

**Typographical Errors in Robert L. McCoy, "Modern Exterior Ballistics"
Schiffer Publishing Ltd, Atglen, PA, 1999**

**Corrections by Donald G. Miller, LLNL, based on comparisons with the Final Manuscript.
With additions and corrections by Henry Hudgins, Picatinny (denoted by H).
by Gene Cooper and Peter Plostins, ARL.
by Robert Lieske and Henry Hudgins (denoted by L).
by Gene Cooper, ARL (denoted by C).
by Darrel Barnette, U. of Texas (denoted by B).
by James B. Millard, "On-line Ballistics" (denoted by M).**

Note: Many of the corrections below are "cosmetic", such as revised spacings between symbols or commas, and are designed to make the text easier to read. These were included in the as yet unrealized hope that the publisher would reprint the text or at least include these corrections in an errata sheet. However, most of the errors corrected below are serious, and include incorrect equations and symbols, missing but essential equations and symbols, wrong table headings, incorrect spellings, the botching of the MCTRAJ Basic listing, completely wrong references for Chapter 9, and the missing index. Only a few of these errors are typos in Bob's final manuscript.

Bob McCoy passed away just after he submitted that final manuscript, and could not oversee the final result. No corrections could have been made before printing because galley or page proofs were never sent to any of his representatives.

The symbol \longrightarrow means "is corrected to read". lc and uc mean lower case and upper case, respectively.

P8 L1: wish toeve \longrightarrow wish to leave

Chapter 1 PP10-31

P10 RH col line 6: $_ \longrightarrow 3/4$

P23 RH col line 7: $_ \longrightarrow 7/8$

P30 LH col ref 2: 1893 \longrightarrow 1900 wrong in MS

P30 LH col: insert a blank line between ref 15 and ref 16

Chapter 2 PP32-41

P33 LH col 3rd line above eq. (2.3): angle is $_ \longrightarrow$ angle is α_i , i.e., insert " α_i " between "is" and comma

L P33 RH col 12th line above § 2.3: $\sin \alpha_i = \sqrt{\left(\frac{\sin \alpha}{\cos \beta}\right)^2 + \sin^2 \beta} \longrightarrow \sin \alpha_i = \sqrt{(\sin \alpha \cos \beta)^2 + \sin^2 \beta}$

P33 RH col 5th line above § 2.3: $_ , \alpha_i \longrightarrow _ , \alpha_i$ i.e., fraction is wrong (wrong in MS)
i.e., insert space between comma and " α_i "

P34 RH col eq. (2.6-a): Vecto \longrightarrow Vector

- P35 LH col eq. (2.8): Avial \longrightarrow Axial
- P35 RH col eq. (2.12) and (2.13): change the fonts of these equations to be consistent with all the others
- P35 RH col below eq. (2.13): $\cos \alpha_t \approx 1$ and $\longrightarrow \cos \alpha_t \approx 1$ and
i.e., delete comma before subscript t and insert space between "1" and "and"
- P36 LH col 2nd definition under eq. (2:16): $C_{N_{\alpha 02}} \longrightarrow C_{N_{\alpha 2}}$ i.e., delete subscript 0 and lower the 2
- P36 RH col 1st line of 3rd par.: positive $C_{M_{\alpha}}$ \longrightarrow positive $C_{M_{\alpha}}$ i.e., insert space before $C_{M_{\alpha}}$
- P37 RH col 2nd line of par. below eq. (2.24):
moment on is \longrightarrow moment on $\sin \alpha_t$ is i.e., insert " $\sin \alpha_t$ "
- P38 LH col line below eq. (2.26): reduce the large space between "where" and " CP_F "
- P38 RH col 3rd line from bottom: insert q_t and $\dot{\alpha}_t$ as below
proportional to and one proportional to \cdot \longrightarrow proportional to q_t and one proportional to $\dot{\alpha}_t$.
- P40 LH col Table 2.1:
All symbols on the left hand side of the equations should have a circumflex \wedge overscript, not a \cap overscript.
Equations 4 – 9 should have subscripts α (alpha), not a (lower case A)
- P40 LH col 2nd line under § 2.14: (etc.) \longrightarrow (K_D, K_L, K_M , etc.)
- P40 RH col Table 2.2:
The right hand sides of the Spin Damping Coefficient, Magnus Force Coefficient, and Magnus Moment Coefficient equations ($C_{l_p}, C_{N_{p\alpha}}, C_{M_{p\alpha}}$) should all have minus signs, i.e.,
$$-\frac{8}{\pi} K_A, -\frac{8}{\pi} K_F, -\frac{8}{\pi} K_T, \text{ respectively.}$$
- P41 Table 2.3: Row 3, 4, 5, 6, 9, 10 of columns 2 and 3 are not lined up with column 1
- P41 RH col Ref. 9: Configuratsl \longrightarrow Configurational (wrong in the manuscript)

Chapter 3 PP42-51

- H P43 RH col eq. (3.12): $X= \longrightarrow Y=$
- P44 LH col eq. (3.14): insert space between LH vertical line of box and "Y"
- P44 LH col under eq. (3.16): close up large space between "where" and "R = range..."
- P44 LH col under eq. (3.17): no indent before "where"
- P44 LH col 2nd line from bottom: no indent before "and for..."
- P44 RH col 2nd line above eq. (3.18): to ϕ_0 \longrightarrow to ϕ_0 i.e., add space after "to"
- P44 RH col 2nd line above eq. (3.20):
denoted by ϕ_0 \longrightarrow denoted by $\hat{\phi}_0$ i.e., add space after "by" and a " \wedge " to " ϕ_0 "
- P45 LH col 2nd line above eq. (3.21): The beginning of this line should read: velocity, V_y , is zero.
i.e., $V_{y,0}$ is wrong and falls on top of the word "zero". " V_y " should go between the commas.
- P45 LH col line below eq. (3.21): where Y_S is \longrightarrow where Y_S is i.e., a space after "where"
- P46 RH col:
eq. (3.31) – (3.33) should have " \approx " instead of " $=$ ".
- P47 RH col 2nd par. line1: the \tilde{X} \longrightarrow the \tilde{X} i.e., a space before \tilde{X}
2nd par. line2: " \tilde{Y} " missing at beginning of the line

2nd par. line2: the \tilde{X} -axis \longrightarrow the \tilde{X} -axis i.e., add space before \tilde{X} , delete after
 2nd par. line3: close up space between " \tilde{Y} " and "- axis"
 2nd par. line4: close up space between " \tilde{X} " and "- axis"

P48 LH col line below eq. (3.45): "Equation" should not be indented and should not be capitalized.
 P48 RH col line 2: angles, can be ... \longrightarrow angles, R_S/R can be i.e., insert " R_S/R ", after "angles,"
 P48 RH col line 4: of ϕ_0 \longrightarrow of ϕ_0 i.e., insert space after "of"
 P48 RH col line 5: insert space after "setting"
 H P48 RH col line 6: for ϕ_0 \longrightarrow for ϕ_0 i.e., insert space after "for"
 P48 RH col line below eq. (3.48): close up space before and after " $\phi_{0_{cr}}$ "
 P48 RH col line above table 3.1: L'Hospital's \longrightarrow "L'Hôpital's (wrong spelling in MS)
 P48 RH col eq. (3.49): $R_S R \longrightarrow R_S/R,$
 $\sec A, \text{or} \longrightarrow \sec A, \text{ or}$ i.e., insert space after comma
 P50 RH col line 3: angles, $\phi_{0_{cr}}$ and \longrightarrow angles, $\phi_{0_{cr}}$ and
 i.e., insert a space after comma and one before "and"
 P50 RH col line 10 [(b)]: If, $\phi_0 = \phi_{0_{cr}}$... \longrightarrow If $\phi_0 = \phi_{0_{cr}}$...
 i.e., replace comma after "If" with a space
 P50 RH col line 13 [(c)]: $v \ 1 \longrightarrow v \approx 1$ i.e., insert " \approx "

Chapter 4 PP52-87

P55 LH col lines 2,3 below Table 4.1: these are a single sentence, so should be joined without space or indent.
 i.e., to disappear in U.S. Army Ordnance"
 P55 LH col 1st paragraph of § 4.3 line 3: , , \longrightarrow , C_D , i.e., insert " C_D " between the , ,
 P55 LH col line 6 from bottom: number, $\rho V I S/\mu,$ number, $\rho V I/\mu,$ i.e., Equation wrong and
 space after first comma
 P55 LH col line 5 from bottom: where $\mu \longrightarrow$ where μ i.e., insert space after "where"
 P55 RH col line 2 below Table 4.1: coefficient, $C_{D_0} \longrightarrow$ coefficient, C_{D_0} i.e., space after 1st comma
 P61 Figure is Figure 4.12 i.e., change 4.11 to 4.12
 P70 RH col line 3 below Fig 4.21: nose, $R=R_T,$ \longrightarrow nose, $R=R_T,$ i.e, insert space after comma
 P70 RH col line 4 below Fig 4.21: parameter $R_T/R \longrightarrow$ parameter R_T/R i.e, put space before R_T/R
 P70 RH col line 6 below Fig 4.21: space between "thus" and " $R_T/R=0$ "
 H P70 RH col line 8 below Fig. 4.21: comma and space between "therefore" and " $0 < R_T/R < 1$ "
 and between "1" and "for",
 i.e., it should read: therefore, $0 < R_T/R < 1$ for
 P70 RH col line 14 below Fig. 4.21: put comma and space after "i.e." to read: (i.e., $R_T=0.5$)
 P78 LH col line 6: delete space between "value" and comma
 P78 LH col 3rd paragraph line 4, in parenthesis:
 $(\log_{10} Re \ 5.0) \longrightarrow (\log_{10} Re \approx 5.0)$ i.e., insert " \approx " between Re and 5.0
 However , \longrightarrow However, i.e., delete space before comma
 P78 LH col 1st par. of § 4.9 line 5: space between comma and " C_{D_0} "
 P78 line 6: space between comma and " $C_{D_{\delta^2}}$ "
 P78 RH col line 4: space between "and" and " $C_{D_{\delta^2}}$ "

P79	bottom of page:	Figure is Figure 4.39	i.e., change 4.38 to 4.39
P80	LH col line 5:	space between "of" and " $C_{D_{\sigma^2}}$ "	
P80	LH col line 15:	space between "to" and " C_{D_0} "	
P80	LH col line 17:	space between "of" and " C_{D_0} "	
P80	LH col line 20:	space between "for" and " C_{D_0} "	
P80	LH col line 4 above § 4.10:	space between "of" and " C_{D_0} "	
P81	bottom of page:	Figure is Figure 4.42	i.e., change 4.41 to 4.42
P83	bottom of page:	Figure is Figure 4.45	i.e., change 4.44 to 4.45
P86	Ref. 1. line 2:	1893 \longrightarrow 1900 (wrong in MS)	

Chapter 5 PP88-97

P89	RH col line 8:	for in ... \longrightarrow for $\sum \vec{F}$ in ...	i.e., insert $\sum \vec{F}$ after "for"
P89	RH col line 4 from bottom:	vector, \vec{g} \longrightarrow vector, \vec{g}	i.e., insert space before " \vec{g} "
P90	LH col line 1 above eq. (5.11):	product of with... \longrightarrow product of \vec{V} with...	
		i.e., insert " \vec{V} " between "of" and "with"	
P90	RH col line 3 of § 5.3:	insert " V_y " before and " V_z " after "and", and insert " V_x " after "component" and before the comma.	
	Line 3 should read:	velocity components V_y and V_z are much smaller than the component V_x for	
P90	RH col line 4 of § 5.3:	crosswind, may \longrightarrow crosswind, V_z may	i.e., insert " V_z " before "may"
P90	RH col eq. (5.14):	delete the "1" after the "+ ..." and which is in front of the "]"	
P90	RH col 3rd line above eq. (5.16):	insert space between "approximation" and " $V \approx V_x$ "	
		i.e., to read: "approximation $V \approx V_x$ "	
P91	LH col eq. (5.21):	$V'_x = \hat{C}_D^* V_x x \longrightarrow V'_x = \hat{C}_D^* V_x$	i.e., delete "x" after " V_x "
P91	LH col eq. (5.24):	middle integral sign \int should be larger	
	eq. (5.25):	left hand integral sign \int should be larger	
	eq. (5.26), in denominator before large [:	$V_{x_0} \longrightarrow V_{x_0}^2$ (wrong in MS), both integral signs larger	
	eq. (5.27):	left hand integral sign \int should be larger	
P91	LH col 4th line from bottom:	$S_1, S_2, \text{ and } S_3 \longrightarrow s_1, s_2, \text{ and } s_3$	i.e., change S to lc
P91	RH col eq. (5.29):	left hand integral sign \int should be larger	
P91	RH col eq. (5.31):	left hand integral sign \int should be larger	
P91	RH col eq. (5.32):	left hand integral sign \int should be larger	

P92	LH col eq. (5.33):	left hand integral sign \int	should be larger	
P92	LH col eq. (5.33):	the upper limit of the 2nd (RH) integral must be t,	not an arbitrary dummy variable s_2	
P92	LH col eq. (5.39), 2nd term in []:	$-\frac{1}{V_{x_0} k_1 t}$	\longrightarrow	$+\frac{1}{V_{x_0} k_1 t}$ i.e., — to +
P92	LH col eq. (5.39):	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L
	LH col eq. (5.39), in the denominator:	$(1 + V_{x_0} k_1 t)^2$	\longrightarrow	$(V_{x_0} k_1 t)^2$
P92	RH col eq. (5.43):	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L
P92	RH col eq. (5.44):	$\left(1 - \frac{V_{x_0}}{V_x}\right)$	\longrightarrow	$\left(1 + \frac{V_{x_0}}{V_x}\right)$ (wrong in MS)
P92	RH col eq. (5.45), last term:	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L
P92	RH col line 5 of Example 5.1:	0.452."	\longrightarrow	0.452," i.e., replace the period after 0.452 by a comma
P92	RH col eq. (5.47):	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L
P93	LH col line 3 of Example 5.2:	and Y_0	\longrightarrow	and Y_0 i.e., insert space after "and"
P93	LH col line 8 of Example 5.2:	and V_x	\longrightarrow	and V_x i.e., insert space after "and"
P93	RH col line under eq. (5.56):			no indent before "where"
P93	RH col eq. (5.57):	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L
P93	RH col eq. (5.58):	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L
H		$ln\left(1 - V_{x_0}/V_x\right)$	\longrightarrow	$ln\left(\frac{V_x}{V_{x_0}}\right)$ i.e., the quantity in () is different
P93	RH col eq. (5.59):	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L (2 places)
H P94	LH col eq. (5.63)	k_3/\sqrt{M}	\longrightarrow	$k_3/\sqrt{V_x}$
P94	RH col eq. (5.67):	V_x'	\longrightarrow	$V_x =$ i.e., delete the "prime"
P95	RH col Table 5.4:	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L (2 places)
P96	Table 5.5:	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L (1 place)
P96	Table 5.6:	$1n$	\longrightarrow	ln i.e., the numeral 1 should be a lc italic L (3 places)
H P97	Tables 5.7, 5.8, 5.9 last col:	K_3/M	\longrightarrow	K_3/\sqrt{M} i.e., replace M by \sqrt{M}

Chapter 6 PP98-156

P98	LH col 2nd paragraph, line 2:	(Ref. 2b)	\longrightarrow	(Ref. 2a, Ref. 2b) (wrong in MS)
P98	RH col eq. (6.1), 2nd eq:	$V_x \approx V \cos \phi$	\longrightarrow	$V_x \approx V \cos \phi_0$ i.e., replace ϕ by ϕ_0
M P98	RH col eq. (5.8):	insert = after $\frac{dV_x}{dt}$		i.e., $\dot{V}_x = \frac{dV_x}{dt} = -\hat{C}_D^* V V_x$
M P98	RH col eq. (5.9):	insert = after $\frac{dV_y}{dt}$		i.e., $\dot{V}_y = \frac{dV_y}{dt} = -\hat{C}_D^* V V_y - g$
P98	RH col eq. (6.3):	v	\longrightarrow	V i.e., $\frac{dv}{dt} \longrightarrow \frac{dV}{dt}$

P99 LH col eq. (6.10): $x \longrightarrow X$ i.e., $\frac{dx}{dV} \longrightarrow \frac{dX}{dV}$

M P99 LH col eq. (6.13): insert = after V' i.e., $V' = \frac{dV}{dX} = \frac{\dot{V}}{V} \sec \Phi_0 = -\hat{C}_D^* V \sec \Phi_0$

P100 LH col line above eq. (6.34): insert "(also see Ref. 5a,b,c)" between "author" and comma, i.e.,
"to the author (also see Ref. 5a,b,c), gives"

P100 LH col last line: where $\phi_0 \longrightarrow$ where ϕ_0 i.e., add space after "where"

H P100 RH col line 1: insert "≈" between "and β " and "1", i.e., "and $\beta \approx 1$ "

H P100 RH col and everywhere else in the book: **NO periods after abbreviated unit names (e.g., "lb" not "lb.", "in" not "in.", etc.)**

P100 RH col {lines 12 – 14} below eq. (6.41): in.2/lb. \longrightarrow in²/lb
line 15 below eq. (6.41): in.4/lb.2 \longrightarrow in⁴/lb²

P101 LH col 6th line from bottom (in ρ_0): lb./ft.3 \longrightarrow lb/ft³ i.e., the 3 is a superscript

P103 LH col line 14 (in the eq. for C_8) (.302)² \longrightarrow (.308)²

P103 LH col lines 7-9 of Example 6.2: in.2/lb. \longrightarrow in²/lb
line 10 of Example 6.2: in.4/lb.2 \longrightarrow in⁴/lb²

P104 Figure is Figure 6.2 i.e., change 6.1 to 6.2

P106 RH col line 7 under § 6.6: insert "(page 113)" between "chapter" and "lists"

Facing P113: mark page number 112 at the bottom of Table 6.1

P113 Table 6.11. Some of the headings are misplaced to the right. The headings should read:

Reference Diameter (Inches)	Projectile Weight (Grains)	Nominal Weight (Grains)	Velocity Interval (fps)	Form Factor i	Ballistic Coefficient C (lb/in ²)	Drag Function
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PP114-156 In the Tables of the Primary Siacci Functions, the order of the entries is velocity V, space function S(V), altitude function A(V), trajectory inclination function I(V), and time of flight function T(V). For the G₁ Drag Function (PP 119-124), G₆ Drag Function (PP 135-140), G₇ Drag Function (PP 140-145), and G_{SP} Drag Function (PP 151-156), the I(V) headings are mislabeled as T(V), leaving two columns labeled T(V).

P156 LH col Ref. 1a 1st line: 1₋ \longrightarrow 1^o i.e., a "°" instead of "-"

P156 LH col Ref. 3: "1953" in line 3 should be moved up behind "Press," in line 2
i.e., "Denver Press, 1953"

Chapter 7 PP157-164

Everywhere in this Chapter: replace all uc subscripts X, Y, Z by lc subscripts x, y, z, respectively; most or all are listed below. These are inconsistent in the MS

P157 LH col lines 3-5 2nd par. of § 7.1: uc subscripts X, Y, Z \longrightarrow lc subscripts x, y, z, respectively

P157 LH col line 2 under § 7.2: insert space between comma and "V" i.e., "velocity \vec{V} , in"

P158 LH col line 1: change italic "and" to roman "and"

P158 LH col eq. (7.3): $V_z \longrightarrow V_z$ i.e., subscript z should be lc

P158 LH col at eq. (7.11): no indent before "where"

- P158 RH col eq. (7.14), middle inequality: $V_x \longrightarrow V_x$ i.e., subscript x should be lc
- P159 LH col line under eq. (7.23): no indent before "where"
- P159 LH col eq. (7.25): remove $\frac{V_x}{V_{x_0}}$ from right hand side of equation just to the right of the =
- P159 LH col line below eq. (7.26): space between comma and " $|V_z|$ " i.e., " $\text{for all } X, |V_z| \text{ is}$ "
with uc subscript Z replaced by lc subscript z
- P159 LH col lines 2, 3 below eq. (7.26): uc subscript Z replaced by lc subscript z in two places: W_z, V_z , respectively
- P159 LH col line 1 above eq. (7.27): uc subscript Z replaced by lc subscript z in W_z
- P159 RH col 2nd line above Table 7.1: uc subscript Z replaced by lc subscript z in W_z
- P160 RH col line above eq. (7.30): $f_{Wz_i} \longrightarrow f_{Wz_i}$ i.e., subscript z should be lc
- P160 RH col 1st line of eq. (7.30): $V_{x_i} \longrightarrow V_{x_i}$ i.e., subscript x should be lc
- P160 RH col 2nd line of eq. (7.30): $V_{x(i+1)} \longrightarrow V_{x(i+1)}$ (see eq. (7.29))
- P160 RH col line 4 below eq. (7.30): caliber \longrightarrow caliber (wrong in MS)
- P160 RH col line 4 above Table 7.2: $V_{x_i} \longrightarrow V_{x_i}$ i.e., subscript x should be lc
 $t(x_i) \longrightarrow t(X_i)$ X should not be a subscript
- P160 RH col Table 7.2 3rd heading: $V_{x_i} \longrightarrow V_{x_i}$ i.e., subscript x should be lc
- P160 RH col Table 7.2 6th heading: $f_{Wz_i} \longrightarrow f_{Wz_i}$ i.e., subscript z should be lc
- P162 LH col lines 2,3 below eq. (7.35): uc subscript X replaced by lc subscript x in two places: W_x, V_x , respectively
- P162 LH col eq. (7.38): the 2 instances of $-\int_0^X \hat{C}_D^* ds_1$ should be the same (larger) size
- P162 RH col eq. (7.40): the 3 instances of $-\int_0^X \hat{C}_D^* ds_1$, should be the same (larger) size
- H** RH col eq. (7.40): there should be a ds_2 just ahead of the last ")" (missing from MS)
- P162 RH col eq. (7.43): $V_x [V_x] \quad V_x^2 \longrightarrow V_x [V_x] \approx V_x^2$ " \approx " missing between " $V_x [V_x]$ " and " V_x^2 "
- P162 RH col eq. (7.45): $[V_y] V_y \longrightarrow [V_y] \approx V_y$ " \approx " missing between " $[V_y]$ " and " V_y "
- P163 LH col line below eq. (7.53): $V_Y \longrightarrow V_y$ i.e., subscript y should be lc
- P164 Tables 7.4 and 7.5 headings: $V_X \longrightarrow V_x$ i.e., subscripts x and y are lower case
 $V_Y \longrightarrow V_y$ for consistency with Table 7.3

Chapter 8 PP165-186

- P166 LH col line under eq. (8.9): no indent before "where"
- P167 RH col eq. (8.24): delete the "- 78" i.e., eq. (8.24) should read
- $$f_{\rho(R_H)} = 1 - .00378 R_H \left(\frac{P_{WV}}{29.92} \right) \quad (8.24)$$
- H** P168 LH col 2 line 2 below Table 8.1: vapor pressure at the local \longrightarrow vapor pressure at saturation at the local
- P168 LH col eq. (8.26): delete the "-78" i.e., eq. (8.26) should read
- $$f_{a_0(R_H)} = 1 + .0014 R_H \left(\frac{P_{WV}}{29.92} \right) \quad (8.26)$$
- H** P168 2nd col of Table 8.2: Water Vapor Pressure \longrightarrow Water Vapor Pressure At Saturation
H (In., Hg) \longrightarrow (In, Hg)
- P176 LH col line 13 below Table 8.4: above: \longrightarrow above. (MS not consistent with layout of book)

P176	RH col line 4 below Table 8.4:	$\beta, \longrightarrow \beta$	i.e., delete comma after β
P178	LH col line 1:	at the beginning of the line, delete space between " $\beta = \sqrt{\sec \phi_0}$ " and the comma	
P178	RH col eq. (8.29):	$-V_x \longrightarrow V_x$	
H P178	RH col line 5 from bottom:	$V_x \text{ and } V_z \longrightarrow V_x \text{ and } V_z$	i.e., subscripts x and z are lc
P179	LH col eq. (8.33):	$\dot{V}_x \longrightarrow V_x$	
P179	RH col eq. (8.40):	$\sqrt{Y_s^3 g} \longrightarrow \sqrt{Y_s^3/g}$	i.e., insert /
P179	LH col eq. (8.45):	lc subscripts x to uc subscripts X and lc "oh" to "zero"	i.e.,
		$V_x = V_{x0} \longrightarrow V_X = V_{X0}$	
P180	LH col eq. (8.53):	lc subscripts x to uc subscripts X and lc "oh" to "zero"	i.e.,
		$V_{x0} \longrightarrow V_{X0}$	
P180	LH col line below eq. (8.53):	insert " \geq " between "cos L" and "0"	i.e., $\cos L \geq 0$
P180	RH col Table 8.8, headings of col 3 and col 4:	$VXO \longrightarrow V_{X0}$	
P181	RH col line 5 above Figure 8.16:	$CD \longrightarrow C_D$	
P182	Table 8.11, col 4:	insert " Δ " before "-Range"	i.e., Δ -Range
P182	Table 8.11, col 5:	insert " Δ " before "-Deflection"	i.e., Δ -Deflection
P183	LH col line 3:	insert " Δ " in front of "'s "	i.e., Δ 's
P183	LH col line 3:	delete space between "dif" and "ferences"	i.e., differences
P183	LH col paragraph 3 line 2:	insert " Δ " before "-Range"	i.e., Δ -Range
P183	LH col paragraph 3 line 2:	insert " Δ " before "-Deflection"	i.e., Δ -Deflection

Errors in MCTRAJ Computer Program

P183 line numbers:

10	MCTRAL.BAS	\longrightarrow	MCTRAJ.BAS
90	COERilCIENT	\longrightarrow	COEFFICIENT
110	LBON 2	\longrightarrow	LB/IN 2
130	MINtEIES	\longrightarrow	MINUTES
150	Iso	\longrightarrow	150
180	FIR]NG	\longrightarrow	FIRING
190	OmON	\longrightarrow	OPTION
340	(LINE 2)		
	(V [^] -FTIsEc)	\longrightarrow	(VZ--FT/SEC)

P184

520	COE "ICIENT	\longrightarrow	COEFFICIENT
530	[RETURN 1	\longrightarrow	[RETURN]
580	VVHICH	\longrightarrow	WHICH
680	M(J'ABS(M (J))	\longrightarrow	M(J) = ABS(M(J))
1040	DINT=#	\longrightarrow	DINT = 1#
1100	TK1C	\longrightarrow	TK1=
1130	W1	\longrightarrow	VV1
1200	W1	\longrightarrow	VV1

1290	(LBON 2)	→	(LB/IN 2)	
1520	IFN1	→	IF NI	i.e., insert a space
1660	lillS	→	THIS	
1720	TRA-TECTORY	→	TRAJECTORY	
1760	INITIALT7:F.	→	INITIALIZE	

P185

1830	R4--	→	R4 =	
1900	22	→	(22	
1910	22	→	(22	
2070	PR7--	→	PR =	
2200	LB1N2	→	LB/IN 2	
H	1NCHES	→	INCHES	
2220	1NT	→	INT	
2400	Q(D	→	Q(1);	
	all commas → semi colons			(wrong in MS)
	all lower case L → 1			i.e., numeral one
2510	W1	→	VVI	
2550	C4-C3*C1*B 1*	→	C4=(C3*C1*B1*	
2550)fV3	→))/V3	
2560	W1	→	W1	i.e., lower case L to numeral one
2640	V8--	→	V8=	
2680	Tk1+Tk2*H1	→	Tk1+Tk2*H1	i.e., lower case L to numeral one
2690	W1	→	VV1	
2700	B2fV1	→	B2/V1	
2730)fV6	→))/V6	
2750	GfV6	→	G/V6	
2810	fB2	→	/B2	
2840	H1	→	H1	i.e., lower case L to numeral one
2850	D1	→	D1	i.e., lower case L to numeral one
2910	--	→	=	
2920	--	→	=	
2940	--	→	=	
2970	--	→	=	
3000	--	→	=	

P185

3040	3040IFL=	→	3040 IF L=	
3080	T(N=	→	T(N) =	
3100	W(N=	→	W(N) =	
3140	all commas → semicolons			(wrong in MS)
3280	IF P = 2 =	→	IF J ≥ 2	

P186

3340	(H3-H(O*(E(J-1)-(J)/	→	(H3-H(J))*(E(J-1)-E(J)/
3360	WIIIH	→	WITH
3590	3590NEXTI	→	3590 NEXT I
3680	LB1N2	→	LB/IN2

- 3750 (INCHES) → (INCHES)
 3810 line 2: (1N) → (IN)
 3840 all commas to semicolons (wrong in MS)
 3850 NEXTN → NEXT N
 4040 $x_1 < M(I+1)$ → $X_1 < M(I+1)$
 4070 change both (I+1) to (I+1) i.e., **lower case L to numeral one**

Chapter 9 PP187-220

- P187 LH col line 9 under § 9.1: "(Ref. 2)" shouldn't be indented but follow after "Kent" on line 8
 i.e., "Kent (Ref. 2) at"
- P188 RH col line 12: delete space between " $I_x p \bar{x}$ " and comma
- P188 RH col line 4 above eq. (9.3): I_Y → I_y i.e., change cap Y to lc y
- P188 RH col 2nd line above eq. (9.3): the sentence after "mass." is unclear unless an " \vec{H} " is inserted between
 "momentum" and "is" i.e., "The total projectile vector angular momentum \vec{H} is therefore...."
 (not in MS, but in the next-to-last draft)
- P189 LH col line 2: " $\frac{d\bar{x}}{dt}$ " in line 2 extends into line 3. It should be written " $d\bar{x}/dt$ " to avoid this.
- P189 RH col line 15: $d^{2/4}$ → $\pi d^{2/4}$ i.e., insert π , move superscript next to d
- P189 RH col 8th line from bottom: $C_{M_{\dot{\alpha}}}$ → $C_{N_{\dot{\alpha}}}$ i.e., change M to N to get $(C_{N_q} + C_{N_{\dot{\alpha}}})$
- P190 RH col line 2 under eq. (9.15): $v_2 =$ → $v^2 =$ i.e., change subscript to superscript
- M P190 RH col 5th eq. below eq. (9.15): $p = \frac{I_x}{I_y} (\vec{h} \bullet \vec{x})$ → $p = \frac{I_y}{I_x} (\vec{h} \bullet \vec{x})$ i.e., switch subscripts x, y
- P191 LH col Table 9.1 (heading of RH col): $[E_2-X_2]$ → $[E_2-X_2]$ (Inches) i.e. units missing
- P192 LH col 1st paragraph line 1: vector, \vec{x} , → vector, \vec{x} , i.e., change spacings by commas
- P192 LH col 1st paragraph line 2: \vec{y} and \vec{z} → \vec{y} and \vec{z} i.e., put space before and after "and"
- P192 LH col 1st paragraph line 6: $(\vec{z} \times \vec{x}) .$ → $(\vec{z} \times \vec{x}) .$ i.e., delete space before period
- P192 LH col eq. (9.23), right side of equation, center expression: $\sin(\theta_0 + \alpha_0)$ → $\sin(\phi_0 + \alpha_0)$
- C P192 LH col rhs of eq. (9.24), center expression: replace $\cos(\phi_0 + \alpha_0)$ by $\cos^2(\phi_0 + \alpha_0)$ (wrong in MS)
 i.e., $\cos^2(\theta_0 + \beta_0) \cos(\phi_0 + \alpha_0) + \sin^2(\theta_0 + \beta_0)$ → $\cos^2(\theta_0 + \beta_0) \cos^2(\phi_0 + \alpha_0) + \sin^2(\theta_0 + \beta_0)$
- P192 LH col eq. (9.26): there should be a box around equation, as in MS
- C P192 LH col line above eq. (9.27): replace that line by the following clarifying material:
 The vector $d\vec{x}_0/dt$ is given by:
- $$d\vec{x}_0/dt = \vec{\omega}_0 \times \vec{x}_0 = (\vec{\omega}_0 \bullet \vec{z}_0) \vec{y}_0 - (\vec{\omega}_0 \bullet \vec{y}_0) \vec{z}_0 \quad (9.27a)$$
- where the components of the column vector $\vec{\omega}_0$ are $(\omega_{1_0}, \omega_{2_0}, \omega_{3_0})$ and are in the earth-fixed system. If ω_{z_0} and ω_{y_0} are defined by
- $$\omega_{z_0} = \vec{\omega}_0 \bullet \vec{z}_0 \quad \text{and} \quad \omega_{y_0} = \vec{\omega}_0 \bullet \vec{y}_0 \quad (9.27b)$$
- then $d\vec{x}_0/dt$ is given by:
- P192 RH col eq. (9.31), right hand side, center expression: $+x_{1_0} \dot{x}_{3_0}$ → $-x_{1_0} \dot{x}_{3_0}$ i.e., + to -

- P192 RH col eq. (9.31), right hand side, bottom expression: $+x_{2_0}\dot{x}_{1_0} \longrightarrow -x_{2_0}\dot{x}_{1_0}$ i.e., + to -
- P192 RH col line 3 above eq. (9.32): " $\frac{d\bar{x}}{dt}$ " extends into the line below. Better written as " $d\bar{x}/dt$ "
- P193 RH col line 2: $f(x,y) \longrightarrow f(x,y)$ i.e., delete space between "f" and "("
- P194 LH col line 3 below eq. (9.37): value, \bar{x}_0 , \longrightarrow value, \bar{x}_0 , i.e., change spacings by commas
- P194 LH col line 3 above Fig 9.2: product, $\bar{x} \bullet \bar{x}$ \longrightarrow product, $\bar{x} \bullet \bar{x}$ i.e., insert space after comma
- P196 LH col line 2 below Fig 9.5: yaw rate,, \longrightarrow yaw rate, ω_{y_0} , i.e., insert ω_{y_0} between commas
- P196 LH col line 14 below fig 9.5: angle, α , \longrightarrow angle, α , i.e., change spacings by commas
- P200 LH col line 6 (below Table 9.4): of C_{M_α} \longrightarrow of C_{M_α} i.e., insert space after "of"
- P201 RH col line 8: attack, α_t , \longrightarrow attack, α_t , i.e., change spacings by commas
- P201 RH col line 10: where α \longrightarrow where α (insert space and use smaller font for α)
- P201 RH col line 6 above Fig 9.11: attack,, \longrightarrow attack, α_t , i.e., insert α_t
- P202 LH col line 5: attack, α_t , \longrightarrow attack, α_t , i.e., change spacings by commas
- H** P202 LH col line 4 from bottom: put parens around (α_R) and delete 1 space between it and "component"
This would read much better if parts of lines 5 and 4 from bottom were changed to read:
a significant vertical (α_R) "pitch of repose" component,
- P202 RH col line 13: attack,, \longrightarrow attack, α_t , i.e., insert α_t between commas
- P204 LH col line 17: attack,, \longrightarrow attack, α_t , i.e., insert α_t between commas
- H** P204 LH col 3rd paragraph line 1: α_t , against \longrightarrow α_t , against i.e., delete space before comma
- P204 LH col line 8 from bottom: attack, α_t , \longrightarrow attack, α_t , i.e., change spacings by commas
- P212 RH col line below eq. (9.39): vector \bar{x} \longrightarrow vector \bar{x} i.e., insert space after "vector"
- P212 RH col line 2 below eq. (9.39): delete spaces before "and" and before "is"
- H** P213 LH col line 3 below eq. (9.44): $(d\bar{\alpha}_R/dt)$, \longrightarrow $(d\bar{\alpha}_R/dt)$, i.e., delete space before comma
- P213 LH col line 3 below eq. (9.44): $\bar{\alpha}_R$. \longrightarrow $\bar{\alpha}_R$. i.e., delete space before period
- H** P213 RH col rhs of eq. (9.49): $C_{M\alpha}$ \longrightarrow C_{M_α} i.e., α is a subscript to subscript M
- P213 RH col line under eq. (9.49): no indent before "where"
- P214 LH col eq. (9.57): $C_{M\alpha}$ \longrightarrow C_{M_α} i.e., α is a subscript to subscript M
- P214 RH col eq. (9.60): $\frac{-\rho S d^2 v}{2I_x} p C_{l_p} \longrightarrow \frac{+\rho S d^2 v}{2I_x} p C_{l_p}$ i.e., change - to +
- P214 RH col line 3 above eq. (9.62): show that and in \longrightarrow show that $h_L \ll 1$ and $h_M \ll 1$ in
- P216 LH col line 19 from bottom: $|\bar{\alpha}_R|$,predicted \longrightarrow $|\bar{\alpha}_R|$, predicted i.e., delete space before comma
- P216 RH col line 7 under example 9.5: repose, $|\bar{\alpha}_R|$ \longrightarrow repose, $|\bar{\alpha}_R|$ i.e., insert space after comma
- P217 headings just under "contour sketch": C_{l_α} \longrightarrow C_{L_α} i.e., uc subscript L

P218 RH col line 8 under notes: $C_{l_\alpha} \longrightarrow C_{L_\alpha}$ i.e., uc subscript L
 P218 col 7 under the drawing "Contour Sketch": last entry (2.5) doesn't line up with others by one space

P220 2nd table under the drawing "Contour Sketch" and to left of "Notes":
 last 2 entries of col 3 (.9, .95) belong after the .85 in col 5;
 -468 of col 4 belongs under -357 in col 6;
 -745 of col 5 belongs under the moved -468 in col 6

P220 The references given for chapter 9 are an exact duplicate of the references for chapter 10 (on P239). The chapter 9 references are completely missing! The final draft of the Chapter 9 references is appended at the end.

H In Chapters 10 through 14, there are two inconsistent representations of C^* with a subscript $C_{whatever}^*$ and $C_{whatever}^*$.
 The latter should be used everywhere.

Chapter 10 PP221-239

P221 RH col eq. (10.2): $m \frac{d\vec{H}}{dt} \longrightarrow \frac{d\vec{H}}{dt}$ i.e., no "m"
 P221 RH col 2nd line from bottom: $\vec{V}, \longrightarrow \vec{V},$ i.e., close up space before comma
 P223 LH col 3rd line above eq. (10.4): to \vec{x} \longrightarrow to \vec{x} i.e., insert space after "to"
 P223 LH col eq. (10.5): minus sign missing
 i.e., $Drag Force = \frac{1}{2} \rho S C_D V \vec{V} \longrightarrow Drag Force = -\frac{1}{2} \rho S C_D V \vec{V}$
 P223 LH col eq. (10.7): $v^2 \longrightarrow V^2$ i.e., uc V
 P223 LH col eq. (10.10) 1st line: $C_{M_{p\alpha}} \longrightarrow C_{M_{p\alpha}}$
 2nd line: $C_{M_{pa}} \longrightarrow C_{M_{p\alpha}}$ i.e., $a \longrightarrow \alpha$ (alpha)
 P223 RH col line 15: $S=d^2/4 \longrightarrow S=\pi d^2/4$ i.e., insert π , move superscript next to d
 P224 RH col line 1: comma after \vec{i} i.e., comma after 2nd term of 3
 P224 RH col 2nd line above eq. (10.22): vector with \vec{i} both \longrightarrow vector \vec{i} with both i.e., switch words
 P225 LH col line after eq. (10.31): no indent of line beginning with "Equation"
 P225 LH col eq. (10.32): $\frac{V}{D} \longrightarrow \frac{V}{d}$ i.e., change to lc d
 P225 LH col eq. (10.37), 2nd line, 1st term: $I_y \left(\frac{d\vec{\omega}}{dt} \bullet \vec{x} \right) \longrightarrow -I_y \left(\frac{d\vec{\omega}}{dt} \bullet \vec{x} \right)$ i.e., insert "-"
 P225 RH col eq. (10.38), 2nd line, 1st term: $I_x p(\vec{\omega} \times \vec{x}) \longrightarrow +I_x p(\vec{\omega} \times \vec{x})$ i.e., insert "+"
 P225 RH col eq. (10.38), 3rd line, 1st term: insert "+"
 i.e., $\frac{1}{2} \rho S d C_{M_\alpha} V^2 (\vec{i} \times \vec{x}) \longrightarrow +\frac{1}{2} \rho S d C_{M_\alpha} V^2 (\vec{i} \times \vec{x})$
 P225 RH col eq. (10.38), 4th line, 1st term: insert "+" and lower the subscript "q"
 i.e., $\frac{1}{2} \rho S d^2 C_{M_q} V \left(\vec{x} \times \frac{d\vec{x}}{dt} \right) \longrightarrow +\frac{1}{2} \rho S d^2 C_{M_q} V \left(\vec{x} \times \frac{d\vec{x}}{dt} \right)$

- P225 RH col eq. (10.38), 4th line, 2nd term: $C_{M\delta} \longrightarrow C_{M_{\dot{\alpha}}}$ i.e. subscript $\dot{\alpha}$
- P225 RH col line below eq. (10.40): $and \longrightarrow and$ i.e., change ital. "and" to roman "and"
- P225 RH col eq. (10.41), 1st line, 1st term: $\left(\bar{x} \frac{d^2 \bar{x}}{dt^2}\right) \longrightarrow \left(\bar{x} \times \frac{d^2 \bar{x}}{dt^2}\right)$
- P225 RH col eq. (10.41), 2nd line, last term: $p C_{M_{p\alpha}} \longrightarrow P C_{M_{p\alpha}}$ i.e. uc p and c
- P225 RH col eq. (10.41), 3rd line, last term: $C_{M_{\delta}}^* \longrightarrow C_{M_{\dot{\alpha}}}^*$ i.e. subscript $\dot{\alpha}$
- P225 RH col 5th line from bottom, middle equation: $C_{M_{\alpha}}^* \longrightarrow C_{M_{p\alpha}}^*$ i.e. subscript $p\alpha$
- P225 RH col 4th line from bottom: $C_{M_{\alpha}}^* = \frac{\rho S d}{2m} C_{M_{\alpha}} \longrightarrow C_{M_{\dot{\alpha}}}^* = \frac{\rho S d}{2m} C_{M_{\dot{\alpha}}}$ i.e. subscripts $\dot{\alpha}$
i.e., insert dot over both subscripts α
- P227 LH col line 9: $of\alpha \longrightarrow of \alpha$ i.e., insert space after "of"
- P227 RH col line 4, 3rd term of eq. (10.64): $P(\beta' - \alpha\alpha')$ \longrightarrow $P(\beta' - i\alpha')$
- P227 RH col eq. (10.64) 1st, 3rd terms after = sign: $k_{\gamma}^{-2} \longrightarrow k_y^{-2}$ i.e., change subscript γ to y
- P227 RH col eq. (10.65) 1st, 3rd terms after = sign: $k_{\gamma}^{-2} \longrightarrow k_y^{-2}$ i.e., change subscript γ to y
- P227 RH col eq. (10.66); $+ -iPG \longrightarrow = -iPG$ i.e., change + after ξ to =
- P227 RH col 2nd eq. (for P) below eq. (10.66): $I_{\gamma} \longrightarrow I_y$ i.e., change subscript γ to y
- P227 RH col 3rd eq. (for M) below eq. (10.66): $k_{\gamma}^{-2} \longrightarrow k_y^{-2}$ i.e., change subscript γ to y
- P228 LH col last line: $V_0is \longrightarrow V_0 is$ i.e., insert space before "is"
- P229 LH col eq. (10.79): should be a box around the equation, as in the MS
- P230 LH col line 14: $\alpha+i\beta$, \longrightarrow $\alpha+i\beta,$ i.e., delete spaces before comma
- P230 LH col eq. (10.85): in denominator $p \longrightarrow \rho$ (lc Greek rho)
- P231 LH col table 10.1: The last 2 lines should be separated from the third from last by a horizontal line as in the MS
- P231 LH col eq. (10.90): should be a box around the equation, as in the MS
- P231 LH col eq. (10.91): should be a box around the equation, as in the MS
- P232 LH col eq. (10.92): The minus sign in front of the right hand term is so close to the fraction bar that it is hard to see.
- P232 RH col last 3 lines of eq. (10.94): These lines should start at the same indent as the previous ϕ_S line
- P232 RH col line below eq. (10.97): $|PT| \ll |M|$, \longrightarrow $|PT| \ll |M|,$ i.e., delete spaces before comma
- P233 LH col 2nd paragraph of § 10.9 1st line: λ_F and \longrightarrow λ_F and i.e., insert space before "and"
- P233 LH col 2nd paragraph of § 10.9 2nd line, λ_S , \longrightarrow $\lambda_S,$ i.e., delete spaces before comma
- P233 LH col line 5 above eq. (10.106): $(C_{M_q} + C_{M_{\dot{\alpha}}})$, \longrightarrow $(C_{M_q} + C_{M_{\dot{\alpha}}})$, i.e., delete space before comma
- P233 LH col eq. (10.107): This equation should be in a box, as in the MS.
- P234 RH col eq. (10.115), 2nd term: $e^{i\phi_s} \longrightarrow e^{i\phi_S}$ i.e., uc S
- H** $i\phi'_s \longrightarrow i\phi'_S$ i.e., uc S
- P234 RH col line below eq. (10.115): $S=0 \longrightarrow s=0$ i.e., lc s
- P235 RH col line 17: insert space after semicolon

- P235 RH col line 18: insert space after semicolon
- P235 RH col line 19: insert space before "radians/" in two places
- P235 RH col line 20: percaliber \longrightarrow per caliber in two places
- P237 LH col line under eq. (10.127): θ , \longrightarrow θ i.e., delete space before comma
- P237 LH col line 9: $\vec{k} \bullet \vec{J}$ \longrightarrow $\vec{k}' \bullet \vec{J}$ i.e., add the prime to \vec{k}
- B** P237 RH col eq. (10.128) right hand side: $iAe^{i\phi}$ \longrightarrow $Ae^{i\phi}$ i.e., delete the factor i (wrong in MS)
- P237 RH col eq. for A below eq. (10.128): square brackets are missing, i.e., it should read

$$A = \frac{\rho S d}{2m} \left[k_y^{-2} (C_{m_0} + i C_{n_0}) + (\phi' - 1)(C_{y_0} + i C_{z_0}) \right]$$

- P237 RH col line 12, 2nd equation: $\phi = \int_0^s \phi' ds_1$ \longrightarrow $\phi = \int_0^s \phi' ds_1$ i.e., lc "s" in limit of integral
- P237 RH col line 13: no indent
- B** P237 RH col eq. (10.131), numerator of RHS: $-iA$ \longrightarrow $-A$ i.e., delete the factor i (wrong in MS)
- P238 LH col line 13: ξ , \longrightarrow ξ i.e., delete space before comma
- P238 LH col line 14: amplitude, δ , \longrightarrow amplitude, δ i.e., add space between comma and δ
- P238 LH col 2 lines below eq. (10.32): cant, δ_F \longrightarrow cant, δ_F i.e., insert space
- P238 RH col line 2: $\tilde{\Psi} - \Phi = \Psi$ \longrightarrow $\tilde{\Psi} - \Phi = \Psi^*$ i.e., add asterisk

Chapter 11 PP240-251

- H** P241 LH col lines 3,4: $S=d^2/4$ \longrightarrow $S=\pi d^2/4$ i.e., insert Greek π and move ² closer to d
- P241 LH col 2 lines below eq. (11.3): $\vec{i} \bullet \vec{x} = \gamma$, \longrightarrow $\vec{i} \bullet \vec{x} = \gamma$, i.e., delete space before comma
- H** P241 LH col 3 lines below eq. (11.5): ϕ and θ , \longrightarrow ϕ and θ , i.e., change spacings
- P242 LH col line under eq. (11.21): definition into \longrightarrow definition $(V'/V) = -C_D^*$ into
- P242 LH col line under eq. (11.26): $i = \sqrt{-1}$, \longrightarrow $i = \sqrt{-1}$, i.e., delete space before comma
- P242 LH col 2nd line under (11.26): $\xi = \alpha + i\beta$, \longrightarrow $\xi = \alpha + i\beta$, i.e., delete space before comma
- P242 RH col, K_{s_0} term of eq. (11.30): all s are cap S except the last one after the ")" 3 instances
- $$K_{s_0} e^{i\phi_{s_0}} e^{(\lambda_s + i\phi'_s)s} \longrightarrow K_{S_0} e^{i\phi_{S_0}} e^{(\lambda_S + i\phi'_S)s}$$
- P243 RH col in 1st term of 2nd line of eq. (11.38): $-\frac{1}{\phi_s'^2}$ \longrightarrow $-\frac{1}{\phi_S'^2}$ i.e., uc subscript S
- P243 RH col line below eq. (11.38): coefficient, $C_{L_\alpha}^*$, \longrightarrow coefficient, $C_{L_\alpha}^*$, i.e., add space before C
- P244 RH col eq. (11.45): $\phi'_F - \phi'_S$ \longrightarrow $\phi'_F \phi'_S$ i.e., a product, as in MS
- P244 RH col eq. (11.46): $P = \phi'_F - \phi'_S$ \longrightarrow $P = \phi'_F + \phi'_S$ i.e., + as in MS
- P245 LH col line 9 below Fig. 11.2: yaw, ξ_0 , \longrightarrow yaw, ξ_0 , i.e., change spacings by commas
- P245 LH col last line: that ξ_0 \longrightarrow that ξ_0 i.e., insert space after "that"
- P246 RH col last term of eq. (11.49): K_{s_0} \longrightarrow K_{S_0} i.e., cap S
- P246 RH col eq. (11.49): This equation should be in a box, as in the MS.

- P248 LH col line 4 below Fig 11.4: $(\lambda_S \longrightarrow (\lambda_S$ unclear unless insert space between "(" and "λ"
- P248 RH col line 10 from bottom: determine $C_{L_\alpha} \longrightarrow$ determine C_{L_α} i.e., insert space before C_{L_α}
- P249 LH col line 9 from bottom: definition, $M \longrightarrow$ definition, M i.e., insert space after comma
- P249 LH col eq. (11.57): This equation should be in a box, as in the MS.
- P249 RH col line 2 above eq. (11.58): set $\phi' \longrightarrow$ set ϕ' i.e., insert space after "set"
- P250 RH col line 2 above Fig 11.7: coefficient, $C_{M_\alpha} \longrightarrow$ coefficient, C_{M_α} i.e., insert space after comma

Chapter 12 PP252-272

- P254 RH col 2nd line before Fig 12.3: move the two lines "(radi" and "ans/sec)" to make a single 2nd line, i.e., "(radians/sec)"
- P255 LH col 3rd line below eq. (12.9): $(2/n) \longrightarrow (2\pi/n)$ i.e., insert π
- P255 RH col line 5/bottom: $y \longrightarrow \bar{y}$ i.e., add \rightarrow on top of y
- P256 Fig 12.4: The symbol ϵ , to left of the center-of-gravity symbol, has been replaced everywhere else in the book by $\hat{\epsilon}$. The larger right-hand ϵ should be $\hat{\epsilon}$
- P257 RH col eq. (12.20), 2nd term after = sign: $\vec{r} \frac{d\vec{x}}{dt} \longrightarrow \vec{r} \bullet \frac{d\vec{x}}{dt}$ i.e., insert dot
- P257 RH col line below eq. (12.21): better with $d\vec{x}/dt$ instead of $\frac{d\vec{x}}{dt}$
- P257 RH col line below eq. (12.22): better with $m_E d\vec{x}/dt$ instead of $m_E \frac{d\vec{x}}{dt}$
- P257 RH col 2 lines above eq. (12.26): $l_E \gamma \vec{i} , \longrightarrow l_E \gamma \vec{i} ,$ i.e., delete space before comma
- P258 LH col 2 lines above eq. (12.36): s , \longrightarrow s, i.e., delete space before comma
- P258 RH col line 4 above eq. (12.45): of $\alpha \longrightarrow$ of α i.e., insert space before α
- P258 yaw, $\gamma \longrightarrow$ yaw, γ i.e., insert space before γ
- P258 RH col line 3 above eq. (12.45) of $\alpha \longrightarrow$ of α i.e., insert space before α
- P258 RH col line 4 above eq. (12.48): $e^{i\phi}$. Substituting \longrightarrow $e^{i\phi}$. Substituting i.e., insert 2 spaces
- P260 RH col line 4 above eq. (12.71): $m \epsilon \longrightarrow m \hat{\epsilon}$ i.e., insert ^ over the ϵ
- P260 RH col eq. (12.71): $\epsilon \longrightarrow \hat{\epsilon}$ i.e., insert ^ over the ϵ
- P261 RH col line above Fig 12.6: 0.94 (in italics) should be 0.94 (in roman)
- P262 RH col line 7 from top: $(K_T \ 0.3 \text{ degree}) \longrightarrow (K_T \approx 0.3 \text{ degree})$ i.e., insert " \approx " as in MS
- P264 LH line 8 from top: $\delta_{MAX} , \longrightarrow \delta_{MAX},$ i.e., delete space before comma
- P264 LH col eq. (12.103): $P + \sqrt{P^2 - 4M} \longrightarrow P - \sqrt{P^2 - 4M}$
- P264 LH col line 2 from bottom: $\epsilon , \longrightarrow \epsilon,$ i.e., delete space before comma
- P264 RH col line 3 from top: ϵ with $\longrightarrow \epsilon$ with i.e., insert space before "with"
- P265 LH col line 2 above eq. (12.80): sine $\epsilon , \longrightarrow$ sine $\epsilon,$ i.e., delete spaces after sin ϵ
- P265 LH col line 5 from bottom: point, $\hat{\epsilon} \longrightarrow$ point, $\hat{\epsilon}$ i.e., insert space before $\hat{\epsilon}$

P265	LH col line 4 from bottom:	muzzle, ϕ_0 \longrightarrow muzzle, ϕ_0	i.e., insert space before ϕ_0
P265	RH col line 2 after eq. (12.82):	twist) \longrightarrow twist).	i.e., add period
P266	LH col line 13 from bottom:	then ϕ_0 \longrightarrow then ϕ_0	i.e., insert space after "then"
P266	LH col line 9 from bottom (eq. for T_L):	delete minus sign to the right of both equal signs	
P266	RH col eq. (12.85):	This equation should be in a box, as in the MS.	
P267	LH col eq. (12.86) 2nd equality:	$\xi_0 = ip\varepsilon \longrightarrow \dot{\xi}_0 = ip\varepsilon$	i.e., change ξ_0 to $\dot{\xi}_0$
P267	LH col line below eq. (12.92):	move the eq $\varepsilon = \dots$ to the left	
P267	RH col line 16 below eq. (12.92):	ε , \longrightarrow ε ,	i.e., delete space after comma
P267	RH col line 3 from bottom:	, ξ_0' \longrightarrow , ξ_0'	i.e., insert space before ξ_0'
P267	RH col line 2 from bottom:	yaw, ξ_0 , \longrightarrow yaw, ξ_0 ,	i.e., insert space before ξ_0
P268	LH col line 3 from top:	yaw, ξ_0 , \longrightarrow yaw, ξ_0 ,	i.e., insert space before ξ_0
P268	RH col line under eq. (12.95):	approximate with throughout \longrightarrow approximate V_{x_0} with V_x throughout	
P270	LH col 3rd line below heading §12.10:	Stern \longrightarrow Sterne	i.e., add e, as in refs 9,10.
P270	RH col line 3 above eq. (12.100):	rate, ξ_0' \longrightarrow rate, ξ_0'	i.e., insert space before ξ_0'
P270	RH col line 2 above eq. (12.100):	yaw, ξ_0 \longrightarrow yaw, ξ_0	i.e., insert space before ξ_0

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P273	LH col line 16:	angle, α , \longrightarrow angle, α ,	i.e., change spacings around α
P273	RH col lines 15,16 from bottom in 3 places:	$\sin \alpha$, \longrightarrow $\sin \alpha$,	i.e., delete space after α
P275	RH col line 3:	coefficient, C_{D_0} , \longrightarrow coefficient, C_{D_0} , i.e., insert space before C_{D_0} , delete space after	
P276	LH col last line:	$d^2 / 4$) \longrightarrow $\pi d^2 / 4$)	i.e., insert π , close up spaces
P277	RH col line 2:	$C_{M_{a(R)}}$, \longrightarrow $C_{M_{a(R)}}$,	i.e., delete space before comma
P279	LH col line 23 from bottom:	$C_{M_{a_0}}$, \longrightarrow $C_{M_{a_0}}$,	i.e., delete space before comma
H P279	LH col line 18 from bottom:	, $C_{M_{a_2}}$, \longrightarrow , $C_{M_{a_2}}$,	i.e., change spacings by commas
P280	RH col eq. (13.19):	This equation should be in a box, as in the MS.	
P280	RH col line 2 from bottom:	$d^2/4 \longrightarrow \pi d^2/4$	i.e., insert π
P281	RH col line 1 first 2 terms of eq. (13.37):	$2\lambda_F - \phi_F' \longrightarrow 2\lambda_F \phi_F'$	i.e., delete minus sign to get 1 term
P281	RH col eq. (13.42) 2nd term after = sign:	$K_F^2 + K_S^2 \longrightarrow K_F^2 - K_S^2$	i.e., change + to -
P281	RH col line 2 below eq. (13.44):	although "definition" is in the MS, it is actually shown as an approximation in eq. (13.42). Therefore "definition" should be replaced by "approximation".	
P281	RH col eq. (13.46):	$-H_0 \phi_S' \longrightarrow +H_0 \phi_S'$	i.e., change - to +

- P282 LH col eq. (13.53) in []: $\frac{\phi'_F - \phi'_S}{\phi'_F - \phi'_S} \longrightarrow \frac{\phi'_F + \phi'_S}{\phi'_F - \phi'_S}$ i.e., + in numerator, not -
- P287 LH col both lines above eq. (13.58): replace "curve of Figure 13.16 with a seventh-power (or higher) series expansion, stated as equation (13.58):" by "with a seventh-power (or higher) series expansion, which yields the Magnus moment coefficient $C_{M_{p\alpha}}$ in even powers as eq. (13.58):"
- P287 LH col: replace eq. (13.58) with $C_{M_{p\alpha}} = C_{M_{p\alpha_0}} + C_{M_{p\alpha_2}} \sin^2 \alpha + C_{M_{p\alpha_4}} \sin^4 \alpha + C_{M_{p\alpha_6}} \sin^6 \alpha + \dots$
- P287 RH col eq. (13.60) $-H_0 \phi'_S \longrightarrow +H_0 \phi'_S$ i.e., change - to +
 $+P(T_0 + T_2 \delta_{eS}^2) \longrightarrow -P(T_0 + T_2 \delta_{eS}^2)$ i.e., change +P to -P
- P291 LH col line 3 from bottom: $C_{M_{p\alpha_0}}, \longrightarrow C_{M_{p\alpha_0}},$ i.e., delete space before comma
- P291 LH col line 2 from bottom: $C_{M_{p\alpha_2}}, \longrightarrow C_{M_{p\alpha_2}},$ i.e., delete space before comma
- P291 RH col line 9 below sketch: $\lambda_F 0 \longrightarrow \lambda_F \approx 0$ i.e., insert " \approx "
- P293 LH col line 2: coefficient, $C_{L_\alpha}, \longrightarrow$ coefficient, $C_{L_\alpha},$ i.e., change spacings by commas
- P293 RH col: Figure is Figure 13.28 i.e., change 13.26 to 13.28
- P293 RH col line 2 below eq. (13.73): $\hat{C}_{M_\alpha}, \longrightarrow \hat{C}_{M_\alpha},$ i.e., delete space before comma
- P294 LH col last line: $C_{D_0}, \longrightarrow C_{D_0},$ i.e., delete space before comma
- P295 RH col eq. (13.86): $C_{L_{\alpha_0}} - C_{L_{\alpha_2}} \delta_{esw}^2 \longrightarrow C_{L_{\alpha_0}} + C_{L_{\alpha_2}} \delta_{esw}^2$ i.e., change - to +
- P297 LH col line 10 from bottom: two- center \longrightarrow two-center i.e., delete space after hyphen
- P297 LH col line 4 from bottom: $C_{M_{p\alpha_0}}$ and $C_{M_{p\alpha_2}} \longrightarrow C_{M_{p\alpha_0}}$ and $C_{M_{p\alpha_2}}$ i.e., insert spaces before and after "and"
- P298 RH col reference 15: insert blank line above ref. 15.

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- P300 RH col line 17: than __ inch \longrightarrow than 1/2 inch
- P302 RH col line 4: $1/2 \rho V^2 S. \longrightarrow 1/2 \rho V^2 S.$ i.e., delete the second period
- P302 RH col line 6: $1/2 \rho V^2 S d. \longrightarrow 1/2 \rho V^2 S d.$ i.e., delete space before period
- P305 RH col 5th line above eq. (10.77): $C_{l_\delta}, \longrightarrow C_{l_\delta},$ i.e., delete space before comma
 $C_{l_p}, \longrightarrow C_{l_p},$ i.e., delete space before comma
- P305 RH col line 2 above eq. (10.77): and $K_\delta \longrightarrow$ and K_δ i.e., insert space after "and"
- P305 RH col eq. (10.77): $\phi = \phi'_0 - \dots \longrightarrow \phi = \phi_0 - \dots$ i.e., delete the prime
- P305 RH col line 4 below eq. (14.1c): $C_{l_p}, \longrightarrow C_{l_p},$ i.e., delete space before comma
- P305 RH col line 7 below eq. (14.1c): $C_{l_p}, \longrightarrow C_{l_p},$ i.e., delete space before comma

P305	RH col eq. (10.94):	There should be a box around the equation, as in MS	
P306	LH col eq. (11.29):	There should be a box around the equation, as in MS	
P306	RH col line 1:	$\tan \phi_0$, \longrightarrow $\tan \phi_0$,	i.e., delete space before comma
P306	RH col line 3:	$\tan \theta_0$, \longrightarrow $\tan \theta_0$,	i.e., delete space before comma
P306	RH col line 2 below eq. (14.11):	coefficient, C_{L_α} , \longrightarrow coefficient, C_{L_α} , i.e., insert space before and delete space after C_{L_α}	
P308	under Table 14.3:	Insert "See Notes 1 and 2 on P307 (RH column) for meaning for * and ?? "	
P309	LH col line 4 in Table 14.4:	move Coefficient next to Aerodynamic	i.e., Aerodynamic Coefficient
P309	LH col lines 7, 8, 10: e.g., (line 7)	, C \longrightarrow , C , C_{M_α} \longrightarrow , C_{M_α}	i.e., add space before all C symbols
P309	LH col line 11:	Coefficients C_{l_p} , \longrightarrow Coefficients, C_{l_p} ,	i.e., add comma after "coefficients" and delete space before 2nd comma
H			
P311	LH col line 3:	Asketch \longrightarrow A sketch	i.e., add space after "A"
P311	LH col line 15:	, C_{l_p} , \longrightarrow , C_{l_p} , i.e., add space before and delete space after C_{l_p}	
P311	LH col line 16:	of C_{l_p} \longrightarrow of C_{l_p}	i.e., add space after "of"
P311	LH col line 18:	general, C_{l_p} \longrightarrow general, C_{l_p}	i.e., add space after comma
P311	LH col line 24:	in C_{l_p} \longrightarrow in C_{l_p}	i.e., add space after "in"
H P311	RH col line 2:	, C_{M_α} , \longrightarrow , C_{M_α} ,	i.e., change spacings of commas
P311	RH col line 4:	of C_{M_α} \longrightarrow of C_{M_α}	i.e., add space after "of"
P311	RH col line 5:	in C_{M_α} \longrightarrow in C_{M_α}	i.e., add space after "in"
P311	RH col line 7:	, C_{N_α} , \longrightarrow , C_{N_α} , i.e., add space before and delete space after C_{N_α}	
P311	RH col line 10:	$C_{L_\alpha} + C_D$. \longrightarrow $C_{L_\alpha} + C_D$.	i.e., delete space before period
P311	RH col line 13:	of C_{N_α} \longrightarrow of C_{N_α}	i.e., add space after "of"
P311	RH col line 21:	-measured $C_{M_{p\alpha}}$ \longrightarrow -measured $C_{M_{p\alpha}}$	ie, add space after "-measured "
P311	RH col line 26:	, $C_{N_{p\alpha}}$ \longrightarrow , $C_{N_{p\alpha}}$	i.e., add space after comma
P311	RH col line 27:	the $C_{M_{p\alpha}}$ \longrightarrow the $C_{M_{p\alpha}}$	i.e., add space after "the"
P315	LH col line 2 below eq. (14.18):	shift of c_G \longrightarrow shift of Δ_{CG}	i.e., insert Δ before subscript CG
P315	LH col line 3 below eq. (14.18):	that c_G \longrightarrow that Δ_{CG}	i.e., insert Δ before subscript CG
P315	RH col eq. (14.21):	There should be a box around the equation, as in MS	
P315	RH col line below eq. (14.21):	no indent before "where" the c_G \longrightarrow the Δ_{CG}	i.e., insert Δ before subscript CG
P315	RH col eq. (14.22):	There should be a box around the equation, as in MS	
P315	RH col eq. (14.23):	There should be a box around the equation, as in MS	
P315	RH col line 4 below eq. (14.23):	the c_G \longrightarrow the Δ_{CG}	i.e., insert Δ before subscript CG
P315	RH col line 6 below eq. (14.23):	, c_G \longrightarrow , Δ_{CG}	i.e., insert Δ before subscript CG
P315	RH col line 7 below eq. (14.23):	, c_G \longrightarrow , Δ_{CG}	i.e., insert Δ before subscript CG

- P315 RH col line 9 below eq. (14.23): so C_{CG} \longrightarrow so Δ_{CG} i.e., insert Δ before subscript CG
- P316 LH col last line: delete "Figure 14.15 Pitch Damping Coefficients vs Mach Number"
H P316 RH col: in Figure 14.15(b) (lower curve)
 replace $\odot [C_{M_q} + C_{M_{\dot{\alpha}}}]$ vs Center of Gravity
 with $\odot [C_{N_q} + C_{N_{\dot{\alpha}}}]$ vs Mach Number
- P316 RH col: insert in Figure 14.15 at the very bottom in smaller font
 "Figure 14.15(b). Pitch Damping Force Coefficient vs. Mach Number"
- P317 Figure 14.17b (lower curve): "Pitching Moment Coefficient vs. Mach Number" in small font between the
 label Mach Number and the bottom of the box
- P319 RH col last line of Table 14.5: $C_{M_{\alpha}}$ \longrightarrow $C_{M_{\dot{\alpha}}}$ i.e., add dot above α
- P325 LH col line 13: Figure 14.28 \longrightarrow Figure 14.28 (page 328)
- P327 RH col ref 17 3rd line: This should be moved up after "Report", i.e.,
 Report \longrightarrow Report No. 1048, 1958
 No. 1048, 1958

There is NO index!!!

Chapter 9 references are appended below.

REFERENCES - CHAPTER 9

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