

ARTS3125

Ai`hja YX]U`DYfZcfa UbWY

GYa YghYf'C bY''#'&\$%

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7 ci fgY[·]Cj Yfj]Yk

`GHJZZ`7cbHJWh`8YHJ]`g`

'7cbj Ybcfg'

BUa Y	9a U]`	5j U]`UV]`]m	@cWUh]cb	D∖cbY
6fmcb] ⁻ HfYn]gY	-0 0	5 5	FcVYfh KYVghYf ⁻ ‱+	-',)`()%

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D\cbY.`f\$&Ł`-`,)`(,)*

9a U]`. <u>'gUa 4 i bgk "YXi "Ui</u>

K YVg]hY. <u>htdg.##gUa "Ufhg"i bgk "YXi "Ui</u>

H\Y'GW\cc``cZh\Y'5fhg'UbX'AYX]U'k ci`X``]_Y'hc'FYgdYWMZ``m5W_bck`YX[Y'h\Y'HfUX]h]cbU``7ighcX]Ubgž h\Y'6YXY[U``f?Ybg]b[hcb'WJadigŁž;UX][U``f7]hmUbX'5fh/`8Yg][b'7UadigYgŁUbX'h\Y'B[ibbUkU` dYcd`Y'f5ighfU`]Ub'8YZYbWF':cfWF'5WJXYam]b'7UbVYffUŁcZh\Y``UbXg'k\YfY'YUW\'WJadig'cZiBGK`]g `cWJhYX"

5 http://www.seven.com/s

5 'ghi XYbh]g'YI dYWYX'nc'UhYbX'U```WUgg'WcbhUWh\ci fg'Zcf'U'ZJWY!hc!ZJWY'fI &: Ł'cf'V`YbXYX'Wci fgY'UbX Wca d`YhY'U```UWf]j]h]Yg'Zcf'U'V`YbXYX'cf'Z ``micb`]bY'Wci fgY"

5 'ghi XYbhik \c`Uff]j Ygʻa cfY`h\Ub`%) 'a]bi hYgʻ`UhY`a UmVY`dYbU`]gYX`Zcf`bcb!UhhYbXUbWY"`=Zgi W\`U`dYbU`hm]g`]a dcgYXž'h\Y`ghi XYbhia i ghVY`]bZcfa YX`j YfVU``m'Uh'h\Y`YbX`cZWUgg`UbX`UXj]gYX`]b`k f]hjb[``k]h\]b`&(\ci fg"

ZUʻghi XYbhYI dYf]YbWYgʻ]`bYggža]gUXj Ybhi fYʻcfʻch\YfʻcVWY ffYbWYʻh\Uha U_YgʻUVgYbWYʻZfcaʻU WUgg#UWfjj]hmi bUj c]XUV`Yžcf`YI dYWfgʻhc`VYʻUVgYbhZfcaʻUʻZcfh\Wća]b[`WUgg#UWfjj]hmžh\Ymg\ci`XʻgYY_ dYfa]gg]cbʻZfcaʻh\Yʻ7 ci fgYʻ5i h\cf]hmžUbX`k \YfYʻUdd`]WUV`Yžh\Y]f`fYei Yghg\ci`X`VYʻUWVća dUb]YX`VmUb cf][]bU``cf`WYffjZJYX`WćdmicZUʻa YX]WU``WYffjZJWUHYʻcf`ch\Yf`Zcfa`cZUddfcdf]UHY`Yj]XYbWY"

5 '7 ci fgY '5 i h\cf]hma UmYI W gY 'U'gh XYbhZrca 'WUggYgʻcf'UWfj] JhYgʻZcf'i d'hc'cbY'a cbh\"' < ck Yj Yfž'h Ym a UmUgg][b'UXX]h]cbU``UbX#cf'U'hYfbUhj Y'HUg_g'hc'Ybgi fY Wca d`]UbWY" 5 '7 ci fgY '5 i h\cf]hmWcbg]XYf]b['h\Y [fUbh]b['cZUVgYbWY'a i ghVY'gUh]gZ]YX'U'gh XYbhk]```gh]``VY'UV'Y'hc'a YYhh\Y'Wci fgY'g``YUfb]b['ci H\car{yg} UbX#cf'j c'i a Y'cZ`YUfb]b["'5 'gh XYbhgYY_]b['Uddfcj U``hc'VY'UVgYbhZcf'a cfY'h\Ub'cbY'a cbh\'a i ghUdd`m]b'k f]h]b['hc'h\Y'8YUb'UbX'dfcj]XY'U``cf][]bU``cf'Wff]Z]YX'gi ddcfh]b['XcW a YbHJh]cb"

: cfa cfY`]bZcfa Uh]cb`UVci hh\Y`UhhYbXUbWY`dfchcWc`g`]b`h\Y`: UW``hmicZ5fhg`UbX`GcW]U` GW]YbWYg.`<u>\hhdg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbhIghi XYbhg#UWUXYa]W]bZcfa Uh]cb#JfchcWc`g![i]XY`]bYg#</u>

5WUXYa]W=bZcfaUh]cb[.]

: cf`YggYbhJU``ghi XYbh`]bZcfa Uh]cb`fY`Uh]b[`hc.`fYei Yghg`Zcf`YI hYbg]cb/fYj]Yk `cZa Uf_g/cVW/dUh]cbU``\YU`h

7ci fgY[·]8YHJ]`g

7 fYX]h Dc]bhg ***

Gi a a UfmcZh\Y'7ci fgY

Gi VYW15fYU. FZWSfdWS` V BW0Xad_ S` UWE fgV[We

H\]g`WcifgY`WUb`U`gc`VY`ghiX]YX`]b`h\Y`Zc``ck]b[`gdYW]U`]gUh]cb.? WV[Sł5g?fgdWS`VFWUZ`a?aYk

H\]gʻWcifgYʻYIUa]bYgʻh\YʻdʻUWYgʻcZhYW\bc`c[m]bʻWcbhYadcfUfmdYfZcfaUbWYʻW`hifYʻZfca`AHJʻhc dYfZcfaUbWYʻUfh"=hWcbg]XYfgʻh\Yʻf]gYʻcZj]XYcʻ`]hYfUWhžh\YʻYIdUbX]b[ʻZ]YXʻcZX][]hUʻ`W`hifYžUbXʻ\ck giW\`hYW\bc`c[]Ygʻ\UjYʻg\]ZhYX'h\YʻdUfUaYhYfgʻcZdYfZcfaUbWYʻUbXʻfYdfYgYbhUh]cb"`Mciʻk]```cc_`Uh'U fUb[YʻcZdYfZcfaUbWYʻcVʻYWgžUWNj]]h]YgžYjYbhgʻUbXʻVY\Uj]cifgʻdfcXiWYX`]bʻh\YʻYIWUb[YʻVYhkYYbʻh\Y VcXmUbXʻbYkʻaYX]U"`Mciʻk]``YId`cfYʻh\YʻWcbjYf[YbWYʻcZdYfZcfaUbWYʻ[YbfYgžh\YʻfYaYX]Uh]cbʻcZUfh kcf_gžh\YcfYh]WU`WcbWYdhgʻgiW\Ugʻdcgh\iaUb]ga`UbX`WhVYfbYh]WgžUbX`\ck``]jYʻdYfZcfaUbWYʻYb[U[Yg k]h\WcbhYadcfUfmWi`hifU`W\Ub[Y''

5 hih Y WobWi g]cb cZih]g Woi fgY h Y ghi XYbhk]``VY UV Y hc

- %" =XYbhJZmUbX`X]gWigg`_YmXYj Y`cda Ybhg`]b`WcbhYa dcfUfmidYfZcfa UbWY`]bgd]fYX`VmXYj Y`cda Ybhg]b`hYW\bc`c[m
- &" 9jU`iUhY`h\Y`Yjc`j]b[`fY`Uh]cbg\]d`VYhkYYb`hYW\bc`c[mUbX`UYgh\Yh]Wg
- ' " 5ggYgg'h,Y'fc'Y'cZhYW,bc'c[m]b'dYfZcfa UbWY'\]ghcfmUbX']b'fYW/bhh,YcfYhJWU`XYVUhYg']b'h,Y \i a Ub]hJYg
- ("8Ya cbglfUHY'Ub'UXj UbWYX'_bck `YX[Y'cZX]ZZYfYbha cXYg'cZdYfZcfa UbWY'UbX'Ub'UddfYWJUhjcb'cZ h\Y]f'W `hi fU``UbX'\]ghcf]WU``gdYWJZWJm
-) " 6YHYf'i bXYfHU_Y'Wf]h]WU``XYVUHY'cb'WcbHYa dcfUfmW `H fU``]ggi Yg
- *" Di fgi Y`]bX]j]Xi U``[i]XYX`fYgYUfV&
- +" 7 cbghfi Wrigi ghU]bYX`Wf]h]WU``Uf[i a Ybh]b`h\Y`Zcfa `cZfYj]Yk g`cf`YggUmg
- , "8YacbghfUhY`U`h\cfci[\`_bck`YX[Y`cZgY`YWhYX`h\YcfYh]WU``dYfgdYWhjjYg`UbX`fYgYUfW\`aYh\cXg

HYUWX]b[GHfUHY[]Yg

FUhjcbU`Y.

H\]gʻWci fgY`]gʻXYg][bYX`hc`ZJW]`]hUHY`ghi XYbhgʻ``YUfb]b[`VmYghUV`]g\]b[`U`a i `h]a cXU``hYUW\]b[`ghfi Wi fY`]b k \]W\`ghi XYbhgʻX]gW ggžfYgYUfW\ždfYgYbhždUfh]W]dUhY`UbX``]ghYb"`H\Y`cj YfU```U]a `cZh\Y`Wci fgY`]gʻhc YbUV`Y`ghi XYbhgʻhc`a U]bhU]b`U`XYYdYf`i bXYfgHUbX]b[`cZa YX]Uh]gYX`dYfZcfa UbWY`h\fci [\`ZUW]`]hUh]b[WcbbYW]cbg`h\Yma U_Y`VYhk YYb`fYUX]b[gžWUgY`ghi X]YgždfYgYbHUh]cbg`UbX`gWfYYb]b[g"`5ggYgga Ybhg fYZYWhh\Y`YI dYWfUh]cbg`Zcf`YI WY``YbWY`]b`fYgYUfW\`UbX`]bj Ybh]j YbYgg`h\Uhh\]g`Wci fgY`gYY_g`hc`YgHUV`]g\" H\Y`hcd]Wgʻh\Y`Wci fgY`Wcj Yfg`fYZYWhUb`cb[c]b[`Wca a]ha Ybhhc`hYUW\]b[`]bbcj Uh]j YžfY`Yj UbhUbX g][b]]WUbha UhYf]U`gʻZcf`h\Y`X]gW]d`]bY`cZh\YUhfY#dYfZcfa UbWY`ghi X]Yg

HYUW]b[GHUHY[]Yg.

H\]gʻWcifgY`]gʻghfi WifYX`UgʻU`WcaV]bUh]cb`cZ`YWifYžkcf_g\cd`UbX`ghiXYbh`YX``YUfb]b[`dfcWfggYg" KYY_gʻ%l-`UfY`ghfi WifYX`]b`U``YWifY'#kcf_g\cd`#X]gWigg]cb`ZcfaUh''KYY_gʻ%\$!%&`UfY`ghfi WifYX`]b`U ghiXYbh`YX``YUfb]b[`fYgYUfW\`UbX`dfYgYbhUh]cb`UddfcUW\žh\fci[\`k\]W\`ghiXYbhg`UfY`YIdYWhYX`hc]bhY[fUhYžUdd`mUbX`YIhYbX`WcifgY`aUhYf]U`g`k]h\`UbX`Zcf`h\Y]f`dYYfg"`GhiXYbhg`UfY`YbWcifU[YX`hc UWMJ Y`mdUfhJWJdUHY`]b'h\Y`h\]b_]b[!h\fci[\`cZ_YmH\YcfYHJWU``UbX`dYXU[c[]WU``eiYgHjcbg`gdYWJZ]Whc`h\]g WcifgYžUbX`hc`dfcUWMJ Y`mXYYdYb'h\Y`hYfag`cZh\Y`WcifgY`h\fci[\`gY`Z`YX`fYgYUfW\"

G9A = B5F : CFA5H. H\Y'H\fYY!\cif'gYa]bUf'k]``VY``ccgY`mighfiWif fYX`Ug. Zjfgh'Ž`gYWcbX`\cif.``YWif fY`Ž

5ggYgga Ybh

=b fh Y ``Ughih, fYY k YY_g cZh Y Wci fgY mci k]```ZcW g cb UgY ZX]fYWhYX fYgYUfW. dfc YWhf]b [fci dg cZ(!* Ł'' Mci f a U]b hUg_ Zcf h]g YI YfW]gY]g fc 'WYUf`mYI d`U]b U'W cgYb k cf_ cf k cf_g]b hYfa g cZ]hg Wca V]bUh]cb cZhYW bc`c[mUbX dYfZcfa UbWf'''H \Y'dfc YWh]g]b fh fYY dUfhgžU'dfcdcgU`ž'U dfYgYbhUh]cb]b k YY_ '& UbX mci f]bX]j]Xi U`k f]hYb fYdcfhg cb h Y'dfc YWhžXi Y k YY_ % cb a ccX`Y'' =h]g YI dYWhYX h Uhmci k]```\Uj Y'VYYb XYj Y`cd]b['h]g dfc YWhZfca 'h Y a]XX`Y cZ'h Y Wci fgY''

F Uh]cbU`Y. `Ghi XYbhg`UfY`fYei]fYX`hc`YI hYbX`UbX`Udd`mh\Y`hYfa g`cZ'h\Y`Wci fgY`]bhc`h\Y]f`ck b fYgYUfW\`UfYUgžUbX`hc`k cf_`Wc``UVcfUh]j Y`mZcf`U`di V`]WdfYgYbhUh]cb"`Ghi XYbhg`UfY`]bj]hYX`hc h\]b_`UbX`dfYgYbh`WfYUh]j Y`mžUbX`hc`fYgdcbX`hc`h\Y`k cf_`cZ'h\Y]f`dYYfg`k]h\]b`Wf]h]WU``mgi ddcfh]j Y ZfUa Yk cf_"

5ggYgga YbhHUg_g

5ggYgga Ybh'HJg_	K Y][∖h	8iY`8UhY	GhiXYbhi@YUfb]b[CihWcaYgʻ5ggYggYX
; fcid`DfcYWbiDfYgYbHUh]cb`	&) ı	Bch5dd`]WUV`Y	&ž ž(ž) ž*ž,
5bU`mhjWU``Yb[U[YaYbhg'%/ &`)\$I	Bch5dd`]WUV`Y	B #5
=bX]j]Xi U``Dfc^Y₩iFUh]cbU`Y`	&) ı	Bch5dd`]WUV`Y	%ž&ž ž(ž* ž+

5ggYgga Ybh8YHJ]`g

5ggYgga Ybh%; fci d Dfc YWhDfYgYbHJh]cb

GhJfhXUhY.~Bch5dd`]WUV`Y

8YHJ]`g. = WUgg`dfYgYbHJh]cb`f&\$`a]bgŁ"`Gh`XYbhg`k cf_`]b`ga U```[fci dg`fl !) Ł`cb`dfc`YWhg`k \]W\`]bj c`j Y WcbWYdhXYj Y`cda Ybh'\]ghcf]WU``fYgYUfW\`cf`U`dYfZcfa UbWY`dfchchmdY"`F i Vf]WUbX`Vf]YZWca a Ybh dfcj]XYX`j]U`A ccX`Y"`DfYgYbhYX`k YY_g`%%`UbX`%&

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

D`YUgY``cc_'hc'a ccX`Y'Zcf'Xi Y`XUhYg'UbX'Z fh\Yf'XYhU]`g

5ggYgga Ybh'& '5bU'mh]WU' 'Yb[U[Ya Ybhg'%/ '&

GHJfhXUHY.Bch5dd`]WUV`Y

8YHJ]`g. `Hk c`gWUZc`XYX`UbU`mf]WU``fYdcfrg`f%\$\$\$!%&) \$`k cfXg`YUW\Ł"`Gh XYbrg`fYdcfricb`h\Y]f Yb[U[Ya Ybrg`k]h `UbX`YI dYf]YbW'g`cZU`gY`YW]cb`cZdYfZcfa UbW'`WUgY`gh X]Yg"`H\YgY`UfY`Uj U]`UV`Y`Ug Uddgž]b`WUgg`cf`j]U`cb!WJa di g`YI W fg]cb`f]7]bYa UŁ"`8YHJ]`YX`k f]hYb`ZYYXVUW_`UbX`fi Vf]Wcb`fYdcfri, % YbUV`Yg`gh XYbrg`rc`]a dfcj Y`VYZcfY`fYdcfri, &`-`ZYYXVUW_j]U`[fUXY`UbX`fi Vf]Wcb`m`8i Y`k YY_g`)`UbX`, "

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

D`YUgY``cc_'fc'a ccX`Y'Zcf'Xi Y`XUhYg'UbX'Z fh\Yf'XYHJ]`g

5ggYgga Ybh' . ₽X]j]Xi U`Dfc YWhFUh]cbUY

GHUfhXUHY. Bch5dd`]WUV`Y

8YHU]`g. '9j U`i UHjj Y`^ gHjZJWUHjcb`cZ[fci d`dfc^YWi]XYUg`]b`fY`UHjcb`hc`Wf]HjWU``WcbWYdhg`UbX`WUgY`gHi X]Yg fU]gYX`h\fci [\ci hH\Y`Wci fgY"'%\$\$\$!%&) \$`k cfXg"`F i Vf]WUbX`[fUXY`dfcj]XYX`j]U`A ccX`Y"`8i Y`k YY_ % "H\]g`]g`h\Y`Z]bU``UggYgga YbHZcf`h\]g`Wci fgY

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

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Ghi XYbhgʻUfYʻYI dYWhYXʻhcʻdi hih\Y]fʻbUa YgʻUbXʻghi XYbhibi a VYfgʻcbʻYj YfmdU[YʻcZh\Y]fʻUgg][ba Ybhgʻ

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

Zmci YbWci bhYf'U'dfcV'Ya 'k \Yb'UhYa dhjb['hc'gi Va]hmci f'Ugg][ba Ybhih\fci [\ 'Hi fb]hjbž'd'YUgY hY'Yd\cbY'9I hYfbU''Gi ddcfhicb'- ',) '' ' %cf'Ya U]`'h\Ya 'cb'<u>YI hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui</u>"'Gi ddcfh \ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'- .\$\$Ua '-') .\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUfŁ'' Zmci UfY'i bUV'Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi `hk]h\ 'Hi fb]hjb'mci 'a UmUdd`m'Zcf'Ub'YI hYbg]cbž'Vi hmci a i ghfYhU]b'mci f'hjW_Yhbi a VYf'Zfca '9I hYfbU''Gi ddcfhfU'cb['k]h\ 'Ubmch\Yf'fY'Yj UbhXcW a YbhgEhc]bWi XY'Ug'Yj]XYbWY hc'gi ddcfhimci f'YI hYbg]cb'Udd`]WUh]cb'''Zmci 'Ya U]`'9I hYfbU''Gi ddcfhimci 'k]`` Ui hca UhjWU'`mfYWY]j Y'U'hjW_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k]``bYYX'hc'gdYWJZWU``mUg_'Zcf'cbY'' Hi fb]hjb'U`gc'dfcj]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'gfUhi g'cb'Hk]hYf"

; YbYfU``mž'UggYgga YbhiHUg_g'a i ghVY'gi Va]HHXXYYWYfcb]WU``mj]U'Y]H\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b`]bgHUbWYg'k \YfY'H\]g']g'bchdcgg]V`Yž']hk]``VY'gHUHX'cb'mci f'Wci fgY'g'A ccX`Y'g]HY'k]H\ U`HYfbUh]j Y'gi Va]gg]cb'XYHU]`g''

@UhY 5ggYgga YbhDYbU`h]Yg

5b'UggYggYX'HJg_']g'XYYa YX``UHY']Z]h']g'gi Va]HYX'UZhYf'H\Y'gdYW]ZJYX'Ha Y'UbX'XUHY'Ug'gYhici h']b'H\Y Wci fgY'@YUfb]b['A UbU[Ya Ybh'GmgHYa 'f@A GŁ''

H\Y``UhY`dYbU`hm`]g`h\Y``cgg`cZ)ı `cZh\Y`hchU``dcgg]V`Y`aUf_g`Zcf`h\Y`hUg_`Zcf`YUW\`XUmcf`dUfhih\YfYcZh\Y kcf_`]g``UhY"`@UhYbYgg`k]```]bWiXY`kYY_YbXg`UbX`diV`]W\c`]XUmg"`H\]g`XcYg`bch'Udd`mhc`U`hUg_`h\Uh`]g UggYggYX`Vihbc`aUf_`]g`UkUfXYX"

K cf_'gi Va]httX:Zci fhtYb`f%(EXUmg`UZhYf`h\Y`Xi Y`XUhY`k]``VY`a Uf_YX`UbX`ZYYXVUW_`dfcj]XYX`Vi hbc`a Uf_ k]``VY`fYWcfXYX''`=Zh\Y`k cf_`k ci `X`\Uj Y`fYWY]j YX`U`dUgg`a Uf_`Vi hZcf`h\Y``UhYbYgg`UbX`h\Y`k cf_`]g`U Wca di `gcfmWci fgY`Wca dcbYbhzU`gh XYbhk]``VY`XYYa YX`hc`\Uj Y`a Yhh\UhfYei]fYa Ybh'`H\]g`XcYg`bch Udd`mhc`U`hUg_`h\Uhi]g`UggYggYX`Vi hbc`a Uf_`]g`Uk UfXYX''

K cf_`gi Va]hhYX'hk YbhnicbY'f&&:XUmg'UZhYf'h\Y'Xi Y'XUhY'k]``bch'VY'UWW/dhYX'Zcf'a Uf_]b['cf'ZYYXVUW_ UbX'k]``fYWY]j Y'bc'a Uf_`cf'[fUXY"'=Zh\Y'UggYgga Ybh'hUg_`]g'U'Wca di `gcfm'Wca dcbYbhicZh\Y'Wci fgY'U ghi XYbh'k]``Ui hca Uh]WU``m'ZU]``h\Y'Wci fgY"

GdYWJU``7cbg]XYfUh]cb`5dd`]WUh]cbg

 $\label{eq:milling} \end{tabular} Mci `WUb`Udd`millingYgdYWJU`Wcbg]XYfUh]cb`k \Yb`]``bYgg`cf`ch\Yf`WJfW a ghUbWfg`]bhYfZYfY`k]h`mci f UggYgga YbhidYfZcfa UbWf"$

G]W_bYggža]gUXjYbhifY`cf`ch\Yf`W]fW a gHubWfg`VYmcbX`mcif`Wcbhfc``aUm

ł DfYj Ybhmci Zfca Wcad Yhjb[UWci fgY fYei]fYa Ybhž

ł??YYd.mci Zfca UHHYbX]b[UbUggYggUVYYUWf]j]mž

ł Ghod moi i gi Va]hh]b[iUggYggUV Y k cf_iZcfiU Wci fgYž

ł `G][b]Z]WUbhmUZYWimci f`dYfZcfa UbWi`]b`UggYggUV`Y`k cf_ž`VY`]hU`Zcfa U``YbX!cZigYa YghYf`YI Ua]bUh]cbž`U WUgg`hYghž`U``UVcfUhcfmhYghž`U`gYa]bUf`dfYgYbhUh]cb`cf`Ubmich\Yf`Zcfa `cZUggYgga Ybh'

: cf'Z fh\Yf'XYHJ]`g`]b`fY`UH]cb`rc`GdYW]U``7 cbg]XYfUH]cb`]bWi X]b[`''K \Yb`rc`5dd`mf'Z''<ck`rc`5dd`mf'UbX "Gi ddcfh]b[`8cW a YbHJh]cb"'d`YUgY`fYZYf'rc'h\Y`GdYW]U``7 cbg]XYfUH]cb`rk YVgh]Y.` \hhdg.##gh XYbH'i bgk "YXi "Ui #gdYW]U`!Wcbg]XYfUH]cb

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

D`U[]Uf]ga `]g`i g]b[`h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX`dfYgYbh]b[`h\Ya `Ug`mci f`ck b"`=hWUb`hU_Y`a Ubm Zcfa gžZca `XY`]VYfUhY`W\YUh]b[`hc`UWW]XYbhU``mWcdm]b[`Zca `U`gci fWY`k]h\ci hUW_bck `YX[Ya Ybh'

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

7 cdm]b[..i g]b[.ih,Y`gUa Y`cf`j Yfmig]a]`Uf`k cfXg`hc`h,Y`cf][.]bU``hYI h`cf`]XYU`k]h\ci hUW_bck `YX[.]b[.ih,Y gci fWY`cf`i g]b[`ei chUh]cb`a Uf_g"`H\]g`U`gc`Udd`]Yg`hc`]a U[.Ygž`Ufh`UbX`XYg][b`dfc`YWfgž`Ug`k Y```Ug dfYgYbhUh]cbg`k \YfY`gca YcbY`dfYgYbhg`Ubch\Yf`g`]XYUg`cf`k cfXg`k]h\ci hWfYX]h"

=bUddfcdf]UhY'dUfUd\fUg]b[.'W\Ub[]b['U'ZYk 'k cfXg'UbX'd\fUgYg'k \]Y'a cghmfYhU]b]b['h\Y'cf][]bU' ghfi Whi fY'UbX']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]h''=hU`gc'Udd`]Yg'hc'd]YW]b['hc[Yh\Yf'ei chYg'UbX dUfUd\fUgYg']bhc'U'bYk 'k \c`Yž'k]h\ci hfYZYfYbW]b['UbX'U'gh XYbhg'ck b'UbU`mg]g'hc'Vf]b['h\Y'a UhYf]U` hc[Yh\Yf''

7 c``i g]cb. 'k cf_]b['k]h 'ch Yfg'Vi hdUgg]b['cZh 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_'hc'Ubch Yf'gh XYbhVYZcfY'h Y'Xi Y'XUhYzcf'Zcf'h Y'di fdcgY'cZh Ya d`U[]Uf]g]b['UhUbmh]a Yž'dUm]b['Ubch Yf'dYfgcb'hc'dYfZcfa 'Ub'UWUXYa]WhUg_ž'ghYU`]b['cf'UWei]f]b[Ubch Yf'dYfgcb'g'UWUXYa]Wk cf_'UbX'Wcdm]b[']hz'cZYf]b['hc'Wca d`YhY'Ubch Yf'dYfgcb'g'k cf_'cf'gYY_]b[dUma YbhZcf'Wca d`Yh]b['UWUXYa]Wk cf_''

=ÐUddfcdf]UhY`W]hUh]cb. 7]h]b[`gci fWYg`k∖]WX`\Uj Y`bchVYYb`fYUXžk]h\ci hUW_bck`YX[]b[`h\Y`″gYWcbXUfm´ gci fWY`Zfca`k∖]W\`_bck`YX[Y`cZh\Ya`\Ug`VYYb`cVhU]bYX"

8id`]\WUh]cb`fl`gY`ZId`U[]Uf]ga "Ł`gi Va]hhjb[`mcif`ckb`kcf_ž`]b`k\c`Y`cf`]b`dUfhž`k\YfY`]h\Ug`dfYj]cig`m VYYb`dfYdUfYX`cf`gi Va]hhYX`Zcf`Ubch\Yf`UggYggaYbhcf`\\circf`Ucil BGK `cf`Ubch\Yf`ib]jYfg]hm"

7 cffYWhfYZYfYbW]b[dfUWf]WYg.

• VYHYfa UbU[Y'mcifh]a Y

1	I	H\ci[\h`UV`UWNjj]hjYg``k\UhikYik]``Xc
		8]gW/gg]cb/UfcibX/gifjY]``UbW/UbX/[Yc!`cWUh]jY aUdd]b['hcc`g"FYZYWf]cb/cb/\ck #\\Yh\Yf'h\YmUfY igYZ ``cf`k\Yb'h\YmVYWcaY'fficc'aiW\f"AUdd]b['cZ U'WUgg`fdf]jUWm#WcbbYWfj]hmfWcbh]biia'!K\YfY`Xc mci'g]hcb/U'g`]X]b['gWUY3`K\UhaUhhYfg'UVcih df]jUWmjg"WcbbYWfj]hmhc'mci3'5fY'h\YmaihiU`m YIWig]jY3'7Ub'mci'\UjY'Vch\3
		I g]b[`f\Y`Zcfa U``dfYa]gY`cZY]f\Yf`]ŁUb`]bHYfUWfj Y Udd`cf`]]Ł[Yc!`cWUfj Y`a Udd]b[`f\cc`g`!`XYj Y`cd`U W&bWYdhZcf`U`k cf_f\UhWti `X`i gY`f\YgY`Zcfa g`f\c W\U``Yb[Y`cf`YI HYbX`f\Y`k Umg`]b`k \]W\`f\YmWt``YWh dYfgcbU``]bZcfa Uf]cb`UbX#cf`a Ud`VY\Uj]ci f"`Mci a UmW\ccgY`f\c`fYh fb`f\c`a cfY`Z ``mXYj Y`cd`f\]g W&bWYdhZcf`mci f`[fci d`dfYgYbfUf]cb"
		SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
		K\Uhimci bYYXihciXci dfYdUfUhjcbiZcfik YY_i&
]Ł = b fYfj]Yk 'k]f\`Ub` Y`XYf . 'UWfcgg'f\Y'k YY_'!'Ug_ mci f`dUfYbhg#[fUbXdUfYbhg#J`bY][\Vci f#J`Wć``YU[i Y k \c`mci `k ci `X`Wcbg]XYf`hc`VY`Ub`"Y`XYf". 'k \Uh]g f\Y`fYWkbc`c[]WU``XYj Y`cda Ybhf\Uh`\Uj Y`f\Ym k]fbYggYX`]b`f\Y]f``]ZYf]a Y`f\Uh`\Ug`]a dUWfYX`f\Ya f\Y`a cgf8`F YWcfX`U`g\cfhdUfU[fUd\`cZf\Y]f`gdc_Yb hYI h—'Y]f\Yf`]b`g\cfh\UbX`bchYgžcb`Ub`Ui X]c fYWcfXYf`cf`fmdYX`—'UbX`dcgh]h`\YfY"`7 ca a Ybhg WUb`VY`Ubcbma ci g"
]]Ł8ckb`cUX11\Y <u>=SdW_Udd1</u> hcimcifigaUfhd\cbY1Zcf U1kYY_UbX1WcaY1dfYdUfYX1hcifYdcfhiVUW_icbimcif YIdYf]YbWY"6f]YZdfcadhg1hci]bZcfaimcififYgdcbgYg WUb1VY1ZcibX1 <u>\YfY</u> "
K YY_''.'%&`A UfVX`!`% A UfVX	GYa]bUf	KYY_`'``pHiYg`AUf`%``p5`]Yb`5[YbW]Yg. Zfca`fcVch]bmhc`V]cfYUWh]jY dYfZcfaUbWY
		H\]gʻkYY_`kY`Wobg]XYf`U`fUb[Y`cZdYfZcfaUh]jY dfchogiVYWh]j]h]Ygʻ—`Zica`fcVchg`ho`U`[cf]h\agʻho `]jY`mžbob!\iaUb`aUhhYf`h\Uh`fgYbgYg'`ig`]b`h\Y fcca"`KY`acjY`Zica`ibXYfghUbX]b[`h\Y`]bXighf]U` ZbWh]cb`cZfcVchg`Ug`aUW\]bYg`Zcf`dfcXiWh]j]hmiho

	VY[]b`rc`Wzbg]XYf'h\Y`fc`Y`cZdYfZcfa`UbWY`]b YI Ua`]b]b[`bchjcbg`cZU`]Yb`U[YbWhzfcVchjbmf]Y`Ug cddcgYX'tc`\i a`Ub]mt`UbX`\ck`fcVctg`k`]\\`ZYY`]b[`g k`cf]b`i bWUbbmk Urg" 7 UgY`gh`X]Yg.`_i h]Y`@UVci fz`7\f]g`GU'HYf/h\Y`H]`Yf _`]f`g`Vm@ci]g`D\]`]ddY`8Ya Yfg/7\f]g`J`YfXcbWfg '5Wcf %2/GH'UFWg`YUFmtc`fYWYbhVcXm

	GmXbYm
	@cWUh]cb
]7]bYaU`GWJYbhJU`:UWJ`]hm
	?Ybg]b[hcbi@ckYfi;fcibXi:`ccfziH\Yi>c\biB]`UbX GW]Ybh]Ui6i]`X]b[i;%
	AUd. <u>∖hnd.##kkk"]W]</u> bYaU"ibgk"YXi"Ui#]WSWcbhUWMi∖ha`
	K Y`k]```VY`UHHYbX]b[`]b`Hkc`[fcidg`!`acfY`XYHU]`g hc`WcaY`cb`[fcid`UffUb[YaYbhg"

K YY_`).`&*`A UfWX`!`% 5df]`	GYa]bUf	K YY_`) `p=bHYf!gYbgcf]U``H\YUHfYg.`Zfca]a a Yfg]j Y`]a U[Y`hc`a UHYf]U``UZZYWfg
		H\]gʻk YY_ʻk Yʻa cj YʻZca ʻh\Yʻ]bhYfUWfj YʻUbX Ja a Yfg]j YʻYI dYf]YbWf cZ5J =9 `]7]bYa Uʻic Wcbg]XYf \ck `WcbhYa dcfUfmdYfZcfa UbWf UYgh\YhWgʻk cf_ k]h\ f\Y`a UhYf]U`]mcZ]a U[Y!VUgYX`XfUa Uhi f[]Yg" K YʻYI dYf]YbWf gHU[YʻdfUWfJWfgʻk \]VX `[YbYfUhY Ja a Yfg]j YʻUbX`UZZYWfj YʻgWfbc[fUd\]Ygʻh\fci [\ a U_]b[``][\hzgci bX`cf`hJa YʻffUh\Yf'h\Ub`bUffUhJj YŁ h\Y`cVYWficZh\Y`UYgh\YhJWYI dYf]YbWf `]bʻk cf_gʻVm GcWJYHUgʻF UZJY``c `GUbn]cžʻ7 \i b_mA cj Y`UbX <]fcU_]`I a YXU"`K Y`U`gc`Wcbg]XYf'h\Y`Ja a Yfg]j Y VcbX]hJcbgʻcZj]XYc`k cf_`]bʻh\Y``Uf[Y`gWJY]bgHU``UhJcb`dfUVfJWfgʻcZ6]``J]c`U`UbX`; fUbi `Uf Gmbh\Yg]g''K Y`ZJbU``mVcbg]XYf'k cf_gʻh\UhicdYfUhY cb`h\Y`YX[Y`cZa UhYf]U`]mf'=`k cf_gʻh\Uhibj c`j Y WXYa]WU``UVfcfgʻgi VX`Ugʻga c_Y`cf`Zc[žk cf_gʻh\Uh XYWca dcgY`gci bX`fc`h\Uha cj Y`VYfk YYb`h\Y Yd\Ya YfU`]mcZdYfZcfa UbVf UbX`dYfZcfa UhJj Y UfVX]hYWfi fY"
		7 UgY`ghi X]Yg .`6]```J]c`U/H\Y`K YUh\Yf`Dfc <i>'</i> YWW][`cc/ <u>9 ′ai</u> _/GcW]YhUg`F UZUY``c`GUbn]c/; fUbi `Uf Gmbh\Yg]g`? aVW^' /<]fcU_]`I a YXU/k cf_g`Vm <u>GWchh</u> <u>;]VVcbg</u> `UbX`a cfY"
		H∖ci[\h`UV`UWMjj]hjYgʻ!`k∖Uh`kY`k]```Xc.
		H\]gʻkYY_`]bjc`jYgʻU``chcZkUhW\]b[`UbX`WUfYZ`` fYZYW]cb`idcb`h\Y`XfUaUhif[]WU``UgʻkY```Ug aUhYf]U``Wcadcg]h]cb`cZh\Y`WUgY`ghiX]YgʻZcf`h\]g kYY_"`
]E8]gW gg]cb'cb'Ybj]fcba Ybhg. K \Uh'Ybj]fcba Ybhg Xc'mci 'a cghZfYei Ybhm]b\UV]h3'K \Uh'UfY'h\Y]f a UhYf]U''ei U']h]Yg3'fWc'ci fž'gci bXž'hUWf]`lmž'YhWf3 K \UhgYbgYg'Xc'h\Yma cgh'UWf]j Uh'3'K \Uhf\mt\a]W X]a Ybg]cbg'Xc'h\Yma cgh'Ya VcXm3'+b'k \Uh Ybj]fcba Ybhg'Xc'mci f`gYbgYg'ZYY`'a cghffU`]j Yf3'+b k \Uh'Ybj]fcba Ybhg'Xc'mci f`gYbgYg'ZYY`'a cgh ftj Yfk \Y`a YXf3'K \Uh'Ybj]fcba Ybhg'YI hYbX'mci f gYbgcfmWJdUWJh]Yg']b'gca Y'k Um3'fl cf`Y''['\Uj Y'mci Yj Yf'YI dYf]YbWYX']bgHJbhWJ'a 'k \Yb'mci 'gYY'U ['fYYb'j U`Ymcf`hfYYg3'H\YfY']g'U'gWJYbhZWfYUgcb Zcf'h\]g''5g'h\Y'['fYYb'X]gUddYUfg'Zfca 'ci f WJmgWJdYžgca Y'dfc['fUa a Yfg'UfY'hfm]b['hc'a U_Y']h fYUddYUf']b'cXX'k Umg't
1]]ŁʿG mbUYgh\Yg] WXYg][b. ˈ <u>GmbUYgh\Yg]U']gʻU</u>

Zcfa gʻcZdi V`]WUfYʻ[YbYfUHYX'Vm`]jYgHYUa]b[3 K \UhbYk 'Yh\]WU`Wcbg]XYfUHJcbg'XcYg `]jYgHYUa]b[`dfcXi WY3'K \UhXUb[Yfg'cf`f]g_g'XcYg h\Y'HYW\bc`c[mdcgY3'<ck 'XcYg']hg\]Zhih\Y'k Umk Y YI dYf]YbWY'HYa dcfU`]mžgi VYWHj]hmžXYUH\ž`]ZY'UbX dfYgYbWY3'K Y``cc_'UhU`fUb[Y`cZbYk 'a YX]U`UbX dYfZcfa UbVY`UfH]ghg'k \c`i gY``]jYgHYUa]b[`UbX']hg dYfa i HUH]cbg'hc`a Ub]di `UHY'H\Y'k Umg']b'k \]W\'k Y YI dYf]YbWY'Hja Y`UbX'hc`W\U`Yb[Y'H\Y'WcbHYa dcfUfm gi V'YWHj]hmcZh\Y'']!k]hbYgg'"

	fíljYbYggfih∖Uhih∖Y`kcf_`dfYgYbhg3`K∖UhiUVcih

UYgh\Yh]Wg.`acV]`Y`aYX]U`UbX X]ghf]VihYX`]bh]aUWm

DYfZcfa UbWY'dfUWijhjcbYfg']bWfYUg]b[`mk cf_'k]h [Yc!`cWUhj Yža cV]Y'UbX'i V]ei]hci gʻcf'dYfj Ug]j Y hYWkbc`c[]Yg"'H\Y]f`k cf_g']bhYffc[UhY'UbX'XfUk i dcb`k \UhF cVYfhDUmbY'\Ug'WU``YX'h\Y 'dfca]gW ci g''WkUfUWYf]gh]WgʻcZga Ufh\UbX!\Y`X XYj]WYg`k \]Wk'YbUV`Y'a i `hjd`Y']bhYfUWijcbg'UbX Z bWijcbg'h\UhWkU``Yb[Y''XYYd''Zcfa gʻcZUHYbhjcb" 5hhja Yg'h\YgY'k cf_g'VYWca Y'`Uf[Y!gWUYž[Ua Y! `]_Y'Yj Ybhg'h\Uh—``]_Y'Ba]W_a` 9 a'! Wca a UbX'U k \c`Y'HYff]hcfmcf'Wca a i b]m''5hhja Yg'h\YgY'k cf_g YI d`cfY'h\Y']gc'Uhjb['WUdUWjhJYgʻcZa cV]`Y'a YX]U h\fci [\`h\Y]f'WUdUWJhJYgʻZcf''cbY!cb!cbY' dYfZcfa UbWf"'H\]g'<u>3dfeZgT'</u>UfhJWY'[]j Yg'U'[ccX gi a a UfmcZh\YgY'Ya Yf[]b['[YbfYg"

H\]gʻkYY_'gʻWUgYʻghiX]YgʻigYʻdYfZcfaUbWYʻhc YIUa]bYʻh\YʻkUmgʻ]bʻk\]W\`acV]`YʻaYX]Uʻg\]Zh Wi`hifU``YIdYWUh]cbgʻUfcibX`]bh]aUWhžghcfmUbX`cif WUdUW]h]YgʻZcfʻUhhYbh]cb"`KYʻk]``igYʻh\Yʻdf]bW]d`Yg cdYfUh]b[`]bʻh\YgYʻkcf_gʻhcʻXYjY`cdʻgcaYʻdfchchmdY dYfZcfaUbWYgʻcZcifckb"

7 UgY'ghi X]Yg. ?? Yb'7 Ua Yfcb': ai ;dS` /: i Y`

		@]ghYb`hc`'``I``9jYfmXUmAcaYbhg`UWfcgg`h\Y`kYY_"` \hhdg.##kkk"h\Y[iUfX]Ub"Wca#W``hifY#UiX]c#&\$%%#XY W#&&#YjYfmXUm1acaYbhg!dcXWUgh!VcVVm1VU_Yf</th></tr><tr><td>K_YY_`%\$.`+`A_Um`!`%' A_Um</td><td>GYa]bUf</td><td>K_YY_`%\$`pFYgYUfW\`UbX`8YjY`cda Ybh D\UgY`%</td></tr><tr><td></td><td></td><td>DfYgYbłUłjcb`fYgYUfV&`UbX`XYj Y`cda Ybł'</td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table>
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F Ygci fWg

DfYgWf]VYX F Ygci fWfg

5^{°°}fYei]fYX[°]UbX[°]gi[YgHYX[°]fYUX]b[g[°]UfY^{°°}]gHYX[°]cb[°]AccX[°]Y[°]@Y[Ubhc["]FYUX]b[g[°]aUm[°]X[°]Ub[Yžcf[°]bYk gi[YgHYX[°]fYUX]b[g[°]UXXYXžgc[°]aU_Y[°]gifY[°]hc[°]fY[i[°]Uf[°]m[°]XYW[°]AccX[°]Y[°]Zcf[°]h\Y[°]acghid!hc!XUHY]bZcfaUh]cb["]

FYWca a YbXYX FYgci fWYg

5XX]h]cbU``fYgci fW/g`WUb`VY`Zci bX``]gh/X`cb`A ccX`Y"

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

5hU```h]a Yg`Xi f]b[`h\Y`gYa YghYfž`=k Y`Wca Y`mci f`ZYYXVUW_`cb`k \UhWcbhYbh]g`YI W]h]b[`žWcbZ g]b[`žk \Uh]g cf`]gb'hk cf_]b[`Zcf`mci `]b`h\Y`Wci fgYž`]bWi X]b[`ei Ygh]cbg`mci `\Uj Y"`Mci `WUb`Vf]b[`h\YgY`Wca a Ybhg`UbX ei Ygh]cbg`hc`WUgg`X]gW gg]cbžcf`WcbhUWfa Y`]bX]j]Xi U``mj]U`Ya U]``cf`a U_Y`Ub`Uddc]bha Ybhhc`gYY`a Y Xi f]b[`cZ]WF`\ci fg"

⊨a U[Y[·]7fYX]h

6cX]Yg'/ "+bHYfZJWYg"&\$%*

7F*=*7CG

7F=7CG'Dfcj]XYf'7cXY.'\$\$\$-,;