

I GH'k]fX`XYf`[fÒ» hY`XYnYbhfU`]g]YfhY
GhUV`YWł]b`bUWł`A Uf_h_Ud]hU`]g]Yfi b[`
5`hWł]bg

I GHž'Y]bYf`XYf`GhUV`YWł]bg`XYg`HYffU!Dfc`Y`hgž`\Uh'g]Wł
\Yi hY`ni a`[fÒ» hYb`GhUV`YWł]b`bUWł`A Uf_h_Ud]hU`]g]Yfi b[
Ybhk]W_Y`hž`bUWłXYa`Yf`gY]bYb`Ui Z`9h\YfYi a`VUg]YfYbXYb
F]j U`Yb`85=ØVYf\c`h`Uh''I GH']gh`Yhnh`XYf`[fÒ» hY
XYnYbhfU`]g]YfhY`GhUV`YWł]b`Ui Z`XYa`A Uf_h`i bX`gWł`]Y» h`Y]b
Ŕ\`f`XYg`K UWłghi a`g`ZØf`XUg`HYffU!²`_cgmghYa`UVž`XUg`Yhnh
ni`XYb`k Yfhj c``ghYb`Hcd!HYb!`?fmdhck Å\`fi b[gdfc`Y`hYb`Ui Z
XYa`A Uf_h`[Y\Œfh''I GH'[]Vh`85=U`g`k Yfhj c``ghY`XYnYbhfU`Y
GhUV`YWł]b`\YfUi g`I GHž'Y]bYf`XYf`GhUV`YWł]bg`Ui g`XYa
HYffU!Dfc`Y`hž`\Uh`k YfXYb`XUg`k Yfhj c``ghY`Dfc`Y`h'gY]bYf`5fh
bUWł`A Uf_h_Ud]hU`]g]Yfi b[`i bX`b]a a`h`XYb`D`Uhn`Y]bž`XYb
85`ž`Y]b`k Y]hYfYf`XYnYbhfU`Yf`GhUV`YWł]bž`Y]bgh`\]Y`h`8Ua`]h
YbXYh`Y]b`Ŕ\`f`XYg`K UWłghi a`g`ZØf`XUg`/ Ua`d^Y``]d/

I GHž'Y]bYf'XYf'GhUV`YŦ]bg'XYg'HYffU!Dfc'Ŧ_hgž'\Uh'g]W
\Yi hY'ni a '[fÒ» hYb'GhUV`YŦ]b'bUW' A Uf_h_Ud]hU`]g]Yfi b[
Yb hk]W_Y`hž'bUW'XYa'Yf'gY]bYb'Ui Z'9h\YfYi a'VUg]YfYbXYb
F]j U`Yb'85=ØVYf\c'h'\Uh"l GH']gh'Ŧhnh'XYf'[fÒ» hY
XYnYbhfU`]g]YfhY'GhUV`YŦ]b'Ui Z'XYa' A Uf_h'i bX'gW`]Y» h
Y]b'Ŧ\ f'XYg'K UW'ghi a'g'ZØf'XUg'HYffU!² _cgmghYa'UVž'XUg
Ŧhnh'ni'XYb'k Yfhj c`ghYb'Hcd!HYb!
? fmdhck Å\fi b[gdfc'Ŧ_hYb'Ui Z'XYa' A Uf_h'[Y\ Òfh"

I GH'[]Vh'85=U`g'k Yfhj c`ghY'XYnYbhfU`Y
GhUV`YŦ]b'\YfUi g

I GHž'Y]bYf'XYf'GhUV`YŦ]bg'Ui g'XYa'HYffU!Dfc'Ŧ_hž'\Uh'k YfXYb
XUg'k Yfhj c`ghY'Dfc'Ŧ_h'gY]bYf'5fh'bUW' A Uf_h_Ud]hU`]g]Yfi b['i bX
b]a a h'XYb'D`Uhn'Y]bž'XYb'85=ž'Y]b'k Y]hYfYf'XYnYbhfU`Yf
GhUV`YŦ]bž'Y]bgh'\]Y'h'8Ua]h'YbXYh'Y]b'Ŧ\ f'XYg'K UW'ghi a'g'ZØf
XUg'HYffU!² _cgmghYa' i bX'ZØf'l GHž'XUg'[Y`Ub['Yg]j cb'Y]bYf
A Uf_h_Ud]hU`]g]Yfi b['j cb'%, &'A]`]cbYb'l G!8c`Uf'5bZUb['&\$&%
Ui Za Y\ f'U`g' - 'A]`]UfXYb'l G!8c`Uf']a'8YnYa VYf'UbgW'k Y`Yb"

Ŧhnh'ZYgh][h'l GH'gY]bY'bYi Y'Dcg]h]cb'U`g'j]YfhYf'GhUV`YŦ]b'a]h
XYf'\ÒW'ghYb' A Uf_h_Ud]hU`]g]Yfi b['\]bhYf' l G8Hž'l G87'i bX
6l G8ž'U`Yg'nYbhfU`]g]YfhY'GhUV`YŦ]bg"K Å\fybX'X]YgY
Zl b_h]cb]YfYbž']bXYa'G]W'Yf\Y]hYb'\]bhYf'Y[h'k YfXYbž'i a'X]Y
Hc_Yb'Ui Z'XYa' A Uf_h'ni'ghØhnYbž']gh'l GH'Y]b'U'[cf]h\ a]gW'Yf
GhUV`YŦ]bž'XYf'Y]bYb'UbXYfYb'Hc_Yb'XYg'HYffU!² _cgmghYa g
f@ B5Łj Yfk YbXYhž'i a'gY]bY'6]bXi b['Ub'XYb'K Yfh'XYg'l G!
8c`Ufg'Ui gni [`Y]W'Yb"

...

5bXYfY'XYnYbhfU`Y'GhUV`YŦ]bg'i bX'@l B5
g]bX'YVYbZU``g'[Yk UW'gYb

⇒ XYb`YhnhYb` '\$'HU[Yb'g]bX'Ui W'UbXYfY'XYnYbhfU`Y'GhUV`YŦ]bg

]b'6Yni ['Ui Z'X]Y'A Uf_h_Ud]hU`g]Yfi b['[Yk UWgYb"'Hc_Yb'k]Y
: fUI 'i bX'A =A '\UVYb'a Y\ f'U'g' \$i 'ni [Y'Y[hžk cVY]: F 5L 'gc[Uf
(\$i 'i]b'6Yni ['Ui Z'X]Y'A Uf_h_Ud]hU`g]Yfi b['YffY]W\h'\Uh"'8]YgY
XYnYbhfU`Yb'Hc_Yb'\Åb[Yb'b]W\h'j cb'Y]bYf'nYbhfU`Yb
5i g[UVYghY`Y'UV'i bX'_ÖbbYb'b]W\h'j cb'Y]bYf'nYbhfU`Yb'6Y\ÖfXY
[YgdYffh'k YfXYb"

5i Z[fi bX'XYf'Yf\Ö\hYb'5i Za Yf_gUa _Y]hž'X]Y'XYf'5i Zgh]Y['j cb
GhUV`YWĉ]bg'k]Y' **I G8H**'i bX'I G87'ghY\Yb'j cf'
F Y[i ']Yfi b[gVY\ÖfXYbž[]Vh'Yg'Y]b][Yž'X]Y' ['Ui VYbž'XUgg'X]YgY
U'hYfbUh]j Yb'GhUV`YWĉ]bg'Y]b'k Y]hYfYg'K UWg'hi a 'YfZU\Yb
k YfXYbž'k cVY]'X]Y'6Ybi hnYf'Ui g'Y]bYf'F Y]\Y'j cb'; fØbXYb'ni
X]YgYb'5'hYfbUh]j Yb'ghfÖa Yb"'5VYf'hfc'hni'U`'X]YgYa 'K UWg'hi a ž'
I G8H]gh]a a Yf'bcW'XUg'a Y]ghY'; **YVfUi W\h**'GhUV`YWĉ]b'Ub'XYb
6ÖfgYbž'k cVY]'XYf'Hc_Yb'[YghYfb'ja 'K Yfh'j cb'a Y\ f'U'g'* ,
A]`]UfXYb'i G!8c`Uf'XYb'6Yg]hnYf'k YWg'Y'hY"

8Yf'5bgh]Y['XYf'I GH'\Uh'Ui W\X'Yb'DfY]g'j cb'@ B5ž'gY]bYa
; YgW\k]ghYf!Hc_Ybž'Ui Z5H<!K YfhY'[Yhf]YVYb"'I a 'i GH'ni
dfÄ[Ybž'a ØggYb'6Ybi hnYf'XYg'HYffU!Dfchc_c`g`@ B5'VfYbbYbž
k Ug'XYb'Hc_Yb'_bUddYf'a UW'h"@ B5g'DfY]g' **F cgY** 'j cb'Yhk Ug
a Y\ f'U'g'\$ž* ('I G!8c`Uf']b'X]YgYa 'U]bi Uf'Ui Za Y\ f'U'g', \$'I G!
8c`Uf'\Yi hYž'Y]b'%&) !ZUWYg'K UWg'hi a ']b'k Yb][Yf'U'g'Y]bYa
U\ f"

8c'?k cbž'; fØbXYf'i bX'79C 'j cb'HYffUZcfa '@UVg'\Uh'**Yf_`Äfh**'Yf
k]fX'j cfgW`U[Ybž'Y]b'6UW_i d'ZØf'I GH']b': cfa 'j cb'6]hWĉ]b'f**6H7**Ł
i bX'UbXYfY'?fmdhck Ä\fi b[Ybž'X]Y'X]Y'Hc_Yb!; cj YfbUbW!
A Yh\cXY'j Yfk YbXYbž'i a '\fY'6]bXi b[']b'ghfYgg][Yb'NY]hYb'Ui Z
XYa 'A Uf_h'j cf'J c`Uh]hÄ'hini 'gWØhnYb"

*K Ug'\ U'hYb'G]Y'XUj cbž'XUgg'I GH'85='U'g'XYnYbhfU`Yb
GhUV`YWĉ]b'a]h'XYf[fÖ»hYb'A Uf_h_Ud]hU`g]Yfi b[
i a _Y\fh3'GU[Yb'G]Y'Yg'i bg'ja '?ca a YbhUfVYfY]W'i bhYb"*

GYf[]c'; cgWXYb_c'

GYf[]c'gh'Y]b'? fmdhc k Å\fi b[g'ci fbU'gh'a]h'G]hn']b' J YbYni Y`U''9f'VYgW fY]Vh'g]W
gY`Vgh`U`g`gdÅh`Ua`'Gd]Y`ž`U`g`Yf`'a`'8YnYa` VYf`&\$%+`'b`X]Y`? fmdhcgd\ÅfY`Y]bhfUh''9f
\Uh`Y]bYb`7ca`di`hYf!9b[]bYYf]b[!<]bhYf[fi bXž`YVh']b' J YbYni Y`U`i bX`]gh`Ui` Z
[YgY`gW`UZh`]W`Yf`9VYbY`j`ca`'? fmdhc k Å\fi b[gVcca`'VYhfcZZYb`ØVYf`XYb`'? fmdhc!
9fZc:['i bX`k]Y`Yf`XYb`B`]W`hVUb`_Yb`i bX`l bhYfj Yfgcf[hYb`'\`]Zh"

6]`XbUWk Y]gY. 'G\i hhYfg hc W_ž`D]l UVUmž`K]_]`7ca a cbg

K Y]hYfY`VY`]YVhY`B UW f]W hYb

: U`g`8i`Yg`j YfdUggh`\Ugh

f bWh]cbfXž`gž`]Xl`o`j Uf`'gž`Z`g`1`'X"[Yh9`Ya Ybhg6mHU[BUa YfgŁO\$Q'
]Z`fK"[Yh9`Ya Ybh6mXf]Xłł`fYhi fb/'`g`1`'X"WfYUhY9`Ya Ybhfgł/'`g"]X`1
]X/'`g"gfWl "\hhdg. #AłcbbYWh"ZUWVcc_"bYh#YbSl G#gX_"`g. l ZVa`1`%/
j Yfg]cb1`j`' "&"/Z`g"dUfYbhBcXY"]bgYfh6YZcfYfłgž`Z`gł/qfXcW a Ybhž
fgWf]dhfž`fZUWVcc_!`g`gX`fłł/

8YhU]`g

6Ygi WXYb`G]Y`i bg`Ui Z. ` _fmdhc!bYk g"Uh