

6]`Xi b[gXYVUhhY`]b`GUW gYb.`88F! 9fZU\fi b[Yb`j Yf[YggYb3

8Yf`5fh]_Y`VY`Yi W hYh`X]Y`≠ bcfUbn`[Y[YbØVYf`XYb
6]`Xi b[gYfZU\fi b[Yb`XYf`88F`]b`U_hi Y`Yb`dc`h]gWYb
8]g_i gg]cbYb`ni f`GW i `fYzcf a "

≠`XYb`YhhYb`HU[Yb`[UV`Yg`\]m][Y`8]g_i gg]cbYb`ØVYf`X]Y
6]`Xi b[gdc`h]_`]b`XYf`FY[]cbž`U`g`X]Y`Gd]mYb`UbX]XUhYb`Ui g
H\Øf]b[Yb`i bX`GUW gYb`]b`Y]bY`YV\UZhY`DcX]i a gX]g_i gg]cb
hfUhYb`"6YgcbXYfg`X]Y`A Y]bi b[gÄi » Yfi b[Yb`ni f`GW i `V]`Xi b[
ghUWYb`]bg`5i [Yž] cf`U`Ya`X]Y`dfU[a Uh]gWYb`J c f g W `Ä[Y`ni a
`Äb[YfYb`[Ya Y]bgUa Yb`@YfbYb`i bX`X]Y`_f]h]gWY`6YhfUW hi b[
XYg`K YW gY`g`bUW`XYf`j]YfhYb`?`UggY`ni a `; ma bUg]i a "8cW
Y]b][Y`Gh]a a Yb`ZfU[Yb`g]W.`K Ufi a `gW]Y`Yb`X]Y`Yi h][Yb
6]`Xi b[gdc`h]_Yf`b]W h`Ui ZX]Y`Ui g`XYf`J Yf[Ub[Yb`Y]hž
]bgVYgcbXYfY`X]Y`XYf`88F 3

8]Y`DcX]i a gX]g_i gg]cbž`X]Y`ja`A 8F`Ui g[YghfU`h`k i fXYž`Vch
]bhYfYggUbhY`9]bV`]W_Y`]b`X]Y`G]W`hk Y]gY`XYf`? UbX]XUhYbž
VYgcbXYfg`]b`GUW gYbž`k c`XYf`l a [Ub[ghcb`U`g`[Yg]hhYhYf
VYgW f]YVYb`k i fXY`U`g`]b`H\Øf]b[Yb`"K Ä`fYbX`XYf`GhfY]h`a]h`XYf
5Z8`i a`X]Y`H`Ya Yb`j]Y`Ya`Ni gW`Ui Yf`Yhk Ug`X]Y`BYfj Yb`_cg hYb
_ÖbbhYž`YfgW]Yb`XYf`5i ghUi gW`]b`GUW gYb`fYgdY`hj c`Yf`"8cW
XUg`?Yfbd f c V`Ya`]b`XYf`6]`Xi b[gX]g_i gg]cb`V`Y]Vh`VYgh`Y`Yb.`X]Y
l a gYhni b[`YZZ`_h]j Yf`6]`Xi b[ga`cXY`Yž`X]Y`Ui ZVYk Ä`fhYb
9fZU\fi b[Yb`VUg]YfYb"

6]`Xi b[ggmghYa`XYf`88F`U`g`A`cXY`

8Ug`6]`Xi b[ggmghYa`XYf`88F`_ÖbbhY`]bgd]f]Yfh`gY]bž`XYb`b`Yg
\UhY`Y]b][Y`Ub gW`Ui`]W`Y`Ghfi`_hi`fYbž`X]Y`a`Ö[`]W`Yfk`Y]gY`VYggYf

]b`X]Y`\\Yi h][Y`NY]hdUggYbž`U`g`ni bÅW gh`Ub[Ybca a Yb" ` ð`XYf
88F` [UV`Yg`V]g`ni f` , "?"`UggY`Y]b` [Ya Y]bgUa Yg`@YfbYb" `<]Yf
ghUbXYb`XYb`GW`Ø`Yfb`j YfgW`]YXYbY`A Ò[`]W`_Y]hYb`cZZYbž`k]Y`XYf
UbgW`]Y» YbXY`K YW`gY`ni f`9fk Y]hYfhYb`C VYfgW`i `Y`f9C GŁ`XYa
\\Yi h][Yb` ; ma bUg]i a ž`cXYf`XYf`GW`i `UVgW`i gg`bUW`XYf`%\$" `"
?`UggYž`i a `XYb`VYfi Z]W`Yb`K YfXY[Ub[`]bX]j]Xi Y`ni ` [YghU`hYb`"

9]b`VYa Yf`_Ybgk YfhYf`5gdY`_h`k Uf`X]Y`?ca V]bUh]cb`j cb`H`\\Ycf]Y
i bX`DfUI]gž`X]Y`VY]`XYb`5VgW`ØggYb`ni f` ; Y`hi b[`_Ua " `Gc
_cbbhYb`GW`Ø`Yf` [`Y]W`gUa `5V]hi f`i bX`Y]bY
: UW`UfVY]hYfei U`Z]_Uh]cb`Yfk YfVYb" `8]YgYg`Xi U`Y`GmghYa ž`XUg`]b
XYf`88F`YhUV`]Yfh`k Ufž`V]YhYhj]Y`Y]W`h`Y]bY`5bhk cfh`Ui Z`X]Y
\\Yi h][Y` : fU[Y`K]Y`_Ubb`a Ub`6]Xi b[`i bX`5fVY]hgk Y`h
ni gUa a YbVf]b[Yb3

%` 9]bY`5i gV]`Xi b[`ni a ` : UW`UfVY]hYf`]b`?ca V]bUh]cb`a]h
XYa `GW`i `UV]hi fž`X]Y`k ÒW`Yb`h]W`Y`DfUI]g`]b`XYf
DfcXi `_h]cb`i bX`X]Y`gW`i `]gW`Y`5i gV]`Xi b[`k UfYb`]a
6]`Xi b[ggmgghYa `XYf`88F`gY`f`dcdi `Àf"
&" 8Ug`5V]hi f`a]h` : UW`UfVY]hYfUVgW`i gg`Vch`GW`Ø`Yfb`Y]bYb
_`UfYb`K Y[`]b`X]Y`VYfi Z]W`Y`DfUI]gž`k Å`fYbX`g]Y
YVYbZU`g`U`UXYa]gW`Y` : Å`][`_Y]hYb`Yfk UfVYb"

8Yf`i bhYff]W`hghU[`]b`XYf`DfcXi `_h]cbž`Ui W`VY`_Ubb`h`U`g`i HDž
k i fXY`VYfY]hg`]b`XYf` , "?"`UggY`Y]b[YZØ`fh" `8]YgY`A U» bU`a Y`nY][h
XYi h]W`ž`k]Y]b`XYf`88F`6]`Xi b[`i bX`6Yfi Zgk Y`h`a]hY]bUbXYf
j Yf`_bØdž`k i fXYb" ` ð`5bVYhfUW`h`X]YgYf`5bg`Å`mY`ghY`h`g]W`X]Y
: fU[Yž`k Ufi a `k]f`b]W`h`j cb`X]YgYb`VYk Å`fhYb`A Yh`cXYb`YfbYbž
UbghU`h`g]Y`j cb` ; fi bX`Ui Z`bYi `YfZ]bXYb`ni `k c`Yb" `9g`]gh
YfZf]gW`YbX`ni `gY`Ybž`XUgg`Y]b`gc`W`Yg` ð`hYfYggY`Ub`Y]bYf
J YfV]bXi b[`nk]gW`Yb`GW`i `V]Xi b[`i bX`dFU`_h]gW`Yf`5fVY]h
VYghY`hž`XUg`_ÒbbhY`U`YfX]b[g`YZZ]n]YbhYf` [YghU`hYh`k YfXYbž
k Ybb`a Ub`Ui g`j Yf[Ub[YbYb`9fZU`fi b[Yb`gW`Òdžh"

9]b`k Y]hYfYf`Di b`_hž`XYf`]b`XYf`DcX]i a gX]g`_i gg]cb`ni f`GdfUW`Y
Ua ž`k Uf`X]Y`A ch]j Uh]cb`\\]bhYf`XYb`6]`Xi b[gfYZcfa Yb" `9g`]gh``Ufž
XUgg`X]Y`\\Yi h][Yb`9bhgW`Y]Xi b[Yb`gcck c`\\`XYb`K ØbgW`Yb`XYf
; YgY`gW`UZh`U`g`Ui W`XYb`5bZc`fXYfi b[Yb`XYg`5fVY]hga Uf`_hYg

F YW bi b [hfU [Yb'a ØggYb"5VYf'k c'V'Y]Vh'XYf'6`]W_ ni fØW_3'8]Y
5bghfYb [i b [Ybž'X]Y'a Ub'i bhYfb]a a hž'i a 'XUg'6]Xi b [ggmghYa 'ni
j YfVYggYfbž'gWY]bYb'a UbW a U'Ub'XYb'U'hYbž'VYk Å\fhYb
J cfV]XYfb'j cfVY]ni `Ui ZYb"

9fgW`]Y» i b [`bYi Yf'DYfgdY_h]j Yb

5`g`Ya UbXž'XYf'gY]bY'5i gV]'Xi b [g'U\fy`]b'XYf'88F`j YfvfUW h
\Uhž'ZØ\`Y`jW`Y]bY'5fh'Ghc`n`Ui Z'XUgž'k Ug'XUa U`g'YffY]W'h'k i fXY"
8]Y'8i U`]hÅ'h'j cb'6]Xi b [`i bX'DfUI]g`_ØbbhY`Yi hni hU [Y`j]Y`
VYk]f_Ybž'k Ybb'g]Y`f]W'h] [`ja d`Ya Ybh]Yfh'k]fX" `Dc`]h]gWY
8YVUhhYb'ØVYf'6]Xi b [`g]bX'k]W'h] [ž'g]Y`gc`hYb`YXcW`Ui W`X]Y
@Y\fyb'XYf'J Yf [Ub [Yb\Y]h'VYfØW_g]W'h] [Ybž'i a `k]f_gUa Y`i bX
ni _i bZhgc]Ybh]YfhY`@Øgi b [Yb'ni `Z]bXYb"

gh'Yg`U`gc`b]W'h'Ub'XYf'NY]hž'i bgYfYb'6`]W_`Ui Z'X]Y`J Yf [Ub [Yb\Y]h
ni `f]W'hYbž'i a `Xi fW`VYk Å\fhY`DfU_h]_Yb'Ui g'XYf'88F`bYi Y
DYfgdY_h]j Yb`ja `6]Xi b [ggmghYa `ni `YfgW`]Y» Yb`i bX
Ubni bY\ a Yb3'6]Xi b [`gc`hY`b]W'h'bi f`]b`YYfYf`H\Ycf]Y
YI]gh]YfYbž'gcbXYfb'g]Y`a i gg`]b'XYf'FYU`]hÅ'h`YVYb`i bX`XUni
X]YbYbž'↑ b [Y`A YbgWYb'Ui Z'X]Y`<YfUi gZcfXYfi b [Yb'XYf'Ni _i bZh
j cfni VYfY]hYb"

8]Y'6]Xi b [gdc`]h]_`]b'8Yi hgW`UbX`\Yi hY`]gh'Y]b`j]Y`
X]g_i h]YfhYg`H\Ya Už'VYgcbXYfg]a `?cbhYI h'XYf'U_hi Y`Yb
dc`]h]gWYb'8YVUhhYb`]b'XYb'6i bXYg`ÅbXYfb"8UVY]`g]bX`X]Y
I bhYfgW]YXY`nk]gWYb'XYb'6i bXYg`ÅbXYfb`cZi [fc» ž'k Ug'X]Y
GW i `cf [Ub]gUh]cb`i bX`!ghfi _hi f`VYhf]Zz" `ϕ`GUW`gYb`i bX
H\Øf]b [Yb`ghY`h'X]Y'6]Xi b [g`UbXgW`UZh'i bhYfgW]YX`]WY
<YfUi gZcfXYfi b [Yb`i bX`7\UbW`b`XUf"6YgcbXYfg`\Yfj cfni \YVYb
]ghž'XUgg`X]Y'6]Xi b [ga]b]ghYf]Yb`]b`VY]XYb`@ÅbXYfb`XYfnY]h
j Yfgi WYbž'@Øgi b [Yb'ni `Z]bXYbž'i a `X]Y`ϕhY [fUh]cb`j cb
5fVY]hgk Y`hi bX`gW`i`]gWYf'5i gV]'Xi b [`ni `j YfVYggYfb"

9]b`fY`Yj UbhYf'5gdY_h'XYf'U_hi Y`Yb'8]g_i gg]cb'ØVYf`X]Y
6]Xi b [gfYZcfa `]b'8Yi hgW`UbX`]gh'XUg`?cbnYdh'XYg`Åb [YfYb
[Ya Y]bgUa Yb`@YfbYbgž'XUg`]b`j]Y`Yb'6i bXYg`ÅbXYfbž
Y]bgW`]Y»`]W`H\Øf]b [Yb`i bX`GUW`gYbž'X]g_i h]Yfh'k]fX" `N]Y`]gh'Ygž

X]Y`7\UbWb[`Y]W\Y]h`Z0f`GW0Yf`ni `Yf\0\Yb`i bX`Y]bY`GY`Y_h]cb
ni `j Yfa Y]XYbžX]Y`X]Y`6]`Xi b[gk Y[Y`XYf`GW0Yf`ni `Zf0\
Y]bgWfÄb_h`9l dYfhYb`Uf[i a Ybh]YfYbžXUgg`Zf0\Y`GY`Y_h]cb`ni
Y]bYa `J Yf`i gh]j cb`HU`YbhYb`Z0\Yb`_Ubbž`k Ug`X]Y`[Y[Ybk Äfh][Y
8]g_i gg]cb`ja `?cbhYl h`XYf`k]fhgWUZh`]WYb`9bhk]W`i b[Yb
i bhYfa Ui Yfh"

Ni gUa a Yb\Ub[`a]h`XYf`k]fhgWUZh`]WYb
G]hi Uh]cb

8]Y`k]fhgWUZh`]WY`@U[Y`8Yi hgW`UbXg`VYY]bZi ggh`X]Y
6]`Xi b[gXYVUhY`Yf\YV`]W`"8Yf` : UW_fÄZhYa Ub[Y`žXYf`]b`j]Y`Yb
6fUbWYb`gd0fVUf`]ghž`ghY`h`Y]bY`XYf`[f0» hYb`<YfUi gZcfXYfi b[Yb
Z0f`X]Y`XYi hgWY`K]fhgWUZh`XUf`"a `š\ f`&\$`%`k i fXYb`]b
8Yi hgW`UbX`0VYf`%ž `A]`]cbYb`cZZYbY`GhY`Yb`]b`j YfgW]YXYbYb
GY_hcfYb`[Ya Y`XYh`fE i Y`Y. **GhUh]gh]gW Yg`6i bXYgUa h`"8]Yg**
Z0\fh`ni `Y]bYf`j YfghÄf_hYb`8]g_i gg]cb`XUf0VYfž`k]Y`X]Y`GW`i `Yb
Ui g[YV`]XYhY` : UW_fÄZhY`VYggYf`Ui Z`X]Y`5bZcfXYfi b[Yb`XYg
5fVY]hga Uf_hYg`j cfVYfY]hYb`_0bbYb"

8]Y`F c`Y`XYf`6Yfi ZgV]`Xi b[

9]b`GW`0ggY`ni f`6Yk Ä`h][i b[`XYg` : UW_fÄZhYa Ub[Y`g`]Y[h`]b`XYf
Xi U`Yb`5i gV]`Xi b[ž`X]Y`]b`8Yi hgW`UbX`HfUX]h]cb`U`h`8]Y
J Yf_b0dZ b[`j cb`H\Ycf]Y`i bX`DfUI]g`j]U`?ccdYfUh]cbYb`nk]gWYb
GW`i `Yb`i bX`l bhYfbY\`a Yb`V]YhYh`GW0Yfb`b0h`]WY`9]bV`]W`Y`]b
X]Y`5fVY]hgk Y`h`8Yf` : c_i g`Ui Z`dfU_h]gWY`@Yfba 0[`]W`_Y]hYb
_0bbhY`Y]bY`A 0[`]W`_Y]h`gY]bž`i a `Ä`b`]WY`Ghfi _hi fYb`ni
gWUZZYb`k]Y`X]Y`l bhYff]W hghU[Y`]b`XYf`DfcXi _h]cb`k Ä`fYbX`XYf
88F!NY]h`9l dYfhYb`g]bX`g]W`Y]b][ž`XUgg`X]Y`A YX]n]bž`šZcfa Uh]_
i bX`š[Yb]Yi fk]ggYbgWUZhYbž`6YfY]WYž`X]Y`gck c`\`]b`XYf`88F
U`g`Ui W`Y`i hY`ghUf`_bUW[YZfU[h`g]bXž`VYgcbXYfY`6YUW`hi b[
VYb0h][Ybž`i a `XYb`[fc» Yb`6YXUfZ`Ub`ei U`]Z]n]YfhYb`?fÄZhYb`ni
XYW`_Yb"

Ni gÄh`]W`_0bbhY`XUg`J cfV]`X`XYf`9fk Y]hYfhYb`C VYfgW`i `Y`f0C GŁ
Ui g`XYf`88F`]b`XYb`U`hi Y`Yb`FYZcfa 0VYf`Y[i b[Yb
6Yf0W_g]W]h][i b[`Z]bXYb`"8Yf`Ni [Ub[`ni `Y]bYf`ei U`]hUh]

\cWk Yfh][Yb'6]Xi b['V]g'ni f', "'?`UggY`_ObbhY`]b`J YfV]bXi b['a]h
dfU_h]gWYb'9`Ya YbhYb`k]Y`i HD`XUni `VY]hfU[Ybž`XUgg`GWØ`Yf
VYggYf`Ui ZX]Y`5bZcfXYfi b[Yb`XYg`5fVY]hga Uf_hYg`j c fVYfY]hYh
k YfXYb"

6]Xi b[gYf[YVb]ggY`]a `]bhYfbUh]cbU`Yb
J Yf[`Y]W

⇒a `]bhYfbUh]cbU`Yb`J Yf[`Y]W`]gh`X]Y`E i U`]h`h`X`Yf`5i gV]Xi b[`]b
8Yi hgW`UbX`Y]b`H\Ya Už`XUg`]a a Yf`k]YXYf`UbU`mg]Yfh`k]fX"@Ui h
XYa `YhnhYb`6Yf]W`h`XYf`C 978`ØVYf`XUg`6]Xi b[gmgY`a `]b
8Yi hgW`UbX`fD`G5!Ghi X]Y`f`Ub[]YfYb`XYi hgW`Y`GWØ`Yf`]a
8i fW`gW`b]h`]b`A Uh\Ya Uh]_ž`B`Uhi fk]ggY`b`gW`U`ZhYb`i bX`@YgYb`]a
a]h`YfYb`V]g`c`VYfYb`6YfY]W`]a `J Yf[`Y]W`ni `UbXYfYb`@`bXYfb"
5`YfX]b[g`U`h`8Yi hgW`UbX`GW`k`ÅW`Yb`]b`XYf`7`UbW`b[`Y]W`Y]h
`?]bXYf`Ui g`VYbUW`hY`][hYb`ZUa `]`ÅfYb`J Yf`Å`hb]ggYb`U`VYb`c`Zh
gW`YW`hYfY`6]Xi b[gW`UbW`b`fE i Y`Y. **C 978**£"

8]Y`F`ØW_a`Y`Xi b[Yb`Ui g`XYb`Ghi X]Yb`Y`VYb`Y`Yf] c fž`XUgg`Y]bY
6]Xi b[gdc`h]_ž`X]Y`X]Y`HfUX]h]cbYb`XYf`J Yf[Ub[Yb`Y]h`]b
6YhfUW`h`n]Y`h`i bX`[`Y]W`nY]h][`b`bcj Uh]cbYb`]bhY[f]Yfhž`XYf
GW`ØggY`ni f`@gi b[`j]Y`Yf`U`hi Y`Yf`<YfUi gZcfXYfi b[Yb`]gh"

8YhU]`g

6Ygi W`Yb`G]Y`i bg`Ui Z.`b!U["XY