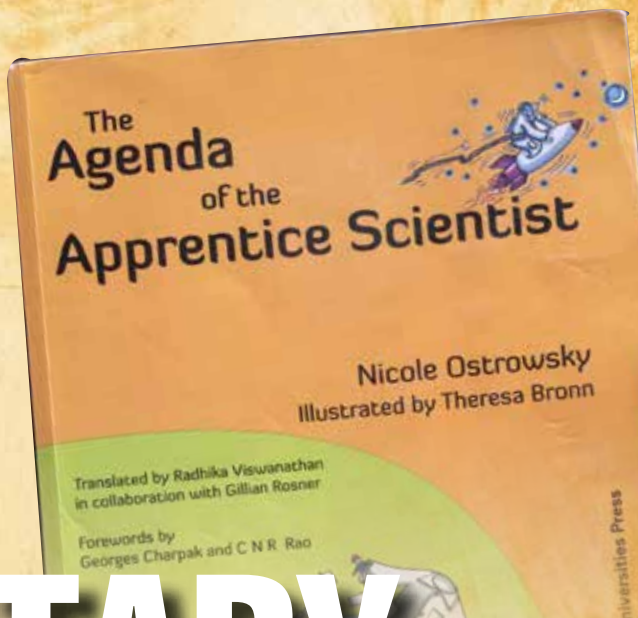

ELEMENTARY, MY DEAR WATSON!

ISHAAN & SANGEETHA RAJ

Are you looking for a book that offers a fun, new perspective to science? In this review, join a mother and son as they share their experiences of one such book, called The Agenda of the Apprentice Scientist.

Written by Nicole Ostrowsky and illustrated by Theresa Bronn, **The Agenda of the Apprentice Scientist** is a book that is 'accessible to everyone, from 7 to 107'. It explores concepts that make sense to even students at the upper primary and middle school levels (9–13 years) through experiments that can be done at home with easily available materials. By inspiring one to be curious and playful in the exploration of science, it can be appealing to anybody, even those who consider themselves to be far removed from the world of science!

The author has worked as a research scientist for decades, and is now Professor Emeritus at the Laboratory of Physics and Condensed matter at the University of Nice, France. The original edition, written in French, has been translated into English by Radhika Viswanathan and Gillian Rosner. Published in association with the French Embassy in India by Universities Press, the book is available for Rs.553 on Flipkart and Amazon (India).

If you are looking to buy a copy of this book, please send an email to the distributors at:

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Ishaan: I first saw **The Agenda of the Apprentice Scientist**, when Yasmin aunty (the chemistry teacher at CFL, and my mother's friend) lent it to me. After looking through the book and doing a few experiments, I decided to get my own copy.

Unlike many books that say 'Experiments to do at home', **The Agenda of the Apprentice Scientist** sticks to its word. It asks only for materials such as paper, straws, balloons and ice cubes. This makes doing the experiments much easier. I recently came across a book that required two gallons of liquid nitrogen to freeze homemade ice cream!

The Agenda of the Apprentice Scientist gives you an experiment, a quote on the experiment, an explanation, and last but not least, a hilarious illustration of apprentice lab coats on every page. At the top of every page is the title of the activity followed by the instructions. Since this book wants to give the reader an experiment to do every day of the year, instead of a page number there is a date, such as March 3rd or June 10th. In the middle of the page there is a large white space for the reader to note down observations. There is also a quote about the activity. The quotes vary from funny to philosophical to inspirational. August 22nd and 23rd are both activities that involve freezing but the quotes are so different. On 22nd, it says "True friendship doesn't freeze in winter" and on 23rd, "He who got burnt with hot milk will blow on his ice-cream to cool it down". Towards the bottom of the page is an illustration of the apprentice lab-coats doing the experiment and comparing results, and making funny remarks.

One of the reasons I like this book is the way concepts are explained. They not only tell the reader what happens when you put baking powder in vinegar (Mar 8th) - the vinegar starts bubbling and the balloon slowly inflates, but also how and why, what happens, happens (one of the ingredients of the baking powder reacts with the vinegar to create carbon dioxide. This fills the bottle and inflates the balloon).

The book has experiments that people of all ages can enjoy and learn from. Many of the activities are very simple but the results can be very exciting, such as

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making smoke rings (Nov 24) using a cardboard tube or making different types of paper airplanes (May 25). On many occasions I have got adults and children alike to participate enthusiastically in these experiments.

Most science books are written on one subject such as Chemistry, Biology, or Physics. Although sticking to the fundamentals, this book covers all three. The book is not divided into thematic sections, but some topics (such as temperature, sound etc.) are clubbed together. When using the book one can follow the 365 activities (one for every day of the year) in order, or do them at random. Certain activities continue over more than a day/page - it is necessary to do these in the right order.

There is only one thing that I found confusing in this book — the Index. When I searched for an experiment in the Index, such as the Smoke rings experiment I mentioned earlier, I looked for keywords such as smoke or rings, only to find the experiment under incense. When I looked for the vinegar and baking soda experiment, I found it under balloon. Another instance was when I wanted to show my friend the famous wineglass experiment — where, by slowly moving your finger along the rim of a wine glass which has been smeared with a thin layer of vinegar, you make the glass sing (June 6th). I looked under W for wineglass and under V for vinegar but finally found it under P for pitch. I think a Contents page with the title of the experiment might have been useful.

In conclusion I'd like to say that **The Agenda of the Apprentice Scientist** is one of the best books I've used. Each and every activity is worth trying.

Sangeetha: I opened the book tentatively, as I do all books related to science, and read the Foreword to the French edition. I felt a little bolder and ventured to read the Foreword for the Indian edition. Positively emboldened, I felt the apprehension fading and a mild curiosity began to occupy its place.

But as I turned to day one, that is, January 1st, I was rudely hurled back into my 8th standard classroom, sitting absently in the back row, doing my very best to go unnoticed by the science teacher. The illustration on page one has a lab coat, drawing a snowflake and saying "I am a scientist, not an artist". Oh! Another book, I thought, that simply defines and categorises the world, in order to make sense of it. I closed the book and forgot about it.

But the book appeared again and again, sitting at our dining table or reclining on our sofa, raiding our kitchen for eggs, salt, vinegar, match sticks, ice cubes, and so on, raiding my barely alive potted plants for earthworms, pulling open shelves for candles, twine, bits of copper wire. The book is not responsible for all of the raiding Ishaan did, although he was definitely inspired by it.

And those incomprehensible words, the ones I'd gladly erased from memory - inertia, diffusion, density, gravity, electrons, friction, and so on, began to feature regularly at mealtime conversations, and on long drives in the car.

My curiosity reappeared and I found myself participating enthusiastically in the discussions, and waiting a little anxiously for the outcome of this or that experiment.

To be able to tell the difference between a raw and boiled egg seemed like a useful skill to have, and it greatly amused me to see the boiled one spinning and the raw one toppling over. And then to learn that the liquid inside

Figure 1. A page from the book. Photo credits: Ishaan and Sangeetha Raj.

the raw egg couldn't just up and move at the same speed as the shell, gave clearer properties to the words 'solid' and 'liquid'. All I remembered about liquids from my school textbooks is that it takes the shape of its container.

I took it to be primarily a book of science experiments; it proved to be more than that. The book took science out of that lofty lab, where I had placed it, and made it a part of everyday experience - accessible and commonplace. Not something I needed to study and 'get through', but something that I could engage with and enjoy, just as I did a good story or a poem.

Ishaan is a 12-year-old boy who has a keen interest in science, and is schooled at home.

Sangeetha volunteers at the Annaswamy Mudaliar School, where she teaches English. She is Ishaan's mother.