



K UWkgYbXY'6Ygcf[b]g'ØVYf
A YbgWkYb\UbXY`']b'8Yi hgWk`UbX.'9]b'5i Zfi Z
ni f'Ni gUa a YbUfVY]h

8 UgʻH\Ya UʻA YbgW\Yb\UbXY`i bXʻX]YʻXUa]hij YfVi bXYbY
5 i gVYi hi b[ˈbY\a Ybˈ]bʻ8 Yi hgW\`UbXʻU`Ufa]YfYbXYʻ5 i ga U» YʻUb"
6 YgcbXYfgʻ]bʻXYbʻ`YhnhYbʻ*J\fYbʻ\Uhʻg]W\ʻXYfʻ: c_i gʻUi ZʻX]Y
5 i gVYi hi b[ˈj cbʻA]bXYfʻA\f][Ybʻi bXʻNk Ub[g\Y]fUhYbʻ[Yf]W\hYh'
8]YgYʻ9bhk]W_`i b[Ybʻk i fXYbʻ]a 'U_hi Y``Ybʻ6 i bXYg`U[YV]`X`XYg
6 i bXYg_f]a]bU`Ua hYgʻfb? 5 ŁʻUi Z[YnY][hž'k cVY]`X]Y; Yk Yf_gW\UZh

XYf'Dc`]nY]'fl XDŁY]bXf]b[`]W\'X]Y'Bchk YbX][_Y]h'Y]bYg j YfghÀf_hYb'; YgYhnYgfU\a Ybg'VYhcbh"

8 Yf; XD!6i bXYgj cfg]hnYbXY & WXYb?cdY`_Y'j YfXYi h`]WX hžXUgg Yg'b]WX h'bi f'i a 'X]Y GhfUZY 'XYf'HÀhYf'[Y\hžgcbXYfb'Ui WX'i a 'X]Y DfÀj Ybh]cb'j cb'J YfVfYWXYbžX]Y '\Ài Z]['ØVYf'XUg' +bhYfbYh VY[Ub[Yb'k YfXYb" 5b[Yg]WX hg'XYf'ghY][YbXYb'NU\`'j cb': À``Ybž']b XYbYb' > [YbX`]WXY'ØVYf'gcn]U`Y'A YX]Yb']b 5i gVYi hi b[gg]hi Uh]cbYb'[YfUhYbž'ZcfXYfh'X]Y'; XD'a Y\f < UbX`i b[ga Ò[`]WX_Y]hYb'ZØf'X]Y'Dc`]nY]'gck]Y'ZØf'GcW]U`!A YX]U! I bhYfbY\a Yb''@YhnhYfY'gc``Yb']b']\fYf'J YfUbhk cfhi b['ghY\Ybž JYfa i hi b[Yb'ØVYf'dchYbn]Y``Y'GhfUZhUhYb'Yfbgh\UZh'ni 'df@ZYb i bX'A Y`Xi b[Yb'U_h]j 'ni 'i bhYfghØhnYb''

9]b k YgYbh`]W\Yf`Di b_hž`XYb '?cdY`_Y`Ubgdf]W\hž`]gh`X]Y`6YXYi hi b[XYf`]bhYfX]gn]d`]bÀfYb Ni gUa a YbUfVY]h" 8]Y '6Y_Àa dZ b['j cb A YbgW\Yb\UbXY``_Ubb 'b]W\h'U``Y]b 'Xi fW\'X]Y`Dc`]nY]`YfZc`[Yb" <]Yf`g]bX`Y]bY`Yb[Y`?ccdYfUh]cb 'nk]gW\Yb 'Dc`]nY]ž
GhUUhgUbk U`hgW\UZhYb 'i bX`Gcn]U`VY\ÒfXYb 'gck]Y`X]Y
I bhYfghØhni b['XYf`N]j]`[YgY``gW\UZh'[YZfU[h"8i fW\'Y]bYb dÀXU[c[]gW\Yb '5bgUhn 'i bX`X]Y`GYbg]V]`]g]Yfi b[']b 'XYf 6Yj Ò`_Yfi b['_ObbhYb'a O[`]W\Yfk Y]gY`DfÀj Ybh]cbga U» bU\a Yb Yf[f]ZZYb'k YfXYbži a 'F]g]_cZU_hcfYb'ZfØ\nY]h]['ni ']XYbh]Z]n]YfYb"

8]Y'Bchk YbX][_Y]h'fUgWXYb'<UbXY`bg'k]fX'i a gc'Xf]b[`]WXYfž'XUV]g'\(\frac{1}{2}\) \\ Y]g'\(\frac{1}{2}\) \\ Y'9I !F]WXh']b]Y'ni f'6Y_\(\hat{A}a\) dZi b['XYg

A YbgWXYb\UbXY`g']b'bUh]cbU`Yg'FYWXh'i a [YgYhnh'k YfXYb'gc``hY''?cdY`_Y'UddY``]Yfh'Ub'X]Y'6i bXYgfY[]Yfi b[\(\frac{1}{2}\)Nk Ub[\(g\Y\)]fUhYb'U`g

A YbgWXYb\UbXY``ni '_YbbnY]WXbYb'i bX'YbhgdfYWXYbX'ni
\(\frac{1}{2}\)Yg'k \(\phi\frac{1}{2}\)Yg'k \(\phi\frac{1}{2}\)Yfb'Uh]gh]gWXY'8 UhYb'j Yf\(\hat{A}b\XYfb\frac{1}{2}\)gcbXYfb'Ui \(\WX'XYb'Cd\frac{1}{2}\)Yfb'Y]bY'Gh]a a Y'[YVYb'i bX']\\ bYb

fYWXh']WXYb'GWXi hn'j YfqWXUZZYb''

A U» $bU\a Yb ni f 9]bXAa a i b[gc WYf 8Y]_hY g]bX"$

±b 'XYf'U_hi Y``Yb '8]g_i gg]cb'i a 'a YbgW\YbfYW\h`]W\Y'GhUbXUfXg i bX 'XUg'K c\`'j cb'6YhfcZZYbYb']gh'Yg'YbhgW\Y]XYbXž'XUgg'U``Y [YgY``gW\UZh`]W\Yb'5_hYi fY'Ub'Y]bYa 'GhfUb['n]Y\Yb"Bi f'Xi fW\ i a ZUggYbXY'5i Z_`Àfi b['i bX'dfÀj Ybh]j Yg'<UbXY`b'_Ubb'a Ub'XYb HYi ZY`g_fY]g'j cb'5i gVYi hi b['i bX'A YbgW\Yb\UbXY` Xi fW\VfYW\Yb"

: Øf'a Y\f' ± Zcfa Uh]cbYb'ØVYf'XYb'U_hi Y``Yb'GhUbX'XYf 9fa]hh`i b[Yb'i bX'GW\i hna U» bU\a Yb'[Y[Yb'A YbgW\Yb\UbXY` ghY``Yb'k]f'k]W\h][Y'FYggci fW'b'ni f'JYfZØ[i b["

8 Y hU]`q

6Ygi WXYb 'G]Y 'i bg 'Ui Z. 'a Y]b!VYf`]b "bYh