

themselves marry and found their own families. The wise chapter on sex instruction is wholly to be commended, and schoolmasters would do well, when opportunity arises, to recommend this book to parents whose children are approaching adolescence.

HENRY ST JOHN, O.P.

SCIENCE AND HUMANISM. By Erwin Schrödinger. (Cambridge University Press; 8s. 6d.)

SCIENCE AND CHRISTIAN APOLOGETIC. By E. F. Caldin. (Blackfriars Publications; 2s. 6d.)

One of the less desirable products of the Scientific Age has been the specialised scientist, the 'type of scientist without precedent in history', described by Ortega y Gasset in his book *The Revolt of the Masses*:

He is a person who, of all the things that a truly educated person ought to know of, is familiar only with one particular science, nay even of this science only that small portion is known to him in which he himself is engaged in research. He reaches the point where he proclaims it a virtue not to take any notice of all that remains outside the narrow domain he himself cultivates, and denounces as *dilettantist* the curiosity that aims at the synthesis of all knowledge.

This and other passages from the same author are quoted by Professor Schrödinger in the first of the four lectures, delivered at University College, Dublin in February 1950, which go to make up his book. He goes on to express his opinion that in the twenty-odd years that have passed since the first publication of Ortega's book, the state of affairs has considerably improved, that 'the awareness that specialisation is not a virtue but an unavoidable evil is gaining ground, the awareness that all specialised research has real value only in the context of the integrated totality of knowledge'. Yet it is a measure of the extent to which the dangers of specialisation still remain that he considers it necessary to exhort his fellow-scientists: 'Never lose sight of the rôle your particular subject has within the great performance of the tragic-comedy of life; keep in touch with life. . .'. Then they must tackle the social problems of communicating the results of their researches. 'If you cannot—in the long run—tell everyone what you have been doing, your doing has been worthless.' After the exhortatory introduction comes practical example. The rest of the book is a masterly exposition of the present state of physics and of the radical change in scientific outlook brought about by the developments of the last half-century. Two developments seem to be especially significant of this change—the hypothesis of indeterminacy in the microcosm and the surrender of the claim that physics can give a 'true' account of reality. 'For in order that a description be *capable* of being true, it must be capable of

being compared *directly* with actual facts. That is usually not the case with our models.' This seems to imply that scientists are beginning to realise the limitations of scientific method (i.e. the method of physics). Since this method is quantitative, based on measurement, it can only give a mathematical account of nature. The discrepancy between the scientists' models and external reality is therefore not surprising. The surprising thing is that such a method should have been expected to give a true picture of a world which includes so many things not susceptible of purely quantitative treatment. If, as Professor Schrödinger contends, scientific effort is to be envisaged as 'part of man's endeavour to grasp the human situation', it must necessarily recognise the existence of 'non-scientific' methods of considering man's nature and environment.

Meanwhile, in popular estimation, scientific explanation is still assumed to be the only valid kind of explanation, and many people think of the inductive method, the method of natural science, as the only valid rational method. Dr Caldin in his Aquinas lecture is concerned with the situation created by these assumptions for Christian Apologetics. Popular scientific explanations of physical, biological and psychological phenomena have 'crowded out' the theistic explanations, so that these, though not disproved, have come to be ignored by the great majority. It is therefore necessary for the Christian to show that other types of explanation besides 'scientific' are possible and necessary, in particular that the methods employed in establishing the divine origin of Christian revelation and in formulating the knowledge derived from revelation are valid. Dr Caldin shows how in doing this it is possible to take advantage of the present prestige of scientific method by pointing out analogies between the method of apologetics and that of science. The most interesting of these analogies concerns the use of interpretation, which is used both in inductive science and in apologetics. Just as science uses its data as 'signs' whose interpretation leads to generalisations about phenomena, so the divine origin of revelation is recognised by the interpretation of the relevant 'signs', i.e. the traditional 'motives of credibility'. It would seem however that Dr Caldin fails to distinguish sufficiently between the conclusion as to the divine origin of revelation and the act of faith itself. It may very well be that in the concrete 'the interpretation of divine signs requires that our ordinary intellectual powers be strengthened by divine grace', but the teaching of the Church is that the 'motives of credibility' are in principle naturally knowable, that their interpretation does not necessarily presuppose the possession of supernatural faith.

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