



# ARTS3283

F ca Ub'9a dYfcfg. : fca '5i [ i ghi g'hc 'BYfc

HYfa 'Cby' '# '&\$%

GWXcc`cZ< i a Ub]hYg'UbX'@Ub[ i U[ Yg`'# 'I BGK ``5ftg'UbX'GcWU`'GWYbWg



7ci fgY'8YHJ]`g

7fYX]hDc]bhg`\*`

Gi a a UfmcZ\hY'7ci fgY

Gi VYWh5fYU.: [efack

H\Y`Wci fgY`YI d`cfYg`hY`\]gfcfmcZF ca Yfg`ZfghXmbUgmiUbX`\ck`]ha UbU[ YX`hY`hfUbg]hcb`Zca`fYdi V`]W  
hc`a cbUfW\m` FZWDa\_ S` 7\_ bWd`de

## 5ggYgga Ybh

H\]g Wci fgY' dfcj ]XYg' U' i b]ei Y' cddcfhi b]mhc' ]a a YfgY' cbYgY' Z]bhc' h\Y' k cF' X' cZ' h\Y' '7 UYgUfg" 'Gh' XYbhg  
UfY' YbWci fU[ YX' hc' XY' j Y' ]bhc' h\Y' 'j Yg' cZ] bX]j ]Xi U' Ya dYfcfg' UbX' ]a dYf] U' k ca Ybžk \] ghUhih\Y' gUa Y  
h]a Y' fY' U]h]b[ ' h\Y' ]f' ]b]h]a U]h' g]hcf] Yg' hc' h\Y' W\Ub[ ]b[ ' bU]h' fY' cZ' h\Y' F ca Ub' dck Yf' g]h]i W]h' fY' " Hc' \Y' d' i g' U]h]U]b  
U' gYbgY' cZk \Uh' ]Z' k Ug' ]\_Y' ]b' h\Y' ]a dYf] U' F ca Ub' Z]a ]mž' k Y' k ]' k U]h\W' UbX' UbU' mgY' gY' YW]c]bg' cZ  
h\Y' j ]g]cb' UbX' Z]a ' XfUa Ug' UVci h\h\Y' 'i' ]c! 7 'Ui X]Ubgž' dUfh] W' Uf' mih\Y' '667' h\Y' Y] ]g]cb' U]XUd]h]h]cb' cZF cVYfh  
; fUj Ygf]f#7 'Ui X]j g]h' 5h' YUghicbY' cZ' h\Y' 'ei Yg]h]cbg] ]b' h\Y' WUgg' h\Y' ghk ]' VY' cb' f#7 'Ui X]j g]h'

## 5ggYgga YbhHUg\_g'

5ggYgga YbhHUg_	K Y] [ \h	8i Y' 8U]h	Gh XYbh@YUfb]b[ Ci hWca Yg' 5ggYggYX

GhUfhXUHY. Bch5dd`]WUV`Y

8YHU]`g. `9UWX`gh XYbhk ]`Wta d`YH`cbY`]b!WUgg`dfYgYbHU]cb`c] Yf`hY`Wci fgY`cZH`Y`gYa Yghf`"H\Y  
dfYgYbHU]cb`k ]`VY`ghf]Wmbc`cb[ Yf`hU`Ub`%\$`a ]bi`hYg`]b`Yb[ h`"H\Y`dfYgYbHU]cb`k ]`VY`UggYggYX`cb`hY  
ei U`]hmcZ]hg`WcbhYbhz`UbX`hY`Ua ci bhicZfYgYUfW`h`Uhk Ybh]bhc`]hg`dfYdUfUH]cb`"9UWX`gh XYbhk ]`gi`dd`m  
U`[ i ]XY`h`hY`dfYgYbHU]cbz`VYhk`YYb`+) \$!%\$\$\$`k`cfXgż`Zcf`YUWX`ZY`ck`gh XYbh`h`k ]`gh]di`UH`hY`a U]b  
dc]bhg`UbX`]bW`i XY`U`V`]c[ fUd`m`k`f]hY`b`ZYXVUW`UbX`a Uf`\_`k ]`VY`dfcj`]XYX"

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

H\]g`UggYgga YbhWta Yg`]b`hk`c`dUfhg`"H\Y`Zfgh]g`hY`dfYgYbHU]cb`"9UWX`gh XYbh]g`fYei ]fYX`h`[ ]j`Y`Ub  
cfU`dfYgYbHU]cb`"Mci`k ]`VY`Ug`\_`YX`h`bca ]bUH`mci`f`h`fY`Z]j`ci`f]hY`hcd]Wg`UbX`mci`k ]`VY`h`Yb`V  
U`c`W`hYX`cbY`cZH`Ya "Mci`f`dfYgYbHU]cb`k ]`h`Yb`fYZYW`icb`cZH`Y`ei`Ygh]cbg`cb`hY`hcd]Wdfcj`]XYX`Vmi`hY  
Wcj`Ybcf`]b`hY`h`hcf]U`[ i ]XY`"Mci`k ]`gdYU`\_`Zcf)`a ]bi`hYg`VY`Zcf`hY`WUgg`UbX`Ub`gk`Yf`Ubmei`Ygh]cbg  
Zca`mci`f`Ui`X]YbW`"Mci`k ]`cb`m`VY`a Uf`\_`YX`cb`gi`VghUbW`.`h`Uha`YUbg`mci`Xc`bchb`YX`h`k`cffi`UVci`h  
mci`f`gdYU`\_`b[ ]j`c]W`Z`XY`j`Yfmc`f`hY`ei U`]hmcZ`mci`f`dck`Yfdc]bhf]Z`mci`W`ccgY`h`ei`gY`cbY`E`"H\]g  
Ugg][`ba`Ybh]g`k`cf`h`&\$`ci`hcZ`\$"

H\Y`gYWtbX`dUfh]g`U`\`UbXci`h`h`Uh`fYei ]fYg`mci`h`Udd`fU]gY`U`df]a`Ufm`XcW`a`Ybh`fY`["`U`d`UggU[`Y`Zca  
HUW]h`g`cf`Gi`Y`hcb]i`gż`Ub`Yd][`fUd`L`h`Uh`fY`UH`g`h`mci`f`dfYgYbHU]cb`hcd]W`H\]g`]g`k`cf`h`%\$`ci`hcZ`\$"  
A`cfY`XYHU]`UVci`h`h`]g`Ugg][`ba`Ybhk ]`VY`X]gW`ggYX`]b`hY`ZfghWUgg"


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F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

Gi Yhcb]i gžH\Y`Hk Yj Y`7 UYgUfgžDYb[ i ]b`6cc\_g

HUW]h gžH\Y`5bbU`gžDYb[ i ]b`6cc\_g

F YWca a YbXYX`F Ygci fWg

<"<"GW`UfXž: fca`h\Y: fUW]h`B.YfcžF ci hYX[ YžUbmYX]hcb

DYhYf: UfbgYmUbX`F ]MUFX`GU`YfžH\Y`F ca Ub`9a d]fYž6`cca gVi fmž&bX`YX

A Ufh]b: ccXa UbžH\Y`F ca Ub`K`cfX`((`67`!`58`%`\$žF ci hYX[ Yž&bX`YX]hcb

7c`]b`K`Y`gžH\Y`F ca Ub`9a d]fYž: cbfUjUž&bX`YX]hcb

Hca`<c`UbXž8mbUghmž8ci V`YXUm

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

Gh XYb]k`k`c`k`]g`h`[ Yhgca Y`gYbgY`cZ`ck`h\YmUFY`ZUf]b[ ]b`h\Y`Wci fgY`a ][\hUg`h`Xc`cbY`cZ`h\Y`YUf`mdfYgYbhUh]cb`hcd]Wg`Zcf`YUf`mZ`YXVUW`"Zmci`WkccgY`cbY`cZ`h\Y`"UhY`hcd]Wg`Vi`hbY`YX`Z`XVUW`a`i`Wk`YUf`]Yfž`d`YUgY`gYY`h\Y`Wcbj`Ybcf`"G`YbX`"a`U`gUa`d`Y`cZ`Ubm`cZ`mci`f`k`f]hYb`k`cf`\_`VY`ZcfY`UbX`UbX`gW`YX`i`Y`Ub`Uddc]b]a`Ybh`Zcf`gca`Y`Z`YXVUW`"



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`U`HYa`dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`  
HY`Yd`cbY`9I`HYfbU`Gi`ddcfhcb`-`,`),`'`,`'`,`%cf`Ya`U]`h`Ya`cb`YI`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`fI`\*)`XUmg`U`mY`UfL`≠mci`  
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhXi`Y`hc`U`ZU`hik`]h`Hi`fb]h]b`mci`a`Um`Udd`mi`Zc`f`Ub`YI`HYbg]cb`z`Vi`hmc`i`  
a`i`ghfY`hU]b`mci`f`h]W`Yhbi`a`VYf`Zca`9I`HYfbU`Gi`ddcfhfU`cb[`k`]h`Ubmc`h`Yf`fY`Yj`UbhXcW`a`Yb`hg`L`hc`  
]bWi`XY`Ug`Yj`]XYbW`hc`gi`ddcfhmc`i`f`YI`HYbg]cb`Udd`]W]h]cb"≠mci`Ya`U]`9I`HYfbU`Gi`ddcfhmc`i`k`]"`

5 WUXYa ]W<c bYghmiUbX`D`U[ ]Uf]ga

D`U[ ]Uf]ga `]g`i g]b[ `hY`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[ `hYa `Ug`mci f`ck b" `hWUb`hU`Y`a Ubm  
Zcfa gZ`Zca `XY`]VYfUHY`WXYU]b[ `hc`UWV]XYbhU`mW`dm]b[ `Zca `U`gci fW`k ]h`ci hUW\_bck`YX[ Ya Ybh`

I BGK `[ fci dg`d`U[ ]Uf]ga `]bhc`hY`Zc`ck ]b[ `WUHY`[ cf]Yg.

7 cdm]b[ .`i g]b[ `hY`gUa Y`cf`j Yfmg]a ]Uf`k cfXg`hc`hY`cf][ ]bU`hYI hcf]XYU`k ]h`ci hUW\_bck`YX[ ]b[ `hY`  
gci fW`cf`i g]b[ `ei chU]cb`a Uf\_g`"H\]g`U`gc`Udd`]Yg`hc`]a U[ YgZ`UfhUbX`XYg][ b`dfc`YWgZ`Ug`k Y`Ug  
dfYgYbhU]cbg`k \YfY`gca YcbY`dfYgYbh]g`UbchYf`g`]XYUg`cf`k cfXg`k ]h`ci hWYX]h`

hUddfcdf]UHY`dUfUd`fUg]b[ .`7`U`b[ ]b[ `U`ZYk`k cfXg`UbX`d`fUgYg`k`Y`a cghmiFYhU]b]b[ `hY`cf][ ]bU`  
ghfi W`i fY`UbX`#`f`dfc[ fYgg]cb`cZ]XYUg`cZ`hY`cf][ ]bU`Z`UbX`]bZcfa U]cb`k ]h`ci hUW\_bck`YX[ Ya Ybh`H\]g`U`gc  
Udd`]Yg`]b`dfYgYbhU]cbg`k \YfY`gca YcbY`dUfUd`fUgYg`UbchYf`g`]XYUg`cf`k cfXg`k ]h`ci hWYX]hU`bX`hc  
d]YW]b[ `hc[ YhYf`ei chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk`k \c`Yz`k ]h`ci hUddfcdf]UHY`fYZYfYbW]b[ "

7 c`i g]cb.`k cf\_]b[ `k ]h`chYfg`Vi hdUgg]b[ `cZ`hY`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`UbchYf`gh`XYbhVYZc`fY`hY`Xi Y`XUHY`Zc`f`Zc`hY`di fdcgY`cZ`hY`a

- i bXYfghUbx'mci f'f][ \hg'UbX'fYgdcbg]V]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[ ]Uf]ga ž'Wc'dmf][ \hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5W'W'dhUV'Y'I gY'cZ I BGK '⇒H'F'Ygci f'W'g'Dc`]W'h
- VY'Uk UfY'cZ'Y'ghUbxUfXg'cZVY\Uj ]ci f'YI dY'W'X'cZYj Yfmcby`]b'h'Y'I BGK 'W'a a i b]m
- `cW'W'h'gYfj ]W'g'UbX'j]bZ'fa U]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZ'Y'gY'UfY'Ug'k ]`VY'ZJa ]]Uf'hc'mci ž'c'h'Y'fg'k ]`VY'bYk " "; U]b]b[ 'U'gc`]X'i bXYfghUbx]b[ 'cZU`'h'Y fY'U'Y'X'UgdY'W'g'cZ9@-G9'k ]`'Y'd'mci 'a U\_Y'h'Y'a cgh'cZ'mci f'gh X]Yg'Uhl BGK ""

[\h'hd.##gi V'Y'W'i \]X'Y'g"\]VfUfm'i bgk "Y'X'i "U'i #' \]g'Y#\]V'ci h' \]g'Y](#)

5 WUXYa ]WbZcfa Uhcb`

: cfYggYbhU`ghi XYbh]bZcfa Uhcb`fY`Uh]b[ `hc.

- fYei Yghg`ZcfYI hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I BGK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua ]bUh]cb`dfcVWXi fYg/
- gdYWU`Vcbg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a ]gUXj Ybh fY/
- ghi XYbhYei ]hmUbX`X]gUV`]`hm/
- UbX`chYfYggYbh]U`UWUXYa ]W]bZcfa Uh]cbz`gYY

[\hhdg.#k k k "Ufng"i bgk "YXi "Ui #W ffYbhghi XYbh\]bZcfa Uhcb`dfcVcbg`\[ i \]XY`\]bYg#](#)

⇒ U[ Y`7 fYX]h

GmbYf[ ]Yg`]b`Gci bX`&\$%\*`

7F ⇒ CG

7F ⇒ CG`Dfcj ]XYf`7 cXY. '\$\$\$- , ;