

W
391

MINING
TRANSIT BOOK
No. 422 F

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and
SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be $30.6 + (20 - 16) \div 2$ or 2 ft. added to $30.6 = 32.6$. For slopes of 1 on $1\frac{1}{2}$ see inside of back cover.

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1-18 Final X Sections Upstream Toe
Wall N 3610 to N 3780
E 5440 to E 5580

71-77 Final X Sections Between Drains
and E 4750

19-70 Final X Sections Over Distr. Toe Wall
N 3550 N 3670
E 4450 to 5130 to E 4450 to 5180

Final X Sections

N 3610

B.M. 0.40 542.44 542.04

5460	+2.0	546.4 544.4	✓
470	2.6	39.8	✓
480	6.4	36.0	✓
492	5.3	37.1	✓
494	12.5	29.9	✓
510	12.5	29.9	✓
512	3.9	38.5	✓
520	4.3	38.1	✓
530	4.4	38.0	✓
540	4.1	38.3	✓
550	+2.8	45.2	✓
560	+7.5	49.9	✓
570	+22.2	09. 64.6	✓

Plotted

all elev. ok for plotting
9-24-32
 Aug 5 - 1932
 Elliott - Notes
 Simpson - T
 Sefer - 9
 Remmen - Tape

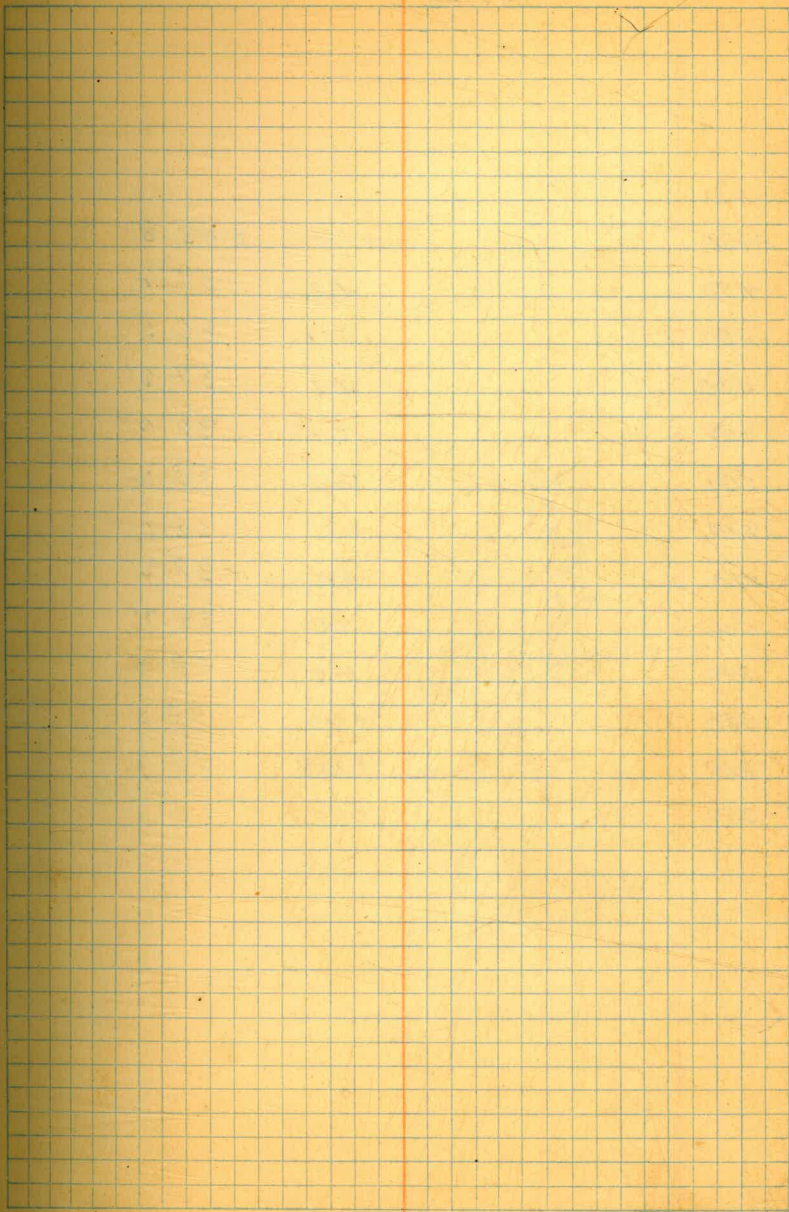
N 3620

542.44

2

5460	+ 1.2	543.6 ✓
470	5.0	37.4 ✓
480	5.9	36.5 ✓
490	4.7	37.7 ✓
492 ⁵	12.5	29.9 ✓
508 ⁵	12.5	29.9 ✓
510	4.0	38.4 ✓
520	4.5	37.9 ✓
530	4.4	38.0 ✓
540	3.9	38.5 ✓
550	+2.0	44.4 ✓
560	+10.6	53.0 ✓
		0.5 ✓
570	+22.1	64.5 ✓

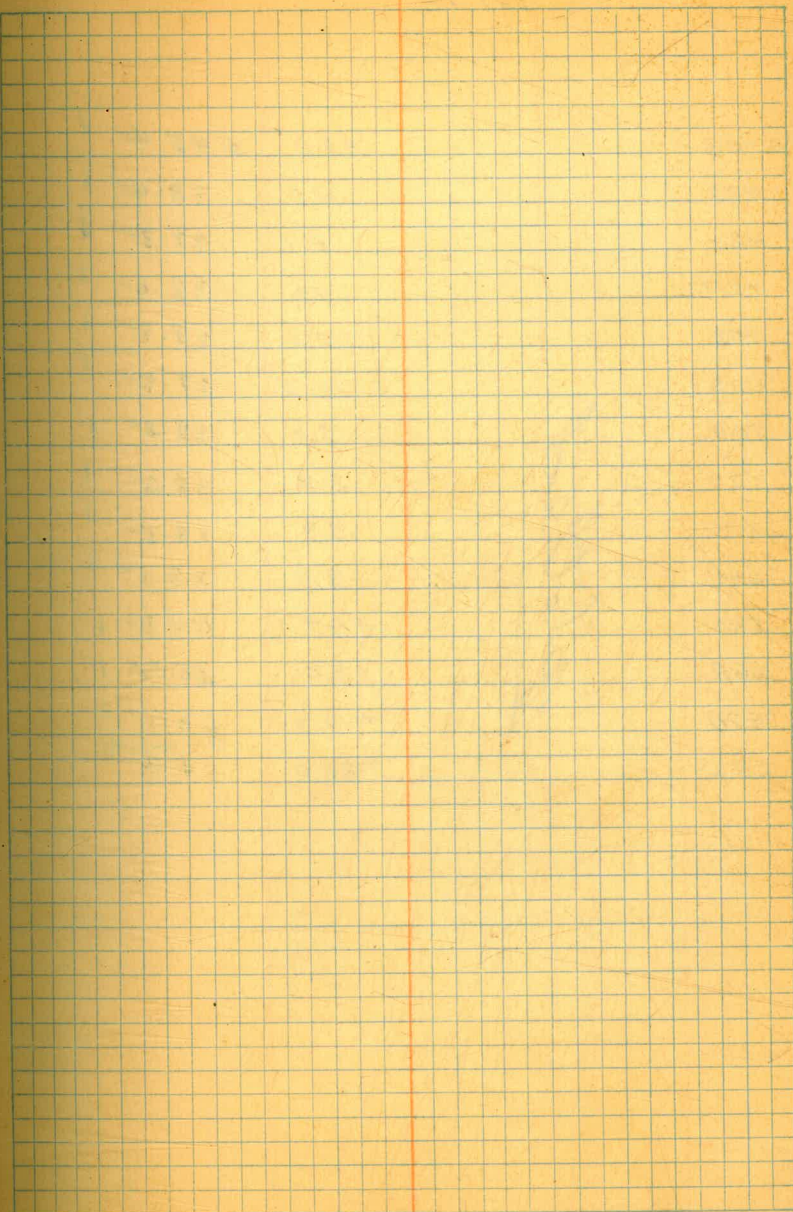
plotted



542.44

5460	+1.4	543.8 ✓	l
470	4.8	37.6 ✓	l
480	5.9	36.5 ✓	l
490	4.8	37.6 ✓	l
495	12.4	30.0 ✓	l
509	12.2	30.2 ✓	l
510	3.7	38.7 ✓	l
520	4.2	38.2 ✓	l
530	3.5	38.9 ✓	l
540	4.2	38.2 ✓	l
550	+1.4	43.8 ✓	l
560	+10.8	53.2 ✓	l
570	+22.1	64.5 ✓	l

plotted



542.44

5460	+3.0	545.4 ✓
470	4.0	38.4 ✓
480	5.1	37.3 ✓
491.5	4.4	38.0 ✓
492	12.5	29.9 ✓
508	12.5	29.9 ✓
509	3.9	38.5 ✓
520	3.8	38.6 ✓
530	3.9	38.5 ✓
540	3.9	38.5 ✓
550	+1.9	44.3 ✓
560	+8.2	50.6 ✓
570	+17.7	60.1 ✓
575	+22.0	64.4 ✓

plotted

542.44

5460	+2.8	545.2 ✓
470	5.0	37.4 ✓
480	4.9	37.5 ✓
491E	4.8	37.6 ✓
492	12.5	29.9 ✓
507E	12.4	30.0 ✓
508E	3.4	39.0 ✓
520	3.8	38.6 ✓
530	4.1	38.3 ✓
540	3.7	38.5 ✓
550	+1.2	43.6 ✓
560	+9.4	51.8 ✓
570	+16.5	58.9 ✓
578	+21.9	64.3 ✓

plotted

542.44

5460	+5.9	548.3 ✓	
470	1.7	40.7 ✓	
480	4.5	37.9 ✓	
491	4.6	37.8 ✓	
493	5.8	36.6 ✓	
494	12.3	30.1 ✓	
507	12.4	30.0 ✓	
509	2.6	39.8 ✓	
520	3.3	39.1 ✓	
530	3.5	38.9 ✓	
540	3.7	38.7 ✓	
550	+0.9	43.3 ✓	
560	+7.9	50.3 ✓	
570	+16.1	58.5 ✓	
575	+21.4	63.8 ✓	

plotted

542.44

5460.	+5.6	548.0 ✓
470	+1.8	44.2 ✓
480	4.1	38.3 ✓
490	4.0	38.4 ✓
492	12.3	30.1 ✓
507	12.3	30.1 ✓
508	2.0	40.4 ✓
520	2.6	39.8 ✓
530	3.6	38.8 ✓
540	3.5	38.9 ✓
550	0.8	41.6 ✓
560	+5.7	48.1 ✓
570	+16.8	59.2 ✓
575	+20.8	63.2 ✓

plotted

542.44

5460	+5.6	548.0 ✓
470	+2.0	44.4 ✓
480	3.8	38.6 ✓
492	3.6	38.8 ✓
492	12.0	30.4 ✓
507	12.1	30.3 ✓
508	1.4	41.0 ✓
520	1.6	40.8 ✓
530	3.3	39.1 ✓
540	3.1	39.3 ✓
550	0.2	42.2 ✓
560	+4.9	47.3 ✓
570	+15.3	57.7 ✓
575	+20.1	62.5 ✓

plotted

N 3690

542.44

5460	+3.8	546.2	
470	1.0	41.4	
480	3.1	39.3	
492	3.4	39.0	
493	11.4	31.0	
508	11.5	30.9	
509	0.8	41.6	
520	1.0	41.4	
530	1.9	40.5	
540	2.8	39.6	
550	1.5	40.9	
560	+4.6	47.0	
570	+14.5	56.9	
575	+19.2	62.1	

plotted

T.P.B.M.

0.40 542.04

9.48 551.52

551.52

5460	3.9	547.6	✓
470	10.2	41.3	✓
480	11.0	40.5	✓
491	11.2	40.3	✓
4925	19.6	31.9	✓
508	19.8	31.7	✓
510	9.3	42.8	✓ 42.2
520	9.4	42.1	✓
530	10.3	41.2	✓
540	11.8	39.7	✓
550	7.7	43.8	✓
560	2.0	49.5	✓
570	+5.6	57.1	✓
575	+9.8	61.3	✓

Plotted

551.52

5460	1.8	549.7 ✓ ↓
470	9.1	42.4 ✓ ↓
480	10.2	41.3 ✓ ↓
492.5	10.1	41.4 ✓ ↓

Plotted

511	8.9	42.6 ✓ ↓
520	8.4	43.1 ✓ ↓
530	9.3	42.2 ✓ ↓
540	11.3	40.2 ✓ ↓
550	8.0	43.5 ✓ ↓
560	0.7	50.8 ✓ ↓

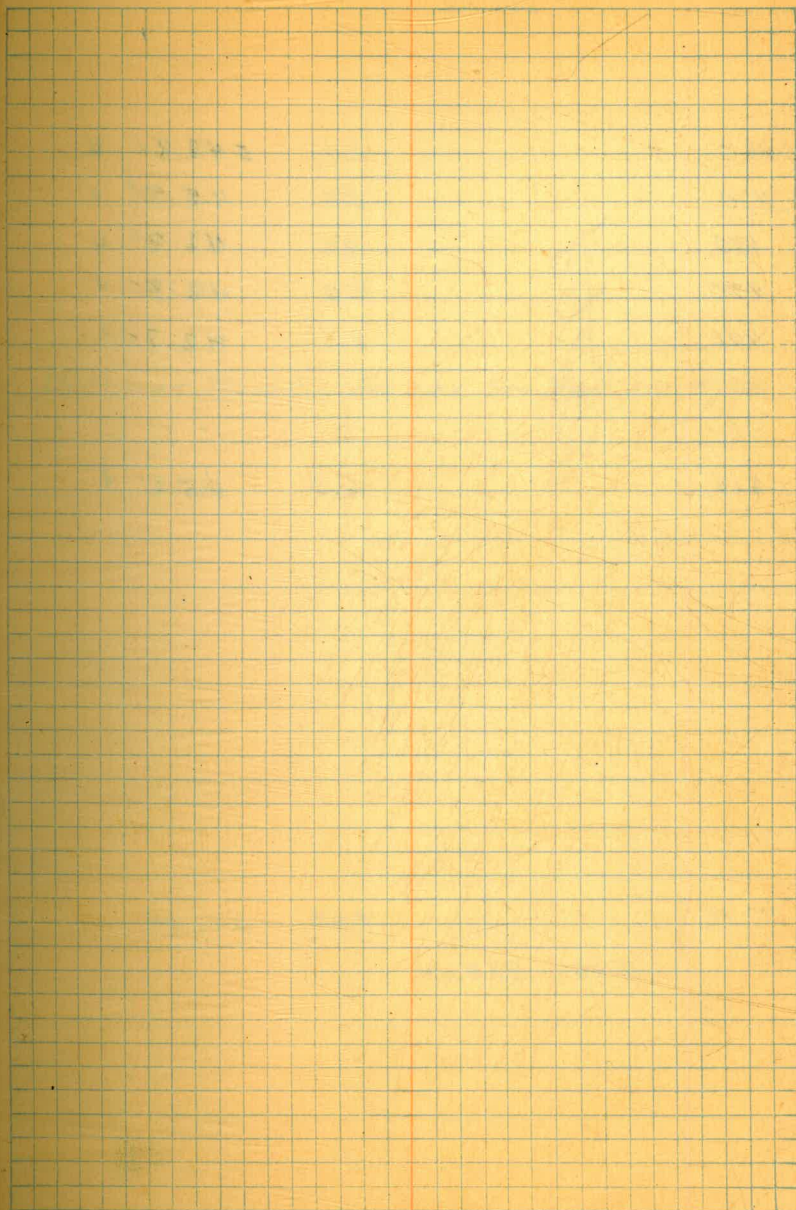
Bottom of trench

"

551.52

5460	2.9	548.6	'
470	7.1	44.4	'
480	9.5	42.0	'
494	9.5	42.0	'
511	8.0	43.5	'
520	7.5	44.0	'
530	9.7	41.8	'
540	8.2	43.3	'
550	4.9	46.6	'
560	10.3	51.8	'

Plotted



551.52

5460	2.7	548.8 ✓	✓
470	5.6	45.9 ✓	✓
480	9.2	42.3 ✓	✓
490	9.2	42.3 ✓	✓
496	8.8	42.7 ✓	✓
513	6.3	45.2 ✓	✓

Plotted

T.P

9.48

542.04

11.60 553.67

Bottom of Trench - For elev. See Book 340 T. 59

"

553.64

5460	4.2	549.4	✓	
470	4.9	48.7	✓	
480	11.2	42.4	✓	
490	11.0	42.6	✓	
496 ⁵	10.4	43.2	✓	
—				
516	8.0	45.6	✓	

plotted

Bottom of trench See Book 340 p. 59

" "

553.64

5460

3.4 550.2

470

5.1 48.5

480

7.8 43.8

490

11.1 42.5

498⁵

9.6 44.0

-

-

514

8.5 45.1

plotted

Bottom of Trench See book 340 p. 59

" "

553.64

5460

2.5

551.1 ✓ ↓

470

2.3

51.3 ✓ ↓

480

8.2

45.4 ✓ ↓

490

9.6

44.0 ✓ ↓

500

9.3

44.3 ✓ ↓

516

8.0

45.6 ✓ ↓

Plotted

Bottom of Trench

see book 340 p. 59

"

"

553.64

5460

2.4

551.2 ✓

470

0.4

53.2 ✓

480

5.3

48.3 ✓

490

6.1

47.5 ✓

500

6.7

46.9 ✓

503

8.6

45.0 ✓

—

—

517

7.6

46.0 ✓

pelotted

Bottom of Trench See book 340 p. 59

" "

553.64

5460	+0.6	554.2	✓
470	0.6	53.0	✓
480	4.6	49.0	✓
490	5.9	47.7	✓
500	5.3	48.3	✓
505	6.7	46.9	✓
—			
—			
517	7.3	46.3	✓
522	5.9	47.7	✓

Plotted

All OK at top of Clotting Box
9-29-34

B.M.

11.60 542.04

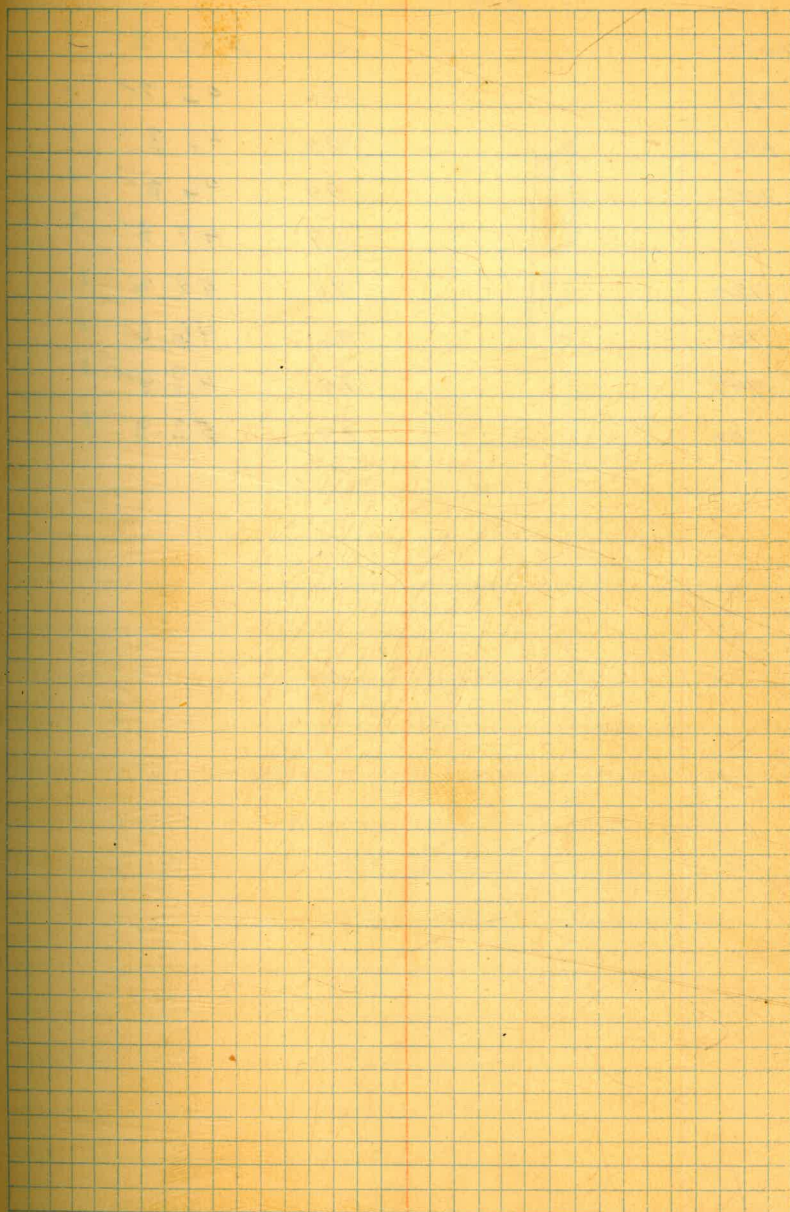
Bottom of Trench

See book 340 p. 59

Bottom of Trench

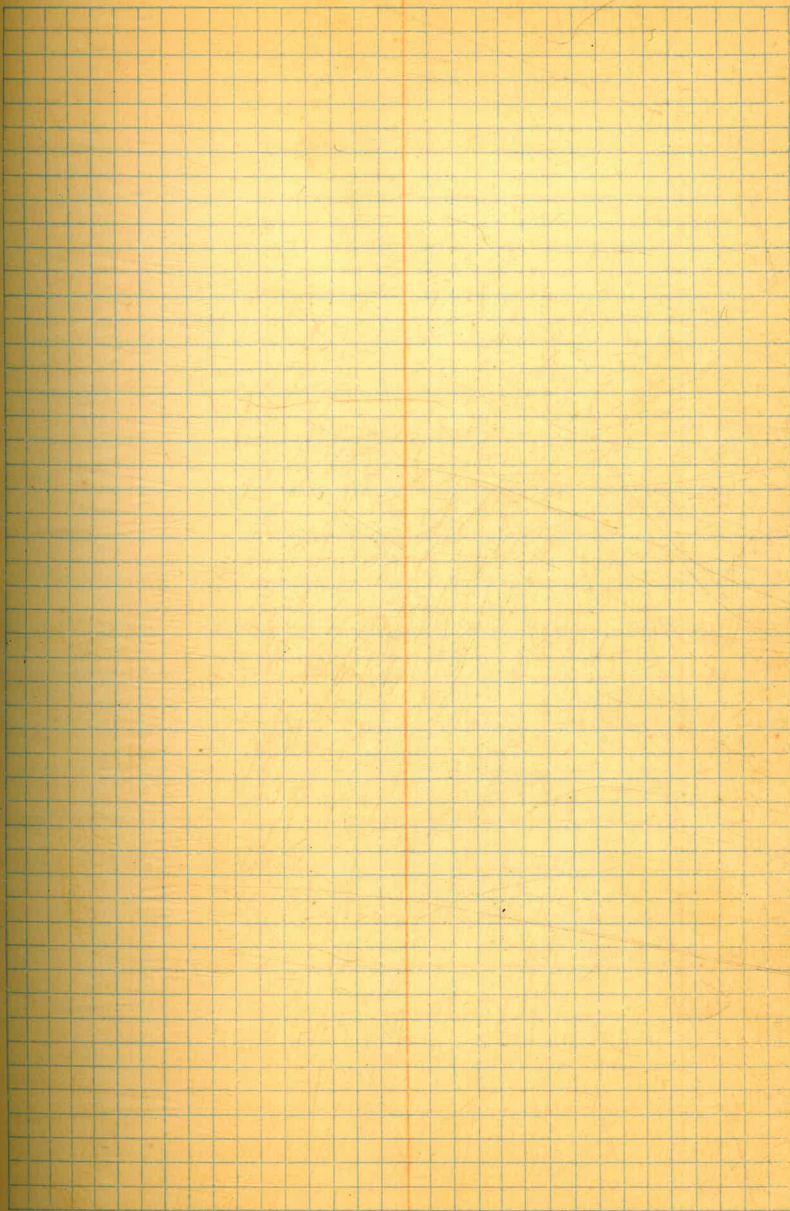
B.M.	2.36	546.80		544.44
E 4450			10.4	536.4 ✓
460			11.1	35.7 ✓
470			10.9	35.9 ✓
480			11.3	35.5 ✓
491			11.0	35.8 ✓
491			16.2	30.6 ✓
509			15.8	31.0 ✓
509			10.7	36.1 ✓
520			9.4	37.4 ✓
530			8.9	37.9 ✓
540			8.6	38.2 ✓
550			8.8	38.0 ✓
560			8.8	38.0 ✓
570			9.0	37.8 ✓
580			8.9	37.9 ✓
590			9.0	37.8 ✓
600			9.2	37.6 ✓
610			9.5	37.3 ✓
620			8.9	37.9 ✓
630			9.0	37.8 ✓
640			8.8	38.0 ✓
650			7.8	39.0 ✓
660			1.5	45.3 ✓
B.M.	0.74	556.17		555.43

plotted



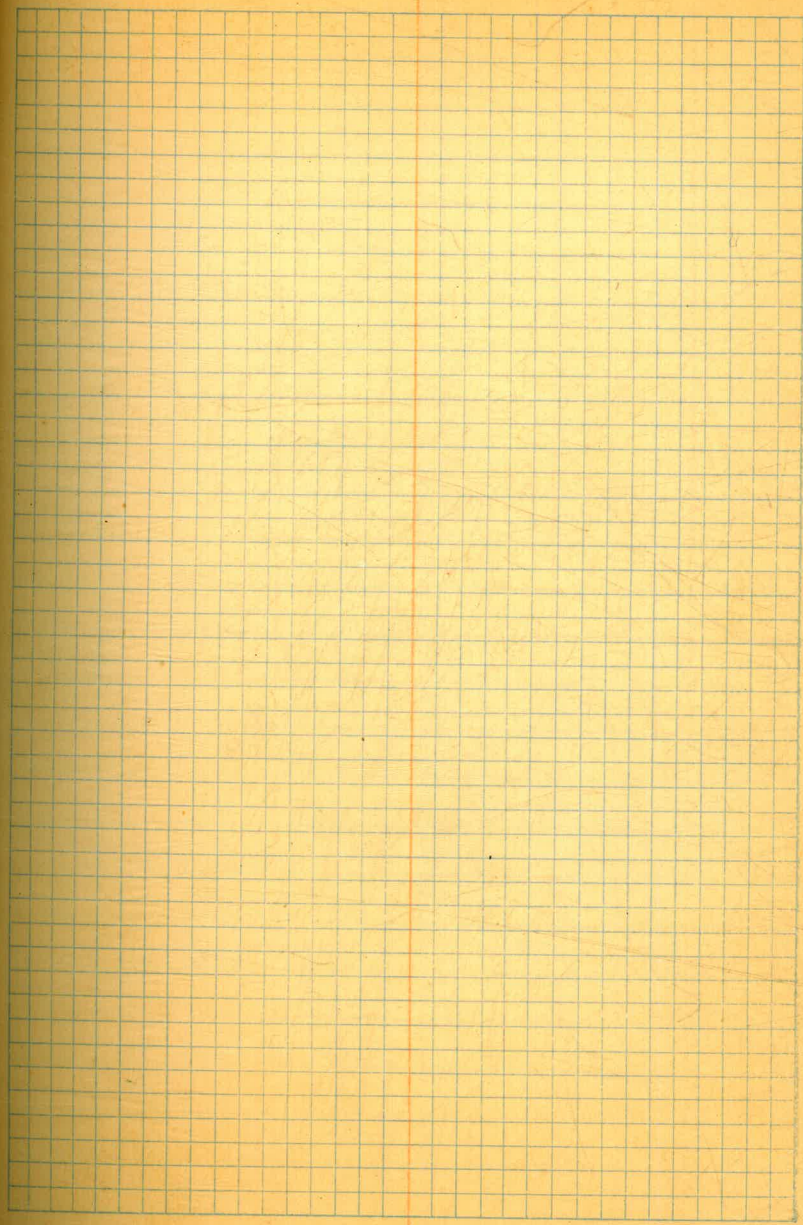
556.17

4670	10.4	545.8	✓
680	10.5	45.7	✓
690	10.4	45.8	✓
700	9.9	46.3	✓
710	8.9	47.3	✓
720	8.0	48.2	✓
730	9.6	46.6	✓
740	7.4	48.8	✓
746	3.9	52.3	✓

plotted

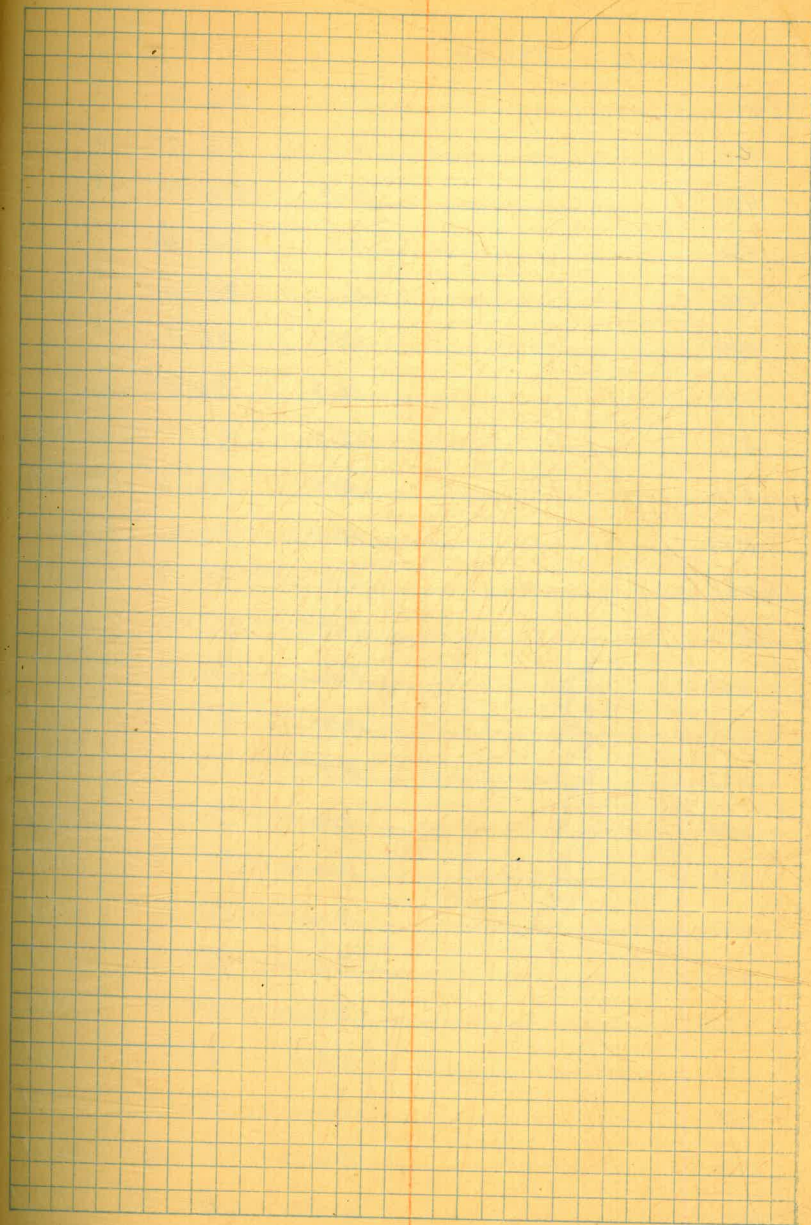
13550

21



N3550

22



B.M.	2.12	546.56	544.44
E 4450		10.0	36.6
460		10.7	35.9
470		10.9	35.7
480		11.1	35.5
490		11.1	35.5
494		10.7	35.9
494		15.8	30.8
511		15.5	31.1 Final Elev
511		10.4	36.2 35.9
520		10.4	36.2 36.1
530		9.0	37.6 36.8
540		8.8	37.8 37.0
550		8.8	37.8 36.7
560		8.7	37.9 36.9
570		8.9	37.7 37.0
580		8.9	37.7 36.9
590		9.0	37.6 36.9
600		9.1	37.5 36.9
610		9.1	37.5 36.9
620		9.0	37.6 37.0
630		8.9	37.7 37.1
640		8.7	37.9 37.1
650		8.6	38.0 37.1
660		2.4	44.2 37.1

& Drain. For final structure Exc. See book 372 p. 20

plotted

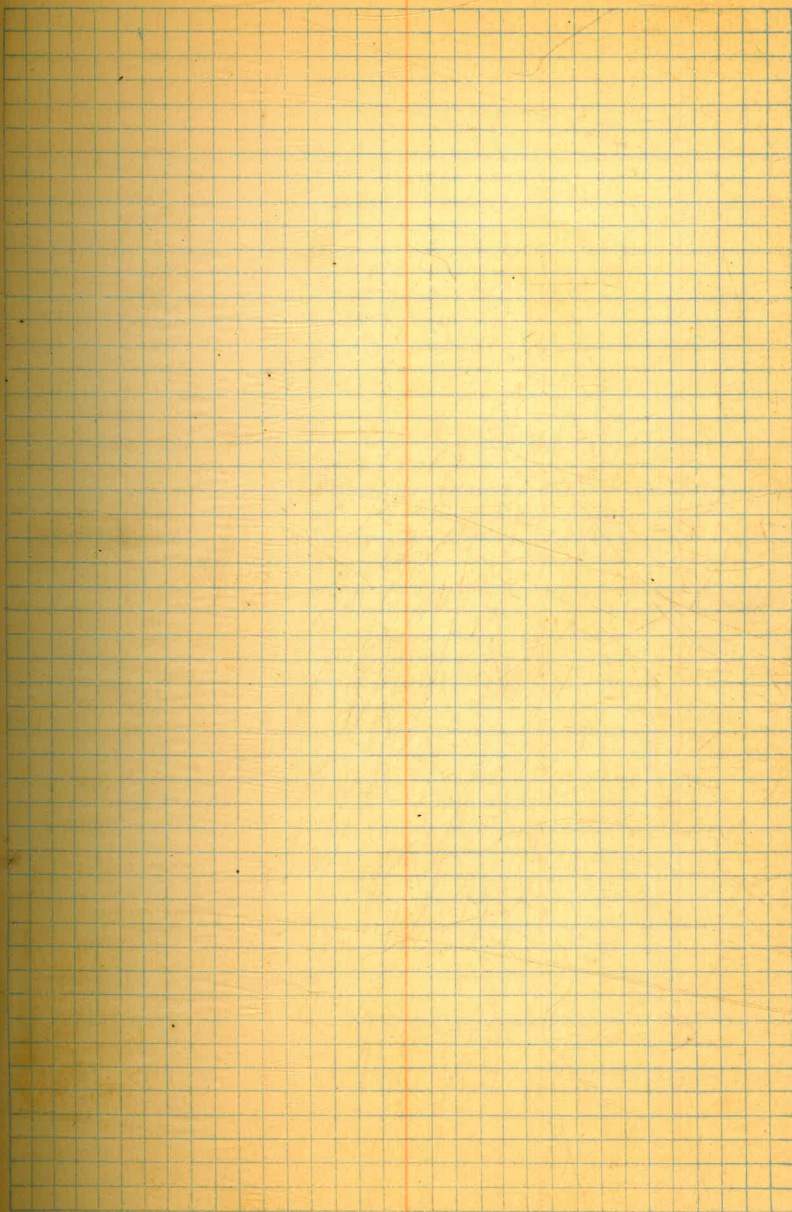
Trench

"

B.M.	0.74	556.17		555.43
E4670			11.2	45.0 ✓
680			10.7	45.5 ✓
690			10.9	45.3 ✓
700			10.6	45.6 ✓
710			10.7	45.5 ✓
720			10.7	45.5 ✓
730			10.6	45.6 ✓
740			7.7	48.5 ✓
745			4.0	52.2 ✓
750			4.0	52.2 ✓

plotted

A Diagram For final structure etc. See book 372 p. 20



546.56

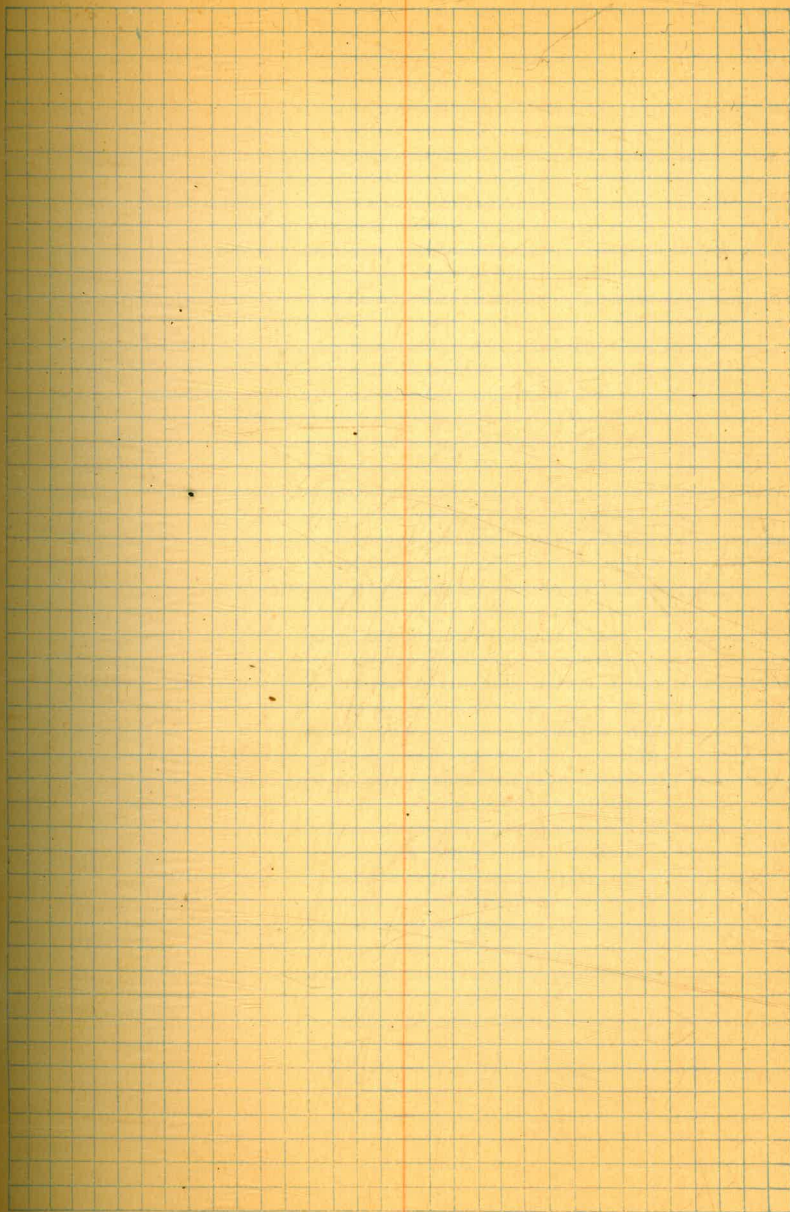
E 4450	10.2	536.4	✓	
460	10.6	36.0	✓	
470	10.8	35.8	✓	
480	10.8	35.8	✓	
490	11.1	35.5	✓	
495	10.7	35.9	✓	
495	15.8	30.8	✓	
512	15.6	31.0	✓	
512	10.6	36.0	✓	
520	10.1	36.5	✓	
530	8.5	38.1	✓	
540	8.2	38.4	✓	
550	8.2	38.4	✓	
560	7.4	39.2	✓	
570	6.8	39.8	✓	
580	6.8	39.8	✓	
590	7.4	39.2	✓	
600	6.4	40.2	✓	
610	7.4	39.2	✓	
620	7.1	39.5	✓	
630	7.6	39.0	✓	
640	6.9	39.7	✓	
650	6.2	40.4	✓	
660	0.9	45.7	✓	

plotted

French

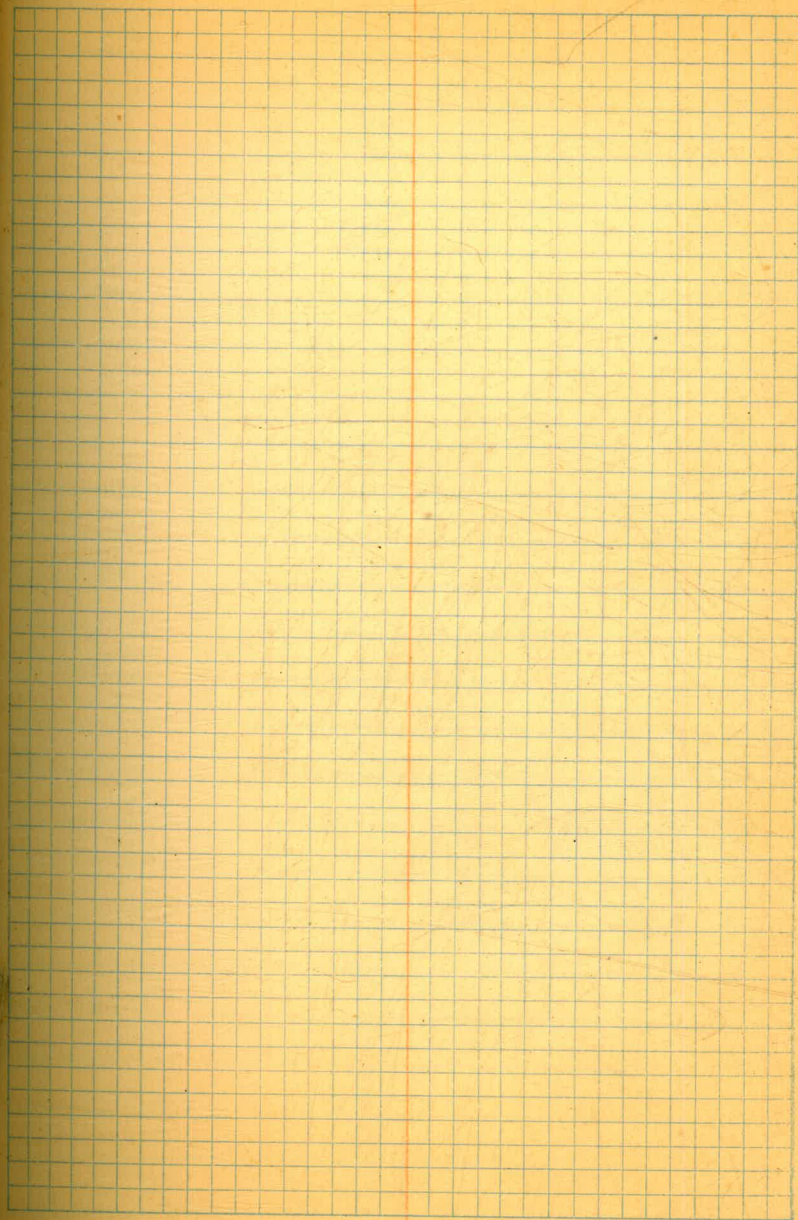
B.M.	0.74	556.17		555.43	
4670			10.8	45.4 ✓	↓
680			10.5	45.7 ✓	↓
690			10.8	45.4 ✓	↓
700			10.4	45.8 ✓	↓
710			10.5	45.7 ✓	↓
720			10.2	46.0 ✓	↓
730			10.9	45.3 ✓	↓
740			6.7	49.5 ✓	↓
745			4.0	52.2 ✓	↓
750			4.0	52.2 ✓	↓

potted



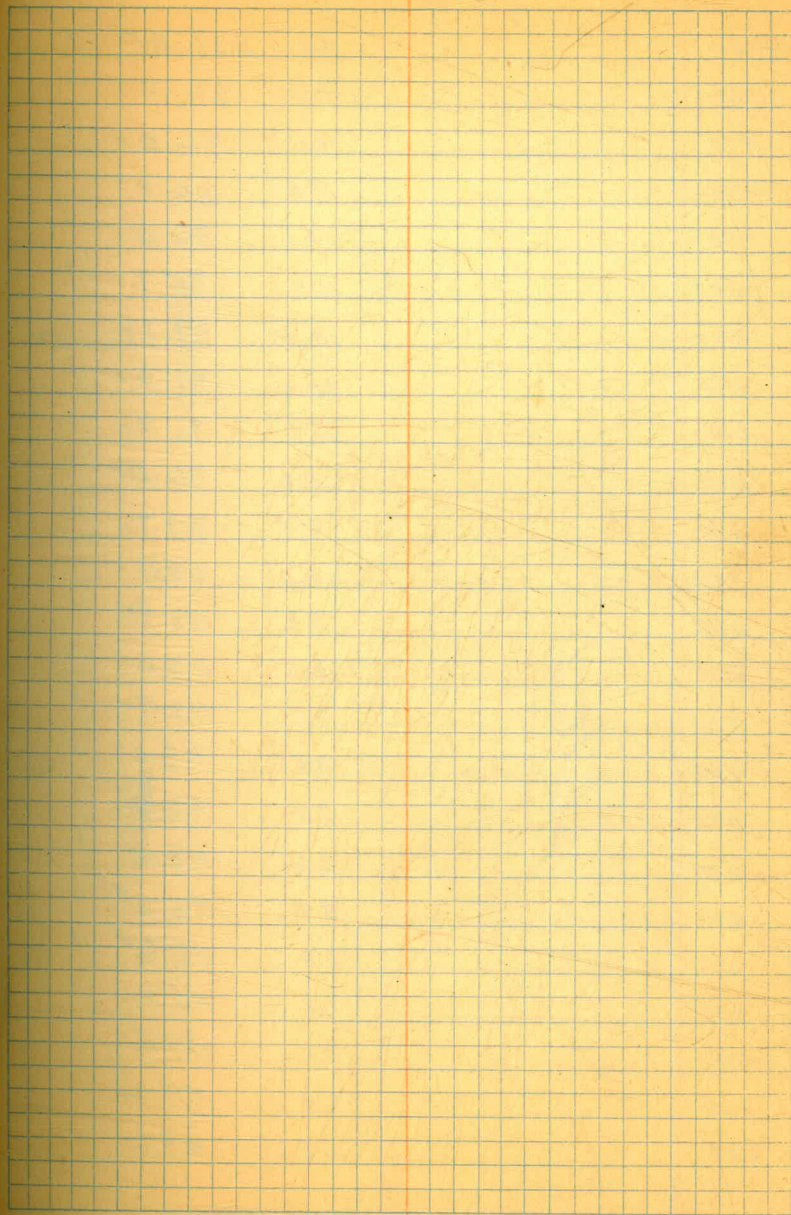
N3570

29



N3570

30



546.56

E 4450	9.6	537.0 ✓
460	10.6	36.0 ✓
470	10.6	36.0 ✓
480	10.6	36.0 ✓
490	10.6	36.0 ✓
497	10.9	35.7 ✓
497	15.5	31.1 ✓
514	15.6	31.0 ✓
514	10.7	35.9 ✓
520	10.6	36.0 ✓
530	6.9	39.7 ✓
540	3.6	43.0 ✓
550	3.8	42.8 ✓
560	3.6	43.0 ✓
570	3.7	42.9 ✓
580	3.6	43.0 ✓
590	3.4	43.2 ✓
600	3.6	43.0 ✓
610	3.4	43.2 ✓
620	3.0	43.6 ✓
630	1.5	45.1 ✓
640	2.1	44.5 ✓
650	2.4	44.2 ✓
660	1.8	44.8 ✓

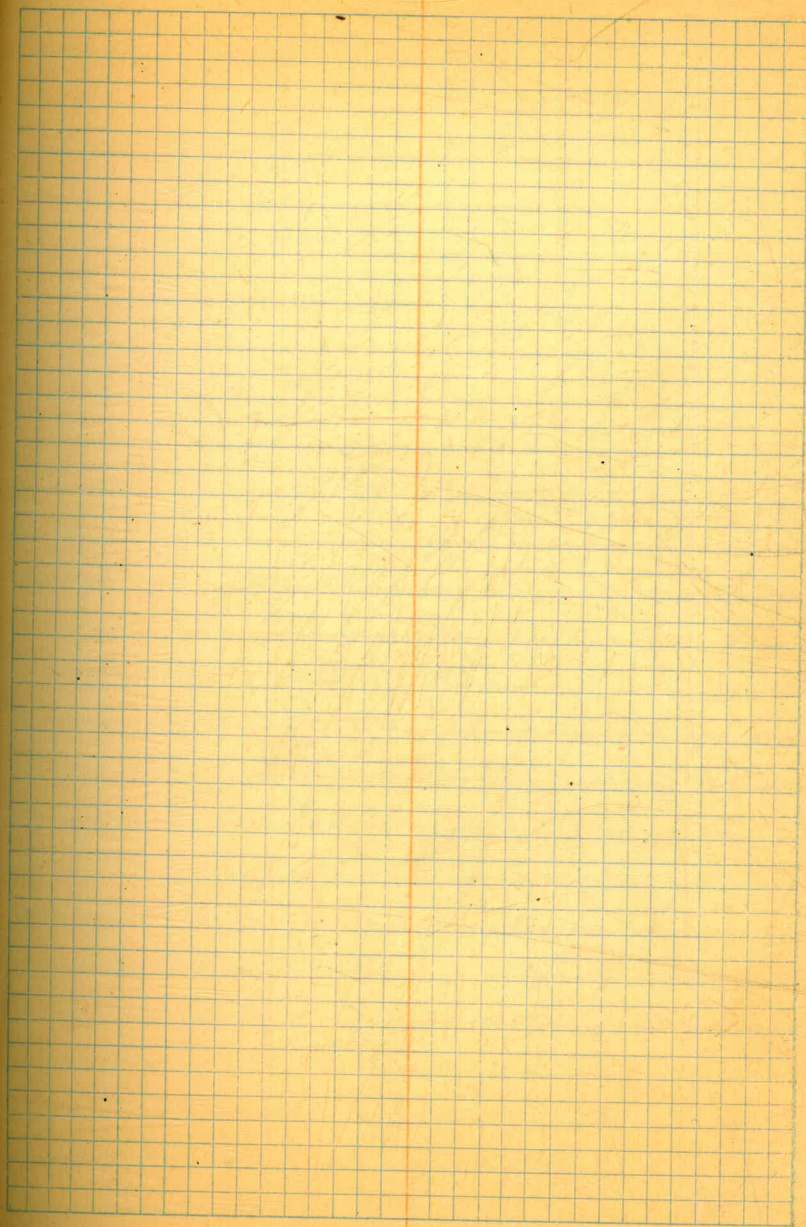
plotted

French

"

N 3580

32

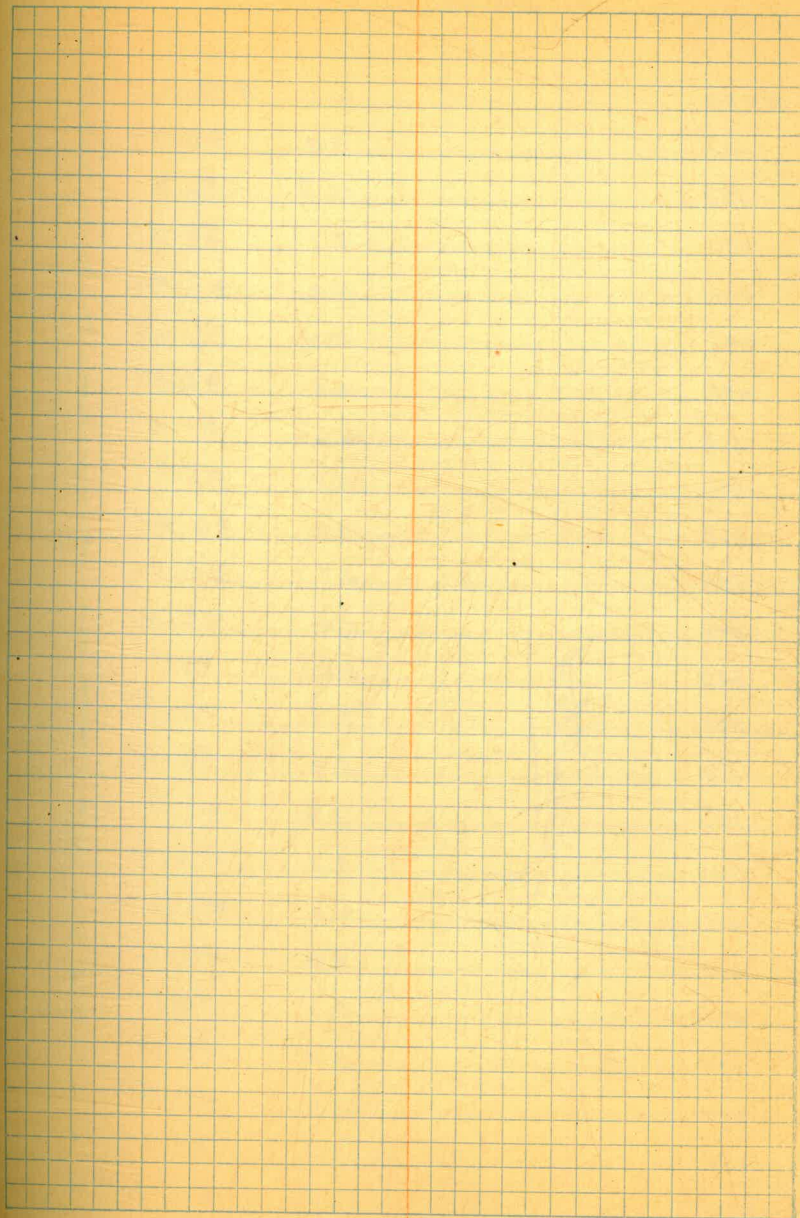


N3580

33

0858N

34



546.56

4450	10.0	536.6 ✓	
460	9.9	36.7 ✓	
470	10.3	36.3 ✓	
480	9.1	37.5 ✓	
490	9.2	37.4 ✓	
498	10.4	36.2 ✓	
498	15.8	30.8 ✓	
516	15.6	31.0 ✓	
516	10.7	35.9 ✓	
520	10.2	36.4 ✓	
530	6.7	39.9 ✓	
540	3.4	43.2 ✓	
550	3.5	43.1 ✓	
560	3.7	42.9 ✓	
570	3.9	42.7 ✓	
580	3.9	42.7 ✓	
590	3.7	42.9 ✓	
600	4.0	42.6 ✓	
610	4.0	42.6 ✓	
620	3.5	43.1 ✓	
630	3.1	43.5 ✓	
640	2.4	44.2 ✓	
650	2.0	44.6 ✓	
660	1.9	44.7 ✓	

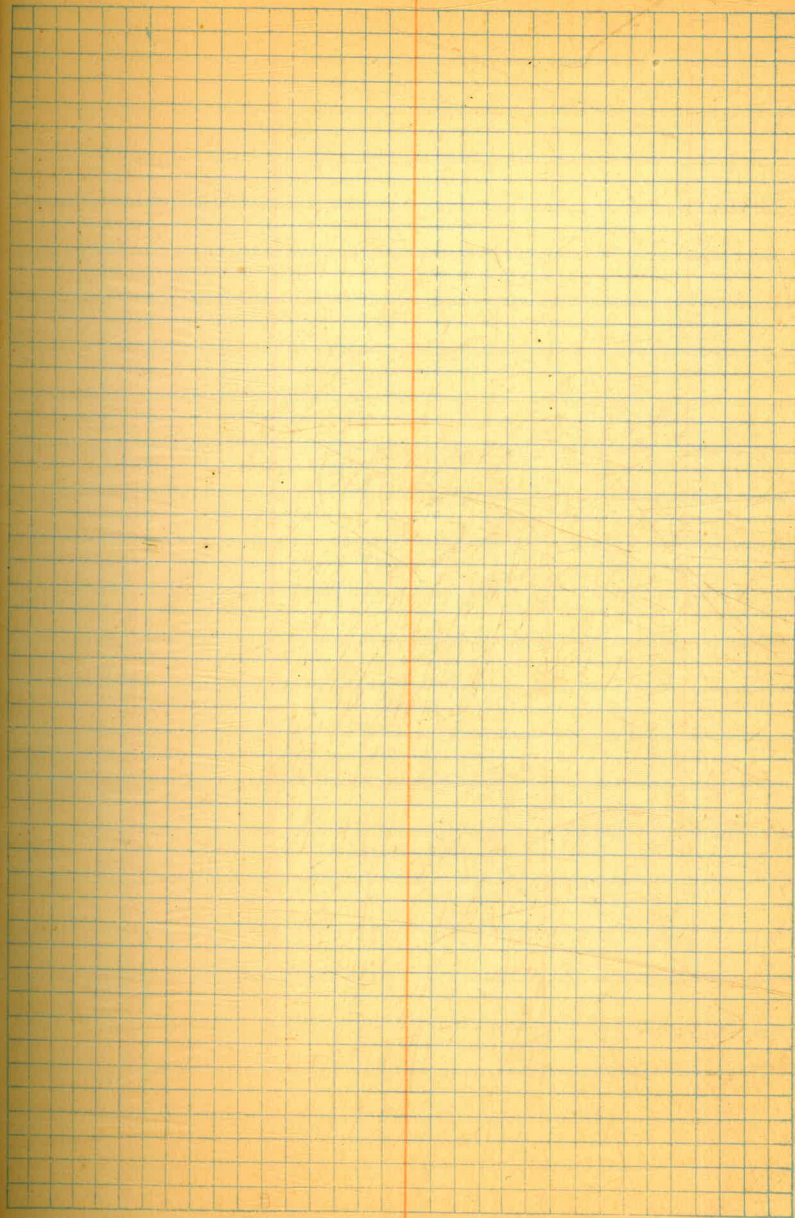
plotted

Trench

"

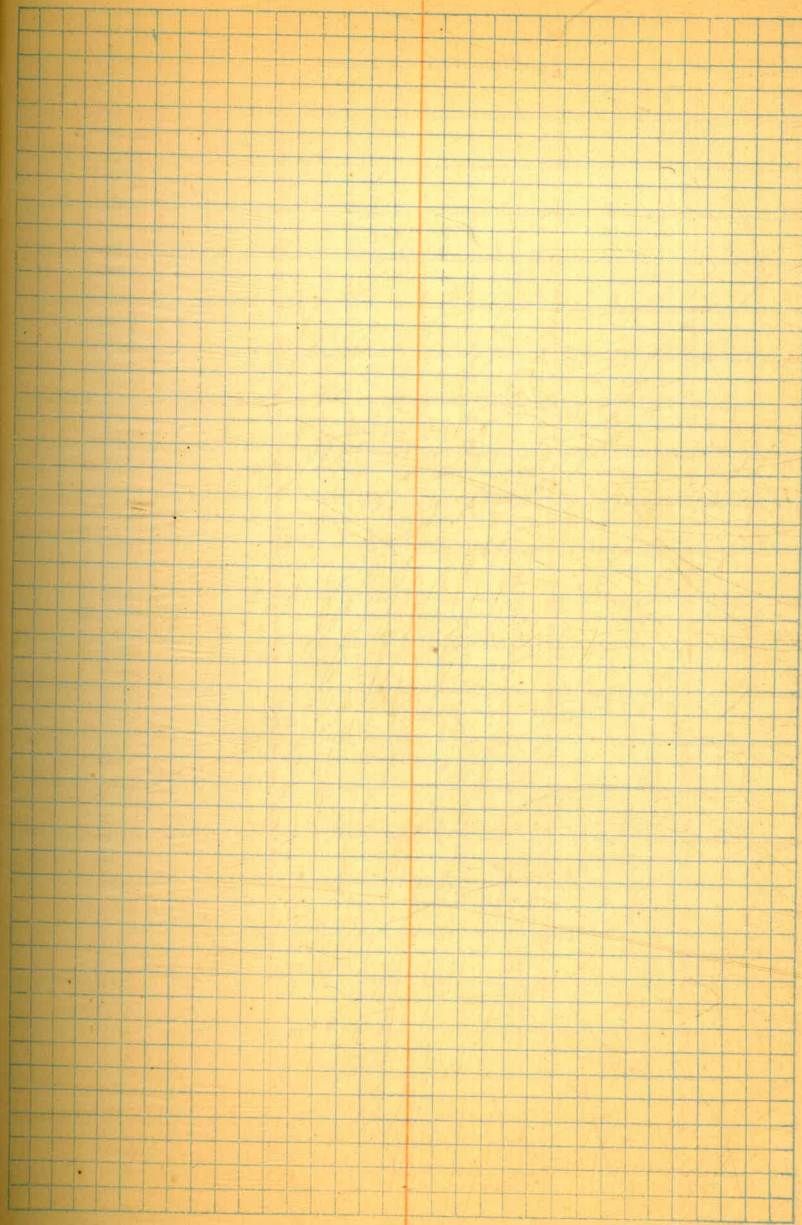
N 3590

36



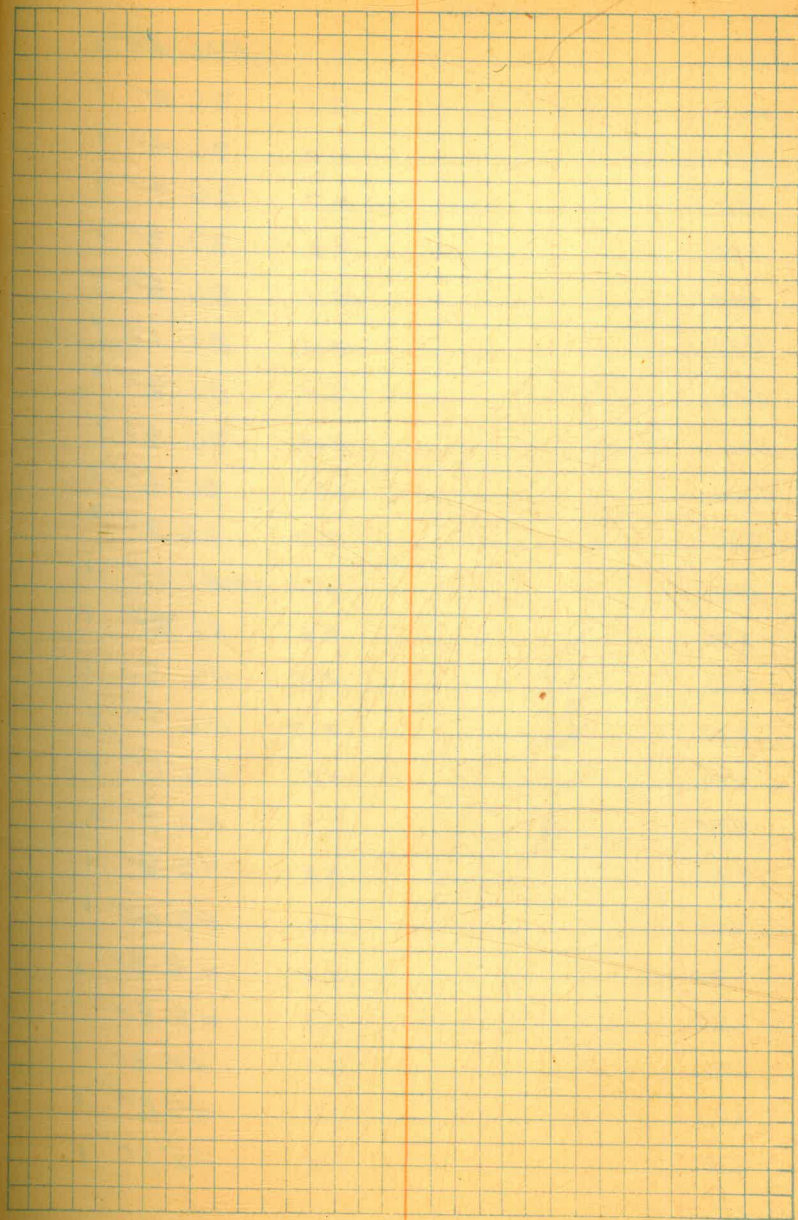
N 3590

37



N3590

38



546.56

E4450	10.1	536.5	
460	10.1	36.5	
470	10.2	36.4	
480	9.7	36.9	
490	9.3	37.3	
499	10.1	36.5	
499	15.5	31.1	
516	15.4	31.2	
516	10.3	36.3	
520	10.0	36.6	
530	9.7	36.9	
540	5.5	41.1	
550	4.3	42.8	
560	3.8	42.8	
570	3.9	42.7	
580	4.0	42.6	
590	3.7	42.9	
600	3.8	42.8	
610	3.6	43.0	
620	3.3	43.3	
630	2.8	43.8	
640	2.3	44.3	
650	2.0	44.6	
660	1.5	45.1	

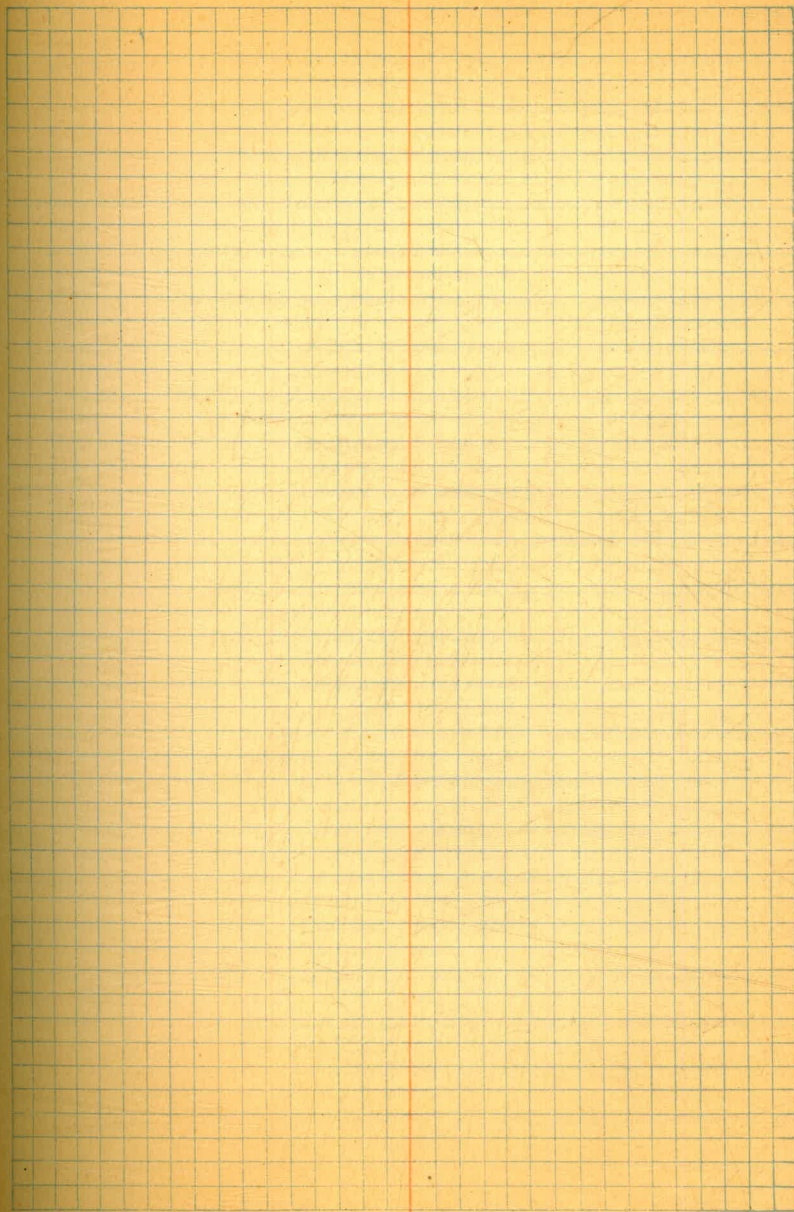
plotted

Trench

"

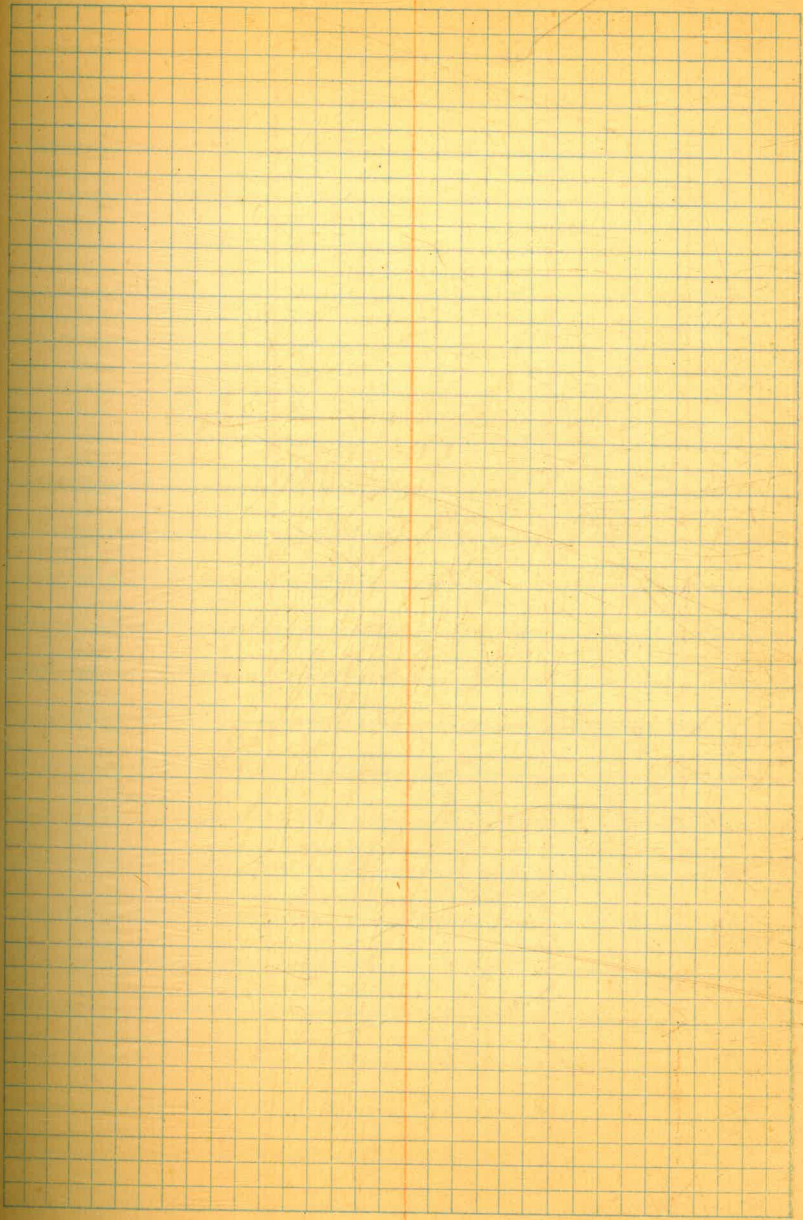
N 3600

40



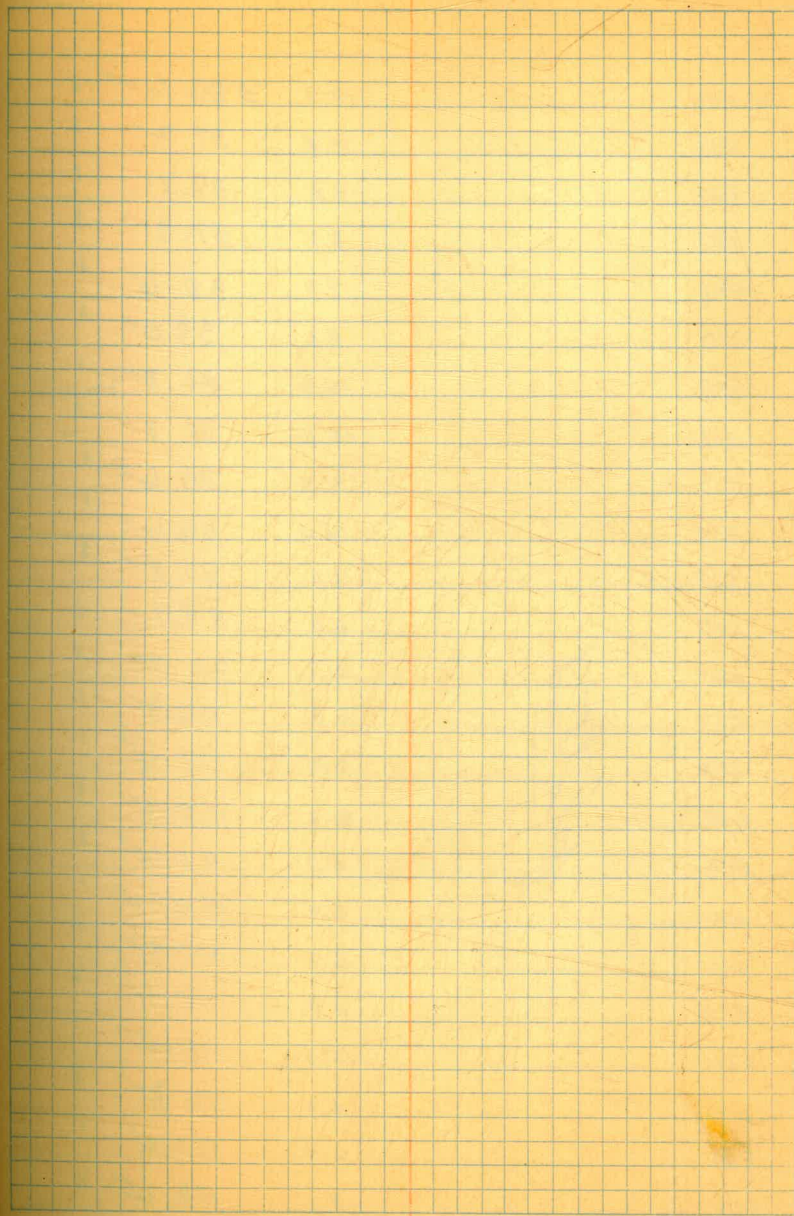
N3600

41



N3600

42



546.56

4450	10.0	536.6 ✓
460	9.4	37.2 ✓
470	9.5	37.1 ✓
480	8.7	37.9 ✓
490	8.0	38.6 ✓
500	8.6	38.0 ✓
500	15.3	31.3 ✓
517	15.3	31.3 ✓
517	10.0	36.6 ✓
520	10.0	36.6 ✓
530	9.2	37.4 ✓
540	6.9	39.7 ✓
550	5.7	40.9 ✓
560	5.8	40.8 ✓
570	6.0	40.6 ✓
580	5.7	40.9 ✓
590	6.0	40.6 ✓
600	5.9	40.7 ✓
610	5.7	40.9 ✓
620	5.9	40.7 ✓
630	6.1	40.5 ✓
640	5.8	40.8 ✓
650	5.4	41.2 ✓
660	4.4	42.2 ✓

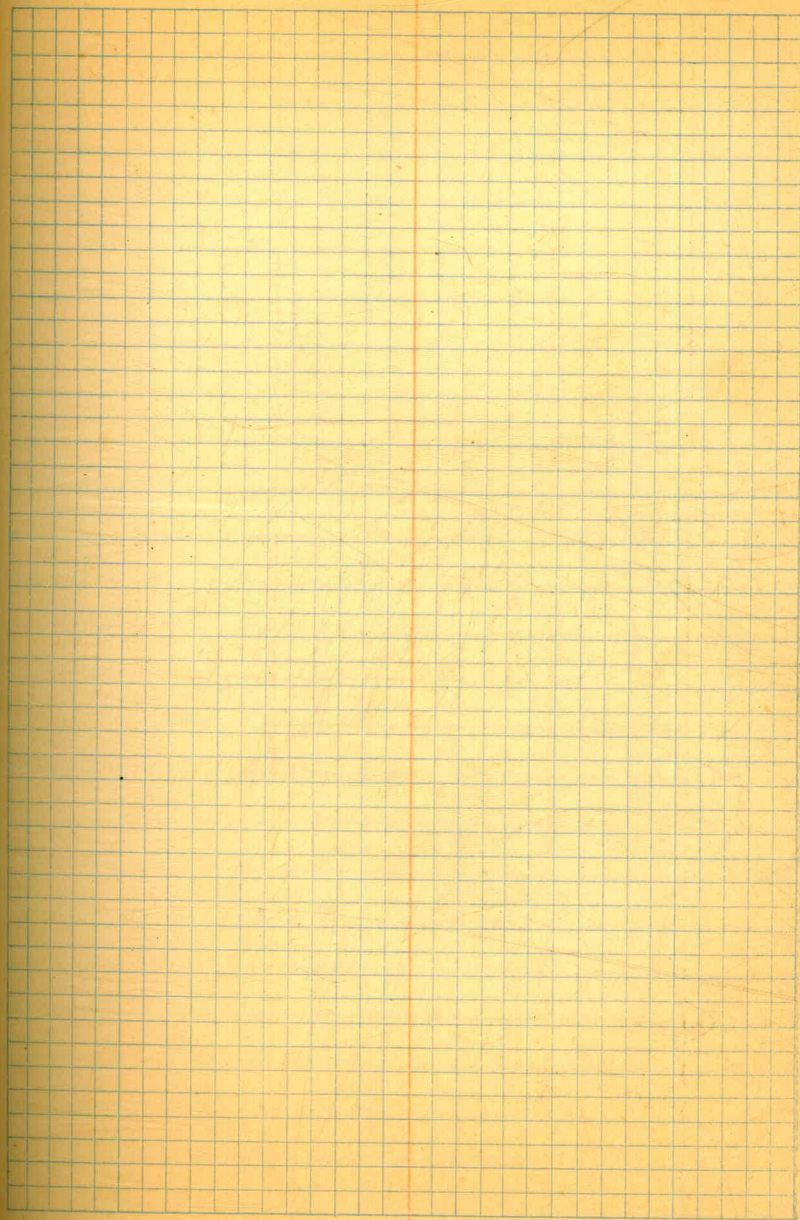
plotted

Trench

"

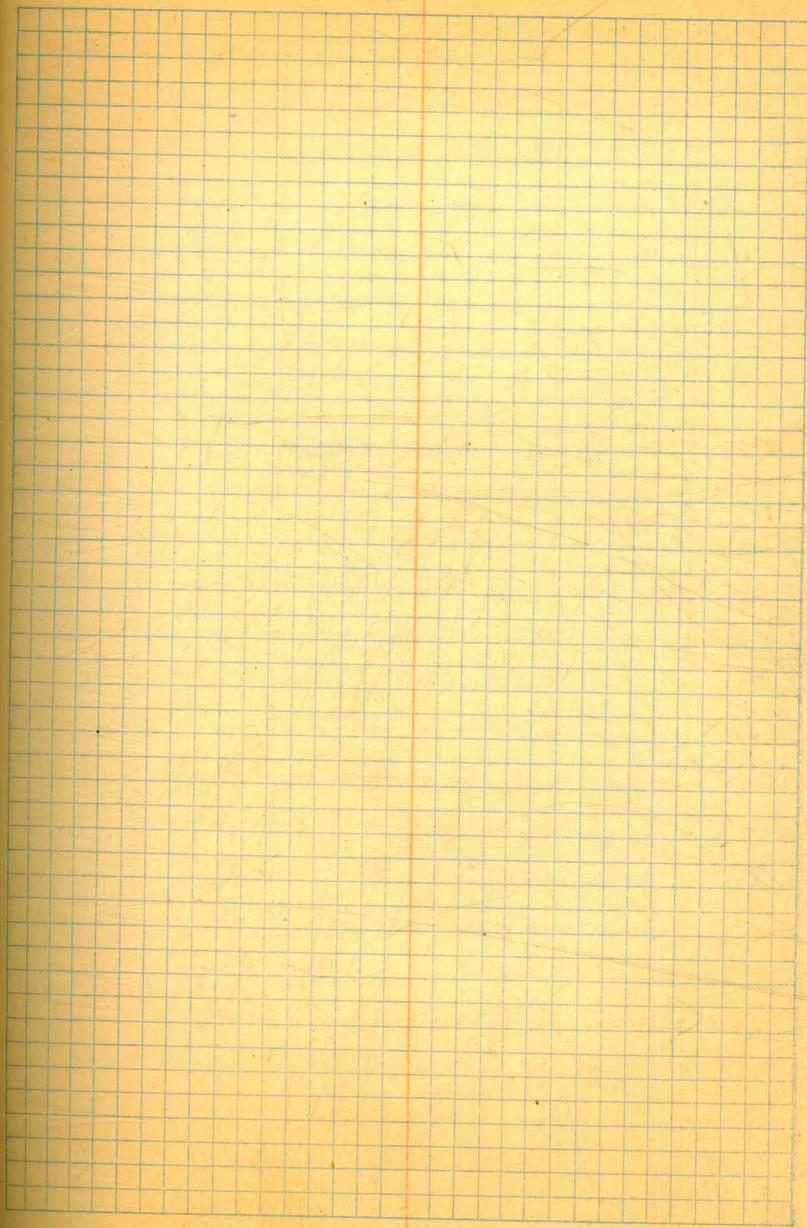
N3610

44



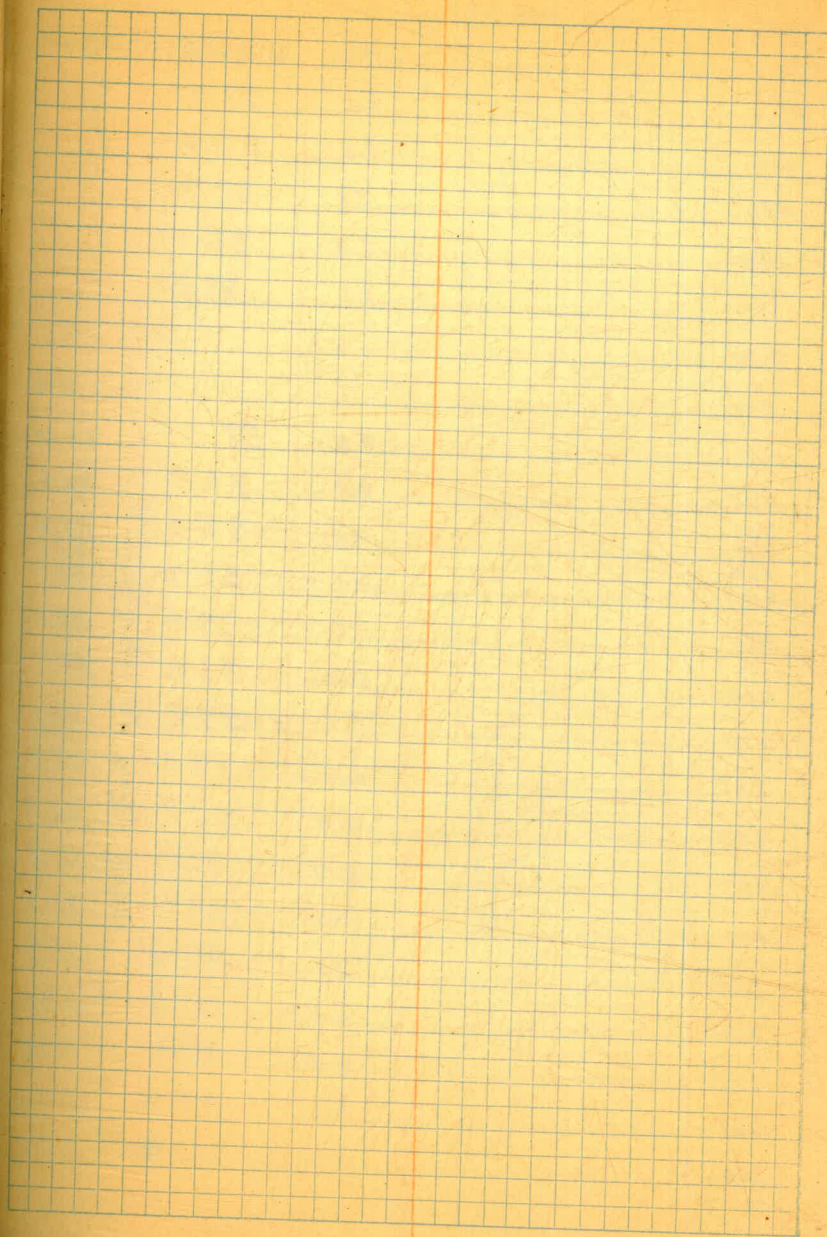
3610

45



3610

46



546.56

4450	7.8	536.8	1
460	9.2	37.4	1
470	8.6	38.0	1
480	8.8	37.8	1
490	8.5	38.1	1
500	8.8	37.8	1
500			
517			
			Final Elev.
517	9.5	37.1	36.6
520	7.8	36.8	36.6
531	7.8	38.8	36.6
530			38.6
534	7.4	39.2	38.9
540			
550	7.2	39.4	38.8
560	7.0	39.6	38.7
570	6.8	39.8	38.8
580	6.7	39.9	38.9
590	6.9	39.7	38.9
600	6.9	39.7	38.8
610	7.0	39.6	38.8
620	7.0	39.6	38.9
630	6.9	39.7	39.0
640	6.9	39.7	39.0
650	7.0	39.6	39.0
660	5.3	41.3	39.0

4. Drain. For final structure Exc. See Book 372 p 19

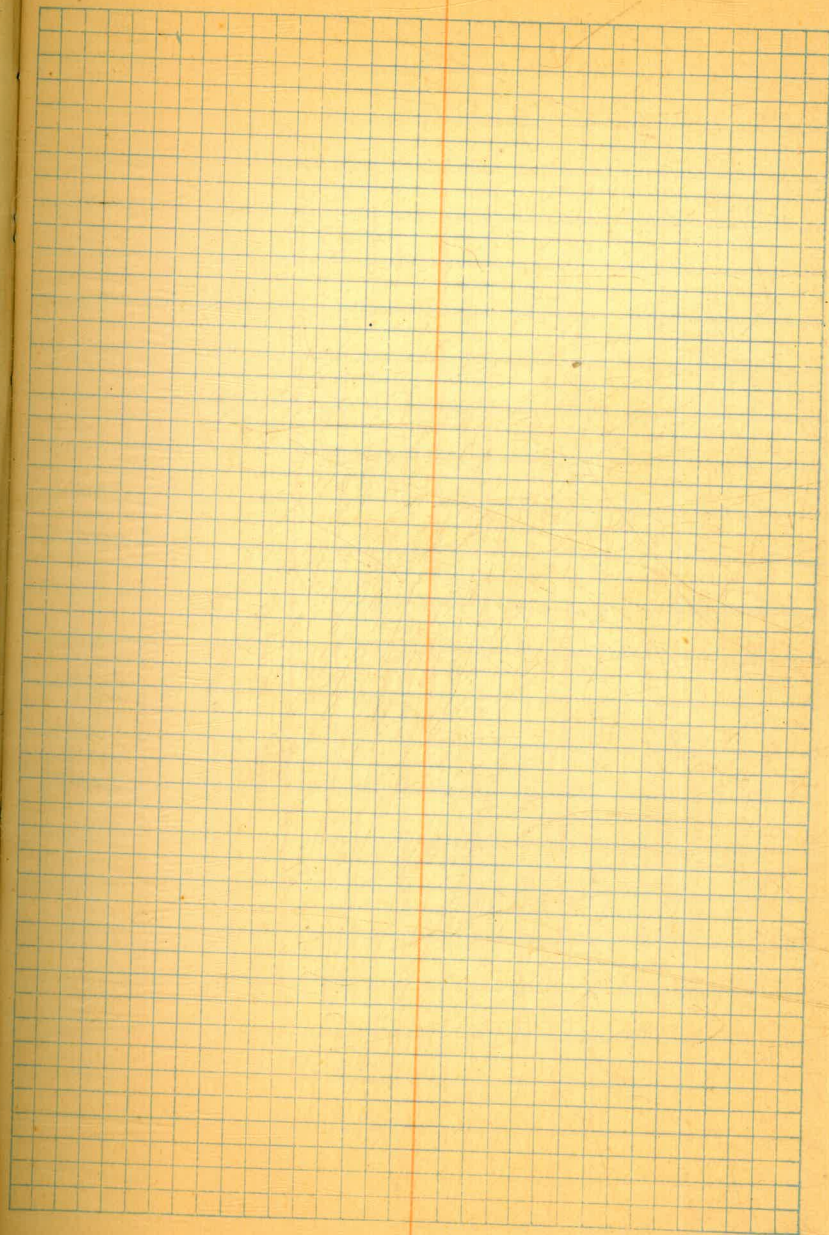
Plotted

from Book 390
2

Trench

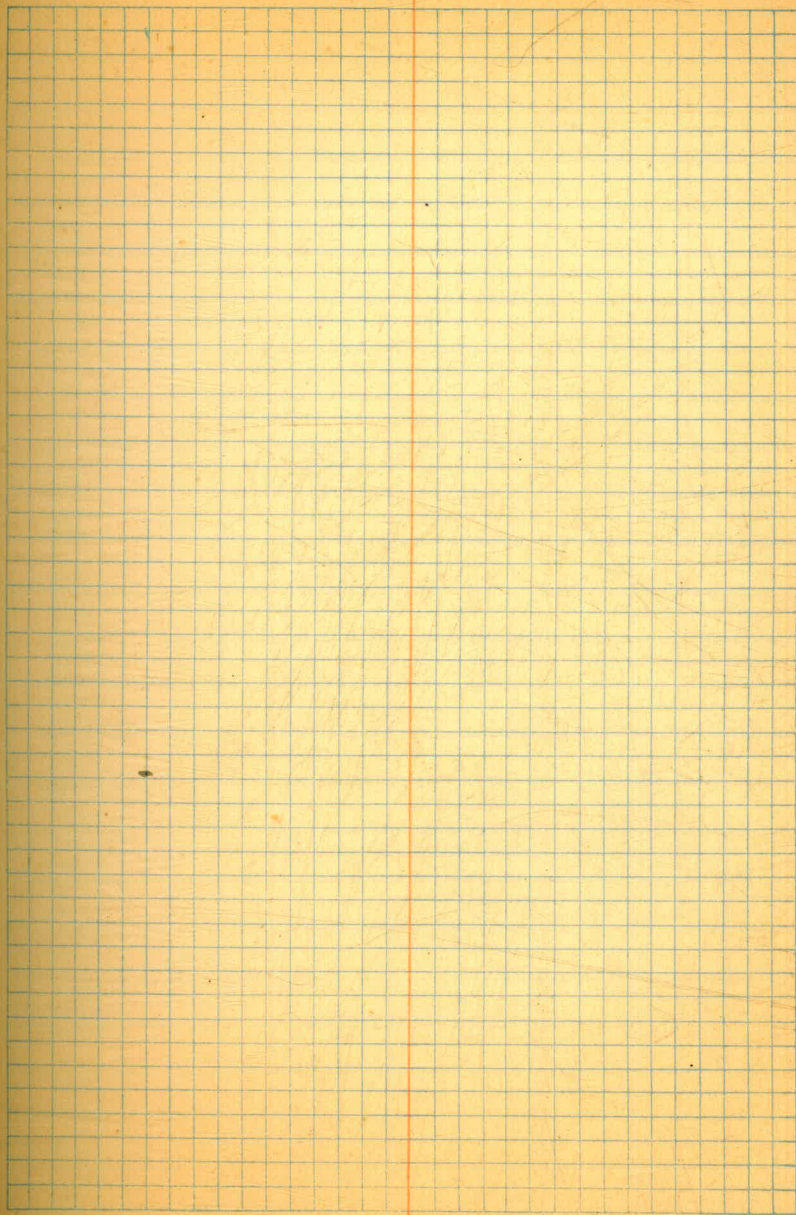
3620

48



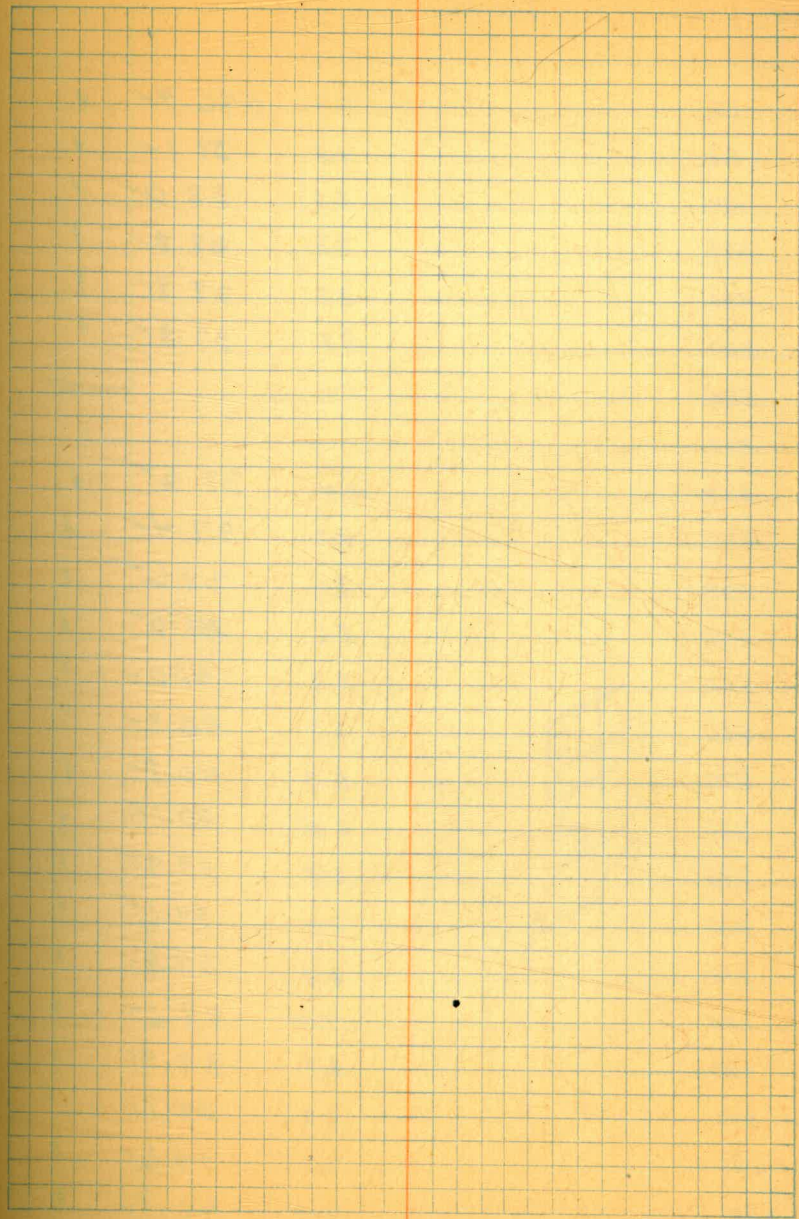
3620

49



3620

50



546.56

450	9.7	536.9	✓
460	9.5	37.1	✓
470	8.6	38.0	✓
480	8.3	38.3	✓
490	8.7	37.9	✓
500	8.8	37.8	✓
500	—		
517	—		
517	9.4	37.2	✓
520	9.2	37.4	✓
530	8.0	38.6	✓
540	5.6	41.0	✓
550	5.6	41.0	✓
560	5.7	40.9	✓
570	5.7	40.9	✓
580	6.5	40.1	✓
590	6.7	39.9	✓
600	7.0	39.6	✓
610	6.8	39.8	✓
620	7.0	39.6	✓
630	6.7	39.9	✓
640	6.9	39.7	✓
650	7.0	39.6	✓
660	5.9	40.7	✓

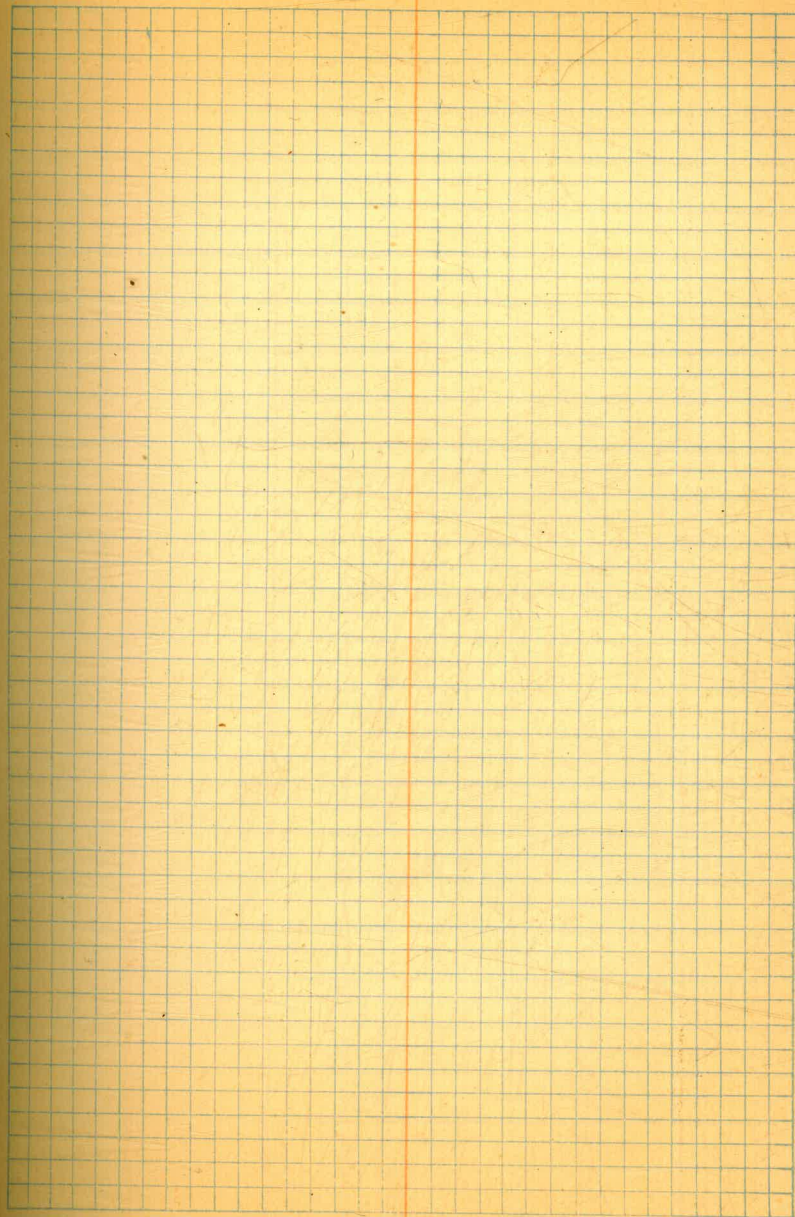
Plotted

Trench

"

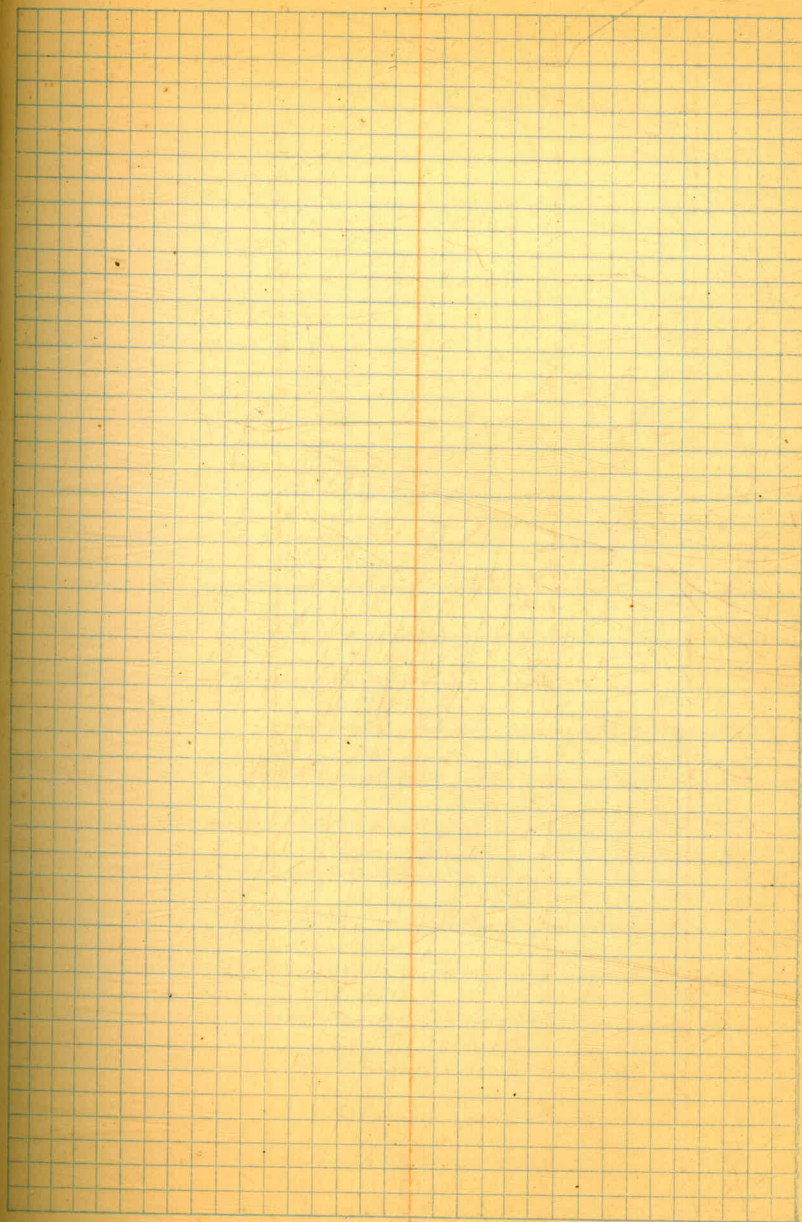
3630

52



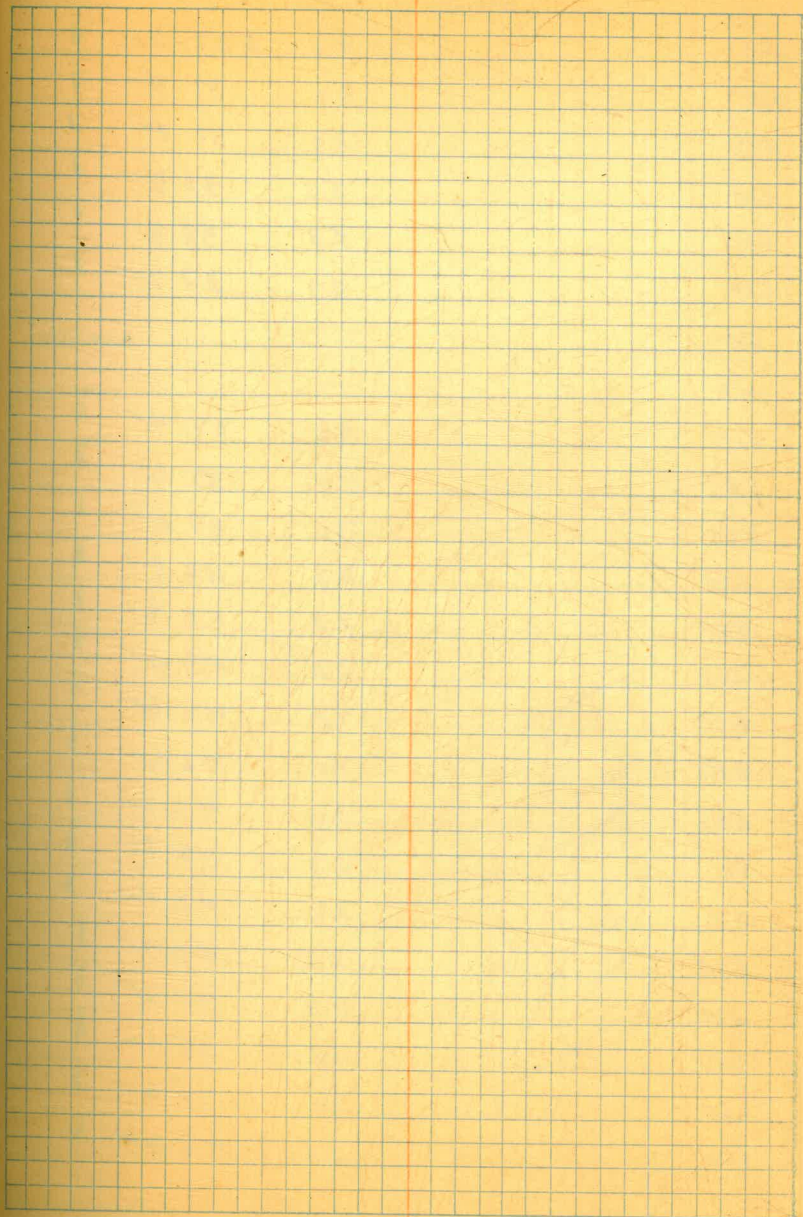
2630

53



3630

54



546.56

4450	9.6	537.0	✓
460	9.2	37.4	✓
470	8.9	37.7	✓
480	8.3	38.3	✓
490	8.3	38.3	✓
500	8.9	37.7	✓
500	—		
517	—		
517	9.2	37.4	✓
520	9.0	37.6	✓
530	7.6	39.0	✓
540	2.7	43.9	✓
550	3.3	43.3	✓
560	3.6	43.0	✓
570	4.0	42.6	✓
580	4.0	42.6	✓
590	3.9	42.7	✓
600	3.7	42.9	✓
610	3.2	43.4	✓
620	2.7	43.9	✓
630	2.4	44.2	✓
640	1.5	45.1	✓
650	1.4	45.2	✓
660	1.6	45.0	✓

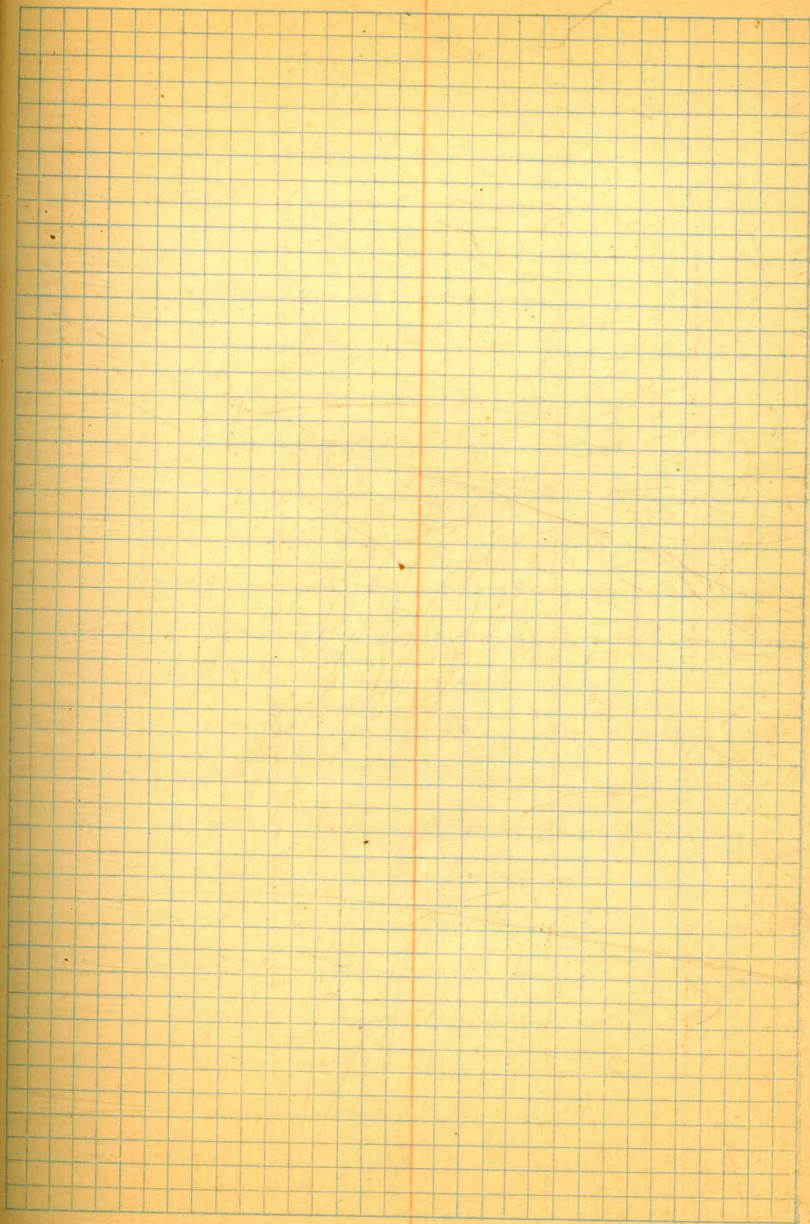
Plotted

Trench

"

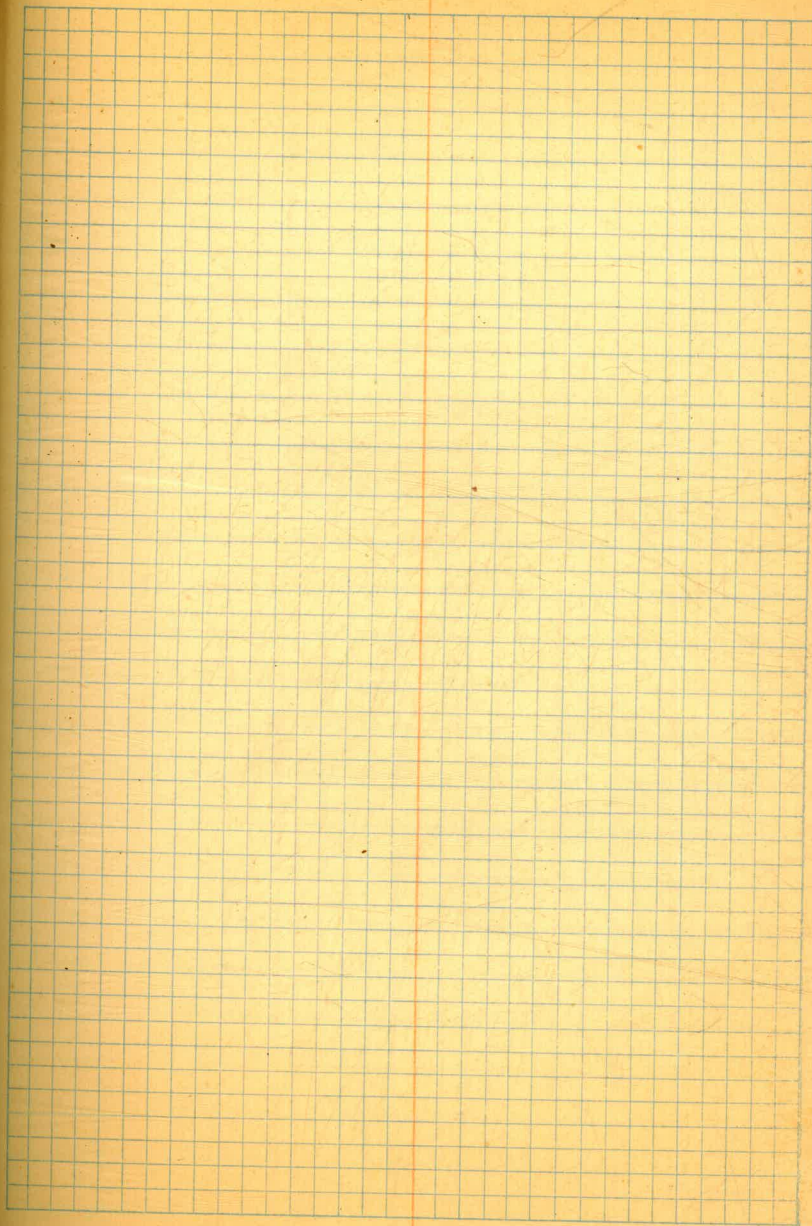
3640

56



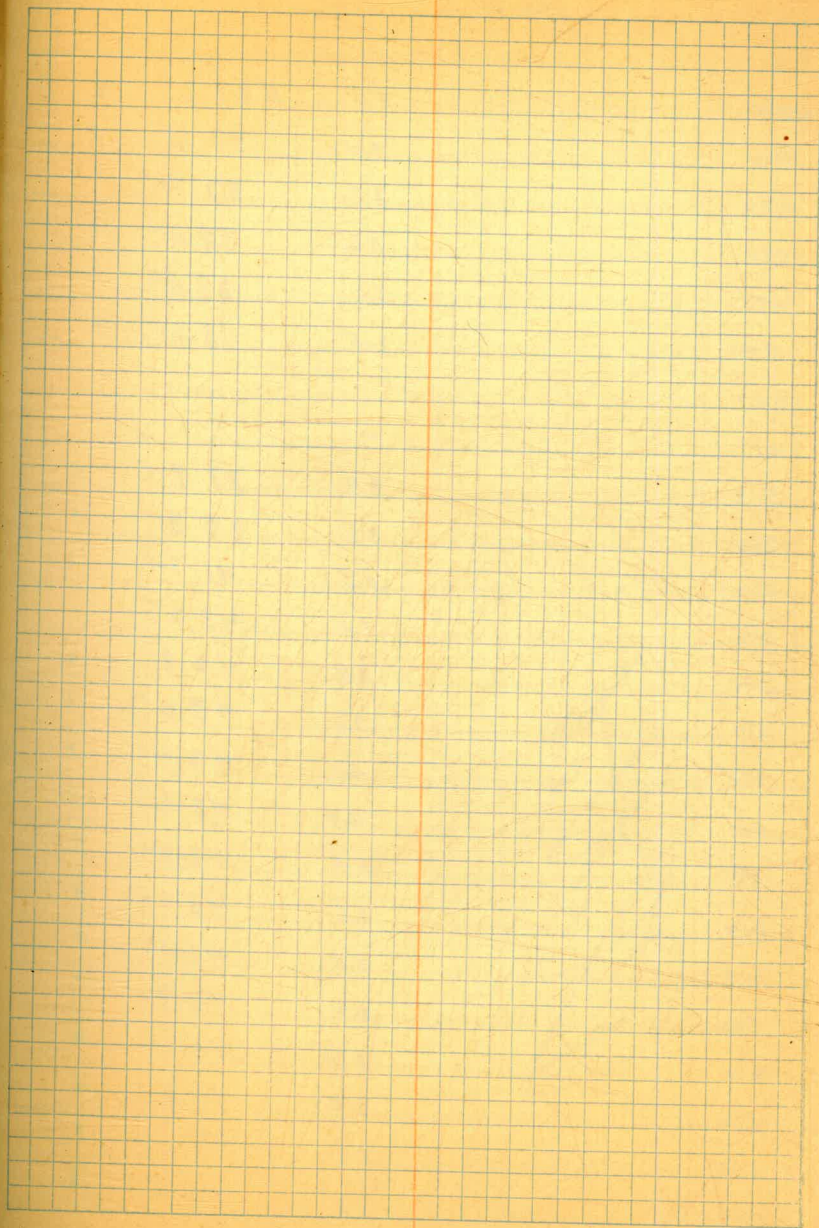
3640

57



3640

58

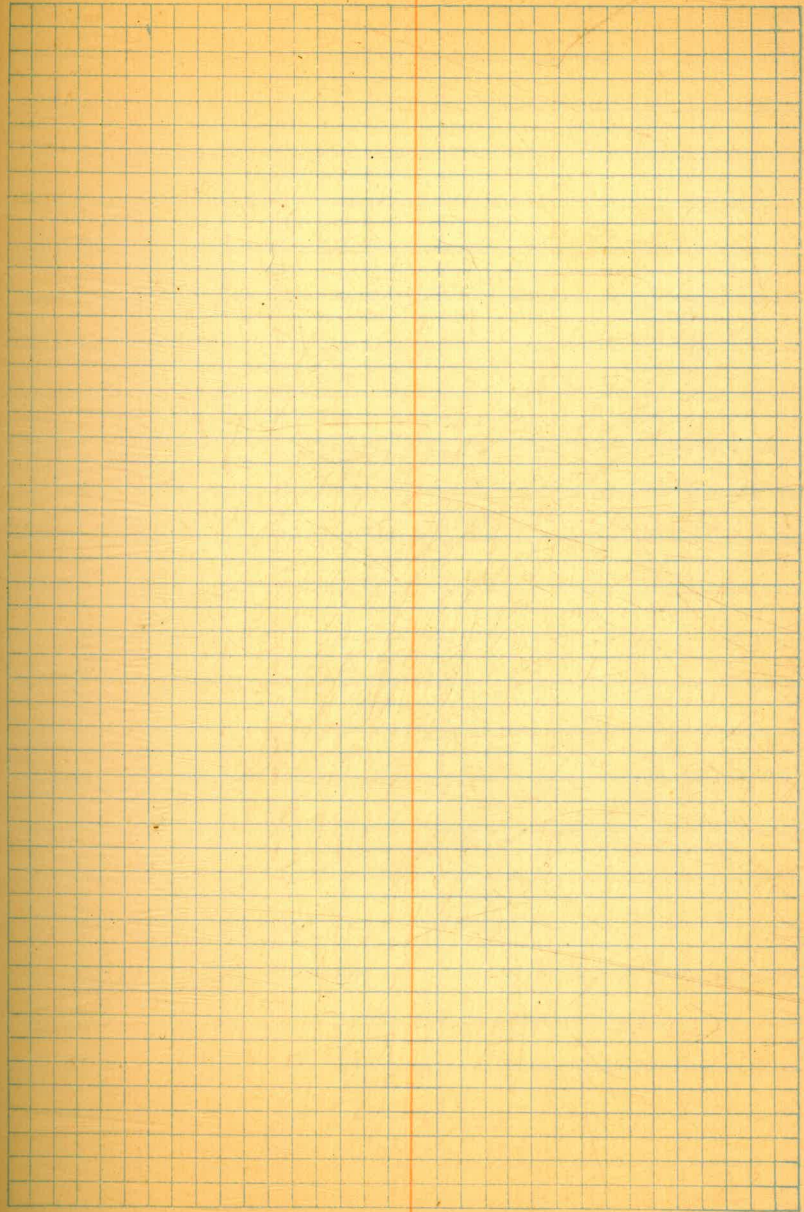


546.56

4450	9.5	537.1	✓
460	9.0	37.6	✓
470	8.9	37.7	✓
480	8.2	38.4	✓
490	8.1	38.5	✓
500	8.5	38.1	✓
500	-		
517	-		
517	8.7	37.9	✓
520	8.3	38.3	✓
530	5.5	41.1	✓
540	3.4	43.2	✓
550	3.8	42.8	✓
560	3.6	43.0	✓
570	4.2	42.4	✓
580	4.0	42.6	✓
590	4.3	42.3	✓
600	3.5	43.1	✓
610	3.5	43.1	✓
620	2.9	43.7	✓
630	2.5	44.1	✓
640	2.3	44.3	✓
650	2.1	44.5	✓
660	1.8	44.8	✓

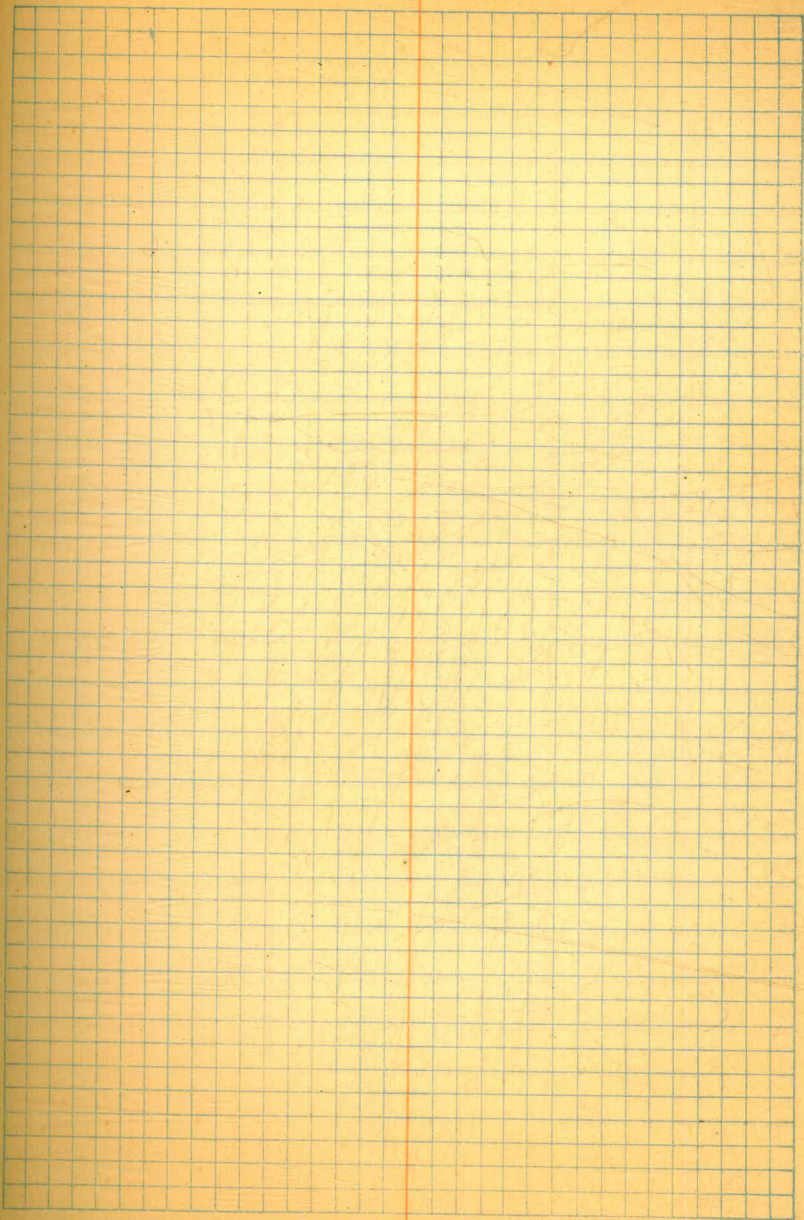
3650

60



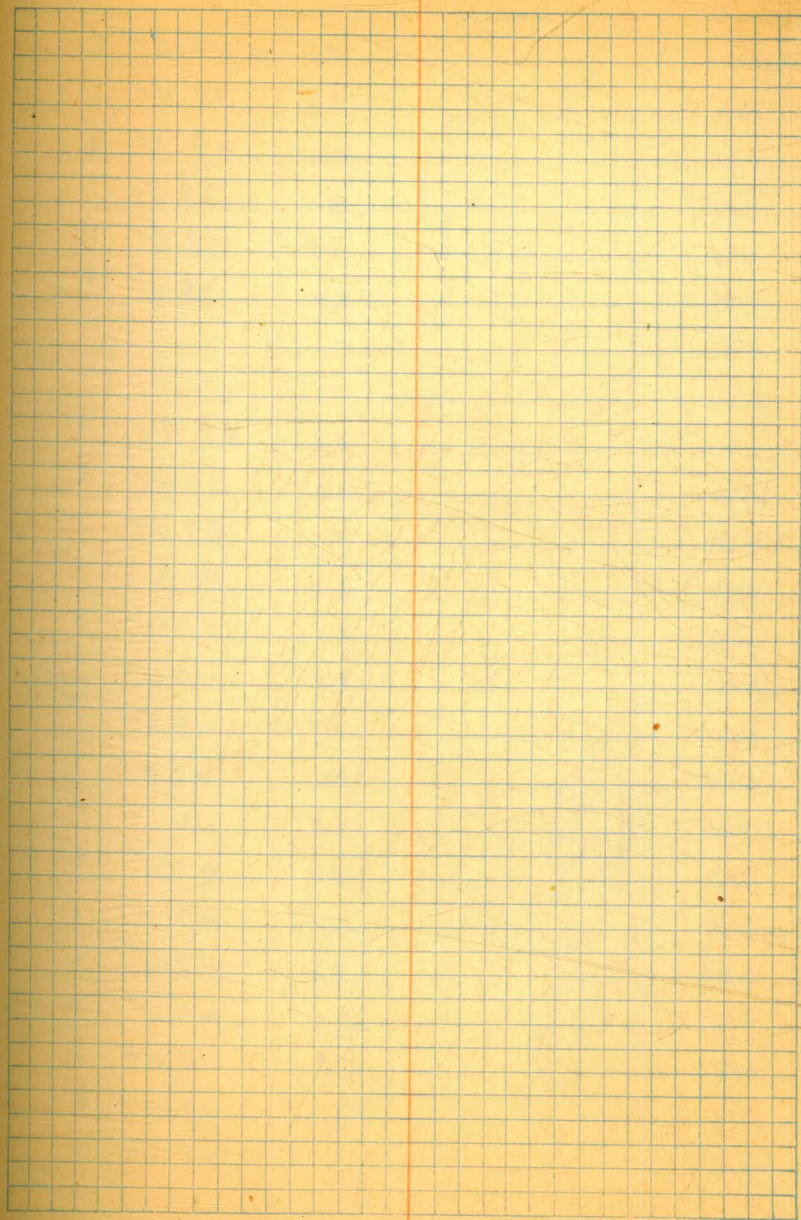
3650

61



3650

62



546.56

4450

7.0

537.6 ✓ |

460

8.8

37.8 ✓ |

470

8.5

38.1 ✓ |

480

8.1

38.5 ✓ |

490

7.8

38.8 ✓ |

499

8.4

38.2 ✓ |

499

-

516

-

516

8.9

37.7 ✓ |

520

9.2

37.4 ✓ |

530

7.1

39.5 ✓ |

540

2.7

43.9 ✓ |

550

3.6

43.0 ✓ |

560

3.6

43.0 ✓ |

570

4.1

42.5 ✓ |

580

4.6

42.0 ✓ |

590

4.5

42.1 ✓ |

600

3.4

43.2 ✓ |

610

3.5

43.1 ✓ |

620

3.0

43.6 ✓ |

630

2.6

44.0 ✓ |

640

2.3

44.3 ✓ |

650

1.6

45.0 ✓ |

660

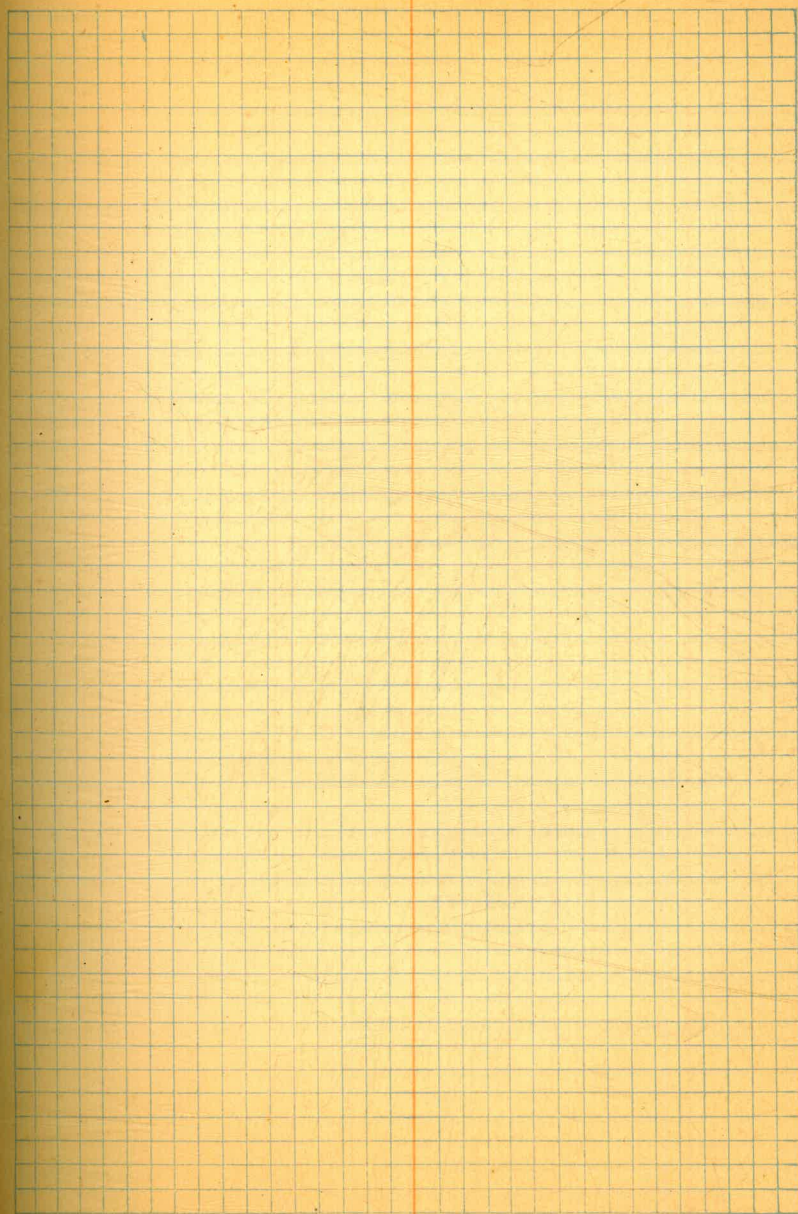
2.0

44.6 ✓ |

Plotted

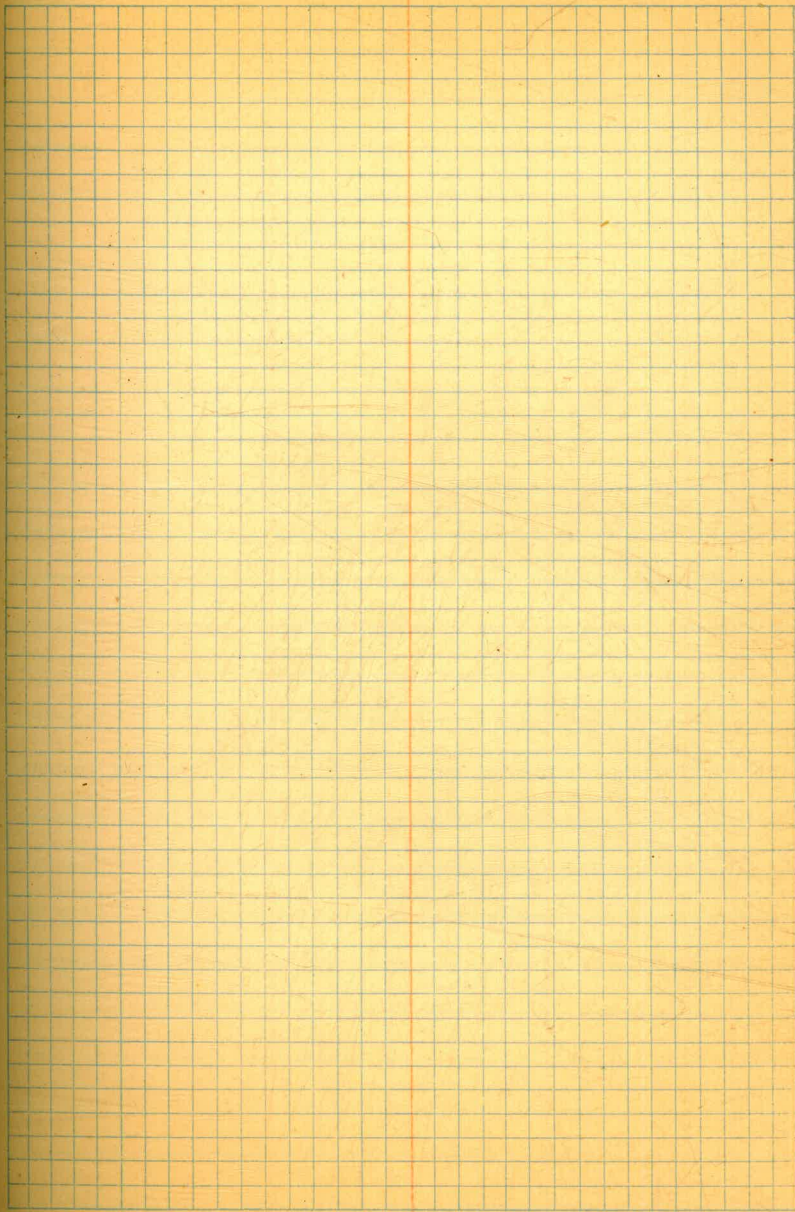
N3660

64



N 3660

65



N3660

66

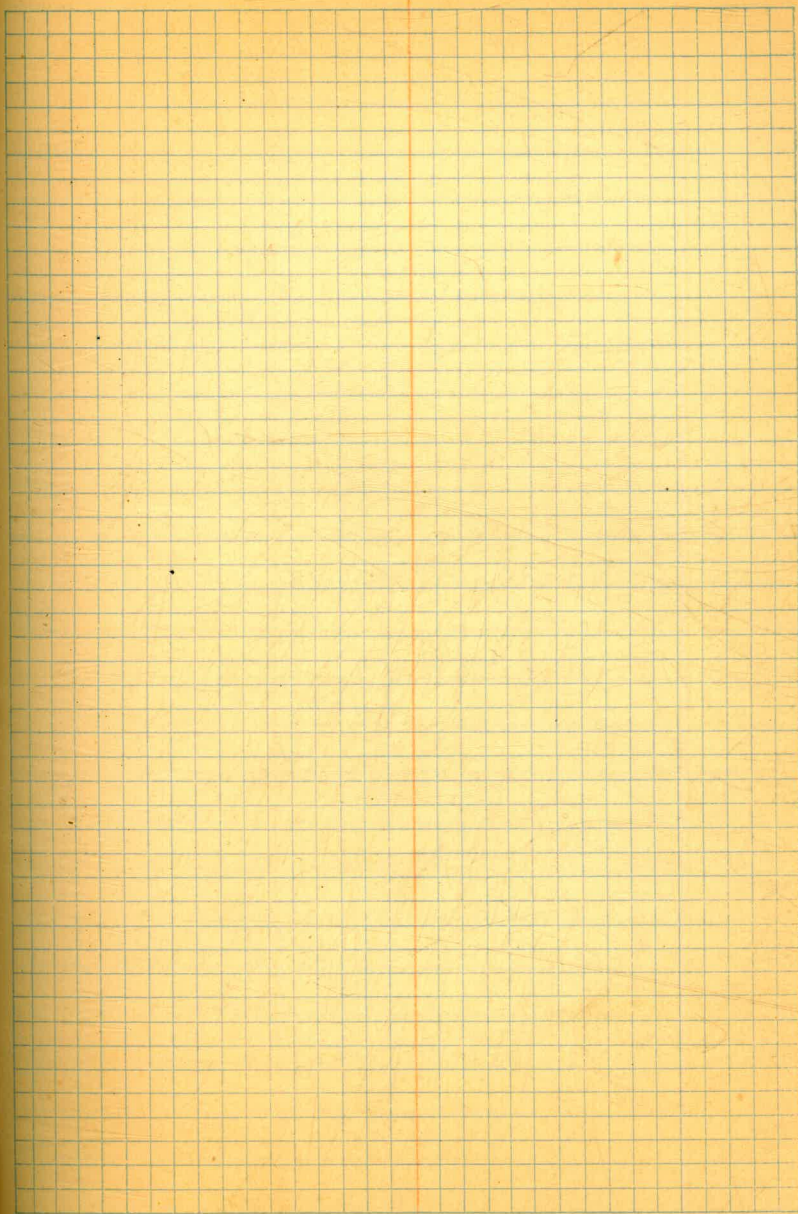
546.56

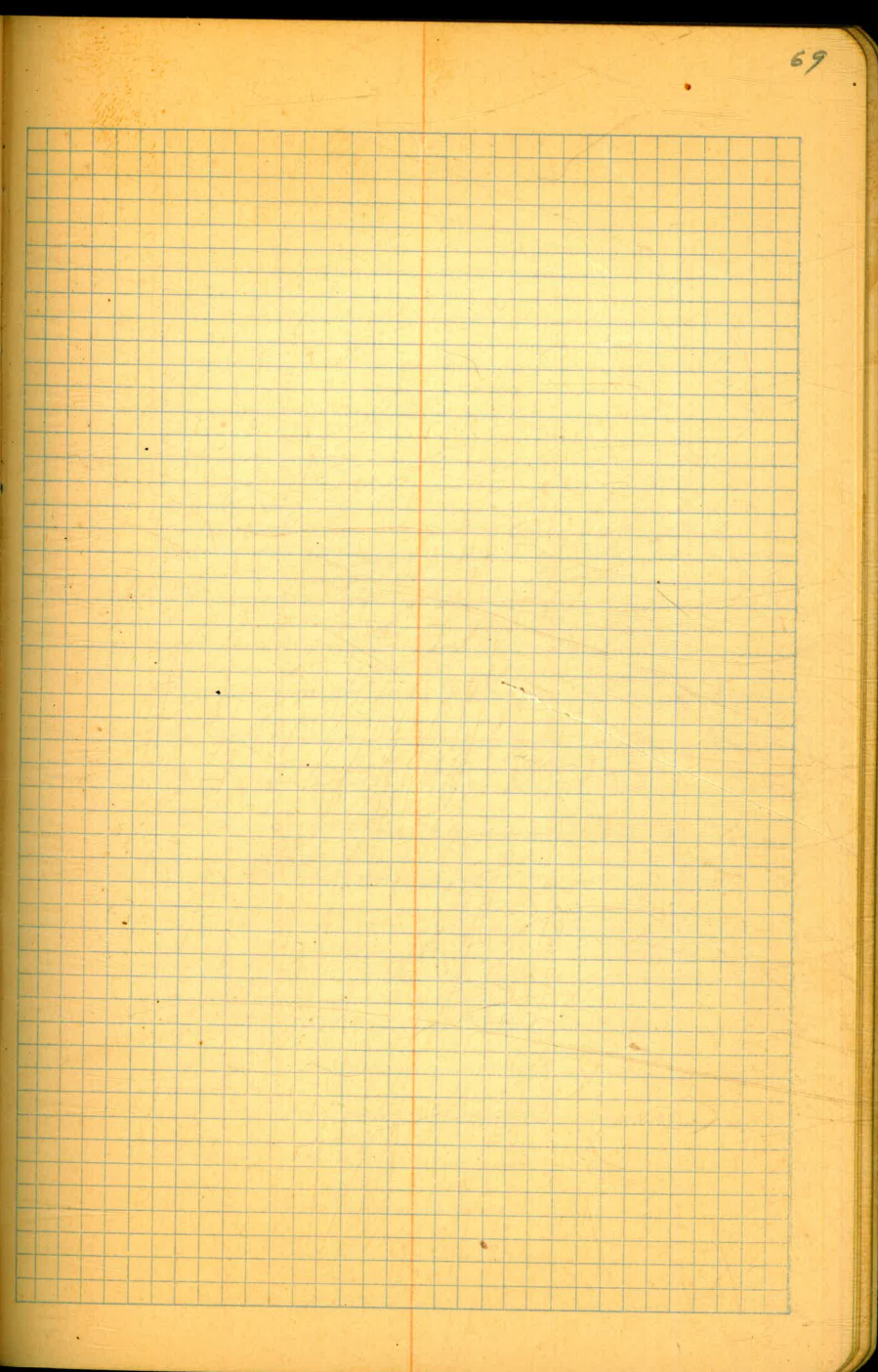
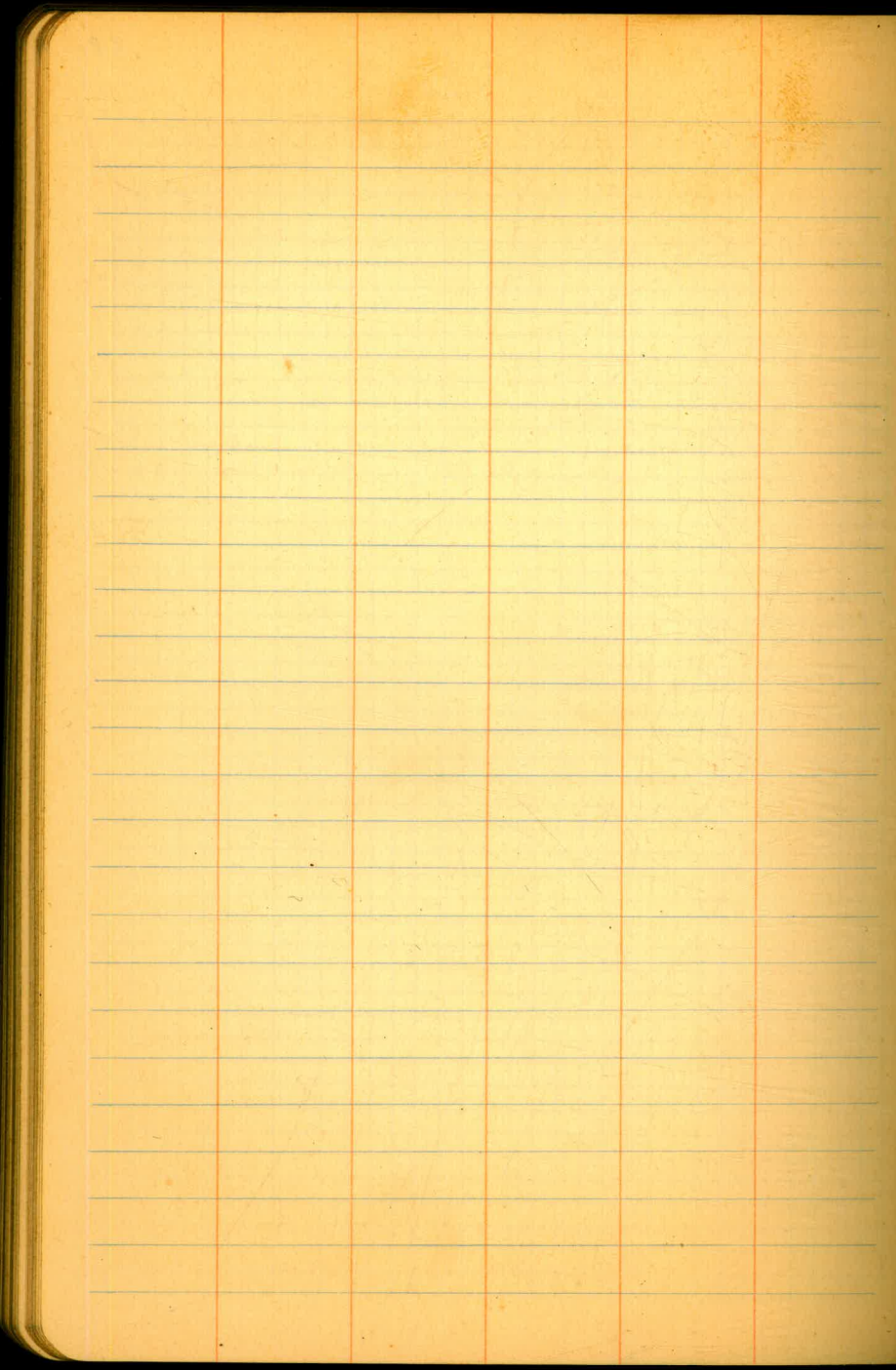
4450	8.6	538.0 ✓	✓
460	8.6	38.0 ✓	✓
470	8.1	38.5 ✓	✓
480	7.9	38.7 ✓	✓
490	7.7	38.9 ✓	✓
498	7.9	38.7 ✓	✓
498	—	—	
515	—	—	
515	8.3	38.3 ✓	✓
520	8.5	38.1 ✓	✓
530	7.4	39.2 ✓	✓
540	3.6	43.0 ✓	✓
550	4.0	42.6 ✓	✓
560	4.2	42.4 ✓	✓
570	4.0	42.6 ✓	✓
580	3.8	42.8 ✓	✓
590	3.8	42.8 ✓	✓
600	3.8	42.8 ✓	✓
610	3.5	43.1 ✓	✓
620	3.1	43.5 ✓	✓
630	2.9	43.7 ✓	✓
640	2.7	43.9 ✓	✓
650	2.2	44.4 ✓	✓
660	1.4	45.2 ✓	✓

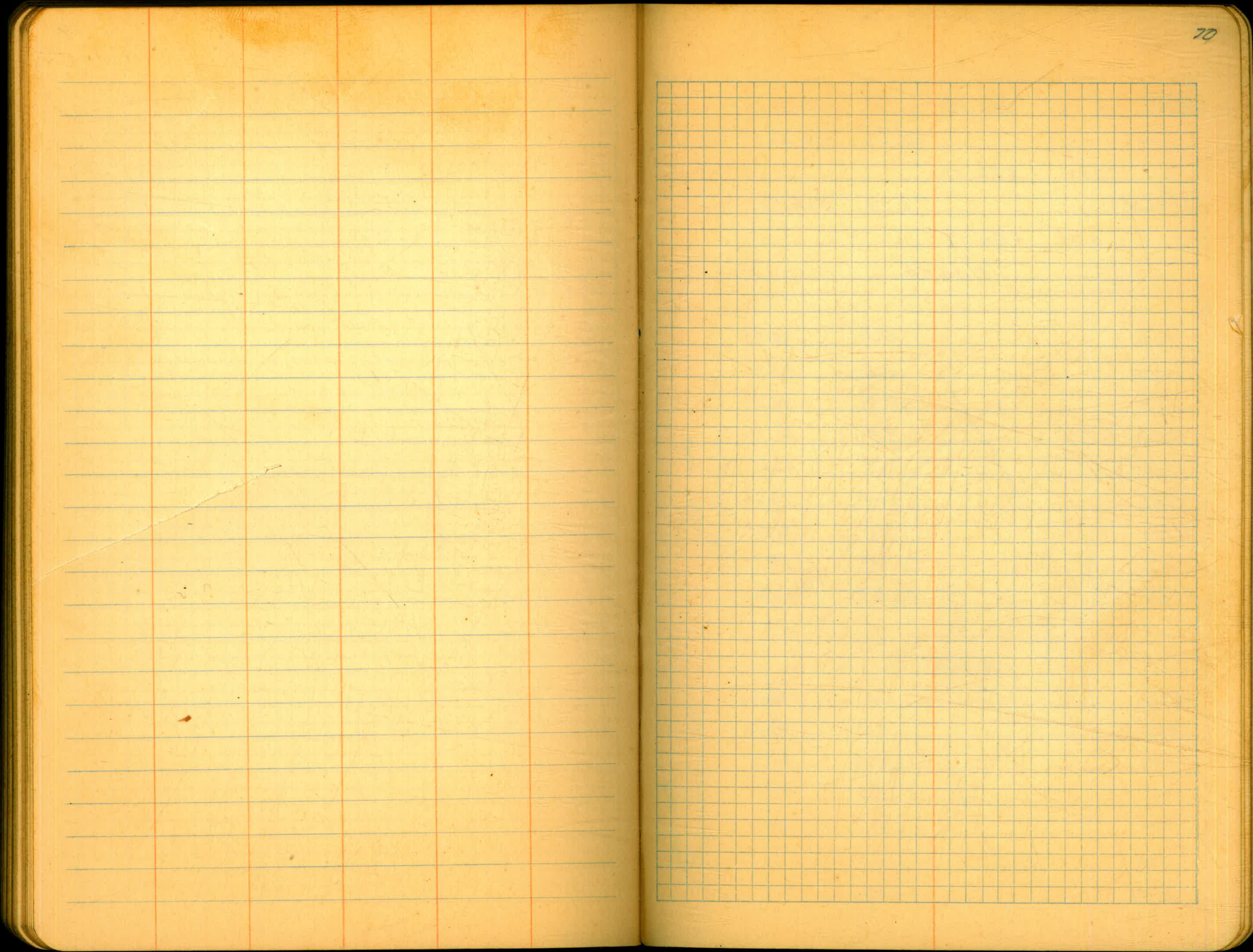
Plotted

N 3670

68







Final X Sections

B.M. 2.13 565.78 563.65

12.53 553.25

2.92 556.17

Set B.M. 0.74 555.43

0.74 556.17

N 3550

E

4670 10.4 45.8

4680 10.5 45.7

4690 10.4 45.8

4700 9.9 46.3

4710 8.9 47.3

4720 8.0 48.2

4730 7.6 46.6

4740 7.4 48.8

4745 3.7 52.3

N 3560

4670 11.2 45.0

680 10.7 45.5

690 10.9 45.3

700 10.6 45.6

710 10.7 45.5

720 10.7 45.5

730 10.6 46.6

Aug 6 - 1932

Elliott - Notes

Soper - Rod

Kemmer - Tape

Osborn - ~~time~~ + Level

71

Duplicated on
Page 20

Duplicated on
Page 21

N3560

556.17

4740	X	7.7	548.5
745		4.0	52.2
750		4.0	52.2

page 21

N3570

670		10.8	45.4
680		10.5	45.7
690		10.8	45.4
700		10.4	45.8
710	X	10.5	45.7
720		10.2	46.0
730		10.9	45.3
740		6.7	49.2
745		4.0	52.2
750		4.0	52.2

See page 20

N3580

670		10.8	45.4	✓
680		10.8	45.4	✓
690		10.3	45.9	✓
700		10.9	45.3	✓
710		10.6	45.6	✓
720		8.2	48.0	✓
730		9.9	46.3	✓
740		4.0	52.2	✓
750		3.9	52.3	✓

plotted

556,17

N 3590

4670	10.7	45.5	✓
680	10.7	45.5	✓
690	10.6	45.6	✓
700	10.7	45.5	✓
710	10.2	46.0	✓
720	10.8	45.4	✓
730	11.0	45.2	✓
740	4.2	52.0	✓
750	4.2	52.0	✓

plotted

N 3600

4670	11.1	45.1	✓
680	11.0	45.2	✓
690	10.8	45.4	✓
700	10.7	45.5	✓
710	10.4	45.8	✓
720	10.2	46.0	✓
730	10.6	45.6	✓
740	4.4	51.8	✓
750	4.4	51.8	✓
B.M.	0.74	55.543	

plotted

0.84 556,27

73

3610

556.27

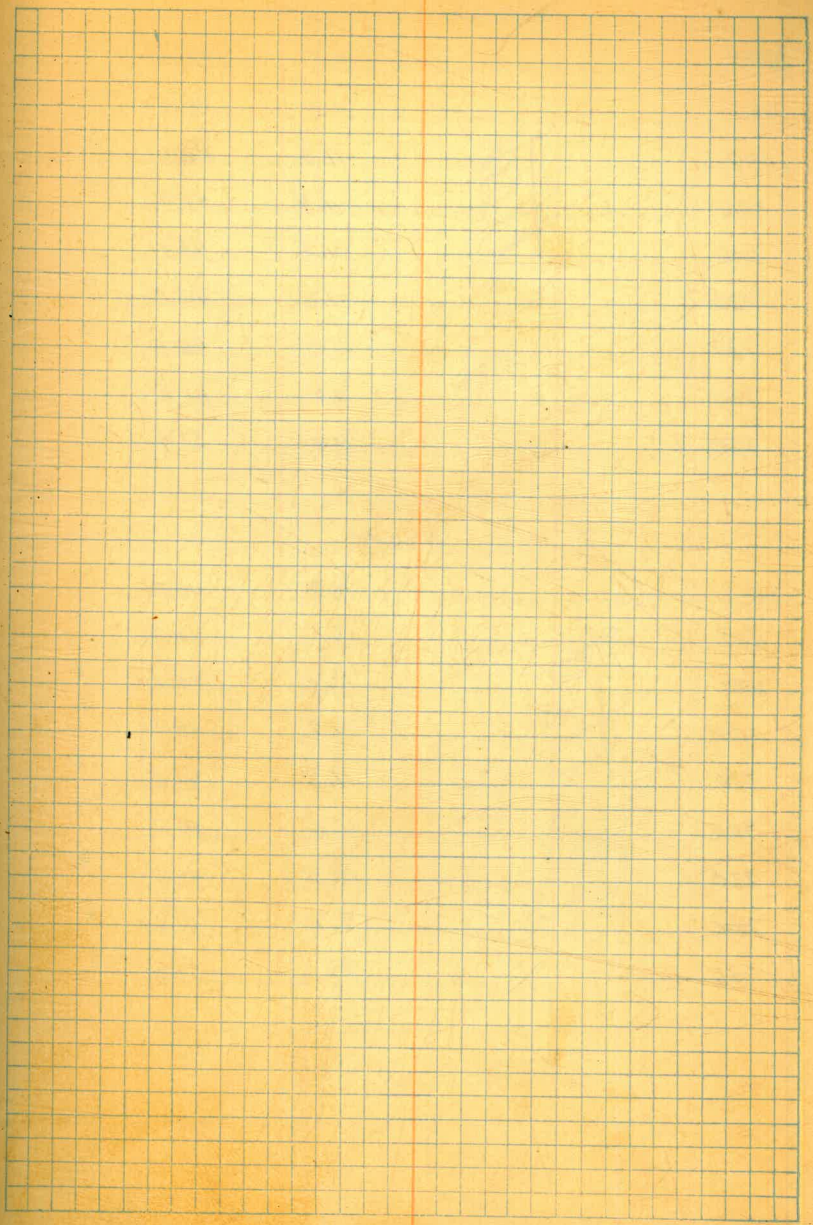
4670	11.0	545.3	-	1
680	11.2	45.1	-	1
690	11.1	45.2	-	1
700	11.1	46.2	-	1
710	10.6	45.7	-	1
720	11.2	45.1	-	1
730	10.6	45.7	-	1
740	4.7	51.6	✓	1
750	4.5	51.8	-	1

plotted

N3620

4670	11.0	45.3	-	1
680	11.2	45.1	-	1
690	11.4	44.9	-	1
700	11.2	45.1	-	1
710	11.4	44.9	-	1
720	11.0	45.3	-	1
730	10.9	45.4	-	1
740	4.6	51.7	-	1
750	4.3	52.0	-	1

plotted



N2630

556.27

4670	11.3	545.0	✓
680	11.3	45.0	✓
690	11.3	45.0	✓
700	11.4	44.9	✓
710	11.5	44.8	✓
720	11.5	44.8	✓
730	11.0	45.3	✓
740	4.9	51.4	✓
750	4.4	51.9	✓

Plotted

N3640

4670	11.3	45.0	✓
680	11.1	45.2	✓
690	11.1	45.2	✓
700	11.2	45.1	✓
710	11.3	45.0	✓
720	11.6	44.7	✓
730	11.3	45.0	✓
740	4.7	51.6	✓
750	4.7	51.6	✓

Plotted

N3650

B.M. 0.96 556.39 555.43

4670	Plotted	11.2	45.2
680		11.0	45.4
690		10.7	45.7
700		11.3	45.1
710		11.8	44.6
720		12.0	44.4
730		11.6	44.8
740		4.3	52.1
4750		4.2	52.2

N3660

4670	Plotted	11.4	45.0
680		10.9	45.5
690		10.6	45.8
700		11.2	45.2
710		11.5	44.9
720		11.8	44.6
730		11.8	44.6
745		1.4	55.0
750		1.4	55.0

Aug 8 - 1932

Elliott - Notes

Simpson - T

Soper - P

Remmen - Top

76

N3670

556.39

4670	Plotted	11.0	545.4	✓
680		10.9	45.5	✓
690		11.1	45.3	✓
700		11.3	45.1	✓
10		11.6	44.8	✓
20		11.7	44.7	✓
30		11.6	44.8	✓
40		7.0	49.4	✓
50		+0.6	57.0	✓

Plotting 9-24-54
DBH
Yellow line

N3680

4670	Plotted	10.7	45.7	✓
680		10.8	45.6	✓
690		10.9	45.5	✓
700		11.3	45.1	✓
710		11.3	45.1	✓
720		10.7	45.7	✓
730		8.4	48.0	✓
740		1.7	54.7	✓
750	+2.1	58.5	✓	

Fill in
Yellow line

Book 39A-66

77

Stripping over-cut above upstream
toe wall.

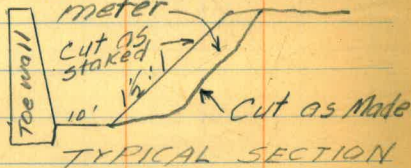
North	Area \square'
3550	0.0
60	142.16
70	156.78
80	239.09
90	255.24
3600	271.40
10	297.25
20	342.49
30	426.49
40	413.58
50	407.11
60	439.42
70	465.26
80	468.49
90	432.95
3700	348.95
10	277.86
20	174.47
30	122.78
40	138.93
50	168.01
60	161.55
70	138.93
80	129.24
90	0.00

Ref. Book 393-
391-340, P 17

E5580

E5580

This area plotted and
measured with plani-
meter



$$6318.43 \times 10 = 63184.3 \text{ cu ft.}$$

$$= 2340.16 \text{ cu. yd.}$$

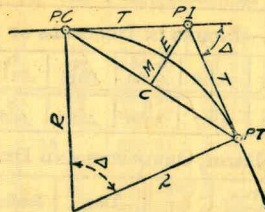
B.M.

566.47

2.34 568.81
42.4
26.4

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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CURVE FORMULAS

Radius= $R = \frac{50}{\sin \frac{D}{2}}$ (1) Degree of Curve= D and $\sin \frac{D}{2} = \frac{50}{R}$ (2)

Tangent= $T = R \tan \frac{\Delta}{2}$ (3) Length of Curve= $L = 100 \frac{\Delta}{D}$ (4)

Middle ordinate= $M = R(1 - \cos \frac{\Delta}{2})$ (5) $= R \text{vers} \frac{\Delta}{2}$ (6)

External= $E = T \tan \frac{\Delta}{4}$ (7) $= R \div \cos \frac{\Delta}{2} - R$ (8) $= R \text{exsec} \frac{\Delta}{2}$ (9)

Long Chord= $C = 2 R \sin \frac{\Delta}{2}$ (10) $\Delta = \text{Central Angle}$

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.—Sta. 161+60.35 to find Sta. of P. C. and P. T. $\Delta = 62^\circ 10'$ $D = 8^\circ 20'$. From Table IV for 1° curve $T = 3454.1$ and $\div 8\frac{1}{3} = 414.49$ ft. From Table V correction $= .36$ or $T = 414.85$ ft. P. C. = Sta. P. I. $- T = 157 + 45.50$. Also from (4) $L = 746.00$ and P. T. = Sta. P. C. $+ L = 164 + 91.50$.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft. $= 7.27$ ft. Distance $= 158 - \text{Sta. P. C.} = 54.50$, hence offset $= 7.27 (54.50 \div 100)^2 = 2.16$ ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26) = 2.16$ ft.

Deflections.—Deflection angle $= \frac{1}{2} D$ for 100 ft., $\frac{1}{4} D$ for 50 ft., etc. For c ft. $= (\text{in minutes}) .3 \times C \times D^\circ$ or $= \text{defl. for 1 ft. from Table III} \times C$. For Sta. 158 of above curve $= .3 \times 54.5 \times 8\frac{1}{3} = 136.2'$ or $2^\circ 16.2'$, or $= 2.50 \times 54.5 = 136.2'$ from Table III. For Sta. 159 deflection angle $= 2^\circ 16.2' + 8^\circ 20' \div 2 = 6^\circ 26.2'$, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 91.37. For from Table IV for 1° curve $E = 960.6$ for $8^\circ 20' = 960.6 \div 8\frac{1}{3} = 91.27$ and from Table V correction $= .10$ or $E = 91.37$ ft. Or suppose $\Delta = 32^\circ$ and E is measured and found to be 42 ft. What is D ? From Table IV $E = 230.9$ and $\div 42 = 5.5$ or $D = 5^\circ 30'$.

DISTANCES FROM CENTER OF ROADWAY FOR
CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	II
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9 + (20 - 16) * 2 or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.