



ARTS4201

I gYg'cZH\Ycfm' < cbc i fg'fF YgYUfWk

GYa YghYf'C bY''##'&\$%



GWcc''cZH Y'5ftg'UbX'A YXJU''##'I BGK ''5ftg'UbX'GcWU''GWYbWg

7 ci fgY`Cj Yfj]Yk

`GHUZZ`7 cbhUWh`8YHU]`g`

`7 cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]]]m	@cWUhc b	D\cbY
GYUb`Dfmc f	g"dfmc f4 i b gk "YXi "Ui	6mUddc]bha Ybh	F cVYfh K YVghYf`&%`	- ' ,) '+' %)

GW\cc``7 cbhUWh`bZcfa Uh]cb

F cca " %&ž`Yj Y`` `F cVYfhK YVghYf`6i]X]b[

D\cbY. f\$&Ł`- ' ,) `(,) *

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

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

H\Y`GW\cc``cZhY`5fng`UbX`A YX]U`k ci `X``]_Y`hc`F YgdYWz`m5W\bck`YX[Y`hY`HfUX]h]cbU`7 i ghcX]Ubgž`hY`6YXY[U`fP`Ybg]b[hcb`WUa di gŁž; UX][U`f7]mUbX`5fhi`8Yg][b`7 Ua di gYgŁ`UbX`hY`B [i bbUk U`dYcd`Y`f5i ghU]Ub`8YzYbW` : cfW`5WUXYa m]b`7 UbVYffUŁcZhY`UbXg`k \YfY`YUW`WUa di g`cZI`BGK`]g`cWUHYX"

5 hYbXUbW`F Yei]fYa Ybhg

5`ghi XYbh]g`YI dYW`X`hc`UhhYbX`U``WUgg`W`b hUWh\ci fg`Zcf`U`ZJW`!hc!ZJW`fi &: Łcf`V`YbXYX`WŁi fgY`UbX`WŁa d`YH`U``UW]j`]hYg`Zcf`U`V`YbXYX`cf`Z`mcb`]bY`WŁi fgY"

5`ghi XYbhk` \c`Uff]j`Yg`a`cfY`h`Ub`%` `a`]bi`hYg`U`H`a`UmVY`d`YbU`]gYX`Zcf`bcb!UhhYbXUbW``Zgi`W`U`d`YbU`m`]g`]a`d cgYXž`hY`gh`XYbhia`i`ghVY`]bZcfa`YX`j`YfVU`m`UhhY`YbX`cZWUgg`UbX`UXj`]gYX`]b`k`f]h]b[`k`]h`]b`&(`\ci`fg"

ZU`ghi XYbhYI dYf]YbW`g`]`bYggž`a`]gUXj`Ybh`fY`cf`chYf`cW`ffYbW`h`Uha`U`_Yg`UVgYbW`Zca`U`WUgg#UW]j`]mi`bUj`c]XUV`Yž`cf`YI dYW`g`hc`VY`UVgYbhZca`U`Zc`f`h`WŁa`]b[`WUgg#UW]j`]mž`h`Y`m`g`l`ci`X`g`Y`_`d`Yfa`]gg]cb`Zca`h`Y`7`ci`fgY`5i`h`cf]mž`UbX`k`YfY`Udd`]WUV`Yž`h`Y`f`f`ei`Y`gh`g`l`ci`X`VY`U`W`Ła`d`Ub]YX`Vm`Ub`cf][`]bU`cf`W`f]jYX`WŁdmcZU`a`YX]W`W`f]jWU`h`cf`chYf`Zcfa`cZUddfcdf]U`h`Y`j`]X`Y`b`W"

5`7`ci`fgY`5i`h`cf]m`a`UmYI`W`gY`U`gh`XYbhZca`WUggYg`cf`UW]j`]hYg`Zcf`i`d`hc`cbY`a`cbh`<`ck`Yj`Yfž`h`Y`m`a`UmUgg][`b`UXX]h]cbU`UbX`#`f`U`h`f`b`U`h]j`Y`hUg`_`g`hc`Y`bgi`fY`WŁa`d`]UbW``5`7`ci`fgY`5i`h`cf]m`WŁbg]XYf]b[`h`Y`[`f`Ub]h]b[`cZUVgYbW`a`i`ghVY`gUhg]YX`U`gh`XYbhk`]`g`h`VY`UV`Y`hc`a`YYh`h`Y`WŁi`fgY`g`Y`Ufb]b[`ci`h`WŁa`Yg`UbX`#`f`]`ci`a`Y`cZ`Y`Ufb]b[``5`ghi`XYbhgY`Y`_]b[`Uddfcj`U`hc`VY`UVgYbhZca`cfY`h`Ub`cbY`a`cbh`a`i`ghUdd`m`]b`k`f]h]b[`hc`h`Y`8Y`Ub`UbX`dfcj`]XY`U`cf][`]bU`cf`W`f]jYX`gi`ddc`f]h]b[`XcW`a`Y`b`h`U`h]cb"

:`cf`a`cfY`]bZcfa`Uh]cb`UVci`h`h`Y`UhhYbXUbW`dfc`hc`WŁg`]b`h`Y` :`UW`m`ic`Z`5`fng`UbX`Gc`W]U`G`W`Y`b`W`g`[\hfdg.#k k k "Ufng"i b gk "YXi "Ui #W ffYbhgh XYbhg#UWUXYa \]W\]bZcfa Uh\]cb#dfc hWŁg\]i \]XY\]bYg#](#)

5 WUXYa]W`bZcfa Uh]cb`

: cf`YggYbh]U`gh XYbh]bZcfa Uhcb`fY`Uh]b[`rc.`fYei Ygrg`Zcf`YI hYbg]cb/fYj]Yk`cZa Uf_g/cVW dUhcbU`\\YU`h
UbX`gUZ`hm/YI Ua]bUhcb`dfcW`Xi fYg/gdYW]U`Wcbg]XYfUhcb`]b`h`Y`Yj YbhcZ]`bYgg`cf`a]gUXj Ybh fY/
gh XYbhYei]mUbX`X]gUV]`]m/UbX`ch`Yf`YggYbh]U`UWXYa]W]bZcfa Uhcbž
gYY`[\hdg.#k.k"Ufng"i bkg "YXi "Ui #W ffYbhgh XYbng#UWXYa \]W\]bZcfa Uhcb#dfcfcW`g!\[i \]XY`\]bYg#](#)

7 ci fgY'8YHJ]`g

7 fYX]hDc]bhtg`%&`

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

H\]g'<cbci fg!Yj Y`gYa]bUf`Wci fgY`]g`XYg][bYX`tc`Yb[U[Y`UXj UbW`X`ghi XYbhtg]b`h`Y`X]gW]d`]bYg`cZ
9b[]g\z:]a`zA`YX]UzA`i`g]Wz`H\YUfY`UbX`DYfZcfa`UbW`UbX`8`UbW`]b`U`gi`fj`YmicZ`W`b`h`Ya`dcfUfmW`h`fU`
h`Ycfm]UbX`]b!XYd`h`X]gW]d`]bY!VUGYX`UbU`mg]g`"H\Y`Wci fgY`VY[]bg`k`]h`Ub`]b`h`fX]gW]d`]bUfmZ`c`W`g`c`b`
W`h`fU`h`Ycfm]b`c`fXYf`tc`Z`ghYf`U`Z]Y`X`c`Z`W`b`W`d`h`U`W`ta`a`cbU`]h`Yg`UW`fcgg`X]gW]d`]bUfmVci`bXUf]Yg`" `h`
h`Yb`g`Y`Y`g`gh`XYbhtg`VfYU`_]b`tc`X]gW]d`]bUfmigi`V![fci`dg`tc`U`ck`h`Y`XYVU`h`Y`g`k`]h`]b`W`h`fU`h`Ycfm]tc`
]`i`a`]bU`h`d`U`f`h`W`U`f`W`c`b`W`d`h`U`UbX`UbU`m]W`W`X`U`Y`b[Yg`]b`h`f`b`U`tc`Y`U`W`X`]gW]d`]bY`"

5 h`h`Y`W`c`b`Wi`g]cb`c`Z`h`]g`W`ci fgY`h`Y`g`h`i`XYb`h`k`]`VY`UV`Y`tc`

%`W`c`b`h`f]Vi`h`Y`]b`h`Y`][Y`b`h`m]tc`W`]h`W`]X]gW`gg]cbg`c`Z`h`Ya`Yg`UbX`]ggi`Yg`W`c`j`YfYX`]b`WUgg
&`fYgYUfW`UbX`XY`]j`Yf`U`Zcfa`U`WUgg`d`fYgYb`h`h]cb`cb`W`ci fgY`a`U`h`f]U`
'`" `fYgYUfW`UbX`k`f]h`Y`Ub`YI`h`Y`b`X`Y`X`W`]h`W`]UbU`mg]g`c`Z`W`ci fgY`a`U`h`f]U`
(`" `a`U`_`Y`a`Y`Ub]b[Z`]`UbX`_`bck`YX[YUV`Y`W`c`bb`Y`W`]cbg`VY`tk`YY`b`h`Y`cf]Yg`UbX`#`f`h`YI`hg`gh`i`X]YX`

HYUW`X`]b[`G`h`f`U`h`[]Yg`

H\Y`W`ci fgY`k`]`VY`h`Uj [\hZ]fghm]h`fci [\`U`U`f[Y`gYa]bUf`Zc`f`h`Y`Y`b`h`fY`g`W`cc`W`c`f`h`Y`X`V`m`U`g]b[`Y`
W`c`bj`Y`bc`f`z`Z`c`ck`YX`V`m`ga`U`Y`f`z`a`c`fY`Z`c`W`g`Y`X`X]gW]d`]bUfm[fci`dg`z`YX`V`m]bX]]Xi`U`W`c`bj`Y`bc`fg`Z`ca`h`Y`
X]Z]Y`f`Y`b`h`X]gW]d`]bYg`UW`fcgg`G5A`" `H\Y`W`ci V]bU`h]cb`k`]`dfcj`]XY`Zc`f`h`Y`XYj`Y`c`da`Y`b`h`c`Z]b`h`f`X]gW]d`]bUfm`
X]U`c[i`Y`UW`fcgg`W`c[bU`h`Y`X]gW]d`]bYg`UbX`b`Y`tk`c`f`_`g`tc[Y`h`Y`f`k`]h`h`j[\hX]gW]d`]bY!VUGYX`W`c`f`g`tc`ZUW`]h`U`h`
h`Y`Z`ck`c`Z[Y`b`Y`fU`h`Y`c`f`Y`h]W`Zcfa`i`U`h]cbg`]b`tc`gd`Y`W]U`]gh`X]gW]d`]bUfm]d`f`c`V`Ya`U`h`W`g`"

5ggYgga Ybh

F YZYfYbW]b["Gh XYbhg'UFY'ZY'hc'WkccgY'k \]WYj Yf'fYZfYbW]b['gmghYa 'h.YmidfYZf' <ck Yj Yfz']b
a U_]b['h.]g'Wk]W'gh XYbhg'g\ci 'X'VYUf']b'a]bX'h.Y'di fdcgY'cZfYZfYbW]b[. 'hc' [i]XY'h.Y'fYUXYf'hc
gci fW'gžUbX'k \Yb'bYW'ggUfmhc'h.Y'fY'Yj UbhdUfhcZ'h.Y'gci fW']b'ei Ygh]cb"'5b'Ui h.cflXUhf'gmghYa
k]h.ci hdU[Y'bi a VYfg']g'h.i g'dYfZYWimUddfcdf]UH'Zcf'gWk'Ufmk f]h]b['XYU']b['k]h'g\cfhk cf_g

Hcd]Wg:k]`VY`X]grf]Vi hX`]b`WUgg"

Hi fb]hb`gYhb[.`H\]g`Ugg][ba Ybh]g`gi Va]mY`h`fci [\`Hi fb]hb`UbX`gh XYbhg`Xc`bchgYY`Hi fb]hb`g]a]Uf]mfYdcfng"

f`G][b]Z]W]b]h]m]U]Z]Y]W]h]m]i] f]d]Y]f]Z]c]f]a] U]b]W]W]]b]U]g]g]Y]g]g]U]V]`Y]`k] c]f]_]Z]V]Y]`]h]U]`Z]c]f]a] U]`Y]b]X]!]c]Z]g]Y]a] Y]g]h]f]`Y]I] U]a]]b]U]h]c]b]Z]U] W]U]g]g]`h]Y]g]h]Z]U]`U]V]c]f]U]h]c]f]m]i]h]Y]g]h]Z]U]`g]Y]a]]b]U]f]d]f]Y]g]Y]b]h]U]h]c]b]`c]f]U]b]m]i]c]h]Y]f]Z]c]f]a] `c]Z]U]g]g]Y]g]g]a] Y]b]h]

: c]f]Z] f]h]Y]f]X]Y]h]U]`g]`]b]`f]Y]`U]h]c]b]`h]c]`G]d]Y]W]U]`7]c]b]g]X]Y]f]U]h]c]b]`]b]W]i] X]b] [`]K] \]Y]b]`h]c]`5]d]d]`m]Z]`<]c]k] `h]c]`5]d]d]`m]`U]b]X] `]G]i] d]d]c]f]h]b] [`]8]c]W] a] Y]b]h]U]h]c]b]`d]`Y]U]g]Y]`f]Y]Z]f]`h]c]`h]Y]`G]d]Y]W]U]`7]c]b]g]X]Y]f]U]h]c]b]`k] Y]V]g]h]Y]`.

[\\]h\]c\]g.\]#\]g\]h\] X\]Y\]b\]h\]i\] b\]g\]k\] "Y\]X\]i\] "U\]i\] #\]g\]d\]Y\]W\]U\]`!\]W\]c\]b\]g\]X\]Y\]f\]U\]h\]c\]b\]](#)

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" #WUb`hU`Y`a Ubm
Zcfa gZ`Zca`XY`]VYfUHy`WXYU]b['hc`UWV]XYbU`mW`dm]b[`Zca`U`gci fW`k]hCi hUW_bck`YX[Ya`Ybh`

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

7cdm]b[.`i`g]b['hY`gUa`Y`cf`j`Yfmg]a`]Uf`k`cfXg`hc`hY`cf][]bU`hY`hcf`]XYU`k`]hCi 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` \Yf`gca`YcbY`dfYgYbh]b[`Ubc`h`Y`f`g`]XYUg`cf`k`cfXg`k`]hCi hWYX]h`

#Uddfcdf]UHy`dUfUd`fUg]b[.`W`Ub[]b[`U`Zy`k`cfXg`UbX`d`fUgYg`k` \]Y`a`cghm`fYU]b]b['hY`cf][]bU`
g]fi`W`fY`UbX`]bZcfa`U]cb`k`]hCi hUW_bck`YX[Ya`Ybh`"H`]g`U`gc`Udd`]Yg`]b`dfYgYbhU]cbg`k` \Yf`gca`YcbY`
dUfUd`fUgYg`Ubc`h`Y`f`g`]XYUg`cf`k`cfXg`k`]hCi hWYX]h` #U`gc`Udd`]Yg`hc`d`]YW]b[`hc`[Y`h`Y`f`ei`chYg`UbX`
dUfUd`fUgYg`]bhc`U`b`Y`k`k` \c`Y`Z`k`]hCi hfY`ZY`fY`bW]b[`UbX`U`gh`XY`bh`g`ck`b`UbU`mg]g`hc`V`f]b['hY`a`U`h`f]U`
hc`[Y`h`Y`f`"

7c`i`g]cb.`k`cf_]b[`k`]h`ch`Y`fg`Vi`hdUgg]b[`cZ`h`Y`k`cf_]Ug`U`dYfgcb`g`]bX]j`]Xi`U`k`cf_]7c`i`g]cb`U`gc`
]bWi`XYg`dfcj`]X]b[`mci`f`k`cf_]hc`Ubc`h`Y`f`gh`XYbhVY`Zc`fY`h`Y`Xi`Y`XU`h`Zc`f`Zc`f`h`Y`di`fdcgY`cZ`h`Ya`
d`U[]Uf]g]b[`Uh`Ubmi]ja`Y`Z`dUm]b[`Ubc`h`Y`f`dYfgcb`hc`dYfZcfa`Ub`UWUXYa`]W]Ug`_`Z`gh`U`]b[`cf`U`W`ei`]f]b[
Ubc`h`Y`f`dYfgcb`g`UWUXYa`]Wk`cf_]UbX`W`dm]b[`]Z`c`Z`Y`f]b[`hc`W`ca`d`Y`h`Ubc`h`Y`f`dYfgcb`g`k`cf_]cf`g`Y`Y_]b[
dUma`YbhZc`f`W`ca`d`Y]b[`UWUXYa`]Wk`cf_]`

#Uddfcdf]UHy`W]U]cb.`7`]h]b[`gci`fW`g`k` \]W` \Uj`Y`bchVYYb`fYUXZ`k`]hCi hUW_bck`YX[]b['hY`"gYW`bXUfm`
gci fW`Zca`k` \]W`_bck`YX[Y`cZ`h`Ya` \Ug`VYYb`cV]U]bYX`"

8i`d`]WU]cb`ffgY`Zd`U[]Uf]ga` "E`gi`Va`]h]b[`mci`f`ck`b`k`cf`_`Z]b`k` \c`Y`cf`]b`dUf]Z`k` \YfY`]h`Ug`dfYj`]ci`g`m`
VYYb`dfYdUfYX`cf`gi`Va`]hYX`Zc`f`Ubc`h`Y`f`UggY`gga`Ybhcf`W`ei`fgY`Uhi`BGK`cf`Ubc`h`Y`fi`b]j`Yfg]h`"

7cffYW]fYZYfYbW]b[`dfUW]W]g.

- VYhYf'a UbU[Y'mci f'hja Y

7 ci fgY`GW`YXi `Y

[J.Jyk`WUgg`ha`YhUV`Y](#)

H]a`YhUV`Y`

8UH`Y	Hmd`Y	7cbh`Ybh
K`YY_`%`&`*`:`YVfi`Ufm!`(` A`UfVX	GYa`j`bUf	h`f`c`X`i`W`j`c`b
K`YY_`&`.`)`A`UfVX`!`%`% A`UfVX	GYa`j`bUf	K`\\`U`h`]g`i`7`i`h`f`Y`3` A`U`h`k`Y`k`5`f`b`c`X`z`g`Y`Y`W`j`c`b`g`Z`f`c`a`5`g`f`g`d`W`S`V` 3`S`d`J`z`k` F`U`m`a`c`b`X`K`J`]U`a`g`z`"7`i`h`f`Y`"
K`YY_`'`.`%`&`A`UfVX`!`%` A`UfVX	GYa`j`bUf	F`Y`d`f`c`X`i`W`j`c`b`U`b`X`5`Z`]f`a`U`h`]c`b` H`Y`c`X`c`f`5`X`c`f`b`c`U`b`X`A`U`I`<`c`f`_`Y`]a`Y`f`z`"7`i`h`f`Y` h`X`i`g`h`f`m` <`Y`f`V`Y`f`h`A`U`f`W`g`Y`z`"5`Z`]f`a`U`h`]Y`7`i`h`f`Y`"
K`YY_`(`.`%`&`A`UfVX`!`&` A`UfVX	GYa`j`bUf	G`Y`I`i`U`]m`i`U`b`X`;`Y`b`X`Y`f` >`i`X`]h`6`i`h`Y`f`z`"6`c`X`]m`h`g`W`]d`h`]c`b`g`z`D`Y`f`z`c`f`a`U`h`]Y` G`i`V`j`Y`f`g`]c`b`g` 9`j`Y`?`c`g`c`Z`g`_`m`G`Y`X`]k`]W`z`"h`f`c`X`i`W`j`c`b`.`5`I`]c`a`U`h`]W`
K`YY_`)`.`&`*`A`UfVX`!`%` 5`d`f`]`	GYa`j`bUf	7`f`]h`e`i`Y` =`a`a`U`b`i`Y`?`U`b`h`z`"5`b`5`b`g`k`Y`f`h`c`h`Y`E`i`Y`g`h`]c`b`.`f`k`\\`U`h`]g`9`b`][]`h`Y`b`a`Y`b`h`B`f`i` A`]W`X`Y`":`c`i`W`U`i`h`z`"K`\\`U`h`]g`7`f`]h`e`i`Y`3`" 6`f`i`b`c`@`U`h`c`i`f`z`"K`\\`m`<`U`g`7`f`]h`e`i`Y`F`i`b`C`i`h`c`Z` G`h`Y`U`a`3`:`f`c`a`A`U`h`Y`f`g`c`Z`:`U`W`h`c`A`U`h`Y`f`g`c`Z` 7`c`b`W`f`b`"
K`YY_`*`.`-`5`d`f`]`!`%` 5`d`f`]`	GYa`j`bUf	7`i`h`f`Y`B`c`k` G`Y`Y`W`j`c`b`g`Z`f`c`a`H`Y`f`f`m`9`U`]Y`h`c`b`z`5`g`f`g`d`W` 7`]m`i`c`Z`G`m`X`b`Y`m`z`5`d`W`S`]h`W`5`]f`k`,`5`g`f`g`d`S`^`B`a`]U`k`S`V` 3`U`f`]a`B`S`\$`#`&`Z`\$`\$`&` 7`]m`i`c`Z`G`m`X`b`Y`m`z`5`]f`k`3`d`,`B`g`T`]U`3`d`E`f`d`S`f`W`k`

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

H\YcXcf`5Xcfbc`UbX`A UI`<cf_\Y]a Yfz`"7i`hi`fY`bXi`ghm"z]b`FZW6 [S`WUf[U aX7`^YZfW`_ W fzfUbg"
9Xa i bX`>Yd\W`hifGHUbZc`fX`I b]j Yfg]mDfYggŁz`dd"- (!% *"

A Uth\Yk`5fbc`Xz`5g`fgdWS`V 3`SdJZkz`YX`"GHYZUb`7c`b]f7 Ua Vf]X[Y`I b]j Yfg]mDfYggz`%-`-`Łz`dd"
)`!%&)"

>i X]h`6i`hYfz`"6cX]m`bgW]dh]cbgžDYfZcfa Uh] Y`Gi`Vj`Yfg]cbg"z]b`9`W`VWdF`dagT`WfBYk`Mcf`_`F`ci`hYX[Yz
%-`-`Łz`dd`"%`!`%`\$"

7]micZGmXbYmž`5 [fk`3`df, BgT`U`3`df`E`fd`SfWk"

7]micZGmXbYmž`

7F ⇒ CG

7F ⇒ CG 'Dfcj jXYf'7cXY. '\$\$\$- , ;