

: U\ ffUXX]YVghU\ `Ua `6U\ b\ cZ'A Y\ f\ cc [ .  
Dc`nY]`b]a a h'gYWX g`J YfXÀWX h][ Y`ZYgh

Dc`nY]`Yfk ]gWX h'gYWX g`A ÀbbYf`VY]a `j Yfgi WX hYb  
: U\ ffUXX]YVghU\ ``]b`<Ua a ]b\_Y`b"K Y]hYfY`bZcfa Uh]cbYb  
ni a `JcfZU``\]Yf"

9]bVfØWX Y`]b`X]Y`G]WX Yf\ Y]h. `8]Y`6YXYi hi b [   
j cb`K UWX gUa \_Y]h`]b`XYf`; Ya Y]bgWX UZh

<Ua a ]b\_Y`b

8]Y`\_Øfn`]WX Yb`9fY][ b]ggY`Ua `6U\ b\ cZA Y\ f\ cc [ `k YfZYb`Y]b  
GWX`U[`]WX h`Ui Z`X]Y`F`Y`Yj Ubn`[ Ya Y]bgWX UZh]WX Yf`K UWX gUa \_Y]h  
i bX`X]Y`A U» bU\ a Yb`ni f`J Yf\]bXYfi b[ `j cb`GhfUZhUhYb"5a  
A ]hk cWX a ]hU[ ž[ Y[ Yb`%( `l \fž`\_cbbhY`Y]b`Ui Za Yf\_gUa Yf`6Øf[ Yf  
X]Y`Dc`nY]`U`Ufa ]YfYbž`bUWX XYa `Yf`a Y\ fYfY`j YfXÀWX h][ Y`A ÀbbYf  
VY]`XYa `J Yfgi WX `VYcVUWX hYh`\ UhYž`Y]b`: U\ ffUX`ni `ghY\`Yb"

8 Ug`; YgWX Y\ YbY`]a `8 YhU]`

8 Yf`NYi [ Y`VYf]WX hYhYž`XUgg`Yf`gU\ž`k ]Y`Y]bYf`XYf`A ÀbbYf`a ]h  
Y]bYa `6c`nYbgWX bY]XYf`Y]b`: U\ ffUXgWX `cgg`ni `Xi fWX hfYbbYb  
j Yfgi WX hY"8]YgY`9fa ]h`i b[ `]gh`VYa Yf\_Ybgk Yf`hž`XU`g]Y`nY][ hž`k ]Y  
k ]WX h][ `Yg`]ghž`]b`XYf`² ZZYbh`]WX \_Y]h`Ui Za Yf\_gUa `ni `gY]b"8]Y  
: À\][ \_Y]hž`j YfXÀWX h][ Y`5\_h]j ]h`hYb`ni `Yf\_YbbYb`i bX`XUfUi Z`ni  
fYU[ ]YfYbž`\_Ubb`]b`j ]Y`Yb`: À`Yb`XUni `VY]hfU[ Ybž`J YfVfYWX Yb`ni  
j Yf\]bXYfb"

8]Y`F`YU\_h]cb`XYf`Dc`nY]

B U\X Ya '5`Ufa`Xi fW`XYb`NYi [ Yb`gYhnhY`X]Y`Dc`nY]`gcZcfh  
: U\bXi b[ ga U» bU\ a Yb`b` ; Ub[ " `b`XYf: c`[ Y`\_cbbhYb`]bg[ YgUa h  
gY\g`A`AbbYf`Ua`6U\b`cZ`[ Yg]W`hYh`i bX`j`cf`Ai`Z][`ZYgh[ Y`U`hYb  
k YfXYb`"9g`]gh`\Yfj`cfni` \YVYbž`XUgg`nk`Y`X]YgYf`A`AbbYf`j`cb`XYa  
Ui`Za`Yf\_gUa`Yb`6Øf[ Yf`b`Å`Yf`VYgW`f]YVYb`k`i`fXYbž`k`Ug`X]Y  
⇒Ybh]Z`\_Uh]cb`Yf`Y]W`hYfhY`i`bX`X]Y`5fVY]h`XYf`Dc`nY]`i`bhYfghØhnhY`"

## I b\_`UfY`I a gh`AbXY`XYf` : YghbU`a`Y`

Hfchn`XYf`gW`bY`Yb`F`YU`\_h]cb`XYf`6YUa`hYb`ghY`hY`g]W`h`YfUi`gž  
XUgg`X]Y`6YgW`i`X][`i`b[`Yb`b]W`h`Xi`fW`6Yk`Y]gY`[`YghØhnh`k`YfXYb  
\_cbbhYb`"K`YXYf`Y]b`6c`nYbgW`bY]XYf`k`i`fXY`VY]`XYb`A`AbbYfb  
[`Yž`bXYbž`bcW`[`UV`Yg`5bnY]W`Yb`ZØf`Y]b`[`YgW`ÅX][`hYg` :`U`ffUX  
Ub`XYa`VYhfY`ZYbXYb` :`U`ffUX`gh`AbXYf`"6Y]`XYf`6Y`ZfU[`i`b[`[`UVYb  
X]Y` :`Ygh[`Y`U`hYbYb`Ubž`YX][` `]W`Ui`Z`XYb`Ni`[`bUW`K`YgY`ni  
k`UfhYb`"B`UW`XYf` :`YghghY`i`b[` `]\`fYf`DYfgcbU`]Yb`k`i`fXYb`g]Y  
gW`]Y»`]W`Yb`h`UggYb`"

## 8 ]Y`@Y`fY`Ui`g`XYa` `J`cfZU`

8 ]YgYf`J`cfZU`nY][`hž`k`]Y`k`]W`h][`Y]bY`U`\_h]j`Y`i`bX`Yb[`U[`]YfhY  
;`Ya`Y]bgW`UZh`]ghž`X]Y`b]W`h`nØ[`Yfhž`j`YfX`ÅW`h][`Y  
J`Yf`U`hYbgk`Y]gYb`ni`a`Y`XYb`"8 ]Y`F`c`Y`XYf`6Øf[`Yf`]gh  
Ui`ggW`U[`[`YVYbX`ZØf`X]Y`G]W`Yf`Y]h]b`XYf`B`UW`V`UfgW`UZh`"8`i`fW`  
\_c`Y`\_h]j`Y`K`UW`gUa`\_Y]h`\_Ubb`X]Y`?`f]a`]bU`]h`Åhg`fU`hY`Yf`YV`]W`  
[`YgYb`\_h`k`YfXYbž`XYbb`c`Zi`fY]W`h`Yg`gW`cb`Ui`gž`Ui`Za`Yf\_gUa`ni  
gY]b`i`bX`fYW`hnhY]h][`ni` \`UbXY`bž`i`a`d`chYbn]Y`Y`H`ÅhYf  
UVni`gW`fYW`\_Yb`"

## : Un]h.`9]b`5i`Zfi`Z`ni`f`K`UW`gUa`\_Y]h`

⇒`5b`VYhf`UW`h`XYf`9fY][`b]ggY`]b`<`Ua`a`]b`\_Y`b`]gh`Yg`i`bYf`Ågg`]W`ž  
XUgg`k`]f`i`bg`U`Y`i`bgYfYf`J`YfU`b`h`k`c`f`h`i`b[`VYk`i`ggh`k`YfXYbž`ni`f  
G]W`Yf`Y]h]i`bgYfYf` ;`Ya`Y]bgW`UZh`VY]ni`hfU[`Yb`"8`Yf`J`cfZU`nY][`hž  
XUgg`d`f`Å]`Yb`h]j`Yg`<`UbXY`b`i`bX`[`Ya`Y]bgW`UZh`]W`Yg`9b[`U[`Ya`Ybh  
YbhgW`Y]XYbX`gY]b`\_Ø`bbYbž`i`a`J`YfV`fYW`Yb`ni`j`Yf`Y]bXYfb`i`bX  
Y]b`g]W`YfYg`I`a`ZY`X`ni`ZØf`XYfb`"

8YhU]g

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