

destroying the claims of astrology with the piece-de-resistance being Chapter 29, aptly entitled Time to shun astrology. (The reviewer would seriously like to suggest to the UGC that this portion of the book be made compulsory course material in all universities.) The final chapter, Chapter 33 concludes with quotations from some of the finest minds of our times, Pandit Nehru, Swami Vivekananda and Karl Popper. The author would have done well to add the following quote from one of the most creative minds of all times (– no, not Newton or Einstein but Shakespeare!).

“This is the excellent foppery of the world, that, when we are sick in fortune, often the

surfeit of our own behaviour – we make guilty of our disasters the sun, the moon, and the stars: as if we were villains by necessity; fools by heavenly compulsion; knaves, thieves, and treachers, by spherical predominance; drunkards, liars, and adulterers, by an enforced obedience of planetary influence; and all that we are evil in, by a divine thrusting on: an admirable evasion.... .”

To conclude, this book, priced at a modest sixty five rupees, is a must for every college student.

A Sitaram, Indian Statistical Institute, Bangalore Centre, R V College Post, Bangalore 560 059, India.

The Lady or the Tiger:

A Review

S P Suresh



*The Lady or the Tiger
and Other Logic Puzzles*
Raymond Smullyan
Oxford University Press
1987, pp.226.

Inspector Craig has again been called in on a life-saving mission. One of the top-security banks in Monte Carlo (for security reasons the name of the bank is withheld!), has just lost the combination of their biggest safe. (An overzealous clerk has safely deposited the only card containing the combination in the safe and locked it up!) The safe contains

some state documents which must be produced within three months, and blowing the safe open is out of the question.

It is at this point that the readers are invited to join Craig in his hunt for the combination. The only clues available are a set of five rules which define a certain binary relation on the space of possible combinations.

Craig eventually succeeds in finding a combination which opens the lock, but before that he (along with the reader) has a series of fascinating encounters with some number machines invented by his friends Norman McCulloch and Malcolm Fergusson, which amazingly leads him to a combination that opens the safe.

All these encounters involve proving close variants of a famous result in the theory of

computable functions known as the second recursion theorem (or sometimes as the fixed-point theorem). This is a delightful theorem whose proof involves a positive use of double diagonalization (in contrast to the more usual negative use of double diagonalization in the proofs of theorems of Cantor, Tarski, Gödel, Turing, and others). Smullyan's versions of the theorems are easily stated without an excess of formalism or notational baggage. They can all be phrased as: Find a program for this machine which is its own output (on any input)! These are a delight to solve for any puzzle buff. The main idea behind the proof of the fixed-point theorem is seen remarkably clearly as one solves Smullyan's puzzles.

But I should emphasise that one need not know anything about recursion theory to enjoy this book. A school kid with enough application can solve most of the puzzles found here.

After successfully solving the Monte Carlo Lock Mystery, Craig, McCulloch, and Fergusson (and the reader of course) have further adventures with some more number machines which bring them face to face with some of the deepest logical questions which are at the very heart of the discoveries by Gödel, Turing, and others.

The first two parts of the book deal with the usual Smullyan puzzles of the knight-knave kind. These puzzles exclusively use propositional reasoning. The ability of Smullyan to weave such intricate puzzles as he does involving only propositional reasoning is amazing.

Most readers are familiar with the Island of Knights and Knives where knights always tell the truth and knaves always lie. This book also contains a lot of puzzles based on the above island or some close variant. It has introduced something new in the form of the Island of Questioners, whose inhabitants only communicate by asking questions. There are two types of inhabitants. The type A inhabitants only ask questions whose correct answer is yes, whereas the type B inhabitants only ask questions whose correct answer is no. The reader gets a flavour of life in this island by considering the following puzzle:

The Gordons are inhabitants of the island. Once Mr. Gordon asked his wife, "Darling, are we of different types?" Deduce what you can about each of them!

If you find this puzzle intriguing enough, then you're sure to enjoy Craig's adventures at the asylum of Dr. Tarr and Prof. Fether, where anybody, doctor or patient, can be either sane or insane, effectively sane people always tell the truth and insane people always lie and Craig's mission is to find out if there is an insane doctor in the asylum! Things really get out of hand in Transylvania where each inhabitant is either a human or a vampire, and either totally sane or totally insane!

All in all, the book offers you guaranteed fun from cover to cover. One piece of advice though: Take the book slowly! More than an hour at a stretch will leave you dazed!

S P Suresh, Junior Research Fellow, The Institute of Mathematical Sciences, CIT Campus, Taramani, Chennai 600 113. Email: spsuresh@imsc.ernet.in