

9]bk c \ bYfj YfgUa a `i b [ `]b < Y]XY. `D`ÀbY  
ZØf`X]Y `bYi Y `6UhhYf]YZUVf]\_

9fZU\ fYb`G]Y`X]Y`bYi YghYb`B UWX f]WX hYb`Ui g`GWX`Ygk ][ !  
< c`ghY]b. `9]bk c \ bYfj YfgUa a `i b [ `ni f`Bcfh\j c`h!  
6UhhYf]YZUVf]\_ `i bX`GWX i `UbZÀb[ Yf!DfcV`Ya Y"

≈a `? fY]g`8]h\ a UfgWX Yb`k ]fX`XYfnY]h`Y]b`VYXYi hYbXYg`6Ui dfc`Y\_h  
ZØf`X]Y`GhUXh`<Y]XY`j cfVYfY]hYh`"8]Y`5bg]YX`i b [ `Y]bYf  
6UhhYf]YZUVf]\_`XYg`gWX k YX]gWX Yb`i bhYfbY\ a Ybg`Bcfh\j c`h`k ]fZh  
nU\`fY]WX Y`: fU[ Yb`i bX`6YXYb`Yb`Ui Z`l a `X]Y`Gcf[ Yb`XYf  
6Øf[ Yf]bbYb`i bX`6Øf[ Yf`ni `UXfYgg]YfYbž`ZUbX`Ua `8]YbghU[ UVYbX  
Y]bY`9]bk c \ bYfj YfgUa a `i b [ `ja `6Yfi ZgV]`Xi b [ gnYbhf i a `]b < Y]XY  
ghUh`"Fi bX`%` \$`5bk c \ bYf` \ UVYb`XUfUb`hY]`[ Ybca a Ybž i a `a Y\ f  
ØVYf`X]Y [ Yd`UbhYb`A U» bU\ a Yb`i bX`X]Y`5i gk ]f\_i b [ Yb`Ui Z]\ fY  
GhUXh`ni `YfZU\ fYb`"

8]Y`J YfgUa a `i b [ `VY\ UbXY`hY`nYbhfU`Y`H\ Ya Yb`k ]Y`XYb  
K c \ bi b [ gVUi ž`XUg`A UbU[ Ya Ybh`j cb`"YYfghY\ YbXYb`≈a a cV]`]Yb  
i bX`\_i `hi fY`Y`5b[ YVchY`ZØf`X]Y`ni bY\ a YbXY`NU\`"bYi Yf  
9]bk c \ bYf`"8]Y`9ff]WX hi b [ `XYf`6UhhYf]YZUVf]\_ [ `]h`U`g`k Y [ k Y]gYbX  
ZØf`X]Y`k ]fhgWX UZh]WX Y`9btk ]W\_`i b [ `XYf`F Y [ `]cbž`YfZØ`h`UVYf`Ui WX  
X]Y`5bZcfXYfi b [ Yb`Ub`Y]bY`bUWX \ U`h[ Y`GhUXhYbtk ]W\_`i b [ "`8]Y  
5bk YgYbXYb`Ài » YfhYb`gck c \ `l bhYfghØmi b [ `U`g`Ui WX`6YXYb`Yb  
VYnØ[ `]WX`XYf`J YfÀbXYfi b [ Ybž`X]Y`XUg`Dfc`Y\_h`a ]h`g]WX`Vf]b [ Yb  
\_ØbbhY`"

**GWX i `UbZÀb[ Yf`c \ bY`gc n]U`Y`F Y]ZY**

5b [ Yg]WX hg`XYf`U`hi Y`Yb`< YfUi gZcfXYfi b [ Yb`]b`XYf  
6]Xi b [ g`UbXgWX UZh`k i fXYb`Ua `gY`VYb`HU[ `k Y]hYfY  
VYgcf[ b]gYffY[ YbXY`9btk ]W\_`i b [ Yb`di V`]\_`"≈a a Yf`a Y\ f

9fgh\_`Ägg`Yf`]b`GW`Ygk`][!<c`ghY]b`k`Y]gYb`Y]bY`i`bni`fY]WYbXY  
gcn]U`!Ya`ch]cbU`Y`FY]ZY`Ui`Z`k`Ug`ZØF`X]Y`GW`i`Yb`ni`gÄh`]WY  
<ØfXYb`a`]h`g]W`Vf]b[`h`8]Y`GW`k`Yf][`\_Y]hYb`XYf`?]bXYfž`g]W`Ui`Z  
XYb`i`bhYff]W`h`ni`\_`cbnYbhf]YfYbž`FY[`Y`b`ni`j`Yfgh\Yb`i`bX  
5bk`Y]gi`b[`Yb`ni`Zc`[`Ybž`g]bX`b]W`h`ni`ØVYfgY\Yb`" `@Ui`h`9fn]Y\Yfbž  
@Y\`f`ÄZhYb`i`bX`?]bXYfÄfnhYb`hfÄ[`h`Y]bY`J]Y`nU\`j`cb`:`U`hc`fYb`ni  
X]YgYa`VYgc`f[`b]gYffY[`YbXYb`HfYbX`VY`" `

9g`k`]fX`j`Yfa`i`hYhž`XUgg`ZJa`]ÄfY`J`YfÄbXYfi`b[`Ybž  
a`][`fUh]cbgVYX]b[`hY`<`YfUi`gZc`fXYfi`b[`Yb`gck`]Y`X]Y`j`YfghÄf`\_hY  
Bi`hni`b[`X][`]hU`Yf`A`YX]Yb`a`U»[`YV`]W`ni`XYb`XYZ]n]hÄfYb`gcn]U`Yb  
?ca`dYhYbnYb`XYf`GW`i`Ub`ZÄb[`Yf`VY]hfU[`Yb`" `A`]h`ZUgh`&`\*`"\$\$\$  
bYi`Yb`GW`Ø`Yf]bbYb`i`bX`GW`Ø`Yfbž`X]Y`]b`X]YgYf`K`cW`Y  
Y]b[`YgW`i`h`k`YfXYbž`VYgh\h`Y]bY`\_`UfY`B`chk`YbX][`\_Y]h`ZØf  
]bX]j`]Xi`Y`Y`:`ØfXYfa`U»`bU`a`Yb`]b`XYb`GW`i`Yb`" `8`cW`k`Ä`fYbX  
X]Y`5b`Zc`fXYfi`b[`Yb`Ub`X]Y`@Y\`f`ÄZh`k`UW`gYbž`k`]fX`X]Y`NY]h`ZØf  
X]Y`Y][`Yb`h]WYb`@Y\`f]b`U`hY`]a`a`Yf`\_`bUddYf`" `

## 6i`bXYgk`Y`f`]b`HcXYbXcfZ`B`Yi`Yf F`U`\_`Y`h`Y`b`U`V`k`Y`f`g`W`]`X`

5b`Y]bYf`UbXYfYb`:`fcbh]a`@UbX`k`]fX`X]Y`G]WYf\Y]h  
[`fc»[`YgW`f]YVYb`" `6i`bXYgj`YfhY]X][`i`b[`ga`]b]ghYf`6cf]g`D]ghcf]i`g  
i`bX`6i`bXYg`\_`Ubn`Yf`C`U`Z`GW`c`n`\`UVYb`Ua`8]YbghU[`]b`HcXYbXcfZ  
fP`fY]g`D`Öb`É`Ub`XYf`ÆX]YbghghY`i`b[`Y]bYg`bYi`Yb  
F`U`\_`Y`h`Y`b`U`V`k`Y`f`g`m`g`h`Y`a`g`h`Y][`Ybca`a`Yb`" `8]YgYg`GmghY`a`ž`XUg`a`]h  
Y]bYa`6i`X[`Yh`j`cb`fi`bX`%(`\$`A`]`cbYb`9i`fc`Ui`g[`YghUhhY]h]ghž  
ghY`h`Y]bYb`k`]W`h][`Yb`GW`f]hh]b`F]W`h`i`b[`Y]bYg`Yi`fcdÄ]gW`Yb  
F`U`\_`Y`h`Y`b`U`V`k`Y`f`g`W`]`X`g`X`U`f`" `9g`gc`""`\_`Øb`Zh][`X`Uni`X]YbYbž  
ZY]bX`]WY`8fc`bYb`i`bX`:`i`[`nYi`[`Y`UVni`ZUb[`Yb`i`bX`gca`]h`X]Y  
G]WYf\Y]h]a`@`Zh`f`Ui`a`ni`Yf`\`Ø`Yb`" `

A`]h`6`]W`\_`Ui`Z`X]Y`ni`\_`Øb`Zh][`Y`?`ccdYfUh]cb`gc`Yb`UV`&`\$`&`\*`Gc`X`U`h`Y`b  
Ui`g`%-`B`Uh]cbYb`Ub`X]YgYa`GmghY`a`Ui`g[`YV]`XYh`k`YfXYb`" `8]Yg  
ZØ`f`h`ni`Y]bYf`j`YfghÄf`\_hYb`]bhYfbUh]cbU`Yb`Ni`gUa`a`YbUfVY]h`i`bX  
nY][`h`XUg`9b[`U[`Ya`Yb`h`8`Yi`hgW`Ub`Xg`]b`g]WYf\Y]hgdc`h]gW`Yb  
:`fU[`Yb`" `

B c fXVUi !A YggY`U`g`A ]hhY`di b\_h`XYf

9bYf[ ]YXYVUhhY

ϕ`BYi a ØbghYf`U`h`Ua`8]YbghU[ `X]Y`B c fXVUi !A YggY`VY[ cbbYbž  
X]Y`g]W`b`X]YgYa`ϕ\`f`VYgcbXYfg`a`]h`XYf`K`Àfa`Yk`YbXY`i`bX  
9bYf[ ]YhYW`b]\_`Ui`gY]bUbXYfgYhnh`i`bhYf`XYb`Yfk`UfhYhYb`\*`\$`\$`\$`\$`  
6Ygi`W`Yfb`\_`ÒbbhYb`j`]Y`Y`Ui`Z`XYf`Gi`W`Y`b`UW`\_`@`Ògi`b[`Yb`Z`Øf  
U`hi`Y`Y`<`YfUi`gZc`fXYfi`b[`Yb`]b`XYf`6Ui`k`]fhgW`UZh`i`bX  
9bYf[ ]YhYW`b]\_`gY]b`"A`YggY`Y]hYf`K`c`Z[`YfX`ϕ]bgW`VYhc`b`hž`XUgg  
XUg`H`Y`a`U`b]W`h`b`Yi`gY]ž`Y`X`c`W`X`i`f`W`X`Y`i`bg]W`Y`f`Y]hYb`ž`X]Y  
Xi`f`W`d`c`h]gW`Y`J`c`f[`UVYb`Y`b`ghY`Y`b`ž`Ub`6YXY`i`hi`b[`[`Yk`c`bb`Y`"

8]YgY`A`YggY`\_`ÒbbhY`U`g`D`UhhZc`fa`X]YbYbž`i`a`]b`bc`j`U`h]`Y`5`bg`À`hm`Y  
ni`f`9bYf[ ]YY]bgdUfi`b[`i`b`X`ni`a`b`UW`\`U`h][`Yb`6Ui`Yb  
j`c`f`ni`ghY`Y`b`"ϕ`Y]bYf`gdYn]Y`Y`b`<`U`Y`k`]fX`Y]bY`\_`c`ghY`b`c`gY  
9bYf[ ]YVYfUhi`b[`Ub[`YVchYbž`k`Ug[`YfUXY`]b`NY]hYb`ghY][`YbXYf  
9bYf[ ]Y`\_`c`ghY`b`j`c`b`[`f`c`»`Ya`ϕ`hY`fY`ggY`]`gh`"

J`Y`f`\_`Y`\`f`g`V`Y`Y`]`b`h`f`À`W`h`h][`i`b[`Y`b`X`i`f`W`X`\_`@`\_`k`!

6fUbX

9]b`k`Y]hYfYf`c`\_`U`Yf`J`c`f`ZU`U`U`U`h`X]Y`J`Y`f`\_`Y`\`f`g`U[`Y`]b`G`W`X`Y`gk`][`!  
<`c`ghY]b`]b`A`]hY]XYbgW`UZh[`Ync[`Yb`5i`Z`XYf`5`&`%`]b`@`Y`n`Y`b`\_`Ua  
Yg`i`Ua`8]YbghU[`a`]hU[`ni`Y]bYa`6fUbX`Y]bYg`a`]h`<`c`n`V`Y`U`X`Y`b`Y`b  
GUhhY`ni`[`g`9]b[`Yd`U`h`h`Y`f`F`Y]Z`Y`b`Z`Ø`f`h`Y`X`U`ni`ž`X`U`gg`X`Y`f`@`\_`k`j`c`b  
X`Y`f`G`h`f`U`»`Y`U`V`\_`Ua`i`b`X`X`Y`f`H`U`b`\_`V`Y`g`W`X`X`][`h`k`i`f`X`Y`ž`k`U`g`Y`h`h`h`]W`X  
X`U`g`:`Y`i`Y`f`U`i`g`Ò`ghY`@`U`i`h`ϕ`Z`c`f`a`U`h]c`b`Y`b`X`Y`f`5`i`h`c`V`U`\`b`i`a`V`<`]`gh  
X]Y`G`h`f`Y`W`\_`Y`n`k`]g`W`X`Y`b`6`U`X`C`X`Y`g`c`Y`!`B`c`f`X`i`b`X`@`Y`n`Y`b`]b`F`]W`X`h`i`b[  
B`c`f`X`Y`b`j`c`f`U`i`g`g]W`X`h`]W`X`V]g`ni`a`gd`À`h`Y`b`B`U`W`a`]h`h`U[`[`Y`g`d`Y`f`f`h`8`Y`f  
:`U`\`f`Y`f`k`i`f`X`Y`a`]h`Y]W`X`h`Y`b`J`Y`f`Y`h`ni`b[`Y`b`]b`Y]b`?`f`U`b`\_`Y`b`\`U`i`g  
[`Y`V`f`U`W`h`ž`k`À`\`f`Y`b`X`X]Y`@`Ò`g`W`U`f`V`Y]h`Y`b`V]g`Y`h`k`U`%`,`i`\`f  
U`b`X`U`i`Y`f`h`Y`b`"

8]Y`J`c`f`Z`À`Y`fi`b`X`i`a`X]Y`J`Y`f`\_`Y`\`f`gg]W`X`Y`f`Y]h`i`b`X`X]Y`\`U`f`h`Y`b  
6YX]b[`i`b[`Y`b`ž`X]Y`X`i`f`W`X`Y`i`h`f`Ya`Y`K`]h`h`Y`fi`b[`ghY`a`d`Y`f`U`h`i`f`Y`b  
j`Y`fi`fg`U`W`X`h`k`i`f`X`Y`b`ž`n`Y][`Y`b`ž`X`U`gg`X`Y`[`Y`g`U`a`h`Y`F`Y`[`]c`b`j`c`f  
j`Y`fg`W`X]Y`X`Y`b`Y`b`<`Y`f`U`i`g`Z`c`f`X`Y`fi`b[`Y`b`ghY`\`h`ž`gY]`Y`g`]a`?`c`b`h`Y`i`h`X`Y`f`

⇒ZfUghfi \_hi f'cXYf'XYf'Ub[ YghfYVhYb'gcn]U'Yb'9btk ]W\_`i b[ "'

Hfchn'U``X]YgYf'<YfUi gZcfXYfi b[ Yb'V`Y]Vh'X]Y'5i Za Yf\_gUa \_Y]h  
Ui Z'X]Y'\_ca a YbXYb'9fY][ b]ggY']b'GW`Ygk ][ !<c`ghY]b' [ Yf]W\hYhž  
k Å\fybX'X]Y'6Øf[ Yf'X]Y'9btk ]W\_`i b[ Yb']b']\fyf'FY[ ]cb'U\_h]j  
j YfZc`[ Yb'i bX'a ]h[ YghU`hYb"

8YhU]`g

6Ygi W\Yb'G]Y'i bg'Ui Z.'b!U[ "XY