

ARTS4100

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

7 ci fgY[·]Cj Yfj]Yk

`GHJZZ`7cbHJWhi8YHJ]`g`

7cbj Ybcfg

BUa Y	9a U]`	5j U]`UV]`]m	@cWUhjcb	D∖cbY
7∖f]g`CU_Ym	WcU_Ym4 i bgk "YXi "Ui	6miUddc]bha Ybh	H65	

GWXcc``7cbHJWhi=bZcfaUh]cb

Fcca '' &&ž`Yj Y``' FcVYfhK YVghYf`6i]`X]b[

D\cbY.'f\$&Ł'-',)'(,)*

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

K YVg]hY. <u>http://thtt</u>

H\Y'GW\cc``cZh\Y'5fhg'UbX'AYX]U'k ci `X``]_Y'hc'FYgdYWM2 ``m5W_bck `YX[Y'h\Y'HfUX]h]cbU``7i ghcX]Ubgž h\Y'6YXY[U``fPYbg]b[hcb'WUa di głź; UX][U``f7]hm'UbX'5fh/ '8Yg][b'7Ua di gYgŁ'UbX'h\Y'B[i bbUk U` dYcd'Y'fБi ghfU`]Ub'8YZYbWY': cfWY'5WUXYam']b'7UbVYffUŁ'cZh\Y``UbXg'k\YfY'YUW\'WUa di g'cZI_BGK ']g `cWUhYX"

5 HhYbXUbWY FYei]fYa Ybhg

5 'ghi XYbh']g'YI dYWYX'nc'UhhYbX'U```WUgg'WcbhUWh\ci fg'Zcf'U'ZUWY!hc!ZUWY'fI & E'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 cfYʻh\Ubʻ%) 'a]bi hYgʻ`UhYʻa UmVYʻdYbU`]gYXʻZcfibcb!UhhYbXUbVW'''-Zgi VXʻUʻdYbUʻhm]gʻ]a dcgYXž'h\Yʻghi XYbha i ghVYʻ]bZcfa YXʻj YfVU``mUhih\YʻYbXʻcZVVUggʻUbXʻUXj]gYXʻ]bʻk f]h]b[ʻk]h\]bʻ&(\ci fg"

ZUʻgh XYbhYl dYf]YbWrgʻ]`bYggža]gUXj Ybh fYʻcfʻch YfʻcVW ffYbWr h Uha U_YgʻUVgYbWr ZfcaʻU WUgg#UWjj]mi bUj c]XUV`Yžcf`Yl dYWgʻhcʻVYʻUVgYbhZfcaʻUʻZcfh Wca]b[`WUgg#UWjj]mžh Ymg\ci`XʻgYY_ dYfa]gg]cbʻZfcaʻh\Yʻ7 ci fgYʻ5i h\cf]mžUbX`k \YfYʻUdd`]WUV`Yžh\Y]f`fYei Yghg\ci`X`VYʻUVWca dUb]YX`VmUb cf][]bU`cf`Wrfh]ZJYX`WcdmcZU`aYX]WU``Wrfh]ZJWUHY`cf`ch\Yf`Zcfa`cZUddfcdf]UHY`Yj]XYbWr"

5 '7 ci fgY '5 i h\cf]hma UmYI W gY Uʻgh XYbhZrca 'WUggYgʻcfʻUWfjj]hjYgʻZcfʻi dʻhcʻcbY a cbh\"' < ck Yj Yfžh Ym a UmUgg][bʻUXX]hjcbU``UbX#cfʻU`hYfbUhjj YʻHUg_gʻhcʻYbgi fY Wca d`]UbWY" 5 '7 ci fgY '5 i h\cf]hmWcbg]XYfjb['h Y [fUbhjb['cZUVgYbWY a i ghVY gUhjgZjYX Uʻgh XYbhk]``ghj``VY UV`Y hcʻa YYhh\Y Wci fgY'gʻ`YUfb]b['ci H\car{y}g 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]hjb['hc h\Y 8 YUb`UbX'dfcj]XY 'U``cf][]bU``cf`Wffh]ZjYX 'gi ddcfhjb['XcW a Ybfuh]cb"

: cf'a cfY']bZcfa Uh]cb'UVci hh\Y'UhhYbXUbWY'dfchcWc`g']b'h\Y': UWY`hmicZ5fhg'UbX'GcWJU` GW]YbWYg.'<u>\hhdg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbh1ghi XYbhg#UWUXYa]W]bZcfa Uh]cb#dfchcWc`g![i]XY`]bYg#</u>

5WUXYa]W=bZcfaUhjcb[·]

7 ci fqY^{*}8YHJ^{*}q

7 fYX]hDc]bhg***

Gi a a UfmcZh Y 7 ci fqY

H\]g`<cbci fq!`Yj Y``qYa]bUf`Wci fqY`]q`XYq][bYX`fc`]bffcXi WY`qhi XYbfq`fc`\][\Yf!`Yj Y``UWUXYa]WfYqYUfWX UbX k f]h]b[`]b h\Y X]gW]d`]bYg cZ9b[`]g\ž:]`a žA YX]UžA i g]Wž H\YUhYž 8 UbW UbX DYfZcfa UbW Gh X]Yg" + k]``YI hYbX'h\Y'fYgYUfV\'UbX'UbU'mg]g`g_]``g'XYj Y`cdYX`]b'h\Y'Z]fghih\fYY'mYUfg'cZh\Y'XY[fYY'hc'gi ddcfhih\Y dfYdUfUhjcb UbX Wca d Yhjcb cZgh XYbhgfiZjfgha U/cf/d]YW cZ]bXYdYbXYbhfYgYUfWX - h Y < cbci fg h Yg]g UbX#cf*dfcXiWfjcb*dfcYWf*+ik]```]bhfcXiWf*ghiXYbhg*hcWcfY*]ggiYg*]b*UbX*UddfcUVXYg*hc*fYgYUfVX*k\]VX k]``\Y`d'h\Ya'Webge`]XUhY'UbX'YI hYbX'h\Y]f'i bXYfqHJbX]b['cZh\Y]f'WeqYb'X]qWd`]bY'UbX'cZh\Y'd`UWY'cZ h\Y]f`fYqYUfW\k]h\b]h'H\Y WcifqY`]q`cf[Ub]qYX`UfcibX`U`qhfiWifYX`qYa]bUf`qYf]YqžVY[]bb]b[`k]h`U Wcbg]XYfUh]cb'cZh,Y'bUhifY'cZX]qW]d`]bUfmifYgYUfW,']b'h,Y'<iaUb]h]Yg'UbX'acj]b['cb'hc'Wcbg]XYf'h,Y [YbfY'cZh\Y'<cbci fq'h\Yq]qž'UbX'hc'XYj Y`cd]b['U'F YqYUfW\'D`Ub'UbX'H\Yq]q'UbX#cf'dfc'YWiHa YHUY'Y"

5 hh\Y WcbWi g]cb cZh\]g Wci fqY h\Y ghi XYbhk]``VY UV Y hc

- %" k cf_']bXYdYbXYbhmhc XYj Y`cd U'Wca d`Yl 'fYqYUfW\'dfc YW/
- &"UbU`mqY`Wf]hWU``mh\Y`qhfi WfifYZUf[iaYbhUhcb'UbX'eiU']hmcZU'h\Yq]q'UbX#cf'dfUWf)WU``dfcYWzUbX]XYbh]Zmih\Y'a Yh\cXc`c[]WU``UddfcUVXYg'Ya d`cmYX/
- ' "Yb[U[Y`k]h\`dYYfqfiUbX`Wc``YU[i YqfifYqYUfW\`Wf]h]WU``mUbX`]b`h\Y`gd]f]hcZ]bhY``YWi U`cdYbbYgg UbX'[YbYfcg]m/
- ("dfYgYbhUb`ci h]bY`cZgdYW]Z]WfYgYUfW\`ei Ygh]cbg`XYj Y`cd]b[`ci hcZh\Y]f`fYgYUfW\žUbX`]XYbh]Zm fYqYUfWX a Yh\cXq qi]hUV`Y Zcf'h\Y]f'dfc YWb/
-) "XYj Y`cd`U`Zcfa U``fYqYUfW\`dfcdcqU``Zcf`h\Y]f`<cbci fq`h\Yq]q`UbX#cf`dfcYWf

HYUWX]b[GhfUhY[]Yg

H\Y'Wci fqY'k]``VY'HJi [\hih\fci [\'U'lk c!\ci f'qYa]bUf'YUW\'k YY_"'8]qWd`]bY!qdYU_Yfg'a Um'VY']bj]hYX'hc Woblf]VihYi]bigYjYfU`cZh\YikYY_g"GhiXYbhgik]``dfYgYbhicbY'UgdYWicZh\Y]fickbifYgYUfW\ifaUcf < cbci fg'dfc'YWE'UhU'gma dcg]i a 'UhH\Y'YbX'cZgYa YgHYf"

H\Y'UddfcUWX hc'hYUWX]b[']q']bZcfa YX'Vmdf]bWjd'Yq'cZ]bhYfUWjj]hmz'qhi XYbhU[YbWmUbX'h\Y'd'YUqi fY'cZ gWkc`Uf`m_bck`YX[Y'UbX`YUfb]b["'Cif`U]a `]g`rc`ZUW]]rUhY`kUmg`Zcf`ghiXYbhg`rc`UWWYgg`UbX`ZcghYf`U`fUb[Y cZdfcXiWhjY'dcgg]V]`]h]Yg'Zfca 'h\Y'X]gW]d`]bUfmVUgYg'cZh\Y]f'ghXm''H\]g'UV]`]mik]``VY'Ub'cb[c]b[fYqci fWr ']b'qhi XYbhq' dfcZyqq]cbU``UbX'dYfqcbU```]i YqžWcbhbi]b['VYmcbX'h,Y']a a YX]UhY WcbhYl hcZUbm cbY Wci fqY cf dfc[fUa "

5ggYgga Ybh

3 ^fZWSeeWee_W fe i [^TWV[eUgeeWW [`VWfS[^[`U'Seeł i ZWdWkag i [^S'ea TWegbb1[WW i [fZ_Sd] [`Y Ud[fWd[SS`VY[hW f[_Wfa Se] cgWef[a`ežKag i [^ZShWfZWabbadfg` [fk fa bdNeW f S eZadf fZWe[e Ud[f[cgWfa kagdUa ^WSYgWe S`V fZWdWi [^TWf[_WXad [`V[h[VgS^Ua`eg/fSf[a`e dWYSdV[`Y fZWDWeWSdJZ BdabaeS/ź

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H∖Yg]g [·] ₩¶]h]ei Y [·]	&) ı	'\$#\$'#&\$%`\$).\$\$`DA	&Ž
: cfa U``fYgYUfW\`dfcdcgU``)\$1	&+#\$(#&\$%`\$).\$\$`DA	%ž(ž)
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GHUfh'XUHY.

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Webhf]VihYiheihXYX]gW]d`]bY3`<ckiYZYW]jY`mXcYgihXYUih\effUfh]WiUhYihXY]fWebhf]Vih]ebiheihXY X]gW]d`]bY3`5fYihXfYUbm]XYbh]Z]UV`Y`[Udgiefitadgi]bihXYUf[iaYbh3

Y" E i U`]micZk f]h]b[`--`]g`h\Y`k f]h]b[``WYUf`UbX`Uddfcdf]UhY`Zcf`]hg`UWUXYa]Wdi fdcgY3`<ck`g_]``Z``m XcYg`h\Y`Ui h\cf`Wcbghfi WhNY]f`Uf[i a Ybh3`8cYg`h\Y`k f]h]b[`X]gd`UmUb`Yb[U[]b[`UbX`cf][]bU` 'j c]WY`3`=g`h\YfY`Ub`]XYbh]ZJUY`Y`bUffUh]j Y`h\Uhfi bg`h\fci [\`h\Y`h\Yg]g3`=g`h\Y`fYZYfYbW]b[`dfcdYf UbX`UWWi fUhY3`8cYg`h\Y`h\Yg]g`a YYhUWUXYa]WghUbXUfXg`fY[UfX]b[`Uddfcdf]UhY UW_bck`YX[Ya YbhcZgci fWfg3

Gi Va]gg]cb bchYg.bi ``

Hi fb]h]b`gYh]b[.`H\]g`Ugg][ba Ybh]g`gi Va]hhYX`h\fci [\`Hi fb]h]b`UbX`gh XYbhg`WUb`gYY`Hi fb]h]b`g]a]`Uf]hm fYdcfhg"

5ggYgga Ybh&: cfa U`fYgYUfVX dfcdcgU`

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@Yb[h\.")\$\$"k cfXg

8YHJ]`g.") \$\$`k cfXg"; fUXY`UbX`k f]HYb`Wca a Ybhg`dfcj]XYX"

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

Mci f`fYgYUfW\`dfcdcgU``a i ghWcj Yf`h\Y`Zc``ck]b[`fk Y`k]``X]gW gg`h\Y`gi [[YghYX``Yb[h\g`Zcf`YUW\`dUfh Xi f]b[`WUggŁ

- U" HYbhUhji Y`hjhY.`h\]g`g\ci`X`fYZYWhH\Y`dfYW]gY`fYgYUfW\`eiYgh]cb`mci`]bhYbX`hc`]bjYgh][UhY`cf YId`cfY`]b`mcif`h\Yg]g"
- V" F UhjcbU'Y. k \UhiUfY mci 'gYY_]b['hc'fYgYUfWkžcf'k \UhidfcV'Ya g'Xc'mci ']bhYbX'hc'UXXfYgg']b'mci f h\Yg]g3'K \m]g'h\Y'hcd]WcZ]bhYfYghhc'mci ž'UbX'k \mXc'mci 'h\]b_'h\]g'fYgYUfWk']g'bYWfggUfm3'<ck XcYg']hfY`UhY'hc'YI]gh]b[žcb![c]b['XYVUhYg']b'mci f'X]gW]d`]bY#Z]Y`X3'f7 fYUh]j Y'DfUWf]Wf#DfcXi Wf]cb ghi XYbhg. 'XYgWf]VY']b'XYhU]`h\Y'dfc'YWhmci 'UfY'[c]b['hc'i bXYfhU_Y'UbX'\ck ']hfY`UhYg'hc'mci f fYgYUfWk'ei Ygh]cbg"Ł
- W @]hYfUhi fY`fYj]Yk.: ħ\]g'k]``Zcfa 'h\Y`a U'cf'dUfhcZh\Y`fYgYUfW\'dfcdcgU'ž'UbX`k]``YgHUY`]g\'Vch\'h\Y VfcUX`UWUXYa]WWcbhYI hcZmci f`fYgYUfW\'hcd]WUbX`]hg`UWUXYa]WfUh]cbU`Y''' ∔ik]```dfcj]XY`U gi WWjbWiUbX`Wf]hJWU``Yj U`i Uh]cb`cZfY`Yj Ubh`]hYfUhi fY`UbX`]hg`VYUf]b[`cb`mci f`hcd]WžXYa cbghfUhY mci f`i bXYfghUbX]b[`]Zh\Y`UfYU`cZmci f`fYgYUfW\'hcd]Wž'UbX``cWJhY`[Udg`]b`h\Y`YI]gh]b[``]hYfUhi fY h\Uhi^gh]ZYg`mci f`hcd]W
- X" A Yh\cXc`c[mik\UhUddfcUVXik]``mciiigYihc'UXXfYggimcifihcd]W3'=ZmciffYgYUfWXi]bjc`jYgiXUHUž k\UhaYh\cXgik]``mciigYihc'Wc``YWfUbX'UbU`mgYiXUHU3'K\UhW2bWYdhiU`žaYh\cXc`c[]WU``cf gW\c`UfmUddfcUVXi\UjYimciiW\cgYbihc'Wcad`YhYimcifWUffmicihimcifiUbU`mg]gicfidfcXiWfjcb3
- Y" HYbhUhji Y W UdhYf ci h]bY. k \UhUfY mci f W UdhYf#gYWgcb h]hYgž UbX \ck Xc h\YmfY UhY hc h\Y hcd]W UbX mci f fYgYUfW ei Ygh]cbg3 Ci h]bY \ck h\YmXYj Y cd h\Y Uf[i a YbhcZmci f h\Yg]g"
- Z'H]aY`]bY. cih`]bY'mcif'h]aY`]bY'ZcfWcbXiWh]b['mciffYgYUfW.UbX'kf]h]b['UbX'fYXfUZr]b['mcif W.UdhYfg'f7'fYUh]jY'DfUWh]W#DfcXiWh]cb'ghiXYbhg.'dfcj]XY'XYhU]`g'cZmcif'dfcXiWh]cb'h]aY`]bY'Zcf h\Y'WcadYh]cb'UbX'YI\]V]h]cb'cZmcif'<cbcifg'dfcYWbž'Ug'kY``Ug'h\Y'h]aY`]bY'Zcf'h\Y'kf]h]b['UbX fYXfUZn]b['cZmcif'h\Yg]g''D'YUgY'dfcj]XY'U``]ghicZhYW\b]WU``fYei]fYaYbhg'Zcf'mcif'dfcYWbUX'h\Y fYgcifWYg'mci'k]``bYYX'hc'g\ck#dYfZcfa'h\Y'dfcYWh'L
- ["FYZYfYbWYg.'dfcj]XY'U``]ghcZfYZYfYbWYg'fY`YjUbhhc'h\]g'Ugg][baYbhž'UbX'Ub']bX]WUhjY V]V`]c[fUd\mcZch\Yf'gcifWYg'h\Uhmci']bhYbX'hc'igY']b'mcif'h\Yg]g"

Gi Va]gg]cb bchyg.bi

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5ggYgga Ybh'. FYgYUfW. dfYgYbHJh]cb

GHUfh'XUhY.

@Yb[h\.')!%\$'a]bg

8YHJ]`g. '5`gc`_bck b`Ug`G5A `Gma dcg]i a "`) !%\$`a]bg"`H\]g`]g`h\Y`Z]bU``UggYgga YbhHUg_"; fUXY`UbX k f]HYb`Wca a Ybhg`dfcj]XYX"

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

Mci f`fYgYUfW\`dfYgYbHUHjcb`k]``VY`) 'hc'%\$`a]bi HYg`]b`Xi fUHjcbžUbX`k]``dfcj]XY`U`gi a a UfmicZmci f fYgYUfW\`dfcdcgU`ž'Wcj Yf]b[`H\Y`fYgYUfW\`hcd]WUbX`fUHjcbU`Yž`]HYfUH fY`fYj]Yk žUbX`a YH\cXc`c[m'`+ik]`` VY`dfYgYbHYX`]b`H\Y`Zcfa UhicZUb`UWUXYa]WWcbZYfYbW\`dUdYfžUbX`a Ya VYfg`cZH\Y`GW\cc``UbX`: UW``hm k]``VY`]bj]HX`hc`k UHW\"

H\Y'Gmadcg]ia žcZk \]W\`mcif'dfYgYbHJh]cb'k]``VY'U'dUfhžk]``HU_Y'd`UWY'cjYf'k c'XUmg''Ncif UHhYbXUbWY'cb'Vch\`XUmg']g'a UbXUhcfm'Yb[U[]b['k]h\`mcif'Wc``YU[iYg'k cf_']b'h\]g'ZcfaUh]g'Vch\`U a UHhYf'cZWc``Y[]U`]Hm'UbX'dfcZYgg]cbU`]ga"

H\Y'a Uf_]b['Wf]hYf]U'Zcf"h\]g'UggYgga Ybhk]``'VY'X]ghf]Vi hYX']b'WUgg"

Gi Va]gg]cb bchYg.bi ``

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Ghi XYbhg UfY YI dYWYX hc di hh\Y]f bUa Yg UbX ghi XYbhbi a VYfg cb Yj YfmdU[Y cZh\Y]f Ugg][ba Ybhg"

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

Zmci YbWci bhYf'U'dfcV'Ya 'k \Yb'UthYa dhjb['hc'gi Va]hmci f'Ugg][ba Ybht\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]cbžVi 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 YbhgŁ'hc]bWi XY'Ug'Yj]XYbWY hc'gi ddcfhimci f'YI hYbg]cb'Udd`]WUhjcb'' 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 'gfUh 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 Ybh DYbU h Yg

5b'UggYggYX'HUg_']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 YbhGmghYa '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\`XUm`cf`dUfhih\YfYcZh\Y kcf_`]g``UhY"`@UhYbYgg`k]```]bWiXY`kYY_YbXg`UbX`diV`]W\c`]XUmg"`H\]g`XcYg`bchUdd`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?YYdimci Zfca UHYbX]b[Ub'UggYggUVYUW]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_žVY`]hU`Zcfa U``YbX!cZgYa YghYf`YI Ua]bUh]cbžU WUgg`hYghžU``UVcfUhcfmhYghžU`gYa]bUf`dfYgYbhUh]cb`cf`Ubmch\Yf`Zcfa `cZUggYgga Ybh'

: cf'2 fh\YfXYHU]`g`]b`fY`UH}cb`hc`GdYW}U``7 cbg]XYfUH}cb`]bWi X]b[```K \Yb`hc`5dd`m´ž`´< ck`hc`5dd`m´`UbX ~Giddcfh]b[`8cWia YbHUH}cb´``d`YUgY`fYZYf`hc`h\Y`GdYW}U``7 cbg]XYfUH}cb`k YVgH}Y.` <u>\Hndg.##qhi XYbH`i bgk "YXi "Ui #qdYW}U`!Wcbg]XYfUH}cb</u>

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

7 ci fgY GWX YXi `Y

<u>J]Yk WUgg'Ha YHJV'Y</u>

H]a YHJV`Y'

8 UHY	Hmd Y	7 cbhYbh
K YY_`%`&*`: YVfi Ufm!`(A UfVX	GYa]bUf	;`fdaVgUf[a` fa fZWUagdeW,WjbWUfSf[a`eł adYS`[ISf[a`łS`V SeeWee_W fež
		Iad]eZab,IZSfSdWkag[fWdWefWW[dWebWSdUZ[Ył
		S`ViZk1
K YY_`&.`) `A UfVX`!`%% A UfVX	GYa]bUf	EW_ [`Sd, FZWE fgVW fŽEg , D
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F Ygci fWg

DfYgWf]VYX F Ygci fWfg

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FYWca a YbXYX FYgci fWYg

BchUjU]`UV`Y

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

DYf]cX]WU``mgh XYbhYj U`i Uh] Y ZYYXVUW_`cb'Wci fgYg`]g`[Uh\YfYXži g]b['Ua cb['ch\Yf`a YUbgži BGK 'g 7 ci fgY'UbX'HYUW\]b['9j U`i Uh]cb'UbX`=a dfcj Ya Ybhf75H9=""Nci f'ZYYXVUW_`]g`YI hfYa Y`m]a dcfHUbhUbX]g`hU_Yb`gYf]ci g`mž'UbX'Wcbh]bi U``]a dfcj Ya Ybhg'UfY`a UXY`hc`h\Y'Wci fgY'VUgYX`]b`dUfhcb`gi W\'ZYYXVUW_'' Nci `k]``U`gc`\Uj Y`h\Y`cddcfh b]hmhc`dfcj]XY`]bZcfa U``ZYYXVUW_`Xi f]b['h\Y'WUgg"

⊣a U[Y[·]7fYX]h

6cX]Yg'/ *=bhYfZJWYg*&\$%*

7F=7CG

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