

Airscrew Characteristics at Constant R.P.M.

N = 2,160 r.p.m.		$n^3 = 46,656$		
P = Full throttle		= 120.3		
J	.. .. .	0.65	0.70	0.75
$K_q Q_c$	.. .. .	0.873	0.809	0.7385
P/n^3	.. .. .	0.0025	0.00232	0.0021
P	.. .. .	116.6	108.3	98.0
V	.. .. .	99.25	106.9	114.5
η	.. .. .	0.702	0.716	0.722
T.H.P.	.. .. .	81.9	77.5	70.8

N = 2,100 r.p.m.		$n^3 = 42,875$		
P, Full Throttle = 117.4.				
J	.. .. .	0.65	0.7	0.75
P/n^3	.. .. .	0.0025	0.00232	0.0021
P	.. .. .	107.1	99.5	90.0
V	.. .. .	96.5	103.9	111.3
η	.. .. .	0.702	0.716	0.722
T.H.P.	.. .. .	75.2	71.3	65.0

N = 2,040 r.p.m.		$n^3 = 39,304$		
P, Full Throttle = 114.4.				
J	.. .. .	0.65	0.7	0.75
P	.. .. .	98.3	91.2	82.5
V	.. .. .	93.8	101.0	108.1
T.H.P.	.. .. .	69.1	65.3	59.5

N = 1,980 r.p.m.		$n^3 = 35,937$		P = 111.5
J	.. .. .	0.65	0.7	0.75
P	.. .. .	89.8	83.4	75.5
V	.. .. .	91.0	98.0	105.0
T.H.P.	.. .. .	63.0	59.6	54.5

N = 1,920 r.p.m.		$n^3 = 32,768$		P = 108.5
J	.. .. .	0.65	0.7	0.75
P	.. .. .	81.9	76.0	68.8
V	.. .. .	88.3	95.0	101.8
T.H.P.	.. .. .	57.5	54.4	49.7

N = 1,860 r.p.m.		$n^3 = 29,791$		P = 105.5	
J	.. .. .	0.65	0.7	0.75	0.6
P	.. .. .	74.5	69.1	62.6	78.0
V	.. .. .	85.5	92.1	98.7	78.9
T.H.P.	.. .. .	52.3	49.5	45.2	53.3

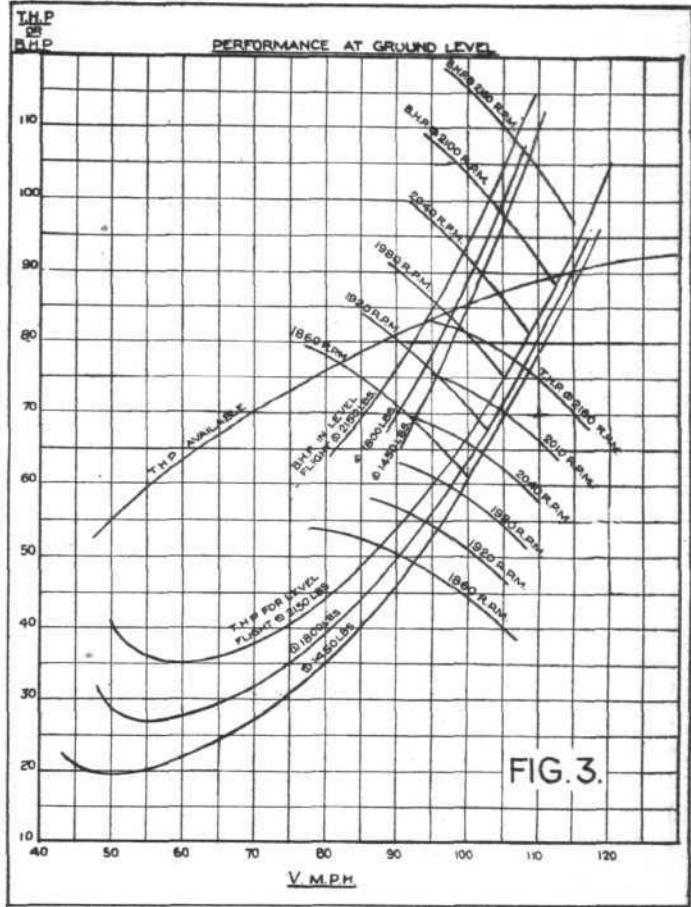


FIG. 3. THE LONG-RANGE AVIAN : Power-required and power-available curves, ground level conditions.

Throttled Consumption of "Gipsy II" Engine

R.P.M.	Maximum B.H.P.	Throttled Maximum B.H.P.	Consumption Maximum pts./B.H.P./Hr.	Throttled Consumption Maximum Consumption
1,200	—	23.3	—	0.897
1,300	—	30	—	0.825
1,400	—	37.1	—	0.765
1,500	—	45	—	0.713
1,600	92.5	53.6	0.579	0.585
1,700	97.7	63.3	0.649	0.579
1,800	102.8	74.2	0.722	0.573
1,900	107.8	85.3	0.792	0.568
2,000	112.6	97.3	0.865	0.565
2,100	117.5	109.3	0.93	0.565
2,200	122.2	122.2	1.0	0.568
2,300	126.2	—	—	0.572
2,400	129	—	—	0.583

Consumption in Level Flight.

At 2,150 lb. Gross Weight.

R.P.M.	1,860	1,920	1,980	2,040	2,100	2,160
B.H.P. (maximum)	105.5	108.5	111.5	114.4	117.4	120.3
V. m.p.h.	87.8	91.9	95.7	99.6	103.1	106.7
B.H.P. (throttled)	73	79.0	85.6	92.7	100.2	108.4
B.H.P. (rat.o)	0.692	0.728	0.768	0.809	0.853	0.901
Full T. consumption (g./B.H.P./hr.)	0.5697	0.5672	0.5654	0.5647	0.5651	0.5664
T. consumption (ga's./hr.)	5.64	5.96	6.21	6.70	7.10	7.55
M.p.g.	15.6	15.4	15.4	14.9	14.5	14.1

At 1,850 lb. Gross Weight.

R.P.M.	1,860	1,920	1,980	2,040	2,100	2,160
V	90.7	94.3	97.7	101.2	104.6	108.0
B.H.P.	70.6	76.8	83.7	91.0	98.7	106.9
B.H.P. ratio	0.669	0.707	0.751	0.795	0.840	0.889
Galls., cons.	5.53	5.86	6.23	6.62	7.04	7.46
M.p.g.	16.4	16.1	15.7	15.3	14.9	14.5

At 1,450 lb. Gross Weight.

V	92.6	95.8	99.0	102.2	105.4	108.1
B.H.P.	68.8	75.2	82.3	89.8	97.8	106.3
B.H.P. ratio	0.652	0.693	0.738	0.784	0.833	0.883
Galls., cons.	5.54	5.78	6.16	6.57	7.0	7.45
M.p.g.	16.7	16.6	16.1	15.6	15.1	14.5

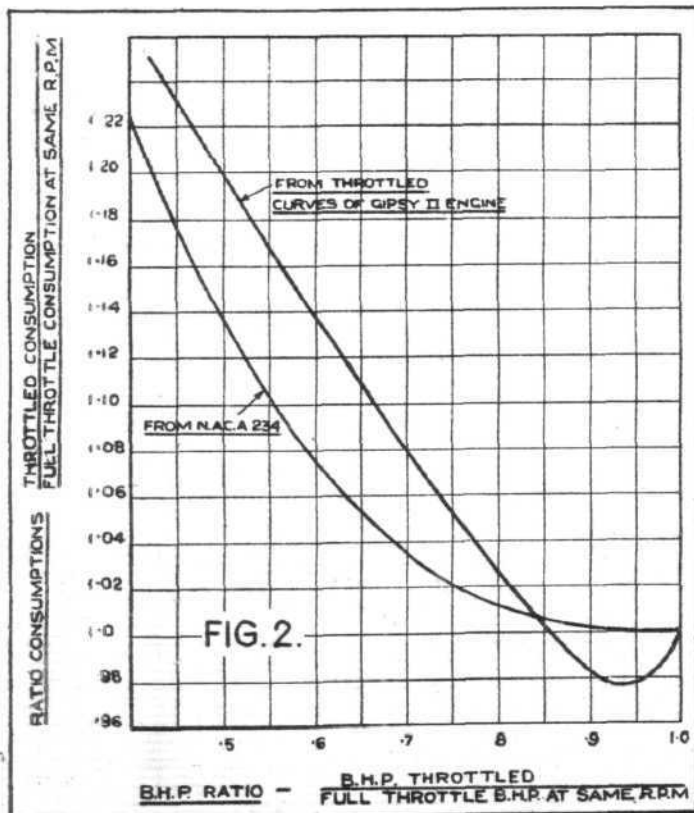


FIG. 2. THE "GIPSY II" ENGINE : Effect of throttling on basic consumption. The relative consumption curve for the "Gipsy" engine has been used in this estimate. This curve is less optimistic at cruising than the standardised curve given in N.A.C.A. 284.