What is the longest year number (yet) written in Roman numerals ?

```
library(tidyverse)

tibble(y = 1:2020) %>%
  mutate(r = as.roman(y),
         l = str_length(r)) %>%
  slice_max(l)
# A tibble: 1 x 3
      y r                l

1  1888 MDCCCLXXXVIII    13
```

It is year 1888, with 13 characters…

And the largest writable number being 3899, according to the strict rules in R (however some say it's 3999),
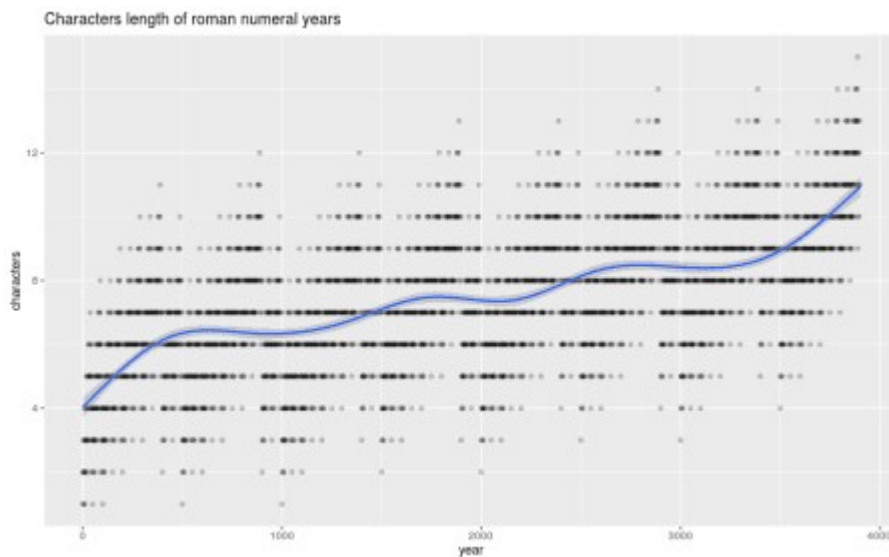
```
tibble(y = 1:5000) %>%
        mutate(r = as.roman(y),
               l = str_length(r)) %>%
        filter(lead(is.na(l))) %>%
        slice_min(l)
# A tibble: 1 x 3
      y r              l

1  3899 MMMDCCCXCIX    11
```

the longest overall year will be year 3888 with 15 characters.

```
tibble(y = 1:3899) %>%
        mutate(r = as.roman(y),
               l = str_length(r)) %>%
        slice_max(l)
# A tibble: 1 x 3
      y r                 l

1  3888 MMMDCCCLXXXVIII    15
```

Nice pattern :

```
tibble(y = 1:3899) %>%
        mutate(r = as.roman(y),
               l = str_length(r)) %>%
        ggplot(aes(y, l)) +
        # geom_col(width = 1) +
        geom_point(alpha = .2) +
        # geom_line(alpha = .5) +
        geom_smooth() +
        labs(title = "Characters length of roman numeral years",
                x = "year",
                y = "characters")
```

Characters length of roman numeral years

And there are only eleven palindromic years :

```r
tibble(y = 1:3899) %>%
        mutate(r = as.character(as.roman(y)),
               rr = stringi::stri_reverse(r)) %>%
        filter(r == rr,
               str_length(r) > 1)
# A tibble: 11 x 3
      y r       rr

  1      2 II      II
  2      3 III     III
  3     19 XIX     XIX
  4     20 XX      XX
  5     30 XXX     XXX
  6    190 CXC     CXC
  7    200 CC      CC
  8    300 CCC     CCC
  9   1900 MCM     MCM
 10   2000 MM      MM
 11   3000 MMM     MMM
```