

Eine schwäbische Erfolgsstory: 150 Jahre Handtmann

Von der handwerklichen Messinggießerei in Biberach zum Technologieunternehmen mit 4300 Mitarbeitenden sowie Produktionssta?tten, Niederlassungen und Werksvertretungen in u?ber 100 La?ndern – Handtmann hat in 150 Jahren eine wahre Erfolgsgeschichte geschrieben.



Generationswechsel: Thomas Handtmann (Mitte) übergibt im 150. Jubiläumsjahr die Geschäftsführung an seinen Sohn Markus (Mitte li.) und seinen Neffen Valentin Ulrich (Mitte re.). Weitere Geschäftsführer sind: Harald Suchanka (li. außen) und Dr. Mark Betzold (re. außen). © Beigestellt

K UZZYbgWka]YXY'i bX'Y]bYf'nY\b'U\f][Yb'K UbXYfgWkUZhž'X]Y']\b ni bUWkgh'bUWk'?Ya dhYb'Zi\fhYž'k c'Yf'XUg'<UbXk Yf_'XYg ;`cW_Yb[]Y»Yfq'Yf`YfbhY"

BYVYb`XYa `Ui Zk YbX][Yb`6fcbnY[i gg`gUa a Y`hY`Yf`XUVY]`Ui Wk 9fZU\fi b[Yb`]a `[i bgh][YfYb`A Ygg]b[[i ggž`XUa U`g`Ui Wk ; Y`V[i gg `[YbUbbhž`k Ugʻj cb`YbhgWkY]XYbXYf`6YXYi hi b[`Zi f`XUg gdUhYfY`I bhYfbY\a Yb`< UbXha Ubb`gY]b`gc``hY"`A]h`X]YgYa `?bck! \ck`_Y\fhY`5`VYfh`< UbXha Ubb`]b`gY]bY`<Y]a UhghUXh`ni fi W_`i bX a UWkh`g]Wk`%, +' `gY`VghghUbX]["

 $BYVYb^*\setminus UbXk^*Yf_*^*]Wk^*Ya^*: UWk^*k^*]ggYb^*Vf]b[h^*Yf^*bYi^*Y^*=XYYb^*a^*]h^*Gc^*Uggh^*Yf^*Y]bYb^*c^*VYZYi^*YfhYb^*GWka^*Y^*ncZYb^*]bghU^*)]YfYbz^*a^*]h^*XYa^*g]Wk^*X]Y^*YfZcfXYf^*]Wk^*Yb^*%$$$...7^*Zi^*f^*XUg^*GWka^*Y^*nYb^*j^*cb^*A^*YhU^**gWk^*bY^*Yf^*YffY]Wk^*Yb^*UggYb^*U^*g^*a^*]h^*XYb^*XUa^*U^*g^*i^*V^*]Wk^*Yb^*?c^*YcZYb^*^5bZUb[g^*[]Y^*h^*<UbXha^*Ubb^*bcWk^*6fcbnY^*i^*bX^*]YZYfh^*Y^*Jh^*U[Yf^*Zi^*f^*X]Y^*9]gYbVU^*b^*^GWk^*bY^*^*Ybhk^*]W_Y^*h^*Yf^*g]Wk^*YXcWk^*ni^*a^*GdYn]U^*]ghYb^*Zi^*f^*A^*Ygg]b[[i^*gg^*i^*bX^*X]Yg^*]b^*[fc^*Yf^*J]Y^*ZU^*h^*$

GWk]Yf][Y'Nk]gWkYb_f]Y[gnY]h' '5Xc`Z'? Uf` < UbXha Ubb'ØVYfb]a a h

BUWX 'XYa 'Hc X 'XYg'I bhYfbY\a Ybg[fi bXYfg'[Y\h'gY]bY'K Yf_ghUhh Ub'gY]bYb'U`hYghYb'Gc\b'?Uf`'5`VYfh'f%, +(%-) %Łž'k]Y'XYf'J UhYf _i fn'5`VYfh'[YbUbbh"'9g']gh'YXcWX 'XYf'A' b[YfY'6fi XYf'5Xc`Z'?Uf` < UbXha Ubb'f%, , (%-) ' Łž'XYf'X]Y'; YgWX]W_Y'XYf':]fa U bUWX\U`h]['dfU[Yb'k]fX"'9f'Yfk Y]hYfh'X]Y'; YgWXUZhghUh][_Y]hž XYbbcWX'bY\a Yb'X]Y' \DZUh]cb'%- &' 'i bX'X]Y'K Y`hk]fhgWXUZhg_f]gY%- &- 'XUg'I bhYfbY\a Yb'gWX K Yf'a]h"'HY]`k Y]gY'g]b_h'X]Y 6Y`Y[qWXUZh'Ui Z'Z bZ'A]hUfVY]hYf"

9fgh UV %- '& [Y\h Yg a]h XYf :]fa U k]Y XYf VYf [Ui Z'' = a nk Y]h Y b K Y h_f]Y ['k]f X A Ygg]b ['U g _f]Y [gk]W h] ['Y]b [Yghi Zh i b X < Ub X ha Ubb 'd f c Xi n] Y fh GhU\ h Y] Y Zi f X]Y F i ghi b [g]b Xi ghf]Y " 6 Y] ? f]Y [gYb XY ']gh X]Y '6 Yhf]Y VgY]b f] W hi b ['\ Yfi b h Yf [Yk]f hg W UZh Yhž X]Y 'Y]b n] [Yb 'VY] XYb '8 f Y\ a Ug W]b Yb 'k Yf XYb 'j c b 'X Yf Zf Ub n c g]g W Yb '6 Yg Uhni b [ga U W h X Ya c b h] Y f h ž < Ub X ha Ubb 'g h Y\ h j c f 'X Ya '5 i g"

8 UgʻK]fhgWX UZhgk i bXYf. '< UbXha UbbʻgYhnh Ui Zʻ@Y]WX ha YhU``

8 Yf B Yi Ub ZUb ['Zi f' < Ub Xha Ubb 'b UW. 'XYa '? f]Y [']gh gWk k Yf" 8 Ua]h XUg I bh Yfb Y\a Yb 'k Y]h Yf V Ygh Y\b '_Ubb ž V Ui h '? Uf` < Ub Xha Ubb ž gY]h '%- (('U `Y]b] [Yf '9] [Ybhi a Yf ž gY]b Yb 'Gc\b '5 fh\i f b UW. 'XYgg Yb 'F i W__Y\f 'Ui g 'XYf'? f]Y [g [YZUb [Ybg W. UZh '%- (* gmgh Ya Uh]g W. 'U `g 'B UW. Zc ` [Yf 'Ui Z' '8] Yg Yf 'g W. `]Y » h '%-) \$ 'g Y]b Ghi X]i a 'U `g 'A Ug W.]b Yb V Ui ! = b [Yb] Yi f 'UV 'i b X 'g Yhnh 'Ui Z @Y] W. ha Yh U `` ž XYbb 'Yg ']gh V Ygg Yf 'ni 'j Yf Uf V Y]h Yb ž \ Uh Y]b Yb b]Y Xf] [Yf Yb 'G W. a Y`ndi b_h i b X 'j Yfi f g U W. h k Yb] [Yf [Ygi b X\Y]h g W. UX`] W. Y '5 V [Ug Y "

%-) & i VYfb]a a hiyfiz fix]Y:]fa Uik Y]g\Ui dhixyb
5ia]b]ia [iggi] cbi6fYbbYfhY]iybiibXi@ ZhYf[Y\UigYb": if
<UbXha Ubbi]ghix]YgiXYfi8i fW\Vfi W\ži%-) & i VYfhf]ZZhiXYfiI a gUhn
Yfgha UigiX]YiA]ii]cbYb!8!A Uf_!GW\k YiiYiiibXi<UbXha Ubbi]ghi]a
K]fhgW\UZhgkiibXYfiUb[Y_ca a Yb"i5i W\ia]hiXYb
A]hUfVY]hYfnU\iYbi[Y\hiYgiVYf[UiZ"6YfY]hgi%-(-ig]bXi)%
DYfgcbYbiVY]i<UbXha UbbiVYgW\UZh][hži%-)\$iVYfY]hgi)*iibXiY]b
\$J\figdUhYfi*) žiXYfi6Y[]bbiY]bYfi_cbh]bi]Yfi]W\Yb
5i Zk UfhgYbhk]W_iib["

8Yf GhUfh]b XYf @YVYbga]hhY`j YfUfVY]hi b[

Y]bYb'Ghi X]Yb_c``Y[Yb'UVž'XYf'X]Y'F'%a a]h'Y]bYa '9`Y_hfca chcf Ui gghUhhYh''A]h'XYa '9f`cg'Ui g'XYa 'JYf_Ui Z'X]YgYf'F'&) '[YhUi ZhYb A UgWX]bY'bUWX'9b[`UbX'VUi h'Yf'%-) (']b'Y]bYf'6UfUW_Y'Ui Z'XYa :]fa Yb[Y`UbXY'X]Y'A UgWX]bYbZUVf]_'Ui Z''.5`g'DYfgcbU`'ghY\Yb']\a bYVYb'gY]bYa '?cbghfi _hYi fž'Y]b'8fY\Yf'i bX'XfY]
GWX`cggYf`Y\f`]b[Y'ni f'JYfZi [i b["'Jcb'%-) - 'V]g'%- *%'YbhghY\Yb bUWX'X]j YfgYb': Y\`j Yfgi WXYb'X]Y'Dcfh]cb]Yf!'i bX
5VXfY\a UgWX]bYb': 5'(\$'i bX': 5'+\$'gck]Y'X]Y'?c`VYbZi ``Yf': '&\$

 $G]Y`Vf]b[Yb`XYb`8ifW.VfiW.`5iZ`XYf`\pmbhYfbUh]cbU`Yb: `Y]gW.k]fhgW.UZh`]W.Yb: UW.UigghY``ib[`=:5'%-*&']b`AibW.Yb: VYffUgW.h'<UbXhaUbb`X]Y: UW.kY`hibX`jYf_UiZh`UiZY]bYbGW.`U['%)&'gY]bYf'bYiYb':i``UihcaUhYb'Ub'?ibXYb']b'[Ubn9ifcdU"$

A]hrgY]bYb Dcfh]cb]Yfa UgWk]bYb \Uhr < UbXha Ubb XUg^f]Wkh][Y GmghYa 'ni f^f]Wkh][Yb NY]hrdUfUh '=a 'Ni [Y XYf' : fYggk Y``Y 'ghY\h fY]Wk\U`h][Y '9fbU\fi b['i bX'\c\Yf': `Y]gWk_cbgi a ']b XYb K]fhgWkUZhgk i bXYf^U\fYb \cWk']a '?i fg"'I bX'XUa]h Vcca h X]Y A UgWk]bYbZUVf]_'j cb' < UbXha Ubb"'GWk cb'%- * ('UfVY]hYb Xcfh', \$ DYfgcbYb 'i bX'XYf'9I dcfhUbhY]`'VYhfU[h'* \$'DfcnYbh"'=bgVYgcbXYfY X]Y Dcfh]cb]Yfa UgWk]bYb : 5'(\$'i bX'+\$'Yfk Y]gYb 'g]Wk'U`g'YWkhY J Yf_Ui ZggWk`U[Yf']b XYf': `Y]gWk k]fhgWkUZhž'%- *, 'j Yf_Ui Zh < UbXha Ubb'X]Y'hUi gYbXghY: 5'+\$"

< UbXha Ubb k]fX Bi a a Yf Y]bg a]h J U_i i a Zi ``Yf</pre>

5i WX 'XUg' Dfc Xi _hdcfhZc`]c'k UWX gh.'%- * + 'Vf]b[h'X]Y
A UgWX]bYbZUVf]_'XYb'YfghYb'J U_i i a Zi ``Yf'Ui Z'XYb'A Uf_h"
6YgcbXYf\Y]h']gh'XUg': `i [Y`nY``YbZcfXYfk Yf_'Z] f'Yl U_hY
Dcfh]cb]Yfi b["'=b'XYf': c`[YnY]h'Uj UbW]YfYb'X]Y']b'j YfgWX]YXYbYb
@Y]ghi b[gghi ZYb'Ub[YVchYbYb'J U_i i a Zi ``Yf'ni a
<Ui dhi a gUhnhfU[Yf"'A]h']\bYb'k]fX'<UbXha Ubb'%-, \$
K Y`ha Uf_hZ \fYf']b'XYf': i ``!'i bX'Dcfh]cb]YfhYWXb]_' i bX']gh'Yg
V]g'\Yi hY"'%- +- 'YffY]WXh'X]Y'A UgWX]bYbZUVf]_'a]h'' \$\$
A]hUfVY]hYbXYb'Y]bYb'I a gUhn'j cb'', 'A]``]cbYb'8!A Uf_ž'&\$&&
g]bX'Yg'%' +' '6YgWX UZh][hY'i bX'fi bX'' (\$'A]c"'9i fc'l a gUhn"

8 Ua]h']gh'X]Y': i ``!'i bX'Dcfh]cb]YfhYW\b]_'XYf'nk Y]h[fc » hY
; YgW\UZngVYfY]W\'VY]' < UbXha Ubb"'%-, * 'gcf[h' < UbXha Ubb'YfbYi h
Zi f'5i ZgY\Yb'i bX'dfUgYbh]Yfh'XYb'k Y`hk Y]h'YfghYb
a]_fcdfcnYggcf[YghYi YfhYb'J U_i i a Zi ``Yf'J:', \$"

A]``Ybb]i a !BYi VUi `XYf`: UVf]_`]b`6]VYfUW\! 5gdUW\

± XYf: c`[YnY]h'X][]hU`]g]Yfh'< UbXha Ubb'gck c\`gY]bY'A UgW\]bYb
U`g'Ui W\`XYfYb: Yfh][i b[i a ZUggYbX"'Ni gUhn`]W\'Yf[UbnYb
Ui hca Uh]gW\Y'5VXfY\!ž'GW\bY]XY!'i bX'5i Z\Ub[Y`]b]Yb'XUg
5b[YVch"'5`g'5bhk cfh'Ui Z'9fbU\fi b[g[Yk c\b\Y]hYb']a 'K UbXY`
`]YZYfh'< UbXha Ubb']bnk]gW\Yb'Ui W\'J Uf]UbhYb'gY]bYf'A UgW\]bYbž
X]Y'g]W\'Ui W\'Z f':]gW\ž'HY][!ž'A]`W\!cXYf'? UgYdfcXi _hYž'GU`UhYž
j Y[YhUf]gW\Y'i bX'7cbj Yb]YbW\!DfcXi _hY'Y][bYb"'GY]h'XYb'%--\$Yf!
₺\\fYb'g]bX']b'XYf'A UgW\]bYbZUVf]_'7B7![YghYi YfhY

8]Y *\understand \text{Uh]cbgZfYi XY YfZU\fh'bcW\a U'g'\understand \text{di 'gYz'U'g'< UbXha Ubb %--, 'XYb'_ca d'YhhYb'BYi VUi 'XYf'Vcca YbXYb'A UgW\]bYbZUVf]_]a 'bYi Yb'\understand \text{Xi ghf}Y[YV]Yh'6]VYfUW\!5gdUW\'VYgW\']Y\\understand \text{k}\\$\$\$

Zc`[hY'X]Y'9]bk Y]\i b["'8]Y'bYi Yb'5b`U[Yb'Yfa c[`]W\Yb'X]Y

BYi ghfi _hi f]Yfi b['i bX'DYfZY_h]cb]Yfi b['XYf': Yfh][i b[gUV`Ui ZY" < Yi hY'XUg'8fY\Ybz'6c\fYbz': fUgYb'i bX'GW\'Y]ZYb']b'XYf

A YhU``j YfUfVY]hi b['g]a i `hUb'a]h

A i `h]Z b_h]cbgVYUfVY]hi b[gnYbhfYb"'6Ui hY]`Y'Ui g'\cW\'Y[]YfhYa

9XY`ghU\``k YfXYb'\]Yf'a]h'Y]bYf'; YbUi][_Y]h'j cb'V]g'ni 'Y]bYa

HUi gYbXghY`a]``]a YhYf'VYUfVY]hYh''\&\\$\'Z\\handle \text{Ti \fh} < UbXha Ubb']b'XYf

A UgW\]bYbZUVf]_'Ui \(\text{YfXYa} 'X]Y'; fi ddYbUfVY]h'Y]bz'X]Y'Y]bY

DfcXi _h]j]hUhgghY][Yfi b[Yb'j cb'V]g'ni ')\\$'DfcnYbh'VfUW\hY"

 $B\ UWX\ ghYf'GWX\ f]hh']gh'\&$$(`X]Y'9]bk\ Y]\setminus i\ b[`Y]bYg\\ j\ c``Ui\ hca\ Uh]g]YfhYb'<cWXfY[\ U``U[\ Yfg'Zi\ f'X]Y'nYbhfU`Y\\ 9fgUhnhY]``c[\]gh]_'XYg'k\ Y`hk\ Y]hYb'<UbXha\ Ubb!GYfj\]WYg'''&$%+'[\ Y\setminus hY]b'nk\ Y]hYgž'bcWX'[\ fc \ YfYg'<cWXfY[\ U``U[\ Yf'a\]h''\ $'A\ YhYfb'<c\ Yž\\ +)\ $$`DU`YhhYb'i\ bX'Y]bYa\ 'j\ c``Ui\ hca\ Uh]gWXYb'?\ 'Y]bhY]`Y`U[\ Yf'a\]h\ *)\ "$$$`@U[\ YfVY\\ U`hYfb']b'6Yhf]YV'''5i\ WX'X]Y'Yfgh'&$$$Y]b[\ Yk\ Y]\ hY':\ UVf]_'k\]fX'\VYfY]hg'&$$-'i\ a\ 'i\ VYf'\)\ $'DfcnYbh'Ui\ Z$

I a 'g]W. 'bcW. 'VfY]hYf'Ui Zhi ghY``Yb'i bX'[Ubn\Y]h`]W.Y

DfcnYgg`cgi b[Yb'Zi f'X]Y'@YVYbga]hhY'j YfUfVY]hi b['Ubni V]YhYbž

Yfk]fVh'< UbXha Ubb'&\$&\$\X]Y'=bchYW; a V< 'a]h'XYb'j]Yf

GhUbXcfhYb''8Yf']b'FYi hhY'fH]fc`E'[YVcfYbY

A UgW.]bYbVUi hYW.b]_Yf'< UfU`X'Gi W.Ub_Už'Yf'j YfUbhk cfhYh'U`g

79C'XYb'I bhYfbY\a YbgVYfY]W.':i``!'i bX'Dcfh]cb]YfgmghYa Y

fl / DE'VY]'< UbXha Ubbž'ZUggh'ni gUa a Yb.' < UbXha Ubb'\Uh'g]W.']b

XYf'J Yf[Ub[Yb\Y]h'gY\f'ghUf_'Ui Z'X]Y'GYf]YbdfcXi _h]cb'j cb

:i``a UgW.]bYb'_cbnYbhf]Yfh''K]f'k c``Yb'< UbXha Ubb'bi b'ghUf_Yf

]b'F]W.hi b['Y]bYg'@]b]YbUbV]YhYfg'Ybhk]W_Y`bž'Ui W.'a]h

_i bXYbgdYn]Z]gW.Yb'5b`U[Yb'gck]Y'; YgUa h`cgi b[Yb'i bX'XUa]h

YW.hYb'A Y\fk Yfh'Zi f'i bgYfY'?i bXYb'V]YhYb'''5i g'X]YgYf'G]hi Uh]cb

fYgi `h]YfhY'X]Y'5_ei]g]h]cb'j cb'+bchYW'8 UXi fW.'g]bX

DYf]d\Yf]Y[YfUhY'k]Y': Y]bghnYf_`Y]bYfYfž'A]gW.Yfž'5VV]bXY!'i bX

K i fghhfYbba UgW.]bYbž'ni a 'DcfhZc`]c'XUni [Y_ca a Yb''

9fZc`[fY]WXY'I bhYfbY\a Ybg[fi ddY'a]h ("'\$\$`A]hUfVY]hYf.]bbYb

&\$&%;gWX`]Yx`jWX'iVYfb]a a h'< UbXha Ubb'XYb'b]YXYf'UbX]gWXYb
5bV]YhYf'j cb'A UgWX]bYbž'5ddUfUhYb'i bX'?ca dcbYbhYb'Zi f'X]Y
@YVYbga]hhY`]bXi ghf]Y'JYfVi ZU"'<Yi hY']gh'X]Y
I bhYfbY\a Ybg[fi ddY']gh'Y]b'k Y'hk Y]h'hUh][Yg
HYWXbc`c[]Yi bhYfbY\a Yb'Ui g'XYa '6YfY]WX'XYf'j YfUfVY]hYbXYb

\$\DXi ghf]Y'a]h'(' \$\$'A]hUfVY]hYbXYbž'XUj cb'&+\$\$'Ua 'GhUa a g]hn']b
6]VYfUWX 'Ub'XYf'F]x' 'i bX'k]fX'bUWX'k]Y'j cf'j cb'XYf
; fi bXYfZUa]']Y'[Y'Y]hYh"'8YnYbhfU`cf[Ub]g]Yfh']gh'< UbXha Ubb']b
gYWXg'; YgWXUZhgVYfY]WXY'a]h'Ui hcbca Yb'A UbU[Ya Ybhghfi _hi fYb
[Y[`]YXYfh '@Y]WX ha YhU``[i gg'i bX'GmghYa hYWXb]_'Zi f'X]Y
5i hca cV]']bXi ghf]Yž': i ``!'i bX'Dcfh]cb]YfgmghYa Y'gck]Y
5b`U[YbhYWXb]_'Zi f'X]Y'@YVYbga]hhY`]bXi ghf]Yž'?i bghghcZZhYWXb]_
i bX'9!Gc`i h]cbg'' < UfU'X'Gi WXUb_U.' K]f'k c``Yb'XUg'K UWXghi a
i bgYfYg'; YgWXUZhgVYfY]WXYg'j cfUbhfY]VYbž']bXYa 'k]f
A Uf_hUbhY]'Y'Ui gVUi Ybž'bYi Y'; YgWXUZhgZY'XYf'YfgWX`]YxYb'i bX

i bg'U`g'U[]`Yb'@cgi b[gUbV]YhYf'Zi f'[YgUa h\UZhYg': ccX DfcWYgg]b['bcW\'ghUf_Yf'dcg]h]cb]YfYb"'8]Y'GhfUhY[]Yž'X]Y'k]f j YfZc`[Yb.'8Ug'DfcXi _hdcfhZc`]c'YfkY]hYfbž'a Y\f'8mbUa]_']b'XYb A Uf_hYb'YfnYi [Yb'gck]Y'[fi bX`Y[YbX'bYi Y'A Uf_hY'gW\UZZYb"

A Uf_i g'< UbXha Ubb'i bX'J U`Ybh]b'l `f]WX ØVYfbY\a Yb

< UbXha Ubb Yfk]fhgWX UZhYhY '&\$&& Y]bYb 'I a gUhn'j cb'%z%
A]``]UfXYb'9i fc"'8i fWX '_cbgYei YbhY'H\YgUi f]Yfi b[gdc`]h]_
Yfa c[`]WXYb'X]Y 'I bhYfbY\a YbgY][bYf'\c\Y'=bj Ygh]h]cbYb']b
: cfgWXi b[z'9bhk]W_`i b[ii bX'DfcXi _h]cbgUb`U[Yb"'5i Z'X]YgY
K Y]gY'i bhYfghi mYb'g]Y'bUWX\U`h]['Y]b'ei U`]hUh]j Yg'K UWXghi a "
8]Y'; fi ddY']gh'U_hi Y```]b'i VYf'%\$\$'@UbXYfb'a]h'Y][YbYb
DfcXi _h]cbgghUhhYbz'B]YXYf'Uggi b[Yb'i bX'K Yf_gj YfhfYhi b[Yb
dfUgYbh''8 Ug'%) \$"':]'a Yb'A V]`Ui a '&\$&' `]gh'a]h'Y]bYa
; YbYfUh]cbgk YWXgY`'Ub'XYf'Gd]hnY'XYg': Ua]`]Ybi bhYfbY\a Ybg
j YfVi bXYb. 'H\ca Ug'< UbXha Ubbz'gY]h'%- - , '; YgWX UZhgZi \fYf'XYf
<UbXha Ubb'I bhYfbY\a Ybg[fi ddYz'i VYf[]Vh'X]Y'@Y]hi b['Ub
gY]bYb'Gc\b'A Uf_i g'< UbXha Ubb'i bX'gY]bYb'BYZZYb'J U`Ybh]b
I `f]WX"</pre>

.

8 Ugʻ=bhYfj]Ykʻa]hʻ@Ug_Uʻnia'nia'xiV]`Àia. < Ub X ha Ub bʻ\Uhʻ; fc » Ufh][Ygʻ[Y`Y]ghY hžʻX Ug V]gʻ\Yi hYʻ6 YghUb Xʻ\Uh

5i WX '7 Uh\ Yf]bY'i bX'FY]b\ UfX'6i f['j cb'**\ \Ubb'@Ug_U'i "'GÒ\ bY g]bX'U`g'`Ub['À\f][Y'< UbXY`gdUfhbYf'Ua '[fc*Yb'9fZc`['j cb < UbXha Ubb'VYhY]`][h"'8 Ug' \DhYfj]Yk 'ni a '\Rightarrow V]`Ài a

: `Y]gW\ / '7c.'%) \$ \Rightarrow U\fY' < Ub X ha Ubb' 'Y]bY [fUbX]cgY'9 $fZc`[g[YgW\]W\ hY"GY]h'k Ubb']gh'@Ug_U$

FY]b\UfX:6i f[.: GY]h:5bZUb[:XYf:GYW.n][Yf*U\fY:XYg:j cf][Yb

\$U\f\i bXYfhg:[]Vh:Yg:Y]bY:Yb[Yž:gY\f:ZfYi bXgW.UZh:]W.Y

DUfhbYfgW.UZh:a]h:< UbXha Ubb":A]h:5fh\i f:< UbXha Ubbž:XYa

'Y]XYf:gW.cb:j YfghcfVYbYb:GYb]cfW.YZ*k Uf:XUa U`g:X]YgYg

5V_ca a Yb:j YfY]bVUfh:k cfXYb":=\W. 'Yf]bbYfY:a]W.*X*XUgg:k]f:Ui Z

XYb:: Y]gW.Yfa YggYb:]a a Yf:GdU»:\UhhYbž:XYbb:Yf:k Uf:gY\f
\i a cfj c``"Ni '6Y[]bb*Z'U`g'Yg`gW.cb:XYb'YfghYb'J'U_i i a Z ``Yf
[UV*zk UfYb'X]Y'<]hg:XYbbcW.'X]Y'?c`VYbZ ``Ui hca UhYb']b'XYb

; fc»Yb'(\$'i bX'+\$'@]hYf"A]h']\bYb'_cbbhY'a Ub'Yfgha U`g
[fUa a [YbUi 'dcfh]cb]YfYb'i bX'UVXfY\Yb*z'XYbb'V]g'XU\]b'[UV'Yg

'U'bi f'; YfUXYUi gZ ``Yf"'G]Y'dUgghYb'Ui W.'[YbUi ']b'X]Y'_`Y]bhY]`][Y
Ghfi _hi f'XYg'XUa U`][Yb'cghYffY]W.]gW.Yb:: Y]gW.Yf[Yk YfVYg"

FY]b\UfX`6i f[...9]bYb'JU_i i a Zi ``Yf'[UV'Yg'ni bUW\gh'Ui Z[fi bXgY]bYf'; fc»Y'bi f'Zi f'X]Y'\DXi ghf]Y''A]h'XYf'9bhk]W_`i b['XYg: `i [Y`nY``YbZcfXYfk Yf_g'\Uh'<UbXha Ubb'UVYf'; fc»Ufh][Yg[Y'Y]ghYhž'XUg'V]g'\Yi hY'6YghUbX'\Uh'''9g'[]Vh'_Y]b'UbXYfYg: cfXYfk Yf_ž'XUg'Y]bYb'YI U_hYfYb'JcfgW\i V'i bX'j cf'U``Ya 'Y]bYgW\cbYbXYfY'6Y\UbX`i b['XYg': i ``[i hYg'Ui Zk Y]gYb'_Ubb'' A]hh`Yfk Y]`Y'cZh'_cd]Yfh' '_Y]b'JYf[`Y]W\"

: `Y]gW\ / '7c. K c\]b [Y\h'X]Y '9bhk]W_`i b[']b XYf : i ``hYW\b]_3

 $7 \text{Uh} Y f] \text{b} Y \text{'6} \text{i} \text{ f} \text{[} ... \\ \text{b} \text{'} \text{XYb} \text{''YhnhYb} \text{'} \text{J} \text{Y} \text{fYb} \text{'i} \text{b} \text{X'} \text{J} \text{YhnhYb} \text{'} \text{J} \text{J} \text{hi} \text{Yh} \text{b} \text{hi} \text{b} \text{J} \text{gh} \text{XUg} \\ \text{a} \text{ UgW} \text{]} \text{b} \text{Y} \text{`'Y} \text{'5} \text{b} \text{[} \text{YVch} \text{Ybcfa} \text{'} \text{[} \text{Yk} \text{ UW} \text{gYb} \text{''J} \text{U}_{\text{i}} \text{i} \text{a} \text{Z} \text{''Y} \text{f} \text{a} \text{]} \text{hi} \text{XYb} \\ \text{Yfj} \text{ cffU} \text{[} \text{Yb} \text{XghYb} \text{'5} \text{i} \text{ gghUhhi} \text{ b} \text{[} \text{Yb} \text{'} \text{[} \text{]} \text{Vh} \text{Yg} \text{'j} \text{ cb} \text{'} \text{<} \text{Ub} \text{Xha} \text{ Ubb} \text{'} \text{Yi} \text{hY} \\ \text{b} \text{Uhi} \text{ f} \text{`]} \text{W} \text{'Z} \text{ f} \text{'?} \text{'Y} \text{]} \text{b} \text{!'} \text{i} \text{b} \text{X'A} \text{]} \text{hhY} \text{`[} \text{Yk} \text{YfVY} \text{Z'YVYbgc} \text{'k} \text{]} \text{Y'} \text{Zi} \text{ f} \text{X]} \text{Y} \\ \text{j} \text{YfgW} \text{]} \text{YXYbghYb} \text{']} \text{bXi} \text{ghf} \text{]} \text{Y} \text{``Yb} \text{'5} \text{bk} \text{YbXi} \text{b} \text{[} \text{Yb} \text{''8} \text{]} \text{Yni} \text{bY} \text{\'a} \text{Yb} \text{XY} \\ \text{5} \text{i} \text{hca} \text{Uh} \text{]g} \text{]} \text{Yf} \text{b} \text{'} \text{j} \text{b} \text{XYf} \text{'DfcXi} \text{_h} \text{]} \text{cb} \text{'Zi} \text{hYf} \text{`UVYf} \text{`Ui} \text{W} \text{'ni} \text{f} \\ \text{9fnYi} \text{[} \text{i} \text{b} \text{[} \text{'j} \text{cb} \text{'j} \text{c} \text{``Ui} \text{hca} \text{Uh} \text{]g} \text{W} \text{Yb} \text{'GW} \text{bY} \text{]} \text{XY!} \text{i} \text{bX'} \text{<} \text{Ub} \text{[} \text{Y} \text{`b} \text{]} \text{Yb} \text{Z} \\ \text{8 cg} \text{]} \text{YfgmghYa} \text{Yb} \text{Z'A} \text{i} \text{`h} \text{]!: cfa} \text{`]b} \text{]Yb} \text{Z'} \text{ccW} \text{j} \text{U_i} \text{i} \text{a} \text{!HYW} \text{bc} \text{`c} \text{c} \text{[]} \text{Y'Z} \text{f} \\ \text{j} \text{YfgW} \text{]YXYbY} \text{5bk} \text{YbXi} \text{b} \text{[} \text{Yb} \text{Z'} \text{7 cb} \text{!Dfc} \text{!GmghYa} \text{Y'ni} \text{a} \text{'5i} \text{ZhfU} \text{[} \\ \text{Y]b} \text{Yf} \text{ZY} \text{]bYb} \text{'d} \text{Z} \text{Ubn} \text{`]W} \text{Yb} \text{'K} \text{i} \text{fgh} \text{i} \text{``Y'UbghY} \text{``Y'Y} \text{]bYg} \text{SUfa} \text{gii} \text{"'ij} \text{"} \\ \text{'} \text{`Yh} \text{`Yh}$

a "'8 Yf'5i hca Uh]g]Yfi b[']gh'YXYbZU``g'Hi f'i bX'Hcf'[YcZZbYh" A]hh`Yfk Y]`Y'g]bX'Y]bnY`bY'GmghYa Y'Ui W\']b'UbXYfYb@YVYbga]hhY`VYfY]W\Ybž'Yhk U']b'XYf'6UW_k UfYb]bXi ghf]Y'i bXXYf[`Y]W\Yb']a '9]bgUhn"

: `Y]gWX / 7c. K]Y _ca a h @Ug_U U`g < Ub XY `gd Ufhb Yf XUa]h ni fY WX h3

`Ub[Y'[Ya Y]bgUa Y'Ni _i bZh°

 $7 \text{Uh} Y f] \text{b} Y \text{`6i} f[. . . 8] Y Y b[Y \text{`Ni} g \text{Ua} a Y \text{b} \text{Uf} Y Y] \text{ha}] \text{h} < \text{Ub} X \text{ha} \text{Ub} b Z \text{If} Y \text{VUN} g Y b g] b X "; Ub n k] W h] [] g h X] Y g h Ub X] [Y <math>\Rightarrow$ Z c fa Uh] c b Z f i bg Y f J Y f _ Ui Z g d Y f g c b U ` i b X X] Y ` Ui Z Y b X Y G W i ` i b [i bg Y f Y f H Y W \ b] _ Y f z X Y b b g c b g h _ c b b h Y a Ub a] h X Y f f Ug Ub h Y b ' h Y W \ b] g W Y b ' 9 b h k] W _ ` i b [' b] W h G W f] h h ` \ U ` h Y b " K] f g] b X ' X] Y g V Y ni [`] W . ` Ui Z Y] b Y a ' g Y \ f [i h Y b ' K Y [z X Ug ' n Y] [Y b i bg ' ni a] b X Y g h X] Y ' J Y f _ Ui Z g n U \ ` Y b " F Y] b \ Uf X ' 6 i f [. . ` & \ Ub b ' @ Ug _ U ' i " ` G c \ b Y ' X Ub _ h X Y a ' \$ i V] ` Uf Z f X] Y ' U \ f n Y \ b h Y ` Ub [Y ` D Uf h b Y f g W U Z h i b X ' k i b g W h ' g] W ` b c W ' Y] b Y \ X \ Y \ D U f h b Y f g W U Z h i b X ' k i b g W h ' g] W ` b c W ' Y] b Y \ X \ Y \ D Y \ D U f h b Y f g W U Z h i b X ' k i b g W h ' g] W ` b c W ' Y] b Y \ X \ Y \ D Y \ D Y \ D U f h b Y f g W U Z h i b X ' k i b g W h ' g] W ` b c W ' Y] b Y \ X \ Y \ D

6Ygi W.Yb G]Y i bg Ui Z. Z`Y]gW i bX Wc "Uh