

# A Ya a ]b[ Yb`bX]Ubg[ `ÀbnYb`a ]h \* .%!G]Y[ ` [ Y[ Yb`97`6fY[ YbnYfk U`X

8]Y`A Ya a ]b[ Yb`bX]Ubg`ZY]Yfb`Y]bYb`\_`UfYb`\* .%!G]Y[ ` [ Y[ Yb`97`6fY[ YbnYfk U`X`i bX`gYhnYb`]`fY`J cfVYfY]hi b[ `YfZc`[ fY]Wk Zc fh"

8]Y`9]g\cW\_Ym!A UbbgWk UZh`XYf`A Ya a ]b[ Yb`bX]Ubg`\Uh`Y]b Y]bXfi W\_gj c`Yg<Y]a gd]Y`UVgc`j ]Yfhi bX`XUVY]`XYb ÒghYffY]Wk ]gWk Yb`?`i V`97`6fY[ YbnYfk U`X`a ]h`\* .%`VYg]Y[ h`8]YgYg Gd]Y`a Uf\_]Yfhi j cfYfgh`XUg`9bXY`]`fYf`J cfVYfY]hi b[ gd\UgY`j cf XYf`\_ca`a YbXYb`GU]gcb`"Hfchn`Y]b][ Yf`Ub[ YgWk`U[ YbYf`Gd]Y`Yf i bX`5i gZ`Yb`Ui Z[ fi bX`j cb`?fUb`\_`Y]hž`XUfi bhYf`Ui Wk`XYf`Gd]Y`Yf A UhY`^DY`fž`dfAgYbh]YfhYb`g]Wk`X]Y`A Ya a ]b[ Yf`U`g`ØVYf`Y[ YbYg HYUa "

8Yf`?Ud]hÀb`Hm`Yf`Gdi f[ Ycb`YfÒZb`YhY`XUg`HcfYgWk ]Y» Yb`VYfY]hg ]b`XYf`UWk`hYb`A ]bi hY`a ]h`Y]bYa`dfÀn]gYb`GWk`i ggž`bUWk`Y]bYa Ni gd]Y`j cb`DUgWU`8cdUh\_U`"i b[ `ØW`\_]Wk`Yfk Y]gY`a i gghY`8cdUh\_U`\_i fn`bUWk`gY]bYa`5gg]gh`YVYbZU`g`j Yf`Yhnh`j ca`9]g`"J cf`XYf DUi gY`Yf\`Ø`hY`8Yb]g`ca ]bmWk`X]Y`: Ø`fi b[ ž`k`À`fYbX`X]Y`; ÀghY ]b`XYf`YhnhYb`A ]bi hY`XYg`YfghYb`8f]hY`g`XYb`5bgWk`i gghfYZZYf Yfn]Y`hYb"

## 8ca ]bUbn`XYf`A Ya a ]b[ Yf

8]Y`nk Y]hY`<U`VnY]h`XYg`Gd]Y`g`nY][ hY`Y]bY`\_`UfY`8ca ]bUbn`XYf`bX]Ubg`"G]Y`gYhnhYb`6fY[ YbnYfk U`X`ghUf`\_i bhYf`8fi W`\_i bX`Y]Y» Yb ]\bYb`\_Ui`a`: fY]fÀi`a`Yž`i`a`g]Wk`ni`Yb`hZU`hYb`"HcV`]A`Y]Yf`nY][ hY`g]Wk`VYgcbXYfg`ghUf`\_ja`Dck`Yfd`Um`i bX`bi`hnhY`Y]bY`j`cb`j`]Y`Yb A Ya a ]b[ Yf`7`UbWk`b`"8Ug`[ YgUa`hY`HYUa`U[ ]YfhY`gY`f YbhgWk`cggYb`i bX`n]Y`[ Yf]Wk`hYhž`k`Ug`YhnhYbX`]Wk`ni`Y]bYa

\_ca ZcfhUV`Yb`J cfgd fi b[ `Z0\fhY"

⇒ ``YhnhYb`5VgWλb]hh`XYg`Gd]Y`g`gc f[ hYb`Hm`Yf`Gdi f[ Ycbž`9XXm  
<ca `U\_cj`g`i`bX`6Yfb`UfX`9hkh`Y]b`XUZ0fž`XUgg`XUg`9f[ YVb]g`Ui`Z  
\*.`%`Yf`\0`h`k`i`fXYž`k`Ug`X]Y`,`VYf`Y[ Yb`Y]h`XYf`ϕX]Ubg`XYi`h`Wλ  
k`]XYfgd]Y[ Y`hY``8Yf`[ Y[ bYf]gWλ`Y`Hcf`\0hYf`\UhhY`nUλ`fY]Wλ`Y  
GWλ0ggY`UVni`k`Y`fYb`i`bX`\_cbbhY`X]Y`B]YXYf`U[ Y`b]Wλ`h  
j`Yf`\bXYfb"

## 5i`gV`]W\_`Ui`Z`\_ca`a`YbXY`Gd]Y`Y

: 0f`X]Y`A`Ya`a`]b[ Yb`ϕX]Ubg`ghY`Yb`bi`b`X]Y`YhnhYb`VY]XYb  
HYghgd]Y`Y`Ubž`X]Y`]a`VYbUWλ`VUfhYb`²`ghYffY]Wλ`ghUhhZ]bXYb  
k`YfXYb``6Y]a`YfghYb`Gd]Y`hf]Zh`XUg`HYUa`Ui`ZXYb`9fgh][`]ghYb  
D]cbYYfg`J`c`f`Uf`VYf[ `]b`:`Y`X\_]fWλ``8]YgY`6Y[ Y[ bi`b[ `k`]fX  
g]Wλ`Yf`]Wλ`Y]bY`[ fc»`Y`<`YfUi`gZcfXYfi`b[ `XUfghY`Ybž`XU`X]Y  
D]cbYYfg`gY]h`YhnhYa``ϕ\`f`]b`XYf`969@`gd]Y`Ybž`XYf`\0Wλ`ghYb`@[`U  
]b`²`ghYffY]Wλ``

8`Ug`nk`Y]hY`HYghgd]Y``Z]bXYh`XUbb`Ua`GcbbhU[ `]b`8`c`f`b`V]fb`ghUhhž  
k`c`XUg`F`0W\_gd]Y``[ Y[ Yb`XYb`97`6fY[ YbnYfk`U`X`Ui`Z`XYa  
Dfc[`f`Ua`a`ghY`h``8]YgY`Gd]Y`Y`g]bX`Yb`hgWλ`Y]XYbX`Z0f`X]Y`ϕX]Ubgž  
i`a`g]Wλ`cdh]a`U`Ui`ZX]Y`C`VYf][`U!`GhUfhgd]Y`Y`Ua`&\$``i`bX`&&"  
GYdhYa`VYf`j`c`fni`VYfY]hYb``8]Y`V]g\Yf][`Yb`Gd]Y`Yž`XUfi`bhYf  
\_bUddY`6Y[ Y[ bi`b[ Yb`[ Y[ Yb`89@&!HYUa`gž`\UVYb`XUg`DchYbn]U`  
i`bX`X]Y`@Y]ghi`b[ gghÅf`\_Y`XYg`A`Ya`a`]b[ Yf`HYUa`g`Y]bXfi`W\_gj`c``  
Ui`Z[`YnY][`h"

8YhU]`g

6Ygi`Wλ`Yb`G]Y`i`bg`Ui`Z.`b!U[`"XY