

< Uj Y``UbX'YbhXYW_Yb.'@UbXgWX UZhYbž ?i`hi f'i bX'5VYbhYi Yf'Yf`YVYb</pre>

 $9bhXYW_Yb^*G]Y^*X]Y^*]Xm^*]gWXYb^*@UbXgWXUZhYb^*XYg^*< Uj Y^*UbXgZ^* gY]bY^*]ghcf]gWXYb^*GWXAhnYZ^*Ui ZfY[YbXY^K UggYfU_h]j]hAhYb i bX^*_Ogh^*]WXY^*c_U^*Y^*GdYn]U^*]hAhYb"$



K]`_ca a Yb']b'<Uj Y``UbX' 'Y]bYa 'j YfghYW_hYb'¾ k Y`'j cf'XYb
HcfYb'6Yf`]bgž'XUg'a]h'gY]bYb'\Yff`]W\Yb'@UbXgW\UZhYbž
\]ghcf]gW\Yb'GhÀXhYb'i bX'Y]bYf'J]Y`nU\`'j cb
: fY]nY]ha Ò[`]W_Y]hYb'VY[Y]ghYfh"'8]YgY'a U`Yf]gW\Y'FY[]cbž
Xi fW\nc[Yb'j cb'gUbZhYb'<Ø[Y`bž'fi\][Yb'; Yk ÀggYfb'i bX'X]W\hYb
K À`XYfbž']gh'b]W\h'bi f'XYf'dYfZY_hY'FØW_ni [gcfh'ZØf
BUhi f`]YV\UVYfž'gcbXYfb'Ui W\'Y]b'?i `hi fdUfUX]Yg'ZØf
; YgW\]W\hg]bhYfYgg]YfhY''' \$\frac{1}{2}} X]YgYa '5fh]_Y``bY\a Yb'k]f'Yi W\'a]h
Ui Z'Y]bY'gdUbbYbXY'9bhXYW_i b[gfY]gY'Xi fW\'<Uj Y``UbX'i bX
nY][Yb'Yi W\ž'k Ug'X]YgY'ZUgn]b]YfYbXY'FY[]cb'ni 'V]YhYb'\Uh"

Jcb'XYf'9f_i bXi b['XYf']Xm`]gW\Yb'@UbXgW\UZhYb'ØVYf'X]Y 9bhXYW_i b['\]ghcf]gW\Yf'GW\ÀhnY'V]g'\]b'ni 'UVYbhYi Yf`]W\Yb 5_h]j]hÀhYb 'Ua 'K UggYf' '< Uj Y``UbX'\Uh'ZØf'YXYb 'Yhk Ug'ni V]YhYb '`@Uggh'Yi W\'j cb 'XYb'_i `]bUf]gW\Yb '? Ògh`]W_Y]hYb 'XYf FY[]cb 'j YfZØ\fYb 'i bX'Yf\U`hYh'H]ddg'ni 'XYb 'VYghYb'I bhYf_ØbZhYb ZØf'Yi fYb '5i ZYbh\U`h"'9[U``cV']\f'U``Y]b'fY]ghž'a]h': fYi bXYb'cXYf XYf': Ua]`]Y' '\]Yf'Z]bXYh']\f'\Dgd]fUh]cb 'ZØf'i bj Yf[Ygg`]W\Y 9f`YVb]ggY']b'XYf'BUhi f"'5`gc'gW\bUddh'Yi W\'Yi fYb'FY]gYZØ\fYf i bX``Uggh'i bg'[Ya Y]bgUa 'X]Y'GW\Òb\Y]h'j cb'<Uj Y``UbX YbhXYW_Yb'

9bhXYW_i b[gfY]gY`Xi fWX`X]Y`a U`Yf]gWXYb @UbXgWXUZhYb`j cb`<Uj Y``UbX

<Uj Y``UbXžY]b`W\Ufa UbhYg': `YW_W\Yb`9fXY`]a `< YfnYb'j cb
6fUbXYbVi f[ž']gh'VY_Ubbh'ZØf'gY]bY`VYnUi VYfbXYb`@UbXgW\UZhYbž
X]Y`BUhi f`]YV\UVYf'i bX`9f\c`i b[ggi W\YbXY`[`Y]W\Yfa U» Yb
Ubn]Y\Yb"`I a [YVYb'j cb'gUbZhYb'< Ø[Y`bž'k Y]hYb': Y`XYfb'i bX
X]W\hYb`K À`XYfbž'_Ubb'a Ub'\]Yf'Ui Z']Xm``]gW\Yb`K Y[Yb'k UbXYfb
cXYf'FUX'ZU\fYbž'k À\fYbX'a Ub'X]Y'j]Y`ZÀ`h][Y': `cfU'i bX': Ui bU
VYk i bXYfh"</pre>

8]Y'FY[]cb']gh'Xi fW\nc[Yb'j cb'nU\`fY]W\Yb': `ØggYbž
]bgVYgcbXYfY'XYf'<Uj Y`gYYž'XYf'g]W\'Xi fW\'a U`Yf]gW\Y'CfhY
gW\`Àb[Y`h"'8Yf'<Uj Y`hci f]ga i g'\Uh'g]W\']b'XYb'`YhnhYb'\\J\fYb
ghUf_'Ybhk]W_Y`hži bX'6Ygi W\Yf'_ObbYb'X]Y'GW\Ob\Y]h'XYf
@UbXgW\UZh'Xi fW\'6cchgZU\fhYb'i bX'?Ubi hci fYb'Ui Z'XYb'fi \][Yb
; Yk ÀggYfb'YbhXYW_Yb"'8]Y'dUbcfUa]gW\Yb'5i gV`]W_Y'g]bX
Y]bZUW\'UhYa VYfUi VYbX'i bX'`UXYb'XUni 'Y]bž'X]Y'GYY`Y'VUi a Y`b
ni ``UggYb"

9]bY'XYf'gdY_hU_i `ÀfghYb'Fci hYb'Xi fW\'XUg'<Uj Y``UbX']gh'XYf' < Uj Y`fUXk Y[ž'XYf'g]W\'Ybh`Ub['XYg': `i ggYg'YfghfYW_h''8]YgYf K Y['ZØ\fh'Xi fW\'fi \][Y'8 ÒfZYf'k]Y': YfW\YgUf'i bX' GW\ a Yf_k]hnž'k c'hfUX]h]cbY``Y'6fUbXYbVi f[Yf'5fW\]hY_hi f VYk U\fh'V`Y]Vh''8]Y'ZØbZ'9hUddYb'V]YhYb'gdUbbYbXY'9]bV`]W_Y']b X]Y'?i `hi f'i bX'X]Y'BUhi fž'k À\fYbX'a Ub'[Ya Øh`]W\']b'gY]bYa Y][YbYb'HYa dc'i bhYfk Y[g']gh''FUXZU\fYf'_ObbYb'\]Yf'X]Y @UbXgW\UZh']b'j c``Yb'NØ[Yb'[Yb]Y» Yb'i bX'[Y`Y[Ybh`]W\'Ub\U`hYbž i a 'X]Y'5i qq]W\h'ni 'Zchc[fUZ]YfYb'cXYf'X]Y'`c_U`Y'; Ughfcbca]Y'ni

9]b'k Y]hYfYg'<][\`][\h']gh'XYf'DchgXUa Yf'K U`Xž'XYf'g]W\
k Ygh`]W\'j cb'6Yf`]b'YfghfYW_h'i bX']a'<Uj Y``UbX'ZcfhgYhnh"'<]Yf
[YXY]\Yb'j]Y'Y'U`hY'6Ài a Y'i bX'Y]bY'J]Y`nU\`'j cb'DZ'UbnYbUfhYbž
X]Y']b'XYb'\Y]a]gW\Yb'K À`XYfb'VY\Y]a UhYh'g]bX"':Øf
BUhi f`]YV\UVYf'V]YhYh'X]YgYf'K U`X'nU\`fY]W\Y'K UbXYfk Y[Y'i bX
Y]bY':Ø``Y'j cb'A Ò[`]W_Y]hYbž'X]Y'`c_U`Y'H]Yfk Y`h'ni 'VYcVUW\hYbž
XUfi bhYf'FY\Yž'K]`XgW\k Y]bY'i bX'Y]bY'J]Y`nU\``Ub'Jc[Y`UfhYb"

9]b][Y'XYf'gWX ObghYb'C fhY']b'<Uj Y``UbX'`]Y[Yb'Ua''I ZYf'XYg' F]VVYW_gYYg'i bX'XYg'K]b_`Yf'GYYg"'8]YgY'GYYb'g]bX'b]WXh'bi f]Xm``]gWXY'FØW_ni [gcfhYž'gcbXYfb'Ui WX'VY`]YVhY'Gdchg'ZØf GWXk]a a Yf'i bX'5b[`Yf"'5a''I ZYf'_Ubb'a Ub'j YfhfÀi a hY D]W_b]W_d`ÀhnY'Z]bXYbž'X]Y'ni a 'JYfkY]`Yb'Y]b`UXYb"': Øf 5VYbhYi Yf`i gh][Y'[]Vh'Yg'ni XYa'X]Y'A O[`]WX_Y]hž']a 'Gca a Yf'Ui Z XYa''K UggYf'ni 'dUXXY`b'cXYf'Y]bY'YbhgdUbbhY'6cchgZU\fh'ni i bhYfbY\a'Yb"

8]Y 'W Ufa Ubhyb'8 OfZyf']a '< Uj Y``UbX'hfU[Yb'k YgYbh`]W 'ni a a U`Yf]gW Yb'@UbXgW UZhgV]`X'VY]"'F]VVYW_ž'VYfØ\a h'ZØf'gY]b' F]VVYW_!< Ui g'i bX'X]Y'[`Y]W bUa][Y'@Y[YbXY'i a 'XYb 6]fbVUi a ž']gh'Y]b'VY`]YVhYg'N]Y`'ZØf'HU[YgUi gZØ[Y"'<]Yf'_ObbYb 6Ygi W Yf']b'X]Y'; YgW]W hY'XYf'FY[]cb'Y]bhUi W Yb'i bX'a Y\f ØVYf'X]Y'`c_U`Y'?i `hi f'YfZU\fYb"'8]Y'; Y[YbX'i a 'F]VVYW_']gh ni XYa 'j cb'nU\`fY]W Yb'C Vghd`UbhU[Yb'i a [YVYbž'X]Y']a ': fØ\`]b[Y]b'k U\fYg': UfVgdY_hU_Y`'V]YhYb"

 $<]Yf`]gh`Y]bY`_i fnY`, VYfg]W\h`ØVYf`Y]b][Y`VY`]YVhY`CfhYž`X]Y`a Ub \\]a `< Uj Y``UbX`VYgi W\Yb`_Ubb.$

Cfh	6YqcbXYfY^A Yf_a U`Y
CIII	Orgovill All_a or

	9
F]VVYW_	<pre><]ghcf]gW\Yg`F]VVYW_!<ui bx<="" g`i="" pre=""></ui></pre>
	6]fbVUi a
Dc hgX Ua	GWX `ÒggYf'i bX'DUf_gž'l B9G7C!
	K Y`h_i `hi fYfVY
8 Y f '< Uj Y `gYY	6cchgZU\fhYb'i bX'\Yff`]W\Y
	5i gV`]W_Y

	Cfh
:	YfWXYgUf

6YgcbXYfY'A Yf_a U`Y HfUX]h]cbY``Y'6fUbXYbVi f[Yf 5fWX]hY_hi f

Ni gàhn`]WX []Vh'Yg'j YfgWX]YXYbY'B Uhi fdUf_g']a '<Uj Y``UbXž'X]Y VY]a '9f_i bXYb'XYf'@UbXgWXUZh'i bhYfghØhnYb"'8Yf' B Uhi fgWX i hnd Uf_'K Ygh\Uj Y``UbX']gh'Y]b'A i gg'ZØf'YXYb B Uhi fZfYi bX"'<]Yf'[]Vh'Yg'[YZØ\fhY'Hci fYb'i bX'X]Y'; Y`Y[Yb\Y]hž Y]bY'J]Y`nU\`'j cb'J Ò[Y`b'ni 'VYcVUWX hYbž'XUfi bhYf'Ui WX Ni [j Ò[Y`ž'X]Y'\]Yf'F Ugh'a UWXYb"

8]Ya U`Yf]gWXYb`@UbXgWXUZhYb`XYg`<UjY``UbXg`g]bX`b]WXh'bi f`Y]bHfUi a 'ZØf`Ci hXccf!9bh\i g]UghYbž'gcbXYfb`Ui WX`ZØf`: chc[fUZYb" \XYYg`\J\f`n]Y\h'X]Y`FY[]cb`A YbgWXYb`Ubž'X]Y`X]Y`BUhi f`]b`]\fYbjYfgWX]YXYbYb`: UWYhhYb`Y]bZUb[Yb'a ÒWXhYb"`9[U`ž'cV`VY]GcbbYbUi Z[Ub[`ØVYf`XYa '<UjY`gYY`cXYf`k À\fYbX`Y]bYggh]a a i b[gj c``Yb`GcbbYbi bhYf[Ub[g`]a 'K U`X' 'X]Y: chca Ò[`]WX_Y]hYb`g]bX`gWX]Yf`i bVY[fYbnh"

 $C\ V'G]Y'Ui\ Z'XYf'Gi\ WXY'bUWX'Y]bYf'YbhgdUbbhYb'5i\ gnY]h']b'XYf \\ B\ Uhi\ f'g]bX'cXYf'XUg'5VYbhYi\ Yf']b'XYb'K\ A`XYfb'i\ bX'Ub'XYb'GYYb \\ gi\ WXYb''<Uj\ Y``UbX'\Uh'ZØf'YXYb'Yhk\ Ug'ni\ 'V]YhYb'''A\ UWXYb'G]Y \\ g]WX'Ui\ Z'Y]bY'i\ bj\ Yf[\ Ygg`]WX\ '9bhXY\ W_i\ b[\ gfY]gY']b'X]YgY'Y]bZUWX \\ hfUi\ a\ UZhY'FY[\]cb']a\ '< YfnYb'j\ cb'6fUbXYbVi\ f[\ ''$

<]ghcf]gW\Y'GW\AhnY'i bX'_i `hi fY``Y <][\`][\hg'XYf'FY[]cb</pre>

<Uj Y``UbX']gh'b]Wkh'bi f'ZØf'gY]bY'a U`Yf]gWkY'@UbXgWkUZh'VY_Ubbhž
gcbXYfb'Ui Wk'ZØf'gY]bY'fY]WkYb'\]ghcf]gWkYb'GWkÀhnY'i bX
_i `hi fY``Yb'<][\`][\hg"'8]Y'FY[]cb']gh'Y]bY'k U\fY': i bX[fi VY'ZØf
; YgWk]Wkhg]bhYfYgg]YfhY'i bX'?i `hi f`]YV\UVYfž'X]Y'h]YZ']b'X]Y
ZUgn]b]YfYbXY'JYf[Ub[Yb\Y]h'8Yi hgWk`UbXg'Y]bhUi WkYb'a ÒWkhYb"</pre>

9]b 'VYa Yf_Ybgk YfhYf'C fh']gh'XUg'GWX `cgg'F\Y]bgVYf[ž'Y]b dfUWXhj c``Yg'6Y]gd]Y``ZØf'XUg'Fc_c_c_c"; YVUi h']a '%, "' \pm U\f\i bXYfhž X]YbhY'Yg'U`g'Gca a YffYg]XYbn'ZØf'XYb'gdÀhYfYb'? Òb][': f]YXf]WX K]`\Y`a '="'j cb'DfYi » Yb"' < Yi hY']gh'XUg'GWX`cgg'HY]``XYf'

@UbXYggh]Zhi b['GW\ `ÒggYf'i bX'; ÀfhYb'6fUbXYbVi f['i bX V]YhYh'fY[Y`a À»][Y': Ø\fi b[Yb'gck]Y'_i `hi fY``Y'J YfUbghU`hi b[Ybž X]Y'6Ygi W\Yf']b'X]Y'_Øbgh`Yf]gW\Y'K Y`h'XYg'%, "'\\J\f\i bXYfhg YbhZØ\fYb"

9]b'k Y]hYfYg'<][\`][\h']gh'XUg'< YVVY`!H\YUhYf']b'K]hhghcW_ž'XUg bUW\XYa 'VYfØ\a hYb'8]W\hYf'i bX'8fUa Uh]_Yf': f]YXf]W\'< YVVY`VYbUbbh']gh''8Ug'H\YUhYf']gh'VY_Ubbh'ZØf'gY]bY'j]Y`gY]h][Yb5i ZZØ\fi b[Ybž'j cb'_`Ugg]gW\Yb'V]g'ni 'nY]h[YbÒgg]gW\Yb'GhØW_Yb''9g'n]Y\h'b]W\h'bi f'`c_U`Yž'gcbXYfb'Ui W\']bhYfbUh]cbU`Y'?Øbgh`YfUb'i bX'ZÒfXYfh'gca]h'XYb'_i `hi fY``Yb'5i ghUi gW\"

 $8]Y `GhUXh' 6 fUb XYb Vi f[`Ub `XYf' < Uj Y` ž'X]Y `b UWX `XYa `: `i gg VYb Ub bh'k i fXY ž']gh'Y]b `k Y]hYfYg'_i `hi fY``Yg' *k Y``XYf'FY[]cb"'8]Y 5 `hghUXh'a]h']\ fYb'[i h'Yf\ U`hYb Yb 'a]hhY`U`hYf`]WXYb'; YV Ài XYb']gh dYfZY_h' <math>Z \emptyset f'Y]b Yb hgd Ub bhYb' Gd Un]Yf[Ub["'6Y[`Y]hYh'j cb'Y]b Ya UhYa VYfUi VYb XYb'6`]W_'Ui Z'X]Y' < Uj Y``_ObbYb'6Ygi WXYf'XYb' 8 ca 'Gh"'DYhYf'i b X'DUi ``VYk i b XYfb ž'Y]b']a dcgUb hYg'6Ui k Yf_ž XUg'j cb'XYf'GhUXh[YgWX]WX hY'nYi [h"$

GY\Ybgk ØfX][_Y]h	6YgWxfY]Vib[6YgcbXYf\Y]hYb
GWX`cgg'F\Y]bgVYf[Fc_c_cVUi i bX	?i`hifY``Y'9jYbhg
	Gca a YffYg]XYbn	i bX∵Ø∖fi b[Yb
< YVVY`!H\YUhYf	J]Y`gY]h][Yg	⇒bhYfbUh]cbU`Y
	H\YUhYfk YgYb	?Øbgh`YfibX
		5i ZZØ\fi b[Yb
8ca 'Gh"'DYhYf'i bX	A]hhY`U`hYf`]WXY	6YY]bXfi W_YbXY
DUi `	?]fWX Y ⁻]b	5fWX]hY_hif
	6fUbXYbVi f[

9]b'k Y]hYfYg'i bj Yf[Ygg`]W\Yg'9f`YVb]g'V]YhYh'XUg'6Y\b]hnž'Y]b Y\Ya U`][Yf'B]_c`U]!?`cghYf"'8]Y'?`cghYfUb`U[Y']gh'b]W\h'bi f'Y]b Cfh'XYf'Fi \Yž'gcbXYfb'VY\YfVYf[h'Ui W\ fY[Y`a À»][?i bghUi gghY``i b[Yb'i bX'_i `hi fY``Y'J YfUbghU`hi b[Yb"'<]Yf'_Ubb a Ub'X]Y'J YfgW\a Y`ni b['j cb'; YgW\]W\hY'i bX'nY]h[YbÒgg]gW\Yf?i bgh'YfZU\fYbž'k Ug'ni 'Y]bYa 'Y]bn][Ufh][Yb'9f`YVb]g'k]fX"

 $8\,]Y\,^F\,Y[\,\,]c\,b\,^'<\,Uj\,\,Y\,^{^{\backprime}}Ub\,X\,^{^{\backprime}}]gh^{\backprime}ni\,\,XY\,a\,\,^{^{\backprime}}Z\!0\!f\,^{^{\backprime}}]\backslash\,fY\,^{^{\backprime}}nU\backslash\,^{^{\backprime}}fY\,]W\lambda\,Y\,b\,^{^{\backprime}}A\,\,i\,\,gY\,Y\,b\,^{^{\backprime}}A$

VY_Ubbh"8Uni [Y\OfhXUg'6fUbXYbVif[Yf
HYW\bc`c[]YAigYia žXUg'X]Y']bXighf]Y``Y'; YgW\]W\hY'XYf
FY[]cb'j Yfa]hhY`h"'=bhYfU_h]j Y'5i gghY``i b[Yb'i bX'\]ghcf]gW\Y
A UgW\]bYb'a UW\Yb'X]Y'5hhfU_h]j]h\h'XYg'A i gYi a g'Ui g'i bX
n]Y\Yb'gck c\``: Ua]`]Yb'U`g'Ui W\'GW\i`[fi ddYb'Ub"

 $: \emptyset f`U````YbYž`X]Y`g]W\&`Z\emptyset f`X]Y``c_U`Y`; YgW&]W\&hY`]bhYfYgg]YfYbž`]ghXUg`5fW&Ac`c[]gW&Y`@UbXYgaigYia`]b`DchgXUa`Y]bYb6YgiW&`kYfh''<]Yf`_ObbYb`6YgiW&Yf`aY\f`ØVYf`X]Y`ZfØ\YfY6Yg]YX`ib[`XYf`FY[]cb`ibX`VYXYihYbXY`UfW&Ac`c[]gW&Y`:ibXYYfZU\fYb''8]Y`5igghY``ib[Yb`g]bX`UbgW&Ui`]W&`ibX`]bZcfaUh]jžkUg`XUg`AigYia`ni`Y]bYa`dYfZY_hYb`N]Y``ZØf`; YgW&]W&hg!`ibX5fW&Ac`c[]Y]bhYfYgg]YfhY`aUW&h''$

#bg[YgUa hi]ghi< Uj Y``UbX'Y]bY'FY[]cbžX]Y'Xi fWX']\fY'\]ghcf]gWXYb
GWXAhnY'i bX'_i `hi fY``Yb'<][\`][\hg'VY[Y]ghYfh"'Jcb'VUfcW_Yb
GWX`ÒggYfb'ØVYf'`YV\UZhY'H\YUhYfUi ZZØ\fi b[Yb'V]g'\]b'ni
ZUgn]b]YfYbXYb'A i gYYbž'X]Y'FY[]cb'\Uh'ZØf'YXYb'Yhk Ug'ni
V]YhYb"'9]b'6Ygi WX']b'< Uj Y``UbX']gh'b]WXh'bi f'Y]bY'FY]gY'Xi fWX
a U`Yf]gWXY'@UbXgWXUZhYbž'gcbXYfb'Ui WX'Y]bY'FY]gY']b'X]Y
ZUgn]b]YfYbXY'; YgWX]WXhY'i bX'?i `hi f'8Yi hgWX`UbXg"</pre>

K UggYfUVYbhYi Yf'Ui Z'XYb'GYYb'i bX': `ØggYb j cb'< Uj Y``UbX</pre>

<Uj Y``UbXžY]bY'XYf'a U`Yf]gWXghYb'FY[]cbYb'8Yi hgWX`UbXgž']gh
b]WXh'bi f'ZØf'gY]bY'k Y]hYb': Y`XYf'i bX'X]WXhYb'K À`XYf'VY_Ubbhž
gcbXYfb'Ui WX'ZØf'gY]bY'VYY]bXfi W_YbXY'K UggYf`UbXgWXUZh"'8]Y
FY[]cb']gh'j cb'Y]bYf'J]Y`nU\`'j cb'GYYb'i bX': `ØggYb'Xi fWXnc[Ybž
X]Y'dYfZY_hY'A Ò[`]WX_Y]hYb'ZØf'K UggYfgdcfh'i bX'9f\c`i b['V]YhYb"
9[U`ž'cV'G]Y'Y]b'Ub[Y\YbXYf'5b[`Yfž'Y]b'VY[Y]ghYfhYf'6cchgZU\fYf</pre>

cXYf'Y]bZUW\`bif'UiZ'XYf'GiW\Y'bUW\`Fi\Y'ibX'9bhgdUbbib[g]bXž'<UjY``UbX'\Uh'ZØf'YXYb'Yhk Ug'ni'V]YhYb"

8]Y'<Uj Y`.'8Yf'bUa Ybg[YVYbXY': `i gg'XYf'FY[]cbž'X]Y'<Uj Y`ž gW\`Àb[Y`h'g]W\'a U`Yf]gW\'Xi fW\'X]Y'@UbXgW\UZh"'A]h'gY]bYb gUbZhYb'?i fj Yb'i bX'fi \][Yb'5VgW\b]hhYb']gh'Yf']XYU`'ZØf?Ubi ZU\fhYb'cXYf'?U'U_!Hci fYb"'J]Y`Y'5bV]YhYf']b'XYf'FY[]cb V]YhYb'6cchgj Yf`Y]\'i bX'[YZØ\fhY'Hci fYb'Ubž'X]Y'Yg'XYb 6Ygi W\Yfb'Yfa Ò[`]W\Ybž'X]Y'i bVYfØ\fhY'BUhi f'j ca 'K UggYf'Ui g ni 'Yf`YVYb"'9bh`Ub['XYf'I ZYf'_ÒbbYb'G]Y'cZh'Ui W\'gY`hYbY Jc[Y`UfhYb'VYcVUW\hYb'cXYf'Y]bZUW\'X]Y'Zf]YX`]W\Y'5ha cgd\ÀfY [Yb]Y*Yb"

8]Y'GYYb`UbXgWX UZh. '< Uj Y``UbX']gh'fY]WX'Ub'GYYbž'XUfi bhYf'XYf GWk |Y`ck gYYž'XYf'Xi fWk'gY]bY']Xm``]gWkYb'GhfÀbXY'i bX _f]ghU``_`UfYg'K UggYf'VYgh]Wkh"'<]Yf'_ÒbbYb'G]Y'gWk |aaYbžgY[Y`b'cXYf'g]Wk'Y]bZUWk'Ua'I ZYf'YbhgdUbbYb"'9]b'VYgcbXYfg VY`]YVhYf'Cfh']gh'XYf'GhfUbX'j cb'7Udi h\ž'k c': Ua]`]Yb'a]h'?]bXYfb cZh'Ubni hfYZZYb'g]bX"'Fi bX'i a'XYb'GWk]Y`ck gYY'[]Vh'Yg'Ui WknU\`fY]WkY'K UbXYf!'i bX'FUXk Y[Yž'X]Y'ni '9f_i bXi b[ghci fYbY]b`UXYb"

GY[Y`gdcfh'i bX`K]bXgi fZYb.: Øf`X]Y Yb][Ybž'X]Y`Y]b`k Yb][
a Y\f`5Wh]cb`gi W\Ybž'g]bX`X]Y`; Yk ÀggYf'j cb`<Uj Y``UbX`cdh]a U`Y
6YX]b[i b[Yb`ni a `GY[Y`b`i bX`K]bXgi fZYb"`6YgcbXYfg`XYf'; fc»Y
NYfbgYY`n]Y\h`K UggYfgdcfh`Yf`Ubž`X]Y`X]Y`XmbUa]gW\Yb`K]bXY
bi hnYb`a ÒW\hYb"`<]Yf`[]Vh`Yg`a Y\fYfY`GY[Y`gW\i `Ybž`X]Y`?i fgY
i bX`J Yf`Y]\a Ò[`]W_Y]hYb`UbV]YhYb` `dYfZY_hži a `g]W\`]b`X]YgYb
GdcfhUfhYb`Ui gni dfcV]YfYb`cXYf`gY]bY`: À\][_Y]hYb`ni
j YfVYggYfb"

 $5b[Y`b']b'a U`Yf]gWXYf'I a [YVib[.'<UjY``UbX`V]YhYh'5b[`YfbY]bY'J]Y`nU\``jcb'A O[`]WX_Y]hYb'''8]Y'; Yk AggYf'g]bX'fY]WX'Ub j YfgWX]YXYbYb':]gWXUfhYbž'XUfi bhYf'<YWXhYž'NUbXYf'i bX?UfdZYb'''CV'jca'I ZYf'Ui g'cXYf'Ui Z'Y]bYa''6cchž'XYf'5b[Y`gdU»]gh'[UfUbh]Yfh'''5b[Y`!HU[Yghci fYb'k YfXYb'cZh'jcb'Ofh`]WXYb 5b[Y`ZUWX[YgWXAZhYb'cXYf'; i]XYg'Ub[YVchYbž'X]Y'=\bYb'[YfbYX]Y'VYghYb'Gdchg'XYf'FY[]cb'nY][Yb''$

6cc hghci fYb ii b X '5i gZ'Ø[Y. K Ybb'G]Y 'Y]bY 'Ybhgd UbbYbXY A Ò[`]W_Y]h'gi W\Ybž' < Uj Y``UbX'j ca 'K UggYf'Ui g'ni 'Yf_i bXYbž g]bX'6cc hghci fYb 'Y]bY '\Yfj cffU[YbXY'K U\`"'J]Y`ZÀ`h][Y'5bV]YhYf cZZYf]YfYb 'Fi bXZU\fhYbž'X]Y'G]Y 'Ybh`Ub['XYf' < Uj Y``ni '\]ghcf]gW\Yb GhÀhhYb'i bX'gW\ÒbYb'D`ÀhnYb'ZØ\fYb"'9]b' <][\`][\h']gh'X]Y 6cc hghci f'bUW\'DchgXUa ž'k c'G]Y'k À\fYbX'\=\fYf': U\fh'X]Y $VYY]bXfi \ W_YbXY'?i \ `]ggY'XYf'GW\`cggUb`U[Yb'i bX'; ÀfhYb [Yb]Y\'Yb'_ObbYb''$

2 _c`c[]gWXY'Hci fYb. =a a Yf'VY`]YVhYf'k YfXYb'Ui WX
O_c`c[]gWXY'6cchghci fYbž'VY]'XYbYb'X]Y'BUhi fgWXOb\Y]hYb'j cb
<Uj Y``UbX']a 'JcfXYf[fi bX'ghY\Yb"'8]YgY'Fi bXZU\fhYb'k YfXYb
\Ai Z]['j cb'I a k Y`hcf[Ub]gUh]cbYb'cXYf'BUhi fgWXi hnj YfVAbXYb
Ub[YVchYb'i bX'V]YhYb'9]bV`]W_Y']b'X]Y'`c_U`Y': `cfU'i bX': Ui bU"'Gc
YfZU\fYb'G]Y'b]WXh'bi f'a Y\f'ØVYf'X]Y'; Yk AggYfž'gcbXYfb'Ui WX
ØVYf'XYb'BUhi fgWXi hn'i bX'X]Y'6]cX]j Yfg]hAh'XYf'FY[]cb"</pre>

 $D`UbYb`G]Y`U`gc`= fYb`bAWXghYb`6Ygi WX`]b`< Uj Y``UbX`i bX \\ [Yb]Y``Yb`G]Y`X]Y`j]Y`ZA`h][Yb`K UggYfUVYbhYi Yfž'X]Y`X]YgY \\ kibXYfgWX`ObY`FY[]cb`ni`V]YhYb`\Uh"`9[U`ž'cV`U_h]j`cXYf`dUgg]j``\]Yf`Z]bXYh`YXYf`gY]b`dYfg`Ob`]WXYg`DUfUX]Yg`Ua`K UggYf``$

? i `]bUf]gW\ Y '? Ògh`]W\ _Y]hYb. '@c_U`Y GdYn]U`]hÀhYb i bX ; Y\Y]a h]ddg

8 Ug' < Uj Y``Ub Xž'Y]b'a U`Yf]gW\Yf'HY]`'6fUb XYbVi f[gž']gh'b]W\h'bi f VY_Ubbh'ZØf'gY]bY'UhYa VYfUi VYb XYb'@Ub XgW\UZhYb'i bX \]ghcf]gW\Yb'GhÀhhYbž'gcb XYfb'Ui W\'ZØf'gY]bY'j]Y`ZÀ`h][Yb _i`]bUf]gW\Yb'5b[YVchY"'Jcb'hfUX]h]cbY``Yb'; Yf]W\hYb'V]g'\]b'ni j YfghYW_hYb'[Ughfcbca]gW\Yb'GW\AhnYb'V]YhYh'X]Y'FY[]cb'Y]bY

FY[]cbU`ibX`Zf]gWX.8]Y`<UjY``AbXYf'?ØWXY

8]Y?@WXY:XYg'<Uj Y``UbXg']gh'ghUf_'j cb'XYf'hfUX]h]cbY``Yb
a Àf_]gWXYb'; Ughfcbca]Y'[YdfÀ[h"'J]Y`Y'FYghUi fUbhg'i bX
; Ugh\OZY']b'XYf'FY[]cb'gYhnYb'Ui Z'Zf]gWXYž'fY[]cbU`Y'Ni hUhYb'i bX
VYfY]hYb']\fY'GdY]gYb'bUWX'@VYf`]YZYfhYb'FYnYdhYb'ni "'<]Yf'g]bX
Y]b][Y'XYf'hmd]gWXYb'; Yf]WXhYž'X]Y'G]Y'dfcV]YfYb'gc``hYb.

- 6]bbYfbfU[cih.'9]b'\Yfn\UZhYg'FU[cih'Uig
 K]`X[YZØ[Y`ž'cZh'a]h'Y]bYf'`YW_YfYb'GUiWY'gYfj]Yfh"
- < Uj Y`nUbXYf. '9]b':]gWk [Yf]Wk hž'XUg'Ui g'XYa ': `i gg' < Uj Y`ghUa a h"'8Yf'NUbXYf'k]fX'cZh'[YVfUhYb'cXYf'[YXØbghYh i bX'a]h'gU]gcbU`Ya '; Ya ØgY'gYfj]Yfh"</p>
- A Àf_]gWX Yf'? Ufhc ZZY`gU`Uh. '9]b'`Y]WX hYgž'YfZf]gWX YbXYg
 ; Yf]WX hž'XUg'Ui g'fY[]cbU`Yb'? Ufhc ZZY`bž'Nk]YVY`b'i bX
 Y]bYf'9gg][!² `!J]bU][fYhhY'VYghY\h"

GØ» Y J Yfgi Wi b [Yb. 8 YggYfhg Ui g XYf F Y []cb

BUWX 'Y]bYa '\Yfn\UZhYb' < Ui dh[Yf]WXh']gh'Yg'Ub'XYf'NY]hž'g]WX Yhk Ug'GØ» Ya '\]bni [YVYb"'8Ug' < Uj Y``UbX'\Uh'Ui WX'\]Yf'Y]b][Yg ni 'V]YhYb.

- 6]YbYbgh]WX. '9]b'_`Ugg]gWXYf'?i WXYb'a]h'Y]bYf
 _`Ogh`]WXYb'A]gWXi b['Ui g'GU\bY'i bX'A UbXY`bž'XYf'ZØf
 gY]bY'GØ» Y'VY_Ubbh']gh"
- < Uj Y``AbXYf'GhfYi gY`_i W.Yb. '8]YgYf'?i W.Yb']gh'a]h Y]bYf'_bUW_][Yb'GhfYi gY`gW.]W.h'VYXYW_h'i bX'Y][bYh'g]W. dYfZY_h'ni 'Y]bYf'HUggY'?UZZYY"
- FY]VY_i WXYb. '5i WX 'VY_Ubbh'U`g'? Ufhc ZZY`di ZZYfž'X]YgY _bi gdf][Yb'@YW_YfV]ggYb'g]bX'c Zh'a]h'5dZY`a i g'cXYf Ni W_Yf'gYfj]Yfh"

8]Y VYghYb CfhY ni a GW Ya a Yb

FYghUifUbh#7UZÅ	Cfh	6YgcbXYf\Y]hYb
@UbX\Ui g' <uj td="" y``ubx<=""><td>K i ghYfa Uf_</td><td>FY[]cbU`Y`?ØW\Y`a]h</td></uj>	K i ghYfa Uf_	FY[]cbU`Y`?ØW\Y`a]h
		Zf]gWXYb NihUhYb
; Ugh\cZnif; fØbYb	?Yhn]b	; Ya Øh`]W\Yg
@]bXY		5a V]YbhYibX
		\Ui g[Ya UW\hY
		GdYn]U`]hÀhYb
<uj td="" y`dyf`y<=""><td>Dc hg X Ua</td><td>5i gV`]W_'Ui Z'X]Y</td></uj>	Dc hg X Ua	5i gV`]W_'Ui Z'X]Y
		<uj bx<="" td="" y`i=""></uj>
		:]gW [Yf]W hY

; Y\Y]a h]ddg ZØf : Y]bgW\a YW<u>Y</u>f

- 7 UZÅ 'Ua 'GYY. '9]b 'ZUa]`]Yb[YZØ\fhYg'7 UZÅ 'Ua 'I ZYf'Y]bYg]Xm``]gW\Yb 'GYYgž'VY_Ubbh 'ZØf'gY]bY '\ Ui g[Ya UW\hYb HcfhYb'i bX'XYb 'Zf]gW\Yb'? UZZYY"
- 6Ui Yfba Uf_h']b'F Uh\Ybck.'9]b'k ÒW\Ybh']W\Yf'A Uf_hž
 Ui Z'XYa 'G]Y'Zf]gW\Y'DfcXi _hY'X]fY_h'j cb'XYb'@UbXk]fhYb
 _Ui ZYb'_ÒbbYb' 'Y]bY']XYU'Y'; Y'Y[Yb\Y]hž'fY[]cbU'Y
 DfcXi _hY'ni 'dfcV]YfYb"
- < Uj Y``ÀbXYf`6]YfVfUi YfY]. '6Ygi W\Yb'G]Y'X]Y'`c_U`Y 6fUi YfY]ž'i a 'WfUZh'VYYfg'ni 'dfcV]YfYb'i bX'a Y\f'ØVYf'XYb 6fUi dfcnYgg'ni 'YfZU\fYb"

$K Y]b i b X a Y f. 8]Y ; YhfAb_Y XYf FY[]cb$

9]bY'AU\`nY]h']a '<Uj Y``UbX'k ÀfY'b]W\h'j c``gh\bX]['c\bY'X]Y dUggYbXYb'; Yhf\b_Y'''@c_U`Y'K Y]b[ØhYf'dfcXi n]YfYb'Y]bY J]Y`nU\`'j cb'K Y]bYbž'cZh'Ui g'FYVgcfhYbž'X]Y'gdYn]Y``'ZØf'XUg?`]a U'XYf'FY[]cb'[YY][bYh'g]bX'''DfcV]YfYb'G]Y'i bVYX]b[h.

- 6fUbXYbVi f[Yf'K Y]b.'8]Y'K Y]bfY[]cb'i a 'X]Y'GhUXh K YfXYf'fk Uj Y`Ł'\Uh'g]W\'Y]bYb'BUa Yb'ZØf']\fYb Zfi W\h][Yb'K Y]b'[Ya UW\h"
- < Uj Y``ÀbXYf'5dZY`kY]b.'9]b'YfZf]gWXYbXYgž'gdf]hn][Yg ; YhfÀb ž'dYfZY h'ZØf'\Y]»Y'Gca a YfhU[Y"
- FY[]cbU`Y`6]YfY. '8]Y`nU\`fY]W\Yb`_`Y]bYb`6fUi YfY]Yb V]YhYb`Y]bY`5i gk U\``Ub`6]YfgcfhYbž'X]Y`j cb`hfUX]h]cbY``Yb V]g`\]b`ni 'a cXYfbYb`Gh]`Yb`fY]W\Yb"

CV'_`Ugg]gW\'cXYf'a cXYfb' 'X]Y'_i `]bUf]gW\Yb'? Ògh`]W_Y]hYb'XYg <Uj Y``UbXg'V]YhYb'Y]b'i bj Yf[Ygg`]W\Yg'; YgW\a UW_gYf`YVb]g" BY\a Yb'G]Y'g]W\'NY]hž'X]Y'j YfgW\]YXYbYb'5b[YVchY'ni YbhXYW_Ybži bX'[Yb]Y»Yb'G]Y'X]Y'J]Y`ZU`h'XYf'`c_U`Yb'?ØW\Y°

5_h]j]hÀhYb ZØf; fc» i bX ? `Y]b. GdU» i bX 5VYbhYi Yf]b XYf BUhi f

 $< Uj \ Y``Ub X`V]YhYhYjbY`J]Y`nU\``Ub`5_h]j]hÀhYbž'X]Y`gck c\``ZØf 9fk UW\gYbY`U`g`Ui W\`ZØf`?]bXYf`[YY][bYh`g]bX"`8]Y`FY[]cb`]gh b]W\h'bi f`ZØf`]\fY`a U`Yf]gW\Yb`@UbXgW\UZhYb`i bX`\]ghcf]gW\Yb GhÀhhYb`VY_Ubbhž'gcbXYfb`Ui W\`ZØf`]\fY`i bn\\`][Yb : fY]nY]ha <math>O[`]W_Y]hYb']b`XYf`ZfY]Yb`BUhi f"`9[U`ž'cV`Xi`Y]b 5XfYbU`]b^1 b_]Yž'Y]b`BUhi f`]YV\UVYf`cXYf`Y]bZUW\`bi f`Ui Z'XYf Gi W\Y`bUW\`Y]bYf`YbhgdUbbhYb`: Ua]`]YbU_h]j]h\h'v]ghž']b < Uj Y``UbX`k]fX`YXYf`ZØbX]["$

%"'FUXZU\fYb'i bX'K UbXYfb

&"'K UggYfgdcfh'i bX'6cchgZU\fhYb

8 U' < Uj Y``UbX'j cb'nU\`fY]WXYb'GYYb'i bX': `ØggYb'Xi fWXnc[Yb']ghž]gh'Yg'XYf'dYfZY_hY'Cfh'ZØf'K UggYfgdcfh`Yf"'J ca 'GY[Y`b'ØVYf?Ubi ZU\fYb'V]g'\]b'ni a 'GhUbX!I d!DUXX`]b['[]Vh'Yg'i bnÀ\`][Y A Ò[`]WX_Y]hYbž'XUg'K UggYf'ni '[Yb]Y»Yb.

- GY[Y`!'i bX'A chcfVcchj Yf`Y]\'Ub'XYb'[fc»Yb'GYYb
- ; YZØ\fhY?U'U hcifYb'UiZ'XYf'<UjY`
- 5b[Y`b']b'XYb'gW\ObghYb':]gW\[Yk\AggYfb

: Ua]`]Yb`_ÒbbYb`Ui W\`[Ya Øh`]W\Y`6cchgZU\fhYb`i bhYfbY\a Ybž X]Y`cZh`a]h`Y]bYa `: Ø\fYf`Ub[YVchYb`k YfXYb`i bX`Ui Z`X]Y I a [YVi b[`i bX`XYfYb`6YgcbXYf\Y]hYb`Y]b[Y\Yb"

' ": Ua]`]YbZfYi bX`]WXY: fY]nY]hdUf_g

: Øf'Y]bYb'Ui ZfY[YbXYb'HU['j c``Yf'GdU» i bX'5VYbhYi Yf'_Ubbgh'Xi Y]bYb'XYf'j]Y`Yb': fY]nY]hdUf_g']b'XYf'l a [YVi b['VYgi WXYb"'8]YgY DUf_g'V]YhYb'Y]bY'J]Y`nU\`'j cb'5hhfU_h]cbYbž'XUfi bhYf.

- 8]Y'< Uj Y``UbX!H\Yfa Y']b'6UX'@]YVYbk YfXUž'Y]b K UggYfdUf_'a]h'Fi hgW\Yb'i bX'K Y``bYgg!5b[YVchYb'ZØf X]Y'[UbnY': Ua]`]Y"
- 8Yf'H]Yf!'i bX': fY]nY]hdUf_']b'; Yfa YbXcfZž'k c'?]bXYf H]YfY'VYcVUW\hYb'i bX'a]h']\bYb']bhYfU[]YfYb'_ObbYbž gck]Y'nU\`fY]W\Y'Gd]Y`d`AhnY'ZØf'_`Y]bY'5VYbhYi fYf"
- 8 Ug': fY]nY]hnYbhfi a '?Øghf]bWXYb ž'k c'A]b][c'Zž HfUa dc']bg'i bX'Gd]Y'd'ÀhnY'ZØf'GdU» 'gcf[Yb"

("BUhi f!'i bX'l a k Y`hV]`Xi b[

<Uj Y``UbX`V]YhYh'Ui » YfXYa 'nU\`fY]W\Y'A Ò[`]W_Y]hYb'ni f'BUhi f!
i bX`I a k Y`hV]`Xi b["'J YfgW\]YXYbY'9]bf]W\hi b[Yb'i bX
Cf[Ub]gUh]cbYb'V]YhYb': Ø\fi b[Yb'i bX`K cf_g\cdg'Ubž'X]Y
?]bXYfb'i bX'9fk UW\gYbYb'\Y`ZYbž'X]Y'`c_U`Y': `cfU'i bX': Ui bU
VYggYf'ni 'j YfghY\Yb"'8Yf'BUhi fgW\i hndUf_'K Ygh\Uj Y``UbX']gh
Y]b'VYgcbXYfg'[YgW\AhnhYf'Cfh'ZØf'cfb]h\c`c[]gW\Y'9f`YVb]ggY"</pre>

<]Yf'_Ubb'a Ub'b]W\h'bi f'j]Y`Y'Jc[Y`UfhYb'VYcVUW\hYbž'gcbXYfb
Ui W\'Ub'[YZØ\fhYb'Hci fYb'hY]`bY\a Yb"</pre>

) "5VYbhYi Yf"]b 5VYbhYi YfdUf_g

 $: \emptyset f'X]Y'UVYbhYi Yf'i gh][Yb': Ua]']Yb'V]YhYh'< Uj Y'`UbX'nU\`fY]WXY < cWX gY]`[ÀfhYb'i bX'? `YhhYfdUf_g"'8Yf'< cWX gY]`[UfhYb']a < Uj Y``UbX'Yfa Õ[`]WXh'Yg'XYb'6Ygi WXYfbž'g]WX'Ui Z j YfgWX]YXYbYb'? `YhhYfdUfWci fg'Ui gni hcVYbž'k À\fYbX'X]Y'? `Y]bYb]b'gdYn]Y``Yb'?]bXYfVYfY]WXYb']\fY'YfghYb'? `YhhYfYZU\fi b[YbgUa a Y`b'_ÒbbYb"'J]Y'Y'X]YgYf'DUf_g'VYZ]bXYb'g]WX']b a U`Yf]gWXYb'K U`X[YV]YhYbž'k Ug'XUg'9f`YVb]g'i a gc'gWXÒbYf a UWXh"$

5_h]j]hÀh	Cfh	; YY][bYh'ZØf
F UXZU\fYb	<uj bxk="" td="" y[<="" y``ubx!fi=""><td>: Ua]`]Ybž[·]DUUfYž</td></uj>	: Ua]`]Ybž [·] DUUfYž
		; fi ddYb
K UggYfgdcfh	GYYb'i bX': `ØggY	5``Y'5`hYfg[fiddYb
: fY]nY]hdUf_g	6UX ⁻ @YVYbk YfXUž	: Ua]`]Ybž'?]bXYf
	; Yfa YbXcfZ	
?`YhhYfb	< c WX gY]`[UfhY b	5VYbhYiYf`igh][Yž
		?]bXYf

8]Y'A Ò[`]W_Y]hYb'g]bX'bU\Yni 'i bVY[fYbnh'i bX'V]YhYb'b]W\h'bi f GdU» i bX'5Vk YW\g`i b[ž'gcbXYfb'Ui W\X]Y'A Ò[`]W_Y]hž'k Yfhj c``Y NY]h'a]h'XYf': Ua]`]Y']b'XYf'ZfY]Yb'BUhi f'ni 'j YfVf]b[Yb"'8UfØVYf\]bUi g'g]bX'X]Y'j YfgW\]YXYbYb'5_h]j]hÀhYb'cZh'i bj Yf[Ygg`]W\Y 9f`YVb]ggYž'X]Y'X]Y'6]bXi b['nk]gW\Yb': Ua]`]Yba]h[`]YXYfb'i bX: fYi bXYb'ghÀf_Yb"

; Ubn'[`Y]W\žcV'Xi 'X]Y'Fi\Y'XYf'BUhi f'Ui Z'Y]bYa 'FUXk Y[
[Yb]Y»Yb'cXYf'X]Y'5i ZfY[i b['Y]bYg'? `YhhYfUVYbhYi Yfg'Yf`YVYb
a ÒW\hYgh' '< Uj Y``UbX'\Uh'ZØf'YXYb'Yhk Ug'ni 'V]YhYb"'DUW_'XY]bY
GbUW_g'Y]bž'gW\bUdd'X]f'X]Y'[UbnY': Ua]`]Y'i bX'a UW\'X]W\'Ui Z
XYb'K Y[ži a 'X]Y'j]Y`ZÀ`h][Yb'5VYbhYi Yf'ni 'YbhXYW_Ybž'X]Y'X]YgY
VYnUi VYfbXY'FY[]cb'ni 'V]YhYb'\Uh'

I bhYf_ØbZhY'i bX'9f\c`i b[.'8]Y'VYghYb D`ÀhnY'ni a ', VYfbUW\hYb']b'<Uj Y``UbX

K Ybb 'G]Y 'X]Y 'a U`Yf]gWXY 'FY[]cb'<Uj Y``UbX'Yf_i bXYb'a ÒWXhYbž
]gh'X]Y 'K U\``XYf'f]WXh][Yb'I bhYf_i bZh'YbhgWXY]XYbX'ZØf'→\f
9f`YVb]g"'<]Yf'[]Vh'Yg'Y]bY'J]Y`nU\``j cb
¸VYfbUWXhi b[ga Ò[`]WX_Y]hYbž'X]Y'ZØf'^YXYb'; Y`XVYi hY``i bX
;YgWXa UW_'Yhk Ug'V]YhYb"'CV'WXUfa UbhY'DYbg]cbYbž'fi gh]_U`Y
@UbX\Ài gYf'cXYf'`i I i f]ÒgY'<chY`g'Ua 'K UggYf' '<Uj Y``UbX'\Uh'ZØf
YXYb'FY]gYbXYb'XUg'DUqqYbXY"

; Ya Øh`]W\Y DYbg]cbYb i bX ; Ugh\ Ài gYf

±b'_`Y]bYb'8 ÒfZYfb'k]Y'? Yhn]b'i bX'Df]hnYfVY'Z]bXYb'G]Y'Y]bY
5i gk U\`'Ub'W\Ufa UbhYb'DYbg]cbYb'i bX'; Ugh\Ài gYfb"'8]YgY
I bhYf_ØbZhY'nY]W\bYb'g]W\'cZh'Xi fW\']\fY'\Yfn`]W\Y
; UghZfYi bXgW\UZhii bX'X]Y'ZUa]`]ÀfY'5ha cgd\ÀfY'Ui g"'8]Y'6Yg]hnYf
[YVYb'⇒bYb'[Yfb'H]ddg'ZØf'5i gZ'Ø[Y']b'X]Y'I a [YVi b["

$=Xm^{^{\prime}}gWXY: Yf]Ybkc\bib[Yb]$

K Ybb'G]Y'a Y\f'I bUV\Ab[][_Y]h'k ØbgWXYbž'g]bX
: Yf]Ybk c\bi b[Yb'Y]bY'\Yfj cffU[YbXY'K U\`"8]YgY'g]bX'cZh']b
\]ghcf]gWXYb'; YVAi XYb'cXYf'Ui Z'Y\Ya U`][Yb'<ÒZYb
i bhYf[YVfUW\h'i bX'V]YhYb'XYb'?ca Zcfh'Y]bYg'Ni \Ui gYg"</pre>

: Yf]Ybk c\bi b[']b 'F]VVYW_. '♣b 'Y]bYa 'U`hYb'; i hg\Ui g i bhYf[YVfUW\hž·V]YhYh'X]YgY 'I bhYf_i bZh'Ni [Ub['ni 'Y]bYa k Y]h`Ài Z][Yb'; UfhYb'i bX'Y]bYa 'hfUX]h]cbY``Yb' F]VVYW_Yf ?]fgW [UfhYb "

`AcXYfbYg`@cZh`]b`6fUbXYbVif[.`9]bY`gh]`jc``Y`IbhYf_ibZhž`X]Y

Y]bY'A]gW\ib['Uig'acXYfbYa'8Yg][b'ibX'`\AbX\`]W\Ya'7\UfaY V]YhYhz']XYU``ZØf'DUUfY'cXYf'_\Y]bYfY'; fiddYb"

@ilif] \(\text{OgY' < chY'g} \)

 $: \emptyset f `F Y] g Y b X Y \check{z} `X] Y `Y hk Ug `a Y \setminus f `? ca Zc fh `gi W X Y b \check{z} `[] V h `Y g `] b \\ < Uj Y `` Ub X `Ui W ``i I i f] Og Y `< ch Y `g " 8] Y g Y `V] Y h Y b `c Zh `n U \ `f Y] W X Y 5 b b Y \ a `] W _Y] h Y b `k] Y `K Y ``b Y g g V Y f Y] W Y \check{z} `F Y g h Ui f Ub h g `i b X 5 _h] j] h A h Y b "$

'GWk]Y`ckgYY`FYgcfh.'8]fY_h'Ua 'I ZYf`XYg`GWk]Y`ckgYYg
[Y`Y[Ybž'V]YhYh'X]YgYg`FYgcfh'nU\`fY]WkY': fY]nY]ha Ò[`]Wk_Y]hYb
gck]Y`Y]b`\cWkkYfh][Yg`FYghUi fUbhž']b`XYa 'G]Y`fY[]cbU`Y
? Ògh`]Wk_Y]hYb`[Yb]Y»Yb`_ÒbbYb"

7Ua d]b[i bX BUhi fYf`YVb]g

: Øf'B Uhi f`]YV\UVYf']gh'7 Ua d]b['Y]bY'[fc > Ufh][Y'A Ò[`]W_Y]hž
< Uj Y``UbX'\Ui hbU\'ni 'Yf`YVYb"'J]Y`Y'Ui g[Yk]YgYbY
7 Ua d]b[d`ÀhnY'g]bX']b'XYf'FY[]cb'j cf\UbXYbž'X]Y'g]W\']b'XYf
BÀ\Y'j cb'GYYb'i bX': `ØggYb'VYZ]bXYb"</pre>

'7 Ua d]b[d`Uhn'<Uj Y`gYY.'9]b'ZUa]`]YbZfYi bX`]W\Yf'D`Uhnž']XYU` ni a '5b[Y`b'i bX'FUXZU\fYb"'<]Yf'_ \dot{O} bbYb'G]Y'X]fY_h'Ua 'K UggYf WUa dYb'i bX'X]Y'BUhi f'[Yb]Y $_{\odot}$ Yb"

"BUhi fWUa d]b[']a '<Uj Y``ÀbX]gW\Yb'@ W\. I a [YVYb'j cb i bVYfØ\fhYf'BUhi fž']gh'X]YgYf'D`Uhn'dYfZY_h'ZØf'U``Yž'X]Y'Fi\Y'i bX 5V[YgW\]YXYb\Y]h'gi W\Ybž'UVYf'Ui W\'X]Y'H]Yfk Y`h'XYg'@ W\g Yf`YVYb'a ÒW\hYb"

K Y``bYqq'i bX'9f\c`i b[

BUW Y]bYa 'HU['j c``Yf'9f_i bXi b[Yb'gc``hYb'G]Y'g]W 'NY]h

bY\a Ybži a 'g]W\'ni 'Yf\c`Yb"'J]Y`Y'<chY`g'i bX'K Y``bYgg! 9]bf]W\hi b[Yb']b'XYf'FY[]cb'V]YhYb'YbhgdUbbYbXY'6Y\UbX`i b[Yb i bX'5bk YbXi b[Yb'Ub"

'H\Yfa Y'6UX'K]`gbUW_. 'Bi f'Y]bY'_i fnY'5i hcZU\fh'j cb'< Uj Y``UbX YbhZYfbhž'V]YhYh'X]Y'H\Yfa Y'Y]bY'J]Y`nU\`'j cb K Y``bYggUbk YbXi b[Ybž'j cb'A UggU[Yb'V]g'ni 'GUi bYbž']XYU`ž'i a bUW. 'Y]bYa 'U_h]j Yb'HU['ni 'YbhgdUbbYb"

'<chY`'Ua '6UXYgYY.'BYVYb'_ca ZcfhUV`Yb'N]a a Yfb'V]YhYh'X]YgYg
<chY`'Y]b'i a ZUb[fY]WXYg'K Y``bYggUb[YVchž'XUfi bhYf'Y]b
GWXk]a a VUX'i bX'j YfgWX]YXYbY'6Y\UbX`i b[Ybž'X]Y'XUfUi Z
UVn]Y`Ybž'? ÒfdYf'i bX'; Y]gh'ni 'YbhgdUbbYb"</pre>

=bZfUghfi_hifibX'9ffY]WXVUf_Y]h

 $< Uj \ Y``Ub X`]gh'j \ cb'j \]Y`Yb'[fc > Yb'GhÀXhYb'k \]Y'6Yf`]b'i b X'DchgXUa Ui g'[i h'YffY]W\VUf''8]Y'FY[]cb']gh'Xi fW\'Y]bYb'[i h'Ui g[YVUi hYbGhfU > Ybj Yf_Y\fi b X'OZZYbh`]W\Y'J Yf_Y\fga]hhY`'j YfVi b XYbž gc XUgg'G]Y'dfc V`Ya `cg' \Rightarrow fY'I bhYf_i bZh'YffY]W\Yb'_ObbYb'''J]Y`Y < chY`g'i b X'DYbg]cbYb'V]YhYb'Ui W\'DUf_a O[`]W_Y]hYb'gck]Y : U\ffUXj Yf`Y]\'Ubž'i a 'X]Y'I a [YVi b['ni 'Yf_i bXYb''$

lbhYf_ibZh	Hmd	6YgcbXYf\Y]hYb
DYbg]cb'5a'5`hYb	DYbg]cb	8]fY_h'Ua 'K UggYfž
< UZY b		: fØ\ghØW_'a]h
		5i gg]W\h
< c hY`'GWX`c gg	@lig\chY`	<]ghc f]gWX Y g
F]VVYW_		5a V]YbhYž [·] GdU!
		6YfY]W
7Ua d]b[d`Uhn	7Ua d]b[: Ua]`]YbZfYi bX`]W\ž
<uj td="" y`gyy<=""><td></td><td>5b[Y`b'ibX</td></uj>		5b[Y`b'ibX
		FUXZU\fYb

< Uj Y``Ub X 'V]YhYh'Y]bY 'ZUWYhhYbfY]WX Y '5i gk U\``Ub 'I bhYf_Øb ZhYbž X]Y '\(\text{A}\) fY '9f\c\`i b['i b X '\(\text{A}\) f'5VYbhYi Yf']b'X]YgYf'k i bXYfgWX\\ObYb FY[]cb'i bhYfghØhnYb'k YfXYb"'9[U`ž'cV'G]Y'X]Y'BUhi fž'X]Y'?i `hi f cXYf'Y]bZUWX 'bi f'X]Y'Fi \Y'gi WXYbž'\]Yf'Z]bXYb'G]Y'XYb'dYfZY_hYb FØW_ni [gcfh"

6Ygi WXYb G]Y i bg Ui Z Y]bY!fY]gY "XY