

ARTS1271

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5ggcWJUHY DfcZYggcf 5bXfYk 6YUHJY	, ,	H67 cfVm Uddc]bha Ybh	A 6&('	-',) [.] &'&, fH67Ł

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@c\\U||cb. G\\cc`C\\Z|\\\žA cfj\Yb'6fck\b'6i]\X]b[\\ž@Yj\Y``&\\z\&),

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9a U]`. \<u>\U`4 i bgk "YXi "Ui</u>

Cif'HYUWX]b['ghfUHY[m]g'hc'YbWcifU[Y'mcif'Wf]h]WU`'Yb[U[YaYbhik]h\'WcifgY'aUhYf]U`'h\fci[\'WUgg X]gW gg]cbz']bHYfUWf] Y'cb']bY'ei]nnYgz'k f]HYb'fYgdcbgYg'UbX'U'WUgg'HYgH'H\Y'WcifgY'k]``'U'gc'\Y`d'mciXYjY`cd'mcif'UbU'mf]WU`'g_]``gz'Ug'kY'k cf_'cb'df]aUfm'UbX'gYWcbXUfm'gcifWYg'h\Uh\Y`d'ig'ibXYfgHUbX'h\Ydc']h]Wg'cZh\Y'dfYgYbh''

5ggYgga Ybh

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C b`]bY'E i]nnYg'	' \$1	&' #\$(#&\$&%`\$).\$\$`DA	&ž' ž'(
K f]h]b['9 YfW]gYg') \$1	\$, #\$' #&\$&%'UbX'&- #\$' #&\$&% \$).\$\$'DA	(Ž)
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8 YW] g.

6UgYX`cb`h\Y`cb`]bY`WUggYg`h\UhZcW`g`cb`g][b]ZJWUbhdc`]hJWU``]XYc`c[]Ygžcf`']ga g'žgh XYbhg`Wca d`YhY`U g\cfhei]n`k YY_`m'

⇒bhYfUWnjjYei]nž]a a YX]UhYZYYXVUW_"

5XX]h]cbU`XYhJ]`g.

H\Y'cb`]bY'ei]nnYg'UfY'Ya VYXXYX']bhc'h\Y'f=ga g'``YWhi fY'gYf]Yg'cb'A ccX`Y"'9UW\fea g`YWhi fY']g'Vfc_Yb i d']bhc'gY[a Ybhgž'Uhh\Y'YbX'cZk\]W\fei Ygh]cb''Wc]W\fei Ygh]cb'''Mci 'WUb'k UhW\f\Y'YWhi fY'gY[a Ybhg a i `h]d'Y'h]a Ygž'Vi hcb`m[Yhhc'Ubgk Yf'h\Y'ei Ygh]cb'cb\W''': YYXVUW_']g']a a YX]UhY/d`YUgY'bchY'h\Uh|]hik]`` cb`mhY```mci ']Zmci '[Yhh\Y'Ubgk Yf'f][\hcf'k fcb["'K Y'fYWca a YbX'h\Uhmci 'k cf_'h\fci [\h\Y'=ga g `YWhi fYg'cb'U'k YY_`mVUg]gž'Ug'h\Y'WcbhYbh]g'WU`]VfUhYX'hc'h\Y'YWhi fYg'UbX'hi hcf]U`g''

Hi fb]hjb gYhjb[. H\]g]g bchU Hi fb]hjb Ugg][ba Ybh

5ggYgga Ybh& K f]h]b[9l YfW]gYg

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\. '9| YfW|qY'5.', \$\$'k cfXg"'9| YfW|qY'6.'\;\$\$'k cfXg"

8 YW] g.

Ghi XYbhgʻWca d`YhYʻhk cʻfYgdcbgYgʻhcʻhi hcf]U``fYUX]b[gž'UbU`mn]b[ˈU'df]a Ufmigci fWYʻ]bʻh\Y``][\hcZUgYWcbXUfmigci fWY''CbY`]gʻ, \$\$`k cfXgž'cbY`]gʻ%\$\$`k cfXg"

: YYXVUW_]grZfca "h\Y h hcfj]U Hi fb]h]b"

5XX]h]cbU`XYhU]`g.

K f]h]b['91 YfW]gYg'

H\YgY`YI YfWlgYg`UfY`U]a YX`UhiXYj Y`cd]b['mci f`g_]``g`]b`fYUX]b['UbX`UbU`mg]b['df]a Ufma UhYf]U`ž'U`cb[g]XY U`gYWcbXUfmgci fWlžUbX`Zcfa i `Uh]b['Ub`Ubgk Yf#Uf[i a Ybh'

: cf'Vch\rh\rgy'YIYfW]gYgžmci k]``VY'a Uf_YX'cb'mci f'UV]`]mmlc'i gY'h\Y'gYhYI hg'hc'fYgdcbX'ZI``m—'Vi h WcbW]gY`m—'nc'h\Y'ei Ygh]cb"'Mci 'UfY'bchYI dYWNYX'hc'i bXYfHU_Y'Ubm'UXX]h]cbU`'fYUX]b[/kY'UfY'`cc_]b['Zcf Yj]XYbWY'cZmci f'WcgY'fYUX]b['cZh\Y'gYhYI hž[fci bXYX'U[U]bgh'h\Y'a UhYf]U``]b''YWh fYg'UbX'hi hcf]U`g"

H\YfY`UfY`lk c`k f]ljb[`Yl YfWjgYgžXi Y`cb`, `A UfW\`&\$&%'Uh`) da /UbX`&- `A UfW\`&\$&%'Uh`) da "`8 YhU]`g`cZh\Y Ugg][ba Ybh'UfY`cb`A ccX`Y"`

 $\label{thm:continuous} \begin{tabular}{ll} Hi & fb & fb & gYM &$

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5 https://bxubwww.Fyei]fYaYbhg

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K YY_'%''%) ': YVfi Ufm!''% : YVfi Ufm	Hcd]W	±blfcXi Wgcb'hc'fffi\Y``cb['lk Ybr]Yh\'Wfbh fmtiztca'h\Y GdUb]g\':`i'hc'7 cj]X!% /a cXYfb]ga
K YY_'&.'&&': YVfi Ufm!'&* : YVfi Ufm	Hcd]W	H\Y'; fYUhK Ufž]a dYf]U`]ga žUbhJ!Wc`cb]U` bUhJcbU`]ga
K YY_" ."%"A UfVX"!") A UfVX	Hcd]W	H\Y`Wf]g]g`cZ]bhYfk Uf`XYa cWfUWhž'Wca a i b]ga ž' bUh]cbU`]ga
K YY_'(.', 'A UfWX'!'%& A UfWX	Hcd]W	: UgW]ga ž'h\Y`GYWcbX`K cf`X`K Ufž`[YbcW]XY`UbX X]gd`UWYa Ybh
K YY_") ."%) "A UfWX"! "% A UfWX	Hcd]W	A Ufl]ga ž'h\Y'7c`X'K Uf
K YY_'*.'&&'A UfW\'!'&* A UfW\	Hcd]W	: `YI `k YY_`! `bc `WUggYg
K YY_"+."&- "A UfW\"!"& 5df]`	Hcd]W	8 YWc`cb]gUl·]cbž[`cVU``gcW]U``a cj Ya Ybl·gž ZYa]b]ga
K_YY_', .') '5df]`'!'- '5df]`	Hcd]W	7 ca a i b]ga fg`Wc``UdgY`]b`9i fcdYž'dYfg]ghYbWY`]b 5g]Už'bYc`]VYfU`]ga
K_YY_'''&'5df]`'!'%* 5df]`	Hcd]W	; `cVU`]gUt]cbžWf]g]g`cZUXj UbWX`WUd]tU`]ga ž Ybj]fcba YbtU`]ga
K_YY_`%\$.`%_'5df]``!`&' 5df]`	Hcd]W	7 cbWi X]b['X]gWi gg]cbž'dcdi `]ga

FYgci fW/g

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Gca Y´UfY´Zfca `h\Y`Zc``ck]b[`Vcc_žk\]W\`k Y`fYWca a YbX`fVi hXcbffi]bg]ghz`mci `di fW\UgYž'Vi h]g`Uj U]`UV`Y Y`YWfcb]WU``mh\fci [\`h\Y``]VfUfm\WUhU`c[i Y.

7":5"'6Ummž'<u>DW_S][Y_fZW?aVWd_L_adV\f#+""Z\$"#',9^aTS^5a``WUf[a`eS`V_5a_bSd[ea`e</u>z'@cbXcb. K_]Ym'6`UW_k_Y``z'&\$% "

FYWca a YbXYX FYgci fWfg

GYY'A ccX`Y'Zcf'fYWca a YbXYX'dcXWUghg'UbX'ch\Yf'fYgci fW'g"

7 ci fgY '9j U'i Uh]cb UbX 8Yj Y'cda Ybh

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

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HY'Yd\cbY'9| hYfbU'`Gi ddcfhcb'-',) '' ' ' %cf'Ya U]`'h\Ya 'cb'Y! hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUfŁ"'=Imci
UfY'i bUV'Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi 'hk]h\'Hi fb]hJb'mci 'a UmUdd'mZcf'Ub'Y! hYbg]cbž'Vi hmci
a i ghfYhJ]b'mci f'hJW_Yhbi a VYf'Zfca '9! hYfbU'`Gi ddcfhfU'cb['k]h\'Ubmch\Yf'fY'Yj UbhXcW a YbhgŁ'hc
]bWi XY'Ug'Yj]XYbW'hc'gi ddcfhmci f'Y! hYbg]cb'Udd']WUhJcb"'=Imci 'Ya U]''9! hYfbU'`Gi ddcfhmci 'k]'`
Ui hca UhJWJ'`mfYWY]j Y'U'hJW_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k]'``bYYX'hc'gdYWJZJWJ'`mUg_'Zcf'cbY''
Hi fb]hJb'U'gc'dfcj]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hYf"

; YbYfU`mž'UggYgga YbhiHug_g'a i ghVY'gi Va]hhYX'Y`YVWfcb]\WJ``mij]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k]h\U`hYfbUh]j Y'gi Va]gg]cb'XYHJ]`g"

: cf']b \mathbb{Z} cfa Uh]cb'cb'\ck 'hc'gi Va]h'Ugg][ba Ybhg'cb`]bY'j]U'A ccX`Y. `\hhdg.##gh XYbh'i bgk "YXi "Ui \mathbb{A} ck! qi Va]h'Ugq][ba Ybha ccX`Y

5 WUXYa]W<cbYghmUbX D`U[]Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i=hWJbihU_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiWXYUh]b[ihciUWW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hiUW_bck iYX[Ya Ybh'

IBGK [fcidg'd'U[]Uf]ga]bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

• i bXYfgHJbX'mci f'f][\hg'UbX'fYgdcbg]V]`]h]Yg'Ug'U'gh XYbh'Uhil BGK