

A YggYfghYWX YfY]`]b`6Yf`]b!@]WX hYbVYf[ .  
A Ubb`gWX k Yf`j Yf`Yhnh!`B c hc d YfUh]c b  
YfZc`[ fY]WX

5a`GcbbhU[ UVYbX`\_Ua`Yg`]b`5`h!<c\YbgWX Ob\Ui gYbž  
Y]bYa`C fghY]`j cb`6Yf`]b!@]WX hYbVYf[ ž`ni`Y]bYf  
5i gY]bUbXYfgYhni b[ ž`VY]`XYf`Y]b`A Ubb`gWX k Yf`j Yf`Yhnh  
k i fXY"@Ui h`Dc`]nY]Ub[ UVYb`ZY]YfhYb`Y]b" (!`i bX`Y]b  
(, !`Å\`f][ Yf`A Ubb`]b`Y]bYf`K c\bi b[`]b`XYf  
; Y\`fYbgY`ghfU»Y"; Y[ Yb`%, "&\$`i \`f`Yg`\_U`]YfhY`X]Y`G]hi Uh]cb  
i bX`Yg`\_Ua`ni`Y]bYa`j YfVU`Yb`GhfY]hink ]gWX Yb`XYb`VY]XYb  
A`ÀbbYfb"~a`J Yf`Ui ZXYf`5i gY]bUbXYfgYhni b[ `gWX`i [ `XYf  
` (!`Å\`f][ Y`XYa`A`hYfYb`A Ubb`a Y\`fZUWX`]bg`; Yg]WX`h"5`g  
F YU`\_h]cb`XUfUi Z[ f]Z`XYf`(!, !`Å\`f][ Y`ni`Y]bYa  
?ØWX Yba YggYf`i bX`ghUWX`Ui ZXYb`Øb[ YfYb`Y]b"8Yf`J UhYf  
XYg" (!`Å\`f][ Ybž`XYf`YVYbZU`g`]b`XYf`K c\bi b[ `Ubk YgYbX  
k Ufžf]YZ`5bk c\`bYf`i a`<`]ZYž`X]Y`XUfUi Z]b`X]Y`Yi Yfk Y\`f  
i bX`/ Ua`d^Y``]d/



5a`GcbbhU[ UVYbX`\_Ua`Yg`]b`5`h!<c\YbgWX Ob\Ui gYbž`Y]bYa  
C fghY]`j cb`6Yf`]b!@]WX hYbVYf[ ž`ni`Y]bYf`5i gY]bUbXYfgYhni b[ ž

VY]`XYf`Y]b`A Ubb`gWk Yf`j Yf`Yhnh`k i fXY`"@Ui h`Dc`nY]Ub[ UVYb  
ZY]YfhYb`Y]b`" (!`i bX`Y]b`(!`!`Å\`f][ Yf`A Ubb`]b`Y]bYf`K c\`bi b[ `]b  
XYf`; Y\`fYbgY`YghfU»Y`"; Y[ Yb`%, "&\$`i \`f`Yg\_U`]YfhY`X]Y`G]hi Uh]cb  
i bX`Yg`\_Ua`ni`Y]bYa`j YfVU`Yb`GhfY]h`nk ]gWk Yb`XYb`VY]XYb  
A`ÅbbYfb`"

⇒a`J Yf`Ui Z`XYf`5i`gY]bUbXYfgYhni b[ `gWk`i [ `XYf`" (!`!`Å\`f][ Y`XYa  
Å`hYfYb`A Ubb`a Y\`fZUWk`]bg`; Yg]Wk`h`5`g`FYU`\_h]cb`XUfUi Z`[ f]Z`XYf  
(,`!`!`Å\`f][ Y`ni`Y]bYa`?ØWk Yba`YggYf`i bX`ghUWk`Ui Z`XYb`Øb[ YfYb  
Y]b`"8Yf`J UhYf`XYg`" (!`!`Å\`f][ Ybž`XYf`YVYbZU`g`]b`XYf`K c\`bi b[  
Ubk YgYbX`k Ufž`f]YZ`5bk c\`bYf`i a`<`]ZYž`X]Y`XUfUi Z`]b`X]Y  
: Yi Yfk Y\`f`i bX`X]Y`Dc`nY]`U`Ufa`]YfhYb`"

8Yf`" (!`!`Å\`f][ Y`Yf`]h`VY]`XYa`5b[ f]Z`nk Y]`Gh]Wk`j Yf`Yhni b[ Yb`Ua  
Fi a`dZ`X]Y`ni bÅWk`ghj`cb`gY]bYa`J UhYf`j Yfgcf[ h`k i fXYb`"8]Y  
Y]bhfYZZYbXYb`FYhhi b[ g`fÅZ`hY`ØVYfbU\`a Yb`XUfUi Z`]b`X]Y  
9fghj Yfgcf[ i b[ `i bX`VfUWk`hYb`XYb`J Yf`YhnhYb`]b`Y]b`?fUb`\_Yb\`Ui gž  
k c`Yf`bchcdYf]Yfh`k YfXYb`a`i gghY`"8YfnY]h`VYghY\`h`\_Y]bY  
@YVYbg[ YZU\`f`"

8]Y`Dc`nY]`bU\`a`XYb`(!`!`!`Å\`f][ Yb`bcWk`]b`XYf`K c\`bi b[ `ZYgh`i bX  
VfUWk`hY`j\`b`ni f`8i fWk`ZØ\`fi b[ `Y]bYf`6`i hYbhbU\`a Y`i bX`Y]bYf  
Yf`\_Ybbi b[ gX]Ybgh`]Wk Yb`6Y\`UbX`i b[ `]b`Y]bYb`Dc`nY][ Yk U\`fgUa`"  
8]Y`k Y]hYfYb`9fa`]hhi b[ Yb`ni f[ YZÅ\`f`]Wk Yb`?ØfdYfj Yf`Yhni b[  
k YfXYb`j`cb`XYf`Dc`nY]`Xi fWk[ YZØ\`fh`"

9g`\`UbXY`hY`g]Wk`i a`Y]bY`[ Yk U`hhÅh][ Y`5i`gY]bUbXYfgYhni b[  
nk`]gWk Yb`nk Y]`A`ÅbbYfbž`X]Y`k Å\`fYbX`Y]bYg`GhfY]hg`Yg\_U`]YfhY`"  
8]Y`[ YbUi Yb`<`]bhYf[ fØbXY`i bX`5i`g`ØgYf`XYg`GhfY]hg`g]bX`V]g\`Yf  
b]Wk`h`VY`\_Ubb`hi bX`; Y[ YbghUbX`XYf`dc`nY]`]Wk Yb`9fa`]hhi b[ Yb`"

Gc`Wk`Y`J`cfZÅ`Y`nY][ Ybž`k`jY`k`]Wk`h][ `Yg`]ghž`]b`?cbZ`\_hg]hi Uh]cbYb  
VYgcb`bYb`ni`\_`UbXY`b`i bX`; Yk U`h`ni`j`Yfa`Y]XYb`"9g`]gh`fUhgUa`ž  
VY]`GhfY]h][`\_Y]hYb`Ui Z`[ Yk U`hžFY]Y`?ca`a`i b]\_Uh]cb`ni`gYhnYb`i bX  
]a`Nk`Y]ZY`gZU`d`fcZYgg]cbY`Y`<`]ZY`]b`5bgdfi`Wk`ni`bY\`a`Ybž`i`a  
9g\_U`Uh]cbYb`ni`j`Yf\`]bXYfb`"8]Y`Dc`nY]`fÅh`ni`XYa`XUni`ž`VY]  
U`i`hYb`; YZU\`fYbg]hi Uh]cbYb`XYb`B`chfi`Z`ni`k`Å\`Yb`i bX`g]Wk`b]Wk`h  
gY`Vgh]b`; YZU\`f`ni`Vf]b[ Yb`"

8]Y'Dc`nY]k ]fX'bi b'X]Y'9fa ]hhi b[ Yb'ni f'?`Àfi b[ 'XYf'[ YbUi Yb  
I a ghÀbXY'i bX'XYg'HUh\Yf[ Ub[ g'Zc fhgYhnYb'i bX'\c ZhiUi Zk Y]hYfY  
NYi [ YbUi ggU[ Ybž'i a 'Y]b'j c`ghÀbX][ Yg'6]'X'XYf'G]hi Uh]cb'ni  
Yf\U'hYb"

8YhU]`g

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