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ORDNANCE PAMPHLET 1188

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ABRIDGED RANGE TABLES

FOR

U. S. NAVAL GUNS



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U. S. NAVAL GUNS

**Compiled from the various range tables
issued by the Bureau of Ordnance**



13 JUNE 1944

**This publication is RESTRICTED and will be handled in accordance with Article 76,
United States Navy Regulations, 1920**

**NAVY DEPARTMENT
BUREAU OF ORDNANCE
WASHINGTON, D. C.**

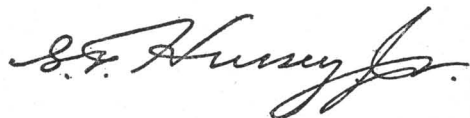
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ORDNANCE PAMPHLET 1188

**ABRIDGED RANGE TABLES FOR
U. S. NAVAL GUNS**

1. Ordnance Pamphlet 1188 is a compilation of surface range tables in abridged form for 20-MM to 16-inch U. S. Naval Guns. The data are from the various range tables issued by the Bureau of Ordnance.
2. These abridged tables are intended as a convenient source of information on the range, maximum ordinate and terminal elements of the trajectories obtained with the several weights of charge issued with armor piercing, common and high capacity projectiles.
3. This publication supersedes O. D. 443 dated 5 September 1941 which should be destroyed.
4. This publication is RESTRICTED and should be handled in accordance with the provisions of Article 76, U. S. Navy Regulations, 1920.



G. F. HUSSEY, JR.
Rear Admiral, U. S. Navy
Chief of the Bureau of Ordnance

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PROJECTILE					
Gun	Type	Weight Lbs.	Charge	I. V. f. s.	Page
20-MM	A. A.	.2714	Service	2,725	1
40-MM	A. A.	1.985	Service	2,800	2
1".1/75	A. A.	.917	Service	2,600	3
1-Pdr.	Com.	1.088	Service	2,000	4
3-Pdr.	Com.	3.3	Service	2,200	5
6-Pdr.	Com.	6.0	Service	2,240	6
3"/23	A. A.	13	Service	1,650	7
3"/50	A. A.	13	Service	2,700	8
4"/50	Com.	33	Target	2,500	9
4"/50	Com.	33	Service	2,900	10
5"/25	A. A. Com.	53.85	Service	2,110	11
5"/38	A. A. Com.	55.18	Service	2,600	12
5"/50	Com.	50	Service	3,000	13
5"/51	Com.	50	Service	3,150	14
5"/51	Tar.	50	Target	2,300	15
5"/54	H. C.	70	Service	2,650	16
6"/47	A. P.	130	Service	2,500	17
6"/47	Com.	105	Service	2,800	18
6"/47	Tar.	105	Target	2,300	19
6"/47	Tar.	130	Target	2,050	20
6"/47	H. C.	105	Service	2,665	21
6"/50	Com.	105	Service	2,800	22
6"/53	3.8-Cal. Com.	105	Service	3,000	23
6"/53	4.5-Cal. Com.	105	Service	3,000	24
6"/53	3.8-Cal. Tar.	105	Target	2,300	25
6"/53	4.5-Cal. Tar.	105	Target	2,300	26
6"/53	H. C.	105	Service	3,000	27
8"/55	A. P.	335	Service	2,500	28
8"/55	A. P. & Com.	260	Service	2,800	29
8"/55	A. P. & Com.	260	Special	2,700	30
8"/55	Tar.	260	Target	2,300	31
8"/55	Tar.	335	Target	2,000	32
8"/55	H. C.	260	Service	2,800	33
8"/55	H. C.	260	Service	2,700	34
8"/55	H. C.	260	Target	2,160	35
12"/50	A. P.	870	Service	2,900	36
12"/50	A. P.	1,140	Service	2,500	37
12"/50	Tar.	870	Target	2,100	38
12"/50	Tar.	1,140	Target	1,800	39
12"/50	Tar.	1,140	Special	2,300	40
14"/45	A. P.	1,400	Service	2,700	41
14"/45	A. P.	1,500	Service	2,600	42
14"/45	H. C.	1,275	Service	2,735	43
14"/45 & 50	A. P.	1,400	Special	2,600	44
14"/45 & 50	Tar.	1,400	Target	2,000	45
14"/45 & 50	Tar.	1,500	Target	1,935	46
14"/45 & 50	H. C.	1,275	H. C.	2,000	47

More calibers on next page

CONTENTS—(Continued)

PROJECTILE					
Gun	Type	Weight Lbs.	Charge	I. V. f. s.	Page
14"/50	A. P.	1,400	Service	2,800	48
14"/50	A. P.	1,500	Service	2,700	49
14"/50	H. C.	1,275	Service	2,825	50
16"/45	A. P.	2,700	Service	2,300	51
16"/45	A. P.	2,240	Service	2,520	52
16"/45	A. P.	2,100	Service	2,600	53
16"/45	Tar.	2,240	Target	1,935	54
16"/45	Tar.	2,100	Target	2,000	55
16"/45	H. C.	1,900	Service	2,635	56
16"/45	H. C.	1,900	Service	2,525	57
16"/45	H. C.	1,900	H. C.	2,000	58
16"/45 & 50	Tar.	2,700	Target	1,800	59
16"/45 & 50	H. C.	1,900	H. C.	1,900	60
16"/50	A. P.	2,700	Service	2,500	61
16"/50	H. C.	1,900	Service	2,690	62

20-MM A. A. GUN

I. V. 2725 f. s.

The standard I. V. is 2,740 f. s. This table is computed for 2,725 f. s., the expected average velocity over the life of the gun.

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
500	13	19	.66	1,839	.9	500	2
1,000	42	1 15	1.71	1,212	2.2	1,000	13
1,500	1 31	3 03	3.16	928	3.9	152	45
2,000	2 46	5 49	5.01	773	6.1	70	110
2,500	4 34	9 44	7.27	660	9	37	240
3,000	7 01	15 28	9.95	567	14	24	440
3,500	10 26	23 45	13.27	491	21	15	790
4,000	15 20	35 15	17.51	450	32	9	1,340
4,500	23 38	52 45	23.81	480	48	5	2,310
4,734	35 19	68 20	31.74	686	62	3	3,840

Data from O. P. 945

40-MM A. A. GUN

I. V. 2800 f. s.

The standard I. V. is 2,890 f. s. This table is computed for 2,800 f. s., the expected average velocity over the life of the gun.

Range	Angle of Elevation		Angle of fall		Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
500		11		13	.57	2,800		500	1
1,000		25		34	1.23	2,444		1,000	6
1,500		42		59	1.99	2,116		1,500	16
2,000	1	03	1	34	2.88	1,822		310	33
2,500	1	29	2	26	3.92	1,564		174	62
3,000	2	02	3	39	5.12	1,346		116	107
3,500	2	43	5	14	6.48	1,170		82	174
4,000	3	32	7	08	7.97	1,050		59	269
4,500	4	30	9	17	9.57	972		44	397
5,000	5	36	11	39	11.27	915		34	562
5,500	6	51	14	15	13.08	870		27	768
6,000	8	15	17	05	15.00	833		23	1,020
6,500	9	48	20	08	17.03	802		19	1,320
7,000	11	30	23	23	19.17	777		16	1,680
7,500	13	22	26	48	21.44	756		14	2,100
8,000	15	26	30	24	23.86	740		12	2,595
8,500	17	44	34	12	26.46	728		10	3,190
9,000	20	19	38	12	29.29	721		9	3,895
9,500	23	14	42	25	32.43	718		7	4,750
10,000	26	43	46	56	36.04	720		6	5,830
10,500	31	15	52	09	40.52	727		5	7,305
11,000	40	00	60	22	49.99	742		4	10,950
11,019	42	00	61	57	50.44	778		4	11,000

Date from O. P. 1181 (Tentative)

1.1-IN. 75-CAL. GUN

I. V. 2600 f. s.

The standard I. V. is 2,700 f. s. This table is computed for 2,600 f. s., the expected average velocity over the life of the gun.

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
500	14	16	.61	2,200	0	500	2
1,000	31	40	1.37	1,818	.2	1,000	8
1,500	54	1 21	2.32	1,470	.5	490	22
2,000	1 27	2 25	3.47	1,177	1.2	172	51
2,500	2 11	3 54	4.81	1,022	2	100	100
3,000	3 06	5 51	6.35	928	4	67	177
3,500	4 12	8 19	8.07	851	6	47	289
4,000	5 31	11 22	9.97	775	10	33	442
4,500	7 06	15 06	12.10	700	14	24	650
5,000	9 03	19 50	14.56	625	20	18	939
5,500	11 29	26 13	17.50	553	29	13	1,349
6,000	14 36	34 51	21.10	491	43	9	1,920
6,500	18 58	46 15	25.8	445	64	6	2,806
7,000	26 00	60 58	33.1	420	105	4	4,445
7,400	40 53	76 27	47.7	434	219	2	8,600

Data from O. P. 717 (1st Rev.)

1-PDR. GUN

7.088-Lb. Projectile

I. V. 2000 f. s.

Range	Angle of Elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
100	4	5	.15	1,863	0	100	0
200	9	10	.32	1,734	0	200	0
300	14	16	.50	1,613	.1	300	1
400	20	24	.69	1,500	.1	400	2
500	27	34	.90	1,395	.2	500	3
600	34	45	1.12	1,300	.3	600	5
800	51	1 13	1.61	1,150	.7	800	10
1,000	1 10	1 48	2.16	1,049	1.2	1,000	19
1,200	1 33	2 30	2.76	976	2.0	200	32
1,400	2 00	3 17	3.40	918	3.0	126	48
1,600	2 31	4 11	4.07	867	4.3	92	71
1,800	3 03	5 12	4.78	820	5.9	76	99
2,000	3 40	6 20	5.54	779	8.0	64	133
2,200	4 21	7 35	6.34	740	10	53	174
2,400	5 04	8 58	7.18	704	13	44	223
2,600	5 52	10 33	8.07	669	17	37	283
2,800	6 43	12 18	9.01	637	21	30	353
3,000	7 40	14 15	10.01	605	26	25	436
3,200	8 42	16 26	11.07	575	32	22	532
3,400	9 50	18 52	12.19	547	39	19	645
3,600	11 05	21 32	13.40	521	47	17	780

Data from O. P. 76 (1st Rev.)

3-PDR. GUN

3.3-Lb. Projectile

I. V. 2200 f. s.

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
500	19.6	22	.74	1,799		500	2
1,000	45.6	1 00	1.68	1,462	.3	1,000	11
1,500	1 20.5	2 00	2.82	1,202	.9	215	32
2,000	2 06.5	3 28	4.16	1,047	2.2	116	71
2,500	3 04.4	5 18	5.67	951	4.6	74	136
3,000	4 13.7	7 28	7.33	877	8.7	51	232
3,500	5 34.5	10 02	9.13	817	15.2	38	364
4,000	7 07.3	12 59	11.97	766	24.8	29	539
4,500	8 52.7	16 21	13.18	724	38.4	23	765

Data from O. P. 81

6-PDR. GUN

6-Lb. Projectile

I. V. 2240 f. s.

Range	Angle of Elevation		Angle of fall		Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
500	18.4		20		.73	1,912		500	2
1,000	41.4		51		1.58	1,621	.2	1,000	10
1,500	1	10.3	1	37	2.59	1,374	.7	273	27
2,000	1	47.0	2	44	3.77	1,183	1.5	150	58
2,500	2	32.5	4	11	5.11	1,060	2.7	96	108
3,000	3	27.5	5	57	6.60	979	5.0	65	183
3,500	4	31.7	7	59	8.20	916	8.4	48	288
4,000	5	45.0	10	18	9.91	864	12.8	37	426
4,500	7	07.5	12	54	11.74	820	18.6	29	603
5,000	8	39.5	15	47	13.69	782	25.8	23	824
5,500	10	21.4	18	56	15.77	749	34.6	19	1,097
6,000	12	14.5	22	32	18.00	725	45.0	16	1,432
6,500	14	20.3	26	23	20.39	705	57.1	13	1,837
7,000	16	38.1	30	29	22.94	692	70.9	11	2,326
7,500	19	10.3	34	49	25.69	685	86.5	9	2,917
8,000	21	59.4	39	20	28.68	686	103.9	8	3,632

Data from O. P. 98

3-IN. 23-CAL. GUN

13-Lb. A. A. Projectile

I. V. 1650 f. s.

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	1 09	1 18	1.98	1,385	.5	1,000	16
2,000	2 37	3 20	4.38	1,157	2.1	125	81
3,000	4 29	6 09	7.16	1,026	5.6	64	215
4,000	6 46	9 42	10.26	943	11	40	441
5,000	9 28	13 59	13.68	877	20	26	786
6,000	12 35	19 01	17.48	824	33	19	1,280
7,000	16 17	24 56	21.75	781	51	14	1,980
8,000	20 48	31 55	26.68	753	77	11	2,980
9,000	26 38	40 16	32.78	741	115	8	4,480
10,000	36 54	52 19	42.51	758	191	5	7,480
10,150	42 30	57 41	47.33	779	236	4	9,235
10,000	48 16	62 37	51.89	803	282	3	11,060
9,000	58 14	69 50	58.79	840	358	2	14,120

Data from O. P. 935

3-IN. 50-CAL. GUN

13-Lb. A. A. Projectile

! V. 2700 f. s.

Range	Angle of Elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	25	31	1.18	2,345	.2	1,000	6
2,000	56	1 17	2.56	2,004	1.0	473	26
3,000	1 34	2 26	4.21	1,687	2.9	191	70
4,000	2 22	4 08	6.16	1,409	6	104	154
5,000	3 26	6 31	8.50	1,191	12	62	296
6,000	4 47	9 29	11.23	1,045	21	41	522
7,000	6 28	13 04	14.31	949	34	29	861
8,000	8 31	17 20	17.70	883	51	21	1,345
9,000	10 58	22 12	21.41	838	75	16	1,995
10,000	13 55	27 35	25.52	808	107	13	2,880
11,000	17 20	33 29	30.08	792	148	10	4,035
12,000	21 19	39 57	35.14	791	202	8	5,530
13,000	26 12	46 58	40.99	805	276	6	7,500
14,000	33 06	54 50	48.80	841	390	5	10,445
14,590	43 02	63 17	59.48	884	580	3	15,010
14,000	52 44	69 49	68.9	916	779	2	19,640
13,000	58 41	73 22	74.0	932	898	2	22,350

Data from O. P. 861 (1st Rev.)

4-IN. 50-CAL. GUN
33-Lb. Common Projectile
I. V. 2500 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		28.7		31	1.27	2,221	0.3	1,000	7
2,000	1	02.5	1	13	2.71	1,964	1.2	404	30
3,000	1	42.7	2	11	4.34	1,730	3.1	189	76
4,000	2	30.6	3	29	6.18	1,525	6.5	114	154
5,000	3	28.0	5	14	8.29	1,347	11.6	73	279
6,000	4	36.7	7	30	10.66	1,207	19.2	51	463
7,000	5	58.2	10	17	13.28	1,112	29.7	37	727
8,000	7	34.0	13	37	16.19	1,042	44.1	28	1,092
9,000	9	32.5	17	31	19.43	985	63.2	21	1,593
10,000	11	55.0	21	55	22.97	945	88.2	17	2,273
11,000	14	41.5	26	46	26.87	918	120.2	13	3,163
12,000	17	56.0	31	52	31.14	906	160.7	11	4,281
13,000	21	45.7	37	16	35.90	904	212.3	9	5,689
14,000	26	24.3	43	06	41.46	913	281.4	7	7,548
14,700	30	28.2	47	36	46.04	924	344.9	6	9,296

Data from O. P. 172

4-IN. 50-CAL. GUN

33-Lb. Common Projectile

I. V. 2900 f. s.

(Service Charge)

Range	Angle of Elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	21.3	24	1.09	2,590	0.2	1,000	5
2,000	46.1	53	2.32	2,303	.7	700	22
3,000	1 15.4	1 35	3.71	2,039	1.7	274	55
4,000	1 50.0	2 31	5.28	1,799	3.5	158	112
5,000	2 31.6	3 47	7.06	1,584	6.5	103	201
6,000	3 21.3	5 27	9.08	1,398	11.2	71	335
7,000	4 21.2	7 39	11.37	1,245	18.0	50	528
8,000	5 32.7	10 23	13.92	1,137	27.3	36	800
9,000	6 56.4	13 33	16.71	1,066	39.5	28	1,165
10,000	8 33.4	17 04	19.71	1,018	55.0	22	1,630
11,000	10 23.7	20 54	22.85	987	74.2	18	2,195
12,000	12 26.7	24 56	26.14	966	97.4	14	2,860
13,000	14 42.7	29 06	29.72	946	125.3	12	3,625
14,000	17 12.4	33 16	33.50	938	158.3	10	4,545
15,000	19 55.5	37 26	37.52	942	197.1	9	5,720
16,000	22 57.7	41 36	41.80	952	242.7	8	7,195
17,000	26 27.2	45 52	46.38	968	296.9	7	9,025
18,000	30 30.9	50 17	51.83	988	363.6	6	11,200
19,000	35 40.7	54 47	58.34	1,013	455.8	5	13,979
19,600	39 54.5	57 30	63.64	1,029	539.0	4	16,575

Data from O. P. 171

4 IN. 50 CAL. GUN

33 Lb. Projectiles, H.C. and Common, Mk. 16
I.V. 2900 f.s.

(Service Charge)

RANGE	ANGLE OF ELEVATION	ANGLE OF FALL	TIME OF FLIGHT	STRIKING VELOCITY	DRIFT	DANGER SPACE FOR A TARGET 20 FEET HIGH	MAXIMUM ORDINATE	
1	2	3	4	5	6	7	8	
YARDS	° ' "	° ' "	SECONDS	F. S.	YARDS	YARDS	FEET	
1000	20.8	22	1.08	2666	.1	1000	5	
2000	44.3	50	2.26	2432	.6	836	20	
3000	1 10.9	1 25	3.55	2202	1.5	305	51	
4000	1 41.3	2 10	4.99	1980	3	186	100	
5000	2 16.5	3 10	6.60	1769	5	125	175	
6000	2 57.9	4 29	8.40	1570	9	87	284	
7000	3 46.9	6 12	10.43	1390	13	61	439	
8000	4 45.0	8 26	12.74	1232	19	45	655	
9000	5 54.6	11 17	15.33	1113	28	34	954	
10000	7 17.3	14 41	18.18	1042	40	25	1355	
11000	8 53.2	18 24	21.23	997	54	20	1885	
12000	10 42	22 19	24.45	968	72	16	2550	
13000	12 44	26 22	27.86	946	93	13	3360	
14000	14 59	30 32	31.47	933	119	11	4335	
15000	17 28	34 47	35.31	928	150	9	5505	
16000	20 13	39 04	39.43	929	187	8	6885	
17000	23 18	43 22	43.90	939	231	7	8530	
18000	26 48	47 40	48.82	956	286	6	10520	
19000	30 53	52 04	54.44	980	356	5	13000	
20000	36 13	56 56	61.53	1014	454	4	16450	
20721	45 00	63 34	72.60	1061	633	3	22510	

Data from O.P. 1224

5-IN. 25-CAL. GUN
53.85-Lb. A. A. Com. Projectile
I. V. 2110 f. s.

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		49.1		43	1.50	1,886	.3	1,000	9
2,000	1	36.0	1	41	3.19	1,674	1.5	266	41
3,000	2	31.5	3	01	5.10	1,478	3.9	133	104
4,000	3	37.8	4	49	7.28	1,299	8	80	213
5,000	4	57.1	7	12	9.76	1,150	15	53	385
6,000	6	32.8	10	14	12.54	1,053	24	37	642
7,000	8	26	13	45	15.56	997	36	27	1,005
8,000	10	36	17	35	18.80	954	53	21	1,495
9,000	13	03	21	49	22.29	920	75	17	2,125
10,000	15	50	26	25	26.07	895	102	13	2,920
11,000	19	01	31	23	30.21	879	137	11	3,925
12,000	22	43	36	46	34.84	873	182	9	5,205
13,000	27	11	42	39	40.20	877	243	7	6,910
14,000	33	13	49	32	47.12	898	333	6	9,440

Data from O. P. 1205 (Preliminary)

5-IN. 38-CAL. GUN

55.18-Lb. A. A. Com. Projectile

I. V. 2600 f. s.

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/30 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	26.2		28		1.21	2,365	0.2	1,000	6
2,000	56.0		1	04	2.55	2,141	1.0	491	26
4,000	2	10.6	2	51	5.71	1,725	5.1	140	130
6,000	3	53.2	5	58	9.67	1,372	14.7	64	377
8,000	6	20.2	11	06	14.73	1,128	34.0	34	890
10,000	9	47.4	18	20	20.81	1,003	67.4	20	1,825
12,000	14	19.5	26	38	27.78	950	119.3	13	3,350
14,000	20	03.8	35	23	35.81	942	196.5	9	5,645
16,000	27	28	44	36	45.44	963	313	7	9,070
18,000	40	05	56	22	60.40	1,019	542	5	15,715
18,200	43	18	59	22	64.40	1,030	613	5	17,750
18,000	50	28	64	09	72.0	1,050	789	3	21,890
16,000	59	27	70	14	79.8	1,060	962	2	27,070
14,000	64	14	73	24	84.2	1,057	1,013	2	29,650
12,000	68	21	76	06	89.0	1,050	1,028	2	31,700
10,000	72	12	78	34	93.7	.....	.....	.....	33,430
8,000	75	57	80	59	97.1	.....	.....	.....	34,880
6,000	79	36	83	19	99.3	.....	.....	.....	36,040
4,000	83	10	85	36	100.6	.....	.....	.....	36,900
2,940	85	00	86	47	100.9	.....	.....	.....	37,220

Data from O. P. 551

5-IN. 50-CAL. GUN

50-Lb. Common Projectile

I. V. 3000 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	19.8	21	1.05	2,704	.2	1,000	5
2,000	42.5	49	2.22	2,427	.9	2,000	20
3,000	1 08.9	1 26	3.53	2,170	2.1	291	50
4,000	1 39.8	2 14	4.99	1,935	4.4	178	100
5,000	2 16.1	3 17	6.64	1,721	8.0	119	178
6,000	2 59.0	4 40	8.49	1,531	13.3	83	292
7,000	3 49.5	6 28	10.57	1,366	21.0	60	454
8,000	4 49.6	8 44	12.89	1,233	32.7	44	680
9,000	6 00.3	11 29	15.44	1,138	49.3	33	986
10,000	7 21.1	14 34	18.19	1,075	71.9	26	1,387
11,000	8 52.0	17 56	21.09	1,036	101.9	21	1,892
12,000	10 32.3	21 29	24.09	1,013	140.4	17	2,512
13,000	12 20.9	25 06	27.24	995	190	.....	.....
14,000	14 17.4	28 47	30.56	987	252	.....	.....
15,000	16 20.8	32 27	33.95	986	326	.....	.....
16,000	18 29.8	36 04	37.46	994	415	.....	.....
17,000	20 43.4	39 34	41.07	1,008	519	.....	.....
18,000	23 00.7	42 54	44.78	1,030	638	.....	.....
19,000	25 19.9	46 03	48.58	1,057	769	.....	.....

Data from O. P. 184

5-IN. 51-CAL. GUN

50-Lb. Common Projectile

I. V. 3150 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	17.9	19	1.00	2,846	.....	1,000	4
2,000	38.3	44	2.10	2,568	1.0	2,000	18
3,000	1 01.8	1 16	3.33	2,308	2.5	330	44
4,000	1 29.3	1 58	4.70	2,068	5.1	204	89
5,000	2 01.0	2 52	6.23	1,848	9.1	137	156
6,000	2 38.2	4 03	7.94	1,649	14.9	96	255
7,000	3 22.2	5 35	9.86	1,471	23.4	69	394
8,000	4 14.1	7 33	12.01	1,319	35.2	51	588
9,000	5 14.8	9 56	14.39	1,195	51.0	38	851
10,000	6 26.2	12 48	17.00	1,107	72.0	29	1,200
11,000	7 48.2	16 02	19.80	1,050	98.4	23	1,650
12,000	9 20.3	19 30	22.76	1,013	130.4	19	2,208
13,000	11 03.0	23 10	25.88	990	168.6	16	2,892
14,000	12 55.8	26 57	29.16	976	213.1	13	3,717
15,000	14 59.3	30 50	32.65	967	264.6	11	4,688
16,000	17 15.4	34 40	36.25	969	323.5	10	5,793
17,000	19 46.4	38 30	40.10	973	391.3	8	7,112
18,000	22 32.3	42 10	44.25	982	469.0	7	8,727
19,000	25 32.7	45 53	48.70	997	559.3	6	10,642
20,000	28 56.4	49 33	53.51	1,014	667.2	6	12,857
21,000	32 56.6	53 27	59.15	1,034	803.8	5	15,407
22,000	38 04.4	57 33	66.25	1,054	993.3	4	18,867
22,600	44 15.0	62 24	74.45	1,077	1,164.4	3	23,860

Data from O. P. 185

5 IN. 51 CAL. GUN

50 Lb. H.C. Projectile

I.V. 3150 f.s.

(Service Charge)

RANGE	ANGLE OF ELEVATION	ANGLE OF FALL	TIME OF FLIGHT	STRIKING VELOCITY	DRIFT	DANGER SPACE FOR A TARGET 20 FEET HIGH	MAXIMUM ORDINATE	
1	2	3	4	5	6	7	8	
YARDS	° ' "	° ' "	SECONDS	F. S.	YARDS	YARDS	FEET	
1000	23.7	19	.99	2881	.2	1000	4	
2000	43.7	42	2.08	2610	.7	2000	17	
3000	1 06.7	1 14	3.30	2339	1.8	360	44	
4000	1 33.5	1 56	4.66	2077	4	212	87	
5000	2 05.0	2 52	6.20	1827	6	138	154	
6000	2 42.7	4 08	7.96	1595	11	95	255	
7000	3 28.3	5 52	9.98	1384	17	65	401	
8000	4 24.2	8 16	12.31	1205	26	46	612	
9000	5 33.0	11 21	14.98	1077	38	33	914	
10000	6 56.0	14 57	17.90	1011	54	25	1325	
11000	8 33	18 58	21.03	965	75	19	1870	
12000	10 25	23 14	24.36	929	101	16	2570	
13000	12 31	27 44	27.92	904	133	13	3445	
14000	14 53	32 24	31.75	890	171	11	4500	
15000	17 33	37 08	35.84	885	218	9	5765	
16000	20 32	41 53	40.26	888	276	7	7295	
17000	23 57	46 41	45.17	901	346	6	9160	
18000	27 56	51 29	50.74	923	438	5	11500	
19000	32 54	56 31	57.44	955	561	4	14620	
20000	41 05	63 04	67.97	1006	788	3	20150	
20142	45 00	65 41	72.77	1026	900	3	22900	

OP 1188 CHANGE 1

50 Lb..H.C Projectile
I.V. 2300 f.s.

[illegible]

5-IN. 51-CAL. GUN
50-Lb. Target Projectile
I. V. 2300 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	34.1	37	1.39	2,029	0.2	1,000	8
1,500	53.8	1 02	2.15	1,904	0.6	1,500	18
2,000	1 14.7	1 29	2.97	1,784	1.2	324	35
2,500	1 37.7	2 01	3.85	1,669	2.0	214	60
3,000	2 03.2	2 40	4.79	1,559	3.0	161	92
3,500	2 31.3	3 25	5.80	1,453	4.5	113	136
4,000	3 02.4	4 18	6.87	1,359	6.3	91	192
4,500	3 36.5	5 19	8.00	1,278	8.6	74	261
5,000	4 13.7	6 29	9.19	1,209	11.5	59	342
5,500	4 54.6	7 48	10.46	1,153	15.1	49	438
6,000	5 39.2	9 14	11.81	1,106	19.3	41	558
6,500	6 27.7	10 48	13.23	1,068	24.3	35	703
7,000	7 20.1	12 29	14.71	1,037	30.1	30	873
7,500	8 17.1	14 18	16.25	1,012	36.8	26	1,083
8,000	9 19.1	16 15	17.86	987	44.5	23	1,343
8,500	10 26.1	18 19	19.54	967	53.4	21	1,644
9,000	11 39.6	20 30	21.31	947	63.5	18	1,983
9,500	13 00.6	22 49	23.16	927	75.0	16	2,359
10,000	14 30.6	25 16	25.09	912	88.2	14	2,773
10,500	16 10.6	27 50	27.13	903	103.2	12	3,251
11,000	18 00.6	30 33	29.29	898	120.7	11	3,826
11,500	20 02.1	33 26	31.64	893	140.7	10	4,486
12,000	22 16.1	36 29	34.24	888	163.2	9	5,221
12,500	24 44.1	39 42	37.09	888	189.7	8	6,031
12,600	25 15.5	40 22	37.69	888	195.6	8	6,202

Data from O. P. 183

5-IN. 54-CAL. GUN

70-Lb. H. C. Projectile

I. V. 2650 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	28.7	25	1.16	2,506	.1	1,000	5
2,000	55.2	55	2.40	2,365	.4	620	23
4,000	1 54.9	2 10	5.10	2,088	2	186	104
6,000	3 06.0	3 53	8.18	1,826	5	100	269
8,000	4 32.0	6 17	11.73	1,587	10	61	553
10,000	6 17.4	9 37	15.84	1,375	18	39	1,010
12,000	8 27.4	14 11	20.60	1,205	30	26	1,715
14,000	11 08.2	19 58	26.07	1,095	48	18	2,770
16,000	14 23.0	26 27	32.14	1,060	72	13	4,275
18,000	18 11	32 51	38.71	1,057	105	10	6,305
20,000	22 37	39 14	45.88	1,068	148	8	8,970
22,000	27 46	45 26	53.88	1,088	203	7	12,420
24,000	34 07	51 54	63.49	1,107	282	5	17,120
25,909	47 24	62 28	82.49	1,148	476	3	28,000
24,000	58 56	70 02	96.70	1,186	655	2	37,680

Data from O. P. 1182

6-IN. 47-CAL. GUN

130-Lb. A. P. Projectile

I. V. 2500 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	27.6	29	1.23	2,374	0.2	1,000	6
2,000	56.9	1 02	2.53	2,252	.7	515	26
4,000	2 02.7	2 21	5.35	2,019	3	170	114
6,000	3 19.8	4 09	8.51	1,799	8	94	291
8,000	4 50.4	6 30	12.07	1,600	16	59	587
10,000	6 39.1	9 40	16.15	1,428	29	39	1,052
12,000	8 49.2	13 42	20.74	1,289	47	27	1,746
14,000	11 24.6	18 38	25.89	1,189	74	20	2,740
16,000	14 28.9	24 18	31.62	1,129	110	15	4,120
18,000	18 06	30 26	37.92	1,102	158	11	5,980
20,000	22 20	36 38	44.86	1,102	221	9	8,430
22,000	27 17	42 49	52.63	1,119	304	7	11,640
24,000	33 30	49 15	61.95	1,149	422	6	16,090
26,000	44 24	58 07	77.27	1,209	656	4	24,650
26,118	47 29	60 13	81.3	1,222	726	4	27,190
26,000	50 22	62 11	84.9	1,235	792	4	29,520
24,000	59 22	68 08	95.1	1,272	994	3	36,650

Data from O. P. 830 (1st Rev.)

6-IN. 47-CAL. GUN

105-Lb. Common Projectile

I. V. 2800 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	22.1	23	1.11	2,627	0.1	1,000	5
2,000	46.2	50	2.29	2,462	0.6	764	21
4,000	1 41.2	2 00	4.90	2,155	2.6	201	96
6,000	2 47.3	3 38	7.87	1,882	6.8	105	249
8,000	4 06.9	5 52	11.27	1,647	13.8	65	514
10,000	5 43.4	8 53	15.16	1,447	25.0	43	935
12,000	7 40.0	12 50	19.61	1,285	42	29	1,565
14,000	10 01.0	17 48	24.63	1,166	66	21	2,490
16,000	12 51.3	23 34	30.25	1,106	100	15	3,810
18,000	16 17	30 00	36.54	1,078	146	12	5,610
20,000	20 20	36 31	43.44	1,072	205	9	7,990
22,000	24 58	42 45	51.00	1,083	283	7	11,090
24,000	30 27	48 51	59.66	1,107	388	6	15,150
26,000	37 23	55 07	70.19	1,150	537	5	20,780
27,520	48 30	63 12	86.8	1,210	821	3	30,900
26,000	57 47	68 43	98.2	1,251	1,051	3	39,100
25,100	60 00	69 56	100.2	1,258	1,094	2	41,000

Data from O. P. 564

6-IN. 47-CAL. GUN
105-Lb. Target Projectile
I. V. 2300 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		33.0		35	1.35	2,137	0.2	1,000	7
2,000	1	09.2	1	16	2.81	1,986	0.9	378	32
3,000	1	49.2	2	06	4.38	1,845	2.1	195	77
4,000	2	33.6	3	07	6.07	1,713	4.0	127	143
5,000	3	22.9	4	20	7.89	1,591	6.8	88	250
6,000	4	17.7	5	46	9.85	1,480	10.5	66	391
7,000	5	18.7	7	28	11.96	1,379	15.6	51	578
8,000	6	26.4	9	28	14.22	1,291	22.0	40	822
9,000	7	41.7	11	45	16.68	1,219	30.3	32	1,132
10,000	9	05.2	14	20	19.29	1,162	40.6	26	1,520
11,000	10	38.7	17	12	22.07	1,117	53	22	2,000
12,000	12	22.2	20	18	25.02	1,082	68	18	2,580
13,000	14	16.0	23	36	28.14	1,057	86	15	3,290
14,000	16	21.1	27	03	31.44	1,042	108	13	4,140
15,000	18	38.0	30	38	34.91	1,035	133	11	5,140
16,000	21	09	34	08	38.61	1,035	162	10	6,320
17,000	23	55	37	44	42.59	1,040	198	9	7,730
18,000	27	00	41	21	46.91	1,050	240	8	9,380
19,000	30	29	45	07	51.62	1,064	290	7	11,310
20,000	34	50	49	20	57.37	1,085	359	6	13,930
21,000	41	20	54	52	65.31	1,115	465	5	18,010
21,000	51	14	62	10	77.3	1,152	651	4	24,600
20,000	56	31	65	53	83.0	1,169	751	3	28,000
19,100	60	04	68	20	85.8	1,180	800	3	30,200

Data from O. P. 563

6-IN. 47-CAL. GUN

130-Lb. Target Projectile

I. V. 2050 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	41.0		44		1.50	1,929	.3	1,000	9
2,000	1	25.8	1	34	3.11	1,812	1.1	290	39
3,000	2	14.7	2	32	4.83	1,699	2.5	159	94
4,000	3	08.1	3	41	6.66	1,592	5	107	178
5,000	4	06.7	5	04	8.62	1,492	8	76	298
6,000	5	11.3	6	41	10.72	1,400	12	57	463
7,000	6	22.7	8	33	12.98	1,317	18	44	681
8,000	7	41.7	10	42	15.40	1,245	26	35	962
9,000	9	09.2	13	11	17.98	1,184	35	28	1,316
10,000	10	46.2	15	56	20.72	1,135	47	23	1,755
11,000	12	32.8	18	53	23.63	1,100	61	19	2,294
12,000	14	29	22	02	26.71	1,075	78	16	2,948
13,000	16	36	25	20	29.97	1,059	99	14	3,730
14,000	18	56	28	43	33.42	1,051	123	12	4,660
15,000	21	30	32	13	37.07	1,049	151	11	5,755
16,000	24	18	35	47	40.95	1,052	184	9	7,040
17,000	27	25	39	24	45.15	1,061	224	8	8,560
18,000	31	01	43	13	49.88	1,074	273	7	10,440
19,000	35	30	47	34	55.56	1,093	339	6	12,920
20,000	42	55	54	00	64.55	1,126	458	5	17,270
20,120	46	24	56	44	68.5	1,140	516	4	19,380
20,000	49	44	59	18	72.2	1,152	573	4	21,400
19,000	56	21	64	17	78.7	1,174	681	3	25,310
18,000	60	01	67	00	82.0	1,184	739	3	27,380

Data from O. P. 832 (1st Rev.)

6-IN. 47-CAL. GUN

105-Lb. H. C. Projectile

I. V. 2665 f. s.

(Service charge for 130-lb. projectile)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	24.4	26	1.16	2,496	0.2	1,000	5
2,000	51.1	56	2.40	2,328	.7	610	23
4,000	1 52.9	2 17	5.17	2,002	4	177	107
6,000	3 09.3	4 15	8.44	1,702	9	90	286
8,000	4 46.0	7 13	12.30	1,435	20	53	608
10,000	6 49.8	11 37	16.92	1,214	37	33	1,157
12,000	9 29.3	17 31	22.39	1,079	65	22	2,047
14,000	12 49	24 19	28.50	1,028	106	15	3,392
16,000	16 49	31 16	35.18	1,015	160	11	5,266
18,000	21 33	38 17	42.57	1,025	235	8	7,778
20,000	27 09	45 15	50.89	1,050	336	7	11,175
22,000	34 18	52 24	61.14	1,082	485	5	16,089
23,483	46 36	62 26	77.85	1,112	787	3	25,228
22,000	57 30	69 45	90.88	1,130	1,073	2	33,673
21,200	60 06	71 23	93.68	1,134	1,140	2	35,595

Data from O. P. 1008

6-IN. 50-CAL. GUN

105-Lb. Common Projectile

I. V. 2800 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		22.3		23	1.11	2,604	0.3	1,000	5
2,000		46.7		52	2.31	2,415	1.0	543	21
3,000	1	14.0	1	26	3.60	2,238	2.3	291	53
4,000	1	44.1	2	08	5.00	2,071	4.5	189	101
5,000	2	17.7	2	57	6.51	1,914	7.6	132	169
6,000	2	55.3	3	58	8.14	1,766	11.8	98	265
7,000	3	37.3	5	11	9.00	1,632	17.7	74	396
8,000	4	24.4	6	39	11.82	1,510	25.6	57	567
9,000	5	16.9	8	22	13.90	1,401	36.1	46	786
10,000	6	15.5	10	24	16.14	1,306	49.8	37	1,061
11,000	7	20.6	12	43	18.52	1,230	67.2	30	1,401
12,000	8	32.5	15	17	21.05	1,175	89.0	24	1,820
13,000	9	51.1	18	03	23.70	1,134	116.1	21	2,326
14,000	11	16.0	20	57	26.47	1,108	149.6	17	2,923
15,000	12	46.5	23	55	29.35	1,090	190.3	15	3,616
16,000	14	21.9	26	57	32.31	1,083	238.6	13	4,412
17,000	16	01.9	29	57	35.32	1,082	294	.....	.....
18,000	17	46.0	32	55	38.41	1,086	358	.....	.....
19,000	19	33.3	35	48	41.59	1,095	430	.....	.....
20,000	21	23.0	38	36	44.82	1,109	513	.....	.....
21,000	23	14.5	41	17	48.11	1,128	604	.....	.....
22,000	25	06.7	43	49	51.46	1,150	706	.....	.....
23,000	26	59.6	46	14	54.86	1,177	818	.....	.....
24,000	28	52.1	48	30	58.31	1,206	941	.....	.....
25,000	30	43.4	50	37	61.78	1,238	1,075	.....	.....

Data from O. P. 200

6-IN. 53-CAL. GUN

105-Lb., 3.8-Cal. Common Projectile

I. V. 3000 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	19.5	20	1.04	2,772	.....	1,000	4
2,000	41.0	46	2.17	2,555	0.8	2,000	19
4,000	1 32.4	1 56	4.72	2,155	4.2	208	90
6,000	2 37.6	3 42	7.78	1,807	11.4	105	244
8,000	4 01.5	6 21	11.41	1,514	25.1	60	528
10,000	5 50.2	10 16	15.75	1,285	48.8	37	1,015
12,000	8 09.3	15 34	20.84	1,142	86.6	24	1,798
14,000	11 00.2	21 47	26.52	1,075	141.2	17	2,968
16,000	14 23.4	28 30	32.71	1,051	214.2	12	4,615
18,000	18 17.5	35 23	39.45	1,056	307.3	9	6,828
20,000	22 43.5	42 13	46.85	1,086	424.4	7	9,739
22,000	27 42.5	48 48	55.02	1,142	573.8	6	13,527
24,000	33 18.9	54 58	64.15	1,210	.....	.....	.....
26,000	40 52.9	60 58	75.70	1,250	.....	.....	.....
26,600	44 27.1	62 46	80.56	1,262	.....	.....	.....

Data from O. P. 192

6-IN. 53-CAL. GUN

105-Lb., 4.5-Cal. Common Projectile

I. V. 3000 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/35 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	19.2		20		1.02	2,824	.1	1,000	4
2,000	40.0		44		2.12	2,655	.5	2,000	18
4,000	1	27.3	1	43	4.53	2,339	2.3	240	83
6,000	2	23.6	3	05	7.27	2,055	6.0	126	213
8,000	3	31.0	4	57	10.39	1,801	12.3	78	436
10,000	4	52.8	7	29	13.97	1,580	22.2	51	790
12,000	6	32.6	10	55	18.09	1,394	37.2	35	1,325
14,000	8	36.5	15	29	22.85	1,248	59.3	24	2,135
16,000	11	09.4	21	06	28.27	1,147	90.9	17	3,310
18,000	14	12.6	27	28	34.30	1,090	133.7	13	4,920
20,000	17	49.0	33	58	40.89	1,073	190.0	10	7,070
22,000	21	59.2	40	15	48.00	1,080	261.8	8	9,865
24,000	26	37.8	46	08	55.72	1,098	352.8	6	13,325
26,000	31	42.0	51	26	64.29	1,128	469.6	5	17,500

Data from O. P. 112

6 IN. 53 CAL. GUN

105 Lb. H.C. Projectile
I.V. 2400 f.s.

(H.C. Charge)

RANGE	ANGLE OF ELEVATION		ANGLE OF FALL		TIME OF FLIGHT	STRIKING VELOCITY	DRIFT $\frac{1}{35}$ twist	DANGER SPACE - FOR A TARGET 20 FEET HIGH	MAXIMUM ORDNATE	
1	2		3		4	5	6	7	8	
YARDS	°	'	°	'	SECONDS	F. S.	YARDS	YARDS	FEET	
1000		30.2		32	1.30	2232	.2	1000	7	
2000	1	03.6	1	10	2.69	2067	.7	421	29	
3000	1	40.8	1	56	4.20	1906	1.7	213	71	
4000	2	22.3	2	54	5.85	1752	3	136	138	
5000	3	08.9	4	07	7.64	1608	6	95	234	
6000	4	01.6	5	35	9.60	1472	9	69	371	
7000	5	01.5	7	23	11.75	1347	13	52	557	
8000	6	09.9	9	37	14.12	1233	19	39	805	
9000	7	27.9	12	17	16.70	1140	26	31	1130	
10000	8	56.9	15	22	19.50	1080	36	24	1555	
11000	10	37.6	18	42	22.49	1044	48	20	2085	
12000	12	30	22	10	25.63	1022	62	16	2740	
13000	14	33	25	45	28.91	1007	79	14	3525	
14000	16	48	29	25	32.36	998	100	12	4465	
15000	19	15	33	09	36.03	996	123	10	5570	
16000	21	57	36	55	38.93	999	151	8	6865	
17000	24	57	40	43	44.14	1009	185	8	8400	
18000	28	20	44	36	48.79	1024	227	7	10240	
19000	32	21	48	47	54.18	1044	279	6	12580	
20000	37	49	53	52	61.26	1072	357	5	15950	
20581	45	00	59	44	70.10	1097	467	4	20630	

Data from O.P. 1214

6-IN. 53-CAL. GUN

105-Lb., 3.8-Cal. Target Projectile

I. V. 2300 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	33.3	36	1.36	2,108	0.3	1,000	7
2,000	1 10.6	1 19	2.85	1,929	1.5	332	33
3,000	1 52.9	2 15	4.48	1,762	3.7	180	81
4,000	2 41.0	3 24	6.27	1,609	7.3	115	158
5,000	3 35.7	4 51	8.23	1,469	12.8	80	273
6,000	4 38.0	6 37	10.38	1,346	20.6	58	436
7,000	5 49.3	8 47	12.73	1,242	31.1	43	659
8,000	7 10.3	11 20	15.28	1,163	45.0	33	954
9,000	8 41.5	14 12	18.02	1,104	62.8	26	1,338
10,000	10 23.7	17 22	20.93	1,064	85.0	21	1,824
11,000	12 16.8	20 46	24.02	1,038	112.2	18	2,427
12,000	14 21.6	24 23	27.30	1,021	144.9	15	3,165
13,000	16 39.2	28 12	30.77	1,010	183.8	13	4,055
14,000	19 10.8	32 12	34.49	1,007	229.8	11	5,126
15,000	21 58.8	36 20	38.50	1,012	284.5	9	6,423
16,000	25 08.7	40 43	42.93	1,026	351.1	8	8,019
17,000	28 46.2	45 21	47.90	1,051	433.6	7	10,024
17,500	30 46.2	47 49	50.71	1,068	483.2	6	11,243

Data from O. P. 194

6-IN. 53-CAL. GUN

105-Lb., 4.5-Cal. Target Projectile

I. V. 2300 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/35 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	<i>° ' "</i>		<i>° ' "</i>		<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		33.0		35	1.35	2,138	.2	1,000	7
2,000	1	09.2	1	16	2.80	1,989	.9	389	32
3,000	1	49.1	2	05	4.36	1,851	2.2	199	77
4,000	2	33.0	3	04	6.04	1,724	4.2	132	147
5,000	3	21.7	4	15	7.85	1,606	7.0	93	248
6,000	4	15.7	5	40	9.80	1,496	10.9	70	386
7,000	5	16.0	7	21	11.90	1,394	16.1	53	568
8,000	6	23.8	9	21	14.16	1,303	22.8	41	814
9,000	7	40.2	11	42	16.59	1,226	31.3	32	1,130
10,000	9	06.2	14	23	19.20	1,162	41.9	26	1,535
11,000	10	42.7	17	22	22.00	1,112	55.0	21	2,030
12,000	12	30.4	20	37	25.00	1,074	71.0	18	2,640
13,000	14	30.0	24	05	28.22	1,048	90.5	15	3,385
14,000	16	42.6	27	42	31.68	1,033	114.1	13	4,275
15,000	19	09.5	31	25	35.40	1,028	142.4	11	5,335
16,000	21	53.1	35	13	39.40	1,029	176.4	9	6,610
17,000	24	57.2	39	06	43.71	1,033	217.1	8	8,135
18,000	28	27.7	43	04	48.36	1,045	265.8	7	9,960
19,000	32	33.8	47	07	53.39	1,062	323.9	6	12,160

Data from O. P. 116

6-IN. 53-CAL. GUN

105-Lb. H. C. Projectile

I. V. 3000 f. s.

(Service charge for 105-lb. projectile)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/35 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	19.2	20	1.03	2,825	0.1	1,000	4
2,000	40.0	43	2.13	2,650	0.5	2,000	18
4,000	1 27.8	1 44	4.57	2,307	2	235	83
6,000	2 25.8	3 11	7.36	1,977	7	123	218
8,000	3 37.2	5 21	10.67	1,674	14	70	457
10,000	5 08.0	8 36	14.60	1,410	26	44	858
12,000	7 05.6	13 12	19.29	1,201	44	28	1,505
14,000	9 34.4	19 13	24.76	1,073	73	19	2,510
16,000	12 39	26 11	30.85	1,026	113	14	3,980
18,000	16 19	33 04	37.43	1,021	167	10	5,985
20,000	20 34	39 42	44.56	1,032	236	8	8,640
22,000	25 23	45 48	52.36	1,057	326	6	12,000
24,000	31 10	51 53	61.40	1,087	449	5	16,420
26,000	39 07	58 56	73.55	1,105	644	4	23,130
26,746	45 00	63 26	82.36	1,113	807	3	28,490

Data from O. P. 1026

8-IN. 55-CAL. GUN

335-Lb. A. P. Projectile

I. V. 2500 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	27.4	29	1.23	2,412	.2	1,000	6
2,000	55.9	59	2.50	2,325	.7	541	25
4,000	1 57.2	2 09	5.17	2,156	3	189	107
6,000	3 05.6	3 35	8.07	1,995	8	109	261
8,000	4 22 4	5 21	11.22	1,843	15	72	505
10,000	5 48.5	7 31	14.65	1,702	25	51	862
12,000	7 25.7	10 06	18.40	1,574	39	37	1,364
14,000	9 16.0	13 12	22.51	1,463	58	28	2,045
16,000	11 21.2	16 51	26.99	1,371	84	22	2,945
18,000	13 43.7	21 03	31.88	1,298	118	17	4,120
20,000	16 26.9	25 44	37.22	1,248	161	14	5,650
22,000	19 34.2	30 47	43.10	1,221	216	11	7,590
24,000	23 10	36 06	49.56	1,211	286	9	10,070
26,000	27 25	41 35	56.81	1,219	376	8	13,280
28,000	32 39	47 22	65.46	1,244	498	6	17,610
30,000	40 43	54 27	77.79	1,294	704	5	24,770
30,500	45 17	57 44	84.15	1,325	823	4	28,880

Data from O. P. 807

8-IN. 55-CAL. GUN

260-Lb. A. P. & Common Projectile

I. V. 2800 f. s.

(Service Charge)

Angle Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	22	23	1.07	2,690	.2	1,000	.....
2,000	45	48	2.21	2,580	.7	2,000	.....
4,000	1 35	1 47	4.66	2,367	3	236	.....
6,000	2 30	2 59	7.32	2,166	8	138	.....
8,000	3 33	4 30	10.23	1,977	15	88	.....
10,000	4 47	6 25	13.43	1,800	26	60	.....
12,000	6 12	8 51	16.99	1,639	41	43	.....
14,000	7 49	11 49	20.92	1,498	62	32	.....
16,000	9 39	15 25	25.25	1,381	91	25	.....
18,000	11 46	19 37	30.02	1,290	129	19	.....
20,000	14 14	24 23	35.23	1,227	176	15	.....
22,000	17 06	29 36	40.92	1,191	238	12	.....
24,000	20 22	34 59	47.15	1,176	316	10	.....
26,000	24 06	40 24	53.92	1,177	413	8	.....
28,000	28 27	45 52	61.51	1,193	537	6	.....
30,000	33 50	51 22	70.60	1,226	708	5	.....
32,000	42 02	57 57	83.45	1,283	989	4	.....
32,330	45 00	60 00	87.98	1,301	1,100	4	.....

Data based on 2,700 f. s. table, O. P. 243

8-IN. 55-CAL. GUN

260-Lb. A. P. & Common Projectile

I. V. 2700 f. s.

(Special Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/35 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	23.5		24		1.14	2,586	0.1	1,000	6
2,000	48.3		51		2.32	2,476	0.4	700	22
4,000	1	42.5	1	55	4.86	2,267	1.9	213	95
6,000	2	44.0	3	15	7.64	2,071	4.9	119	234
8,000	3	53.7	4	56	10.68	1,890	9.9	78	460
10,000	5	13.3	7	02	14.03	1,724	17.7	54	795
12,000	6	44.9	9	39	17.75	1,576	29.2	39	1,273
14,000	8	30.6	12	54	21.87	1,447	46.2	29	1,933
16,000	10	32.9	16	48	26.41	1,340	70.7	22	2,834
18,000	12	54.7	21	20	31.43	1,256	104.7	17	4,040
20,000	15	38.5	26	26	36.91	1,197	150.3	13	5,600
22,000	18	46.8	31	53	42.88	1,169	210.3	10	7,585
24,000	22	23.7	37	26	49.46	1,165	288.4	8	10,130
26,000	26	37.3	43	01	56.91	1,178	390.5	7	13,405
28,000	31	46.5	48	43	65.49	1,203	527.5	6	17,730
30,000	39	01.6	55	00	76.88	1,250	736.8	5	24,455
30,500	41	55.4	57	15	81.18	1,268	819.1	4	26,950

Data from O. P. 243

8-IN. 55-CAL. GUN
260-Lb. Target Projectile
I. V. 2300 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/35 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		32.4		34	1.33	2,187	.2	1,000	7
2,000	1	07.1	1	12	2.74	2,078	.8	409	30
3,000	1	44.3	1	55	4.23	1,975	1.8	216	72
4,000	2	24.2	2	45	5.79	1,877	3.2	137	135
5,000	3	07.2	3	42	7.44	1,783	5.1	105	223
6,000	3	53.5	4	47	9.18	1,693	7.6	81	339
7,000	4	43.3	6	00	11.02	1,607	10.9	64	488
8,000	5	37.0	7	23	12.95	1,527	15.2	52	676
9,000	6	35.0	8	56	14.99	1,453	20.8	43	908
10,000	7	37.7	10	41	17.15	1,386	28.1	36	1,191
11,000	8	45.6	12	38	19.44	1,327	37.5	31	1,533
12,000	9	59.1	14	48	21.86	1,275	49.4	26	1,942
13,000	11	18.7	17	10	24.41	1,230	64.2	22	2,426
14,000	12	44.9	19	41	27.09	1,193	82.3	19	3,000
15,000	14	18.3	22	21	29.90	1,163	104.1	16	3,650
16,000	15	59.6	25	10	32.85	1,141	129.9	14	4,415
17,000	17	49.6	28	06	35.94	1,127	160.0	12	5,310
18,000	19	49.3	31	09	39.20	1,120	194.7	11	6,360
19,000	22	00.1	34	19	42.69	1,118	234.3	10	7,580
20,000	24	24.0	37	32	46.46	1,121	278.9	9	8,900
21,000	27	04.0	40	46	50.54	1,129	330.0	8	10,640
22,000	30	05.3	44	04	54.98	1,141	390	7	12,570
23,000	33	40.1	47	38	60.00	1,158	465	6	14,970
24,000	38	31.0	52	05	66.73	1,180	565	5	18,340
24,300	40	36.0	53	47	69.52	1,188	608	5	19,860

Data from O. P. 227

8-IN. 55-CAL. GUN

335-lb. Target Projectile

I. V. 2000 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	42.6	43	1.55	1,916	.3	1,000	10
2,000	1 27.7	1 31	3.14	1,833	1.1	290	39
3,000	2 15.8	2 27	4.80	1,754	3	163	92
4,000	3 06.8	3 30	6.56	1,679	5	112	173
5,000	4 01.4	4 40	8.40	1,606	8	83	283
6,000	4 59.8	5 58	10.32	1,535	12	63	428
7,000	6 02.3	7 24	12.35	1,469	18	50	613
8,000	7 09.3	9 01	14.48	1,408	24	41	844
9,000	8 21.4	10 50	16.73	1,353	33	34	1,130
10,000	9 39.0	12 49	19.10	1,302	42	29	1,475
11,000	11 02.5	15 00	21.59	1,258	54	25	1,885
12,000	12 32.4	17 23	24.21	1,219	68	21	2,375
13,000	14 10	19 57	26.97	1,187	85	18	2,960
14,000	15 56	22 41	29.89	1,163	104	16	3,645
15,000	17 52	25 33	32.98	1,146	127	14	4,450
16,000	19 57	28 33	36.24	1,135	152	12	5,385
17,000	22 15	31 41	39.70	1,130	183	11	6,480
18,000	24 47	34 56	43.41	1,129	219	10	7,765
19,000	27 36	38 16	47.44	1,134	262	8	9,290
20,000	30 50	41 47	51.93	1,145	313	7	11,140
21,000	34 47	45 52	57.19	1,163	380	7	13,500
22,000	40 32	50 49	64.53	1,189	484	5	17,120
22,330	45 00	54 25	69.89	1,210	568	5	20,010

Data from O. P. 858

8-IN. 55-CAL. GUN

260-Lb. H. C. Projectile

I. V. 2800 f. s.

(Service charge for 260-lb. projectile)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	21.7		22		1.09	2,692	.2	1,000	5
2,000	44.6		47		2.23	2,584	.7	2,000	20
4,000	1	34.4	1	46	4.66	2,370	3	234	87
6,000	2	30.7	3	00	7.32	2,160	8	129	215
8,000	3	34.6	4	33	10.24	1,960	15	84	421
10,000	4	48.1	6	31	13.48	1,772	25	58	730
12,000	6	13.0	9	02	17.10	1,599	41	42	1,175
14,000	7	51.7	12	13	21.12	1,447	62	31	1,790
16,000	9	46.9	16	08	25.61	1,317	92	23	2,640
18,000	12	01.5	20	51	30.61	1,215	131	17	3,785
20,000	14	37.9	26	16	36.13	1,147	183	13	5,295
22,000	17	39.1	32	05	42.18	1,115	249	11	7,250
24,000	21	08	37	56	48.79	1,109	333	9	9,765
26,000	25	08	43	43	56.05	1,121	440	7	12,940
28,000	29	49	49	18	64.21	1,143	577	6	17,000
30,000	35	40	54	47	73.98	1,175	766	5	22,490
31,982	45	00	61	21	88.69	1,235	1,101	4	31,900

Data from O. P. 1095

8-IN. 55-CAL. GUN

260-Lb. H. C. Projectile

I. V. 2700 f. s.

(Service charge for 335-lb. projectile)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	23.4		24		1.14	2,591	.2	1,000	5
2,000	48.2		51		2.32	2,484	.8	724	22
4,000	1	42.1	1	54	4.84	2,273	3	209	94
6,000	2	43.0	3	15	7.62	2,066	8	117	233
8,000	3	53.0	4	59	10.68	1,868	15	76	458
10,000	5	13.6	7	12	14.09	1,686	27	52	799
12,000	6	47.2	9	58	17.90	1,521	44	38	1,290
14,000	8	36.6	13	28	22.16	1,376	68	28	1,980
16,000	10	44.9	17	50	26.93	1,256	99	21	2,926
18,000	13	15.5	22	59	32.25	1,169	142	16	4,208
20,000	16	11.8	28	47	38.13	1,120	200	12	5,913
22,000	19	37	34	49	44.57	1,107	272	10	8,136
24,000	23	34	40	45	51.62	1,113	365	8	10,993
26,000	28	13	46	35	59.53	1,131	486	6	14,676
28,000	33	54	52	17	68.85	1,157	649	6	19,572
30,000	42	06	58	46	81.63	1,203	913	4	27,227
30,360	45	00	60	42	85.92	1,221	1,011	4	30,028

Data from O. P. 1041

8 IN. 55 CAL. GUN

260 Lb. H.C. Projectile
I.V. 2220 f.s.

(Target Charge for 335 Lb. Projectiles)

RANGE	ANGLE OF ELEVATION	ANGLE OF FALL	TIME OF FLIGHT	STRIKING VELOCITY	DRIFT 1/25 twist	DANGER SPACE FOR A TARGET 20 FEET HIGH	MAXIMUM ORDINATE	
1	2	3	4	5	6	7	8	
YARDS	°	'	SECONDS	F. S.	YARDS	YARDS	FEET	
1000	34.7	36	1.38	2116	.3	1000	8	
2000	11.8	1 17	2.84	2013	1.1	371	32	
3000	51.5	2 03	4.37	1913	2.5	201	77	
4000	34.1	2 56	5.98	1816	5	135	143	
5000	19.9	3 57	7.68	1721	8	99	236	
6000	09.4	5 07	9.49	1630	12	75	361	
7000	03.2	6 27	11.40	1544	17	59	523	
8000	01.4	7 58	13.43	1461	24	48	727	
9000	04.7	9 42	15.59	1384	32	39	979	
10000	13.6	11 40	17.88	1312	42	32	1290	
11000	28.7	13 54	20.32	1246	55	27	1665	
12000	51.1	16 24	22.92	1190	70	23	2125	
13000	21.8	19 11	25.70	1143	88	19	2675	
14000	01	22 11	28.66	1111	109	16	3335	
15000	51	25 20	31.76	1093	134	14	4115	
16000	50	28 32	35.03	1086	163	12	5035	
17000	59	31 45	38.43	1086	196	11	6105	
18000	20	35 00	42.01	1091	235	10	7350	
19000	53	38 16	45.80	1100	279	9	8780	
20000	42	41 32	49.88	1109	331	8	10440	
21000	52	44 51	54.37	1119	393	6	12410	
22000	36	48 25	59.59	1130	472	6	14860	
23000	53	53 04	66.67	1147	591	5	18450	
23412	00	57 16	73.26	1164	714	4	22076	

Data from O.P. 1333

8-IN. 55-CAL. GUN

260-Lb. H. C. Projectile

I. V. 2160 f. s.

(Target charge for 335-lb. projectile)

Range	Angle of Elevation	Angle of fall	Time of flight	Striking velocity	Drift	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	36.7	38	1.42	2,057	.3	1,000	8
2,000	1 15.9	1 21	2.92	1,956	1.1	345	33
3,000	1 58.0	2 10	4.50	1,857	2.7	188	81
4,000	2 43.3	3 06	6.16	1,761	5	126	153
5,000	3 32.1	4 11	7.91	1,669	9	93	252
6,000	4 24.8	5 26	9.77	1,580	12	70	384
7,000	5 22.0	6 52	11.75	1,495	18	55	556
8,000	6 24.1	8 29	13.86	1,414	25	45	774
9,000	7 31.7	10 20	16.10	1,339	34	37	1,040
10,000	8 45.5	12 27	18.48	1,270	45	30	1,375
11,000	10 06.4	14 51	21.02	1,208	58	25	1,780
12,000	11 35.3	17 31	23.73	1,157	74	21	2,275
13,000	13 13.0	20 27	26.61	1,119	93	18	2,870
14,000	15 00	23 34	29.66	1,096	116	15	3,580
15,000	16 58	26 45	32.86	1,085	143	13	4,425
16,000	19 06	29 59	36.21	1,082	174	11	5,415
17,000	21 25	33 12	39.74	1,084	209	10	6,560
18,000	23 56	36 25	43.47	1,089	249	9	7,890
19,000	26 43	39 41	47.45	1,097	297	8	9,435
20,000	29 51	43 03	51.83	1,107	355	7	11,270
21,000	33 31	46 44	56.87	1,120	427	6	13,540
22,000	38 25	51 16	63.41	1,136	531	5	16,720
22,602	45 00	56 52	71.74	1,158	679	4	21,180

Data from O. P. 1190

12-IN. 50-CAL. GUN

870-Lb. A. P. Projectile

I. V. 2900 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		20.3		21	1.05	2,796	.2	1,000	5
2,000		41.5		44	2.15	2,694	.9	2,000	19
4,000	1	27.1	1	37	4.46	2,500	3.9	256	80
6,000	2	17.8	2	40	6.95	2,318	9.5	145	194
8,000	3	14.1	3	57	9.63	2,150	18.2	96	374
10,000	4	16.5	5	29	12.55	1,995	30.8	70	634
12,000	5	25.7	7	19	15.68	1,853	48.0	53	993
14,000	6	42.4	9	27	19.04	1,728	70.6	40	1,464
16,000	8	07.1	11	58	22.67	1,618	99.8	31	2,078
18,000	9	40.6	14	51	26.56	1,523	136.7	25	2,855
20,000	11	24.2	18	07	30.73	1,445	182.5	20	3,840
22,000	13	20.1	21	44	35.21	1,379	238.7	16	5,035
24,000	15	30.4	25	43	40.05	1,323	307.5	14	6,500
26,000	17	57.1	30	01	45.30	1,285	392.2	12	8,335
28,000	20	40.5	34	30	50.98	1,268	494.6	10	10,605
30,000	23	40.6	38	56	57.02	1,268	615.8	8	13,310
32,000	26	57.0	43	10	63.41	1,280	757.6	7	16,470
34,000	30	29.4	47	08	70.13	1,303	921.4	6	20,160

Data from O. P. 168

12-IN. 50-CAL. GUN
1140-Lb. A. P. Projectile
I. V. 2500 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		27.0		28	1.22	2,436	.2	1,000	6
2,000		55.0		57	2.46	2,373	.7	571	24
4,000	1	54.0	2	03	5.07	2,247	3	197	103
6,000	2	57.7	3	18	7.83	2,124	7	118	245
8,000	4	06.6	4	45	10.74	2,005	13	80	463
10,000	5	21.4	6	27	13.85	1,893	22	59	770
12,000	6	42.7	8	23	17.14	1,788	35	45	1,180
14,000	8	11.0	10	35	20.65	1,694	50	36	1,715
16,000	9	46.3	13	03	24.36	1,611	69	29	2,385
18,000	11	29.3	15	49	28.29	1,541	93	24	3,220
20,000	13	20.7	18	48	32.43	1,482	122	20	4,235
22,000	15	21.6	22	02	36.82	1,434	158	16	5,460
24,000	17	33.3	25	30	41.50	1,397	200	14	6,935
26,000	19	57.8	29	13	46.49	1,371	251	12	8,710
28,000	22	37.8	33	05	51.86	1,356	313	10	10,850
30,000	25	36.9	37	08	57.70	1,353	387	9	13,440
32,000	29	03	41	22	64.20	1,362	480	7	16,640
34,000	33	13	46	01	71.82	1,386	600	7	20,790
36,000	39	25	51	55	82.43	1,434	790	5	27,350
36,774	45	00	56	28	91.25	1,482	968	4	.....

Data from O. P. 789

12-IN. 50-CAL. GUN

870-Lb. Target Projectile

I. V. 2100 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	38.7	40	1.47	2,005	.3	1,000	9
2,000	1 19.9	1 25	2.99	1,917	1.6	322	37
3,000	2 03.7	2 16	4.59	1,833	3.9	181	86
4,000	2 50.3	3 12	6.27	1,753	7.3	124	156
5,000	3 39.9	4 15	8.02	1,678	11.9	91	258
6,000	4 32.7	5 26	9.85	1,608	17.9	71	391
7,000	5 29.0	6 44	11.77	1,542	25.5	57	559
8,000	6 28.9	8 11	13.78	1,480	35.0	47	766
9,000	7 32.7	9 47	15.89	1,422	46.5	39	1,018
10,000	8 40.9	11 33	18.10	1,369	60.2	33	1,325
11,000	9 54.1	13 30	20.42	1,321	76.5	28	1,690
12,000	11 12.8	15 37	22.86	1,279	95.7	24	2,120
13,000	12 37.8	17 55	25.43	1,242	118.2	21	2,630
14,000	14 10.3	20 24	28.14	1,211	144.5	18	3,235
15,000	15 51.6	23 04	31.01	1,185	175.1	16	3,945
16,000	17 42.9	25 55	34.06	1,164	210.7	14	4,765
17,000	19 45.2	28 56	37.31	1,149	252.2	12	5,710
18,000	21 59.4	32 04	40.78	1,141	300.5	11	6,815
19,000	24 26.2	35 17	44.49	1,140	356.5	9	8,135
20,000	27 06.2	38 33	48.47	1,146	421.7	8	9,705
21,000	30 00.0	41 51	52.75	1,158	497.8	7	11,480

Data from O. P. 169

12-IN. 50-CAL. GUN
1140-Lb. Target Projectile
I. V. 1800 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	52.3	53	1.69	1,743	.3	.....	11
2,000	1 46.9	1 52	3.44	1,687	1.4	232	47
3,000	2 44.1	2 55	5.25	1,633	3.2	137	111
4,000	3 44.1	4 04	7.13	1,581	6	96	204
5,000	4 47.1	5 20	9.07	1,530	10	72	331
6,000	5 53.3	6 42	11.09	1,481	14	57	495
7,000	7 03.0	8 12	13.19	1,435	20	46	699
8,000	8 16.4	9 49	15.37	1,392	27	39	951
9,000	9 33.7	11 34	17.63	1,351	36	33	1,255
10,000	10 55.1	13 26	19.99	1,314	47	28	1,610
11,000	12 21.0	15 27	22.44	1,281	59	24	2,025
12,000	13 52.0	17 36	24.99	1,252	73	21	2,515
13,000	15 28.9	19 54	27.65	1,227	89	18	3,080
14,000	17 13	22 22	30.46	1,206	108	16	3,740
15,000	19 05	24 59	33.42	1,189	130	14	4,510
16,000	21 06	27 45	36.57	1,176	156	13	5,405
17,000	23 20	30 41	39.93	1,169	186	12	6,455
18,000	25 48	33 46	43.56	1,167	221	10	7,690
19,000	28 33	36 58	47.48	1,172	262	9	9,150
20,000	31 41	40 16	51.77	1,184	312	8	10,900
21,000	35 23	43 47	56.66	1,202	373	7	13,070
22,000	40 42	48 25	63.40	1,231	467	6	16,340
22,316	45 00	52 07	68.55	1,251	547	5	19,060

Data from O. P. 789

12-IN. 50-CAL. GUN

1140-Lb. Target Projectile

I. V. 2300 f. s.

(Special Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		31.9		32	1.32	2,237	.2	1,000	7
2,000	1	05.0	1	07	2.68	2,175	.8	437	29
4,000	2	15.4	2	26	5.52	2,053	4	163	123
6,000	3	31.6	3	58	8.55	1,935	9	98	294
8,000	4	54.6	5	44	11.76	1,823	16	67	556
10,000	6	25.2	7	48	15.20	1,718	27	49	928
12,000	8	04.2	10	11	18.87	1,623	41	37	1,430
14,000	9	52.0	12	52	22.77	1,539	60	29	2,085
16,000	11	49.2	15	53	26.91	1,468	84	23	2,915
18,000	13	56.9	19	12	31.31	1,410	114	19	3,950
20,000	16	17.3	22	51	36.03	1,365	151	16	5,230
22,000	18	53.2	26	49	41.13	1,330	197	13	6,820
24,000	21	48.3	31	06	46.66	1,308	252	11	8,785
26,000	25	09	35	41	52.79	1,299	324	10	11,250
28,000	29	06	40	42	59.77	1,304	415	8	14,430
30,000	34	16	46	28	68.43	1,327	545	6	18,900
32,000	44	49	55	34	84.43	1,405	829	5	28,730
32,011	45	00	55	41	84.69	1,407	834	5	.....

Data from O. P. 789

OP 1188 CHANGE 1

740 Lb. H.C. Projectile
I.V. 3000 f.s.

[illegible]

40 a

12 IN. 50 CAL. GUN

940 Lb. H.C. Projectile
I.V. 2650 f.s.

(Service Charge for 1140 Lb. Projectile)

RANGE	ANGLE OF ELEVATION	ANGLE OF FALL	TIME OF FLIGHT	STRIKING VELOCITY	DRIFT 1/25 twist	DANGER SPACE FOR A TARGET 20 FEET HIGH	MAXIMUM ORDINATE	
1	2	3	4	5	6	7	8	
YARDS	°	'	SECONDS	F. S.	YARDS	YARDS	FEET	
1000	31.3	25	1.15	2577	.2	1000	5	
2000	56.2	50	2.33	2505	.8	702	22	
4000	1 49.2	1 50	4.80	2361	3	221	93	
6000	2 46.6	2 59	7.42	2221	8	128	221	
8000	3 49.2	4 20	10.21	2085	15	88	420	
10000	4 57.7	5 56	13.21	1955	24	64	701	
12000	6 12.9	7 47	16.41	1833	38	49	1085	
14000	7 35.5	9 57	19.84	1720	55	38	1585	
16000	9 6.4	12 27	23.53	1618	77	30	2230	
18000	10 46.4	15 19	27.49	1528	106	24	3040	
20000	12 36.5	18 32	31.72	1451	141	20	4050	
22000	14 37.5	22 06	36.24	1389	184	16	5290	
24000	16 50.4	25 56	41.07	1343	236	14	6795	
26000	19 16.2	29 57	46.20	1310	299	12	8610	
28000	21 56.2	34 05	51.70	1292	374	10	10780	
30000	24 52.5	38 18	57.58	1289	464	8	13380	
32000	28 9	42 31	63.98	1299	573	7	16510	
34000	31 55	46 46	71.10	1323	708	6	20370	
36000	36 36	51 17	79.59	1365	887	5	25480	
38000	44 48	57 47	93.54	1450	1225	4	35100	
38021	45 00	57 56	93.87	1452	1234	4	35349	

Data from O.P. 1241

14-IN. 45-CAL. GUN
1400-Lb. A. P. Projectile
I. V. 2700 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	23.3		24		1.13	2,616	.3	1,000	5
2,000	47.6		50		2.30	2,533	1.0	755	21
4,000	1	39.3	1	48	4.74	2,374	4.3	225	90
6,000	2	35.6	2	57	7.36	2,226	10.2	133	217
8,000	3	37.5	4	18	10.15	2,089	19.4	90	414
10,000	4	45.1	5	53	13.12	1,962	32.4	66	693
12,000	5	58.4	7	42	16.29	1,846	49.8	50	1,064
14,000	7	18.3	9	46	19.64	1,743	72.4	39	1,556
16,000	8	45.1	12	08	23.21	1,653	100.8	31	2,176
18,000	10	19.3	14	46	26.99	1,574	136.0	25	2,947
20,000	12	01.7	17	40	30.99	1,506	178.8	21	3,905
22,000	13	53.0	20	47	35.24	1,450	230.4	17	5,035
24,000	15	54.6	24	08	39.75	1,407	292.3	15	6,390
26,000	18	07.1	27	44	44.51	1,379	365.4	13	8,030
28,000	20	30.7	31	26	49.54	1,364	450.9	11	9,990
30,000	23	06.3	35	11	54.89	1,359	551.0	9	12,275
32,000	25	56.4	38	57	60.61	1,364	669.0	8	14,950
34,000	29	05.4	42	39	66.76	1,380	808.3	7	18,125
36,000	32	40.5	46	22	73.60	1,408	977.1	6	21,980
38,000	36	59.3	50	24	81.68	1,450	1,195.6	6	27,090
39,100	40	04.1	52	57	87.14	1,483	1,355.3	5	30,680

Data from O. P. 230

14-IN. 45-CAL. GUN
1500-Lb. A. P. Projectile
I. V. 2600 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	25.1		26		1.17	2,526	.2	1,000	6
2,000	51.1		53		2.37	2,454	.7	650	23
4,000	1	46.1	1	55	4.88	2,315	3	212	97
6,000	2	45.6	3	07	7.54	2,184	7	126	230
8,000	3	50.1	4	28	10.38	2,063	14	89	431
10,000	4	59.9	6	03	13.40	1,951	23	65	717
12,000	6	15.1	7	50	16.58	1,848	35	49	1,100
14,000	7	36.3	9	50	19.92	1,759	50	38	1,592
16,000	9	03.6	12	07	23.42	1,684	69	31	2,204
18,000	10	36.9	14	33	27.08	1,619	92	26	2,952
20,000	12	16.2	17	07	30.91	1,563	121	22	3,851
22,000	14	02	19	53	34.97	1,515	155	18	4,934
24,000	15	57	22	58	39.31	1,475	195	16	6,240
26,000	18	07	26	21	44.00	1,442	245	14	7,824
28,000	20	33	30	00	49.05	1,417	304	12	9,730
30,000	23	13	33	50	54.47	1,404	375	10	12,005
32,000	26	10	37	46	60.33	1,405	461	9	14,735
34,000	29	32	41	49	66.77	1,418	564	7	18,060
36,000	33	35	46	09	74.18	1,443	696	6	22,270
38,000	39	11	51	16	83.87	1,484	891	5	28,420
39,100	45	30	56	08	94.15	1,540	1,124	4	35,760

Data from O. P. 746

14-IN. 45-CAL. GUN

1275-Lb. H. C. Projectile

I. V. 2735 f. s.

(Service charge for 1,500-lb. projectile)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	33.6	23	1.11	2,664	.2	1,000	5
2,000	56.9	48	2.25	2,593	1.0	2,000	20
4,000	1 46.4	1 42	4.63	2,451	4	237	86
6,000	2 39.8	2 46	7.16	2,312	10	141	206
8,000	3 37.7	4 00	9.84	2,177	19	95	389
10,000	4 40.7	5 26	12.70	2,046	31	70	648
12,000	5 49.6	7 08	15.75	1,922	48	53	997
14,000	7 05.0	9 06	19.02	1,806	70	41	1,450
16,000	8 27.9	11 21	22.52	1,700	99	32	2,035
18,000	9 58.8	13 56	26.27	1,604	134	27	2,775
20,000	11 38.7	16 53	30.27	1,521	178	23	3,690
22,000	13 28.2	20 07	34.54	1,451	231	19	4,805
24,000	15 28.1	23 37	39.09	1,396	296	15	6,165
26,000	17 39.2	27 23	43.93	1,354	374	13	7,785
28,000	20 02.3	31 20	49.09	1,327	467	11	9,715
30,000	22 38.8	35 20	54.57	1,314	578	9	12,010
32,000	25 30.8	39 22	60.43	1,316	708	8	14,730
34,000	28 42.7	43 24	66.78	1,329	865	7	17,990
36,000	32 22	47 25	73.83	1,356	1,058	6	21,970
38,000	36 51	51 38	82.18	1,397	1,310	6	27,180
40,000	44 10	57 20	94.97	1,475	1,750	4	36,200
40,122	45 00	57 56	96.39	1,485	1,802	4	37,270

Data from O. P. 923 (1st Rev.)

14-IN. 45 & 50-CAL. GUNS

1400-Lb. A. P. Projectile

I. V. 2600 f. s.

(Special Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	25.1	26	1.18	2,523	.3	1,000	6
2,000	51.2	54	2.39	2,448	1.0	657	23
4,000	1 46.6	1 56	4.91	2,303	4.3	209	97
6,000	2 47.0	3 09	7.60	2,165	10.5	124	232
8,000	3 53.0	4 35	10.47	2,033	20.0	84	442
10,000	5 05.1	6 15	13.55	1,910	33.5	61	739
12,000	6 24.3	8 11	16.84	1,797	51.6	47	1,141
14,000	7 51.1	10 26	20.36	1,695	75.2	36	1,668
16,000	9 26.1	13 01	24.12	1,604	105.3	29	2,344
18,000	11 10.4	15 55	28.13	1,525	142.9	23	3,194
20,000	13 05.0	19 07	32.40	1,457	189.4	19	4,248
22,000	15 10.3	22 35	36.93	1,401	245.7	15	5,515
24,000	17 26.8	26 18	41.74	1,364	312.6	13	7,055
26,000	19 55.4	30 11	46.84	1,344	391.6	11	8,915
28,000	22 37.9	34 07	52.27	1,337	485.0	10	11,125
30,000	25 36.3	38 03	58.07	1,341	595.8	9	13,750
32,000	28 54.2	42 00	64.36	1,356	728.8	7	16,880
34,000	32 42.9	46 02	71.42	1,385	891.4	6	20,705
36,000	37 20.8	50 22	79.77	1,427	1,103.9	6	25,855
37,000	40 24.8	52 57	85.07	1,457	1,253.0	5	29,190

Data from O. P. 267

14-IN. 45- & 50-CAL. GUNS

1400-Lb. Target Projectile

I. V. 2000 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	42.3	43	1.55	1,934	.3	1,000	9
2,000	1 26.8	1 31	3.15	1,869	1.3	284	39
3,000	2 13.4	2 23	4.79	1,806	3.5	169	91
4,000	3 02.2	3 19	6.48	1,746	6.0	118	169
5,000	3 53.5	4 21	8.22	1,688	9.5	89	271
6,000	4 47.5	5 29	10.02	1,633	14.3	70	404
7,000	5 44.2	6 43	11.90	1,580	20.1	57	572
8,000	6 43.8	8 03	13.86	1,530	27.5	47	774
9,000	7 46.8	9 30	15.90	1,483	36.2	40	1,019
10,000	8 53.4	11 04	18.03	1,438	46.6	34	1,315
11,000	10 04.4	12 46	20.24	1,395	58.9	30	1,660
12,000	11 20.4	14 36	22.55	1,355	73.2	26	2,065
13,000	12 41.4	16 35	24.95	1,320	89.5	23	2,530
14,000	14 07.4	18 43	27.45	1,290	108.3	20	3,055
15,000	15 38.4	21 01	30.10	1,265	129.5	17	3,660
16,000	17 16.9	23 29	32.95	1,240	154.5	15	4,385
17,000	19 05.4	26 08	36.00	1,220	185.2	14	5,250
18,000	21 06.9	28 58	39.28	1,205	222.5	12	6,270
19,000	23 23.4	31 59	42.80	1,195	266.5	11	7,455
20,000	25 54.9	35 11	46.58	1,192	320.8	9	8,845
21,000	28 41.4	38 34	50.66	1,196	388.5	8	10,495
22,000	31 42.9	42 04	55.08	1,206	469.5	7	12,445
23,000	35 05.8	45 34	59.83	1,225	563.8	6	14,735
24,000	39 35.3	49 04	65.83	1,252	691.3	6	17,550
24,100	40 09.4	49 25	66.54	1,255	709.0	6	.....

Data from O. P. 512

14-IN. 45- & 50-CAL. GUNS

1500-Lb. Target Projectile

I. V. 1935 f. s.

(Target Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	45.2	47	1.56	1,876	.3	1,000	10
2,000	1 32.4	1 37	3.18	1,818	1.3	280	41
3,000	2 21.7	2 31	4.86	1,762	3.0	161	95
4,000	3 13.2	3 30	6.60	1,707	6	112	175
5,000	4 07.1	4 34	8.40	1,654	9	86	283
6,000	5 03.6	5 44	10.26	1,603	13	68	425
7,000	6 02.9	7 00	12.19	1,555	19	55	599
8,000	7 05.2	8 22	14.19	1,509	26	45	809
9,000	8 10.7	9 50	16.26	1,466	34	38	1,064
10,000	9 19.7	11 25	18.40	1,426	43	32	1,364
11,000	10 32.5	13 07	20.62	1,389	54	28	1,715
12,000	11 49.4	14 56	22.93	1,355	67	24	2,123
13,000	13 10.8	16 52	25.34	1,325	82	21	2,595
14,000	14 37.2	18 56	27.87	1,299	99	19	3,135
15,000	16 09.5	21 09	30.53	1,276	118	17	3,770
16,000	17 49	23 31	33.32	1,257	140	15	4,495
17,000	19 36	26 01	36.26	1,242	166	14	5,330
18,000	21 32	28 40	39.37	1,231	196	12	6,290
19,000	23 39	31 27	42.68	1,224	231	11	7,400
20,000	25 59	34 23	46.23	1,221	271	10	8,690
21,000	28 34	37 28	50.10	1,223	318	9	10,220
22,000	31 34	40 46	54.40	1,231	375	8	12,070
23,000	35 12	44 26	59.48	1,247	448	7	14,430
24,000	40 16	49 00	66.28	1,276	557	6	17,900
24,445	45 00	52 54	72.18	1,305	660	5	21,240

Data from O. P. 754

14-IN. 45- & 50-CAL. GUNS

1275-Lb. H. C. Projectile

I. V. 2000 f. s.

(H. C. Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		42.3		44	1.53	1,934	.3	1,000	9
2,000	1	26.6	1	31	3.11	1,870	1.2	296	38
3,000	2	13.1	2	23	4.74	1,807	2.7	166	90
4,000	3	01.9	3	20	6.43	1,745	5	115	166
5,000	3	53.3	4	22	8.19	1,685	8	87	270
6,000	4	47.5	5	30	10.02	1,625	12	69	404
7,000	5	44.7	6	45	11.92	1,568	17	56	573
8,000	6	45.2	8	08	13.91	1,513	23	47	779
9,000	7	49.4	9	39	15.99	1,460	30	39	1,029
10,000	8	57.7	11	19	18.17	1,409	39	33	1,327
11,000	10	10.5	13	08	20.45	1,362	50	29	1,682
12,000	11	28.4	15	07	22.84	1,317	62	25	2,102
13,000	12	52.0	17	17	25.35	1,277	77	21	2,591
14,000	14	22	19	39	28.00	1,241	94	19	3,163
15,000	15	59	22	13	30.81	1,209	113	16	3,834
16,000	17	45	24	59	33.80	1,184	136	14	4,619
17,000	19	41	27	56	36.99	1,164	161	13	5,537
18,000	21	49	31	03	40.40	1,152	192	11	6,613
19,000	24	10	34	17	44.04	1,148	228	10	7,876
20,000	26	46	37	34	47.94	1,150	270	9	9,364
21,000	29	42	40	52	52.17	1,160	318	8	11,130
22,000	33	08	44	15	56.92	1,175	376	7	13,262
23,000	37	24	48	07	62.64	1,198	453	6	16,085
23,820	45	00	54	28	72.26	1,235	597	5	21,280

Data from O. P. 964

14-IN. 50-CAL. GUN

1400-Lb. A. P. Projectile

I. V. 2800 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	21.6		22		1.09	2,718	3.0	1,000	5
2,000	44.2		46		2.21	2,637	6.0	2,000	20
4,000	1	31.9	1	40	4.56	2,481	13.5	243	84
6,000	2	23.9	2	43	7.06	2,332	24.0	144	200
8,000	3	20.5	3	56	9.72	2,190	36.5	98	379
10,000	4	22.3	5	22	12.57	2,058	51.5	71	633
12,000	5	29.9	7	02	15.60	1,935	69.0	54	975
14,000	6	44.0	8	57	18.83	1,822	88.5	43	1,422
16,000	8	05.2	11	10	22.29	1,721	110.0	34	1,997
18,000	9	34.2	13	42	25.99	1,629	135.0	27	2,706
20,000	11	11.3	16	36	29.93	1,546	165.0	22	3,599
22,000	12	58.5	19	46	34.17	1,475	204.2	19	4,699
24,000	14	58.2	23	26	38.70	1,418	256.5	15	6,025
26,000	17	09.2	27	06	43.46	1,376	322.7	13	7,603
28,000	19	30.2	31	00	48.50	1,354	407.7	11	9,436
30,000	22	01.2	34	40	53.76	1,347	502.7	10	11,606
32,000	24	41.9	38	20	59.26	1,350	600.7	8	14,106
34,000	27	30.9	41	40	65.02	1,364	698.7	8	16,936
36,000	30	27.9	45	00	71.06	1,391	796.7	7	20,229
38,000	33	48.9	48	20	77.48	1,425	894.7	6	24,081
40,000	37	49.9	51	40	85.11	1,470	992.7	5	28,996
41,900	44	55.4	56	50	98.04	1,538	1,085.8	4	37,983

Data from O. P. 508

14-IN. 50-CAL. GUN
1500-Lb. A. P. Projectile
I. V. 2700 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		23.2		25	1.12	2,625	.2	1,000	5
2,000		47.2		50	2.28	2,551	.7	780	21
4,000	1	38.2	1	46	4.71	2,409	3	224	89
6,000	2	33.3	2	51	7.28	2,275	7	138	212
8,000	3	32.8	4	08	10.00	2,149	13	94	399
10,000	4	37.1	5	36	12.86	2,031	21	68	661
12,000	5	46.5	7	15	15.90	1,924	32	52	1,012
14,000	7	01.3	9	06	19.10	1,829	47	41	1,460
16,000	8	21.5	11	07	22.45	1,745	64	34	2,020
18,000	9	47.3	13	20	25.95	1,672	85	28	2,700
20,000	11	18.8	15	44	29.59	1,611	111	24	3,520
22,000	12	56	18	20	33.45	1,559	142	20	4,510
24,000	14	39	21	10	37.55	1,515	179	17	5,690
26,000	16	32	24	16	41.90	1,481	223	15	7,100
28,000	18	39	27	37	46.56	1,453	275	13	8,770
30,000	21	00	31	06	51.55	1,435	336	11	10,760
32,000	23	33	34	41	56.88	1,426	410	10	13,110
34,000	26	21	38	20	62.61	1,429	497	8	15,880
36,000	29	31	42	07	68.86	1,442	601	7	19,210
38,000	33	14	46	07	75.92	1,467	731	6	23,340
40,000	38	02	50	36	84.76	1,507	911	5	29,040
41,600	45	52	56	31	97.67	1,598	1,209	4	38,460

Data from O. P. 752

14-IN. 50-CAL. GUN

1275-Lb. H. C. Projectile

I. V. 2825 f. s.

(Service charge for 1,500-lb. projectile)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	33.1		21		1.08	2,754	.2	1,000	5
2,000	55.0		44		2.18	2,682	1	2,000	19
4,000	1	41.2	1	35	4.48	2,541	4	256	80
6,000	2	30.9	2	35	6.91	2,401	9	152	190
8,000	3	24.7	3	44	9.49	2,264	18	103	365
10,000	4	23.1	5	03	12.24	2,131	31	75	600
12,000	5	26.7	6	36	15.16	2,004	46	58	920
14,000	6	36.1	8	23	18.28	1,885	67	45	1,340
16,000	7	52.2	10	26	21.63	1,774	94	36	1,880
18,000	9	15.4	12	48	25.19	1,673	127	29	2,550
20,000	10	46.5	15	29	29.01	1,584	169	24	3,380
22,000	12	26.1	18	28	33.05	1,508	220	20	4,390
24,000	14	14.5	21	44	37.35	1,446	280	16	5,620
26,000	16	12.7	25	13	41.91	1,397	353	14	7,070
28,000	18	21.2	28	53	46.74	1,362	439	12	8,800
30,000	20	40.6	32	41	51.85	1,342	540	10	10,840
32,000	23	11.7	36	29	57.27	1,333	659	9	13,220
34,000	25	56.4	40	15	63.02	1,337	799	8	16,010
36,000	28	57.9	43	58	69.19	1,353	962	7	19,300
38,000	32	22	47	37	75.96	1,380	1,160	6	23,240
40,000	36	25	51	22	83.74	1,420	1,410	5	28,200
42,000	42	07	55	55	94.24	1,485	1,785	5	35,620
42,585	45	00	57	56	99.29	1,520	1,982	4	39,780

Data from O. P. 924 (1st Rev.)

16-IN. 45-CAL. GUN

2700-Lb. A. P. Projectile

I. V. 2300 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	31.6	32	1.31	2,257	.2	1,000	7
2,000	1 04.1	1 05	2.65	2,215	.8	448	28
4,000	2 11.8	2 17	5.41	2,131	4	171	118
6,000	3 23.4	3 38	8.28	2,050	8	106	275
8,000	4 39.1	5 08	11.30	1,973	16	76	513
10,000	5 59.3	6 48	14.45	1,900	26	57	839
12,000	7 24.7	8 37	17.74	1,831	40	43	1,265
14,000	8 55.8	10 38	21.16	1,764	58	35	1,800
16,000	10 33.2	12 51	24.76	1,704	78	29	2,465
18,000	12 17.4	15 17	28.55	1,650	103	24	3,280
20,000	14 09.3	17 56	32.55	1,604	134	21	4,260
22,000	16 09	20 47	36.79	1,565	172	18	5,450
24,000	18 20	23 48	41.27	1,533	216	15	6,870
26,000	20 43	27 01	46.03	1,509	269	13	8,550
28,000	23 19	30 26	51.12	1,495	331	11	10,550
30,000	26 14	34 04	56.64	1,490	407	10	12,970
32,000	29 34	37 59	62.80	1,494	499	9	15,940
34,000	33 37	42 22	70.09	1,512	624	7	19,870
36,000	39 25	47 54	79.80	1,551	806	6	25,730
36,900	45 22	53 06	89.16	1,600	1,007	5	32,070

Data from O. P. 757

16-IN. 45-CAL. GUN

2240-Lb A. P. Projectile

I. V. 2520 f. s.

(Service Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	<i>° ' "</i>	<i>° ' "</i>	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	26.5	28	1.21	2,466	.2	1,000	6
2,000	53.8	57	2.44	2,412	.7	584	24
4,000	1 50.9	1 58	4.99	2,305	3	203	100
6,000	2 51.9	3 07	7.66	2,200	7	122	236
8,000	3 56.9	4 26	10.46	2,101	13	87	440
10,000	5 06.3	5 55	13.40	2,007	22	65	723
12,000	6 20.6	7 36	16.50	1,918	33	49	1,095
14,000	7 40.5	9 28	19.76	1,835	48	40	1,575
16,000	9 06.4	11 32	23.19	1,758	66	33	2,170
18,000	10 38.7	13 51	26.79	1,689	87	27	2,900
20,000	12 18.1	16 20	30.58	1,629	113	23	3,770
22,000	14 05	19 04	34.60	1,579	145	19	4,830
24,000	15 59	22 00	38.83	1,538	183	17	6,090
26,000	18 03	25 07	43.30	1,507	227	14	7,570
28,000	20 18	28 22	48.03	1,485	279	12	9,320
30,000	22 44	31 41	53.07	1,472	341	11	11,380
32,000	25 22	35 06	58.45	1,469	414	9	13,810
34,000	28 19	38 39	64.20	1,477	499	8	16,670
36,000	31 40	42 24	70.62	1,496	604	7	20,160
38,000	35 47	46 31	78.24	1,528	741	6	24,740
40,000	41 56	51 52	88.90	1,586	957	5	31,910
40,600	46 25	55 58	96.10	1,625	1,118	5	37,240

Data from O. P. 750

16-IN. 45-CAL. GUN

2100-Lb. A. P. Projectile

I. V. 2600 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	25.0		26		1.17	2,532	0	1,000	5
2,000	50.9		53		2.38	2,466	1	653	22
4,000	1	45.6	1	53	4.88	2,337	5	217	95
6,000	2	44.5	3	03	7.52	2,214	11	128	227
8,000	3	48.3	4	23	10.32	2,097	20	88	428
10,000	4	56.8	5	55	13.27	1,987	34	65	709
12,000	6	11.1	7	40	16.41	1,883	55	50	1,085
14,000	7	31.7	9	39	19.74	1,789	85	39	1,569
16,000	8	58.8	11	53	23.27	1,706	117	32	2,179
18,000	10	33.0	14	24	27.01	1,630	154	26	2,931
20,000	12	14.9	17	04	30.96	1,566	200	22	3,857
22,000	14	05.1	20	00	35.14	1,511	252	18	4,978
24,000	16	07.1	23	14	39.56	1,465	313	15	6,320
26,000	18	20.5	26	44	44.25	1,430	382	13	7,910
28,000	20	42.9	30	24	49.21	1,410	468	11	9,786
30,000	23	19.0	34	04	54.49	1,400	570	10	12,001
32,000	26	11.0	37	44	60.09	1,405	698	9	14,711
34,000	29	25.2	41	42	66.40	1,419	854	8	18,021
36,000	33	13.4	45	42	73.60	1,450	1,055	7	22,000
38,000	38	04.0	50	09	82.28	1,500	1,333	6	27,325
39,600	45	14.9	55	54	94.60	1,559	1,736	5	35,699

Data from O. P. 519

16-IN. 45-CAL. GUN
2240-Lb. Target Projectile
I. V. 1935 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		45.1		46	1.56	1,887	.3	1,000	10
2,000	1	31.6	1	35	3.17	1,840	1.2	283	40
4,000	3	09.8	3	23	6.52	1,749	5	116	170
6,000	4	55.9	5	28	10.07	1,662	12	70	408
8,000	6	51.3	7	53	13.85	1,579	23	48	772
10,000	8	57.7	10	39	17.88	1,501	38	35	1,287
12,000	11	17.1	13	49	22.20	1,432	59	27	1,988
14,000	13	51.5	17	23	26.85	1,373	87	21	2,915
16,000	16	46	21	25	31.91	1,326	123	17	4,120
18,000	20	05	25	59	37.53	1,291	170	14	5,710
20,000	23	59	31	09	43.84	1,271	232	11	7,800
22,000	28	45	37	01	51.19	1,267	317	9	10,640
24,000	35	23	44	04	60.69	1,285	446	7	14,960
25,315	45	00	52	32	73.23	1,336	649	5	21,770

Data from O. P. 751

16-IN. 45-CAL. GUN
2100-Lb. Target Projectile
I. V. 2000 f. s.

(Target Charge)

Angle Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/32 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	42.2	43	1.55	1,939	.4	1,000	9
2,000	1 26.5	1 30	3.14	1,880	1.6	301	39
3,000	2 12.7	2 21	4.77	1,823	3.8	178	90
4,000	3 00.7	3 16	6.44	1,767	7.0	120	165
5,000	3 51.0	4 16	8.16	1,714	11.3	91	267
6,000	4 43.8	5 21	9.94	1,663	16.8	72	397
7,000	5 39.0	6 31	11.78	1,614	23.7	59	559
8,000	6 36.9	7 47	13.69	1,567	32.1	49	756
9,000	7 37.7	9 09	15.68	1,522	42.2	42	991
10,000	8 41.9	10 37	17.74	1,480	54.1	36	1,271
11,000	9 49.4	12 12	19.92	1,441	68.0	31	1,595
12,000	11 00.9	13 53	22.20	1,406	84.2	27	1,973
13,000	12 17.4	15 43	24.58	1,372	103.1	24	2,406
14,000	13 38.9	17 43	27.06	1,342	125.0	21	2,897
15,000	15 05.4	19 53	29.64	1,312	150.3	18	3,482
16,000	16 37.7	22 13	32.32	1,285	179.4	16	4,167
17,000	18 16.7	24 33	35.10	1,260	212.1	15	4,952
18,000	20 02.4	27 03	38.05	1,240	249.6	13	5,837
19,000	21 56.9	29 43	41.20	1,232	292.7	12	6,834
20,000	24 01.4	32 23	44.55	1,230	341.6	11	7,966
21,000	26 17.9	35 13	48.10	1,230	398.5	9	9,276
22,000	28 51.9	38 13	51.85	1,235	466.1	8	10,841
23,000	31 45.9	41 18	55.95	1,242	546.7	8	12,761
24,000	34 59.9	44 43	60.80	1,260	646.1	7	15,096
25,000	39 26.9	48 35	66.65	1,288	787.2	6	18,176

Data from O. P. 520

16-IN. 45-CAL. GUN

1900-Lb. H. C. Projectile

I. V. 2635 f. s.

(Service charge for 2,240-lb. projectile)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		32.0		25	1.16	2,573	.3	1,000	5
2,000		57.0		51	2.33	2,510	1	701	22
4,000	1	49.6	1	49	4.78	2,387	4	220	92
6,000	2	46.2	2	55	7.37	2,266	10	133	219
8,000	3	46.9	4	11	10.10	2,149	20	91	410
10,000	4	52.6	5	38	12.99	2,034	33	68	679
12,000	6	03.6	7	19	16.05	1,926	50	52	1,035
14,000	7	20.6	9	14	19.31	1,824	72	41	1,500
16,000	8	44.3	11	24	22.78	1,730	100	33	2,085
18,000	10	15.2	13	50	26.46	1,646	135	27	2,815
20,000	11	54.1	16	33	30.36	1,571	178	22	3,705
22,000	13	41.6	19	33	34.50	1,509	230	18	4,790
24,000	15	38.7	22	47	38.91	1,457	292	16	6,090
26,000	17	46.1	26	16	43.58	1,418	367	14	7,645
28,000	20	04.9	29	55	48.54	1,389	454	12	9,490
30,000	22	36.6	33	41	53.82	1,375	559	10	11,670
32,000	25	23.4	37	31	59.49	1,372	683	9	14,260
34,000	28	29.6	41	23	65.64	1,380	832	8	17,360
36,000	32	04	45	20	72.50	1,403	1,015	7	21,170
38,000	36	28	49	39	80.67	1,441	1,256	6	26,180
40,000	43	39	55	36	93.20	1,516	1,677	5	34,880
40,180	45	00	56	36	95.40	1,531	1,757	5	.....

Data from O. P. 921 (1st Rev.)

16-IN. 45-CAL. GUN

1900-Lb. H. C. Projectile

I. V. 2525 f. s.

(Service charge for 2,700-lb. projectile)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		32.4		27	1.20	2,462	.3	1,000	6
2,000		59.7		56	2.43	2,400	1.1	592	24
4,000	1	57.4	1	59	5.01	2,277	5	202	101
6,000	2	59.5	3	13	7.72	2,156	11	120	240
8,000	4	06.6	4	38	10.59	2,039	21	82	451
10,000	5	19.2	6	14	13.65	1,928	35	61	748
12,000	6	38.2	8	07	16.90	1,822	54	47	1,145
14,000	8	04.3	10	16	20.36	1,724	78	37	1,665
16,000	9	38.2	12	43	24.05	1,635	109	30	2,325
18,000	11	21.1	15	29	27.99	1,556	147	24	3,150
20,000	13	13.5	18	34	32.19	1,487	195	20	4,170
22,000	15	16.5	21	57	36.66	1,430	253	17	5,410
24,000	17	31.3	25	35	41.43	1,386	323	14	6,920
26,000	19	59.6	29	28	46.55	1,357	407	12	8,740
28,000	22	43.4	33	30	52.05	1,340	509	10	10,930
30,000	25	46.5	37	43	58.01	1,337	633	9	13,580
32,000	29	15	42	02	64.61	1,347	785	7	16,840
34,000	33	26	46	38	72.24	1,371	981	6	21,040
36,000	39	10	51	58	82.18	1,420	1,270	5	27,180
37,084	45	00	56	40	91.82	1,481	1,585	4	33,890

Data from O. P. 922 (1st Rev.)

16-IN. 45-CAL. GUN

1900-Lb. H. C. Projectile

I. V. 2000 f. s.

(H. C. Charge)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' ''	° ' ''	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	42.3	43	1.53	1,944	.4	1,000	9
2,000	1 26.3	1 29	3.09	1,888	1.6	308	39
4,000	2 59.8	3 14	6.37	1,779	7	122	163
6,000	4 41.7	5 17	9.88	1,674	17	72	392
8,000	6 33.8	7 42	13.63	1,575	32	49	748
10,000	8 37.7	10 33	17.68	1,482	53	36	1,258
12,000	10 56.3	13 52	22.07	1,398	83	27	1,960
14,000	13 32.3	17 46	26.86	1,324	123	21	2,904
16,000	16 30	22 15	32.14	1,264	177	16	4,163
18,000	19 57	27 25	38.04	1,220	247	13	5,839
20,000	24 06	33 17	44.75	1,196	342	10	8,103
22,000	29 18	39 46	52.68	1,197	475	8	11,257
24,000	36 24	46 56	62.78	1,230	674	6	16,021
25,184	45 00	53 56	73.96	1,281	935	5	22,179

Data from O. P. 969 (1st Rev.)

16-IN. 45- & 50-CAL. GUNS

2700-Lb. Target Projectile

I. V. 1800 f. s.

(Target Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		51.8		53	1.68	1,763	.3	1,000	11
2,000	1	45.2	1	49	3.40	1,727	1.2	241	47
3,000	2	40.3	2	48	5.16	1,691	2.8	142	107
4,000	3	37.1	3	51	6.96	1,655	5	101	195
5,000	4	35.9	4	58	8.81	1,620	8	78	313
6,000	5	36.8	6	09	10.71	1,586	12	62	463
7,000	6	40.0	7	25	12.66	1,553	17	51	646
8,000	7	45.7	8	46	14.67	1,521	23	43	866
9,000	8	54.1	10	12	16.74	1,490	30	37	1,129
10,000	10	05.6	11	43	18.88	1,460	38	32	1,437
11,000	11	20.5	13	19	21.09	1,432	47	28	1,794
12,000	12	39.1	15	01	23.38	1,405	58	25	2,204
13,000	14	01.8	16	50	25.75	1,380	70	22	2,674
14,000	15	29.2	18	47	28.21	1,357	84	20	3,210
15,000	17	02.0	20	51	30.78	1,337	100	18	3,825
16,000	18	41	23	03	33.49	1,319	119	16	4,530
17,000	20	28	25	23	36.36	1,304	140	14	5,340
18,000	22	24	27	51	39.41	1,292	164	13	6,280
19,000	24	31	30	27	42.66	1,284	192	11	7,360
20,000	26	52	33	13	46.17	1,280	225	10	8,630
21,000	29	32	36	13	50.06	1,280	265	9	10,160
22,000	32	42	39	34	54.55	1,285	314	8	12,060
23,000	36	50	43	40	60.07	1,297	381	7	14,630
23,930	45	00	51	15	70.09	1,334	519	5	19,870

Data from O. P. 758

16-IN. 45- & 50-CAL. GUNS

1900-Lb. H. C. Projectile

I. V. 1900 f. s.

(H. C. Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000		46.8		48	1.60	1,845	.4	1,000	10
2,000	1	35.6	1	40	3.26	1,791	1.8	265	42
3,000	2	26.4	2	35	4.96	1,738	4.1	155	98
4,000	3	19.6	3	36	6.72	1,685	8	106	181
5,000	4	15.3	4	42	8.54	1,634	12	80	293
6,000	5	13.7	5	54	10.43	1,584	18	64	437
7,000	6	15.0	7	12	12.39	1,535	26	53	616
8,000	7	19.5	8	37	14.42	1,487	35	44	836
9,000	8	27.6	10	09	16.53	1,442	46	37	1,100
10,000	9	39.7	11	49	18.74	1,399	59	32	1,413
11,000	10	56.1	13	38	21.05	1,359	74	28	1,782
12,000	12	17.4	15	36	23.46	1,321	92	24	2,215
13,000	13	44.1	17	44	25.99	1,286	113	21	2,720
14,000	15	17.0	20	03	28.65	1,255	138	18	3,307
15,000	16	57.2	22	32	31.46	1,228	166	16	3,989
16,000	18	46	25	13	34.44	1,205	199	14	4,784
17,000	20	45	28	04	37.62	1,188	238	13	5,714
18,000	22	56	31	05	41.04	1,177	283	11	6,808
19,000	25	23	34	17	44.74	1,173	336	10	8,106
20,000	28	08	37	37	48.77	1,175	400	9	9,654
21,000	31	17	41	03	53.20	1,185	476	8	11,518
22,000	35	00	44	40	58.22	1,202	569	7	13,822
23,000	40	04	49	06	64.78	1,228	705	6	17,092
23,430	45	00	53	18	70.87	1,254	844	5	20,381

Data from O. P. 970 (1st Rev.)

16-IN. 50-CAL. GUN

2700-Lb. A. P. Projectile

I. V. 2500 f. s.

(Service Charge)

Range	Angle of elevation		Angle of fall		Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2		3		4	5	6	7	8
<i>Yards</i>	°	'	°	'	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	26.9		27		1.21	2,454	.2	1,000	6
2,000	54.5		55		2.45	2,409	.7	578	24
4,000	1	51.6	1	57	4.99	2,322	3	209	99
6,000	2	51.9	3	05	7.62	2,237	7	127	232
8,000	3	55.6	4	20	10.37	2,154	13	89	430
10,000	5	02.9	5	42	13.24	2,074	21	67	703
12,000	6	14.1	7	14	16.23	1,997	33	53	1,057
14,000	7	29.7	8	54	19.36	1,926	47	43	1,505
16,000	8	50.1	10	43	22.63	1,859	64	35	2,060
18,000	10	15.6	12	44	26.03	1,796	85	29	2,730
20,000	11	46.6	14	55	29.59	1,740	109	25	3,530
22,000	13	23.5	17	17	33.33	1,692	138	21	4,470
24,000	15	07.1	19	48	37.26	1,650	173	19	5,600
26,000	16	58.3	22	28	41.39	1,615	213	16	6,910
28,000	18	57.9	25	17	45.73	1,587	260	14	8,430
30,000	21	06.8	28	15	50.32	1,567	315	12	10,210
32,000	23	26.3	31	21	55.20	1,556	379	11	12,290
34,000	25	59.2	34	35	60.44	1,554	455	10	14,730
36,000	28	51.1	38	00	66.13	1,560	545	9	17,640
38,000	32	10	41	35	72.47	1,577	654	8	21,160
40,000	36	05	45	28	79.96	1,607	795	7	25,770
42,000	42	23	50	56	90.78	1,666	1,025	5	33,210
42,345	45	00	53	14	95.32	1,686	1,131	5	36,610

Data from O. P. 770

16-IN. 50-CAL. GUN

1900-Lb. H. C. Projectile

I. V. 2690 f. s.

(Service charge for 2,700-lb. projectile)

Range	Angle of elevation	Angle of fall	Time of flight	Striking velocity	Drift 1/25 twist	Danger space for a target 20 feet high	Maximum ordinate
1	2	3	4	5	6	7	8
<i>Yards</i>	° ' "	° ' "	<i>Seconds</i>	<i>F. S.</i>	<i>Yards</i>	<i>Yards</i>	<i>Feet</i>
1,000	33.0	23	1.13	2,627	0.3	1,000	5
2,000	57.0	49	2.28	2,564	1.0	771	21
4,000	1 47.6	1 44	4.69	2,440	4	234	88
6,000	2 41.7	2 48	7.22	2,318	10	137	209
8,000	3 39.8	4 01	9.89	2,199	19	95	392
10,000	4 42.4	5 24	12.71	2,083	32	71	649
12,000	5 50.1	6 59	15.70	1,973	48	55	991
14,000	7 03.4	8 47	18.87	1,869	70	43	1,432
16,000	8 23.1	10 50	22.24	1,772	96	35	1,989
18,000	9 49.7	13 10	25.82	1,684	130	28	2,680
20,000	11 23.6	15 47	29.63	1,606	171	24	3,527
22,000	13 05.7	18 39	33.66	1,540	221	20	4,554
24,000	14 56.4	21 45	37.92	1,485	280	16	5,786
26,000	16 56.5	25 04	42.44	1,441	351	14	7,252
28,000	19 06.8	28 34	47.23	1,410	435	12	8,986
30,000	21 28.4	32 11	52.31	1,391	534	11	11,027
32,000	24 02.8	35 52	57.71	1,382	650	9	13,419
34,000	26 52.2	39 36	63.49	1,387	786	8	16,236
36,000	30 01.2	43 19	69.76	1,403	949	7	19,592
38,000	33 40	47 08	76.79	1,431	1,150	6	23,734
40,000	38 18	51 23	85.40	1,479	1,422	5	29,338
41,622	45 10	56 46	97.38	1,552	1,849	4	38,049

Data from O. P. 1100

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