

⇒ a a][fU]cb Gh Xn]b[



Gh Xn]b[! i b]j Yfg]hm

GdUb]g\

A Y`[i gUfÉU`a Uf]W`Ufa Y`Yb`Ui b]j Yfg]XUX"
GhU]b[`h.Uhmc`i `k Ubhlc`Ybfc`

8i hW

⇒ `nci `a]^[fUU[]bgWf]`j Yb`]b`Yb`i b]j Yfg]h]h`

A Y`ei]Yfc`a Uf]W`Uf`SSSSSSSSSSSSSSSS"

GhU]b[`h.Uhmc`i `k Ubhlc`Udd`mZcf`UVéi fgY

⇒ `nci `a]^[fUU[]bgWf]`j Yb`j ccf`SSSSSSSSSSSSSSSS"

Yb`i b`[fUXc

HndY`cZVéi fgY

Yb`VUWY`cf`cd`Y]X]b[

Yb`i b`dcb] fUXc

HndY`cZVéi fgY

Yb`dcb] fUXi UUh

Yb`i b`XcVtcfUXc

HndY`cZVéi fgY

Yb`XcVtcfUUh

U]h]Ya dc`Véa d`Yfc

HndY`cZVéi fgY

Yb`j c`h]`XgY`cd`Y]X]b[

U]h]Ya dc`dUfV]U

HndY`cZVéi fgY

Yb`XY`h]`XgY`cd`Y]X]b[

UX]ghUbV]U

HndY`cZVéi fgY

Yb`cb`]bY`Wfg`g

A Y`[i gUfÉU`Ygh X]Uf`Yb`g`i b]j Yfg]XUX`Xi fUb]Y`i b`
dYf]cXc`XY`SSSSSSSSSSSS"

GhU]b[`ck`cb[`nci f`Yi WUb[Y`dYf]cX`]g

⇒ `nci `[fUU[`UUb`i k`i b]j Yfg]h]h]ghi XYfYb`j ccf`
SSSSSSSSSSSS"

i b`gYa YgfY

@Yb[h`cZ`ghUmihZcfY][b`i b]j Yfg]hm

Yb`gYa YghYf

i b`Wfgc`UWXA`a]Vé

@Yb[h`cZ`ghUmihZcfY][b`i b]j Yfg]hm

Yb`UWXYa]gW`Uf

`9i]ghYb`fYgf]W]cbYg`UvcfU`Yg`dUfU`cg`
Ygh X]Ub]Yg3

5g_]b[`Uvc`i h`k`cf`_`fYgf]W]cbg`Zcf`gh`XYb]g

K Uhin]`b`XY`VdYf_]b[Yb`j ccf`h`k`Yf`_gh`]b[]j ccf`
gh`XYb]Yb3

⇒ a a][fU]cb Gh Xn]b[



~HYb[c'ei Y'dfYgYbHf''cg'XcW'a Ybhc'g'cf][]bUYg'c Yg'g Zl VYbHY'V'eb'g'g Zc'hc'V'ed]Ug3 5g_]b[]Z'nci 'bYX'h'c'dfcj]XY'h'Y'cf][]bU'XcW'a Ybhc'g'cf'V'ed]Yg	A cYh]_ 'XY'_cd]YCb'cZXY'cf][]bY'Y'XcW'a YbHY'b'n'Y'Z]bX]YbYb3
~7i ½Yg'gcb''cg'fYei]g]hc'g'XY'UW'W'g'c'U'U i b]j Yfg]XUX3 I gY'X'k \Yb'Udd'n]b['Zcf'i b]j Yfg]hm	K Uhin]'b'XY'h'c'Y'U]b[]g ccfk UUFXYb'j Ub'XY'i b]j Yfg]h]h3
~A Y'Ybj]UF'Y'i bU'W'F'U'XY'UW'd'U'W'i b3 5g_]b[]Z'nci 'k]''f'W'W]j Y'U'Z'c'f'a U'c'Z'Y'f	NU]_ 'Yb'Z'c'f'a Y'Y'h'c'Y'U]b['cb]j Ub[]Yb3
~@U'i b]j Yfg]XUX'd'f'c'd'c'f'V]c'b'U'h'U'a V]Å'b'Y' U'c'U'a]Yb'hc'3 5g_]b[]Z'h'Y'i b]j Yfg]h'm'd'f'c'j]X'Y'g'U'W'U'a a cXU]h]cb	J ccf'n]Y'h'XY'i b]j Yfg]h]h'c'c'_ 'U'W'U'a a cXU]h]Y3
~< U'm'd'f'W'W'g'd'f'c'Z'g]c'b'U'Y'g'Y'b'Y' 'd'U'b'XY' Y'g'h'X]c'g'3 5g_]b[]Z'nci f'i b]j Yfg]h'm'V'ei f'g'Y']b]j c'j Y'g'U'b']b'h'Y'f'g']d'd'Y'f]c'X	6Y U'h'XY'W'f'g' g'c'c'_ 'Y'b'g'U']Y'd'Y'f]c'XY3
~@cg'Y'g'h'X]U'b'h'Y'g'XY']b'h'Y'W'a V]c'h'U'a V]Å'b'h'Y'b'Y'a cg' ei Y'd'U']U'f'U'a U'f'U'W'U'Y'b'g' 'i b]j Yfg]XUX3 5g_]b[]Z'nci '\U'Y'h'c'd'U'h'c'g'h' X'm]U'g'U'b'Y'i W'U'b[]Y'g'h'XY'b'h'U'h'U'h'i b]j Yfg]hm	N]b'Y'f'g'h'X]Y'_c'g'Y'b'j ccf'i]h'k]g'g'Y']b[]g'g'h'XY'b'h'Y'b'U'b'i k i b]j Yfg]h]h3
~7I a c'di Y'X'c'V'eb'g'j 'h'U'f'Y'Y'g'h'U'X'c'XY'a]'g'c']W'h'i X3 5g_]b['\ck 'nci 'W'b'g'Y'h'Y'd'f'c[]f'Y'g'g'c'Z'nci f'U'dd']W'h]cb	< cY'_Ub]_ 'XY'j ccf'i]h']b[]j Ub'a]'b'U'U'a Y'X]b[]g'd'f'c'W'g VY_]'^_Yb3
~7i ½Yg'Y' b]j Y'XY'f]X]ca U'f'Y'ei Yf]Xc3 =bei]f]b['U'W'c'i h'h'Y'U'b[]i U[]Y'f'Y'ei]f'Y'a Y'b'h'c'V'Y'Zi 'Z]'Y'X']b'c'f'XY'f'c'V'Y'U'W'W'd'h'X'U'h'i'U'h'i b]j Yfg]hm	K Uhin]'b'XY'U'U'U'U'U'j Y'f'Y'g'h]Yb3
~7I a c'Y'g'Y'g]g'h'Y'a U'S'S'S'S'S'S'S'S'S'S'S3 5g_]b[]b'Z'c'f'a U]cb'U'W'c'i h'h'Y'g'g'h'Y'a	< cY'k Yf'_h'Y'h'i'S'S'S'S'S'S'S'S'S'S'S'g'g'h]Y'a 3
XY'W'Å'X]hc'g H'nd'Y'c'Z'g'g'h]Y'a	V'Y'X]h'g'g'h]Y'a
XY'b'ch]U'g H'nd'Y'c'Z'g'g'h]Y'a	V'Y'c'c'f'XY']b[]g'g'g'h]Y'a

⇒ a a] [f U h] c b G h X m] b [



~ F Y W] f Å i b U V t d] U X Y a] Y i d Y X] Y b h Y U M X Å a] V t U Z] b U X Y U Y g] U b V] U 3	? f] [] _ Y b U M X Y a] g W U Z g W f] Z h c d \ Y h Y] b X Y j U b a] b i] h k] g g] b [3
5 g _] b [] Z n c i \ U j Y U b U M X Y a] W f U b g W] d h U h h Y Y b X c Z n c i f Y i W U b [Y	
~ E i Å Y g] c X Y Y b g Y i U b n U U d] W b 3 = b e i] f] b [U V c i h h Y h Y U M X] b [g m i Y	K Y _ Y W f a Y h c X Y b k c f X Y b Y f [W f i] _ h 3
~ < U m S S S S S S S S S S S S S S 3 = b e i] f] b [U V c i h h Y h Y U M X] b [g m i Y	N] b Y f S S S S S S S S S S S S S S 3
W U g Y g h Y i f] W U g H n d Y c Z W U g g	Y h] b [Y b
g Y a] b U f] c g H n d Y c Z W U g g	g Y a] b U f g
h h c f f U g H n d Y c Z W U g g	h h c f] U g
V t b Z Y f Y b V] U g H n d Y c Z W U g g	V t b Z Y f Y b h] Y g
~ E i Å W f g c g g Y c Z Y f U b d U F U U Y g W Y U X Y j Y f U b c 3 5 g _] b [] b Z c f a U h] c b U V c i h h Y _] b X g c Z V t i f g Y g c Z Z Y f Y X V m i g a a Y f g W c c g	K Y _ Y W f g g g Y b V] Y X Y b X Y g a a Y f g W c c g U b 3
~ 7 i Y b X c Y g Y d Y f] c X c X Y Y i 1 a Y b Y g 3 5 g _] b [k \ Y b h h Y Y i U a g U f Y	K U b b Y f k c f X Y b X Y Y i U a Y b g [Y \ c i X Y b 3
~ 8 I b X Y d i Y X c V t b g Y [i] f] b Z c f a U W i b g c V f Y U g U g] [b U h f U g X] g d c b] V Y g 3 5 g _] b [k \ Y f Y m c i W b Z] b X] b Z c f a U h] c b U V c i h h Y V t i f g Y g	K U W f _ U b _] b Z c f a U h] Y c j Y f U Y V Y g W _ V U f Y W f g g g Y b j] b X Y b 3
~ < U m] b g h U W] c b Y g X Y d c f h j U g Y b U i b j Y f g] X U X 3 5 g _] b [] Z h Y f Y g U i b j Y f g] m i g d c f r g W b h Y f	< Y Z h X Y i b j Y f g] h] h Y Y b g d c f h W b h f i a 3
~ 7 I a c d i Y X c i b] f a Y U U g U g c V] U W] c b Y g X Y Y g h X] U b h Y g 3 5 g _] b [\ c k i n c i W b e] b g h i X Y b h i g c V] Y h] Y g	< c Y _ U b _] h c h Y Y b g h i X Y b h Y b j Y f Y b] [] b [h c Y f Y X Y b 3

⇒ a a] [f U h] c b G h X m] b [



~ 7 i ½ Yg'a ½ g'c'a Ybcg'Y' Vtgh'XY'Uj] XU'Yb
fVj XUXt3
=bei]f]b['U'ci h'k'Y'Yg]a U'YX']j]b['Vtgh]b'h'Y'V]m

K U'h]b'XY' [Yg'WU'U'cg]Yb] ccf' Y' YbgcbXY' \ci X']b
Q'fUX3

G h X m] b [! @ U b [i U [Y V t i f g Y g

G d U b] g \

~ E i Å] X] c a U g'g' d i Y X Y b' Y g h i X] U f' Y b' Y' W b l f c 3
5 g _] b [' k \ U h' U b [i U [Y g' m e i ' W b' g h i X m i U h' U h i g' W c c'`

8 i h W

K Y _ Y' U Y b' _ U b] _ g i X Y f Y b' U b' i k' g' W c c'` 3

~ < U m d f i V U g' X Y' b] j Y' 3
5 g _] b ['] Z h' Y f Y'] g' U d' U W a Y b h i Y g h i t c' U g g' Y g g' m e i f' Y' Y'

= g Y f' Y b' d' U h g] b [g h c' Y r g j c c f' a] ' b' b] j Y U i ' h' Y' V d U Y b 3

~ A Y' d i Y X c' W b a V] U f' X Y' W U g' Y' g] Y' b] j Y' b c' Y g' Y'
U X Y W' U X c' d' U f' U a' E 3
5 g _] b ['] Z' n e i ' W b' W U b [Y' Y' j Y'] b' W b' Y' m e i ' U f' Y' b c h i g' U h g] Y X' k] h' h' Y' c b Y' m e i ' U f' Y' U h' Y b X] b [

? U b] _ b c [' c j Y f g' W U _ Y Y b' b U f' Y b' U b X Y f' b] j Y U i ' U g' \ Y h
 \ i] X] [Y b] j Y U i ' b] Y h' \ Y h' i'] g Y'] g 3

~ H] Y b Y b' X Y g' W] d V] c b Y g' X Y U' U X U g' X Y' U g
U g] [b U h f U g 3
5 g _] b ['] Z h' Y f Y'] g' U X Y U] Y X' X Y g' W] d h] c b' c Z h' Y V t i f g Y'

< Y Z h i ' Y b' [Y X Y U] ^ Y f X Y V Y g W f] j] b [j U b' X Y W f g g 3

~ 7 i ½ Yg'Y' b' C a Y f c' a' ½] a' c' X Y' Y g h i X] U b h' Y g' Y b' W X U
W U g' Y 3
5 g _] b [' k \ U h' h' Y' a U] a] a' ' b i a' V y f' c Z' g h i X Y b h g] b' U' W U g g] g

K U h] g' \ Y h a U] a] a' ' U b h U' g h i X Y b h Y b' d Y f' _ U g 3

~ E i Å] b g' U U W] c b Y g' h] Y b Y' Y' W b l f c 3
5 g _] b [' k \ U h' Z U W]] h] Y g' h' Y f Y' U f Y'] b' h' Y' g' W c c'`

K U h i n] b' X Y' V Y g W] _ V U f Y' Z U W]] h] h Y b'] b' i k' g' W c c'` 3

~ C f [U b] n U b' h U a V] Å b' Y i W f g] c b Y g 3
5 g _] b ['] Z h' Y' g' W c c'` U f f U b [Y g' U g c' Y i W f g] c b g

C f [U b] g' Y f Y b' i' ^] Y' c c' _ Y i W f g] Y g 3

~ E i Å' d f c [f U a U g' c Z Y f U b 3
5 g _] b [' k \ U h' d f c [f U a g' U f Y' c Z Y f Y X

K Y _ Y' d f c [f U a a U f g V] Y X Y b' i' ^] Y' U b 3

G h X m] b [! ' G W c' U f g \] d g

G d U b] g \

J Y b [c' U d Y X] f] b Z c f a U W] b' g c V f Y' U g' d c g] V] X U X Y g
X Y' Z] b U b V] U W] b"
=bei]f]b['U'ci h'z' bX]b['cddcfh' b]h]Yg

8 i h W

= _ n c i ' a] ^ [f U U]] b Z c f a Y f Y b' c j Y f' V i f n Y b "

=a a][fUh]cb Gh Xm]b[

~ E i Å'cf[Ub]ga cg'di YXyb'Z]bUbV]Uf'a]g'Ygh X]cg3
5g_]b['k \]W'VcX]Yg'Wb'Zi bX'mci f'gh X]Yg

K Y_Y'cf[Ub]g]H]Yg_i bbYb'a]'b'gh X]Yg'Z]bUbV]YfYb3

B YWg]hc'Uhi XU'Z]bUbV]YfU'dUfU'SSSSSSSSSSSSSSS"
Gh]b['h.Uh'mci 'bYX'Z]bUbV]U'`Y'd

=_`W'bccX'Uub'Z]bUbV]ÇY'i `d'j ccf 'SSSSSSSSSSSSSS"

a UfÉW`U
H\]b['h.Uh'mci 'bYX'Z]bUbV]U'`Y'd'Zcf

]bgWf]j]b[g]YX

[U]hcg'dYfgcbU'Yg
H\]b['h.Uh'mci 'bYX'Z]bUbV]U'`Y'd'Zcf

_cg]Yb'j ccf `Yj YbgcbXYf\ci X

a Ubi h'rbV]i b'XY'\]^cg'a YbcfYg
H\]b['h.Uh'mci 'bYX'Z]bUbV]U'`Y'd'Zcf

_]bXYfcdj Ub[

~ E i Å'VW]g'di YXc'gc`]V]huf3
5g_]b['k \]U_]bXg'cZgW'c`Ufg\]dg'UfY'Uj U]`UW'Y

K Y_Y'g'ccf'h'b'gh X]YWi f'nYb'n]'b'Yf'VYgW]_VUf3

Gh Xm]b[!] U]XU]b['ZcfY][b'XY[fYYg GdUb]g\

8i hW

A Y'[i g]UfÉU'Vébj U]XUf'a]'h'hi `c'Yb'f'U'Ég"
Gh]b['h.Uh'mci 'k ci `X`_]Y'hc'j U]XU]Y'mci f'XY[fYY'Wf]Z]W]h'Y]'b'h.Uh'Véi b'f'm

=_mci '[fUU['a]'b'X]d'ca Uj U]XYfYb']b'OUbXQ

~ A Y'dcXfÉU'XUf'i bU`]g]U'XY'h'fUXi V'hc'fYg'f'fUXcg'Yb
f]X]ca U'3
5g_]b['Z]h.YfY'g'U`]gh'cZ'Wf]Z]YX'h'fUbg'U'hc'fg]'b'h.Y`Ub[i U]Y'h.Uh'mci 'bYX

< YZhi `Yb`]^ghj Ub'VYQ][XYj Yf]U'Yfgj ccf `Yh'OUUQ

~ 8i bXY'di YXc'Vébg[i]f'i b'Wf]Z]W]Xc'XY
Vébj U]XU]Yi b3
5g_]b['k \]Yf'Y'mci `Wb['Yh'U'Wf]Z]W]h'Y'cZ'Yei]j U'Yb'W'h

K UUF'_Ub_]`Yb[Y]^_k UUFX][\Y]Xg]H]Yghj Yf_f]`Yb3