



*The Madonna of Canon van der Paele, painted by Jan van Eyck in 1436, shows that spectacles were then in use.*

## THE INVENTION OF SPECTACLES

by E. C. WATSON

**A**LTHOUGH THE ANCIENTS were apparently more familiar with optics than with any other branch of physics, and although mirrors and burning glasses are very old — and the magnifying power of such glasses was observed quite early — it may safely be said that the lens as an optical instrument was practically unknown up to A.D. 1270. The question of whether the ancients had any knowledge of the theory and use of dioptric instruments, such as lenses, telescopes, and microscopes, has

been examined exhaustively by Professor Thomas Henri Martin, Dean of the Faculty of Letters of the University of Rennes, and his conclusion is definitely a negative one.

There is good reason to believe that spectacles were invented in Italy near the end of the thirteenth century. Their inventor was most probably Salvino d'Armato degli Armati of Florence, who died in 1317. The evidence for this identification, as summarized by E. Wilde,

Charles Singer, and George Sarton is as follows:

1. The naturalist, poet, and scholar, Francesco Redi, published in 1678 and again in 1690 a manuscript dated 1289, in which was the following passage: "I find myself so pressed by age that I can neither write nor read without those glasses they call spectacles, lately invented, to the great advantage of poor old men when their sight grows weak."

2. Bernard De Gordon, a physician at Montpellier, in his *Lilium medicinae* (1303), in recommending an eye-salve, says, "It is of such great value that it will make an enfeebled old man read tiny letters without spectacles."

3. Giordano Da Rivalto, a Dominican friar of Pisa, in a sermon delivered on February 23, 1305, said that "it is not twenty years since there was discovered the art of making spectacles to see better, one of the best and most necessary of arts . . . I have myself seen and spoken to the man who first discovered and made them."

4. A Latin chronicle of 1313 or thereabouts, which was originally in the library of the monastery of St. Catharine at Pisa, but which is now lost, stated that "Brother Alexander of Spina, a modest and good man, knew how to make anything which he had seen or heard of. He made spectacles, which had been previously made by someone who was unwilling to communicate his knowledge, while he himself was only too glad and willing to do so."



Altar screen by Michael Wohlgemuth (1434-1519) in the church of St. James in Rothenburg, Germany.

5. An epitaph in the church of Santa Maria Maggiore in Florence reads as follows: "Here lies Salvino d'Armato degli Armati of Florence, inventor of spectacles. May God pardon his sins. Anno D. MCCCXVII."

The first spectacles may have consisted of two lenses suspended by pieces of leather from a cap. The form with which we are now familiar probably dates from the early fifteenth century.

### Spectacles and artists

After their invention, the use of spectacles spread slowly over Europe. This fact can be demonstrated by a study of old paintings as well as in other ways.

The *Madonna of Canon van der Paele*, executed by Jan van Eyck in 1436, clearly shows a pair of spectacles. This fine painting now hangs in the Municipal Museum, Bruges, Belgium. Other early paintings of note in which spectacles or eye-glasses are clearly depicted include an altar screen by Michael Wohlgemuth (1434-1519) in the church of St. James in Rothenburg, Germany (above), and the *Portrait of a Clergyman* painted by Quinten Massys about 1515, which was in the Liechtenstein Gallery at Vienna (left).

*One of a series of articles devoted to reproductions of prints, drawings and paintings of interest in the history of science—drawn from the famous collection of E. C. Watson, Professor of Physics and Dean of the Faculty of the California Institute.*



*Portrait of a Clergyman (with glasses), by Quinten Massys, was painted in about 1515.*