

6`i h)[Yf`GhfY]h`j]b`GWk f]Yg\Y]a .
) *!>À\ f][Yf`bUWk `A YggYfUhhUW_Y`gWk k Yf
j Yf`Yhnh

⇒ a `F\Y]b!BYW_Uf!`fY]g`ghUWk `Y]b`), !>À\ f][Yf`gY]bYb
A]hVYk c\`bYf`f) *É:gWk k Yf`b]YXYf"8Ui Yf\UZhY`DgmWk]Uhf]Y
ghY\`h`VYj`cf"

9]b`[Yk U`hgUa Yg`JcfZU``\Uh`Ua`%, ""5df]`&\$&(`]a`GhUXhhY]
5`hYbVUWk`j`cb`GWk f]Yg\Y]a`]a`F\Y]b!BYW_Uf!`fY]g`ZØf`5i`ZgY\Yb
[Ygcf[h`b`XYb`ZfØ\Yb`A`cf[Ybghi`bXYb`[Yf]YhYb`nk`Y]`A`ÀbbYf`]b
Y]bYb`\YZh][Yb`GhfY]hž`XYf`]b`Y]bYf`Vfi`hU`Yb`A`YggYfUhhUW_Y
YbXYhY"8Yf`) *!>À\ f][Y`A`Ubbž`XYf`U`g`C`dZYf`[]`hž`k`i`fXY`XUVY]
`YVYbg[YZÀ\`f]Wk`j`Yf`Yhnh"8Yf`), !>À\ f][Y`HUj`YfXÀWk]h][Y`k`i`fXY
i`a`[Y\YbX`ZYgh[Ybca`a`Yb`i`bX`g]Y\`h`bi`b`Y]bYf`gWk`YfYb
5b`_U[Y`Ybh[Y[Yb"

8 Ug`; YgWkY\Yb`YfY][bYhY`g]Wk`[Y[Yb`*.&) `i`\f"@"Ui`h`Dc`]nY]
YbhVfUbbhY`ni`bÀWk`gh`Y]b`j`YfVU`Yf`GhfY]h`nk`]gWk`Yb`XYb`VY]XYb
A`ÀbbYfb]a`6]f_Ybk`Y[""8Yf`) *!>À\ f][Y`j`Yfgi`Wk`hY`c`ZYbVUfž`XYf
5i`gY]bUbXYfgYhni`b[`ni`Ybh`ca`a`Ybž`]bXYa`Yf`g]Wk`Ui`g`Y]bYa
: YbghYf`ghØfnhY"8UVY]`nc[`Yf`g]Wk`Y]bY`6Y]bj`Yf`Yhni`b[`ni`"?Ui`a
k`Uf`Yf`XfUi`»Ybž`\`c`hY`]\`b`XYf`5b[fY]ZYf`Y]b`i`bX`ghUWk`a`Y\`fa`U`g
a`]h`Y]bYa`A`YggYf`Ui`Z]\`b`Y]b""9g`k`Uf`bi`f`XYa`gWk`bY`Yb`<`UbXY`b
j`cb`DUggUbhYb`i`bX`XYb`F`Yhni`b[g_`f`À`ZhYb`ni`j`YfXUb`_Ybž`XUgg`XUg
@YVYb`XYg`C`dZYfg`[YfYhYh`k`YfXYb`_`c`bbhY"9f`a`i`gghY`Y]bYf
B`chcdYfUh]cb`i`bhYfnc[Yb`k`YfXYb`i`bX`VYZ]bXYh`g]Wk`bUWk`k`]Y`j`cf
]b`a`YX]n]b]gWk`Yf`6Y\`UbX`i`b["

9fa]hh`i`b[Yb`i`bX`fYWk`h`]Wk`Y`GWk`f]hhY

B UWkXYa`X]Y`Dc`]nY]`gcZcfh][Y`9fa]hh`i`b[Yb`Y]b`Y]hYhYž`k`i`fXY`XYf

HUj YfXÅW h][Y`Ui Z[fi bX`XYg`J YfXUW hg`Ui Zj Yfgi W`hYb`A cfX
gW`bY` [YZUggh"8]Y`GhUUhgUbk U`hgW`UZh`A Ubb`Y]a` VYUbfhU[h`Y]b
G]W`Yfi b[gj YfZU`fYbž`XU`g]Y`ZYghgY`hž`XUgg`XYf`6YgW`i`X][hY`ni f
NY]h`XYf`HUhgW`i`Xi bZÅ`][`k Uf"5b[Yg]W`hg`X]YgYf`I a ghÅbXY
k]fX`Yhnh`ØVYf`Y]bY`XUi Yf`UZh`I bhYfVf]b[i b[`]b`Y]bYf
dgmW`]Uhf]gW`Yb`9]bf]W`hi b[`YbhgW`]YXYb"8]YgY`A U»bU`a`Y`gc`
j cf`U`Ya`X]Y` ; YgY`gW`UZh`gW`ØhnYb`i bX`j Yf`]bXYfbž`XUgg`gc`W`Y
 ; Yk U`hhU`hYb`YfbYi h`[YgW`Y`Yb"

8]Y`HUh`Uh`b]W`h`bi f`VY]`XYb`6YhY][hYbž`gcbXYfb`Ui W`]b`XYf
 [YgUa hYb` ; Ya`Y]bXY`GW`f]Yg`Y]a` ZØf`GW`U[nY]`Yb` [Ygcf[h`b
Y]bYf`VYfY]hg`U`g`Zf]YX`]W` [Y`hYbXYb`B UW`VUfgW`UZh`ghY`h`X]YgYg
J YfVfYW`Yb`Y]bYb` [Yk U`h][Yb`GW`cW`XUf"5i [YbnYi [Yb
VYf]W`hYhYb`j cb`gW`f]`Yb`GW`fY]Yb`i bX`XYf`5i ZfY[i b[ž`X]Y`Ui Z
XYf`GhfU»Y`YffgW`hYž`bUW`XYa`X]Y`5hhUW`Y`ghUhh[YZi bXYb`U`hhY"
F Yhi b[gk U[Yb`i bX`Y]b`<i VgW`fUi VYf`Y]`hYb`ni f`HUhghY`Yž`i a
i a [Y`YbX`<]`ZY`ni`Y]ghYb"

6Y]`XYf`5i gk Yfhi b[`XYf`YfghYb`6Yk`Y]gY`i bX`NYi [YbUi ggU[Yb
ghY`hYb`X]Y`9fa`]h`Yf`ZYghž`XUgg`XYf`5b[fY]ZYf`k`c`ØVYf`Y]bYb
`Åb[YfYb`NY]hfUi a`GW`k`]Yf][_Y]hYb`]a`I a [Ub[`a`]h`gY]bYa
A]hVYk`c`bYf`U`hhY" `Gc`W`Y`W`fcb]gW`Yb`?cbZ]_hY`ZØ`fYb
a UbW`a`U`ni`YI hfYa`Yb`<UbX`i b[Ybž`k`]Y`XYa`X]Yf
VYgW`f]YVYbYb"8]YgY`HUh`nY][hž`k`]W`h][`Yg`]ghž`?cbZ]_hY
ZfØ`nY]h][`ni`Yf`_YbYb`i bX`ni`ÖgYbž`VYj`cf`g]Y`]b` ; Yk U`h
i a gW`U[Yb"

5i gk]f_i b[Yb`Ui Z`X]Y` ; YgY`gW`UZh

8]Y`9fY][b]ggY`]b`GW`f]Yg`Y]a`k`YfZYb`Y]b`GW`U[`]W`h`Ui ZY]b
ni bY`a`YbXYg`DfcV`Ya`]b`j`]Y`Yb` ; Ya`Y]bgW`UZhYb`X]Y`UhYbhY
 ; Yk U`hVYfY]hgW`UZh`i bX`X]Y`I bZÅ`][_Y]hž`?cbZ]_hY` [Yk U`hZfY]`ni
fY[Y`b"8]Y`GhUUhgUbk U`hgW`UZh`i bX`X]Y`?f]a`]bU`dc`nY]`UVYb
_`UfY`<]bk`Y]gY`XUfUi Zž`XUgg` ; Yk U`h]b`XYb`ZJa`]`ÅfYb`c`XYf
bUW`VUfgW`UZh]W`Yb`6Yn]Y`i b[Yb`c`ZiUi`g`i b[Y`ØghYb
GdUbbi b[Yb`YbhghY`h"8 Ug`Y]» hž`XUgg`b]W`h`bi f`X]Y
i ba`]hhY`VUfYb`6YhY][hYb`VYhfc`ZYb`g]bXž`gcbXYfb`XUgg`Ui W`XUg
_c`Y`_h]j`Y`6Yk`i`gghgY]b`XYf`5bk`c`bYf`VYhfc`ZYb`k`]fX"

ϕ·X]YgYf'gdYn]Y`Yb'5b[Y`Y[Yb\Y]h'V`Y]Vh'UVni k UfhYbžk]Y`XUg
@UbX[Yf]W`h'A Ubb\Y]a`ØVYf`X]Y`XUi Yf\UZhY`I bhYfVf]b[i b[`XYg
HÀhYfg`Yb`hgW`Y]XYb`k]fX"·8]Y`b`ÀW`ghYb`A`c`b`UhY`_`Òb`bhYb
Yb`hgW`Y]XYb`X`XU`ZØf`gY]bž`k]Y`[YgY`gW`UZh`]W`Y`8`Uf`ghY`i`b[Yb`j`c`b
dgmW`]gW`Yf`?`fUb`_`Y]h`i`b`X`; Yk`U`h`g]W`k`Y]hYfYb`hk]W`_`Y`b`"·Gc`W`Y
HfU[`ØX]Yb`Yf]bb`Yfb`i`bg`XUf`Ubž`k]Y`k`]W`h][`Y]b`i`bhYfghØ`h`Yb`XYg
I`a`Z`X`i`b`X`Ni`[Ub[`ni`dgmW`c`c`[]gW`Yf`<`]Z`Y`g]b`X`"·G`W`Y]Y»`]W`k`]gh
X]Y`J`Yf\]b`XYfi`b[`j`c`b`; Yk`U`h`X`Yf`V`Y`ghY`G`W`i`h`n`ZØf`U`Y`
6`Y`h`Y]][`h`Yb`i`b`X`ZØf`X]Y`U`[Ya`Y]b`Y`G]W`Yf\Y]h`i]b`Y]b`Yf
7`ca`a`i`b]h`m`"

A`c`h]j`Uh]c`b`X`Y`g`H`À`h`Y`f`g`i`b`X`d`g`m`W`]g`W`Y ;`Y`g`i`b`X`\`Y]h`

8]Y`<]bhYf[fØbXY`ni`[Yk`U`h`h`À]h[Yb`?`c`b`Z]_`h`Yb`g]b`X`c`Z`h
j]Y`g`W`]W`h][`i`b`X`_`Òb`b`Yb`h]Y`Z]b`X`Yf`dgmW`]g`W`Yb`i`Ygi`b`X`\`Y]h`X`Yf
6`Y`h`Y]][`h`Yb`j`Yfk`i`fn`Y`h`g`Y]b`"·ϕ·X]YgYa`gdYn]Y`Yb`i`U`g`W`Y]b`h`X`Yf
)`!`À`\f][`Y`6`Y`g`W`i`X][`h`Y`dgmW`]g`W`Y`D`f`c`V`Ya`Y`ni`_`UV`Ybž`k`Ug`V`Y]
X`Yf`6`Yi`f`h`Y]i`b[`g`Y]b`Yf`G`W`i`X`Z`À][`_`Y]h`Y]b`Y`n`Yb`h`f`U`Y`F`c`Y`gd]Y`h`
8]Y`g`h`f`U`Z`f`Y`W`h`]W`Yb`F`U`a`Yb`V`Y`X]b[i b[Yb`i]b`8`Yi`hgW`_`Ub`X
V`Yf`Ø`W`_g]W`h][`Yb`dgmW`]g`W`Y`9`f`_`f`Ub`_i`b[Yb`V`Y]`X`Yf`i`Y`gh`gh`Y`i`b[
X`Yf`G`W`i`X`Z`À][`_`Y]h`"·@`U`i`h`z`&`\$`X`Y`g`G`h`f`U`Z[`Y`g`Y`h`n`V`i`W`Y`g`f`G`h`6`Ł
_`Òb`b`Yb`D`Y`f`g`c`b`Ybž`X]Y`ni`f`H`U`h`n]h`i`bhYf`Y]b`Yf`dgmW`]g`W`Yb
G`h`Ø`fi`b[`i]h`h`Ybž`U`g`g`W`i`X`i`b`Z`À][`i`[`Y`h`Yb`"·8]Y`g`_`Òb`b`h`Y`f`_`À`f`Ybž
k`U`fi`a`Y]b`G]W`Yfi`b[`g`j`Y`f`Z`U`\`f`Yb`ni`f`X`U`i`Y`f`\`U`Z`h`Yb`i`bhYfVf]b[i b[
]b`Y]b`Yf`dgmW`]U`h`f]g`W`Yb`9]b`f]W`h`i`b[`V`Y`U`b`h`f`U[`h`i`k`i`f`X`Y`"

8]Y`8]g`_i`gg]c`b`Ø`V`Yf`dgmW`]g`W`Y`9`f`_`f`Ub`_i`b[Yb`i`b`X`; Yk`U`h`]gh
b]W`h`b`Yi`"·5`i`Z`[`Y`g`Y`g`W`U`Z`h`]W`Yf`9`V`Yb`Y`[]V`h`Y`g`Y]b`Yb
Ub`\`U`h`Yb`X`Yb`6`Y`X`U`f`Z`X]Y`G`h][`a`U`h]g]Yfi`b[`dgmW`]g`W`_`f`Ub`_Yf
A`Y`b`g`W`Yb`ni`j`Y`ff]b[`Y`fb`i`b`X`i`a`Z`U`gg`Yb`X`Y`6`Y`\`Ub`X`i`b[`g`Ub[`Y`V`c`h`Y
ni`g`W`U`Z`Yb`"·G`c`k`Y`f`X`Ybž`h`f`c`h`n`X`Yf`Yf`_`Ub`b`h`Yb`i`Y`Z`U`\`f`Ybž`j`]Y`Y
9`f`_`f`Ub`_i`b[Yb`b]W`h`U`X`À`e`i`U`h`V`Y`\`Ub`X`Y`hž`k`Ug]a`9`I`h`f`Ya`Z`U`ni
[`Yk`U`h`g`U`a`Yb`5`i`g`V`f`Ø`W`Yb`ZØ`\`f`Yb`_`Ub`b`"·8]Y`i`bhYfghØ`h`i`b[`j`c`b
dgmW`]g`W`_`f`Ub`_Yb`A`Y`b`g`W`Yb`g`c`h`Y`X`U`\`Y`f`\`Ø`W`ghY`D`f]c`f]h`À`h
[`Yb]Y»`Ybž`i`a`X`U`g`f`g]_`c`ni`_`Ø`b`Z`h][`Y`f`i`Yk`U`h`h`U`h`Yb`ni`a`]b]a`]Y`f`Yb`
K`Y]h`Y`f`Y`ϕ`Z`c`f`a`U`h]c`b`Yb`ni`f`H`\`Ya`U`h]_`U`gg`Yb`g]W`i`U`i`Z`X`Yf`G`Y]h`Y
X`Y`g`6`i`b`X`Y`g`a`]b]g`h`Y`f`i`a`g`ZØf`i`Ygi`b`X`\`Y]h`Z]b`X`Yb`"

F YU_h]cbYb`Ui g`XYf`; Ya Y]bgW UZh`i bX
DfAj Ybh]cbga U» bU\ a Yb

8]Y`FYU_h]cbYb`Ui Z`X]YgYb`J cfZU`k UfYb`]b`XYf`; Ya Y]bXY
GWf]Yg\Y]a`[Ya`]gW h`B UW`Y]bYa`gc`W Yb`[Yk U`h`h] [Yb`5_h
ghY`Yb`g]W \`Ai Z[: fU[Yb`bUW`XYf`G]W Yf\Y]h`b`XYf
B UW`V UfgW UZh`i bX`XYf`; A\][_Y]h`XYf`6Y\`OfXYb`ž`gc`W Y`J cfZ`Y
ni`j Yf\]bXYfb`"8]Y`c_U`Y`Dc`nY]\`Uh`Ub[Y_`0bX][h`X]Y`DfAgYbn`]b
XYf`FY[]cb`ni`j Yfgh`f_Yb`ž`i a`XUg`G]W Yf\Y]hg[YZ`0`XYf
6Yj`0`_Yfi b[`ni`j YfVYggYfb`"8]Yg`_0bbhY`Ui W`]a
Ni gUa`a Yb\Ub[`a`]h`d`f`Aj Ybh]j Yb`A U» bU\ a Yb`ghY\Yb`ž`X]Y` : fUi Yb
i bX`A`Ab`bYf`]b`XYf`; Ya Y]bXY`X]Y`A`0[`]W`_Y]h`V]YhYb`ž`g]W`0VYf
8YYg`_U`Uh]cbghYW`b]_Yb`ni`]bZ`cfa`]YfYb`i bX`?cbZ]_hY`[Yk U`h`ZfY]
ni`"0gYb"

8 Ug`H\Ya`U`; Yk U`h`d`f`Aj Ybh]cb`k`]fX`ni bY\ a YbX`Ui W`]b`GW`i`Yb
i bX`gcn]U`Yb`9]bf]W`hi b[Yb`VY\UbXY`h`Dfc[fUa`a Y`ni`f
?cbZ]_hVYk`A`h][i b[`i bX`ni`f` : OfXYfi b[`gcn]U`Yf`?ca`dYhYbnYb
gc`Yb`XYb`↑ b[Yb`A`YbgW`Yb`\Y`ZYb`ž`[Yk U`h`h] [Y
5i`gY]bUbXYfgYhni b[Yb`ni`j Yfa`Y]XYb`"5_hi`Y`Y`GhUh]gh]_Yb
nY][Yb`ž`XUgg`X]Y`a`d`Ya`Ybh]Yfi b[`gc`W`Yf`Dfc[fUa`a Y`]b`GW`i`Yb
dcg]h]j Y`5i`gk`]f_i b[Yb`Ui Z`XUg`J Yf\U`hYb`j`cb`GW`0`Yf]bbYb`i bX
GW`0`Yfb`\UVYb`_Ubb`"I`a`a`Y`f`0VYf
; Yk U`h`d`f`Aj Ybh]cbgg`hfUhY[]Yb`ni`YfZU`fYb`ž`_Ubb`XUg
6i bXYga`]b]ghYf]i a`Z`0f` : Ua`]Y`ž`GYb]cfYb`ž` : fUi Yb`i bX`ž` [YbX
VYgi W`h`k`YfXYb`ž`k`Y`W`Yg`j`YfgW]YXYbY`b]h]Uh]j Yb`Z`0fXYfh"

8YhU]`g

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