AUGUSTINE TO GALILEO. The History of Science A.D. 400-1650. By A. C. Crombie. (Falcon Educational Books; 42s.)

Dr Crombie has succeeded admirably in providing the single-volume history of medieval science that has so long been needed. It is now an easier task to assess the scientific thought of the Middle Ages, and to compare it with that of the seventeenth-century 'revolution' which made it possible. The actual results are impressive enough, for discoveries were made in every branch of speculative and applied science: and it is no small tribute to Dr Crombie's erudition and skill in presentation that throughout this vast field there is very little that seems unclear or uninteresting. But since ideas are harder to produce than to apply, the main emphasis is rightly put on the change of outlook that developed continuously until it was put into practice by the brilliant experimental work at the end of the period.

The Middle Ages had recovered the Greek aim of explaining nature in terms of causes, together with its most complete product, the closely-knit Aristotelian system. But to this desire to understand nature was added the desire to dominate it, perhaps because of the growing interest in practical techniques. For such a purpose it was sufficient to discover a mathematical hypothesis that would 'save the appearances'; this type of theory also had the great advantage of being readily proved or disproved by experiment. Physics ceased to be sharply distinguished from mathematics, and except in the biological sciences qualitative explanations became something of an embarrassment: 'it was difficult to see what to do with a theory of physical causes, however necessary they might seem to be theoretically for a complete explanation of the observed occurrences'. By the time of Galileo mathematical explanations had come to be considered enough in themselves: the familiar Cartesian world of extension was born.

After tracing theoretical development to this point, it might have been better to omit the rapid final survey that covers the remaining three centuries, and enables Dr Crombie to introduce his own (and in our opinion over-simplified) view that science is a structure of hypotheses chosen with regard to nothing more than convenience. The book ends with a very full bibliography, which would have been even more useful had it been provided with critical notes. The decision not to burden a work of this kind with references is no doubt a wise one, but it means that most of Dr Crombie's statement have to be taken on trust. If these are blemishes, however, they do little to detract from the value of an excellent book. There can be nothing but praise for the way in which the main ideas are traced through the mass of detail that supports them, with no appearance of superficial or hurried treatment, and with the help of ample quotation and illustration that brings every page to life.

L.B.