~~APPENDIX~~

TABLE 1

Comparison of the Measured and the Calculated Forces

at location $\omega t = \frac{3}{4}\pi$

gk omega l.c.

Run #	ω rad/sec	Re	C_V	F_V g	Ac	C_A (Avg.)	$F_A + F_I$ (Calc.) g	Force (Calc.) g	Force (Meas.) g
1	1.67	4.28	8.85	+4.58	0.566	0.907	-2.64	+1.94	+0.00
2	1.94	4.96	6.98	+4.85	0.566	0.907	-3.52	+1.33	+2.00
3	2.26	5.80	6.20	+5.90	0.566	0.907	-4.80	+1.10	+1.00
4	2.62	6.70	5.52	+7.03	0.566	0.907	-6.45	+0.58	+0.00
5	2.96	7.60	4.97	+8.11	0.566	0.907	-8.21	-0.10	-1.00
6	3.29	8.40	4.62	+9.26	0.566	0.907	-10.15	-0.89	-2.20
7	3.75	9.58	4.24	+11.00	0.566	0.907	-13.20	-2.20	-3.00
8	4.13	10.60	3.87	+12.10	0.566	0.907	-16.10	-4.00	-5.00
9	4.61	11.28	3.70	+13.35	0.566	0.907	-19.30	-5.95	-5.80
10	5.10	13.10	3.35	+16.20	0.566	0.907	-24.50	-8.30	-8.20
11	5.68	14.55	3.13	+18.75	0.566	0.907	-30.30	-11.55	-10.00
11a	5.65	14.40	3.15	+18.60	0.566	0.907	-30.00	-11.40	-12.00
12	6.26	16.00	2.94	+21.40	0.566	0.907	-36.90	-15.50	-16.20
13	6.90	17.65	2.76	+24.10	0.566	0.907	-44.70	-20.60	-18.00
14	7.65	19.61	2.58	+28.00	0.566	0.907	-55.20	-27.20	-27.50
15	8.50	21.70	2.42	+32.20	0.566	0.907	-67.90	-35.70	-36.20
15a	8.43	21.60	2.42	+32.00	0.566	0.907	-66.90	-34.90	-35.00
16	9.43	24.15	2.27	+37.40	0.566	0.907	-83.50	-45.90	-48.00
17	10.55	27.00	2.12	+43.80	0.566	0.907	-104.50	-60.70	-58.00
18	11.90	30.40	1.99	+52.00	0.566	0.907	-133.00	-81.00	-79.00
19	13.30	33.80	1.90	+62.50	0.566	0.907	-166.00	-103.50	-100.00
20	1.62	2.07	14.15	+1.72	0.283	0.720	-1.13	+0.59	+0.00
21	1.94	2.48	12.10	+2.12	0.283	0.720	-1.61	+0.51	+0.00
22	2.26	2.88	10.75	+2.53	0.283	0.720	-2.18	+0.35	+0.00
23	2.61	3.34	9.60	+3.04	0.283	0.720	-2.72	+0.12	+0.00
24	2.99	3.82	8.65	+3.57	0.283	0.720	-3.82	-0.25	-0.70
25	3.34	4.27	7.95	+4.10	0.283	0.720	-4.97	-0.87	-1.20
26	3.74	4.78	7.20	+4.65	0.283	0.720	-6.00	-1.35	-2.10
27	4.15	5.30	6.61	+5.26	0.283	0.720	-7.35	-2.09	-3.00
28	4.88	6.22	5.85	+6.42	0.283	0.720	-10.15	-3.73	-4.00
29	5.10	6.50	5.65	+6.78	0.283	0.720	-11.10	-4.32	-5.50
30	5.64	7.20	5.20	+7.60	0.283	0.720	-13.60	-6.00	-7.00
31	6.25	8.00	4.80	+8.66	0.283	0.720	-16.70	-8.04	-9.00
32	6.89	8.72	4.50	+9.90	0.283	0.720	-20.40	-10.50	-11.00
33	7.65	9.80	4.18	+11.30	0.283	0.720	-25.00	-13.70	-15.30
34	8.55	10.82	3.82	+12.92	0.283	0.720	-31.20	-18.30	-20.50

no.

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TABLE I

(Continued)

Run #	ω rad/sec	Re	C_V	F_V gm	Ac	C_A (Avg.)	$F_A + F_I$ (Calc) gm	Force (Calc) gm	Force (Meas.) gm
35	9.43	12.00	3.55	+14.58	0.283	0.720	-38.00	-24.42	-24.70
36	10.50	13.40	3.32	+16.90	0.283	0.720	-47.20	-30.30	-33.00
37	11.75	15.00	3.08	+19.60	0.283	0.720	-59.10	-39.50	-38.50
38	13.30	16.95	2.83	+23.00	0.283	0.720	-75.90	-52.90	-55.00
39	15.21	19.45	2.60	+27.90	0.283	0.720	-99.20	-71.30	-67.00
40	16.40	20.95	2.48	+30.80	0.283	0.720	-114.80	-84.00	-84.00
41	1.68	6.45	5.70	+6.70	0.848	0.980	-4.10	+2.60	+2.30
42	1.95	7.50	5.02	+8.03	0.848	0.980	-5.55	+2.48	+1.70
43	2.27	8.70	4.51	+9.68	0.848	0.980	-7.48	+2.20	+1.50
44	2.60	9.96	4.15	+11.70	0.848	0.980	-9.80	+1.90	+1.50
45	2.96	11.40	3.70	+13.50	0.848	0.980	-12.70	+0.80	-0.00
46	3.35	12.90	3.40	+16.00	0.848	0.980	-16.30	-0.30	-0.35
47	3.74	14.35	3.17	+18.50	0.848	0.980	-20.30	-1.80	-3.00
48	4.15	15.90	2.93	+21.00	0.848	0.980	-25.00	-4.00	-4.10
49	4.63	17.80	2.74	+24.50	0.848	0.980	-31.20	-6.70	-8.00
50	5.10	19.60	2.58	+28.10	0.848	0.980	-37.90	-9.80	-11.00
51	5.64	21,60	2.43	+32.20	0.848	0.980	-46.00	-13.80	-13.50
52	6.41	24.10	2.28	+37.40	0.848	0.980	-55.80	-18.40	-19.70
53	6.87	26.40	2.16	+42.50	0.848	0.980	-68.50	-26.00	-25.00
54	7.65	29.40	2.02	+49.40	0.848	0.980	-85.00	-35.60	-32.00
55	8.43	32.30	1.95	+57.70	0.848	0.980	-103.00	-45.30	-40.70
56	9.37	36.00	1.81	+66.50	0.848	0.980	-127.00	-60.50	-61.00
57	10.48	40.20	1.70	+77.50	0.848	0.980	-152.50	-75.00	-74.50
58	2.56	13.10	3.35	+16.30	1.130	1.003	-12.60	+3.70	+3.60
59	2.94	15.05	3.07	+19.80	1.130	1.003	-16.80	+3.00	+1.50
60	3.26	16.07	2.86	+22.70	1.130	1.003	-20.70	+2.00	+1.30
61	3.74	19.00	2.67	+27.20	1.130	1.003	-27.40	-0.20	-1.00
62	4.08	20.90	2.48	+30.80	1.130	1.003	-32.80	-2.00	-3.00
63	4.60	23.60	2.30	+36.20	1.130	1.003	-41.50	-5.30	-5.00
64	5.09	26.00	2.17	+41.60	1.130	1.003	-50.70	-9.10	-8.00
65	5.63	28.80	2.04	+48.00	1.130	1.003	-62.10	-14.10	-12.20
66	6.22	31.90	1.94	+55.80	1.130	1.003	-76.00	-20.20	-22.00
67	6.36	35.30	1.83	+64.40	1.130	1.003	-93.00	-28.60	-28.00
68	7.63	39.00	1.73	+74.80	1.130	1.003	-114.00	-39.20	-38.00
69	8.49	43.40	1.62	+86.40	1.130	1.003	-141.00	-54.60	-51.00

(Printer, no plus signs Ed.)

TABLE ~~II~~ 2

Comparison of the Measured and the Calculated Forces

at Location $\omega t = \frac{1}{2}\pi$ (a=0)

$Ac \rightarrow \infty$ $C_H = 2.88$

Run #	ω rad/sec	Re	F_V gm	F_H gm	Force (Calc.) gm	Force (Meas.) gm
1	1.67	6.04	+6.20	+1.92	+8.12	+8.20
2	1.94	7.00	+7.36	+2.24	+9.60	+9.50
3	2.26	8.15	+8.90	+3.00	+11.90	+12.00
4	2.62	9.50	+10.85	+3.75	+14.60	+15.00
5	2.96	10.70	+12.45	+4.52	+16.97	+18.40
6	3.29	11.90	+14.30	+5.30	+19.60	+20.60
7	3.75	13.50	+17.20	+6.45	+23.65	+24.30
8	4.13	15.00	+19.50	+7.45	+26.95	+27.80
9	4.61	16.70	+22.50	+8.78	+31.28	+33.20
10	5.10	18.40	+25.80	+10.20	+36.00	+37.70
11	5.68	20.50	+29.90	+11.95	+41.85	+42.50
11a	5.65	20.40	+29.80	+13.20	+42.00	+42.50
12	6.26	22.70	+34.30	+13.80	+48.10	+48.60
13	6.90	25.00	+39.30	+16.10	+55.40	+57.20
14	7.65	27.70	+45.00	+18.80	+63.80	+70.50
15	8.50	30.70	+52.90	+21.70	+74.60	+77.20
15a	8.43	30.50	+52.00	+21.70	+73.70	+79.00
16	9.43	34.00	+61.00	+25.60	+86.60	+93.00
17	10.55	38.20	+72.30	+30.20	+102.50	+109.50
18	11.90	43.00	+85.60	+36.30	+121.90	+120.50
19	13.30	47.10	+104.00	+43.50	+147.50	+149.50
20	1.62	2.93	+2.57	+0.92	+3.49	+3.70
21	1.94	3.50	+3.24	+1.19	+4.43	+5.30
22	2.26	4.08	+3.88	+1.50	+5.38	+6.00
23	2.61	4.71	+4.60	+1.87	+6.47	+7.00
24	2.99	5.40	+5.40	+2.30	+7.70	+8.00
25	3.34	6.03	+6.18	+2.70	+8.88	+9.10
26	3.74	6.75	+7.10	+3.19	+10.29	+10.70
27	4.15	7.50	+8.06	+3.75	+11.81	+12.00
28	4.88	8.80	+9.95	+4.76	+14.66	+16.00
29	5.10	9.22	+10.46	+5.10	+15.56	+16.40
30	5.64	10.20	+11.90	+5.95	+17.85	+17.50
31	6.25	11.28	+13.40	+7.15	+20.55	+20.90
32	6.89	12.47	+15.30	+7.96	+23.26	+24.20
33	7.65	13.85	+17.62	+9.38	+27.00	+28.50
34	8.55	15.45	+20.40	+11.10	+31.50	+31.20
35	9.43	17.05	+23,20	+12.75	+ 35.95	+38.50
36	10.50	19.00	+26.80	+15.10	+41.90	+42.10
37	11.75	21.40	+31.20	+17.50	+48.70	+49.50
38	13.30	24.10	+37.40	+21.60	+59.00	+61.00

TABLE ~~II~~ 2

(Continued)

Run #	ω rad/sec	Re	F_V gm	F_H gm	Force (Calc.) gm	Force (Meas.) gm
39	15.21	27.60	+46.20	+26.40	+72.60	+76.50
40	16.40	29.60	+50.30	+29.40	+79.70	+84.50
41	1.68	9.10	+10.20	+2.88	+13.08	+13.00
42	1.95	10.60	+12.31	+3.62	+15.93	+16.30
43	2.27	12.30	+14.90	+4.55	+19.45	+19.80
44	2.60	14.10	+17.85	+5.55	+23.40	+23.50
45	2.96	16.10	+21.20	+6.78	+27.98	+28.60
46	3.35	18.10	+24.00	+8.12	+32.12	+33.00
47	3.74	20.30	+29.40	+9.60	+39.00	+38.90
48	4.15	22.50	+33.80	+11.30	+45.10	+44.70
49	4.63	25.10	+39.70	+13.20	+52.90	+52.00
50	5.10	27.65	+45.20	+15.00	+60.20	+60.70
51	5.64	30.60	+52.50	+18.20	+70.70	+71.00
52	6.22	33.70	+60.00	+20.70	+80.70	+81.00
53	6.87	37.30	+69.60	+23.90	+93.50	+94.00
54	7.65	41.50	+81.00	+28.10	+107.10	+109.50
55	8.43	45.80	+93.80	+32.50	+126.30	+125.50
56	9.37	51.00	+108.50	+37.60	+146.10	+147.00
57	10.48	56.80	+128.00	+44.80	+172.80	+173.00
58	2.56	18.50	+25.90	+7.24	+33.14	+33.50
59	2.94	21.20	+31.50	+8.80	+40.30	+40.20
60	3.26	23.60	+36.00	+10.40	+46.40	+44.00
61	3.74	27.00	+43.60	+12.70	+56.30	+52.50
62	4.09	29.50	+49.60	+14.60	+64.20	+62.00
63	4.60	33.20	+58.50	+17.50	+76.00	+74.50
64	5.09	36.80	+68.00	+20.20	+88.20	+84.50
65	5.63	40.70	+78.60	+23.70	+102.30	+102.00
66	6.22	45.00	+90.00	+27.40	+117.40	+116.00
67	6.88	49.60	+104.50	+31.70	+135.20	+135.50
68	7.63	55.00	+122.00	+37.30	+159.30	+160.00
69	8.49	61.30	+143.50	+43.40	+186.90	+184.00

TABLE ~~III~~ 3

Comparison of the Measured and the Calculated Forces

at Location $\omega t = \frac{1}{4}\pi$

Run #	ω rad/sec	Re	F_V gm	F_A+F_I gm	Ac	C_H (Avg.)	F_H gm	Force (Calc) gm	Force (Meas.) gm
1	1.67	4.28	+4.58	+2.64	0.566	3.61	+3.39	+10.61	+9.80
2	1.94	4.96	+4.85	+3.52	0.566	3.61	+3.96	+12.33	+12.10
3	2.26	5.80	+5.90	+4.80	0.566	3.61	+5.33	+16.03	+16.80
4	2.62	6.70	+7.03	+6.45	0.566	3.61	+6.65	+20.13	+20.50
5	2.96	7.60	+8.11	+8.21	0.566	3.61	+8.00	+24.32	+25.00
6	3.29	8.40	+9.26	+10.15	0.566	3.61	+9.38	+30.69	+30.70
7	3.75	9.58	+11.00	+13.20	0.566	3.61	+11.40	+35.60	+36.20
8	4.13	10.60	+12.10	+16.10	0.566	3.61	+13.20	+41.40	+41.70
9	4.61	11.28	+13.35	+19.30	0.566	3.61	+15.50	+48.15	+50.30
10	5.10	13.10	+16.20	+24.50	0.566	3.61	+18.10	+58.80	+60.10
11	5.68	14.55	+18.75	+30.30	0.566	3.61	+21.10	+70.15	+69.20
11a	5.65	14.40	+18.60	+30.00	0.566	3.61	+21.00	+69.60	+71.10
12	6.26	16.00	+21.40	+36.90	0.566	3.61	+24.50	+82.80	+82.70
13	6.90	17.65	+24.10	+44.70	0.566	3.61	+28.50	+97.30	+97.00
14	7.65	19.61	+28.00	+55.20	0.566	3.61	+33.20	+116.40	+117.20
15	8.50	21.70	+32.20	+67.90	0.566	3.61	+38.30	+138.40	+136.80
15a	8.43	21.60	+32.00	+66.90	0.566	3.61	+38.40	+137.30	+137.50
16	9.43	24.15	+37.40	+83.50	0.566	3.61	+45.40	+166.30	+168.50
17	10.55	27.00	+43.80	+104.50	0.566	3.61	+53.50	+201.80	+202.70
18	11.90	30.40	+52.00	+133.00	0.566	3.61	+64.30	+249.30	+246.50
19	13.30	33.80	+62.50	+166.00	0.566	3.61	+76.90	+305.40	+301.50
20	1.62	2.07	+1.72	+1.13	0.283	4.43	+1.98	+4.83	+5.10
21	1.94	2.48	+2.12	+1.61	0.283	4.43	+2.58	+6.31	+6.65
22	2.26	2.88	+2.53	+2.18	0.283	4.43	+3.28	+7.99	+7.50
23	2.61	3.34	+3.04	+2.92	0.283	4.43	+4.07	+10.03	+9.70
24	2.99	3.82	+3.57	+3.82	0.283	4.43	+5.00	+12.39	+12.00
25	3.34	4.27	+4.10	+4.97	0.283	4.43	+5.87	+14.94	+14.90
26	3.74	4.78	+4.65	+6.00	0.283	4.43	+6.95	+17.60	+17.90
27	4.15	5.30	+5.26	+7.35	0.283	4.43	+8.16	+20.77	+20.85
28	4.88	6.22	+6.42	+10.15	0.283	4.43	+10.32	+26.89	+25.40
29	5.10	6.50	+6.78	+11.10	0.283	4.43	+11.05	+28.93	+29.00
30	5.64	7.20	+7.60	+13.60	0.283	4.43	+12.90	+34.13	+34.35
31	6.25	8.00	+8.66	+16.70	0.283	4.43	+15.00	+40.36	+40.30
32	6.89	8.72	+9.90	+20.40	0.283	4.43	+17.35	+47.65	+47.50
33	7.65	9.80	+11.30	+25.00	0.283	4.43	+20.30	+56.60	+56.30
34	8.55	10.82	+12.92	+31.20	0.283	4.43	+24.00	+68.10	+67.80
35	9.43	12.00	+14.58	+38.00	0.283	4.43	+27.70	+80.15	+79.40
36	10.50	13.40	+16.90	+47.20	0.283	4.43	+32.70	+96.80	+97.00
37	11.75	15.00	+19.60	+59.10	0.283	4.43	+38.00	+116.70	+116.30
38	13.30	16.95	+23.00	+75.90	0.283	4.43	+46.80	+145.70	+146.50
39	15.21	19.45	+27.90	+99.20	0.283	4.43	+57.20	+184.30	+187.50

TABLE III

(Continued)

Run #	ω rad/sec	Re	F_V gm	F_A+F_I gm	Ac	C_H (Avg)	F_H gm	Force (Calc.) gm	Force (Meas.) gm
40	16.40	20.95	+30.80	+114.80	0.283	4.43	+64.00	+209.60	+209.00
41	1.68	6.45	+6.70	+4.10	0.848	3.33	+4.72	+15.52	+16.00
42	1.95	7.50	+8.03	+5.55	0.848	3.33	+5.90	+19.43	+19.00
43	2.27	8.70	+9.68	+7.48	0.848	3.33	+7.20	+24.36	+24.40
44	2.60	9.96	+11.70	+9.80	0.848	3.33	+9.06	+30.56	+31.20
45	2.96	11.40	+13.50	+12.70	0.848	3.33	+11.10	+ 37.30	+37.60
46	3.35	12.90	+16.00	+16.30	0.848	3.33	+13.30	+45.60	+45.50
47	3.74	14.35	+18.50	+20.30	0.848	3.33	+15.70	+54.50	+54.80
48	4.15	15.90	+21.00	+25.00	0.848	3.33	+18.40	+64.40	+65.20
49	4.63	17.80	+24.50	+31.20	0.848	3.33	+21.60	+77.30	+77.40
50	5.10	19.60	+28.10	+37.90	0.848	3.33	+25.00	+91.00	+91.20
51	5.64	21.60	+32.20	+46.00	0.848	3.33	+29.10	+107.30	+108.20
52	6.41	24.10	+37.40	+55.80	0.848	3.33	+33.90	+127.10	+126.00
53	6.87	26.40	+42.50	+68.50	0.848	3.33	+39.10	+150.10	+150.00
54	7.65	29.40	+49.40	+85.00	0.848	3.33	+45.80	+180.20	+179.50
55	8.43	32.30	+57.70	+103.00	0.848	3.33	+53.00	+213.70	+211.50
56	9.37	36.00	+66.50	+127.00	0.848	3.33	+61.60	+255.10	+254.50
57	10.48	40.20	+77.50	+152.50	0.848	3.33	+73.50	+303.50	+301.50
58	2.56	13.10	+16.30	+12.60	1.130	3.24	+11.50	+40.40	+41.20
59	2.94	15.05	+19.80	+16.80	1.130	3.24	+14.20	+50.80	+50.30
60	3.26	16.07	+22.70	+20.70	1.130	3.24	+16.10	+59.50	+69.10
61	3.74	19.00	+27.20	+27.40	1.130	3.24	+20.20	+74.80	+75.50
62	4.08	20.90	+30.80	+ 32.80	1.130	3.24	+23.30	+86.90	+87.90
63	4.60	23.60	+36.20	+41.50	1.130	3.24	+27.90	+105.60	+106.70
64	5.09	26.00	+41.60	+50.70	1.130	3.24	+32.10	+124.40	+124.50
65	5.63	28.80	+48.00	+62.10	1.130	3.24	+37.60	+148.30	+149.00
66	6.22	31.90	+55.80	+76.00	1.130	3.24	+42.80	+175.60	+175.00
67	6.36	35.30	+64.40	+93.00	1.130	3.24	+50.20	+207.60	+206.00
68	7.63	39.00	+74.80	+114.00	1.130	3.24	+59.30	+246.10	+247.00
69	8.49	43.40	+86.40	+141.00	1.130	3.24	+69.10	+296.50	+294.80

TABLE ~~IV~~ 4

Comparison of the Measured and Calculated Forces l.c.

at Intervals of $\omega t = \frac{1}{8}\pi$

Run #	ω rad/sec	ωt rad/	Re	Ac	F_V gm	F_A+F_I gm	F_H gm	Force (Calc.) gm	Force (Meas.) gm
9	4.61	0	0.00	0.0000	0.00	+22.90	+18.30	+41.20	+41.30
"	"	$\pi/8$	6.40	0.1270	+6.65	+22.30	+20.40	+49.35	+49.70
"	"	$\pi/4$	11.28	0.5660	+13.35	+19.30	+15.50	+48.15	+50.30
"	"	$3\pi/8$	15.50	1.7750	+20.25	+11.30	+12.75	+44.30	+44.75
"	"	$\pi/2$	16.70	∞	+22.50	00.00	+8.75	+31.28	+33.20
"	"	$5\pi/8$	15.50	1.775	+20.25	-11.30	+5.30	+14.25	+16.20
"	"	$3\pi/4$	11.28	0.5660	+13.35	-19.30	0.00	- 5.95	- 5.80
"	"	$7\pi/8$	6.40	0.1270	+6.65	-22.30	-8.50	-24.15	-25.35
18	11.90	0	0.00	0.0000	0.00	+152.50	+75.70	+228.20	+227.00
"	"	$\pi/8$	16.50	0.1270	+22.20	+147.50	+85.00	+254.70	+252.50
"	"	$\pi/4$	30.40	0.5660	+52.00	+133.00	+64.30	+249.30	+246.50
"	"	$3\pi/8$	39.80	1.7750	+76.50	+75.00	+52.80	+204.30	+202.50
"	"	$\pi/2$	43.00	∞	+85.60	00.00	+36.30	+121.90	+120.50
"	"	$5\pi/8$	39.80	1.7750	+76.50	-75.00	+22.00	+23.50	+22.00
"	"	$3\pi/4$	30.40	0.5660	+52.00	-133.00	00.00	- 81.00	-79.00
"	"	$7\pi/8$	16.50	0.1270	+22.20	-147.50	-35.20	-160.50	-164.50
29	5.10	0	0.00	0.0000	0.00	+13.95	+10.62	+24.57	+25.30
"	"	$\pi/8$	3.54	0.0634	+3.29	+13.30	+12.80	+29.39	+29.70
"	"	$\pi/4$	6.50	0.2830	+6.78	+11.10	+11.05	+28.93	+29.00
"	"	$3\pi/8$	8.53	0.8900	+9.45	+6.80	+7.62	+23.87	+24.60
"	"	$\pi/2$	9.22	∞	+10.46	0.00	+5.10	+15.56	+16.40
"	"	$5\pi/8$	8.53	0.8900	+9.45	- 6.80	+3.18	+5.83	+6.75
"	"	$3\pi/4$	6.50	0.2830	+6.78	-11.10	00.00	- 4.32	- 5.50
"	"	$7\pi/8$	3.54	0.0634	+3.29	-13.30	- 5.30	-15.31	-16.35
38	13.30	0	0.00	0.0000	0.00	+95.00	+45.00	+140.00	+141.00
"	"	$\pi/8$	9.22	0.0634	+10.40	+90.60	+53.70	+154.70	+154.50
"	"	$\pi/4$	16.95	0.2830	+23.00	+75.90	+46.80	+145.70	+146.50
"	"	$3\pi/8$	22.30	0.8900	+33.40	+46.30	+32.20	+111.90	+113.00
"	"	$\pi/2$	24.10	∞	+37.40	00.00	+21.60	+59.00	+61.00
"	"	$5\pi/8$	22.30	0.8900	+33.40	- 46.30	+18.45	+0.50	+6.00
"	"	$3\pi/4$	16.95	0.2830	+23.00	-75.90	00.00	- 52.90	-55.00
"	"	$7\pi/8$	9.22	0.0634	+10.40	-90.60	-21.30	-101.50	-103.50
50	5.10	0	0.00	0.0000	00.00	+41.80	+31.70	+73.50	+74.70
"	"	$\pi/8$	10.60	0.1900	+12.30	+42.00	+33.20	+87.50	+89.00
"	"	$\pi/4$	19.60	0.8480	+28.10	+37.90	+25.00	+91.00	+91.20
"	"	$3\pi/8$	25.60	2.6600	+40.60	+20.80	+22.00	+83.40	+82.00
"	"	$\pi/2$	27.65	∞	+45.20	00.00	+15.00	+60.20	+60.70
"	"	$5\pi/8$	25.60	2.6600	+40.60	-20.80	+9.14	+28.94	+29.00
"	"	$3\pi/4$	19.60	0.848	+28.10	-37.90	00.00	- 9.80	-11.00
"	"	$7\pi/8$	10.60	0.1900	+12.30	-42.00	-13.75	-43.45	-46.00

TABLE 4

(Continued)

Run #	ω rad/sec	ωt rad.	Re	Ac	F_V gm	$F_A + F_I$ gm	F_H gm	Force (Calc.) gm	Force (Meas.) gm
56	9.37	0	0.00	0.000	00.00	+141.50	+78.60	+220.10	+219.00
"	"	π/8	19.50	0.1900	+27.75	+142.00	+82.20	+251.95	+255.50
"	"	π/4	36.00	0.8480	+66.50	+127.00	+61.60	+255.10	+254.50
"	"	3π/8	47.00	2.6600	+97.20	+70.00	+54.40	+221.60	+220.50
"	"	π/2	51.00	∞	+108.50	00.00	+37.60	+146.10	+147.00
"	"	5π/8	47.00	2.6600	+97.20	-70.00	+22.70	+49.90	+48.50
"	"	3π/4	36.00	0.8480	+66.50	-127.00	00.00	-60.50	-61.00
"	"	7π/8	19.50	0.1900	+27.75	-142.00	-34.20	-148.45	-152.00
65	5.63	0	00.00	0.0000	00.00	+68.00	+49.50	+117.50	+115.50
"	"	π/8	15.60	0.2540	+20.50	+69.60	+48.90	+139.10	+141.50
"	"	π/4	28.80	1.1300	+48.00	+62.10	+37.60	+148.30	+149.00
"	"	3π/8	37.60	3.5500	+70.90	+33.70	+33.90	+138.50	+136.50
"	"	π/2	40.70	∞	+78.60	00.00	+23.70	+102.30	+102.00
"	"	5π/8	37.60	3.5500	+ 70.90	-33.70	+14.10	+52.30	+52.30
"	"	3π/4	28.80	1.1300	+48.00	-62.10	00.00	-14.10	-12.20
"	"	7π/8	15.60	0.2540	+20.50	-69.60	-20.30	-69.40	-68.10
68	7.63	0	00.00	0.0000	00.00	+125.00	+77.90	+202.90	+203.50
"	"	π/8	21.10	0.2540	+31.00	+128.20	+76.80	+235.00	+238.50
"	"	π/4	39.00	1.1300	+74.00	+114.00	+59.30	+246.10	+247.00
"	"	3π/8	51.00	3.5500	+109.00	+62.00	+53.30	+224.30	+219.50
"	"	π/2	55.00	∞	+122.00	00.00	+37.30	+159.30	+160.00
"	"	5π/8	51.00	3.5500	+109.00	-62.00	+22.20	+69.20	+69.00
"	"	3π/4	39.00	1.1300	+74.00	-114.00	00.00	-39.20	-38.00
"	"	7π/4	21.10	0.2540	+31.00	-128.20	-31.80	-129.00	-132.00

TABLE ~~X~~ 5

Comparison of the Measured and the Calculated Forces

at Location $\omega t = 2\pi$ (V=0)

$C_A = 0.5$ $C_H = 6$ Ac=0

Run #	ω rad/sec	$F_A + F_I$ gm	F_H gm	Force (Calc.) gm	Force (Meas.) gm
1	1.67	+2.99	+3.99	+6.98	+7.10
2	1.94	+4.04	+4.65	+8.69	+8.70
3	2.26	+5.46	+6.28	+11.74	+11.50
4	2.62	+7.35	+7.80	+15.15	+15.85
5	2.96	+9.40	+9.43	+18.83	+18.80
6	3.29	+11.60	+11.00	+22.60	+24.30
7	3.75	+15.10	+13.40	+28.50	+29.30
8	4.13	+18.35	+15.50	+33.85	+34.10
9	4.61	+22.90	+18.30	+41.20	+41.30
10	5.10	+27.90	+21.30	+49.20	+49.80
11	5.68	+34.60	+24.90	+59.50	+59.60
11a	5.65	+34.20	+24.70	+58.90	+58.90
12	6.26	+42.20	+28.80	+71.00	+70.70
13	6.90	+47.80	+33.50	+81.30	+82.70
14	7.65	+62.80	+39.10	+101.90	+102.70
15	8.50	+77.70	+45.10	+122.80	+123.20
15a	8.43	+76.30	+45.10	+121.40	+121.00
16	9.43	+95.30	+53.50	+148.80	+153.00
17	10.55	+119.50	+63.00	+182.50	+188.50
18	11.90	+152.50	+75.70	+228.20	+227.00
19	13.30	+190.00	+90.70	+280.70	+281.00
20	1.62	+1.41	+1.90	+3.31	+3.70
21	1.94	+2.02	+2.48	+4.50	+5.00
22	2.26	+2.73	+3.14	+5.87	+6.00
23	2.61	+3.66	+3.90	+7.56	+7.30
24	2.99	+4.79	+4.79	+9.58	+8.80
25	3.34	+5.98	+5.63	+11.61	+10.60
26	3.74	+7.48	+6.65	+ 14.13	+14.00
27	4.15	+9.23	+7.82	+17.05	+17.50
28	4.88	+12.80	+11.05	+21.80	+20.60
29	5.10	+13.95	+10.62	+24.57	+25.30
30	5.64	+17.00	+12.35	+29.35	+29.60
31	6.25	+20.90	+14.40	+35.30	+35.50
32	6.89	+25.50	+16.60	+42.10	+42.70
33	7.65	+31.40	+19.50	+50.90	+51.40
34	8.55	+39.30	+23.00	+62.30	+62.00
35	9.43	+47.60	+26.60	+74.20	+75.20
36	10.50	+59.20	+31.40	+90.60	+90.30
37	11.75	+74.80	+36.40	+111.20	+112.00

TABLE 5

(Continued)

Run #	ω rad/sec	$F_A + F_I$ gm	F_H gm	Force (Calc.) gm	Force (Meas.) gm
38	13.30	+95.00	+45.00	+140.00	+141.00
39	15.21	+124.50	+54.80	+179.30	+177.50
40	16.40	+144.00	+61.10	+205.10	+201.00
41	1.68	+4.54	+6.05	+10.59	+10.50
42	1.95	+6.16	+7.53	+13.69	+13.70
43	2.27	+8.30	+9.48	+17.78	+18.40
44	2.60	+10.90	+11.56	+22.46	+23.10
45	2.96	+14.10	+14.10	+28.20	+28.90
46	3.35	+18.00	+16.95	+34.95	+35.30
47	3.74	+22.50	+20.00	+42.50	+42.60
48	4.15	+27.70	+23.50	+51.20	+52.20
49	4.63	+34.60	+27.50	+62.10	+61.50
50	5.10	+41.80	+31.70	+73.50	+74.70
51	5.64	+51.20	+37.10	+88.30	+87.30
52	6.22	+62.10	+43.20	+105.30	+107.70
53	6.87	+76.10	+49.90	+126.00	+124.00
54	7.65	+94.40	+58.50	+152.90	+153.50
55	8.43	+114.60	+67.80	+182.40	+182.00
56	9.37	+141.50	+78.60	+220.10	+219.00
57	10.48	+176.50	+93.50	+270.00	+269.00
58	2.56	+14.08	+15.10	+29.18	+29.80
59	2.94	+18.50	+18.60	+37.10	+37.60
60	3.26	+22.80	+21.80	+44.60	+45.40
61	3.74	+30.10	+26.70	+56.80	+57.20
62	4.09	+35.70	+30.60	+66.30	+68.00
63	4.60	+45.40	+36.50	+81.90	+81.00
64	5.09	+55.40	+42.00	+97.40	+97.70
65	5.63	+68.00	+49.50	+117.50	+115.50
66	6.22	+83.00	+57.50	+140.50	+140.00
67	6.88	+101.50	+66.50	+168.00	+167.50
68	7.63	+125.00	+77.90	+202.90	+203.50
69	8.49	+153.50	+90.70	+244.20	+242.00