



ARTS3064

ggi Yg`]b` :]`a` `GmYg`UbX`5Ygh\Yh]Vg

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



GWcc`cZH`Y`5ftg`UbX`A`YX]U`##`I`BGK`..5ftg`UbX`GcW]U`..GWYbWg

7 ci fgY`Cj Yfj]Yk

`GHUZZ7 cbhUWhi8YHU]`g`

`7 cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]]m	@cWU]cb	D\cbY
; Ycf[Y`? ci j Ufcg	["_ci j Ufcg4 i bgk "YXi "Ui	6mUddc]bha Ybh	K YVghYf`F a &\$*	- ' ,) `(, * %

GWcc``7 cbhUWhi`bZcfa Uh]cb

F cca " %&Z`Yj Y`` `F cVYfhiK YVghYf`6i]X]b[

D\cbY.`f\$&L`- ' ,) `(,) *

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

K YVg]hY: [\hfdg.#gUa "Ufng"i bgk "YXi "Ui](#)

H\Y`GWcc``cZhY`5fng`UbX`A YX]U`k ci `X``_Y`hc`F YgdYWz`m5W_bck`YX[Y`hY`HfUX]hcbU``7 i g]cX]Ubgz`
 hY`6YXY[U`fP`Ybg]b[hcb`WUa di gLz; UX][U`f7]mUbX`5fhi`8Yg][b`7 Ua di gYgE`UbX`hY`B [i bbUk U`
 dYcd`Y`fBi glf

%o %o%o%o%o%o%o%o%o%o %o%o %o £\$ %o

7 ci fgY'8YHJ`g

7 fYX]hDc]bhr '*`

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

Gi V`YWh5fYU.'8[E fgV[M6

H\]g`Wci fgY`Wb`U`gc`VY`gh`X]YX`]b`h`Y`Zc`ck`]b[`gdYW]U`]gU]cb.`?`W[S]5`g`fgdWS`V`F`WUZ`a`a`Yk

9I`Ua`]b`Yg`Y`Ya`Ybhr`c`Z`Z`a` `ghmY`Z`Z`c`fa` ž`UbX`UY`gh`Y`h]Wg`h`fci` [`h`Y`gh`XmicZ`dUfh]W`Uf`Z`a` `dfUW]Wg`"
9I`d`c`f`Yg`h`Y`f`Y`U]h]cbg\]dg`V`Y`k`Y`Y`b`Z`a` `]g]h`c`fm]UbX`Z`a` `ghmY`g`UbX`U`X`X`f`Y`g`g`Y`g`h`Y`f`Y`U]h]cbg`V`Y`k`Y`Y`b`
W`h`f`U`UbX`UY`gh`Y`h]W\]g]h`c`f]Y`g`UbX`Z`a` `dfUW]Wg`"8Yj`Y`c`dg`UXj`UbW`X`g_]`g`]b`Z`a` `UbU`mg]g`UbX`d`f`c`j`]X`Y`g`
Ub`i`b`X`Y`f`g`h`UbX]b[`c`Z`g`c`a`Y`c`Z`h`Y`W]h]W`Z`Ua`Y`k`c`f`_g`UbX`a`Y`h`c`X`c`c`[`]Y`g`i`g`Y`X`Z`c`f`Y`I`Ua`]b]b[`ei`Y`g]h]cbg`c`Z`
Z`a` `ghmY`"

7 ci fgY`@YUfb]b[`Ci`h`W`c`a`Yg

%`5`b`U`mg`Y`ck` `ghmY`UbX`UY`gh`Y`h]Wg`W`c`b]f]Vi`h`f`c`j`]Y`k`]b[`Y`I`d`Y`f]Y`b`W`UbX`X]f`Y`W]h]b]h`f`d`f`Y`h]j`Y`
`dfUW]Wg`"
&`9I`d`U]b`h`Y`]a`d`U`W]h]c`Z`W`h`f`U`UbX`]b]g]h]h]h]cbU`]\]g]h`c`fm]cb`Z`a` `ghmY`UbX`UY`gh`Y`h]Wg`"
'`" `I`b`X`Y`f`h]_Y`X`Y`h]Y`X`UbU`mg]g`UbX`]b]h`f`d`f`Y`h]h]cb`c`Z`g`d`Y`W]Z`W]Z`a`g`i`g]b[`a`Y`h`c`X`g`U`d`d`f`c`d`f]U`h]f`c`Z`a`
`gh`X]Y`g`"
(`5`d`d`m`d`\]c`g`c`d`\]W]UbX`W]h]W]a`Y`h`c`X`g`h`c`h`Y`gh`XmicZ]b]X]j`]X`i`U`Z`a`g`UbX`Z`a` `dfUW]Wg`"

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

H\Y`h`Y`U`W\]b[`ghfU`h]`[`m`Y`a`d`c`m`Y`X`]b`h`]g`W`c`i`fgY`f`Y`d`U`W`g`h`Y`h`f`U`X]h]cbU`Y`W]h]f`Y`!`g`W`Y`Y`b]b[`!`h`h`c`f]U`a`c`X`Y`
k`]h`U`g`Y`a`]b`U`f`g]h]f`W]h]f`Y`]b`k`\]W\`gh`X`Y`b]h]b]d`i`h`d`U`mg`U`Z`f`a`c`f`Y`W`b]h]U`f`c`Y`"H\]g`]g`]b`]b]Y`k`]h`h`Y`
[`Y`b`Y`f`U`U]a`c`Z`Y`Y`" `Z`a` `gh`X]Y`g`gi`V`Y`W]g`h`c`d`f`c`a`c`h`Y`U`\][`Y`f`X`Y`[`f`Y`Y`c`Z`gh`X`Y`b]h]Y`X`f`Y`g`Y`U`f`W\`UbX`
X`Y`V`U`h]`c`b`X]g`W]d`]b`Y`!`g`d`Y`W]Z`W`W`c`b`W`d`h]g`"a`a`Y`X]U`h]m]U`Z`Y`f`h`Y`g`W`Y`Y`b]b[`ž`h`Y`W`U`g`g`k`]f`Y`W`c`b]j`Y`b`Y`]b`U`
g`Y`a`]b`U`f`9`Y`W]h]W]X`Y`j`]W]g`gi`W\`U`g`U`d`h`c`d`g`ž]D`U`X`g`UbX`a`c`V]Y`d`l`c`b`Y`g`a`i`gh`V`Y`g`k`]h`W`Y`X`c`Z`X`i`f]b[
g`W`Y`Y`b]b[`g`"

5ggYgga Ybh

H\YfY'UFY'fY'fY'UggYgga YbhHug_g'hc'Wca d'YHY'Zc'f'h'g'Wci fgY''Mci 'a i ghWca d'YHY'UbX'gi Va]hU''fY'fY' Hug_g']b'cfXY'f'hc'dUgg'h'g'Wci fgY''H\]g'a YUbg'hUhmci 'k]''ZU]'Zmci 'Xc'bc'h\UbX']b'cbY'HUg_zYj Yb']Zmci \Uj Y'U'hc'U' [fUXY'cZcj Yf') \$i 'Zca 'hY'c'hY'f'k c'Ugg][ba Ybhg''

Mci 'a i ghUHYbX'U'a]b]a i a 'cZ, \$i 'cZ'h'hc'f]U'g'hc'VY'fY [UFXYX'Ug'\Uj]b['Z'Z'YX'hY'UHYbXUbW' fYei]fYa Ybhg'cZ'hY'Wci fgY''5'fc''k]''VY'fU_Yb']b'hY'h'hc'f]U''

5ggYgga YbhHUG_g'

5ggYgga YbhHUG_g'	K Y][\ h	8i Y'8UH'	Gh XYbh@YUfb]b[Ci hWca Yg'5ggYggYX
h!7`Ugg':]a `5bU`mg]g`HYgh`	')	%&#/\$#&\$%- '\$- . \$\$'5A	%z&Z(
F YgYUfW'9ggUm`) \$	&- #/6/#&\$%- '%% \$\$'DA	%z&Z z(
F YgYUfW'D`Ub`	%)	&&#/#&\$#&\$%- '%% \$\$'DA	&z z(

5ggYgga Ybh8YHJ]`g

5ggYgga Ybh%`h!7`Ugg':]a `5bU`mg]g`HYgh`

GHUfhXUH'. %&#/\$#&\$%- '\$- . \$\$'5A

8YHJ]`g. (' \$'a]bi h'g'd'i g%'\$'a]bi h'g'fYUX]b[#]Yk]b['h]a Y''Gh XYbhg'UFY'g\ck b'U'g\cfh]Z'a `gYei YbW' UbX'i bXYfU_Y'U'WcgY'UbU`mg]g'UbX']bh'fd'fYU]cb'cZ'hY'gYei YbW'XfUk]b['cb'_YmWcbW'dhg]b]f'cXi W'X]b'hY'Wci fgY'fYUX]b[g'UbX''YW'fYg'Gh XYbhg'fYW'] Y'k f]hY'b'ZYXVUW_z'fi Vf]WUbX'bi a Yf]WU' [fUXY''

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

5ggYgga Ybh&. F YgYUfW'9ggUm`

GHUfhXUH'. Bch5dd`]WU'Y

@Yb[h. '&\$\$\$'!&) \$\$'k cfXg

8YHJ]`g. '&\$\$\$'k cfXg''Gh XYbhg'fYW'] Y'k f]hY'b'ZYXVUW'_UbX'bi a Yf]WU' [fUXY''Gh XYbhg'fYW'] Y'k f]hY'b'ZYXVUW_z'fi Vf]WUbX'bi a Yf]WU' [fUXY''H\]g:]g'hY'Z]bU'UggYgga YbhHUG_g''

Hi fb]h]b'gYH]b[. H\]g']Ugg][ba Ybh]g'gi Va]hYX'h'fci [\ 'Hi fb]h]b'UbX'gh XYbhg'Xc'bc'hgYY'Hi fb]h]b' g]a]Uf]mifYdc'f'g''

5ggYgga Ybh' . F YgYUfW'D`Ub`

GHUfhXUH'. Bch5dd`]WU'Y

8YHJ]`g. 'Gh XYbhg'k]''Vf]b['hc'U'Wca di `gc'fmiWcbgi 'h]cb'k]h'hY]f'h'hc'f'U'XYHJ]YX'k f]hY'b'd'Ub'Zc'f'hY'

F YgYUfW 9ggUm]bX]W]h]b['h\Y'YI h'bhicZfYgYUfW 'i bXYfU_Yb'UbX'ghfi Wfi fY'cZh\Y'Uf[i a Ybhd fcdcgYX"
Gh XYbtg'fYW]j Y'U'bi a Yf]W]'[fUXY'UbX'j YfVU'ZYXVUW_"

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

5 hYbXUbW F Ye i]fYa YbHg

Gh XYbHg UFY gHfcb[mYbWci fU[YX'hc UthYbX'U''WUggYg UbX'fYj]Yk ''YWih fY'fYWc fX]b[g"

7 ci fgY'GWXYXi `Y

[J \]Yk WUgg'ha YhUVY](#)

H]a YhUV`Y`

K YY_- . %%Bcj Ya VYf! %) 'Bcj Ya VYf	GWYYb]b[l WdU]_ WefWd: Sd_ a` [Met 6Å`U`Huffž&\$\$ž%() a]log"
	@YWh fy	8YUX`H]a Y
	Hi hcf]U`	F YUX]b[g. `5bXf½g`6½]bh? cj ½gž`7 \UdhYf` (. `H\Y HUFF`GhmY`]b`9j c`i`hcb`UbX`7 \UdhYf` . `B UffU]hcb`]b`h\Y`HUFF: `]a gž`]b`FZW5[`W_ S aX4 `S F Sddf@cbXcb UbX`BYk `Mcf_ `K U`Zck Yf`DfYggž&\$% Ł
K YY_`%\$.`% `Bcj Ya VYf! &&`Bcj Ya VYf	=bHYbg]j Y	9ggUmGi f[Yf]Yg

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

5`fYei]fYX`fYUX]b[g`Zcf`h]g`Wci fgY`UfY`Uj U]UV`Y`j]U`h`Y`@Y[Ubhc`b_]b`A`ccX`Y`

F YWca a YbXYX`F Ygci fWg

5XX]h]cbU`fYUX]b[g

8i X`Ym5bXfYk ``3`Vd` 4SI [fBYk`Mcf_`C I ZcfX`I b]j Yfg]mDfYggž%`+` ,` Ł

8i X`Ym5bXfYk ``8[^ [fZW3gdS`aX3dfDf]bWfhcbžB>`Df]bWfhcb`I b]j Yfg]mDfYggž%` ,` (Ł

8i X`Ym5bXfYk ``fYXŁA`bW [Y`4SI [,`Baefi`Sd8[^`FZWack`S`V`;fe`3XWd]XWfC I ZcfX.`C I ZcfX`I b]j Yfg]mDfYggž`&\$%Ł

5bXfÅ`6Un]b``4SI [SfI`ad] ,`?`S`ad7eeSke`S`V`DWh]W`e`8da_`fZW8ad]W`e`S`V`8[X]W`e`ž`f`Ubg`U`h`X`5`U]bD]Y`h`Y`UbX`6Yfh7UfXi`c`fBYk`Mcf_`UbX`@cbXcb.`F`ci`hYX[Yž%`-`+Ł

5bXfÅ`6Un]b``H\Y`A`m\`cZA`cbg]Yi`f`J`YfXci`I`"]b`I`ZSf[e`5[W_`S1J`c``="

F`c`UbX`6Uf`h`Yg``5S_`WdS`>gU]VS``fBYk`Mcf_`<]``UbX`K`Ub[ž%` ,` \$Ł

ŁŁ`7\`UfbYmUbX`J`UbYggU`F`"GWk`Ufmž`"b]fcXj`

H\Y`Wti fgY`i gYg`A m9I dYfjYbW`gh XYbhZYXVUW`Ug`dUfhcZU`Wtbi U`ja dfcj Ya YbhdFcW`gg"

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

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

Ẓmci `YbWci bhYf`U`dfcV`Ya `k \Yb`U`H`Ya dh]b[`hc`gi Va]hmc i f`Ugg][ba YbhHfci [\`Hi fb]h]bžd`YUgY
H`Yd\cbY`9I H`fbU`Gi ddcfhcb`-` ,) `` `` %cf`Ya U]`H`Ya `cb`YI H`fbU`H`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`mYUfL` Ẓmci
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 UmiUdd`miZc`f`Ub`YI H`bg]cbžVi hmc i
a i ghfYH]b`mci f`h]W`Yhbi a VYf`Zca `9I H`fbU`Gi ddcfhfU`cb[`k]H`Ubmch`Yf`fY`Yj UbhXcW a YbHgE`hc
]bWi XY`Ug`Yj]XYbW`hc`gi ddcfhmci f`YI H`bg]cb`Udd`]W]h]cb" Ẓmci `Ya U]`9I H`fbU`Gi ddcfhmci `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 hW`YX]h`

hUddfcdf]UHY`dUfUd`fUg]b[.`7`U`b[]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 hW`YX]h`UbX`hc`
d]YW]b[`hc[Y`hYf`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 bXYfghUjX'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'UjX'5W'W'dhUV'Y'I gY'cZ
I BGK '⇒H'F'Ygci f'W'g'Dc`]W'h
- VY'Uk UfY'cZ'Y'ghUjX'UfX'g'cZVY\Uj]ci f'YI dY'W'X'cZYj Yfmc'bY']b'Y'Y'I BGK 'W'a a i b]m
- `cW'U'Y'gY'fj]W'g'UbX']b'Z'f'a U'h'c'b'UV'ci hi 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 bXYfghUjX]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'c'.#\]i V'Y'W'f'i \]X'Y'g"\]V'f'U'f'm'i b'g'k "Y'X'i "U'i #' \]g'Y'#\]V'c'i h' \]g'Y](#)

5 WUXYa]W]bZcfa Uh]cb`

: cf`YggYbh]U`ghi XYbh]bZcfa Uh]cb`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/
- gdYW]U`Vc]bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a]gUXj Ybh fY/
- ghi XYbhYei]hmUbX`X]gUV`]`hm/
- UbX`chYf`YggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

[\hfdg.#k k k "Ufmg"i bgk "YXi "Ui #W ffYbh\]ghi XYbh\]bZcfa Uh\]cb`#dfchVc`g!\[i \]XY`\]bYg#](#)