

### FUgYbdZ`Y[Y!I bZU```]b': cfWX\Y]a . 'GYb]cf gWXk Yf'j Yf`Yhnh' '; Ya Y]bXY'\]`Zh°

9]b'\*)!'À\f][Yf'AUbb'Yf`]hh']b': cfW\\Y]a 'gW\k YfY JYf`Yhni b[Yb'VY]'Y]bYa 'FUgYba À\Yf!| bZU``"'8]Y'6Y\ÒfXYb Yfa ]hhY`b"

D'Y]bYa 'VYgcf[b]gYffY[YbXYb'JcfZU``ž'XYf'g]WX'Ua 'j Yf[Ub[YbYb8cbbYfghU[']b'XYf'a U`Yf]gWXYb'CVYfZfUb\_Yb!FY[]cb'YfY][bYhYžaigg'g]WX'Y]bY'DYfgcb'a]h'XYb': c`[Yb'Y]bYg'XfUaUh]gWXYbFUgYbdZY[Y!IbZU``g'UigY]bUbXYfgYhnYb"'8Yf'\*)!'À\f][Y'AUbbžXYf'a]h'Y]bYa'FUgYbaÀ\YfhfU\_hcf']b'9[`cZZghY]b'VYgWXÀZh][h'kUfžYf`]hh'VY]'XYf'5igZØ\fib['X]YgYf'U``hÀ[`]WXYb'5iZ[UVYgWXkYfk]Y[YbXY'JYf`Yhnib[Yb"

8 Yf'J cfZU```\_Ua `UVfi dhž'U`g'XYf'F UgYba À\Yf'i bhYf'XYb'a Ugg]j Yb 8 fi W\_'i bX'XUg'; Yk ]W\h'XYf'A UgW\]bY'[Yf]Yh"'8 Yf': i » 'XYg A UbbYg'k i fXY'XUVY]'gW\k Yf'j Yf`Yhnh"'GW\fY]YbX'bUW\'<]`ZY k YW\_hY'Yf'X]Y'5i Za Yf\_gUa \_Y]h'Y]bYg'\]`ZgVYfY]hYb'DUggUbhYbž'XYf i a [Y\YbX'X]Y'BchX]YbghY'U`Ufa ]YfhY"'\#\:\A``Yb'k ]Y'X]YgYb gW\Ahnh'a Ub'X]Y'GW\bY``][\_Y]hž'a ]h'XYf'A YbgW\Yb'\UbXY`bž'i a ']b Y]bYf'Bchg]hi Uh]cb'l bhYfghØhni b['ni '`Y]ghYb"

## A YX]n]b]gW\Y'A U» bU\a Yb'i bX'FYU\_h]cbYb XYf'; Ya Y]bgW\UZh

8]Y'a YX]n]b]gW\Y'Bchj Yfgcf[ib['YfZc`[hY'dfcadh'8Yf'JYf`YhnhYkifXY'a]h'Y]bYa 'FYhhib[g\iVgW\fUiVYf']b'XUg'bÀW\gh[Y`Y[YbY?fUb\_Yb\Uig'[YZc[Yb"8]Y'GW\kYfY'gY]bYf'JYf`Yhnib[YbYfZcfXYfhYb'Y]bYb'gW\bY``Yb'ibX'dfcZYgg]cbY``Yb6Y\UbX`ib[gY]b[f]ZZž'ia'kY]hYfY'GW\AXYb'ni'jYf\]bXYfb"'@Y]XYfg]bX'X]Y'[YbUiYb'IaghÀbXYž'X]Y'ni'X]YgYa'VYXUiYf`]W\Yb'IbZU``

 $Z\emptyset \ fhYb \check{z} [Y[Ybk \grave{h}fh][`bcW`ib_`Uf"`8]Yg` \ Uh'X]Y``c_U`Yb`6Y \ \grave{O}fXYb j YfUb`Uggh\check{z}'Y]bY`[fØbX`]WXY`IbhYfgi WXib[`Y]bni`Y]hYb"$ 

8 UgʻGW\]W\_gU``XYgʻA UbbYgʻ\Uhʻb]W\hʻbi fʻgY]bYʻ: Ua ]`]YžʻgcbXYfb Ui W\X]Yʻ[YgUa hYʻ; Ya Y]bgW\UZhʻ]bʻ: cfW\\Y]a `VYhfcZZYb"`CVk c\`XYfʻGYb]cfʻi fgdfØb[`]W\Ui gʻ: fUb\_fY]W\ʻghUa a hž`\Uhʻg]W\`X]Y BUW\VUfgW\UZhʻni gUa a Yb[YhUbži a `]\a `I bhYfghØhni b[`i bX VYghYbʻ; YbYgi b[ gk ØbgW\Y'ni \_ca a Ybʻni ``UggYb"`8]YgʻnY][ hʻXUg ghUf\_'Ui g[YdfÀ[ hYʻNi gUa a Yb[Y\Òf][ \_Y]hg[YZØ\``]bʻXYfʻFY[]cbž k Y`W\Ygʻ]bgVYgcbXYfY`]bʻ?f]gYbnY]hYbʻØVYfʻ\_i `hi fY``Yʻi bX gdfUW\`]W\Y'I bhYfgW\]YXY`\]bk Y[ 'g]W\hVUf`k ]fX"

# 8]Y'6YXYi hi b['j cb G]WXYf\Y]hgj cf\_Y\fi b[Yb

9gʻ]ghʻb]Wkhʻbi fʻY]bʻ9]bnYʻj cfZU`ʻžʻgcbXYfbʻk]fZhʻUi WkʻY]bʻk]Wkh][Yg@]WkhʻUi ZʻG]WkYf\Y]hgj cf\_Y\fi b[YbʻVY]ʻXYfʻ5fVY]hʻa]h

`UbXk]fhgWkUZh`]WkYbʻ; YfÀhYbžʻX]Yʻ]bʻj]YʻYbʻ< Ui g\UʻhYbʻni fʻDZY[Y
XYgʻF UgYbgʻj Yfk YbXYhʻk YfXYbʻʻl a'l bZÀʻʻYʻk]YʻX]YgYbʻni
j Yfa Y]XYbžʻ]ghʻYgʻj cbʻYbhgWkY]XYbXYfʻ6YXYi hi b[žʻXUggʻX]Y
6YX]YbYfʻgcʻWkYfʻA UgWk]bYbʻi a ZUggYbXʻ[YgWkiʻhʻg]bXʻi bXʻghYhg
X]YʻbÒh][YbʻJ cfg]Wkhga U» bU\a YbʻhfYZZYbʻʻ8Yfʻl bhYfgWk]YX
nk]gWkYbʻY]bYaʻg]WkYfYbʻi bXʻY]bYaʻ[YZÀ\f`]WkYbʻl a [Ub[ia]h
; YfÀhYbʻk]YʻF UgYba À\Yfbʻ\_ObbhYʻZØfʻj]YʻYʻA YbgWkYbʻj cb
`YVYbgk]Wkh][Yfʻ6YXYi hi b[ˈqY]bʻ'

I b[YUW\hYh'XYf'U\_hi Y``Yb'G]hi Uh]cb'V`Y]Vh'UVni k UfhYbž'k Y`W\Y
9f[YVb]ggY'X]Y'Y]b[Y`Y]hYhY'I bhYfgi W\i b['Vf]b[Yb'k]fX"'Gc`W\Y
I bZ\h``Y'\_\ObbYb']b'XYf'HUh'j Yf\YYfYbXY': c`[Yb'\UVYbž'gck c\`d\mg]gW\'U`g'Ui W\'Ya ch]cbU`"'8U\Yf']gh'Yg'i bYf`\hgg`]W\\ž'XUgg'X]Y
j YfUbhk cfh`]W\Yb'GhY``Yb'U``Y': U\_hcfYb'VY`Yi W\hYbž'X]Y'ni 'X]YgYa
J cfZU``'[YZ\ho\fh'\UVYb'\_\ObbhYbž'i a '\h\\b`]W\Y'HfU[\OX]Yb']b'XYf
Ni \_i bZh'ni 'j Yf\]bXYfb"

CVkc\`X]Y; Ya Y]bgW\UZhij cb'9[`cZZghY]b'g]W\'gc`]XUf]gW\'nY][hibX'XYa 'AUbb'; YbYgi b[gk ØbgW\Y'ØVYfa]hhY`hž'\_ÒbbYb; YXUb\_Yb'ØVYf'; YZU\fYb'i bX'F]g]\_Yb']b'XYf'FUgYbdZY[Y'b]W\h][bcf]Yfh'k YfXYb"'8]Y'I bhYfghØhni b['XYf'BUW\VUfb'\_Ubb'Y]bY

[fc»Y'<]`ZY']b'XYf'<Y]`i b[gd\UgY'gY]bž'UVYf'Ui W\'Y]bY Y]b[Y\YbXY'6YhfUW\hi b['XYf'G]W\Yf\Y]hgdfchc\_c``Y']gh'bchk YbX][ž i a 'XUg'K c\`VYZ]bXYb'U``Yf'6Øf[Yf'ni '[Yk À\f`Y]ghYb"

±0.5 b V Y h f U W h 'X Y f '6 Y X Y i h i b [ 'X Y f 'H \ Y a U h]\_']gh 'Y g'\_ `U f ž 'X U g g g c k c \ `']b X]j ] X i Y ``Y 'G] W Y f \ Y]hgd f U\_h]\_Y b 'U `g 'U i W [ Y a Y]b g W U Z h `] W Y I b h Y f g h Ø h n i b [ '< U b X '] b '< U b X '[ Y \ Y b 'a Ø g g Y b ž i a ']b 'Y X Y f 'G] h i U h ] c b 'X ] Y 'V Y g h a Ò[ `] W Y b '9 f [ Y V b ] g g Y 'Z Ø f 'U ``Y 6 Y h Y]`][ h Y b 'n i 'Y f n] Y `Y b "'G] W Y f \ Y]hgj c f\_Y \ f i b [ Y b 'i b X 6 Y k i g g h g Y] b 'g] b X 'X Y f `G W `Ø g g Y ``n i a 'G W i h n 'X Y f Y b] [ Y b ž X ] Y 'a ] h `U b X k ] f h g W U Z h `] W Y b '; Y f À h Y b 'U f V Y] h Y b "'8 ] Y '6 c h g W U Z h `] g h '\_ `U f . G] W Y f \ Y ] h 'g c ``h Y '] a a Y f 'U b 'c V Y f g h Y f `G h Y ``Y 'g h Y \ Y b "

## 8]Y'6YXYi hi b['XYf'G]WXYf\Y]h'VY]'XYf FUgYbdZ`Y[Y

I bZÀ``Y'VY]'XYf'FUgYbdZY[Y'g]bX'`Y]XYf'\_Y]bY'GY`hYb\Y]h"'@Ui h
Y]bYa '6Yf]W\h'XYf'8Yi hgW\Yb'; YgYhn`]W\Yb'I bZU``j Yfg]W\Yfi b[
fB; I J Ł'YfY][ bYb'g]W\'A\f`]W\'hUi gYbXY'j cb'FUgYba À\Yf!
I bZÀ``Yb"'C Zh'g]bX'X]Y'I fgUW\Yb'a Ub[Y`bXY
G]W\Yf\Y]hgj cf\_Y\fi b[Yb'cXYf'ZU`gW\Y'<UbX\UVi b['j cb'; YfÀhYb"
I a 'gc`W\Y'J cfZÀ``Y'ni 'j Yf\]bXYfbž']gh'Yg'YbhgW\Y]XYbXž'XUgg
6Ybi hnYf']a a Yf'X]Y'6Yhf]YVgUb`Y]hi b['gcf[ZÀ`h]['`YgYb'i bX
dYfgÒb`]W\Y'GW\i hnUi gfØghi b['j Yfk YbXYbž'k]Y'Yhk U
G]W\Yf\Y]hggW\i \Y'i bX'<UbXgW\i \Y"

Ni gàhn`]WX 'gc``hY 'a Ub 'VY]'XYf'J Yfk YbXi b[ 'j cb'F UgYba à\Yfb XUfUi Z'UWX hYbž'XUgg'g]WX '\_Y]bY 'DYfgcbYb']b'XYf'Bà\Y'Ui Z\U`hYbž k à\fYbX'XUg'; Yfàh']b'6Yhf]YV']gh"'8]Y'Bi hni b[ 'j cb F UgYba à\YfhfU\_hcfYb'gc``hY'ni XYa 'b]Y'i bhYf'9]bZi gg'j cb 5`\_c\c``cXYf'8fc[ Yb'YfZc`[ Ybž'i a 'XUg'F]g]\_c'Y]bYg'I bZU``g'ni a ]b]a ]YfYb"

#### ; Ya Y]bgWX UZh`]WX Y`I bhYfghØhni b[`i bX <]`ZgUb[YVchY

VYa Yf\_Ybgk Yfhžík ]Y 'gWX bY``X]Y ``c\_U`Y'; Ya Y]bgWX UZh
ni gUa a Yb\_Ua ž'i a '<]`ZY 'Ubni V]YhYb" 'Gc`WXY 'Gc`]XUf]hÀh'\_Ubb']b
?f]gYbg]hi Uh]cbYb'j cb'YbhgWXY]XYbXYf'6YXYi hi b[ 'gY]b"' ≠
8 Yi hgWX `UbX'YI ]gh]YfYb'nU\`fY]WXY'Cf[ Ub]gUh]cbYbž'X]Y 'g]WX'ZØf
X]Y 'I bhYfghØhni b[ 'j cb'J Yf`YhnhYb'i bX'XYfYb': Ua ]`]Yb'Y]bgYhnYb"
@c\_U`Y' ≠ b]h]Uh]j Yb'gck ]Y' <]`Zgcf[ Ub]gUh]cbYb'k ]Y'XUg'8Yi hgWXY
FchY'?fYi n'V]YhYb'cZh'gWXbY``Y' <]`ZY'i bX'6YfUhi b[ 'Ubž'i a
A YbgWXYb']b'Bch'ni f'GY]hY'ni 'ghY\Yb"

5i » YfXYa ']gh'Yg'ZØf'5bk c\bYf'k ]W\h][ ž'Y]bY'[i hY BUW\VUfgW\UZhg\]`ZY'ni 'ZÒfXYfbž']bXYa 'g]Y'Y]bUbXYf']a '5``hU[ i bhYfghØhnYb'i bX']a 'BchZU```gW\bY```fYU[]YfYb"'8]Yg'gW\UZZh'b]W\h bi f'Y]b'g]W\YfYg'I a ZY`Xž'gcbXYfb'ghÀf\_h'Ui W\'X]Y'gcn]U`Y'6]bXi b[ ]bbYf\U`V'XYf'; Ya Y]bgW\UZh"

8 Y hU]`g

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'X]Y!bUWX f]WX hYb "bYh