hopefully, will remain in the future: overt product sponsorship for maths contests and drugs testing for recipients of mathematics prizes.

The stories vary in length, ingenuity and sophistication. I enjoyed the Hitchcock-like darkness of 'The integral: a horror story', the central conceit of 'Journey to the centre of mathematics' (which is revealed to be the empty set), the lure of 'A killer theorem' – a problem so enticing that algebraists stop eating and die once they are hooked by it, and the sheer silliness of 'class reunion' in which functions punningly socialise at the level of 'So e^x is your ex.'. The mathematics employed in this collection ranges from actual mathematics quoted or modelled accurately, through real mathematics used figuratively '(the big theorem) would make Riemann-Roch look like Zorn's Lemma', to pseudo-mathematics (which sounds plausible, but is essentially gibberish) and spoof mathematics (which sounds plausible, but is silly, 'A subprime is a prime number that is a factor of a larger prime.').

As with all humour, reactions to this book will vary from individual to individual. It is a quick, light read but, for my own tastes and risking the accusation of exhibiting Snark-like tendencies, I found the humour in many of the stories to be rather forced. There are a few typos – Leibniz is misspelt twice and $\zeta(2)$ purports to be $\frac{\pi^2}{4}$ on page 235 – and I would really like to know whether the mislabelling of the curve $y = x^2 - 2x$ on the cover and frontispiece is a mistake or a joke!

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Those fascinating numbers, by Jean-Marie De Koninck. Pp. 426. £34.95. 2009. ISBN: 978-0-8218-4807-4 (American Mathematical Society).

This book consists essentially of a list, in numerical order, of some of the positive integers from one to the *Skewes number*, highlighting any 'interesting' properties they may possess. Needless to say, most numbers in this enormous interval have been omitted! The smallest number missing from the list is 95, and, a bit like the behaviour of the primes, the included numbers tend to get more spread out as we proceed through the book. As might be expected, the latter part of the book is littered with large perfect numbers and Mersenne primes (including large prime *repunits*).

The material has not been partitioned into sections or chapters; instead it comprises a continuous list with anything from one to ten numbers occupying a single page. This structure (or lack of it) would seem to be fairly sensible, given that the numbers are presented in numerical order. However, an alternative might have been to group them according to their highlighted properties, in which case the utilisation of themed chapters could have been deemed appropriate.

There is very much a number-theoretic flavour to the book, with many of the properties being related to well-known arithmetic functions such as ϕ and σ, denoting *Euler's phi function* and the *sum-of-divisors* function respectively. Some rather more obscure arithmetic functions also make the odd appearance. Many of the numbers on the list are there by virtue of being the smallest or the largest integer with some particular property. Here are several examples to give the reader an idea of the content:

(1) 17907119 is the smallest positive integer n satisfying the equation $\phi(n) = 5\phi(n + 1)$ (p. 302).

(2) 168 is the largest-known integer k such that the decimal expansion of 2^k does not contain the digit 2 (p. 50).

(3) 38358837677 is the smallest known prime for which the inequality

$$\pi^2(p) < \frac{ep}{\log p}\pi\left(\frac{p}{e}\right)$$

does not hold, where π is the prime-counting function (p. 355). Incidentally, Ramanujan proved that this inequality holds for p sufficiently large.

(4) 130370767029135901 is the 17th horse number. A number n is said to be a *horse number* if, for some k, it represents the number of possible results, accounting for ties, in a race in which k horses participate (p. 381).

The vast majority of the results given are presented simply as facts. Although one would imagine that most of the properties had been obtained with the aid of a computer, it is not in general clear which results had arisen in this manner and which had been derived by way of manual proofs. Although some proofs are provided, they are few and far between.

The target audience is difficult to gauge; maybe, in addition to students with a fascination for number theory, this book might appeal to people interested in recreational mathematics or to those looking for ideas on which to base number-theoretical, possibly computer-aided, investigations. It is extremely well-referenced and could certainly instigate some little explorations into various aspects of number theory.

The statement on the back cover of the book starts with the sentence:

> "Who would have thought that listing the positive integers along with their most remarkable properties could end up being such an engaging and stimulating adventure?"

This is a very good question! Although it is not a book that I could ever see myself buying, I did enjoy rummaging through it in a semi-random fashion, being pulled here and there by way of the various cross references. This is a difficult book to recommend, although if you are genuinely fascinated by the properties of the integers, however obscure they might seem, then you would probably take pleasure in making a rambling journey through its pages. It is the sort of book I will return to every now and again in order to pick out some new number-theoretic gem.

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The finite simple groups, by Robert A. Wilson. Pp. 298. £53.45 (Hardback). 2009. ISBN: 978-1-84800-987-5. (Springer).

In one of her novels [1], Iris Murdoch wrote that the archaic period of early Greek history 'sets a special challenge to the disciplined mind. It is a game with very few pieces, where the skill of the players lies in complicating the rules'. Allowing myself the temerity of altering, or just swapping round, a couple of her words, the same can perhaps be said of the study of the finite simple groups.

Groups are just about the most abstract of mathematical objects and therefore any discovery of their properties empowers us to apply the knowledge to countless different areas. Problems involving the structure of finite groups, and thus their action on other related objects, can often be reduced to problems about finite simple groups. Similar to the primes among the natural numbers, the finite simple groups are the basic building blocks from which the finite groups are made. The reader may have seen such a vague sentence before, but a more precise way of saying it will require the definition for simplicity and the Jordan-Hölder theorem. Anyway, just like the primes, the finite simple groups are of fundamental importance in many