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Clarify ctype<> Members widen() and narrow()

The question arises frequently when to use the ctype<> member functions widen() and narrow(), and when to use the codecvt<> facet.

The distinction is actually quite simple: the codecvt<> facets of a locale convert between any two encodings specified for a locale. The codecvt<char,wchar_t,mbstate_t> facet might convert between (e.g.) extended EBCDIC and Unicode. The ctype<charT> facet members widen() and narrow convert only between the character type charT and the encoding supported by your compiler.

In other words, the appropriate argument values for codecvt<> members tend to arrive via an input device, whereas arguments for ctype<>::widen are character literals. This distinction does not appear to be clear in the draft, but should be.

Proposed Resolution

In [lib.locale.ctype] (22.2.1.1), add a paragraph:

3 The argument to members widen(), and the result of members narrow() have the encoding of the native execution character set, identical to that of character and string literals. [Example: an appropriate use of widen would be widen('0') to produce the character representing the digit zero in a locale's character encoding.
-- end example]