



ARTS1450

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

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

7ci fgY`Cj Yfj]Yk

GHJZ`7cbHJW`8YHJ]`g

7cbj Ybcfg

7ci fgY'8YHJ]g

7fYX]hDc]bHg '*

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 dcbYbHg'cZ7\]bYgY'Ub[i U[Y.'hY b[k[žUbX'WXUfUWYfg" k]j'fUW'f'ci '\ck'hY'7\]bYgY'Ub[i U[Y'k cf_g'Vch'[fUa a Uh]W'mUbX]b'gcWci'W'hi fU'WcbhY'hg'gc hUhmci'ghUfhc'XYj'Y'cd'mci f'j]b[i]gh]WUbX'Wca a i b]WU]h]j'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]bH[fUH'X'h'fci [\ci h'hY'Wci fgY'"5'W'hi fU'Uk UfYbYgg]g'U'gc'Vi]h]brc'hY'Wci fgY'"H\fci [\]Ub[i U[Y'gh] Xminci 'k]'XYj'Y'cd'Ub]bZcfa YX'i bXYfghUbX]b['cZ 7\]bYgY'Ub[i]gh]WVY\Uj]ci fž'gcWYfmiUbX'W'hi fY'"

H\]g'Wci fgY]g'U'VY[]bbYfg]'Y]Y'Ub[i U[Y'Wci fgY'"5'gh] XYbHg'k \c'\Uj'Y'\UX'gca Y'Yi dYf]YbW'k]h'hY'Ub[i U[YžY]h'Y'Ug'U'\Yf]hU[Y'Ub[i U[Y'cf'h'fci [\d'fYj]ci g]bgrfi W]cbž'a i gh]Z'j]b'hY'd'UW'a Ybh ei Ygh]cbU]fY'Uj]U]UV'Y'Uh'h'fdg.#\U'U'f'f'g'i bkg"YXi "Ui #gh] XYbHg#Wci fgYg#Ub[i U[Y]d'UW'a YbHg"Mc]i 'k]' bchVY'dYfa]hY'X'hc'Ybfc'j]b'U'Ub[i U[Y'Wci fgY'h'Uh]g'hc'c'YUgm]Zc'f'f'ci "'Z'h]g'c'WV'fgž'f'ci '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' &'I'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'YfmXUmdfUWY]W'g]h]U]cbg "' žYb]h]Z'm'U'Ug]WV]h]W' i bXYfghUbX]b['cZUgdYWg'cZ7\]bYgY'Ub[i]gh]WVY\Uj]ci fž'gcWYfmiUbX W'hi fY'"

HYUW]b['GhfUH[]Yg'

@Ub[i U[Y'g]VYghUWci]fYX'h'fci [\U'c'g]h]WUbX]bH'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'hi fU'Wca dcbYbhUfY]bH[fUH'X'h'fci [\ci h'h]g Wci fgY'"H\Y'Ya d\Ug]g]g'cb'hY'f'UbgZcfa Uh]cb'cZ]b[i]gh]Wg_]`g]brc'UW]j'Y'Wca a i b]WU]h]cb'"GdYW]Z]W]bgrfi W]cbg'UbX'dfUW]W'g'dYf]h]bYbh'hc'YUW'g_]`g'XYj'Y'cd'a YbhUfY'k'cj'Yb]brc'hY'YUfb]b['UW]j]h]Ygž U]b]bYX'k]h'hY'UggYgga YbHgž'U_]b[]brc'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 Yh'cXg'UbX'gh]f'W'hi fY'k]h'hY'U]a'g'UbX'YUfb]b['ci hWca Yg'cZ'hY'Wci fgY'"H\Y'Y'W'hi fY'g'f]Y'g'Ug'Ub cj'YfU'Ub]bfcXi W]cb'hc'Vch'Ub[i U[Y'UbX'W'hi fU'UgdYWg'fY'Yj'Ubh'hc'YUW'WX'Ud'h'f'"H\Y'hi hc]f]U'g'Zc'W'g cb'hY'j]bH[fUH'X'Ub[i U[Y'g_]`g'h'fci [\U]j'Uf]YfmcZYI'YfW]gYg'"5'hY'UggYgga YbHgž]bW]X]b['WUgg UW]j]h]Yg'UbX'[fci d]bH'fUW]j'Y'dfc'Y'Wgž'UfY'gYh'hc'Yb[U[Y'gh] XYbHg]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!]bY'UggYgga YbHg]UfY'U'gc'UXcd'h'X'hc'Wca d'Ya Ybh'hY

5ggYgga Ybh

5`hY`XYHJ]YX`]bZfa Uh]cb`UVci h`hY`UggYgga Ybfg`k`]`VY`dfcj]YX`k`Y``]b`UXj UbW`cb`hY`7ci fgY
A ccX`Y`UbX`]b`WUgg"

5ggYgga YbhHUg_g

5ggYgga YbhHUg_	K Y][\h	8i Y`8UH`	Gh XYbh@YUfb]b[Ci hW`a Yg`5ggYggYX
A]X!hYfa `HYgh	' \$i	J Uf]ci g`fgYY`UXX]h]cbU``]bZc` VY`ck Ł	%ž`&ž`
:]bU`YI Ua`	() i	J Uf]ci g`fgYY`UXX]h]cbU``]bZc` VY`ck Ł	%ž`&ž`
7cb]bi ci g`UggYgga Ybfg`	&) i	J Uf]ci g`fgYY`UXX]h]cbU``]bZc` VY`ck Ł	%ž`&

5ggYgga Ybh8YHJ]`g

5ggYgga Ybh%`A]X!hYfa `HYgh

@Yb[h. `%)`\ci fg

8YHJ]`g.

7ca dfY\Ybg]j Y`Hgh]bW`X]b[`U`gdYU_]b[`W`a dcbYbh`@Yb[h. `&`\ci fg"

Gh XYbfg`[Yh]bX]j]Xi U`a Uf_g/cfU`UbX`k`f]Hb`ZYXVUW`"

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

A]X`hYfa `Hghf] \$i Ł1`&\$i `C b`]bY`k`f]Hb`Hgh`W`j Yf]b[`@Yggcbg`%` fXcbY`]b`K`?`)`@YW`fYŁ`Ž`%\$i
GdYU_]b[`HYghf]C`i`hg]XY`cZWUggYg`"hc`VY`gi Va`]H`X`cb!`]bY`]b`K`?`,`Ł

A cfY`XYHJ]YX`]bZfa Uh]cb`k`]`VY`dfcj]YX`k`Y``]b`UXj UbW`cb`hY`7ci fgY`A`ccX`Y`UbX`]b`WUgg"

5ggYgga Ybh&.`:]bU`YI Ua

8YHJ]`g.

7ca dfY\Ybg]j Y`Hgh]bW`X]b[`U`7ca dcg]h]cb`W`a dcbYbh`@Yb[h. `&`\ci fg"

Gh XYbfg`[Yh]bX]j]Xi U`a Uf_g/ZYXVUW`dfcj]YX`i`dcb`fYei`Ygh`

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

:]bU`YI Ua `f() i `£1" \$i `C b`]bY`k f]Hb`H`ghz`Wcj Yf]b[`@Yggcbg`(!, `fKcbY`Xi f]b[`h`Y`l b]j Yfg]m: cfa U`
9I Ua `DYf]cX£Ž`%\$i `7ca dcg]h]cb`HYghfKcbY`]b`K ?`%\$`@YWi`fY£Ž`) i `l`ad]Taa] Wj WdU[eWe fWYW_YX
Xi f]b[`Hi`hcf]U`g£

A cfY`8YHJ]YX`]bZcfa Uh]cb`k]`VY`dfcj]XYX`k Y``]b`UXj UbW`cb`h`Y`7 ci 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 H`g`YUW£U`bX`U`B[`k[`H`ghfUfci bX`&`a]bi H`g`dYf
gh XYb££"

Gh XYbhg`[Yh]bX]j]Xi U`a Uf_g/cfU`UbX`k f]Hb`ZYXVUW`"

5XX]h]cbU`XYHJ]g.

7cb]bi ci g`UggYgga Ybhg`f&) i `£1`) i `l`(`cb`]bY`ei]nnYg`fci hg]XY`cZWUggYgž`h`VY`gi Va]H`X`cb!`]bY`£Ž
) i `B[`k[`H`ghfKcbY`]b`K ?`" `h`hcf]U`££"

A cfY`XYHJ]YX`]bZcfa Uh]cb`k]`VY`dfcj]XYX`k Y``]b`UXj UbW`cb`h`Y`7 ci 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 `gcfmHYl hVcc_g.

;`fWdSfW 5Z[WeWFWj fTaa] ž@Yj Y`%DUfh%fG]a d`]ZYX`7\UfUWYfg`J Yfg]cbtž (h`9X]h]cb

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

VmHUc!VXi b[`MjC`UbX`M Y\i U`@] žUbX`di V]g\YX`Vm7\Yb[/ Hgi]"ž5j U]UV`Y`Zca`l 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\UfUWYfg`J Yfg]cbtž

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

l BGK`6cc_g\cd"

ChYf`cdh]cbU`fYgci fWg.

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

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

H\]g`5dd`]bWi XYg`8][]hU`HYl hVcc_ž5i X]cžJ]XYcg" #hVcghg`l G8` (' - - `Zcf`U`gi VgW]dh]cb`cZ*`a cbh`g"

ChYf`fYWca a YbXYX`fYgci fWg`UbX`hcc`g`k]`VY`dfcj]XYX`cb`hY`7`ci`fgY`A`ccXY`"

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

H\]g`Wci fgY`k]`VY`Zca U`mYj U`i UHYX`h`fci [\`A`m9l dYf]YbWž`Ug`k Y`Ug`]bZca U`mXi f]b[`hY`
k \c`Y`h`UW]b[`dfcWgg"5bm]ggi Yg`fU]gYX`]b`gh`XYbthgfZYXVUW`k]`VY`UXXfYggYXž`UbX`g`fUHY []Yg

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`Ybhi`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`
HY`Yd`cbY`9I`HYfbU`Gi`ddcfhcb`-`,`)`"``'``%cf`Ya`Uj`h`Ya`cb`YI`HYfbU`HY`hgi`ddcfh4`i`bgk`"YXi`"Ui`"Gi`ddcfh`
`lci`fg`UfY`,`.\$\$Ua`-`-%\$.\$\$da`cb`k`YY`XUmg`UbX`-`.\$\$Ua`-`).\$\$da`cb`k`YY`YbXg`f1`*)`XUmg`U`mY`Uf2`Ʒmci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybhi`Xi`Y`hc`U`Zi`h`k`]h`Hi`fb]h]b`mci`a`UmUdd`m`Zc`f`Ub`YI`HYbg]cb`z`Vi`hmc`i`
a`i`ghf`YhU]b`mci`f`h]W`Yhbi`a`VYf`Z`ca`9I`HYfbU`Gi`ddcfh`f`U`cb[`k`]h`Ubmc`h`Yf`fY`Yj`Ubh`Xc`W`a`Yb`hg`L`hc`
]b`Wi`XY`Ug`Yj`]XYb`V`hc`gi`ddcfhmc`i`f`YI`HYbg]cb`Udd`]W]h]cb`"Ʒmci`Ya`Uj`9I`HYfbU`Gi`ddcfhmc`i`k`j`
Ui`hc`a`U]h]W]m`f`Y`W]j`Y`U`h]W`Yhbi`a`VYf`z`Vi`h]Zmci`HY`Yd`cbY`mci`k`j`b`YYX`hc`gd`Y`W]Z]W]m`Ug`_`Zc`f`cbY`"
Hi`fb]h]b`U`gc`d`fcj`]XYg`i`d`XU`HY`g`cb`h`Y]f`gm`gh`Ya`g`h`U`h`g`cb`Hk`]h`Y`f`"

;`YbYfU`m`z`UggYgga`YbhiUg_g`a`i`gh`VY`gi`Va`]h`Y`X`Y`Y`W`f`cb]W]m`j`]U`Y]h`Y`f`Hi`fb]h]b`cf`U`A`cc`X`Y`
Ugg][`ba`Yb`h`h`b]bg`h`Ub`W`g`k` \Y`fY`h`g`]g`b`ch`d`c`gg]V`Y`z`]h`k`]`V`Y`g`h`U`H`X`cb`mci`f`W`ci`fg`Y`g`A`cc`X`Y`g`]h`k`]h`
U`h`Y`fb`U`h]`Y`gi`Va`]gg]cb`X`Y`hU]`g`"

:`cf`]b`Z`fa`U]h]cb`cb`l`ck`hc`gi`Va`]h`Ugg][`ba`Yb`hg]cb`]b`Y`j`]U`A`cc`X`Y`.`h`h`d`g`#`gh`XYb`h`i`bgk`"YXi`"Ui`#`ck`!
gi`Va`]h`Ugg][`ba`Yb`h`a`cc`X`Y`"

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

D`U[]Uf]ga `]g`i`g]b[`h`Y`k`cfXg`cf`]XYUg`cZc`h`Yfg`UbX`d`fYgYbh]b[`h`Ya`Ug`mci`f`ck`b``#WUb`hU`_`Y`a`Ubm
Zcfa`gZ`Zca`X`Y`]VYfU`h`V`X`Y`U`h]b[`h`c`U`W`Y`X`Y`b`h`U`m`i`W`c`d`m]b[`Z`ca`U`g`ci`f`W`k`]h`ci`h`U`W`b`ck`Y`X[`Ya`Y`b`h`

I`B`G`K` `[`f`ci`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 YbhcZ]`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\]UWUXYa \]W\]bZcfa Uh\]cb#dfchW`g`\[i \]XY`\]bYg#](#)

⇒ U[Y`7 fYX]h

G\i H`Yfg`hW_

7F ⇒ CG

7F ⇒ CG`Dfcj]XYf`7cXY.`\$\$\$- ;

5W_bck `YX[Ya YbhcZ7ci bhfm

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