

K ]fX`XUg` H]\_Hc\_`'6Ub !; YgYhn`Ui WÅ`Y]bY  
6YXfc\i b[ `ZØf`6]hWŁ]b`XUfghY``Yb3

9]b`i a ghf]hhYbYf`; YgYhnYbhk i fZ`ni a `J YfVch`XYf`VY`]YVhYb  
GcW]U`!A YX]U!5dd`H]\_Hc\_`\_ÖbbhY`a Ö[ `]WÅYfk Y]gY`XUni  
j Yfk YbXYhk YfXYbž`[ Y[ Yb`? fmdhc`j cfni [ Y\Ybž`gU[ Yb  
F YWÅhgdc`]h]\_Yf`j cb`Uh`7c]b`7YbhYf`"8]Y`\_fmdhcZc\_i gg]YfhY  
Bcb!DfcZ]h!Cf[ Ub]gUh]cb`VY\Ui dhYhYž`XUgg`X]Y  
; YgYhn[ YVi b[ `]b`YI hfYa Yb` : Å`Yb`XUni `j Yfk YbXYhk YfXYb  
\_ÖbbhYž` XYb`Ni [ Ub[ `XYf`5a Yf]\_UbYf`ni `CdYb!Gci fW!  
Hcc`g`cXYf`!Dfchc\_c``Yb`k ]Y`6]hWŁ]b`ni `V`cW\_]YfYb "9]b  
gh]`Yf`5b[ f]ZZ`Ui Z? fmdhc3`8 Ug`; YgYhn`ni f`6YgWÅfÅb\_i b[ `XYf  
9bhghY\i b[ `j cb`G]WÅYf\Y]hgVYXfc\i b[ Ybž`X]Y`ϕZcfa Uh]cbg!  
i bX`?ca a i b]\_Uh]cbghYWÅbc`c[ ]Y`[ YZÅ\fXYb`fUi WÅ`VY`\_Ubbh  
U`g`69G7<FÿB?I B; `5WŁž`XUg`Ua `+"`A Åfn`Y]b[ YZØ\fh  
k i fXYž`k ØfXY`XYa `<UbXY`ga ]b]ghYf]i a `k Y]hfY]WÅYbXY  
6YZ [ b]ggY [ YVYbž`i a `hYWÅb]gWÅY`DfcXi`\_hY`ni`fY[ i `]YfYbž`  
X]Y`]b`@ÅbXYfb`a ]h`ZY]bX`]WÅYb`6Yn]Y\i b[ Yb`ni`XYb  
J YfY]b][ hYb`GhUUhYb`\Yf[ YghY`h/ Ua d^Y``]d/



9]b`i a ghf]hhYbYf`; YgYhnYbhk i fZ`ni a `J YfVch`XYf`VY`]YVhYb`GcW]U`!

A YX]U!5dd`H]\_Hc\_`\_ÖbbhY`a Ö[ `]WYfk Y]gY`XUni `j Yfk YbXYh  
k YfXYbž[ Y[ Yb`?fmdhc`j cfni [ Y\Ybž`gU[ Yb`F YW\hgdc`]h]\_Yf`j cb`Uh  
7c]b`7YbhYf"

8]Y`\_fmdhcZc\_i gg]YfhY`Bcb!DfcZ]h!C f[ Ub]gUh]cb`VY\Ui dhYhYž`XUgg  
X]Y`; YgYhn[ YVi b[ `]b`Yi hfYa Yb` : Ä`Yb`XUni `j Yfk YbXYh`k YfXYb  
\_ÖbbhYž` XYb`Ni [ Ub[ `XYf`5a Yf]\_UbYf`ni `CdYb!Gci fW!Hcc`g`cXYf  
!Dfchc\_c`Yb`k ]Y`6]hWc]b`ni `V`cW\_]YfYb "

## 9]b`gh]`Yf`5b [ f]ZZ`Ui Z`? fmdhc 3

8 Ug`; YgYhn`ni f`6YgWfÄb\_i b[ `XYf`9bhghY\i b[ `j cb  
G]WYf\Y]hgVYXfc\i b[ Ybž`X]Y` ðZcfa Uh]cbg!`i bX  
?ca a i b]\_Uh]cbghYW\bc`c[ ]Y [ YZ\`fXYb`fUi W\`VY`\_Ubbh  
U`g`69G7 < F`Y`B?I B; `5W\ž`XUg`Ua `+"`A Äfn`Y]b[ YZ\`fh`k i fXYž  
k ØfXY`XYa `< UbXY`ga ]b]ghYf]i a `k Y]hfY]WYbXY`6YZ [ b]ggY  
[ YVYbž`i a `hYW\ b]gWY`DfcXi \_hY`ni `fY[ i `]YfYbž`X]Y`]b`@ÄbXYfb`a ]h  
ZY]bX`]WYb`6Yn]Y\i b[ Yb`ni `XYb`J YfY]b][ hYb`GhUUhYb`Yf[ YghY`h  
k YfXYb`"

ðgVYgcbXYfY`k ÄfY`XUg`A ]b]ghYf]i a `j YfdZ]W\hYhž`XYb`9]bgUhn  
gc`WYf`HYW\bc`c[ ]Yb`ni `i bhYfgi WYb`i bX`ni `j Yf\]bXYfbž`X]Y  
[ Y[ YbgÄh`]WY` ðhYfYggYb`VY]b\U`hYb`i bX`X]Y`Y]b`bUh]cbU`Yg  
G]WYf\Y]hg]g]\_c`ZØf`X]Y`J YfY]b][ hYb`GhUUhYb`XUfghY`Yb`"  
9bhgdYfWYbX`7c]b`7YbhYf\_ÖbbhY`X]Y`GdfUWY`XYg  
; YgYhnYbhk i fZg`cZYb`ZØf`Y]bY`ni `k Y]hY`5i g`Y[ i b[ `gY]bž`X]Y  
5a Yf]\_UbYf`XUfUb`\]bXYfhž`Ui Z` [ Ubny`?`UggYb`j cb  
HYW\bc`c[ ]Yb`ni ni [ fY]ZYbž`i bUV\Äb[ ] [ `XUj cbž`cV`Ui g`ÄbX]gWY  
; Y[ bYf`Y]b` ðhYfYggY`Ub`XYf`HYW\bc`c[ ]Y`UVYb`cXYf`b]W\h`"

K ]f`k ØfXYb`Y]bYf`ØVYfhf]YVYbYb`5i g`Y[ i b[ `j cb` ðhYfYggY  
k ]XYfgdYfWYbž`VY]`XYf`XYf`A ]b]ghYf`ni `Uf[ i a Ybh]YfYb`j Yfgi W\hYž  
XUgg`X]Y [ YgUa `hY`?`UggY`U`Yf`6]hWc]b!HfUbgU\_h]cbYb  
VY]gd]Y`gk Y]gY`Y]bY`?`UggY`j cb`HfUbgU\_h]cbYb`]ghž`Ub`XYbYb  
Ui g`ÄbX]gWY`I G!; Y[ bYf`Y]b` ðhYfYggY`\UVYb`ž`\Y]»h`Yg`7c]b  
9f\_`Äfi b[ `XYg`NYbhfi a g`"

8]Y`[ Ya`Y]bbØhn][ Y`C f[ Ub]gUh]cb`j Yf[ `]W\`X]Y`bYi Y`; YgYhn[ YVi b[

a ]h'XYa 'K Å\fi b[ gfY[ ]a Y'XYg'C ZZ]W'cZ: cfY][ b'5ggYh'7cbhfc`  
fC: 57Ĺ'XUg'Yg']\f'Yfa Ò[ `]Wĥž5a Yf]\_UbYf'XUfUb'ni `]\bXYfbž'a ]h  
gUb\_h]cb]YfhYb'Ui g'ÅbX]gWYb'A ÅWĥYb'; YgWÅZĥY'ni 'hÅh][ Yb"  
C: 57'k i fXY'YĥhYb'5i [ i gh'i bhYf'X]Y '@ dY [ Ybca a Ybž'U`g'Yg  
\]bni ZØ[ hY'HcfbUXc'7Ug\g'i bj YfÅbXYf']WY'Ga Ufh'7cbhfUWĥg'ni  
gY]bYf'@]ghY'XYf'gUb\_h]cb]YfhYb'I bhYfbY\`a Ybž'X]Y'7c]b  
7YbhYf'Uf[ i a Ybh]Yfh'`\_ÒbbhY'Y]b'J Yfghc» ' [ Y [ Yb'XYb': ]fgh  
5a YbXa Ybh'gY]b"

⇒a ; Y [ YbgUĥn'ni 'XYb']a 'F U\`a Yb'XYg'9a Yf [ YbWm'9Wc'bc a ]W  
Dck Yfg'5Wĥ'f'99D5Ĺ [ Yk Å\fhYb'6YZ [ b]ggYb'XYg'C: 57'Ybh\Å'h'XYf  
F 9GHF ⇒7'H'5Wĥ'YXcW'k YXYf'Y]bY'5i gbU\`a YfY [ Y'i b [ `ZØf  
[ YgWÅØĥhY'GdfUWU\_h]j ]hÅhYbž'bcW'j Yf'Ub [ h'Yf'j ca 'DfÅg]XYbhYbž  
Y]bYb'bUh]cbU'Yb'B chghUbX'Ui gni fi ZYbž'VYj cf'Yf'HfUbgU\_h]cbYb  
j Yf\]bXYfh"

9]bY'VfY]hY'i bX'X]g\_fYh]cbÅfY'6YZ [ b]gž'U`Y'5fhYb'j cb  
⇒Zcfa Uh]cbghYW'bc`c [ ]Yb'ni 'j YfV]YhYb'i bX'ni 'ghØfYbž'gc`hY  
b]Wĥ'h'c\`bY'Ub [ Ya YggYbY'5i Zg]Wĥ'h'i bX'; Y`Y [ Yb\Y]h'ni f  
, VYfdfØZ b [ `Ui g [ YØVh'k YfXYb ž'gWf]YV'Yf'7c]b'7YbhYf"

## F Y [ i `]Yfi b [ gXfi W\_`Ui Z'? fmdhc

8]Y'?fmdhc]bXi ghf]Y'k i fXY'X]YgYb'A cbUh'a ]h'U`Yb'a Ò[ `]WYb  
?'U [ Yb'i bX'; YgYĥhYb']bg'J ]g]Yf' [ Ybca a Ybž'j cb'XYbYb'?f]h]\_Yf  
Uf [ i a Ybh]YfYbž'XUgg'g]Y'XYb'Ui ZghfYVYbXYb'GY\_hcf']bg'5i g'UbX  
XfÅb [ Yb'`\_ÒbbhYb"

8]Y'GYW f]h]Yg'UbX'9I W'Ub [ Y'7ca a ]gg]cb'fG97Ĺ'\Uh'X]Y'?fmdhc!  
6ØfgY'?fU\_Yb']a 'j Yf [ Ub [ YbYb'A cbUh'a ]h'Y]bYf'; Y'XghfUZY'j cb  
' \$'A ]`]cbYb'I G!8c`Uf'VY`Y [ ĥž'k Y]'g]Y'Yg'j YfgÅi a h'\UhYž']\fY  
GhU\_]b [ !8]YbghY'U'g'G]WYf\Y]h'ni 'fY [ ]ghf]YfYb"@YĥhY'K cWY'\Uh  
X]Y'5 [ Ybhi f']bg'J ]g]Yf' [ Ybca a Yb'A ØbnVUg]g'a ]h'Y]bYf  
A ]hY]i b [ 'j cb'K Y`g'ZØf'X]Y'6YfY]ghY`i b [ 'Y]bYg'Å\`b`]WYb  
DfcXi \_hg"

5i Zg]WĥhgVY\ØfXYbž'Y]bgW`]Y»`]W'XYg': ]bUbna ]b]ghYf]i a gž  
nk Ub [ Yb'5bZUb [ `X]YgYg'A cbUhg'Ui W'X]Y'G [ bUhi fY'6Ub\_`'Y]bY

XYf'\_fmdhcZfYi bX`]W\ghYb'6Ub\_Yb'XYf'J YfY]b][ hYb'GhUUhYb'`ni  
gW`]Y»Yb"9]b`Y\Ya U`][ Yf"?cb[ fYggUV[ YcfXbYhYf'i bX  
J c fghUbXga ]h[ `]YX'XYf'6Ub\_ž'6UfbYm: fUb\_ž'VY\Ui dhYh`X]Y  
FY[ i `]Yfi b[ gVY\ÖfXYb'hUhYb'X]Yg'UVg]W\h`]W\ž'i a `Y]bY' 5bh!  
?fmdhc!BUW\ f]W\h`ni`gYbXYb"

...

8YhU]`g

6Ygi W\Yb'G]Y`i bg'Ui Z.`\_fmdhc!bYk g"Uh