

## ? Ubb'; Ua Y: ]'XUg'A YhUj YfgY'bcW\ ZfY]gW\U`hYb3

8]Y 6fUbWXY j Yfgi WX h XYfnY]hžY]bYb K YWXgY``j ca 'D`Um!hc! 9Ufb!AcXY```ni 'Y]bYa 'D`Um!UbX!9Ufb!AcXY```j cfUbni hfY]VYb ±b'Y]bYa'D`Um!UbX!9Ufb!AcXY```df]cf]q]YfYb'Gd]Y`UfW\]hY\_hYb XUgʻ; Ua Yd`Umʻ[Y[YbØVYf`XYfʻ\b!; Ua Y!2 \_cbca ]Yži a 9b[U[Ya Ybhii bUV\Ab[]['jcb'XYf'Z]bUbn]Y``Yb'6Y`c\bi b[ ni [Yk]bbYb < Uh; Ua Y: ]g A ]gg]cbžY]b Y]b\Y]h`]W\Yg A YhUj Yfgi a 'ni 'gW\UZZYbž'Xi fW\ XYb Ni gUa a YbVfi W\ XYf ±b!; Ua Y!<sup>2</sup> \_cbca ]Yb i bX XYb Di g\!6UW\_i cb ; Ua ]b[!B: H VYYbXYh3'@Ui h'CfbY``U'< YfbUbXYn'j cb'6`cW\_k cf\_'`Ui hYh'X]Y  $5bhk cfhbY]b"6cW_WWJb!; Ua]b[]ghbUWWk]YjcfY]bY$ hfY]VYbXY'?fUZh'\]bhYf'XYf' ⇒bhYfcdYfUV]`]hÀh'j ]fhi Y``Yf K Y`hYb"'| bX'X]Y'BUW\ZfU[Y'bUW\Gd]Y`Yb'k]fX'| bUV\Àb[][ icb:XYb:k]fhqW\UZh`]W\Yb:6YX]b[ib[Yb:VYqhY\Yb:V`Y]VYb":±b a Y]bYa '; YgdfÀWX 'a ]h'CfbY``U'\Y`ZYb'k ]f'XUVY]ž'U``Y'ØVYf A Uf\_hVYX]b[ib[Ybž'\_cb\_iff]YfYbXY': fU\_h]cbYb'ibX ni  $_{\emptyset}bZh][Y/Uad\Lambda Y^{*}]d/$ 

- 8]Y'6fUbWXY'j Yfgi WXh'XYfnY]hž'Y]bYb'K YWXgY`'j ca 'D`Umlhc! 9Ufb!A cXY``'ni 'Y]bYa 'D`UmlUbX!9Ufb!A cXY`` j cfUbni hfY]VYb
- b'Y]bYa 'D`UmUbX!9Ufb!A cXY``'df]cf]g]YfYb
  Gd]Y`UfWX]hY\_hYb'XUg'; Ua Yd`Um'[Y[YbØVYf'XYf'±b!; Ua Y!

  2 \_cbca ]Yž'i a '9b[U[Ya Ybh'i bUV\Àb[]['j cb'XYf
  Z]bUbn]Y``Yb'6Y`c\bi b['ni '[Yk]bbYb

<Uh; Ua Y: ]g'A ]gg]cbžY]b'Y]b\Y]h']W\Yg'A YhUj Yfgi a 'ni 'gW\UZZYbž
Xi fW\'XYb'Ni gUa a YbVfi W\'XYf'\del; Ua Y!^2 \_cbca ]Yb'i bX'XYb
Di g\!6UW\_j cb'; Ua ]b[!B: H'VYYbXYh3'@Ui h'CfbY``U'<YfbUbXYn
j cb'6`cW\_k cf\_'`Ui hYh'X]Y'5bhk cfh'bY]b"'6`cW\_W\U]b!; Ua ]b[']gh
bUW\k ]Y'j cf'Y]bY'hfY]VYbXY'?fUZh'\]bhYf'XYf'\delta hYfcdYfUV]`]h\h
j ]fhi Y``Yf'K Y`hYb"'I bX'X]Y'BUW\ZfU[Y'bUW\'Gd]Y`Yb'k ]fX
i bUV\\h
b[]['j cb'XYb'k]fhgW\UZh`]W\Yb'6YX]b[i b[Yb'VYghY\Yb
V`Y]VYb"'\delta a Y]bYa '; Ygdf\h
W\'a ]h'CfbY``U'\Y'ZYb'k]f'XUVY]\delta U`Y
ØVYf'A Uf\_hVYX]b[i b[Yb\delta'\_cb\_i ff]YfYbXY': fU\_h]cbYb'i bX
ni \_ØbZh][Y'5i gk]f\_i b[Yb'Ui Z'XUg'A YhUj Yfgi a 'Ui Z'XYa
@Ui ZYbXYb'ni '\U`hYb"'</pre>

 $CfbY``U']gh'a ]h'] \land fYf'dcg]h]j Yb'9]bghY``ib['b]Wkh'U``Y]b"'\frac{5 Vgc`ih}{1}b'Y]bYb'6Yf]Wkh'j YfÒZZYbh`]Wkhž']b'XYa'`ØVYf'&ž, 'A]``]UfXYb'; UaY:]!9]bbU\aYb']b'XYb'bÀWkghYb'gYWkg'\\J\fYb'dfc[bcgh]n]Yfh'kYfXYb"$ 

5VYf'X]Y'; Ua Y: ]! DXi ghf]Y'a i gg'Y]bY' XYbh]hÀhg\_f]gY'`ÒgYbž'VYj cf g]Y'Y]b'bYi Yg'DUfUX][ a U'\Yfj cfVf]b[ Yb'\_Ubb"'8]Y'6fUbWXY j Yfgi WXhž'Y]bY'JYf'U[ Yfi b[ 'j ca 'D`Umlhc!9Ufb!A cXY``ni 'Y]bYa D`UmlUbX!9Ufb!A cXY``'j cfUbni hfY]VYb"'CfbY``U']gh'XYf'5bg]WXhž XUgg'X]Y'6fUbWXY'bcWX'Y]bYb'GWXf]hh'k Y]hYf'[ Y\Yb'i bX'X]Y HYfa ]bc`c[]Y'j cb' 6`cW\_WXU]b!Gd]Y`Yb'ni 'fY]bYbž']b'XYf'?YhhY

[YVUi hYb GdU» gd]Y Yb 'ÀbXYfb a i gg" 9g a i gg gY]bY ]bbcj Uh]j Y 9bYf[]Y Ui Z' cfhgWlf]hhY ]a '; Ua ]b[ 'ghUhh Ui Z' b!; Ua Y! 2 \_cbca ]Yb 'Yb \_Yb"

G]Y 'gU[ h'Ui W\ ž'XUgg 'g]W\ 'XUg'; Yg]W\ h'XYg'; Ua ]b[ g'j YfÀbXYfh" = a Yf'a Y\f': fUi Yb 'nY][ Yb '=bhYfYggYž'XU' < mdYf! 7 Ugi U`!Gd]Y`Y ]a a Yf'VY`]YVhYf'k YfXYb"'K Ybb'; Ua Y: ]'Y]bY'; Ua ]b[!:]fgh!?i`hi f\Yfj cfVf]b[ Yb'a ÒW\hYž'gc``hY'Yg'X]YgY'5fhYb'j cb'Gd]Y`Yb'i bX'X]YU``[ Ya Y]bY'J ]Y`ZU`h'XYf'8 UfghY``i b[ 'Y]bVYn]Y\Yb"'

## K Ug g]bX D`Umlhc!9Ufb!Gd]Y`Y i bX ]gh D`UmlUbX! 9Ufb Y]bY YW hY @Ògi b[ 3

 $D`Um! hc! 9 Ufb! Gd]Y`Y`g]bX`X]Y`YfghY`; YbYfUh]cb`j cb`; Ua~Y: ]"`Gd]Y`Y k~]Y`51~]Y~$\delta Z]b~]hm\delta X]Y`Gd]Y`Yf`a~]h`X][~]hU`Yb~5ggYhg~Z\delta f`9fZc`[~Y~]a~Gd]Y``VY`c\bYb\delta ZU``Yb~]b`X]YgY~?~UhY[~cf]Y"~8~]YgY`X][~]hU`Yb~5ggYhg~_\delta bYb~XUbb~Ui~Z`Y]bYa~GY_i~bX\delta fa~Uf_h~[~Y_Ui~Zh~i~bX~j~Yf_Ui~Zh~j~Yf_Ui$ 

8]Y 'Dcdi `Uf]hÀh'X]YgYg'A cXY``g'Yl d`cX]YfhY ']a '\\\f'&\&\%\\X'\Yg'\XYb'K Y[ 'ZØf'Y]bY'bYi Y'9]bbU\a Yei Y``Y'ZØf'; Ua Yf'VYfY]hYhY" 
I bX'Yg'k Uf'VYgcbXYfg'VY`]YVh'VY]'A YbgW\Yb']b 
9bhk ]\\\\_`i b[ g`\AbXYfb\z'\k Y]``Yg']ba ]hhYb'Y]bYf'dUbXYa ]YVYX]b[ hYb k ]fhg\W\UZh`]\W\Yb'5Vg\W\k \AW\i b[ 'bYi Y'gcn]U`Y'A cV]`]h\Ah'Vch"'

8]YgYf'bYiY'k]fhgWkUZh`]WkY'5bfY]n'kifXY'YXcWk'ni'Y]bYf'EiY``Y Yf\YV`]WkYf'?f]h]\_"'J]Y`Y'VY\UidhYhYbž'XUgg'X]Y'Dcdi`Uf]hÀh'jcb Gd]Y`Yb'k]Y'5l]Y'=bZ]b]hm'bif'XifWk']\fY':]bUbn]U`]g]Yfib['[YghØhnhkifXY"'IbX'kYbb'Yg'gY]bY'FYbhUV]`]hÀh'jYf`]YfYb'kØfXYž'kØfXY XUg'; UaYd`Um'UiZ\ÒfYb"''

Hfchn'XYg'Ni gUa a YbZi ggYg'bY[Uh]j Yf'BUW\f]W\hYbž
Y]bgW\`]Y»`]W\'bYi Yf'\dg]XYf\UbXY`gUbgdfØW\Yž']gh'XUg'Gd]Y`
]a a Yf'bcW\'Ua '@YVYb'i bX'k c\`Ui Z''\d \in '\hi\`]'j YfÒZZYbh`]W\hYb'X]Y
9bhk ]W\_`Yf'Y]bY'bYi Y'J Yfg]cb'XYg'Gd]Y`g'bUa Ybg'Cf][]bž'i bX'U`g
9f[YVb]g'J Yf\_Ui Z'j cb'B: H'51 ]Yg'g]bX'k ]YXYf'Ui Z'XYa
J cfa UfqW\"

8]YgYg'I d[fUXY']gh'HY]`'Y]bYg'GWXf]hhYgži a '?f]h]\_Yf'j cb'D`Um!hc!
9Ufb'Xi fWX'Y]bYb'JYfVYggYfi b[gj Yfgi WX'bUa Ybg'D`Um!UbX!9Ufb
Ubni gdfYWXYb"'+b'X]YgYa 'AcXY``'df]cf]g]YfYb'Gd]Y`UfWX]hY\_hYb
XUg'; Ua Yd`Um'[Y[YbØVYfXYf'+b!; UaY!2\_cbca]Yži a
9b[U[YaYbhi bUV\Àb[]['jcb'XYf'Z]bUbn]Y``Yb'6Y`c\bi b['ni
[Yk]bbYb"'8]Y'Hc\_Ybca]\_']gh'XUbb'gc'\_cbn]d]Yfhž'XUgg'g]Y'XYf
[YgUahYb'9fZU\fi b['Y]bYb'gY\_i bXÀfYb'K Yfhi Yf'Y]\h"'

6Y]gd]Y`gk Y]gY \_ObbYb bYi Y 6Ybi hnYf XUg Gd]Y`a ]h'Y]bYa \_cghYb`cgYb GhUfhYfdU\_Yh']b Cf][ ]b gd]Y`Yb" J cf XYa 'I d[ fUXY a i gghYb 6Ybi hnYf XfY] 5j UhUfY bUa Ybg 5I ]Yg \_Ui ZYbži a gd]Y`Yb ni '\_ObbYb" GY]h'X]YgYa 'I dXUhY gh]Y[ 'X]Y NU\``XYf bYi Yb a cbUh`]WXYb ?cbhYb j cb ( "\$' \$ ']a '\$ b]'Ui Z') "' , + ']a '\$ `]"

CVk c\`X]YgY`Ni bU\a Y`bYi Yf`6Ybi hnYf`Y]bY`HfYbXi a \_Y\f
XUfghY``hž`]gh`bcW\`i b\_`Ufž`cV`Yg`XYf`bYi Yb`D`Um!UbX!9Ufb!
D\]`cgcd\]Y`[Y`]b[Yb`\_Ubbž`9b[U[Ya Ybh`i bUV\Àb[][`j cb`XYf
9Ufb !BUhi f`XYg`; Ua Yd`Umg`ni `[Yk]bbYb"`8U`X]Y`9bhk]W\_`Yf
51]Y`\dZ]b]hm`i fgdfØb[`]W\`a]h`XYf`: ]bUbn]U`]g]Yfi b[g\_ca dcbYbhY]a `?Yfb`Ybhk cfZYb`\UVYbž`]gh`Yg`gW\kYf`ni `Uf[i a Ybh]YfYbž`XUgg
XUq`I d[fUXY`k]f\_`]W\`D`Um!UbX!9Ufb `]qh"

## K Y`WXY'Fc``Y'k ]fX'D`Um!UbX!9Ufb']a 'A YhUj YfgY qd]Y`Yb3

#bgh]hi h]cbY``Y :#bj YghcfYb k UfhYb XUfUi Zžni 'gY\YbžcV'Yg'C b!
7\U]b!Gd]Y`Yb [Y`]b[hž; Ua Yd`Um'Ui » Yf\U`V'XYg'\_fmdhc!bUh]j Yb
2 \_cgmghYa g'Ubni n]Y\Yb"'K Ybb 'Yg'5bnY]W\Yb 'ZØf'Y]bY '7fcggcj Yf!
5bn]Y\i b[g\_fUZh'[]Vhž'ÒZZbYh'X]Yg'X]Y '6fUbW\Y'ZØf'Y]bY
%+,!A]``]UfXYb!8c``Uf!; Ua ]b[!#bXi ghf]Y"'5VYf'bcW\'k]W\h][Yf']ghž
XUgg'Y]b '5bgh]Y['XYf'6Ybi hnYf'X]Y'; fi bX`U[Y'ZØf'Y]b'Y]b\Y]h`]W\Yg
A YhUj YfqY'V]`XYb'k]fX"''

CfbY``U`XYZ]b]Yfh`XUg`A YhUj Yfgi a `U`g`i bYbX`]W\`g\_U`]YfYbXYb
j ]fhi Y``Yb`FUi a `a ]h`Y][ YbYf`X][ ]hU`Yf`² \_cbca ]Yž`UVYf
[ fi bXgÀhn`]W\`[ Y\h`Yg`i a `X]Y`; Ua ]Z]n]Yfi b[ `gcn]U`Yf`±bhYfU\_h]cb"
8 ]Y`6fUbW\Y`\_Ubb`g]W\`^YXcW\`b]W\h`XUfUi Z`Y]b][ Ybž`k Ug`X]YgYf
j ]fhi Y``Y`FUi a `]ghi bX`k Y`W\Y`Ni \_i bZh`Yf`\Uh"`9g`[ ]Vh`U`gc
j YfgW\]YXYbY`j ]fhi Y``Y`FÀi a Y# \_cbca ]Ybž`X]Y`U``Y`XUfi a
\_cb\_i ff]YfYbž`XUg`A YhUj YfgY`ni `gY]b"`

± Y]bYa :: c`[Y[YgdfÀW.'Yf\_`ÀfhY'CfbY``Už'XUgg'±hYfcdYfUV]`]hÀh
Y]bY'@Ògi b['ZØf'X]YgYg'DfcV`Ya ']gh"'5bghUhh'Ui Z'X]Y'YbX[Ø'h][Y
5VZc`[Y'Y]bYf'j]fhi Y``Yb'K Y`h'k]Y'H\Y'GUbXVcI'cXYf
8YWWbhfU`UbX'ni 'k UfhYbž'k YfXYb'X]YgY'K Y`hYb'Y]bYb'K Y['Z]bXYbž
6YXYi hi b['i bX'K Yfh'ØVYf'j]fhi Y``Y'; fYbnYb'\]bk Y['ni
ØVYfhfU[Yb"'

 $8 ]Y `6`c W\_WX U]b!HY WX bc`c[]Y `V]Y hY h'h\ Y cfY h]gWX `X]Y `#b ZfUghfi\_hi f ZØf `X]Y `#b hY fcd Y fUV]`]hÀ hŽ UV Y f'b ]WX h'XY b `5 b fY]n" `C fb Y ``U `Y f_`À fhŽ XUgg `X]Y ; Ua ]Z]n]Y fi b[ `XY f'X][]hU `Y b `gcn]U `Y b `#b hY fU_h]cb `Y hnhY b X`]WX `X]Y gY `k Y gY b h`]WX Y b `: c fhgWX f]hhY 'j c fUb hfY]V Y b `k ]fX" I b X `X]Y `Xi fWX `XUg ; Ua ]b[!:]fgh!D`Um!Ub X!9Ufb!A c XY`` Y fk c fV Y b Y 6 Y b i hnY fV Ug]g `_Obb hY `X]Y `gcn]U`Y ; fi b X`U[Y `ZØf `X]Y gY 'j Y fb Y hnhY F Y U`]hÀ h'V]Y hY b "$ 

## 8 Ug A YhUj YfgY 'U`g'; Ua ]Z]WUh]cb 'gcn]U`Yf =bhYfU\_h]cb

A Ub '\_ObbhY 'Uf[i a Ybh]YfYbžXUgg'Yg']a 'K YV'gWkcb']a a Yf'i a gcn]U'Y'JYfV]bXi b[Yb'[]b[i bX']a a Yf'[Y\Yb'k]fX"'\dot K YV% VYgU» Yb'9]bnY`dYfgcbYb'Y]bYb'; fc» hY]`'XYf JYfV]bXi b[g]bZfUghfi \_hi fž'UVYf'b]Wkh'X]Y'Y][Ybh`]WkYb'\dot \U`hY''\dot K YV&k i fXY'X]Y'gcn]U'Y'\dot hYfU\_h]cb'a ]h'D`UhhZcfa Yb'k]Y: UWWVcc\_'ghÀf\_Yf'nYbhfU`]g]Yfh''I bX']b'K YV' ž'XUg'Ui Wk'U`g Ck bYfg\]d'9Wcbca m'VYnY]WkbYh'k]fXž'\UVYb'6Ybi hnYf'X]Y A O[`]Wk\_Y]hž'X]fY\_hYg'9][Ybhi a 'Ub']\fYf'Cb`]bY!\dot XYbh]hÀh'i bX]\fYa '5i gXfi W\_'ni 'ØVYfbY\a Yb'''5VYf'k Ug'V]YhYh'X]YgYg 9][Ybhi a 'k]f `]Wk 3

9][Ybhi a 'gYhnh'; fYbnYb"'K]Y'<Ui gi f\_i bXYb'V]YhYh'Yg'Y]bY'5fh GWcfY\_UfhYž'a]h'XYf'XYf'KYfh']a 'JYf\À`hb]g'ni 'UbXYfYb [Ya YggYb'k YfXYb'\_Ubb"'8Yg\U`V'k Uf'Df]j UhY][Ybhi a 'gW\cb ]a a Yf'Y]bY': cfa 'XYf'; Ua]Z]WUh]cb"'

8][]hU`Y'9][Ybhi a gbUWkY]gY'g]bX'X]Y'9fkY]hYfi b['XYggY`VYbGd]Y`g"'G]Y'g]bX'Y]bZUWk'Y]bY'bYi Y'AÒ[`]Wk\_Y]hž'9][Ybhi a 'ZØfgcn]U`Yg'?Ud]hU`ni 'bi hnYb' 'i bX'i a [Y\_Y\fh"'K]f'gY\Yb'X]Yg']bXYf'B: H!?i`hi f"'\DZi YbWYf'bi hnYb']\f'gcn]U`Yg'?Ud]hU`ž'i a 'XYb

A ]bXYghdfY]g'j cb'B: Hg'ni 'Yf\O\Ybž'i bX'A YbgW\Yb'a ]h
Z]bUbn]Y``Yb'F Yggci fW'b'\_Ui ZYb'X]YgY'B: Hgž'i a 'gcn]U`Yg'?Ud]hU`
ni 'Yfk YfVYb"'B: Hg'\_ObbYb'gc[Uf'U`g'?fYX]hg]W\Yf\Y]hYb
j Yfk YbXYh'k YfXYb"'

8]YgY; Ua ]Z]n]Yfi b[ 'XYf'gcn]U`Yb' \(\Delta\h\)fU\_h]cb']gh'Y]b'\_`\UfYg'i bX df\(\text{AgYbhYg'? YbbnY}\)WYb'j cb'K YV' "'5VYf'Yg'ZY\`h'Y]b'bYi hfU`Yf i bX'XYnYbhfU`Yf'FUi a 'ZØf'X][]hU`Yb'5i gXfi W\_"'9g'a i gg'Y]bYb FUi a '[ YVYb\(\text{Z'}\)]b'XYa 'XUg'9][ Ybhi a 'Ub'Y]bYf'j ]fhi Y``Yb'K Y`h bYVYb'XYa '9][ Ybhi a 'Ub'UbXYfYb'j ]fhi Y``Yb'K Y`hYb'ni a 5i gXfi W\_'[ YVfUW\ h'i bX'[ Ybi hnh'k YfXYb'\_Ubb"'B: H!A Uf\_hd`\text{AhnY i bX'GcW]U'!A YX]U!D`UhhZcfa Yb'g]bX'6Y]gd]Y'Y'ZØf'bYi hfU`Y'Cb`]bY! 6YfY]W\(Y\text{Z'X]Y'Y]bYb'5bgW\(\X']b'XUj cb'V]YhYb\(\text{Z'UVYf'X]Y 6Ybi hnYfYfZU\fi b[ ']gh'VY[ fYbnh"I bX'X]Y'D`UhhZcfa Yb'k YfXYb nYbhfU`'[ YghYi Yfh'i bX'VYhf]YVYb"'5i Z'XYf'[ fi bX`Y[ YbXYb'9VYbY V]YhYhXUg'A YhUj Yfgi a 'Y]bY'@\(\text{Q}j b[\text{Z'}]bXYa 'Yg'XYb'bYi hfU`Yb i bX'[ Y[ YbgY]h][ Yb'FUi a 'nk ]gW\(\X'b'j ]fhi Y``Yb'K Y`hYb'ni 'Y]bYf a Yfg]j Yb'9fZU\fi b[ 'Yfk Y]hYfh"

I bX'a ]h'XYf'Ni bU\a Y'j ]fhi Y``Yf'K Y`hYb'i bX'XYf'XUf]b
Ybh\U`hYbYb'Gd]Y`Y'k ÀW.gh'Ui W. 'X]Y'BUW.ZfU[Y'bUW.'Y]bYa
Y]b\Y]h`]W\Yb'A YhUj Yfgi a "'8]YgY'BUW.ZfU[Y'g]Y\h'gc'Ui gž'U`g
k ØfXYb'6Ybi hnYf'bUW.'bYi Yb'K Y[Yb'ZfU[Ybži a ']\f'9][Ybhi a
Ub'X][]hU`Yb'5ggYhg'ni 'bi hnYb"'8]Yg'\_ObbhYb'A O[`]W\\_Y]hYb'gY]bž
bYi Y'9fZU\fi b[Yb'ZfY]ni gW\U`hYbž'Ni [Ub['ni 'YI\_`i g]j Yb
BYhnk Yf\_Yb'ni 'Yf\U`hYb'cXYf'X][]hU`Y'?fYUh]cbYb'ni
a cbYhUf]g]YfYb"'8]YgY'Ub[YVcfYbY'BY][i b['ni f'gcn]U`Yb
; Ua ]Z]n]Yfi b[']gh'XYf'; fi bXž'k Ufi a 'g]W\'Y]b'Y]b\Y]h`]W\Yg
A YhUj Yfgi a 'i bj Yfa Y]X`]W\'UbZØ\`h"'I bX'XYg\U`V']gh'; Ua Y:]'gc
k ]W\h][ži a 'X]YgY'Ni \_i bZh'ni 'YfgW\`]Y» Yb"

пін

8 Y f '6 Y ]hf U [ '? Ubb'; Ua Y: ] 'X Ug 'A Y h U j Y f g Y 'b c W 'Z f Y ] g W U `h Y b 3 '] g h \_Y ] b Y 'Z | b U b n ] Y ``Y '6 Y f U h i b [ "

8 Y hU1`a