

Bif') & $XYf'\%(! \rightarrow XYf')$ [Yb']b'2 ghYffY]W [Y[Yb'< DJ'[Y]a dZh°

K]Yb'dfÀgYbh]Yfh'5_h]cbgd`Ub'ni f'<DJ!9`]a]bUh]cb.'bi f') &ı
XYf'%(!À\f][Yb'[Y]a dZhž'A U» bU\a Yb'ni f'GhY][Yfi b['XYf

a dZei chY'Ya dZc\`Yb"



K]Ybž'² ghYffY]W ! : + 12 ghYffY]W a UW hX]Y < DJ! = dZ b['bi f ZØf') & DfcnYbhXYf'%(! A\f][Yb Y]bYb I bhYfgW]YX" 8]YgY NU\`]gh U`Ufa]YfYbXž']bgVYgcbXYfY k Ybb a Ub VYXYb_hžXUgg'X]Y < DJ! = dZ b['X]Y VYghY GhfUhY[]Y ni f'JcfVYi [i b['j cb ; YVAfa i hhYf\U`g_fYVg'i bX k Y]hYfYb ZØbZ'? fYVgUfhYb XUfghY``h" 5a 'A cbhU[UVYbX'dfAgYbh]YfhYb'9I dYfhYb']b'K]Yb < UbX`i b[gYa dZY\`i b[Yb i bX'Y]bYb bUh]cbU`Yb'5_h]cbgd`Ub ni f' < DJ!9`]a]bUh]cb" 8Yf k]ggYbgW UZh`]WXY@Y]hYf'9`a Uf'xi fU ZcfXYfhY'Y]bYb'j YfV]bX`]WXYb'OghYffY]WXk Y]hYb'5_h]cbgd`Ub'i bX VYhcbhY'X]Y'K]WXh][_Y]hYY]bYg'gmghYa Uh]gWXYb'5bgUhnYgži a 'X]Y = dZei chY'ni 'ghY][Yfb"

8]Y`\gcWUbÒfYb`<UbX`ib[gYa dZY\`ib[Yb'ia ZUggYb'Y]b

i a ZUggYbXYg'9]b`UXi b[ggmghYa 'ni f'=a dZ b[ž'XYb'5i gVUi 'j cb GWi ']a dZ b[Yb'i bX'X]Y'9f\O\i b[XYf'=a dZcfhY']b 5fVY]hgghÀhhYb"Ni XYa 'gc``hYb'Y]b'Y!=a dZdUgg'i bX'Y]b ghfi _hi f]YfhYg'< DJ!GWfYYb]b[dfc[fUa a 'Y]b[YZØ\fh'k YfXYbž'i a _`UfY': cfhgW\f]hhY'ni 'Yfn]Y`Yb"'8Ug'N]Y``]gh'Ui W\'X]Y JYfOZZYbh`]W\i b['Y]bYg'A\f`]W\Yb'< DJ!6Yf]W\hgž'i a 'X]Y OZZYbh`]W\Y'; Ygi bX\Y]h'ni 'ZOfXYfb"'8]YgY'GW\f]hhY'g]bX bchk YbX][ž'XU'X]Y'=a dZei chYb'fY[]cbU``ghUf_'j Uf]]YfYb.'K A\fYbX]b'K]Yb'VYfY]hg'+*'DfcnYbh'XYf'> [YbX`]W\Yb'[Y]a dZh'g]bXž'g]Y\h Yg']b'UbXYfYb'6i bXYg`AbXYfb'k Yb][Yf'cdh]a]gh]gW\'Ui g'']b B]YXYfOghYffY]W\'g]bX'Yg'bi f'(\$'DfcnYbhz']b'CVYfOghYffY]W\'((DfcnYbh'i bX'qc[Uf'bi f'&-'DfcnYbh']b'GU`nVi f["

=a dZeichYibXIbhYfgWX]YXY

9]b k Y]hYfYf Di b_hZXYf ni f 8]g_i gg]cb Ub[Yghc Yb k i fXYZ]gh XYf I bhYfgW]YX]b XYf = dZei chY nk]gW Yb A AXW Yb i bX 6i fgW Yb 8]YgY `]Y[h VY] A AXW Yb VY], \$ DfcnYbhZ k A\fYbX 6i fgW Yb YX][`]W + \$ DfcnYbhYffY]W Yb "8 Yf OghYffY]W]gW Y 5_h]cbgd `Ub n]Y hXUfUi Z UV Z X]YgY ? `ØZhY ni gW `]Y Yb i bX X]Y K < C!N]Y a Uf_Y ni YffY]W Yb Z X]Y j cfg]Y hZ XUgg V]g &\$' \$ - \$ DfcnYbh XYf A AXW Yb V]g ni a 5 hYf j cb %) = 1\fYb [Y]a dZhg]bX" @Ui hY]bYa K < C!6Yf]W hg]bX]b XYf 9i fcdA]gW Yb FY[]cbZ ni XYf Ui W 2 ghYffY]W [Y\OfhZ fi bX * \$"\$\$\$: fUi Yb A\fYb [Y]a bZ ni XYf Ui W 2 ghYffY]W [Y\OfhZ fi bX * \$"\$\$\$: fUi Yb A\fYb Yb XUfUb K < C]bZcfa]YfhYVYbZU`g XUfØVYfZ XUgg X]Y < DJ!=a dZ b[Y]b YbgW Y]XYbXYf: U_hcf]b XYf 6Y_Aa dZ b[X]YgYg?fYVgYg]gh"

5 VYf'k]Y'g]W\Yf']gh'X]Y' < DJ! a dZ b['Y][Ybh`]W\3'8 Ug'FcVYfh
? cW\! = bgh]hi h'[]Vh'9bhk Ufbi b[.'6]g'\\$\&\k k i fXYb'k Y`hk Y]h'ØVYf
) \\$\frac{1}{2} \text{CgYb'j YfUVfY]W\k'z'c\bY'XUgg}
gW\k Yfk]Y[YbXY'i bYfk ØbgW\hY'K]f_i b[Yb'j YfnY]W\bYh'k YfXYb
_cbbhYb''8]YgY' a dZ b['[]`h'U'g'gY\f'g]W\Yfz''Ui W\k'k Ybb''VY]
Y]b][Yb'DUh]YbhYb'6YgW\k YfXYb'Ub'XYf'9]bgh]W\ghY'`Y'cXYf
_i fnZf]gh][Y'?fY]g`Ui ZfYU_h]cbYb'Ui ZhfYhYb'_ObbYb''8f'' < Ubg' < Ybf]
D'''?`i [Yz'XYf'K < C!FY[]cbU'X]fY_hcf'ZØf'9i fcdUz'VY_f\AZh][hY'X]Y
Bchk YbX][_Y]h'XYf' < DJ! a dZ b['U`g'HY]``i a ZUggYbXYf
; Ygi bX\Y]hgghfUhY[]Yb''

$8]Y^8f]b[^]WX_Y]h^XYf^=a dZi b[$

9]bY']bhYfYggUbhY'HUhgUW\Y.'8]Y'; fUh]g!=adZib['ZØf'&%!'V]g' \$! \to \f][Y'YbXYh'VYfY]hg'Ua \to U\fYgYbXY''8U\Yf'gc``hYb''Ab[Y 9fk UW\gYbY'Xf]b[YbX'\UbXY`b'ibX'X]Y'; Y'Y[Yb\Y]h'bi hnYbž VYj cf'Yg'ni 'gdÀh']gh'''9`a Uf' \approx i fU'a UW\h'YfbYi h'_`Ufž'k]Y'k]W\h][Yg'k ÀfYž'a Y\f'5i Za Yf_gUa _Y]h'Ui Z'X]Y'<DJ!=adZib['ni 'Yb_Ybž'ia 'X]Y'Ub[YghfYVhY'EichY'ni 'YffY]W\Yb'ibX'XUa]h'@YVYb'ni fYhhYb''' \to XYf'Y]bnY`bY'GW\f]hh']b'X]YgYf'F]W\hib['_\ObbhY'\YhnhYbX`]W\'XUni 'VY]hfU[Ybž'XUgg'kYb][Yf': fUiYb'Ub'X]YgYf'j Yfa Y]XVUfYb'?fUb_\Y]h``Y]XYb'a ØggYb''

±bg[YgUa h'V`Y]Vh'U`gc'j]Y``ni 'hi b"'8]Y'; Ygi bX\Y]hgVY\ÒfXYb'g]bX Ui Z[Yfi ZYbž'X]Y'Ya dZc\`YbYb'A U» bU\a Yb'Yfbgh\UZh']b'X]Y'HUh i a ni gYhnYbž'i a 'X]Y'G]W\Yf\Y]hgVUff]YfY'fi bX'i a 'XUg'H\Ya U <DJ'k Y]hYf'ni 'ghÀf_Yb'i bX'XYa 'N]Y`'Y]bYf'<DJ!ZfY]Yb'Ni _i bZh bÀ\Yf'ni '_ca a Yb"'8Ybb'Ua '9bXY'VYhf]ZZh'X]Y'; Ygi bX\Y]h'U``Yf i bg'U``Y°

8 YhU]`g	
Cfh	K]Ybž ^{·2} ghYffY]WX
EiY``Yb	• k k k "a Y]bVYn]f_"Uh
	• k k k "k \ c "]bh
	• k k k "f_]"XY

6 Y gi W Y b 'G | Y 'i b g 'U i Z 'a Y | b ! k | Y b "b Y h