

for  $x=10(01)100$ , with second differences. Some changes have been made in the introductory matter (which is now printed) and in the auxiliary tables at the end of the volume.

A. FLETCHER.

*Geometria Intuitiva per la Scuola Media.* By EMMA CASTELNUOVO. 2nd edition. Pp. 320. L. 650. 1953. (La Nuova Italia, Firenze) 911

When I agreed to review this book I had not yet visited the Liceo Tasso in Rome where Miss Castelnovo teaches boys and girls from 11 to 14 years of age. I already knew the first edition of the book which I had read with great interest in 1951, but the contact I have since had with two classes of her pupils made a deeper impression than was possible from merely reading of her ideas and imagining how she proceeds.

The book under review is the product of a mind with views on education which may inspire some readers. Since it gives great place to experimentation in learning about geometrical facts, and does not introduce deductive proofs too early, it will not appear alien to British secondary school teachers. But even empiricists must make a choice of material and since in Italy the syllabus is imposed by the Ministry an original approach presents considerable difficulty. Nevertheless Miss Castelnovo has realised the feat of re-thinking her syllabus and of presenting the work in such a way that the interest of her pupils is held throughout the three year course and that they are equipped with an impressive knowledge of geometry when they proceed to the higher schools (as I was informed by teachers who have been receiving her pupils since 1944). Her solution would have appealed to Sir Percy Nunn and is explicitly historical in the sense that it is constructive and not descriptive and proceeds, like Clairaut's book (1741), from simple measurements of land and of accessible and inaccessible distances to the study of equality of areas and thence to that of congruity and similarity. But in accordance with modern practice, Miss Castelnovo starts with geometrical drawing to introduce the figures and to ensure good habits of accuracy and neatness, and to comply with the regulations she adds three chapters on solid geometry.

The use of the term "intuitive geometry" implies nowadays that the aim remains, as before, knowledge of theorems and geometrical facts, but that the presentation of the material will start with wholes which will be analysed and not with definitions and axioms, with actions that will gradually be formalised and whose validity will be extended, rather than with general statements universally valid from the start (at least as far as the teacher's mind is concerned).

The teaching summarized in this book deals with the stage of geometrical discoveries that can be met in the fields stated above; it suggests activities and series of actions that lead to a point forecast by the teacher and controlled by him, and it proposes an order of difficulty which results from the historical attitude, not from investigation of the pupils' minds. Within this framework the book will be a mine for the teacher who will find useful material in the exercises that occupy almost half the text, in the reproductions of photographs showing a number of beautiful ornaments and buildings that suggest a link between geometry and reality, in the historical summaries which are usually scattered in various books.

Written by an enthusiast for active methods in geometry, the daughter of an eminent mathematician, accustomed to meeting mathematicians and to hearing about mathematics from her earliest years, the book is mathematically reliable and pedagogically sound. Miss Castelnovo has learnt from her classes what can be done with safety and with ease and pleasure. Adapted to the British situation, the book could serve a useful purpose not only in libraries but as an aid to more realistic teaching.

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