



ARTS1450

hfcXi Wc fm7 \]bYgY '5 'Zcf' Bcb!6UW_[fci bX'Gh XYbhtg

HYfa 'Cby' '# '&\$&%

7 ci fgY`Cj Yfj]Yk

GHJZZ`7 cbHJW`8YHJ`g

7 cbj Ybcfg

B Ua Y	9a U]	5j U]`UV]`]m	@cW]h]cb	D\cbY
5#DfcZ`D]b[`K Ub[d"k Ub[4 i bgk "YXi "Ui	VmUddc]bħa Ybh	A 6&' *	- ' ,) ' () %

Hi ħcfg

B Ua Y	9a U]	5j U]`UV]`]m	@cW]h]cb	D\cbY
8f`Mcb[!>i `F i Y	m`fi Y4 i bgk "YXi "Ui		A 6&*,	- ' ,) \$) %
8f`M]b[`]Gi b	m]b[`]"gi b4 i bgk "YXi "Ui		A 6&))	- ' ,) &*(\$

GWXcc``7 cbHJW`ħZcfa U]h]cb

GWXcc``cZ<i a Ub]h]Yg`UbX`@Jb[i U[Yg

@cW]h]cb. `GWXcc``C Z]W`žA cfj Yb`6fck b`6i `]X]b[ž`@Yj Y``&ž&),

CdYb]b[`<ci fg. `A cbXUm! : f]XUmž - Ua `!) da

D\cbY. `ž*%&`- ' ,) `)%*, %

: Ul. `ž*%&`- ' ,) `; , +\$)

9a U]: [\U`4 i bgk "YXi "Ui](#)

7ci fgY'8YHJ]`g

7fYX]hDc]bhtg`*`

Gi a a UfmicZhY'7ci fgY

H\]g]g'Ub]bfcXi WcfmWci fgY]b'A cXYfb'GHUbXUfX'7\]bYgY`Ub[i U[Y'fA UbXUf]bE'Zc'f'bcbl'VUW_[fci bX gdYU_Yfg'"H\Y'Wci fgY'k]'`ghUfhk]h'VUg]WWca dcbYbhtg'cZ7\]bYgY`Ub[i U[Y.'hY b[k[žUbX'WXUfUWYfg" k]`h'UW'`mci '\ck'hY'7\]bYgY`Ub[i U[Y'k cf_g'Vch'[fUa a Uh]WU`mUbX]b'gcWci'W`h'fU`WcbhY'hg'gc hUhmci'ghUfhc'XYj'Y'cd'mci f`]b[i]gh]WUbX'Wca a i b]WU]h]Y'Wca dYh'bwWg'"H\Y'Zci f`Ub[i U[Y'g_]`g! @]ghYb]b[žGdYU_]b[žFYUX]b[žUbX'k f]h]b['!UfY]bht[fUH'X'h'fci [\ci h'hY'Wci fgY'"5'W`h'fU`Uk UfYbYgg]g'U'gc'Vi]h]bht'hY'Wci fgY'"H\fc[i]`Ub[i U[Y'gh'Xmici'k]'`XYj'Y'cd'Ub]bZca YX'i bXYfghUbX]b['cZ 7\]bYgY`Ub[i]gh]WVY\Uj]ci fž'gcWY'hmUbX'W`h'fY"

H\]g'Wci fgY]g'U'VY[]bbYfg]'Y'Y`Ub[i U[Y'Wci fgY'"5`gh'XYbht'k'lc'\Uj'Y'\UX'gca Y'Yi dYf]YbW'k]h'hY' `Ub[i U[Y'žY]h'Y'f'Ug'U'\Yf]hU[Y`Ub[i U[Y'cf'h'fci [\d'fYj]ci g]bgh'f'W]cbž'a i ghZ`]b'hY'd'UW'a Ybh ei Ygh]cbU]fY'Uj]U]UV'Y'Uh'h'hdg.#'A'U`U'f'f'g'i b'gk"YXi"Ui #gh'XYbht'Wci fgYg#Ub[i U[Y'd'UW'a Ybht'"Mci'k]'` bchVY'dYfa]h'Y'X'hc'Ybfc`]b'U`Ub[i U[Y'Wci fgY'h'Uh]g'hc'c'YUgm'Zc'f'mci "'Z'h]g'c'W'W'fgž'mci'k]'`VY fYei Ygh'X'hc'W'Ub[Y'mci f'Ybfc'a Ybh"

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

%'F'Y'Wci b]gYž'dfcbci bW'UbX'k f]h'Y'd]bm]b'UbX'WXUfUWYfg'Uh]bfcXi Wcfm'Yj'Y' &'l'g'Y'Z`'g_]`g'cZ7\]bYgY`Ub[i U[Y'f]ghYb]b[žFYUX]b[žGdYU_]b['UbX'k f]h]b[E'Uh]bfcXi Wcfm'Yj'Y' k]h]b'hc'd]Wg'fY'Uh'X'hc'Yj'Yfm'X'U'f'U'W'W'g]h'U]cbg ' "'XYbh]Z'm'U'Ug]WV]h]W' i bXYfghUbX]b['cZUgdYW'g'cZ7\]bYgY`Ub[i]gh]WVY\Uj]ci fž'gcWY'hmUbX W`h'fY"

HYUW]b['GhfUH[]Yg'

@Ub[i U[Y]g'VYghUWci]fYX'h'fci [\U'lc']gh]WUbX]bht'fUW]j'Y'Z]g\]cbž'gc'U`Zci f`Ub[i U[Y'g_]`g!]ghYb]b[žGdYU_]b[žFYUX]b[žUbX'k f]h]b['!Ug'k'Y`Ug'U'W`h'fU`Wca dcbYbhUfY]bht[fUH'X'h'fci [\ci h'h]g Wci fgY'"H\Y'Ya d\Ug]g]g'cb'hY'f'UbgZca U]cb'cZ]b[i]gh]Wg_]`g]bht'UW]j'Y'Wca a i b]WU]h]cb'"GdYW]Z]W]bgh'f'W]cbg'UbX'd'fUW]W'g'dYf]h]bYbh'hc'YUW'g_]`XYj'Y'cda YbhUfY'k'cj'Yb]bht'hY'YUfb]b['UW]j]h]Ygž U]b]bYX'k]h'hY'UggYgga Ybhtž'U_]b[]bht'UW'Wci bh'h'Uh'h]g'Wci fgY]g'Zc'f'bcbl'VUW_[fci bX'VY[]bbYfg'"Hc UW]j]Y'Y'hY'XYg]fYX'YZY'Wž'YZc'fh'UbX'WUfY'Z`'d'Ubb]b['\Uj'Y'VYb'a UXY'hc'U]b'ci f'h'UW]b['ghfUH[]Ygž a Y'h'cXg'UbX'gh'f'W'fY'k]h'hY'U]a'g'UbX'YUfb]b['ci hWca Yg'cZ'hY'Wci fgY'"H\Y'Y'W'fY'g'f]Yg'Ug'Ub cj'YfU`]bfcXi W]cb'hc'Vch'`Ub[i U[Y'UbX'W`h'fU`UgdYW'g'fY'Yj'Ubht'YUW'W'Ud'h'f'"H\Y'hi'hc]U'g'Zc'W'g cb'hY'Y]bht[fUH'X'`Ub[i U[Y'g_]`g'h'fci [\Uj]Uf]Y'f'f'c'ZYI'Y'f]Y'g'g'"5`h'Y'UggYgga Ybhtž]b'W'X]b['WUgg UW]j]h]Yg'UbX]'fci d]bht'fUW]j'Y'dfc'Y'W'gž'UfY'g'Yh'hc'Yb[U[Y'gh'XYbht]b'UW]j'Y'YUfb]b['UbX'YZY'W]j'Y Wca a i b]WU]h]cb'"5'a i'h]a YX]U'Uddfc'UW'`UbX'cb]b]bY'UggYgga Ybht]UfY'U'gc'UXcd'h'X'hc'Wca d'Ya Ybh'hY

9I Ua 'DYf]cXŁŻ '%\$i '7ca dCg]hcb'HYghfKcbY']b'K ? '%\$@YWh FYŁŻ') i 'l' ad]Taa] Wj WdU[eWē fWXYW_YX
Xi f]b['Hi hcf]U'gŁ

A cFY'8YHJ]YX']bZc'ff [cb'k]''VY'dfcj]YX'k Y'']b'UXj UbW'cb'h\Y'7ci fgY'A ccX'Y'UbX']b'WUgg"

5ggYgga Ybh' . '7cb]bi ci g'UggYgga Ybhg

8YHJ]`g.

H\]g']bWi XYg' ('gYhg'cZcb`]bY'ei]nnYg'fUfci bX" \$'a]bi hYg'YUWŁ'UbX'U'B[k['hYghfUfci bX'&'a]bi hYg'dYf
gh XYbŁ"

Gh XYbŁg[Yh]bX]j]Xi U'f _g/cfU'UbX'k f]hYb'ZYXVUW_"

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

7cb]bi ci g'UggYgga Ybhg'f&) i 'Ł') i 'l' ('cb']bY'ei]nnYg'fci hg]XY'cZWUggYgZ'hc'VY'gi Va]hYX'cb!']bY'ŁZ
) i b[k['hYghfKcbY']b'K ? '' 'h hcf]U'Ł"

A cFY'XYHJ]YX']bZc'ff [cb'k]''VY'dfcj]YX'k Y'']b'UXj UbW'cb'h\Y'7ci fgY'A ccX'Y'UbX']b'WUgg"

Hi fb]h]b'gYH]b[. H\]g]g'bchU'Hi fb]h]b'Ugg][ba Ybh

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

7ca di `gcfmHYI hVcc_g.

;`fWdSfW 5Z[`WeWFW]fTaa]ž@Yj Y`%DUfh%fG]a d`]ZYX`7\UfUWf]fg`J Yfg]cbŁž(h`9X]hcb

;`fWdSfW 5Z[`WeWl` ad]Taa]ž@Yj Y`%DUfh%fG]a d`]ZYX`7\UfUWf]fg`J Yfg]cbŁž(h`9X]hcb

VmHUc!Wxi b[`MjC`UbX`M Y\i U`@] ž`UbX`di V`]g\YX`Vm7\Yb[` / Hgi]"ž5j U]UV`Y`Zca

I BGK `6cc_g\cd"

.
.

F YWca a YbXYX`F Ygci fWg

F YWca a YbXYX.

;`fWdSfW 5Z[`WeW5ZScSufWdI` ad]Taa]ž@Yj Y`%DUfh%fG]a d`]ZYX`7\UfUWf]fg`J Yfg]cbŁ

VmHUc!Wxi b[`MjC`UbX`M Y\i U`@] ž`UbX`di V`]g\YX`Vm7\Yb[` / Hgi]"ž5j U]UV`Y`Zca

I BGK `6cc_g\cd"

.
.

C h\Yf`cd]hcbU`fYgci fWg.

hY[fUHYX`7\]bYgY`J c`i a Y`%K YV`5dd.`

\hdg.##k k k "WXYb[!hgi]"Wca #/fck gY#bH[fUHYX!W]bYgY!(h!YX]hcb#bH[fUHYX!W]bYgY!(Y!j c`!%WXYb[hgi]!
k YV!Udd3]X1&%&&

H\]g`5dd`]bWl XYg`8][]hU`HYI hVcc_ž5i X]cžJ]XYcg"``hWcghg`I G8`~(' - - `Zcf`U`gi VgW]dh]cb`cZ*`a cbhlg`

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.
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C h\Yf`fYWca a YbXYX`fYgci fWg`UbX`hcc`g`k]`VY`dfcj]XYX`cb`hY`7ci fgY`A ccX`Y`

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

H\]g'Wci fgY'k]''VY'Zcfa U''mYj U'i UH'X'h'fci [\ 'A m9l dYf]YbW'Z'Ug'k Y''Ug']bZcfa U''mXi f]b['h'Y
k \c'Y'h'UW']b['dfcV'gg'' '5bm]ggi Yg'fU]gYX']b'ghi XYbhgf'ZYXVUW'k]''VY'UXXfYggYX'Z'UbX'ghfU'h' []Yg
hc'Z' fh'Yf'Yb\UbW'h'Y]f''YUfb]b['Yl dYf]YbW'k]''VY'X]gW'ggYX'k]h'ghi XYbhg']b'WUgg''

Gi Va]gg]cb 'cZ5ggYgga YbhiHUg_g

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

≠mci 'YbWci bhYf'U'dfcV'Ya 'k \Yb'UffYa dh]b['hc'gi Va]hirci f'Ugg][ba Ybhih'fci [\ 'Hi fb]h]bž'd'YUgY

5 WUXYa]W< cbYgmiUbX`D`U[]Uf]ga

D`U[]Uf]ga `]g`i`g]b[`h`Y`k`c`f`X`g`c`f`]X`Y`U`g`c`Z`c`h`Y`f`g`i`U`b`X`d`f`Y`g`Y`b`h]b[`h`Y`a` `U`g`m`c`i`f`c`k`b`" `#`W`U`b`h`U`_`Y`a` `U`b`m`
Z`c`f`a`g`Z`Z`c`a` `X`Y`]V`Y`f`U`h`Y` `W`X`Y`U`h]b[`h`c` `U`W`W`Y`X`Y`b`h`U` `m`i`W`c`d`m]b[`Z`c`a` `U`g`c`i`f`W` `k`]h`c`i`h`U`W`_`b`c`k` `Y`X[`Y`a` `Y`b`h`

I`B`G`K` `[`f`c`i`d`g`d`U[]Uf]ga `]b`h`c` `h`Y` `Z`c` `c`k`]b[`W`U`h`Y`[`c`f`]Y`g.

- i bXYfgHUbX'mci f'f][\hg'UbX'fYgdcbg]V']hYg'Ug'U'gh XYbhUhl BGK
-

5 WUXYa]WbZcfa Uh]cb

: cfYggYbh]U`gh XYbh]bZcfa Uh]cb fY`Uh]b[`tc.

- fYei Yghg`Zcf`YI H`bg]cb/
- `UhY`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I BGK `<YU`h`UbX`GUZY`mdc`]WYg/
- YI Ua]bUh]cb`dfcW`Xi fYg/
- gdYW]U`W`bg]XYfUh]cb`]b`hY`Yj YbhicZ]`bYgg`cf`a]gUXj Ybh fY/
- gh XYbhYei]mUbX`X]gUV`]m/
- UbX`c`hYf`YggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

[\ftdg.#k k k "Uftg"i bgk "YXi "Ui #W ffYbh\]gh XYbh\]bZcfa Uh\]cb#dfc`W`g`\[i \]XY`\]bYg#](#)

⇒ U[Y`7 fYX]h

G\i H`Yfg`W_

7F ⇒ CG

7F ⇒ CG`Dfcj]XYf`7cXY.`\$\$\$- ;

5W_bck `YX[Ya YbhicZ7ci bhfm

K Y`UW_bck `YX[Y`hY`6YXY[U`dYcd`Y`k `c`UfY`h`Y`fUX]h]cbU`W`ghcX]Ubg`cZ`hY`UbXg`cb`k `]W`I BGK
? Ybg]b[`tc`b`W]a`di`g`]g`c`W]hYX"