



# ARTS1453

ϰhfcXi Wc fm7 \]bYgY `Zcf'6UW\_[ fci bX'GdYU\_Yfg'6

HYfa `H\fYY`##`&\$&\$

7 ci fgY`Cj Yfj ]Yk

GHJZZ`7cbHJW`8YHJ]`g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cW]h]cb	D\cbY
DUb`K Ub[	DUb`k Ub[ 4 i bgk "YXi "Ui	6mUddc]bħa Ybh	@&žF `&( * A cfj Yb`6fck b	\$&`-' , ) &' (-

@YW`i fYfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cW]h]cb	D\cbY
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Hi ħcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cW]h]cb	D\cbY
M]b[ `]`Gi b	M]b[ `]`gi b4 i bgk "YXi "Ui	6mUddc]bħa Ybh	@&žF `& ) A cfj Yb`6fck b	\$&`-' , ) &*( \$
L ]Uck Y]`N\Ub[	] ]Uck Y]`n\Ub[ &4 i bgk "YXi "Ui	6mUddc]bħa Ybh	@&žF `&%\$ž A cfj Yb`6fck b	

GW`cc``7cbHJW`i`bZcfa Uh]cb

GW`cc``cZ<i a Ub]h]Yg`UbX`@Ub[ i U[ Yg

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

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

D\cbY. `ž\*%&`-' , ) `\* , %

: U! . ž\*%&`-' , ) ` , +\$)

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

7ci fgY'8YHJ]`g

7fYX]hDc]bHg`\*`

Gi a a UfmicZ`h`Y'7ci fgY

H\]g'7\]bYgY`Ub[ i U[ Y`Wci fgY ]g`XYg][ bYX`Zc'f'7\]bYgY`VUW\_[ fci bX`gdYU`Yfg`k \c`\Uj Y`UWci ]fYX`gci bX`\_bck`YX[ Y`Zca`h`Y`dfYj ]ci g`]bfcXi`Wc`fm`Wci fgY`5F`HG%() &`cf`k \c`dcggYgg`Wca`dUfUV`Y`dfcZ`WY`bWm]b`7\]bYgY`"7`cb]bi`]b[ `h`Y`dfY`W`X]b[ `k`cf`\_`z`h`Y`dfY`g`Y`bh`Wci fgY`Z`f`h`Y`f`X`Yj`Y`cdg`mci`f`Zci`f`Ub[ i U[ Y`g\_]`g`f]`Y`" ]g`h`b]b[ `z`gdYU\_]b[ `z`fYUX]b[ `UbX`k`f]h]b[ `E`]b`Ub`]b`h`[ fU`h`X`a`U`bb`Y`F`" `h]b`f`c`X`i`W`g`mci`h`c`U`dd`f`c`l`]a`U`h`m`' ) \$`j`c`W`U`V`i`U`f`m`k`c`f`X`g`z`U`c`b`[ `k`]h`h`Y`U`gg`c`W`U`h`X`g`c`W`]c`W`h`f`U`Ub`X`]b[ i ]g`h`W`U`k`U`f`Y`b`Y`g`g`]b`X`U`m`h`c`!`X`U`m`h`c`d`]V`g`z`gi`W`X`U`g`h`U`\_]b[ `U`V`ci`h`h`Y`k`Y`U`h`Y`f`z`g`Y`Y]b[ `U`X`c`W`c`f`z`f`Y`b`h]b[ `U`d`U`W`h`c`"]j`Y`Ub`X`d`f`Y`d`U`f]b[ `Z`c`f`f`U`j`Y`"

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

%`I`b`X`Y`f`g`h`U`b`X`U`b`X`i`g`Y`U`dd`f`c`l`]a`U`h`m`' ) \$`Y`g`g`Y`b`h`U`j`c`W`U`V`i`U`f`m`]h`Y`a`g`"  
&"`5`d`d`m`h`h`Y`Z`ci`f`Ub[ i U[ Y`g\_]`g`]b`7\]bYgY`f]`Y`" ]g`h`b]b[ `z`gdYU\_]b[ `z`fYUX]b[ `UbX`k`f]h]b[ `E`U`h`i`d`d`Y`f`\_`]b`f`c`X`i`W`c`f`m`Y`j`Y`z`h`U`\_]b[ `]b`h`c`U`W`W`ci`b`h`g`h`X`Y`b`h`g`f`h`Y`f]h]U[ Y`V`U`W`\_]f`c`i`b`X`"  
'`" `7`c`a`a`i`b`]W`U`h`Y`Z`]W`Y`b`h`m]b`7\]bYgY`c`b`h`c`d`]V`g`gi`W`X`U`g`h`U`\_]b[ `U`V`ci`h`h`Y`k`Y`U`h`Y`f`z`g`Y`Y]b[ `U`X`c`W`c`f`U`b`X`d`f`Y`d`U`f]b[ `Z`c`f`f`U`j`Y`z`]b`V`c`h`c`f`U`Ub`X`k`f]h]b`Z`c`f`a`g`z`]b`U`"]b[ i ]g`h`W`U`m`U`b`X`g`c`W`]c`W`h`f`U`m`U`dd`f`c`d`f]U`h`Y`a`U`bb`Y`F`"  
( "`5`d`d`m]b`X`Y`d`Y`b`X`Y`b`h`Y`U`f]b[ `g`h`f`U`h`[ ]Y`g`h`c`]b`W`Y`U`g`Y`7\]bYgY`d`f`c`Z`W`Y`b`W`m`V`Y`m`c`b`X`h`h`Y`W`U`g`g`f`c`c`a`"

HYUWX]b[ `G`h`f`U`h`[ ]Y`g`

h`h`g`"Ub[ i U[ Y`Wci fgY`z`mci`k`]"`V`Y`f`Y`ei`]f`Y`X`h`c`U`h`Y`b`X`"Y`W`h`f`Y`g`U`b`X`h`h`c`f]U`g`Y`U`W`k`Y`Y`\_"`H`h`Y`"Y`W`h`f`Y`g`k`]"`W`c`j`Y`f`b`Y`k`]c`W`U`V`i`U`f`m`z`[ fU`a`a`U`h`W`"d`c]b`h`g`U`b`X`W`h`f`U`" ]h`f`U`W`h`W`b`h`Y`X`c`b`h`h`Y`k`Y`Y`\_"m`h`c`d`]V`g`"H`h`Y`h`h`c`f]U`g`k`]"`V`Y`X`Y`X`]W`U`h`Y`X`h`c`Y`b`U`b`W`]b[ `mci`f`" ]g`h`b]b[ `z`gdYU\_]b[ `z`fYUX]b[ `UbX`k`f]h]b[ `g\_]`g`" `h`c`f`X`Y`f`h`c`c`V`h]b`U`g`U`h]g`Z`U`W`c`f`m`Y`U`f]b[ `f`Y`gi`h`z`mci`k`]"`V`Y`Y`l`d`Y`W`h`X`h`c`g`d`Y`b`X`" ` \`ci`fg`ci`h`g]X`Y`c`Z`h`Y`W`U`g`g`f`c`c`a`h`c`f`Y`j`Y`k`Y`U`W`"Y`g`g`c`b`U`b`X`W`c`a`d`Y`h`h`h`Y`k`c`f`\_`V`c`c`\_`Y`l`Y`f`W]g`Y`g`Y`U`W`k`Y`Y`\_"`

5g`Z`c`f`d`f`U`W`]W`h`U`W`]b[ `z`V`c`h`h`h`Y`g`h`i`W`h`f`U`"a`Y`h`c`X`U`b`X`W`c`a`a`i`b`]W`U`h]Y`a`Y`h`c`X`k`]"`V`Y`U`dd`]Y`X`]b`h`Y`W`c`i`fg`" `h`Y`U`W`"Y`g`g`c`b`z`mci`k`]"`i`gi`U`m`V`Y`[ ]b`k`]h`j`c`W`U`V`i`U`f`m`U`b`X`g`h`i`W`h`f`U`"d`f`U`W`]W`z`Z`c`k`Y`X`V`m`h`U`g`!`V`U`g`Y`X`"Y`U`f]b[ `U`W`]j`]h`Y`g`"5`g`h`h`Y`W`c`f`h]g`V`U`W`\_]f`c`i`b`X`"Ub[ i U[ Y`"Y`U`f`b`Y`f`g`z`U`gi`V`g`h`U`b`h]U`"U`a`ci`b`h`c`Z`W`U`g`g`k`]"`V`Y`W`c`b`X`i`W`h`X`]b`7\]bYgY`"H`h`Y`h`U`W`]b[ `g`h`U`Z`k`]"`U`X`g`h`h`Y`U`a`ci`b`h`c`Z`9`b[ ]g`h`U`b`X`7\]bYgY`i`g`Y`X`U`W`c`f`X]b[ `h`c`mci`f`Z`Y`X`V`U`W`\_`U`b`X`b`Y`Y`X`g`"

## 5ggYgga Ybh

8YHU]YX`]bghfi W]cbg`Zc`YUWX`UggYgga YbhiUg\_k ]`VY`i d`cUXYX`hc`A ccX`Y`"F YZf`hc`UggYgga YbhVf]YZ`

### 5ggYgga YbhiUg\_g`

5ggYgga YbhiUg_	K Y][ \h	8i Y`8UH`	Gh XYbh@YUfb]b[ Ci hWta Yg`5ggYggYX
F c`Y`d`Um	&\$	k YY_`(`	%ž&ž ž{
h!WUgg`Wta dcg]hcb`	&)	k YY_`+`	%ž&ž ž{
F YUX`U`ci X`	%)	k YY_`%\$`	

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

5ggYgga Ybh' . 'F YUX'U'ci X

GHUfhXUHY . 'k YY\_ '%\$

8YHU]`g.

Gh XYbfg'UFY'[ ]j Yb'' 'a ]bi h'g'hc'fYUX'U'7 \]bYgY'dUggU[ Y'fUddfcI ""' ) \$'7 \]bYgY'WXUfUWYfgL'H\Y'hUg\_  
YI Ua ]bYg'ghi XYbfg''UV]']mhc'fYVc[ b]gY'hY''YUfbh7 \]bYgY'WXUfUWYfgZ'hLY]f'']h'fUWm'Yj Y''UbX'cfU'  
Wc'a a i b]WU]cb'g\_]`g"

Gh XYbfg'k ]`VY'[ ]j Yb']bgfUbhcfU'ZYXVUW\_Zcf'hY'UggYgga Ybh'

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

5ggYgga Ybh(. : ]bU'9I Ua

GHUfhXUHY . : cfa U'YI Ua 'dYf]cX

@Yb[ h. '&\ci fg

8YHU]`g.

H\Y'Z]bU'YI Ua ]g'Wc'a dfY\Ybg]j Y''#iUggYggYg'ghi XYbfg'']gh'Yb]b[ Z'fYUX]b[ 'UbX'k f]h]b[ 'g\_]`g'Wc] YfYX  
h.fci [ \ci h'hY'h'fa "'H\]g]g'hY'Z]bU'UggYgga YbhZcf'UfhYbXUbW' di fdcgYg"

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



K YY_%. %* 'Bcj Ya VYf!	@YWh fy	@Yggcb '&\$'5h\Y'5]fdcfh'J UWVvi `Ufnž[ fUa a Uf'UbX
&\$'Bcj Ya VYf		

## F Ygci fWg

### DfYgWf]VYX`F Ygci fWg`

- ~~hY~~[ fUHx`7\]bYgYžJc`i a Y`&ž( h`9X]h]cbžHYI hVcc\_`f&\$%+ŁfG]a d`]ZYX`7\]bYgY`j Yfg]cb`]g dfYgW]VYX/mci`UfY`k Y`VŁa Y`h`i`gY`HfUX]h]cbU`cbY`h`ci [ \`Ł
- ~~hY~~[ fUHx`7\]bYgYžJc`i a Y`&ž( h`9X]h]cbžK cf\_Vcc\_`f&\$%+ŁfG]a d`]ZYX`7\]bYgY`j Yfg]cb`]g dfYgW]VYX/mci`UfY`k Y`VŁa Y`h`i`gY`HfUX]h]cbU`cbY`h`ci [ \`Ł
- ~~hY~~[ fUHx`7\]bYgYžJc`i a Y`&ž( h`9X]h]cbž7\UfUWYf`K cf\_Vcc\_`f&\$%+ŁfC dh]cbU`Ł

H\Y`hYI hVcc\_`g\UVcj Y`UfY`Uj U]UV`Y`]b`I BGK`´6cc\_`g\cd`UbX`5a Uncb`5I`"

### F YWŁa a YbXYX`F Ygci fWg

- A cv]`Y`5ddg
  - K f]hYb`7\]bYgY`  
8]W]cbUfm`h`tdg.##]h bYg"Udd`Y"VŁa #Uj #Udd#k f]hYb!W]bYgY!  
X]W]cbUfm#X, \*, (, ') , - 3a hI,  
f\UbXmZcf`WXYW\_]b[ `glfc\_`Y`cfXYfgŁ



YbWci fU[ YX'hc'Z]'ci h'Y'A n9I dYf]YbW'gi fj YmfUbcba ci g'UbX'i b]] Yfg]m'k ]XYE'hc'Yj U'i UH  
h'Y]f'h'UW]b[ 'UbX''YUfb]b[ 'YI dYf]YbW'g''6ch'cfU'UbX'k f]h'Y'b'Z'YXVUW\_ Z'ca' gh'XYb'k ]''VY'i gYX'hc  
Z f'h'Yf''a d'fcj Y'h'Y'Wci fgY''

Gi Va ]gg]cb 'cZ5ggYgga YbhiHUg\_g

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

Ʒmci 'YbWci bHYf'U'dfcV'Ya 'k \Yb'UH'Ya dh]b[ 'hc'gi Va ]hmc i f'Ugg][ ba YbhiH'fci [ \ 'Hi fb]h]bž'd'YUgY  
HY'Yd\cbY'9I HYfbU'Gi ddcfhcb'-', ) " ' ' %cf'Ya U] 'H'Ya 'cb'YI HYfbU'HY'fgi 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'mYUfI" Ʒmci  
UfY'i bUV'Y'hc'gi Va ]hmc i f'Ugg][ ba YbhiXi Y'hc'U'Zi 'hk ]H'Hi fb]h]b'mci 'a UmUdd'm'Zc'f'Ub'YI HYbg]cbž'Vi hmc i  
a i ghfYHU]b'mci f'h]W\_Yhbi a VYf'Z'ca '9I HYfbU'Gi ddcfhfU'cb[ 'k ]H'UbmcH'Yf'fY'Yj UbhXcW a YbHgE'hc  
]bWi XY'Ug'Yj ]XYbVW'hc'gi ddcfhmc i f'YI HYbg]cb'Udd'jW]h]cb" Ʒmci 'Ya U] '9I HYfbU'Gi ddcfhmc i 'k ]  
Ui 'ca UH]WU'm'fYW]j Y'U'h]W\_Yhbi a VYfž'Vi h]Zmci 'HY'Yd\cbY'mci 'k ]'b'YX'hc'gdYW]Z]WU'mUg\_ 'Zc'f'cbY"  
Hi fb]h]b 'U'gc'dfcj ]XYg'i dXUH'g'cb'H'Y]f'gmgh'Ya 'ghU'hi g'cb'Hk ]HYf"

; YbYfU'mž'UggYgga YbhiHUg\_g'a i ghVY'gi Va ]HYX'Y'YW'fcb]WU'mj ]U'Y]H'Yf'Hi fb]h]b'cf'U'A ccX'Y  
Ugg][ ba YbH' 'b]bgHUbVW'g'k \YfY'H'g ]g'bc'hd'cgg]V'Yž'hk ]'VY'gh'UH'X'cb'mci f'Wci fgY'g'A ccX'Y'g]HY'k ]H  
U'HYfbUH] Y'gi Va ]gg]cb'XYHU]g"

: cf]bZ'fa UH]cb'cb'\ck 'hc'gi Va ]hUgg][ ba YbHg'cb]bYj ]U'A ccX'Y. \h'hdg.#gh XYbH'i bgk "YXi "Ui #ck!  
gi Va ]hUgg][ ba YbH'a ccX'Y

## 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]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]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[ ]Uf]ga ž'Wc'dmf][ \hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5Ww'dhUV'Y'I gY'cZ I BGK '⇒H'F Ygci fW'g'Dc`]Wm
- VY'Uk UfY'cZh'Y'ghUbxUfXg'cZVY\Uj ]ci f'YI dYW'X'cZYj Yfmcby'j]b'h'Y'I BGK 'Wc'a a i b]m
- `cWJh'gYfj ]W'g'UbX'j]bZcfa Uh]cb'UVci hl 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 bXYfghUbx]b[ 'cZU`h'Y fY'UH'X'UgdYW'g'cZ9@G9'k ]`Y'd'mci 'a U\_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\hhd.##ji V'YW'i \]XYg" \]VfUfm'i bgk "YXi "Ui #' \]gY#JVci h' \]gY](#)

