Yet more Welsh affairs! Using the same translation manual as §34.3 – i.e.

\begin{itemize}
  \item ‘a’ means Angharad
  \item ‘b’ means Bryn
  \item ‘m’ means Mrs Jones
  \item ‘F’ means \ldots speaks Welsh
  \item ‘G’ means \ldots is a girl
  \item ‘L’ means \ldots loves \ldots
  \item ‘M’ means \ldots is taller than \ldots
\end{itemize}

and where the domain of quantification again consists of human beings – we are to translate the following into QL\textsuperscript{w}.

Throughout, of course, we are to use Russell’s Theory of Descriptions: so, we render a sentence of the kind ‘The F is G’ into QL\textsuperscript{w} by corresponding wffs of one of the forms

\begin{align*}
  (R) & \exists x((Fx \land \forall y((Fx \land y = x) \land Lm)) \\
  (R') & \exists y\forall x((Fx = y = x) \land Gv)
\end{align*}

(R) could be rebracketed as: \(\exists x((Fx \land (\forall y(Fx \land w = y)) \land Gv))\), and (R') as \(\exists y(\forall x(Fx = y = x) \land Gv)\).

We give some alternative versions (with some Loglish mixes on the way!):

\begin{enumerate}
  \item The Welsh speaker loves Mrs Jones.
    \begin{align*}
    & \exists x((Fx \land \forall y((Fx \land y = x)) \land Lm)) \\
    & \exists x\forall y((Fx = y = x) \land Lm)
    \end{align*}
  \item The girl who loves Angharad does not loves Bryn.
    \begin{align*}
    & \exists x((Gx \land Lxa) \land \forall y((Gy \land Lya) \supset y = x)) \land \neg Lxb) \\
    & \exists x\forall y((Gy \land Lya) = y = x) \land \neg Lxb)
    \end{align*}
  \item Angharad loves the girl who loves Bryn.
    \begin{align*}
    & \exists x((Gx \land Lxb) \land \forall y((Gy \land Lyb) \supset y = x)) \land Lax) \\
    & \exists x\forall y((Gy \land Lyb) = y = x) \land Lax)
    \end{align*}
  \item The Welsh speaker who loves Mrs Jones is either Angharad or Bryn.
    \begin{align*}
    & \exists x((Fx \land Lxm) \land \forall y((Fx \land Lym) \supset y = x)) \land (x = a \lor x = a)) \\
    & \exists x\forall y((Fx \land Lym) = y = x) \land (x = a \lor x = a))
    \end{align*}
  \item Someone other than the girl who loves Bryn is taller than Angharad.
    \begin{align*}
    & \exists x((Gx \land Lxb) \land \forall y((Gy \land Lyb) \supset y = x)) \land Someone other than x is taller than a) \\
    & \exists x((Gx \land Lxb) \land \forall y((Gy \land Lyb) \supset y = x)) \land x \land \exists z(\neg z = x \land Mza)) \\
    & \exists x\forall y((Gy \land Lyb) = y = x) \land \exists z(\neg z = x \land Mza))
    \end{align*}
  \item The one who loves Angharad is the one she loves.
    \begin{align*}
    & \exists x((Lxa \land \forall y((Lya \supset y = x))) \land x is the one who a loves) \\
    & \exists x((Lxa \land \forall y((Lyb \supset y = x)) \land \exists z((Laz \land \forall w((Law \supset w = z)) \land z = x)) \\
    & \exists x\forall y((Lyb = y = x) \land \exists z((Law = w = x) \land z = x))
    \end{align*}
  \item Only if she loves him does Bryn love the girl who speaks Welsh.
    \begin{align*}
    & \exists x((Fx \land Gx) \land \forall y((Fx \land Gy) \supset y = x)) \land Bryn loves x only if x loves Bryn) \\
    & \exists x((Fx \land Gx) \land \forall y((Fx \land Gy) \supset y = x)) \land (Lbx \supset Lxb)) \\
    & \exists x\forall y((Fx \land Gy) = y = x) \land (Lbx \supset Lxb)
    \end{align*}
  \item The girl other than the girl who loves Bryn is Angharad.
    \begin{align*}
    & \exists x((Gx \land Lxb) \land \forall y((Gy \land Lyb) \supset y = x)) \land The girl other than x is a) \\
    & \exists x((Gx \land Lxb) \land \forall y((Gy \land Lyb) \supset y = x)) \land \\
    & \exists z((Gz \land \neg z = x) \land \forall w((Gw \land \neg w = x) \supset w = z)) \land z = a))
    \end{align*}
\end{enumerate}
9. The shortest Welsh speaker loves Bryn.

That is to say: the Welsh speaker who is shorter than all other Welsh speakers loves Bryn. Now consider the predicate ‘x is a Welsh Speaker and shorter than all other Welsh speakers’, i.e \( Fx \land \forall w((Fw \land \neg w = x) \supset Mwx) \). Plugging that into the usual RTD schemas, we get

\[
\exists x((Fx \land \forall w((Fw \land \neg w = x) \supset Mwx) \land \forall y((Fy \land \forall w((Fw \land \neg w = y) \supset Mwy) \supset y = x)) \land Lxb)
\]
or, more simply

\[
\exists x \forall y((Fy \land \forall w((Fw \land \neg w = y) \supset Mwy)) = y = x) \land Lxb
\]

10. The shortest Welsh speaker loves the tallest Welsh speaker.

\[
\exists x((Fx \land \forall w((Fw \land \neg w = x) \supset Mwx) \land \forall y((Fy \land \forall w((Fw \land \neg w = y) \supset Mwy) \supset y = x)) \land x \text{ loves the tallest F})
\]

But similarly x loves the tallest F is

\[
\exists v((Fv \land \forall w((Fw \land \neg w = v) \supset Mvw) \land \forall z((Fz \land \forall w((Fw \land \neg w = z) \supset Mzw) \supset z = v)) \land Lxv)
\]

Plugging the two together we get ...

\[
\exists x((Fx \land \forall w((Fw \land \neg w = x) \supset Mwx) \land \forall y((Fy \land \forall w((Fw \land \neg w = y) \supset Mwy) \supset y = x)) \land \exists v((Fv \land \forall w((Fw \land \neg w = v) \supset Mvw) \land \forall z((Fz \land \forall w((Fw \land \neg w = z) \supset Mzw) \supset z = v)) \land Lxv))
\]

And we are done!