Chapter 8, called "Non-Einsteinian Theories of Gravitation", deals with topics of current interest for which Professor Stephani could find no room earlier. Possible tests of alternatives to Einstein's theory of gravitation, the PPN formalism and quantum gravity. This last chapter is not up to the standard of the others because the author seems to me to be very unenthusiastic about the subject matter. Section 30 on quantum gravity is very skeptical about the outcome of current research.

An excellent course of lectures could be created from this book for either an honours degree course or M.Sc. It has everything the potential research student ought to know!

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"MATHEMATICAL BYWAYS IN AYLING, BEELING AND CEILING"

By *Hugh ApSiman*

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This is the first book of a new series called Recreations in Mathematics from O.U.P. The series is aimed at 'all lovers of mathematics' and will include not only new titles, but also translations and reprints of classics.

Mathematical Byways is a book of problems. The problems themselves are of a familiar type, many being concerned with integer-sided triangles and optimising strategies, but the for-

mat of the book is rather unusual. Each of the chapters is introduced by a specific problem featuring some aspect of rural life in the three villages of Ayling, Beeling and Ceiling. For example, in Chapter 1 we meet Farmer Able's pretty daughter and are asked to work out how far from the ground is her windowsill if a ladder of length 18 ft 5 ins will just reach it when there is a packing case with cross-section 5 ft x 5 ft directly below the window. Later problems involve, for example, the areas of sheep pens, strategies for sheepdog trials and the shortest possible road system which connects the three villages.

Each of these specific problems is followed directly by the statement of a more general problem, which is solved in detail. The solution to the original problem is then given and each chapter ends with remarks about the 'composer's problem' and possible 'extension problems'. In this way each of the eleven problems in the book is given a very thorough treatment which should certainly be accessible, as the author claims, to a 'properly taught sixteen year old".

In fact the author's solutions are in some ways almost too good! Many readers will not, I fear, try to solve the specific problems, but turn immediately to the general problems (which are sometimes easier to understand) and so proceed inevitably to their solutions. With a more conventional style of format this might have been avoided, and also many more problems of a similar standard could have been included, without reducing the depth of their treatment. Most of the extension problems given look decidedly difficult, though one at least can be settled by a short computer search.

To sum up, this is an interesting book, well illustrated and with only a few misprints, and I enjoyed the treatment of the problems given. However I couldn't help recalling how much more is to be found in the books of puzzles and games by Martin Gardner or, at a more advanced level, in Donald Newman's splendid 'Problem Seminar'.

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