

LING5005

HY'; fUa a Uf'cZ9b[`]g\

HYfa 'Hk c''##'&\$%-

7ci fgY 8YHJ] g

7 fYX]hDc]bhg**

Gi a a UfmcZh\Y 7ci fgY

 $H\g``Wci\ fgY`dfcj\]XYg`U`ghYd!Vm!ghYd`UWWci\ bhcZ9b[`]g\[`]g\[`fUa\ a\ Uf`Wcj\ Yf]b[``h\Y`a\ cgh]a\ dcfhUbhUbX W\bfU``Wcbgfi Whcbg`UbX`WUhY[cf]Yg''`Mci `k]````YUfb`UVci hh\Y``UhYghh\YcfYh\WU``UXj UbW'g`]b```]b[i]gh]Wg UbXž`VmUbU`mg]b[`]bhYfYgh]b[`Yl Ua\ d`Yg`Zfca `dfYgYbhXUm'9b[`]g\ž'mci `k]```Yl\ d`cfY`k\Umg`]b`k\]W\`h\Y hfUX]h]cbU``[fUa\ a\ Uf`cZ9b[`]g\`]g`W\Ub[]b["$

7ci fgY @YUfb]b['Ci hWca Yg

- %" GmghYa UhJWJ``miYl Ua]bY'h\Y'j Uf]ci g`_]bXg`cZ`Ub[i U[Y'Y`Ya Ybhg`fa cfd\Ya Yžk cfXgžd\fUgYg`UbX WUi qYqŁ'UbX'h\Y'fY`Uhlcbq\]dg'h\YqY'UfY'UV'Y'hc'YbhYf`]bhc']b\'9b[`]q\
- &" 7 cbglfi Wi[fUa a Uh]WU``UbU`mgYg`UbX``]b[i]gh]WUf[i a Ybhg`ig]b['dfYW]gY`hYfa]bc`c[m
- "" 8 YgWf]VY"UbX"UbU"mgY"X]ZZYfYbh'WUi gY"UbX"gYbhYbWY"mmdYg"]b"9b["]gV"UbX"gYbhYbW"mmdYg"]b"0b"["]gV"UbX"gYbhYbW"mmdYg"]b"0b"["]gV"UbX"gYbhYbW"mmdYg"]b"0b"["]gV"UbX"gYbhYbW"mmdYg"]b"0b"["]gV"UbX"gYbhYbW"mmdYg"]b"0b"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"gYbhYbW"mmdYg"["]gV"UbX"["]gV"ubX"["]gV"UbX"["]gV"ub
- ("5bU`mgY``]b[i]gh]WXUhU`UbX`Uf[iY`h\Y`aYf]hg`cZh\Y`UbU`mg]g"

HYUWX]b[GlfUlY[]Yg

H\]g']g'U'' * '\ci f'Wci fgYz'XY`]j YfYX'h\fci [\'`YWi fYg'UbX'h hcf]U`g''@YWi fYg']bhfcXi W'a UhYf]U``UVci h
`]b[i]gh]WUddfcUW\Yg'hc'9b[`]g\'[fUa a Uf'' +b'h hcf]U``dfYdUfUh]cb'k cf_z'UggYgga Ybhg'UbX'h hcf]U`gz'mci
k]```dfUWf]gY'UbX'Udd`mh\YgY'hYW\b]ei Yg'UbX']b'h\Y'dfcWYgg'mci 'k]```VYWca Y'Wca dYhYbh]b'h\Y'XYgWf]dh]cb
UbX'UbU`mq]g'i qYX']b'h\Y'`]b[i]qh]WUddfcUW\'hc'9b[`]q\'; fUa a UhW\'gfi Wi fY'' < Uj]b['Udd`]YX'\$ %

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5ggYgga Ybh'HUg_g'

5ggYgga Ybh'tUg_	K Y][\h	8i Y [.] 8UhY	Ghi XYbhi@YUfb]b[i hwwchiwayaanayayayayayaXsse:	ssed
K YY_`miDfh	%	% %	‰ @YUfb]b[

5XX]h]cbU`XYhU]`g.

9 UWX 'ghi XYbhik]```dfYgYbhigc`i h]cbg'hc'U'dfcV`Ya 'gYhcbWY'U'gYa YghYf"'H\]g'k]```cVWV f']b'hi hcf]U`g'k]h\ gi Va]gg]cb'XUhYg'hc'VY'Ugg][bYX"

5ggYgga Ybh(.:]bU`DfcV`Ya GYh

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h. (!) dfcVYa g

8YHJ]`g. '5 'dfcV`Ya 'gYhcZ`]b[i]gh]WUbU`mgYg`XcbY`Uh\ca Y"`K f]hhYb`ZYYXVUW_"`H\]g']g'h\Y`Z]bU`UggYgga YbhHUg_`Zcf`UhhYbXUbWY'di fdcgYg

5XX]h]cbU`XYhU]`g.

K cf_']g'hc'VY'gi Va]hhYX'cb'A ccX`Y"

Hi fb]hjb gYhjb[. H\]g]g bchU Hi fb]hjb Ugg][ba Ybh

5 http://bxubww.F.Yei]fYa Ybhg

D`YUgY`bchY`h\Uh``YWi fY`fYWcfX]b[g`UfY`bch'Uj U]`UV`Y`Zcf'h\]g`Wci fgY"`Ghi XYbhg`UfY`glfcb[`mYbWci fU[YX`hcUhhYbX`U```WUggYg`UbX`WcbhUWhh\Y`7ci fgY`5i h\cf]mmhc`a U_Y`U`hYfbUh]j Y`UffUb[Ya Ybhg`Zcf'WUggYga]gga ``) gYghg h\YbgY!]Yg`Ubhg

FYgci fWfg

DfYgWf]VYX F Ygci fWYg

6i fhcb!FcVYfhgžBcY`"'&\$%*"'5bU`mg]b['gYbhYbV\\g"': ci fh\ '9X]h]cb"'Fci hYX[Y"

FYWca a YbXYX FYgci fWYg

: fca _]b"'J "'Yh'U`'&\$% "'5b'=blfcXi Wf]cb'hc'@Ub[i U[Y"'-h\ '5i glfU`]Ub'YX]h]cb"'7Yb[U[Y"

7ci fgY 9j U`i Uh]cb UbX 8Yj Y`cda Ybh

 $\label{eq:continuity} \text{Ghi XYbhZYXVUW_Vch\ 'Zcfa U``UbX']bZcfa U``\Ug'VYYb'[Uh\YfYX'cj Yf'h\Y'dUghmYUfgž'UbX'\Ug'VYYb]bWcfdcfUhYX']bhc'h\Y'Wci fgY'': YYXVUW_']g'k Y`Wca YX''}$

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Hi fb]h]b Gi Va]gg]cb

⊋mci 'YbWci bhYf'U'dfcV'Ya 'k \Yb'UhhYa dh]b['hc'gi Va]h'mci f'Ugg][ba Ybh'h\fci [\'Hi fb]h]bž'd'YUgY

5 WUXYa | W < cbYghmUbX D`U[| Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i±iWUbihU_Yia Ubm Zcfa qžZfca iXYi]VYfUhYiW\YUh|b[ihciUVW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hUW_bck iYX[Ya Ybh'i

IBGK '[fci dg'd'U[]Uf]ga ']bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

7 cdm]b[.'i g]b['h\Y'gUa Y'cf'j Yfmg]a]`Uf'k cfXg'hc'h\Y'cf][]bU`hYl h'cf']XYU'k]h\ci h'UW_bck `YX[]b['h\Y gci fW'cf'i g]b['ei chUh]cb'a Uf_g"'H\]g'U`gc'Udd`]Yg'hc']a U[Ygž'Ufh'UbX'XYg][b'dfcYWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k\YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]h'

⇒ Uddfcdf]UhY 'dUfUd\fUg]b[...7\Ub[]b['U'ZYk 'k cfXg'UbX'd\fUgYg'k \]'Y 'a cghmfYhJ]b]b['h\Y'cf][]bU` ghfi Wh fY 'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU'žUbX']bZcfa Uh]cb'k]h\ci hUW_bck `YX[Ya Ybh'H\]g'U`gc Udd`]Yg']b'dfYgYbhUh]cbg'k \YfY'gca YcbY'dUfUd\fUgYg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci hWfYX]hUbX'hc d]YW]b['hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk 'k \c`Yžk]h\ci hUddfcdf]UhY'fYZYfYbW]b["

7 c``i g]cb. 'k cf_]b['k]th 'cth Yfg'Vi hidUgg]b['cZZth Y 'k cf_'Ug'U'dYfgcb'g']bX]j]Xi U``k cf_"'7 c``i g]cb'U`gc]bWi XYg'dfcj]X]b['mci f'k cf_'thc'Ubcth Yf'ghi XYbh'VYZcfY'th Y'Xi Y'XUHYZcf'Zcf'th Y'di fdcgY'cZth Ya

- i bXYfglUbX`mci f`f][\hg`UbX`fYgdcbg]V]`]h]Yg`Ug`U`gh XYbh'Uhi BGK
- VY'Uk UfY'cZd`U[]Uf]ga ž'Wcdmf][\hzil BGK 'Gh XYbh7cXY'cZ7cbXi WhUbX'5WWdhUV`Y'I gY'cZ I BGK '= H'F Ygci fWfg'Dc`]Wh
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj]ci f'Yl dYWhYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wcaaib]hm
- `cWUHY 'gYfj]WYg'UbX `]bZcfa UH]cb'UVci hI BGK 'UbX'I BGK '@]VfUfm

5 WUXYa]W = DZcfa Uhjcb

: cf`YggYbhJU``gh XYbh]bZcfa UhJcb`fY`UhJb['hc.

fYei YghgʻZcfʻYl hYbg]cb/ `UhYʻgi Va]gg]cbgʻ[i]XY`]bYg/ fYj]Yk ʻcZa Uf_g/ I BGK ʻ< YUʻh\ 'UbXʻGUZYhmdc`]WJYg/