

6`]hn!K cW\Y']b'A Ubb\Y]a 'i bX @i Xk][g\UZYb.'<]Yf'gc``hYb'G]Y'j cfg]W\h][ZU\fYb°

8]YgY'K cW\Y'V`]hnYb'FUXUf_cbhfc``Yb']b'A Ubb\Y]a ž @ Xk][g\UZYb'i bX'XYf'DZU`n"'9fZU\fYb'G]Yž'k c'i bX'k Ubb°

A Ubb\Y]a ii bX'@ Xk][g\UZYb'ghY\Yb']b'XYf'_ca a YbXYb'K cW\Y]a i: c_i g'XYf'JYf_Y\fg_cbhfc``Yb"'Jca '&*"'5i [i gh'V]g'%"
GYdhYa VYf'k YfXYb']b'j YfgW\]YXYbYb'GhfU» Yb'X]YgYf'GhÀXhY
; YgW\k]bX][_Y]hga Yggi b[Yb'Xi fW\[YZØ\fh"'5i hcZU\fYf'gc``hYb
VYgcbXYfg'Ui Za Yf_gUa 'gY]bž'i a 'b]W\h']b'X]Y'FUXUfZU``Yb'ni
[YfUhYb"'8]Y'Dc`]nY]'\Uh'X]Y'VYhfYZZYbXYb'6YfY]W\Y'XYhU]``]Yfh
VY_Ubbh[Y[YVYbž'X]Y'_cbhfc``]Yfh'k YfXYb"

8]Y `Ui Z[YZØ\fhYb `GhfU» Yb `]b `A Ubb\Y]a ž 'k c

; YgWk]bX][_Y]hga Yggi b[Yb 'ghUhhZ]bXYbž'g]bX'i a ZUb[fY]Wk" I bhYf'UbXYfYa 'k YfXYb'X]Y'6fUi bgWk Y][Yf'5``YYž'XYf'@i]gYbf]b[i bX'X]Y'<UZYbghfU» Y'ØVYfk UWkh"'5i hcZU\fYf'gc``hYb'j cf'U``Ya k À\fYbX'XYf'Ub[Y_ØbX][hYb'?cbhfc``Yb']\fY'; YgWk]bX][_Y]h ØVYfdfØZYbž'i a 'a Ò[`]WkY'GhfUZYb'ni 'j Yfa Y]XYb"'8]Y'Dc`]nY] VYhcbhž'XUgg'ŸbXYfi b[Yb'i bX'ni gÀhn`]WkY'A YggghY``Yb'YXYfnY]h a Ò[`]Wk'g]bXž'k Yg\U`V'Y]b'[Yk]ggYg'A U» 'Ub'J cfg]Wkh'Ub[YnY][h]gh"

GhUbXcfhY'XYf'FUXUf_cbhfc``Yb

♣ '@ Xk][g\UZYb'k]fX'Ua '8]YbghU[ž'XYb'&+"'5i [i ghž'gdYn]Y``']a
6YfY]W\F Òa YfVYf['Y]bY'J]Y`nU\`'Ub'?cbhfc``Yb'ghUhhZ]bXYb"'5i W\
\]Yf'k]fX'_Y]bY'5i gbU\a YfY[Y`i b['[Ya UW\h/'JYf_Y\fg_cbhfc``Yb
_ÒbbhYb'ni 'YXYf'NY]h'i bX'Ub'YXYa 'Cfh'YfZc`[Yb"'8]Y'Dc`]nY]'\Uh
X]Yg'Ui gXfØW_`]W\'\Yfj cf[Y\cVYb'i bX'fi Zh'X]Y'5i hcZU\fYf'XUni

 $\label{eq:continuous} \begin{picture}(20,0) \put(0,0){\line(0,0){100}} \put(0,0){\line(0,0){100}}$

Ni gÀhn`]W\'d`Ubh'X]Y'Dc`]nY]X]fY_h]cb'BYi ghUXh'Y]bYb
6`]hnYfY]bgUhn'Ua 'A]hhk cW\žXYb'&, "'5i [i ghž']a '6YfY]W\
K Y]gYb\Y]a 'Ua '6Yf["'<]Yf'k]fX'YVYbZU``g'XUfUi Z'\]b[Yk]YgYbž
XUgg'c\bY'5b_ØbX][i b['h\YcfYh]gW\'Ui W\'Ui »Yf\U`V'XYf
[YbUbbhYb'NY]hfÀi a Y'i bX'CfhY'; YgW\k]bX][_Y]hga Yggi b[Yb
ghUhhZ]bXYb'_ObbhYb"

$K \]WX h][\ \underline{Y}]h \ XYf \ ? cbhfc \ Yb$

8]Y'fY[Y`a À»][Yb'6`]hnYfU_h]cbYb'g]bX'HY]`'XYf

J Yf_Y\fgg]W\Yf\Y]hgghfUhY[]Yž'X]Y'XUfUi Z'UVn]Y`hž

; YgW\k]bX][_Y]hgØVYfhfYhi b[Yb'ni 'fYXi n]YfYb'i bX'X]Y'G]W\Yf\Y]h
Ui Z'XYb'GhfU»Yb'ni 'Yf\O\Yb"'6Y]'Y]bYf', VYfgW\fY]hi b['XYf

; YgW\k]bX][_Y]h'f]g_]YfYb'5i hc ZU\fYf'b]W\h'bi f'6i »[Y`XYfž
gcbXYfb'Ui W\"[YZ\\fXYb'g]Y'g]W\"gY`Vgh'i bX'UbXYfY"'8]Y'Dc`]nY]
\Uh'XYb'_`UfYb'5i ZhfU[ž:U\fYf']b']\fYf'J YfUbhk cfhi b['ni
gYbg]V]`]g]YfYb"

8]Y J Yf_Y\fgg]W\Yf\Y]hi]b i fVUbYb; YV]YhYbi]ghiY]b inYbhfU`Yg
5b`]Y[YbiXYfi6Y\OfXYbžii bXi?cbhfc``Ybik]Y iX]YgYig]bX
bchk YbX][žii a iY]bi6Yk i gghgY]biZØfiX]Y; YZU\fYbij cb
; YgW\k]bX][_Y]hgØVYfhfYhi b[YbiniigW\UZZYb''; YgW\k]bX][_Y]hž
X]YiØVYfiXUginiiÀgg][YiA U»i\]bUi g[Y\hži_UbbiniigW\kYfYb
I bZÀ``YbiZØ\fYb''8UgiA]hZØ\fYbij cb
; YgW\k]bX][_Y]hga Ygg[YfÀhYbigc```XUVY]'\Y`ZYbžiX]Ygini
j Yf\]bXYfbii bXiX]Yi5i hcZU\fYfiniij YfUbhk cfhi b[gj c``Ya
: U\fj Yf\U`hYbiniiYfa i h][Yb''

5Whi b[']gh'b]Wh'bi f']b'XYb'[YbUbbhYb'6YfY]W\Yb'[YVchYb" 5i hcZU\fYf'k YfXYb'XUfUb'Yf]bbYfhž'g]W\'ghYhg'Ub'X]Y

J Yf_Y\fgfY[Y`b'ni '\U`hYbž'i a 'XUg'F]g]_c'j cb'l bZÀ``Yb'ni
a]b]a]YfYb"'CV']a '5``hU['cXYf'Ui Z``Àb[YfYb': U\fhYb'

J Yf_Y\fgg]W\Yf\Y]h'VY[]bbh']a a Yf'a]h'XYa 'Y][YbYb'J Yf\U`hYb

8]Y'VYj cfghY\YbXYb'?cbhfc``Yb'V]YhYb'gck c\``Y]bY'7\UbW'ni f FYZYI]cb'ZØf'X]Y'5i hcZU\fYf'U`g'Ui W\'Y]bY'A U»bU\a Y'ni f; Ygi bX\Y]hgj YfVYggYfi b[']a 'GhfU»Ybj Yf_Y\f"'G]W\YfYf'J Yf_Y\f]gh'b]W\h'bi f'Y]b'N]Y'ž'gcbXYfb'Ui W\'Y]bY'J YfUbhk cfhi b[ž'X]Y YXYf'5i hcZU\fYf'hfU[Yb'gc``hY''8Ug'K]ggYb'i a 'VYj cfghY\YbXY 6`]hnU_h]cbYb'_Ubb'XUni 'ZØ\fYbž'XUgg': U\fYf']\fY; YgW\k]bX][_Y]h'UbdUggYb'i bX'gca]h'ni f'G]W\Yf\Y]h'U``Yf J Yf_Y\fghY]`bY\a Yf'VY]hfU[Yb"

8]Y'Bi hni b['j cb'6`]hnYfUb`U[Yb'i bX'FUXUf_cbhfc``Yb'\Uh']b
8Yi hgW\`UbX'Y]bY'`Ub[Y'; YgW\]W\hY''8]YgY'A U» bU\a Yb'k i fXYb
i fgdfØb[']W\'Y]b[YZØ\fhž'i a 'X]Y'JYf_Y\fgg]W\Yf\Y]h'ni 'Yf\O\Yb
i bX'; YgW\k]bX][_Y]hgØVYfhfYhi b[Yb'ni 'j Yff]b[Yfb'''+b'XYb
`YhnhYb'*J\fYb'\UVYb'g]W\'X]Y'HYW\bc`c[]Yb'ni f
; YgW\k]bX][_Y]hgØVYfk UW\i b['Yf\YV`]W\'kY]hYfYbhk]W_Y`hž'k Ug
Y]bY'[YbUi YfY'i bX'YZZ]n]YbhYfY', VYfk UW\i b['j cb
JYf_Y\fggØbXYf'Yfa O[`]W\h''

FYWXh`]WXYf'FU\a Yb'i bX'6YXYi hi b[

#b '8 Yi hgW\`UbX'g]bX'X]Y'F YW\hg[fi bX`U[Yb'ZØf'F UXUf_cbhfc``Yb]a 'GhfU\"Ybj Yf_Y\fi]a 'GhfU\"Ybj Yf_Y\fg[YgYhn'fGhJ; L'j YfUb_Yfh"8]Y'Dc`]nY]']gh'VYZ [hž'; YgW\k]bX][_Y]hg_cbhfc``Yb'Xi fW\ni ZØ\fYbži a 'X]Y'G]W\Yf\Y]h'Ui Z'XYb'GhfU\"Yb'ni '[Yk\A\f`Y]ghYb"'?cbhfc``YbX]YbYb'b]W\h'bi f'XYf'5\bXi b['j cb'J YfghÒ\"Ybž'gcbXYfb'Ui W\'XYfDfAj Ybh]cbž']bXYa 'g]Y'Ui Z'XUg'f]W\h][Y'J Yf\U`hYb']aGhfU\"Ybj Yf_Y\f'Ui Za Yf_gUa 'a UW\Yb"8]Yg'[YgW\]Y\h]bgVYgcbXYfY']b'6YfY]W\Yb'a]h'\c\Yb'I bZU``nU\`Yb'cXYf']b'XYfB\A\Y'j cb'GW\i Yb"

8]Y'9f\YVi b['j cb'6i »[Y'XYfb'Ui g
; YgWk]bX][_Y]hgØVYfhfYhi b[Yb'hfÀ[h'YVYbZU``g'ni f':]bUbn]Yfi b[
j cb'JYf_Y\fgg]W\Yf\Y]hgdfc[fUa a Yb'VY]"'@Ui h'Y]bYf'GhUh]gh]_'XYf
8 Yi hgW\Yb'JYf_Y\fgk UW\h'`U['X]Y'NU\`'XYf'Xi fW\
; YgW\k]bX][_Y]hgØVYfgW\fY]hi b[Yb'j Yfi fgUW\hYb'I bZÀ``Y']a '\$J\f
&\$&&'VY]'Yhk U'-\$"\$\$\$ž'k Ug'Y]bYb'g][b]Z]_UbhYb'5bhY]`'Ub'XYb
]bg[YgUa h'fY[]ghf]YfhYb'JYf_Y\fgi bZÀ``Yb'XUfghY``h''8]Yg
j YfXYi h`]W\h'X]Y'k]W\h][Y'Fc``Y'j cb'?cbhfc``Yb'ni f'FYXi n]Yfi b[

$HYWMbc^c[]gWMY'9bhk]W_ib[Yb']a'6YfY]WMFUXUfØVYfkUWMib[$

 $8]Y F UXUfØVYfk UWXi b[g[YfÅhY`\UVYb`g]WX`Xi fWX`XYb`9]bgUhn X][]hU`Yf`HYWXbc`c[]Y`j YfÅbXYfh"`<Yi hni hU[Y`j Yfk YbXYb`j]Y`Y Dc`]nY]X]YbghghY``Yb`a cV]`Y`6`]hn[YfÅhYž`X]Y`Ui Z`: U\fnYi [Yb a cbh]Yfh`g]bX`i bX`ZYI]VY``Y]b[YgYhnh`k YfXYb`_ObbYb"`8]YgY ; YfÅhY`g]bX`cZh`]b`XYf`@U[Yž`[`Y]WXnY]h][Y ; YgWXk]bX][_Y]hga Yggi b[Yb`]b`VY]XY`: U\fhf]WXhi b[Yb Xi fWXni ZØ\fYb`i bX`_ObbYb`gc[Uf`J]XYcg`Ui ZbY\a Ybž`i a JYfghO`»Y`ni `Xc_i a Ybh]YfYb"`8Ub_`X]YgYf`hYWXbc`c[]gWXYb : cfhgWXf]hhY`_ObbYb`X]Y`6Y\OfXYb`YZZY_h]j Yf`UfVY]hYb`i bX`a Y\f JYf_Y\fggØbXYf`]XYbh]Z]n]YfYb"$

9]b'k Y]hYfYf'k]W\h][Yf'5gdY_h'XYf'hYW\b]gW\Yb

K Y]hYfYbhk]W_`i b[']gh'X]Y'9]bZØ\fi b['j cb'gc[YbUbbhYb' 6`]hnYfb

a]h'?ca V]!, VYfk UW\i b["'8]YgY'; Yf\hY'_\ObbYb'b]W\h'bi f

; YgW\k]bX][_Y]hga Yggi b[Yb\tigcbXYfb'Ui W\'X]Y'Y]bXYi h][Y

9fZUggi b['j cb'fchYb'5a dY\b'i bX'XUg': U\fYb'c\bY'[Ø\h][Yb

: Ø\fYfgW\Y]b'i bhYfghØhnYb"'8]Yg'Yf\O\h'X]Y'9ZZ]n]Ybn'XYf

J Yf_Y\fg_cbhfc``Yb'i bX'X]Y'G]W\Yf\Y]h'Ui Z'XYb'GhfU\'Yb

[YbYfY\`Yf"

Ni gUa a YbZUggYbX'`Àggh'g]W\'gU[Ybž'XUgg'FUXUf_cbhfc``Yb'i bX 6`]hnYf'b]W\h'bi f'Y]b' \Delta ghfi a Ybh'XYf', VYfk UW\i b['g]bXž'gcbXYfb Y]b'VYXYi hYbXYf': U_hcf'ZØf'X]Y'G]W\Yf\Y]h']a 'GhfU» Ybj Yf_Y\f"'8]Y HYW\bc`c[]Y'i bX'X]Y'fYW\h`]W\Yb'FU\a YbVYX]b[i b[Yb'\UVYb g]W\'k Y]hYfYbhk]W_Y`hž'i a 'XYb'6YXØfZb]ggYb'XYf'a cXYfbYb ; YgY``gW\UZh'[YfYW\h'ni 'k YfXYb"

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