1958. Here the author generalises this theory to encompass larger classes of operators such as the Riesz operators (or as he calls them asymptotically quasi-compact operators—those with quasinilpotent images in the Calkin algebra) in Banach spaces.

Considerable attention is directed to the problem of putting the appropriate norms on the tensor products of Banach spaces and then using this notation the author gives exhaustive discussions of the various expansion formulae associated with the names of Sikorski, Lezanski, Plemelj and Grothendieck besides surveying his own work commenced as a graduate student under Frank Smithies in Cambridge.

The reader should be warned, however, that the author has been somewhat ingenuous in his choice of title. To a modernist, a work on Fredholm theory in Banach spaces without a reference to the Fredholm index would be unthinkable. This book does not attempt to survey the spectral theory which has given Fredholm and semi-Fredholm operators in Banach spaces such a central role in modern analysis. Rather is it a specialist text on Fredholm's theory of determinantal expansions of the resolvent by an expert in the field.

T. T. WEST

KLINE, M., *Mathematics and the search for knowledge* (Oxford University Press, New York, 1985), pp. 257, £21.

Professor Kline has made use of his encyclopaedic knowledge of the history of mathematics to give a readable and coherent résumé of his view of the changing role of Mathematics from ancient times to the twentieth century. Briefly his thesis is that mathematics was first honoured in the ancient world for semi-mystical reasons by philosophers; that after the renaissance the revolution in the human conception of the universe wrought by the mathematically based work of Copernicus, Galileo, Kepler and Newton led to a quasi-religious respect for mathematics as revealing the ways of God in creating and ordering the world; that in the later eighteenth and early nineteenth centuries this religious faith declined but the reliance on mathematics as a source of ultimate truth increased; but that recently causes of doubt arising in the heart of Mathematics and Physics—the existence of non-euclidean geometries and the uncertainty principles of quantum mechanics for example—have led modern thinkers to abandon absolute truth as a standard against which Mathematics is measured.

The whole book requires a minimum of technical mathematical knowledge and gives an illuminating oversight of the historical developments sketched above with many interesting observations along the way.

I was left wondering at the end why the book seemed vaguely unsatisfactory to me. There appear on reflection to be two reasons. The first is that a rather large number of imprecisely worded sentences have been allowed to remain in the final version of the text. Examples from Chapter VII are "...the science of electricity, the Greek word for amber" and "...the peculiar property of magnets is their power of attracting unmagnetized iron or steel, a stronger magnet being able to pull a heavier piece of iron to itself" and "Volta realized that the two unlike metals were producing a force, now called electromotive force...". There is a correct idea in each case which can be understood by one who knows it, but the uninstructed reader may well be slightly misled.

The second reason is more fundamental and is implicit in the theme Professor Kline has chosen. When the book has been read one is left with the feeling that the golden days of certainty in mathematical truth are done, and that the Götterdämmerung is on us. Although much about our present era is dark I cannot accept that no adequate successors to early nineteenth-century attitudes to Mathematics have been proposed or explored. There is indeed no single unified Philosophy of Mathematics, but it is surely partly for this reason that the subject is alive and interesting.

M. PETERSON