

ARTS2120

K f]h]b['Zcf'DYfZcfa UbW

HYfa 'H\fYY''##'&\$%

7ci fgY 8YHJ] g

7 fYX]hDc]bhg *

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GiVYWh5fYU.FZWSfdWS`VBWdAd_S`UWEfgV[WeH\]q:WcifgY:Wb'U`qc:VY`qhiX]YX`]b'h\Y'Zc``ck]b[`qdYWJU`]qUh]cb.'5dWSf]hWIdff)Y

H\]g`Wci fgY`YI d`cfYg`h\Y`k Umg`h\Uhk f]h]b[`dYfZcfa gžbcha YfY`mXYgWf]V]b[`h\Y`k cf`X`Vi hUWh]j Y`mfY! g\Ud]b[`]hž]b`h\Y`k Um]hghfi Wh fYg`h\ci [\hž'ZYY`]b[žYbWci bhYfž'UbX`a Ya cfm';H\fci [\k YY_`m`YWh fYgž [i]XYX`k cf_g\cdgž'UbX`fYUX]b[g`UbX`YI YfW]gYg`ci hg]XY`cZWUggž'mci `k]```YI d`cfY`U'j Uf]YhmcZh\YUhf]WU` UbX`dYfZcfa Uhjj Y`'a cXYg''''I `hja UhY`mh\YgY`k]```VY`X]fYWhYX`hck UfX`k f]h]b[`mci `k]```WfYUhY`Zcf`U'dYfZcfa YX g]h Uhjcb`—k\]W\`a UmVY`XY`]j YfYX``]j Y`VmU'dYfZcfa Yf`cf`dYfZcfa Yfg']b`U'h\YUhfYžYbWci bhYfYX`VmU gYUhYX`cf`a cV]`Y`Ui X]YbWYžYI dYf]YbWYX`h\fci [\`a YX]U'gi W\`Ug`\YUXd\cbYg`cf`\mdYfhYI hz`cf`gca Y`ch\Yf Wca V]bUhjcb''`6i h]b`Xc]b[`gc`k Y`k]```HU_Y`]bgd]fUhjcb''Zfca 'h\Y`k Um`Ub[i U[Y`k cf_g`U```Ufci bX`i gžk \Yh\Yf]b`h\Y`h\YUhfY`cf`VYmcbX''

7 ci fgY @YUfb]b[Ci hWca Yg

- %" GY`YWhUbX`i hj`]nY`Uddfcdf]UhY`dfUWhJWY!VUgYX`UddfcUWXYg`hc`Wca dcg]hjcbU``a cXYg`Zfca `U`fUb[Y cZW ffYbhdfUWhJWYg"
- &" HYghiUbX`UggYgg`h\Y`fY`UhJcbg\]d`VYhk YYb`h\Y`Zcfa `cZU`dYfZcfa UbWY`hYl hiUbX`]hg`WcbhYbhž WcbhYl hi U`]q]b[`mci f`k cf `]b`fY`UhJcb`hc`ch\Yf`k f]hYfq"
- "FYU`]gY`h\Y`WfYUhJcb`cZU`k f]hhYb`dYf7cfa UbWY`hYI hih\UhifYgdcbXg`hc`gdYWJZJWdYf7cfa UbW]bhYbhJcbgž`7fUa YX`h\fci [\`Ub`Uk UfYbYgg`cZ]hg`WcbX]hJcbg`cZfYWYdhJcb`VmU`fYU``cf`dchYbhJU` Ui X]YbWY"

HYUW]b['GhfUhY[]Yg'

H\]g`Wci fgY`]g`HUi [\hih\fci [\k\YY_`m`YWi fYgžk\]W\`k]```]bHfcXi WV`_YmWcbWVdhg`UbX`UddfcUW\Yg`Ug`k Y`` Ugʻa cXY``]b[`X]ZZYfYbhZcfa gʻcZk f]h]b[`ZcfʻdYfZcfa UbWV"'``Mci `k]```Uʻgcʻi bXYfHU_Y`]bXYdYbXYbhfYUX]b[`UbX k f]h]b[`YI YfW]gYg`]b`dfYdUfUh]cb`Zcf`[i]XYX`k cf_g\cdgžk\]W\`k]```]bHfcXi WY`Z fh\YfYI YfW]gYg`hc`XYj Y`cd mci f`k f]h]b["'``Mci `k]```VY`Ug_YX`hc`HfmZcfa gʻcZk f]h]b[`H\Uha UmVY`i bZJa]`]Uf`hc`mci ž``YUX]b[`hck UfX`U %\$!a]bi hY`dYfZcfa UbWV`hYI hZcf`k\]W\`mci `k]```VY`UV`Y`hc`W\ccgY`UbmcZh\Y`a cXY`gʻfcf`a]I `cZa cXY`gŁ'Zcf mci f`Z]bU``dfYgYbHJhCb"

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DYfZcfa UbWY'k f]h]b['dfcYWh	' \$1	&-#%#&\$% `\$).\$\$`DA	1

5ggYgga Ybh'8YHJ]`g

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GhUfh'XUhY.

 $\label{thm:continuous} \begin{tabular}{ll} Hi & fb & fb & gYM &$

5ggYgga Ybh& 7f]h]WU`Ybei]fm

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8YHJ]`g. 8YHJ]`g. 7f]h]WU``mUbU`mgY`Ub`YI Ua d`Y`cZk f]h]b[Zcf`dYfZcfa UbWY`]**‰**

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5 hmy b X Ub WY F Yei] f Ya Yb hg

- \$\dip in hcf]U`g`mci k]```UWNjj Y`mYb[U[Y`k]h\`WcfY`Wci fgY`WcbhYbhih\Uhk]```YbUV`Y`mci hc`XYa cbghfUhY UhtU]ba YbhcZfcf`\Y`d`mci hc`UhtU]bb':7@C`%fGY`YWhUbX`i hj`]nY`Uddfcdf]UhY`dfUWnjWY!VUgYX UddfcUWXyg`hc`Wca dcg]hjcbU``a cXYg`Zfca 'U`fUb[Y`cZW ffYbhdfUWnjWYgŁ
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FYgci fWyg

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D`YUgY`gYY`@Y[Ubhc`Zcf`h\Y``]ghcZfYWca a YbXYX`hYI h`Vcc_g`UbX`k YY_`mfYUX]b[g":5```fYei]fYX`fYUX]b[g WUb`VY`UVWYggYX`j]U`@Y[Ubhc`fcb`A ccX`YŁ`UbX`Xck b`cUXYX`UbX`df]bhYX`Uh`\ca Y"

FYWca a YbXYX FYgci fW/g

DUi `'7 "'7 UgHJ[bcž@W B'Ski dff[`Y E fcSfW [We, >S` YgSYWS` V ? WW[S [` fZW\$#ef 5 W fgckž&bX`YX fl@cbXcb`UbX`BYk 'Mcf_. 'F ci hYX[Yž&\$\%\L"

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7ci fgY 9j U'i Uhjcb UbX 8Yj Y'cda Ybh

Mci f'ZYYXVUW_`]g'U`k Umg']a dcfhUbhhc'h\Y'cb[c]b['XYj Y`cda YbhcZh\]g'Wci fgY"'D`YUgY'WcbhUWia Y'Xi f]b[h\Y'Wci fgY']Zmci '\Uj Y'Ubm]ggi Yg'cf'WcbWfbg"

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

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 Ybhh\fci [\ 'Hi fb]hJbž'd`YUgY
hY`Yd\cbY'9| hYfbU``Gi ddcfhcb'-',) '' ' ' %cf'Ya U]`'h\Ya 'cb'Y! hYfbU`hY`hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-') .\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUft'' =Zmci
UfY'i bUV`Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZUi 'hk]h\'Hi fb]hJb'mci 'a Um'Udd'mZcf'Ub'Y! hYbg]cbžVi hmci
a i ghfYhU]b'mci f'hJW_Yhbi a VYf'Zfca '9! hYfbU``Gi ddcfhfU'cb['k]h\'Ubmch\Yf'fY`Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj]XYbW'hc'gi ddcfhmci f'Y! hYbg]cb'Udd`]WUhJcb'' =Zmci 'Ya U]`'9! hYfbU``Gi ddcfhmci 'k]``

5 WUXYa]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 gžZfca `XY`]VYfUhY`W\YUh]b['hc`UWW]XYbhU``mWcdm]b['Zfca `U`gci fW'k]h\ci hUW_bck `YX[Ya Ybh'

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

 $7 \text{ cdm}b[...i g]b[...h\Y.gUa Y.cf.j Yfmig]a] \Uf'k cfXg'hc'h\Y.cf][]bU''hYl h'cf']XYU'k]h\ci h'U\V_bck `YX[]b[...h\Y.cf][]bU''hYl h'cf']XYU'k]h'cf']$

- i bXYfgfUbX mci f'f][\hg'UbX'fYgdcbg]V]`]hJYg'Ug'U'gh XYbhUhl BGK
- VY`Uk UfY`cZd`U[]Uf]ga ž`Wcdmf][\hz'l BGK `Gh XYbh7cXY`cZ7cbXi WhUbX`5VWWdhUV`Y`l gY`cZ I BGK `=\forall H`F Ygci f\W\g`Dc`]\m\m
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj]ci f'Yl dYWYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wca a i b]hm
- `cWUHY 'gYfj]WYg'UbX `]bZcfa UH]cb'UVci hI BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZh\YgY'UfYUg'k]``VY'ZJa]`]Uf'hc'mci ž'ch\Yfg'k]``VY'bYk"'; U]b]b['U'gc`]X'i bXYfgHJbX]b['cZU``h\YfY`UhYX'UgdYWng'cZ9@+69'k]``\Y`d'mci 'a U_Y'h\Y'a cghicZmci f'ghi X]Yg'UhI BGK "'\\hd.##qi VYWfi |XYg"`]VfUfm'i bqk "YXi "Ui #\`]qY#JVci hY`]qY