

JZ6 Ghi hh[Ufh. BYi k U\`Yb bUW\`XYf 5 V k U\``j cb DfYg]XYbh'7`Ui g'Jc[h

DfÀg]XYbh'7`Ui g'Jc[h']gh'VY]a 'JZ6'Ghi hh[Ufh'UV[YkÀ\`h kcfXYbž'J]nYdfÀg]XYbh'FU]bYf'5Xf]cb'hf]hh'ni fØW_"
A UWXhk YWXgY`']b'XYf'JYfY]bgZØ\fi b["

GhUb X. '&, "\$+"&\$&('&\$.%- 'I \f

8]Y'A]h[`]YXYf'XYg'JZ6'Ghi hh[Ufh'\UVYb'VY]'Y]bYf'YbhgW\Y]XYbXYb
JYfgUa a`i b['k Y]hfY]W\YbXY'JYfÀbXYfi b[Yb']b'XYf
JYfY]bgZØ\fi b['VYgW\`cggYb"'8]Yg'\Uh'b]W\h'bi f'5i gk]f_i b[Yb
Ui Z'X]Y'gdcfh`]W\Y'@Y]hi b['z'gcbXYfb'Ui W\'Ui Z'XUg'[YgUa hY
JYfY]bg_`]a U'i bX'X]Y'6Yn]Y\i b['nk]gW\Yb'XYb'A]h[`]YXYfb'i bX
XYf': Ø\fi b["'

I bni Zf]YXYb\Y]h'i bhYf'A]h[`]YXYfb'k ÀW gh

8]Y'5Vk U\`Ubhfà[Y'[Y[Yb'Dfàg]XYbh'7`Ui g'Jc[h'i bX
J]nYdfàg]XYbh'F U]bYf'5Xf]cb'g]bX'Ui g'Y]bYf'h]YZ[fY]ZYbXYb
I bni Zf]YXYb\Y]h'XYf'A]h[`]YXYf'\YfUi g'YbhghUbXYb"'8Yf
<]bhYf[fi bX'\]YfZØf']gh'XYf'JYf'i gh'XYg'Dfàg]XYbhYbdcghYbg']a
5i Zg]WXhgfUh'i bX'XUg'; YZØ\`ž'XUgg'X]Y'A]h[`]YXYf']b
9bhgWXY]Xi b[gdfcnYggY'b]WXh'Ui gfY]WXYbX'Y]bVYnc[Yb'k YfXYb"
6YgcbXYfg'XYf'9]bgh]Y['j cb'DcfgWXY'U`g'+bj Yghcf'gcf[hY'ZØf
GdUbbi b[Ybž'XU'j]Y`Y': Ubg'Y]bY'5V_Y\f'j cb'XYb'JYfY]bgk YfhYb
VYZØfWXhYb"

FU]bYf'5Xf]cb'_cbbhY'JYfhfUiYb'b]W\h

BUWW XYf 5Vgh]a a i b['k i fXY'J]nYdfÀg]XYbh FU]bYf 5Xf]cb'_`Ufž

XUggʻXUgʻJYfhfUiYbʻXYfʻA]h[`]YXYfʻ]bʻ]\bʻYf\YV`]W\ʻ[Y`]hhYbʻ\Uh"NkUfʻYf\]Y`hʻYfʻb]W\h'X]YʻbÒh][Ybʻ+)ʻDfcnYbhʻZØfʻY]bYʻgcZcfh][Y
5VkU\ʻžʻXcW\ʻX]Yʻ+\$ž\$&ʻDfcnYbhʻZØfʻY]bʻA]gghfUiYbgjchiaʻnY][Yb
XYih`]W\YʻA]ggV]``][ib["'8UgʻJYfhfUiYbʻ]bʻa]W\ž'X]YʻNi_ibZhʻXYg
JZ6ʻa]hni[YghU`hYbžʻ]ghʻXYih`]W\jYfZY\`hž'Ài»YfhYʻYfʻibX
_ØbX][hYʻqY]bYbʻFØW_hf]hhʻUb"

$Jc[hibX.5Xf]cb.g]WAhVUf.VYf\emptyset\fh$

6Y]XYŽ7`Ui gʻJ c[hʻi bXʻF U]bYfʻ5Xf]cbžʻk UfYbʻbUWXʻXYf

5Vgh]a a i b['Ya ch]cbU``VYhfcZZYb"'J c[hʻYf_`ÀfhY.' BUhØf`]WX '[Y\h
a]fʻXUgʻbU\ž']WX '\UVY']bʻXYb '`YhnhYbʻgYWXgʻ*J\fYbʻU``YgʻZØfʻXYb

J Z6 '[Y[YVYb" 'Gc`WXY'dYfgÒb`]WXYbʻFØW_gWX`À[YʻnY][Ybž'k]Y
gY\fʻX]YʻVY]XYbʻ: Ø\fi b[gdYfgÒb`]WX_Y]hYbʻ]bʻX]YʻJ YfY]bgUfVY]h
]bj Ygh]Yfh'k UfYbʻi bX'k]YʻgWXa Yfn\UZhʻgc`WXYʻ9bhgWXY]Xi b[YbʻZØf

\$\Delta X]j]Xi YbʻgY]bʻ_ObbYb"

: Ub[fi ddYb ZcfXYfb HfUbgdUfYbn

 $8]Y `cf[Ub]g]Y fhY `: UbgnYbY `\ Uh'g]W `b]W h'Yfgh'gY]h'XYb \\ 5 Vk U\ `UbhfA[Yb'[Y[Yb'X]Y'VY]XYb': Ø\fi b[gdYfgÒb`]W _Y]hYb \\ [Y[Yb'X]Y'U_hi Y``Y'JYfY]bgZØ\fi b['Ui g[Ygdfc W Yb''8 Yf'JYf`i gh j cb'9]bZi gg'i bX'X]Y'a Ub[Y`\UZhY'? ca a i b]_Uh]cb'ØVYf'k]W h][Y H\Ya Yb'ZØ\fhYb'ni 'X]YgYf'k UW gYbXYb'I bni Zf]YXYb\Y]h'''J]Y`Y A]h[`]YXYf'ZcfXYfb'bi b'Y]bY'F ØW_VYg]bbi b['Ui Z'X]Y'Df]bn]d]Yb XYg'_`UfYb'8]U`c[g'i bX'XYf'9]bVYn]Y\i b['U``Yf'A]h[`]YXYf']b k]W h][Y'9bhgW Y]Xi b[Yb'''$

5; !7\YZ'K Y\f`Y'U_nYdh]Yfh'X]Y 9bhgWXY]Xi b[Yb

5`YI UbXYf`K Y\f`YžXYf`J cfghUbXgj cfg]hnYbXY`XYf`J Z6`5; ž Ài »YfhY`g]W\ni `XYb`9f[YVb]ggYb`XYf`J YfgUa a `i b[`i bX`VYhcbhY X]Y`K]W\h][_Y]h`XYf`XYa c_fUh]gW\Yb`9bhgW\Y]Xi b[Yb" 8]Y A]h[`]YXYf`\UVYb`YbhgW\]YXYbž`i bX`XUg`]gh`Y]b`XYa c_fUh]gW\Yf DfcnYgg ž`gc`K Y\f`Y"`9g`]gh`XYi h`]W\ž`XUgg`X]Y`bÀW\ghY`NY]h`ZØf XYb`J YfY]b`j cb`Y]bYa `]bhYbq]j Yb`I a XYb_Yb`[YdfÀ[h`gY]b`k]fX"`

J YfY]bgVY]fUh gi W h b Yi Yb =b h Yf]a gdf Àg]XYb h Yb

± XYb '_ca a Yb XYb 'HU[Yb 'k]fX 'XYf'J YfY]bgVY]fUh 'XYg'J Z6 Ghi hh[Ufh'U_h]j 'k YfXYb 'a ØggYbž'i a 'Y]bYb '± hYf]a gdfÀg]XYbhYb ni 'VYgh]a a Yb"'8]YgY 'Dcg]h]cb 'k]fX 'ZØf'X]Y', VYf[Ub[gnY]h'V]g'ni f bÀWXghYb 'A]h[`]YXYfj YfgUa a `i b['j cb'[fc» Yf'6YXYi hi b['gY]bž i a 'GhUV]`]hÀh']a 'J YfY]b'ni '[Yk À\f`Y]ghYb'i bX 'XUg'J YfhfUi Yb'XYf A]h[`]YXYf'k]YXYf\Yfni ghY``Yb"'

 $8]Y \wedge \emptyset b [ghYb \cdot 9bhk]W_i b [Yb \cdot VY]a \cdot J Z6 \cdot Ghi hh[Ufh'j YfXYi h`]W Yb \check{z} \\ k]Y \cdot k]W h][\cdot XUg \cdot 9b [U[Ya Ybh'i bX \cdot X]Y \cdot Ni gh]a a i b [\cdot XYf \cdot A]h[`]Y XYf \\ ZØf \cdot X]Y \cdot J YfY]bg ZØ \setminus fi b [\cdot g]b X " \cdot 8 Yf \cdot Y]b [YgW \cdot U[YbY \cdot ?i fg \cdot a i gg \cdot b i b]bg V Yg c b X Yf Y \cdot]b' <]b V \cdot]W_ \cdot Ui Z \cdot X]Y \cdot A]h[\cdot]Y X Yf_ca a i b]_Uh]cb' i b X H f Ubg d Uf Ybn \cdot Ø V Yf Uf V Y]h Yh 'k Yf X Yb" \leftarrow \lef$

B 5;

8 Y hU]`q

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'X]Y!bUWX f]WX hYb "bYh