### :`cf]XU'; Uhcfg'Dc]gYX'Zcf'6]['>i`m']b'&\$&\* FYWfi]h]b['6Uhh`Y'

H\Y`:`cf]XU`; Uhcfg`Vc`ghYf`h\Y]f`&\$&\*`fYWfi]h]b[`WUgg`k]h\ \_Ym`Wcaa]haYbhg`Ug`\][\!dfcZ]`Y`hUf[Yhg`UbbcibWY XYW]g]cbg`h\]g`\$`m"



7 c Wc Už: `cf]X UžI G5 ! H\Y: `cf]XU'; Uhcfg'UfY'a U\_]b[ 'k Uj Yg']b h\Y'k cf`X'cZ'Wc``Y[Y'ZcchVU``fYWfi]h]b[ ž'UbX'h\Y'YI W]hYa Ybh']g dU`dUV`Y'Ug'k Y'ghYd']bhc'i `m"'H\]g']g'U'd]j chU`'a ca Ybh'Zcf'h\Y hYUa 'Ug']h'gYY\_g'hc'Vc`ghYf']hg'&\$&\*`fYWfi]h]b[ 'WUgg"' ♣`i bY U`cbYž: `cf]XU'UXXYX'%&'dfcgdYWhgž'Vf]b[]b[ 'h\Y]f'hchU` Wca a ]ha Ybhg'hc'U'gc`]X'%( "'H\Y'; Uhcfg'UfY'df]a YX'Zcf'U'Vi gm a cbh\'U\YUXž'k]h\'gYj YfU`\][\!dfcZ]`Y'fYWfi]hg'a U\_]b[ 'XYW]g]cbg gccbž'k \]W\'Wci `X'g\UdY'h\Y'hYUa g'Z hi fY'ghfUhY[m'g][b]Z]WUbh`m" : `cf]XU'; Uhcfg'cb'G=fYdcfhg'h\Uh'h\Y'hYUa ']g']bhYbgY`m'ZcW'gYX cb'hfUW\_]b[ 'a U'cf'fYWfi]h]b[ 'bYk gž']bWi X]b[ 'Wca a ]ha Ybhgž dfcgdYWhgž'UbX'h\Y'U``!]a dcfhUbh'cZZ]W]U`'j ]g]h'gWXYXi `Y"

CbY'ghUbXcihid`UmYf'hc'kUhW\']g'Zcif!ghUf'WcfbYfVUW\_'7><YghYf

## 6i]`X]b['U'Ghfcb[':ihifY

Y ZZc fhg"

5XX]b[`hc`h\Y`XfUa Už`\$`m`)`k]```VY`U`Wfi WJU``XUhY`ZYUhi f]b[`Z]j Y! ghUf`fYWY]j Yfg`7U`j ]b`Fi ggY```UbX`}fY\`9Xk UfXg"`I bZcfhi bUhY`m`Zcf ; Uhcfg`ZUbgž': `cf]XU`]g`bc``cb[Yf`]b`h\Y`fUWY`Zcf`Fi ggY``ž`k \c a UXY`\]g`hcd`h\fYY`W\c]WYg`k]h\ci h`]bWi X]b[`h\Y`hYUa "`9Xk UfXgž hccž`]g`dfYX]WhYX`hc`cdh`Zcf`5`UVUa U`cj Yf`: `cf]XU g`Wcbh]bi YX

:`cf]XUg'WXUbWYg'gYYa 'g`]a "

>i `m' `Vf]b[g`Zcfa Yf`: `cf]XU`Wca a ]h`8Yj ]b`>JW\_gcb`VUW\_`]bhc ZcW'g"`8Ygd]hY`\Uj ]b[`: `cf]XU`Ua cb[`\]g`Z]bU`]ghgž`]bX]WUh]cbg gi [[Ygh`\Y g`i b`]\_Y`m`hc`fYWca a ]hž`Ug`hYUa g``]\_Y`@GI ž`A ]Ua ]ž BYVfUg\_Už`UbX`CfY[cb`U`gc`j ]Y`Zcf`\]g`UhhYbh]cb"`H\Ybž`cb`>i `m`(ž Z]j Y!ghUf`cZZYbg]j Y``]bYa Ub`: Y`]I`C ^c`UddYUfg`hc`VY``YUb]b[ hck UfXg`ch\Yf`WcbhYbXYfg`gi W\`Ug`A ]W\][Ub`UbX`HYI Ugž`a U\_]b[ `}ef]VU e`W\Ub`W(e`ex)V(e`de`)

5gʻh\Yʻa cbh\ʻi bZc`Xgž'a cfYʻbUa YgʻUfYʻYbhYf]b[ʻh\Y Wabj YfgUh]ab"'Cbʻsi `mʻ&žʻ: `cf]XUʻ]gʻYmY]b[ʻZ]j Y!ghUfʻk ]XYʻfYWY]j Yf 7YXYf]UbʻA cf[Ubž'Z]j Y!ghUfʻ98; 9ʻHfYbhabʻ<YbXYfgabžʻUbXʻZai f! ghUfʻXYZYbg]j Yʻ`]bYa Ubʻ?YbXU```; i Yfj ]`"5`h\ci [\`A cf[Ubʻ]g WiffYbh`m`YUb]b[ʻhak UfXgʻ5`UVUa Užʻ\Y gʻbabYh\YʻYggʻUʻdf]af]hm hUf[YhʻZafʻh\Yʻ; Uhafg"A YUbk \]`Yžʻ<YbXYfgabžʻfUb\_YXʻUgʻh\YʻBa" (`YX[Yʻfi g\Yfžʻ\Ugʻg\]ZhYXʻa ca Ybhi a ʻhak UfXʻ@GI ʻUgʻ\]g Zfabhfi bbYf"Cbʻh\Yʻch\Yfʻ\UbXžʻ; i Yfj ]``]gʻ[U]b]b[ʻhfUWh]abž'k ]h\ dfYX]Wh]abgʻ]bX]WUh]b['Uʻdagg]V`YʻWaa a ]ha Ybhihaʻ: `cf]XU"

### ?YmFYWfi]hgUbXH\Y]f7caa]haYbhg

Zfca '7cWcUž: `cf]XU"'<Y`]g'W ffYbh`m'h\Y'Zfcbhfi bbYf'Zcf: `cf]XUž fUb\_YX'Ug'h\Y'Bc"'%+ WcfbYf']b'h\Y'&\$&\* WUgg'Vm'Cb' "'5ZhYf'\]g fYW/bh`cZZ]W]U`'j ]g]hž'<YghYf'YI dfYggYX'cdh]a ]ga ž'ghUh]b[ 'h\Uh : `cf]XU']g' gh]``'hfYbX]b[ 'Bc"'% 'Ua cb[ '\]g'W\c]WYgž'k \]W\'U`gc ]bWi XY'5i Vi fbž'; Ycf[ ]Už'€k Už'A ]Ua ]ž'UbX'GmfUW gY"'G\ci `X <YghYf'XYW]XY'hc'^c]bž']h'k ci `X'Zi fh\Yf'gc`]X]Zm: `cf]XU g'XYZYbg]j Y VUW\_Z]Y`Xž'k \]W\'U`fYUXm'ZYUhi fYg'Zci f!ghUf'gUZYhm'?U]XYb'<U`` UbX'ZY``ck 'Zci f!ghUf'WcfbYf'7>6fcbUi [ \"

8 Y hU]`g	
Cfh	7cWcUž:`cf]XUžIG5
EiY``Yb	• k k k "g]"Wca
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5gʻh\Yʻi `m`\YUh`f]qYqž'qc'XcYq`h\Y'Ubh]W]dUh]cb'qi ffci bX]b[ 'h\Y :`cf]XU; Uhcfg fYWfi ]h]b[ YZcfhg"K ]h\`\_YmXYW]g]cbg``cca ]b[ UbX U'V`YbX'cZ'hU`Ybh'U`fYUXm'cb'VcUfXž'\YUX'WcUW\'6]``m'BUd]Yf'UbX \]g`ghUZZ`\Uj Y`h\Y]f`k cf\_`W h`ci h`Zcf`h\Ya ž`Ybgi f]b[ `h\Uh`h\Y ; Uhcfg 'Zci bXUh]cb fYa U]bg ghfcb[ 'Zcf h\Y Zi hi fY"

- ?Y\_i U'5i a i Už'H9!Mź'\* ) ž'&) \$``Vgž'6fUXYbhcbž': @
- \$Ja ]f`DYfYnž'8Hž'\* ( ž' ) \$``Vqž'7`Yj Y`UbXž'C <</pre>
- \$Jj Uf]]`@ W\_Ugž`C Hž`\* \* ž`' &\$``Vgž'6Y``Y`; `UXYž`: @
- Hm`Yf`7\i\_imYa ž'CHž'\*) ž'&-\$``Vgž'8ci[`Ugj]``Yž'; 5
- 8Yga cbX; fYYbžC; ž\*) ž'() ``VgžGU]bhGhYd\YbžG7
- 7\UbWY``cf'7Ua dVY``ž'CHž'\*, ž'' \$\$``Vqž'GU]bh'DYhYfqVi f[ž :@
- ; B]i fY 7Uffž'C; ž'\* ( ž'' ' \$``Vqž'6fUXYbhcbž': @
- > gh]b K ]``]Ua qž K F ž') %% ž %- \$ ``V qž'; U]b Y qj ]``Y ž': @
- A Ufei Yn 8 Ub | Y ` ž 5 H < ž \* ) ž & \$ \$ ``Vgž Hi g\_Y [ Y Y ž 5 @
- 7">"6fcbUi [\ž76ž" \$ ž%") ``VqžK ]bXYfa YfYž: @
- ? U]XYb'<U``ž'Gž'\*' ž'&\$\$``Vgž'A]`hcbž':@
- 7 Ufgmb '6U\_Yfž F 6ž \* % ž %- ) ``Vgž : U]fVi fbž ; 5
- K ]``; f]ZZ]bžE6!DDž\* ( ž&'\$``VqžHUadUž:@
- JFYmUb'AW7cmž'89ž'\* + ž'&\*\$``Vgž'HidY`cž'AG

dfca ]g]b[ 'hU`Ybhg`gi W\'Ug.

H\Y`W`ffYbh``]bYid`Zcf`: `cf]XUg`fYWfi]h]b[`WUgg`]bWiXYg

#### $k Y ] [ \langle g'U' \rangle Y Zhm'' ) ( dci b X g''$

5g<sup>·</sup>h\Y<sup>·</sup>; Uhcfg<sup>·</sup>Wcbh]biY<sup>·</sup>h\Y]f<sup>·</sup>W\UgYž<sup>·</sup>h\YfY<sup>·</sup>UfY<sup>·</sup>Vf][\higdchg<sup>·</sup>]b  $h Y f & \& & f W f i h b [ W U g ' 5 W c f X b [ h c K 7 <math>\rightarrow$  z h Y W U g ' U g f]qYb'hc'%(h\'bUh]cbU``mžVcUqh]b['cbY'Z]jY!qhUfž'qYjYb'Zcif!qhUfqž UbX'g]I 'h\fYY!ghUfg"'FYWbh'Wca a ]ha Ybhg']bWi XY'8Yga cbX ; fYYbžUZcif!ghUf]bhYf]cf``]bYaUbk\cghUbXgUh\* (") UbX

# 6Ygi WXYb'G]Y'i bg'Ui Z.'a Y]b!k ]Yb"bYh