





Fig. 2--Observed distribution of magnitudes of great earthquakes and Gumbel's theory of largest values

1300 square miles, east of Los Angeles. Lists (c) and (d) have been excerpted by the author from the "Local report" of the Seismological Laboratory in Pasadena.

Table 1 (parts a, b, c, and d) shows the reduction [8] of the data from the corresponding lists to the variable  $F(\bar{x}_m)$  plotted on GUMBEL'S probability-paper in Figure 2.

It will be seen from Figure 2 that all the points plotted for the earthquakes of the entire world can be represented fairly well by a straight line. The same is true for the plotted points for each smaller region separately, indicating that in each case the observed distribution of the magnitudes of the largest earthquakes is in good agreement with the theory of largest values even when so short a time-interval as ten days is used as a unit.

#### References

- [1] E. J. GUMBEL, Statistical control-curves for flood-discharges, Trans. Amer. Geophys. Union, pp. 489-509, 1942.
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Table 1--Large earthquakes

M	Upper class-limit	No.	m for upper class-limit	$F(\tilde{x}_m)$	M	Upper class-limit	No.	m for upper class-limit	$F(\tilde{x}_m)$
(a) Very large earthquakes of the world, 1904-42					(c) Concluded				
7 1/2	7.62	19	1242	.9576	5.4		2	309	.978
7 3/4	7.87	19	1261	.9722	5.5		1	310	.981
8	8.12	24	1285	.9908	5.8		1	311	.984
8 1/4	8.37	7	1292	.9961	5.9		1	312	.9873
8 1/2	8.62	4	1296	.9992	6.0		2	314	.9936
(b) Large earthquakes of the world, 1926-34					6.7		1	315	.9968
6.8	6.9		220	.738	(d) Earthquakes of small region in southern California, 1934-42				
7.0	7.1	26	246	.825	1 1/2	1.75		166	.525
7.2	7.3	25	271	.909	2	2.25	23	189	.598
7.4	7.5	10	281	.913	2 1/2	2.75	41	230	.728
7.6	7.68	4	285	.956	3	3.25	49	279	.883
7 3/4	7.87	6	291	.9765	3 1/2	3.75	21	300	.950
8	8.12	4	295	.9899	3.8		3	303	.959
8 1/4	8.37	2	297	.9967	4.1		1	304	.962
(e) Earthquakes of southern California, 1934-42					4.2		1	305	.965
2	2.25	1	1	.0026	4.3		2	307	.972
2 1/2	2.75	9	10	.031	4.4		3	310	.981
3	3.25	61	71	.224	4.5		1	311	.984
3 1/2	3.75	84	145	.459	4.6		1	312	.987
4	4.25	96	241	.763	4.7		1	313	.990
4 1/2	4.75	47	288	.911	4.8		1	314	.994
5	5.25	18	306	.968	5.3		1	315	.997
5.3		1	307	.971					

- [3] B. GUTENBERG and C. F. RICHTER, Recent results of earthquake study in southern California, *Trans. Amer. Geophys. Union*, pp. 95-96, 1943.
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