
		F	3 25	…	…	…	41° N., 146° E. (U.R.S.S.)
13		eL	19 51	…	…	…	Asia Minor.
		F	20 0	…	…	…	38·0° N., 41·5° E. (U.R.S.S.)
14		eL	10 36	…	…	…	
		F	50	…	…	…	
14		eL	20 47	…	…	…	
		F	21 0	…	…	…	
18	Z	iP	0 24 32	…	…	9430	Compression. Near
	Z	iPP	27 44	…	…	…	Northern Japan.
	E	eSKS	34 54	…	…	…	44° N., 147° E., with
	E	iS	35 4	…	…	…	focal depth 80 Km.
	E	iPS	35 30	…	…	…	(J.S.A.)
	NE	iSS	40 22	…	…	…	
	E	eSSS	43 41	…	…	…	
	NE	L	50	…	…	…	
	Z	L	56·5	…	…	…	
	N	M	1 0 8	20	−105	…	
	E	M	0 8	20	+140	…	
	Z	M	5 29	19	+67	…	
		F	3 10	…	…	…	
18	NEZ	iPP	11 24 15	…	…	(12100)	Near Guam.
	N	eSKS	30 38	…	…	…	13° N., 143° E.
	Z	e(S)	32 43	…	…	…	(J.S.A.)
	NE	ePS	33 48	…	…	…	
	NE	iSS	39 30	…	…	…	
	E	L	55	…	…	…	
	Z	L	12 0	…	…	…	
	E	M	10 24	19	+20	…	
		F	13 35	…	…	…	
18	Z	eP	15 6 21	…	…	9430	Japan. Repetition of
	NE	eSKS	16 44	…	…	…	the shock at 18d 0h.
	E	iS	16 53	…	…	…	
	E	L	34	…	…	…	
	Z	L	41	…	…	…	
	E	M	42 21	20	+34	…	
		F	16 40	…	…	…	
22	N	e	7 42 10	…	…	…	Very small.
	Z	L	8 22	…	…	…	
		F	9 20	…	…	…	
23		eL	14 8	…	…	…	
		F	15	…	…	…	
25		eL	1 14	…	…	…	Polynesia.
		F	2 0	…	…	…	17·5° S., 165·0° W. (U.R.S.S.)
31	Z	eL	19 12	…	…	…	Horizontal components disturbed by
		F	30	…	…	…	wind. Montana. 47° N., 112° W. (J.S.A.)
Nov. 1	Z	iP	6 12 27	…	…	5590	Dilatation.
	E	eS	19 41	…	…	…	Felt in Eastern
	E	iSS	23 19	…	…	…	Canada and U.S.A.
	N	eL	25	…	…	…	46° 47′ N., 79° 04′ W.
	EZ	iL	27 31	…	…	…	(Ottawa.)
	E	M	31 8	18	−37	…	
	Z	M	31 21	18	+39	…	
		F	7 15	…	…	…	
1	Z	e	16 36	…	…	…	Tong-King.
	NE	eS	44 42	…	…	…	21° N., 103° E.
	E	eSSS	53 46	…	…	…	(Manila.)
	NE	L	17 2	…	…	…	
	Z	L	9	…	…	…	
	N	M	9 52	19	−39	…	
		F	18 5	…	…	…	
5		eL	21 48	…	…	…	Celebes.
		F	22 25	…	…	…	0·5° S., 120·5° E. (U.R.S.S.)

‡ Repetition of New Guinea shock at 20d. 2h.

† The notation used for near earthquakes is that of Jeffreys :—" The Earth," 2nd Edition, Cambridge University Press, 1929, p.100. London, Mon. Not. R. Astr. Soc., Geophys. Supp., 1, No. 8, 1926.

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat. 51° 28′ 6″ N. Long. 0° 18′ 47″ W. Height above M.S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
Nov.			h. m. s.	s.	μ	km.	
7	Z	eP	4 41 39	...	...	1990	Albania.
	E	eS	45 1	...	...	...	40·5° N., 20·5° E.
	N	L	46·2	...	...	...	(Strasbourg.)
	N	M	47 35	15	−9	...	
		F	5 0	...	...	...	
10	ZNE	e	18 46	...	...	...	North of Leeward
	N	LQ	52 53	...	...	...	Islands.
	ZE	LR	55 41	...	...	...	19° N., 63° W.
	E	M	55 44	33	−14	...	(J.S.A.)
		F	19 50	...	...	...	
11		eL	14 20	...	...	...	South of Fiji Islands.
		F	15 0	...	...	...	21° S., 176° E.
							(U.R.S.S.)
14		eL	20 56	...	...	...	Confused by wind dis-
		F	21 30	...	...	...	turbance. North of
							Solomon Islands.
							5° S., 161° E.
							(U.R.S.S.)
16		eL	0 28	...	...	...	Atlantic Ocean.
		F	45		...	...	2·5° N., 34° W.
							(U.R.S.S.)
16		eL	6 50	...	...	...	East of Philippine
		F	7 5	...	...	...	Islands.
							15° N., 130° E.
							(U.R.S.S.)
23		eL	8 33	...	...	...	Pacific Ocean, west of
		F	45	...	...	...	Ecuador.
							0°., 85° W. (J.S.A.)
25	Z	iP	10 15 55	...	...	9640	Dilatation.
	Z	iPP	19 26	...	...	...	South of Andaman
	E	eSKS	26 21	...	...	...	Islands.
	N	iS	26 35	...	...	...	10° N., 92° E.
	NE	L	46	...	...	...	(Strasbourg.)
	Z	L	54	...	...	...	
	N	M	11 3 24	18	+12	...	
		F	12 0	...	...	...	
28	Z	e	13 17	...	...	...	
		F	20	...	...	...	
30	Z	eP	3 51 36	...	...	8390	Confused by micro-
	E	eS	4 1 16	...	...	...	seisms.
	E	ePS	1 38	...	...	...	Caribbean Sea north
	E	L	18·5	...	...	...	of Panama.
	E	M	21 1	20	−16	...	10° N., 80° W.
		F	5 10	...	...	...	(U.S.G.G.S.)
Dec.							
2	NE	eL	0 31	...	...	...	Confused by micro-
	Z	eL	35	...	...	...	seisms.
	N	M	36 9	17	−8	...	Probably in Riu-Kiu
		F	50	...	...	...	Islands. (Manila).
2	N	eL	17 33	...	...	...	No records of "Z"
	N	M	40 3	17	+7	...	and "E–W" com-
		F	55	...	...	...	ponents.
							Confused by micro-
							seisms. .
							Near Riu-Kiu Islands.
							27·5° N., 127·5° E.
							(U.R.S.S.)
5	N	e	18 53 12	...	...	...	
	NE	eL	19 2	...	...	...	
	Z	eL	8	...	...	...	
	N	M	16 1	20	−6	...	
		F	20 5	...	...	...	
9	ZNE	eL	9 1	...	...	...	
	Z	M	5 33	19	−7	...	
		F	35	...	...	...	
14	Z	iP	1 42 47	...	...	9300	} NE, e.
	Z	isP	45 2	...	...	...	
	Z	ePP	46 8	...	...	...	
	NE	iSKS	52 12	...	...	...	
	ZNE	iS	52 33	...	...	...	
	ZNE	eSP	53 28	...	...	...	Large on "N–S"
	ZNE	esSP	56 31	...	...	...	component.
Dec.			h. m. s.	s.	μ	km.	
14	E	eSS	57 51	...	...	...	Northern Peru.
cont.	N	eSS	58 11	...	...	...	5·5° S., 73·3° W., with
	E	esSS	2 0 54	...	...	...	focal depth 350 km.
	N	iSSS	2 15	...	...	...	(J.S.A.)
	E	esSSS	5 15	...	...	...	Surface waves poorly
	N	iSSSS	5 31	...	...	...	developed.
		F	3 0	...	...	...	
14/15	ZE	iP	22 17 30	...	...	8890	Compression. N, e.
	Z	i	17 35	...	...	...	
	E	iS	27 35	...	...	...	
	ZNE	ePS	28 13	...	...	...	
	E	i	29 17	...	...	...	} Large movements.
	E	i	29 38	...	...	...	
	E	iSS	33 12	...	...	...	
	E	eSSS	36 11	...	...	...	
	N	i	38 53	...	...	...	
	ZNE	eL	41	...	...	...	
	N	M	51 0	20	−75	...	Pacific Ocean off Cen-
	Z	M	54 38	17	+185	...	tral America.
	E	M	54 38	17	+185	...	14° N., 93° W.
		F	1 15	...	...	...	(U.S.C.G.S.)
15	ZNE	ePKP	7 27 11	...	...	(15000)	Felt in Solomon
	Z	iSKP	30 33	...	...	...	Islands.
	N	iSS	48 22	...	...	...	10° S., 163° E.
	E	iSSP	48 32	...	...	...	(Manila.)
	N	i	49 51	...	...	...	
	NE	iSSS	53 8	...	...	...	
	NE	eL	57	...	...	...	
	Z	eL	8 9	...	...	...	
	E	M	13 2	36	+185	...	
	E	M	17 15	28	−130	...	
	Z	M	22 30	25	−110	...	
	N	M	22 40	24	−155	...	
		F	11 5	...	...	...	
16	NE	i	17 18 32	...	...	...	Clearly shown by
		F	35	...	...	...	Wood-Anderson seis-
							mograph. Very small.
							No "Z" record.
17	Z	eP	19 30 46	...	...	10100	South of Riu-Kiu
	ZN	e	31 14	...	...	...	Islands.
	ZNE	ePP	34 35	...	...	...	22° N., 127° E.
	NE	sSKS	41 30	...	...	...	(Strasbourg.)
	ZN	eS	41 48	...	...	...	
	N	iSS	47 58	...	...	...	
	NE	L	58	...	...	...	
	N	M	20 3 37	39	−105	...	
	Z	L	4	...	...	...	
	E	M	5 37	31	−89	...	
	N	M	6 23	29	−91	...	
	Z	M	17 24	17	−52	...	
		F	22 5	...	...	...	
18	ZNE	e(SSS)	7 41	...	...	...	Southern China.
	NE	L	48	...	...	...	27° N., 103° E.
	N	M	51 5	28	+13	...	(Chiufeng.)
	E	M	51 34	30	−13	...	
	Z	L	53	...	...	...	
		F	8 35	...	...	...	
18		e	17 39	...	...	...	Repetition of preced-
		F	18 5	...	...	...	ing shock.
							28·5° N., 104·0° E.
							(U.R.S.S.)
20		e	0 55	...	...	...	
		F	1 5	...	...	...	
20	ZN	eSKP	18 59 1	...	...	(14500)	No "E–W" record.
	N	L	19 41	...	...	...	Solomon Islands.
	Z	L	46	...	...	...	9° S., 159° E.
	N	M	46 22	28	−10	...	(Manila.
	N	M	59 59	20	+8	...	
	Z	M	20 0 4	20	−8	...	
		F	21 10 0	...	...	...	
21	ZNE	eL	12 32	...	...	...	Pacific Ocean off Cen-
		F	13 0	...	...	...	tral America.
							14° N., 92° W.
							(J.S.A.)
23	ZNE	eL	15 30	...	...	...	Kurile Islands.
		F	45				49·0° N., 154·5° E.
							(U.R.S.S).

SEISMOLOGICAL DIARY—*continued.*

Galitzin Seismographs, three components.

546. KEW OBSERVATORY. Lat 51° 28′ 6″ N. Long 0° 18′ 47″ W. Height above M S.L. 5 metres. **1935.**

Date.	Compt.	Phase.	G.M.T.	Period.	Amplitude.	Δ	Remarks.
			h. m. s.	s.	μ	km.	
Dec. 24	Z	eP	12 36 25	...	...	9200	Confused by microseisms.
	NE	eS	46 45	...	...	...	
	NE	L	58	...	...	...	
	Z	L	13 1	...	...	...	
	E	M	5 8	26	+8	...	
		F	14 5	...	...	...	
28	ZE	iP	2 48 56	...	...	10020	Amplitudes as read in mm. :— N. E. Z. (0·0) −1·2 +1·7 +1·3 +6·8 −12·7 Azimuth about 80°. Indian Ocean off western Sumatra. 0°, 98° E. (Batavia.)
	ZNE	i	49 5	...	...	...	
	ZNE	iPP	52 55	...	...	...	
	ZE	iPPP	54 57	...	...	...	
	ZE	i	56 57	...	...	...	
	Z	i	58 28	...	...	...	
	E	iSKS	59 39	...	...	...	
	NE	iS	59 55	...	...	...	
	N	i	3 0 3	...	...	...	
	ZE	i	1 35	...	...	...	
	N	i	3 42	...	...	...	
	N	iSS	5 55	...	...	...	
	ZE	i	6 46	...	...	...	
	N	i	7 36	...	...	...	
	ZE	i	10 35	...	...	...	
	N	i	10 38	...	...	...	
	N	i(SSSS)	12 23	...	...	...	
	Z	iPPP	14 37	...	...	...	By path > 180°.
	N	i	15 13	...	...	...	
	ZNE	L	18	...	...	...	
	N	M	19 24	52	550	...	
	N	M	22 7	34	+450*	...	*Not completely recorded.
Dec. 28 cont.	E	M	26 2	30	+170	...	
	N	M	30 6	28	+330	...	
	Z	M	35 17	25	−360	...	
	E	M	35 48	27	−200	...	
		F	7 30	...	...	...	
28		e	19 38	...	...	...	
		F	50	...	...	...	
29		e	4 39	...	...	...	Very small. Near Sumatra. 1° S., 97·5° E. (U.R.S.S.)
		F	55	...	...	...	
30	ZNE	e	0 7 57	...	...	...	Disturbed by wind and microseisms. New Guinea. 2° S., 140° E. (Wellington.)
	NE	eL	38	...	...	...	
	Z	eL	45	...	...	...	
	E	M	48 53	24	− 8	...	
		F	2 0	...	...	...	
30	N	i	3 10 46	...	...	...	Readings from experimental Wood-Anderson seismogram; very small on Galitzin records. Confused by microseisms. Black Forest. 48° 30′ N., 8° 10′ E. (Strasbourg.)
	N	i	11 4	...	...	...	
	N	i	11 22	...	...	...	
		F	13	...	...	...	
30	N	i	3 38 36	...	...	...	
	N	i	39 28	...	...	...	
	N	i	39 35	...	...	...	
	N	i	40 9	...	...	...	
		F	42	...	...	...	

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

547. KEW OBSERVATORY:

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

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

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

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

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

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

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

1935

547. KEW OBSERVATORY

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

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

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