Here $\mathcal{F}^+$ and $\mu^+$ are as defined in the notes on completion of measure spaces.

**Exercise 1.3.1.** Let $(\Omega, \mathcal{F}, \mu)$ be a measure space and define

$$\mathcal{G} = \{ A \subset \Omega : A \triangle B \in \mathcal{N} \text{ for some } B \in \mathcal{F} \}.$$ 

(a) Show that $\mathcal{G} = \mathcal{F}^+$.

(b) If $B \in \mathcal{F}$ and $A \triangle B \in \mathcal{N}$, show that $\mu^+(A) = \mu(B)$.

Note that (a) and (b) together provide an alternative way to define the completion of a measure space.