



# ARTS1092

K cf\_]b[ 'k ]h '8UHJ

HYfa 'Hk c''##'&\$%-

GWXcc``cZHAY'5ftg'UbX'A YXJU''# 'I BGK ``5ftg'UbX'GcWJU``GWYbWg

7 ci fgY`Cj Yfj ]Yk

`GHUZZ7cbhUWhi8YHJ`g`

`7cbj Ybcfg`

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWjhcb	D\cbY
@i ][]8]A Ufhjbc	"X]a Ufhjbc4 i bgk "YXi "Ui			

7 ci fgY'8YHJ]`g

7 fYX]hDc]bhtg`\*`

Gi a a UfmicZ\hY'7 ci fgY

8 UHU'UbX']hg`f\Yfcf]WUFY'U`Ufci bX'i`g" H\Y'k Umg']b'k \]W\k`Y`ja U[ ]bY'XUHU'Ug`k`Y`Ug`h`Y'XUHU'cV`Y`Wg`  
h`Ya`g`Y`j`Yg`\Uj`Y`U`dfcZci bX']a dUW`icb`h`Y`k`Umg']b'k \]W\h`Y`k`cfX']g`cf[ Ub]gYXZ`\ck`fYgci fW`g`UfY`  
X]ghf]Vi`h`XZ`\ck`k`Y`i`bXYfg`h`UbX`fYW`bhYj`Ybhtg`UbX`k`U`h`k`Y`W`e`a`Y`h`c`\_`bck`Ug`"ZUW`j`Yfgi`g`a`YfY`  
"cd]b]cb""`b`h`l`g`W`e`i`fgY`mci`k`j`"YUfb`h`c`V`c`h`d`f`c`X`i`W`U`b`X`W`f]h`W`m`U`b`U`mg`Y`X`U`H`U`c`V`Y`W`g`" `b`U`X`X`h`c`b`h`c`  
dfUW`h]W]b[ `X`U`H`U`Y`I`f`U`W`h]cbZ`U`b`U`mg]g`U`b`X`j`]gi`U`]g`U`h]cbZ`mci`k`j`"YUfb`\ck`h`c`Y`j`U`i`U`h`Y`h`Y`a`i`h`d`Y`  
Y`I`U`a`d`Y`g`c`Z`X`U`H`U`h`U`h`mci`Y`b`W`e`i`b`h`Y`f`"j`b`h`Y`k`j`X`" `X`U`H`U`h`U`h`U`f`Y`i`g`Y`X`V`m`h`Y`a`Y`X]U`Z`V`m[ `c`j`Y`f`b`a`Y`b`h`g`U`b`X`  
W]j`]`g`c`W`Y`h`m`h`c`Y`I`d`U]b`U`b`X`c`f[ Ub]gY`h`Y`k`cfX`U`f`c`i`b`X`mci`" `6`m`h`Y`Y`b`X`c`Z`h`Y`W`e`i`fgY`Z`mci`k`j`"\Uj`Y`[ `U]b`Y`X`  
U`g`c`X`]b`h`c`X`i`W`f]c`b`h`c`h`Y`d`f`c`W`gg`Y`g`]b`j`c`j`Y`X`]b`k`cf\_]b[ `k`j`h`X`U`H`U`b`X`U`b`U`V`]m`h`c`f`Y`Z`Y`W`h`c`b`W`f`f`Y`b`h`  
X`Y`V`U`H`g`U`V`c`i`h`h`Y`]a`d`U`W`h`c`Z`X`U`H`U`c`b`g`c`W`Y`h`m`

7 ci fgY`@YUfb]b[ `C`i`h`W`e`a`Y`g

%` 9`I`f`U`W`h`c`U`b`U`mg`Y`U`b`X`j`]gi`U`]g`Y`X`U`H`U`]b`a`Y`U`b]b[ `Z`i`Z`Y`h`l`W`U`k`U`mg`  
&`" `7`f]h]W`m`Y`j`U`i`U`h`Y`X`U`H`U`c`V`Y`W`g`  
'`" `F`Y`Z`Y`W`h`c`b`W`f`f`Y`b`h`X`Y`V`U`H`g`U`V`c`i`h`h`Y`]a`d`U`W`h`c`Z`X`U`H`U`c`b`g`c`W`Y`h`m`

HYUW\]b[ `G`h`f`U`h`Y`[ ]Y`g`

H\Y`Z`c`W`g`c`Z`h`g`W`e`i`fgY`]g`c`b`Y`e`i`]dd]b[ `mci`k`j`h`h`Y`g\_]`g`h`c`V`c`h`d`f`c`X`i`W`U`b`X`W`f]h`W`m`U`b`U`mg`Y`X`U`H`  
c`V`Y`W`g`" `Mci`k`j`" [ `U]b`\U`b`X`g`c`b`Y`I`d`Y`f]Y`b`W`c`Z`k`cf\_]b[ `k`j`h`X`U`H`U`]b`h`Y`d`f`c`W`gg`c`Z`X`U`H`U`Y`I`f`U`W`h]cbZ`  
U`b`U`mg]g`U`b`X`j`]gi`U`]g`U`h]cbZ`U`g`k`Y`U`g`U`W`e`i`]f]b[ `h`Y`g\_]`g`b`Y`W`gg`U`f`m`h`c`W`f]h]W`m`Y`j`U`i`U`h`Y`X`U`H`U`c`V`Y`W`g`U`b`X`  
f`Y`Z`Y`W`h`c`b`W`f`f`Y`b`h`X`Y`V`U`H`g`U`V`c`i`h`h`Y`]a`d`U`W`h`c`Z`X`U`H`U`c`b`g`c`W`Y`h`m`H\Y`g`h`f`i`W`h`f`Y`c`Z`h`Y`W`e`i`fgY`f`Y`e`i`]f`Y`g`h`U`h`  
mci`U`f`Y`U`W`h]j`Y`m`Y`b[ `U[ `Y`X`]b`V`c`h`Y`W`h`f`Y`g`U`b`X`h`h`c`f]U`g`g]b`W`mci`f`d`f`c[ `f`Y`g`g`k`j`h`V`c`h`h`Y`c`f`m`U`b`X`d`f`U`W`h]W`  
Y`U`W`k`Y`Y`\_]g`U`b`Y`g`g`Y`b`h]U`W`e`a`d`c`b`Y`b`h`c`Z`mci`f`U`g`g`Y`g`g`a`Y`b`h`g`"

## 5ggYgga Ybh

H\YfY'UfY'fk c'UggYgga YbhiUg\_g'fc'Wca d'YH''Mci 'a i ghWca d'YH'UbX'\UbX'']b'Vch'Ug\_g']b'cfXYf'fc  
dUgg'h\]g'Wci fgY''H\]g'a YUbg'h\Uhmci 'k ]''ZU]' ]Zmci 'Xc'bc'h\UbX'']b'cbY'Ug\_Yj Yb ]Zmci '\Uj Y'U'hcU'  
[ fUXY'cZcj Yf') \$'Zca 'hY'c'hYf'Ugg][ ba Ybh'  
GYY'hY'Wci fgY'k YVg]h'cb'A ccX'Y'Zcf'Z ''Ugg][ ba YbhiUg\_'XYgW]dh]cbgža Uf\_]b[ 'W]hYf]U'UbX'gi Va ]gg]cb  
]bghfi W]cbg"

## 5ggYgga YbhiUg\_g'

5ggYgga YbhiUg_			

D`YUgY'gYY`A ccX`Y`Zcf`Z ``UggYgga YbhXYgW]dh]cb"

Hi fb]hb'gYhb[ . 'H\]g'Ugg][ ba Ybh]g'gi Va ]mX'h\fc i [ \ 'Hi fb]hb'UbX'gh XYbhg`Wb'gYY`Hi fb]hb'g)a ]'Uf]m  
fYdcfg"

5 HbXUbW F Yei ]fYa Ybhg

5 YW fYg ]b h]g Wci fgy Ufy cb ]bY"

Gh X]c fhi hcf]U E WUgg UHbXUbW ]g Wca di `gcfm]b`k YY\_g`, ž- UbX`%\$ Ug`mci `k ]`VY Wca d`Yh]b[ `UW]j ]hYg ]b`dFYdUfU]cb`Zcf`hY`UggYgga Ybh`Gh XYbhg`Ufy`YI dYWYX`hc`UhbX`U`chYf`k YY\_g`fYI W`dhZcf`hY`F YUX]b[ `K YY\_]b`k YY\_`\*E`H\YgY`]b!WUgg`UW]j ]hYg`k ]`Y`d`mci `hc`Uhb]b`U`h`fY`Wci fgy`YUfb]b[ ci`hWca`Yg`I bYI W`gYX`UVgYbW`Zca`a`cfY`h`Ub`, \$i`cZGh`X]c`WUggYg`k ]`fYgi`h]b`hY`Uk`UfX`U`Z]`[`fUXY`"

7 ci fgY`GW`YXi`Y`

[J \]Yk`WUgg`ha`YhUV`Y`](#)

H]a`YhUV`Y`

8UH	HmdY	7cbhYbh
K YY_%`" `>i bY!`+>i bY`	@YWh`fY`	hfcXi`W]cb`-`8UH`UbX`j`]gi`U`]gU]cbg`
	Gh`X]c`	7`l`ccg]b[`h`Y`a`cghUddfcdf]U]Y`j`]gi`U`]gU]cb`
K YY_&`%\$>i bY!`%(`>i bY`	@YWh`fY`	A`Yh`cXg`Zcf`UbX`]a`d`]W]h]cbg`cZ[`U]h`Yf]b[`XU]U`
	Gh`X]c`	8UH`YI`fUW]cb.`Hk`]hYf`
K YY_`"`. `%>i bY!`&%`>i bY`	@YWh`fY`	H\Y`]a`dUW]cZXU]U`cb`gc`W]Ym`XYW]g]cb`a`U_]b[`UbX`_bck`YX[`Y`dfcXi`W]cb`
	Gh`X]c`	8UH`YI`fUW]cb.`:`UW`Vcc`_dU[`Yg`UbX`;`cc[`Y`BYk`g`
K YY_(`.`&(`>i bY!`&`,`>i bY`	@YWh`fY`	6][`8UH`9h`]W]Z`Df]j`UW]z`UbX`Gi`fj`Y`]UbW`
	Gh`X]c`	K`cf_]b[`k`]h`9I`W`UbX`a`Ubi`U`W`X]b[`
K YY_)`. `%>i`m!`)`>i`m`	@YWh`fY`	?Ymia`Yh]W]i`gYX`Zcf`UbU`mg]b[`Hk`]hYf`
	Gh`X]c`	K`cf_]b[`k`]h`HUV`YUi`
	5ggYgga`Ybh`	9ggUmXi`Y`h`]g`k`YY_`"
K YY_*`"`,`>i`m!`%&>i`m`	F`YUX]b[`	F`YUX]b[`K`YY_!`Bc`@YWh`fYz`Bc`Gh`X]c`7`UggYg`
K YY_+`. %)`>i`m!`%`>i`m`	@YWh`fY`	J`]gi`U`]g]b[`B`Y]k`cf_g!`hfcXi`W]cb`hc`hY`DcfhZ`]c`
	Gh`X]c`	K`cf_]b[`k`]h`;`Yd\`]
K YY_`,`&&>i`m!`&*>i`m`	@YWh`fY`	7`fYU]h`mci`fj`]gi`U`]gU]cb!`hfcXi`W]cb`hc`hY`DcfhZ`]c`
	Gh`X]c`	K`cf_]cb`mci`f`dcfhZ`]c`
K YY_`-`. &-`>i`m!`&`5i`[`i`gh`	@YWh`fY`	@YUfb]b[`Zca`dfUW]W]g`
	Gh`X]c`	K`cf_]cb`mci`f`dcfhZ`]c`
K YY_%\$.)`5i`[`i`gh!`-`5i`[`i`gh`	@YWh`fY`	Gi`a`!i`d.`K`cf_]b[`k`]h`XU]U`]g`U`k`Um]g`U`YUfb]b[`dfcW]gg`
	Gh`X]c`	;`Yh]b[`fYUXmZcf`gi`Va`]h]b[`mci`f`DcfhZ`]c`
	5ggYgga`Ybh`	DcfhZ`]c`Xi`Y`h`]g`k`YY_`"

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

5`k YY\_mfYUX]b[ g`UbX`cH`Yf`Wci fgY`WcbH`bhk ]`VY`Uj U]UV`Y`j ]U`hY`Wci fgY`k YVg]H`cb`A ccX`Y"

F YWca a YbXYX`F Ygci fWg

H\Y`I BGK `@]VfUfm\Ug`a Ubmi gYZ`fYgci fWg`cb`XUH`UbX`j ]gi U`]gUh]cbgZ`Zcf`YI Ua d`Y.

5W\UfmUz`G"/`7\Y`UddUbz`G"z&\$%+"`Bda FST`MSg , 3 E fWbZTkZE fWb 9g[VWz`6Yf`\_Y`mz`75.`5dfYgg"

6i f[ Yggz`>`zA Ufk ]Wz`5"9"z/`DcY`zH" f&\$%+L`FZWE 39 7 ZS` VTaa ] aXeaU[S^`\_ W[Sz@cg`5b[ Y`Yg.`G5; 9"

; UHcZA`"5" f&\$%) L`? S] [ Y dWdSDJZ geWg^; 5gdW fUZS`W YWc S` V YaaV bdUf[UWc [ VSfS h[egS`feSfa`" CI ZcfX. F Yi Hfg`bgh]h H`XadfZWE fgVk aX<agd` S`e\_ z

? bUZ]Wz`7"B`z&\$%)`"E fackfWf` Y i [fZ VSfS, 3 VSfS h[egS`l Sfa` Yg[VWXdTge[ Wce bda`Wceja` S`ez <cVc`\_YbzBYk`>YfgYm`K ]Ym`

B [ i nYbz`5"z&\$%`"@W`el`g`\_ TWc S` V bgT`U ab[ [a` [ S VSfS`Zdhw` i adVzBYk`Mcf`zBM`6`cca gVi fm 5WUXYa ]W`

G`cUbz`@z&\$%+"`FZWE 39 7 ZS` VTaa ] aXeaU[S^`\_ W[S dWdSDJZ`\_ WZaVež@cbXcb.`G5; 9"

K Y`Yfz`?`z6fi bgz`5"z6i f[ Yggz`>`zA U\fzA`z/`Di gWxa Ubbz`7" f&\$%(L`Fi [ffWdS`V eaU[WkzBYk`Mcf`\_ DYHf`@Ub[ "

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

H\]g`Wci fgY`]g`XY`j YfYX`Zcf`hY`Zfgh]a Y`]b`&\$%`"D`YUgY`Wca d`YH`mci f`a m9I dYf]YbW`gi fj YmiUh`hY`YbX cZhf`a`tc`\Y`d`i`g`XYj Y`cd`hY`Wci fgY`Zcf`Z`h`fY`gh`XYbhg"

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`H`Ya`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 bYghmUbX`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 gž 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[ Ygž UfhUbX`XYg][ b`dfc`YWgž`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`Ub[ ]b[ `U`ZYk `k cfXg`UbX`d`fUgYg`k \]Y`a cghmifYU]b]b[ `hY`cf][ ]bU`  
ghfi W`i fY`UbX`#`f`dfc[ fYgg]cb`cZ]XYUg`cZ`hY`cf][ ]bU`ž`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`Yž`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`XUHYž`cf`Zc`f`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'Wcdmf][ \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'jb'h'Y'I BGK 'Wca 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](#)

