of the important theorems connected with the four colour problem are
here, for the first time, collected in one book.

W. T. Tutte

De proportionibus proportionum and Ad pauca respicientes, by
Nicole Oresme. Edited with introductions, English translations, and
critical notes by Edward Grant. The University of Wisconsin Press:
Madison, Milwaukee, and London, 1966. xxii + 466 pages, 11 plates.
$10.75.

"No scientific figure in the Middle Ages combines in his works
such originality with the more traditional views of natural philosophy
as does Oresme" - this is the judgement of Prof. Marshall Clagett,
editor of the well known series in which this edition of two of Oresme's
treatises is published. Perhaps best known to mathematicians for
his theory of the 'latitudines formarum', a kind of graphical
representation of variable quantities, Oresme (1323?-1382) also
brought to higher perfection the theory of proportions which was first
developed by Thomas Bradwardine (1290?-1349). This Oxford
mathematician had replaced the customary form $V \propto \Gamma/R$ of
Aristotle's law of motion (V = velocity, F = motive power, R = resistance)
by the more sophisticated relation $F_2/R_2 = (F_1/R_1)^{V_2/V_1}$; the
expression on the right hand side of the last equation was called a
'ratio of ratios'. "De proportionibus proportionum" is a treatise
about the handling of such 'ratio of ratios'. It is more advanced than
the better known "Algorismus proportionum" of the same author. Of
particular interest is the consideration of irrational 'ratios of ratios'
and the conclusion that the heavenly motions (which are considered in
greater detail in the second treatise of this edition) are most probably
incommensurable to one another. This gives Oresme a weapon with
which to fight against astrological prediction.

The present edition of the Latin texts is based on several
manuscripts and equipped with an English translation, a lengthy
introduction, variant readings, critical notes, bibliography and index.
Other works by Oresme are being prepared for edition in the same series.
They will help to prove - if a proof is still needed - that the so-called
"dark" Middle Ages were not so dark, after all, as previous generations
were used to believe.

C. J. Scriba, University of Hamburg

Lecons sur les fonctions calculables, par V. A. Ouspenski,
Traduit du russe par André Chauvin. Hermann, Paris, 1966.
412 pages. 48F.

This book is an introduction to the theory of recursive functions. The book contains fourteen chapters.

Chapter I discusses the intuitive concepts of calculable functions and enumerable sets.

Chapters II and III supply the terminology and notation from set theory and mathematical logic necessary to make the book self contained.

Chapters IV to IX develop the standard results on partial recursive functions and recursively enumerable sets (including the cases of primitive and general recursion).

Chapter X presents the elementary results on simple and hyper-simple sets.

Chapter XI introduces the powerful new concept of "numerotage". General results about principal "numerotages" show why such specific technical devices as Gödel numbering are so useful.

The last three chapters give applications of the theory developed. Chapter XII concerns calculable real numbers. Chapter XIII deals with the constructive infinity, innumberability and inseparability of sets. Chapter XIV applies the theory to abstract calculating machines.

The book would serve as an excellent introduction to recursive functions for students with a minimum of background. It is extremely thorough with very few details omitted (in fact often unnecessarily repeating arguments completely analagous to previous ones). It does not contain any exercises (and it is difficult to conceive of any that it could). The only bad feature of the book is the extreme number of typographical errors, often several to a page. They occur mostly in the subscripts and superscripts. Most of the errors are obvious but they may prove disconcerting to a student.

K.W. Armstrong, University of Manitoba

A course in tensors with applications to Riemannian geometry, by R.S. Mishra. Pothishala Private Ld, Allahabad 1965. iii + 199.

This book is designed to meet the requirements of those who wish to make a systematic study of tensors and Riemannian Geometry. It also emphasizes the utilitarian aspect and it will be of some value to those who study tensors as essential tools in other branches like relatively modern algebra, fluid mechanics, elasticity, etc. The presentation is axiomatic and rigorous and the book can be characterised as an elementary modern textbook, the word "elementary" meaning that no fibre bundles or Lie groups are used throughout the book.

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