

K ]Y`]WΛ`a Y]bY`? Yfb\_fUZh`bUWΛ`Y]bYa  
? U]gYfgWΛ`b]hh`k ]YXYf[ Yk`c`b`bYb`\\UVY

≠WΛ`k`Uf`b]Y`[fc»`]b`D`Ub\_g`i`bX`7fi`bWΛYg``5VYf`j`YfXUa`a`hž`  
]WΛ`\\UhhY`\_Y]bY`5\\bi`b[`ž`k`]Y`c`Zh]WΛ`a`Y]bYb`?Yfb`]a`5``hU[  
VYbi`hnhY``]b`XYf`!6U\\b`ghY\\Ybž`Ui`g`XYf`6UXYk`UbbY`  
ghY][`Ybž`;`Y[`YbghÀbXY`Ui`Z\\YVYb``V]g`]WΛ`a`Y]b`YfghYg`?`]bX`  
VY\_Ua`""8U`ÀbXYfhY`g]WΛ`U``Yg"≠WΛ`\\UVY`ØVYf`Y]bYb`  
B`ch\_U]gYfgWΛ`b]hh`YbhVi`bXYbž`i`bX`gU[`Yb`k`]f`Y]bZUWΛ`ž`]WΛ`  
\_c`b`b`hY`a`]WΛ`XUbUWΛ`b]WΛ`h`Y]ba`U``Ui`ZgYhnYbž`i`a`a`Y]b`  
BYi`[`YVcfYbYg`ni`ZØhhYfb""8]Y`GWΛ`k`Ub[`YfgWΛ`UZh]gh`UbZUb[`g`  
\\Ufh`ZØf`≠fYb`?Yfbž`UVYf`?U]gYfgWΛ`b]hhY`g]bX`Y]bY`gY`f`fYU`Y`  
C`dYfUh]cb""9g`YfZcfXYfh`XUg`8i`fWΛ`hfYbbYb`c`XYf`6Yk`Y[`Yb`  
XYf`Ugn]Yb`i`bX`XUg`HfYbbYb`XYf`6Ui`WΛ`a`i`g\_Y`bž`i`a`ni`f`  
;`YVÀfa`i`hhYf`fi`bX`Y`hnhYbX`]WΛ`ni`a`/`Ua`d^Y``]d/`



≠WΛ`k`Uf`b]Y`[fc»`]b`D`Ub\_g`i`bX`7fi`bWΛYg``5VYf`j`YfXUa`a`hž`]WΛ`  
\\UhhY`\_Y]bY`5\\bi`b[`ž`k`]Y`c`Zh]WΛ`a`Y]bYb`?Yfb`]a`5``hU[`VYbi`hnhY`  
]b`XYf`!6U\\b`ghY\\Ybž`Ui`g`XYf`6UXYk`UbbY`ghY][`Ybž`;`Y[`YbghÀbXY`  
Ui`Z\\YVYb``V]g`]WΛ`a`Y]b`YfghYg`?`]bX`VY\_Ua`""8U`ÀbXYfhY`g]WΛ`  
U``Yg"≠WΛ`\\UVY`ØVYf`Y]bYb`B`ch\_U]gYfgWΛ`b]hh`YbhVi`bXYbž`i`bX`

gU[ Yb`k ]f`Y]bZUW`ž`jW`\_cbbhY`a` ]W`XUbUW`b]W`h`Y]ba`U`  
Ui`ZgYhmYbž`i`a``a`Y]b`B`Yi`[`YVcfYbYg`ni`ZØhYfb`"

8]Y`GW`k`Ub`[`YfgW`UZh`]gh`UbZUb`[`g`\\Ufh`ZØf`≡fYb`?Yfbž`UVYf`  
?U]gYfgW`b]hhY`g]bX`Y]bY`gY`f`fYU`Y`C`dYfUh]cb`"9g`YfZcfXYfh`XUg`  
8i`fW`hfYbbYb`cXYf`6Yk`Y[`Yb`XYf`Ugn]Yb`i`bX`XUg`HfYbbYb`XYf`  
6Ui`W`a`i`g\_Y`bž`i`a``ni`f`;`YV`Afa`i`hhYf`fl`bX`Y`h`hYbX`]W`ni`a`  
6UVm`ni`[`Y`Ub`[`Yb`"K`Ybb`G]Y`X]YgY`A`i`g\_Y`b`j`Yf`YhmYbž`  
j`Yff]b`[`YfhX]Yg`j`\\fY`?fUZh`i`bX`j`\\fYb`6Yk`Y[`i`b`[`gVYfY]W`"

5`Y`GW`]W`hYb`VfUi`W`Yb`NY]h`ni`a``<Y`Yb`ž`gU[`h`9a`j`mDfci`gYž`  
A`8ž`j`cb`A`Yhfcdc`]hUb`C`6;`MB`j`b`8Ybj`Yfž`X]Y`Y]bY`9f`c`i`b`[`gnY]h`  
j`cb`Yhk`U`gYW`g`V]g`UW`h`K`cW`Yb`Ya`dZ]Y`\\h`f`\_Y]b`gW`k`YfYg`  
<YVYbž`Y]W`hYg`;`Y`Yb`L`"B`UW`X`Yf`GYW`g!K`cW`Yb`!A`Uf`Y`\_`ÖbbYb`  
G]Y`X]Y`HfU]b]b`[`g]bhYbg]h`h`Yf`\\Ö`Yb`i`bX`UbZUb`[`Ybž`Y]b`k`Yb][`  
;`Yk`]W`h`ni``\\YVYb`"`"

;`Y`Yb`k`Uf`ZØf`a`]W`X`Yf`YfghY`GW`f]hž`i`a``X]YgY`A`i`g\_Y`b`k`]YXYf`  
]b`;`Ub`[`ni`Vf]b`[`Yb`"I`bX`U`g`]W`j`cb`XYa``9]bgW`b]hh`[`Y`Y]h`k`Ufž`  
k`i`gghY`]W`ž`XUgg`Yg`Ub`XYf`NY]h`k`Ufž`[`Yn]Y`hYf`XUfUb`ni`UfVY]hYbž`  
a`Y]bYb`?Yfb`k`]YXYfni`Yf`Ub`[`Yb`"5VYf`k`Ybb`≡f`6Ui`W`k`]Y`  
K`UW\_Y`di`XX]b`[`]gh`i`bX`≡fY`?ÖfdYfa`]hhY`j`ca`GhfYgg`XYf`  
GW`k`Ub`[`YfgW`UZh`i`bX`XYf`C`dYfUh]cb`[`YgW`k`ÅW`h`]ghž`\_Ubb`Yg`  
gW`k`]Yf][`gY]bž`k`]YXYf`]b`XYb`;`fccj`Y`ni`\_ca`a`Yb`"

:`c`[`YbXYg`\\UVY`]W`[`Y`Yfbhž`U`g`]W`a`Y]bY`?Yfb`fUZh]Yf`cf`i`bX`  
k`]YXYfYf`Ub`[`hY`"

`"GW`k`ÅW`Y`]gh`b]W`h`ZØf`]a`a`Yf`"

≡W`k`Y]»ž`Yg`ZØ`\\h`g]W`Ubž`U`g`k`ØfXYgh`Xi`b]Y`k`]YXYf`ghUf`\_gY]bž`  
UVYf`Xi`k`]fgh`X]W`Yf`c`Yb`"5`g`a`Y]b`9]bgW`b]hh`j`Yf`Y]h`k`Ufž`  
k`i`fXY`]W`VYfY]hg`gh`Åf`\_Yf`i`bX`\_cbbhY`Y]W`hYf`[`Y`Ybž`Y]W`hYfY`  
8]b`[`Y`Ui`Z`YVYb`i`bX`Åb`[`Yf`ghY`Ybž`i`a`a`Y]b`6UVm`ni`k`]Y[`Yb`  
I`bX`]b`[`Yk`]ggYf`K`Y]gY`\\Uh`Yg`a`]W`[`Y`Y`fhž`a`Y`f`;`YXi`X`a`]h`a`]f`  
gY`Vgh`ni`\\UVYbž`k`Y`]W`j`]Y`<`]ZY`VfUi`W`hY`"8Ug`k`]YXYfi`a`  
Yf`Ui`VhY`a`]fž`[`YbYfY`a`Y`f`;`YXi`X`a`]h`XYf`A`i`hhYfgW`UZh`ni`  
\\UVYb`"@Ub`[`gUa`i`i`bX`ghYh][`]gh`]b`C`fXbi`b`[`"

· · · J Yfi fhY]`Y`X]YgYb`6Ui WΛ `b]WΛ h" · ·

⇒f`6Ui WΛ `bUWΛ`XYf`GWΛk Ub[ YfgWΛUZh`k ]fX`g]WΛ`k U\fgWΛY]b`]WΛ  
b]WΛh'gcZcfh`k ]YXYf`Yf\c`Yb"· · ·⇒WΛ`k Uf`ØVYffUgWΛhž`XUgg`]WΛ`Y]b`dUUf  
K cWΛYb`bUWΛ`XYf`; YVi fh]a a Yf`bcWΛ`gWΛk Ub[ Yf`Ui ggU\`"8]Y  
; YVÅfa i hhYf`VfUi WΛh`NY]hž`i a `ni`]`fYf`; fØ»Y`j cf`XYf  
GWΛk Ub[ YfgWΛUZh`ni fØW`ni \_Y\fybž`UVYf`k Ug`a ]h`Y]bYa`6UVm  
XUf]b`gØ»`]ghž`ZØ\`h`g]WΛ`bUWΛ`XYf`; YVi fh`b]WΛh`a Y\f`gc`gYI m`Ub"  
⇒WΛ`j YfghY\Y`Yg"· · ·⇒WΛ`k Uf`Xcfh`5VYf`Yg`]gh`k ]WΛh][ ž`g]WΛ`b]WΛh`a ]h  
UbXYfYb`A ØhhYfb`cXYf`XYa ž`k Ug`a Ub`]b`<c`mk ccX`g]Y\hž`ni  
j Yf[ `Y]WΛYb"· · ·fGÅb[ Yf]b`D]b`\_gh]a a h`j c``\_ca a Yb`ni "Ł

· · · 5fVY]hY`X]WΛ`\_cWΛ " · ·

⇒WΛ`\_UVY`a ]h`XYa`Y]bZUWΛYb`7cfY`%!?i fg`]b`a Y]bYa`\_c\_U`Yb  
7cfYDck Yf!Ghi X]c`VY[ cbbYbž`XYf`] ]Y`Y`D`Ub`!J Uf]Uh]cbYb  
VY]b\U`hYh"· · ·⇒WΛ`VY`Y[ hY`i b[ YZÅ\f`XfY]`?i fgY`dfc`K cWΛY`i bX  
UfVY]hYhY`XUbb`Ub`XYb`UbXYfYb`nk Y]`cXYf`XfY]`HU[ Yb`ni`<Ui gY  
Ub`Y]bYf`F`Y]`Y`j cb`6fYhhYfbž`Y]WΛhYb`7fi bWΛYg`i bX  
; `Y]WΛ[ Yk ]WΛhgØVi b[ Yb"· · ·⇒[ YbXk Ub`b`Z]b[`]WΛ`Ui WΛ`Ubž`6UffY`ni  
a UWΛYbž`k Ug`a Y]bYb`?Yfb`bcWΛ`ghÅf`Yf`a UWΛhY"· ·

G]Y]b`G]Y`]b`YfghYf`@]b]Y`[ YXi`X][`i bX`Y\fyb`G]Y`⇒fYb`?ØfdYfž  
k Ybb`G]Y`k ]YXYf`Gdcfh`hfY]VYbž`i bX`hi b`G]Y`X]Yg`bUhØf`]WΛ`bi`f`Ui Z  
9a dZY\`i b[ `⇒fYg`5fnhYg ž`gU[ h`?Uh\`YYb`GUbXž`X]Y`Y]bYb`D\`"8"· · ·]b  
6]ca YWΛUb[\_`i bX`]gh`GYb]cf`8]fYW`hcf`cZ`CdYfUh]cbg`ZØf`X]Y  
k Ygh`]WΛYb`Ghi X]cg`]cb`7cfYDck Yf`MŁ[U"· ·

?Y]bY`NY]h`ZØf`Y]b`Ghi X]c3`GUbX`gWΛ`À[ h`X]YgY`, Vi b[ Yb`]cfž`i a  
⇒fYb`?Yfb`ni`<Ui gY`ni`ghÅf`Yb"· ·

D`Ub`\_Yb\U`hi b[ .`@Y[ Yb`G]Y`X]Y`<UbXZÅWΛYb`ZYgh`]b`X]Y`A UhhY  
fXYb`Yb`G]Y`Ub`· · ·Unn!<ÅbXY`Ui ZXYa`6cXYbŁž`ghUdY`b`G]Y`X]Y  
GWΛi`hYfb`]Yfh]\_U`ØVYf`XYb`<UbX[ Y`Yb`\_Ybž`a ]h`j c``ghÅbX][ Yf  
GhfYW`i b[ `XYg`9`Vc[ Yb[ Y`Yb`\_g`fk Å\fybX`G]Y`XUfUi ZUWΛhYbž  
Y]bY`, VYfXY\bi b[ `XYg`9`Vc[ Yb[ Y`Yb`\_g`ni`]Yfa Y]XYbŁ"; Y\Yb  
G]Y`Xi fWΛ`X]Y`i »VU`Yb`bUWΛ`i bhYb`i bX`ghfYW`Yb`G]Y`X]Y`YfYb  
bUWΛ`\_]bhYbž`k Å\fybX`G]Y`X]Y`?b]YgWΛY]VYb`ni`XYb`<ØZhYb

n]Y\Yb"6Ui W\ bUVY`bUW\ ]bbYb`i bX`cVYb`n]Y\Yb"GW\Ui Yb`G]Y  
bUW\`i bhYb`Ui Z`X]Y`A UhhY`nk ]gW\Yb`XYb`< UbXZ`ÅW\Yb`ž`i a` `XYb  
<U`g`ni` j` Yf`Åb[ Yfb" fG]Y`\_`ÒbbYb`Ui W\`X]YgY`D`Ub`!J Uf]Uh]cbYb  
Ui gdfcV]YfYb`ž`k Ybb`G]Y`VYfY]h`g]bX"Ł`

<U`Va`cbX.`GhfYW\_Yb`G]Y`Ui`g`Y]bYf`ghY\YbXYb`DcgY`X]Y`5fa`Y  
ØVYf`XYb`?cdZ`j`YfV]bXYb`G]Y`X]Y`< UbXZ`ÅW\Yb`i bX`j`YfgW\ fÅb\_Yb  
G]Y`X]Y`8Ui`a`Yb"5ha`Yb`G]Y`Y]bž`i`a` `bUW\`cVYb`ni` `[fY]ZYbž`Uha`Yb  
G]Y`Ui`g`i`bX`VYi`[ Yb`G]Y`g]W\`XUbb`bUW\`fYW\hg"J`YfUb\_Yfb`G]Y  
g]W\`Xi`fW\`VY]XY` : Ø»Yž`U`hYb`G]Y`< ØZhYb`i bX`6fi`gh[ YfUXY`bUW\  
j`cfbY`i bX`ghfYW\_Yb`G]Y`X]Y`]b\_Y`GY]hYž`k`Å`fYbX`G]Y`X]Y  
K`]fVY`gÅi`Y`bUW\`fYW\hg`VYi`[ Yb" <U`hYb`G]Y`X]Y`?fUZh]b`VY]XYb  
5fa`Ybž`k`Å`fYbX`G]Y`]b`X]Y`cVYfY`fYW\hY`9W\_Y`XYg`F`Ui`a`g`[fY]ZYb  
i bX`ZØf" `V]g`) `5hYa`nØ[ Y`Ui`Z`YXYf`GY]hY`U`hYb"

<c`Yf`<U`Zk`Uml`@]Zh.`F`]W\hYb`G]Y`X]Y`K`]fVY`gÅi`Y`a`]h`Y]bYf  
k`Y]W\Yb`?b]YVYi`[ i b[ `dUfU`Y`ni`a` `6cXYb`Ui`g" @Y[ Yb`G]Y`X]Y  
 : ]b[ Yfgd]hnYb`cXYf`< UbXZ`ÅW\Yb`Ui`Z`X]Y`J`cfXYfgY]hY`XYf  
C`VYfgW\Yb\_Y`"5\_h]j`]YfYb`G]Y`X]Y`j`cfXYfYb`?Yfba`i`g\_Y`bž`]bXYa  
G]Y`XYb`6Ui`W\`bUW\`]bbYb`i bX`cVYb`n]Y\Yb`i bX`XYb`F`Ui`a  
nk`]gW\Yb`< ØZh[ Y`Yb`\_`i bX`5W\gY`U`Å`Yb`j`Yf`Åb[ Yfb" <U`hYb`G]Y  
ZØf" `V]g`) `5hYa`nØ[ Yž`VYj`cf`G]Y`g]W\`i`a`\_`UddYb`cXYf`X]Y` : ]b[ Yf  
ni`f`8YW\_Y`ghfYW\_Yb"

8YhU]`g

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