Mr Tompkins is back!

The mild-mannered bank clerk with the short attention span and vivid imagination has inspired, charmed and informed young and old alike since the publication of the hugely successful *Mr Tompkins in Paperback* (by George Gamow) in 1965. He is now back in a new set of adventures exploring the extreme edges of the universe – the smallest, the largest, the fastest, the farthest. Through his experiences and his dreams, you are there at Mr Tompkins's shoulder watching and taking part in the merry dance of cosmic mysteries: Einstein's relativity, bizarre effects near light-speed, the birth and death of the universe, black holes, quarks, space warps and antimatter, the fuzzy world of the quantum, the demolition derby of atom smashers, and that ultimate cosmic mystery of all … love.

Mr Tompkins, the star of these stories, was introduced in a small book, *Mr Tompkins in Wonderland*, published in 1941. This was followed in 1944 by a second volume, *Mr Tompkins Explores the Atom*. In 1965 the two books were combined with much updating and a number of new chapters as *Mr Tompkins in Paperback* (which, despite its title, was published in both paperback and hardback editions). Mr Tompkins has, for over 50 years, been a constant presence in bookshops the world over, watching his younger (perhaps more flashy) rivals come and go. He is now back to show new generations of delighted readers the way into the physics of the twenty-first century.

Russell Stannard has established a reputation as one of the most gifted popularisers of science through numerous media appearances and projects, and in particular for his *Uncle Albert Trilogy* (*The Time and Space of Uncle Albert, Black Holes and Uncle Albert,* and *Uncle Albert and the Quantum Quest*), which covers the work of Albert Einstein and quantum theory in a way that is accessible to children of 11+. These books have enjoyed much success and critical acclaim, being translated into 15 languages, shortlisted for the Rhone–Poulenc non-fiction Book Prizes, the Whitbread Children's Novel of the Year, and the American Science Writing Award.

George Gamow (1904 to 1968) was not only one of the most influential physicists of the twentieth century (one of the founders of the Big Bang theory) but was also a master at science popularisation. Of his many popular books, the best known is *Mr Tompkins in Paperback* (1965).

The NEW World of Mr Tompkins

George Gamow's classic *Mr Tompkins in Paperback*

fully revised and updated by **Russell Stannard**

Illustrated by Michael Edwards

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Reviser's Foreword

There cannot be many physicists who have not at one time or other read the Mr Tompkins adventures. Although originally intended for the layperson, Gamow's classic introduction to modern physics has had enduring, universal appeal. I myself have always regarded Mr Tompkins with the greatest affection. I was therefore delighted to be asked to update the book.

A new version was clearly long overdue, so much having happened in the 30 years since the last revision, especially in the fields of cosmology and high energy nuclear physics. But on re-reading the book, it struck me that it was not only the physics that needed attention.

For example, the current output from Hollywood could hardly be regarded as 'infinite romances between popular stars'. Again, ought one to be introducing quantum theory by reference to a tiger shoot, given our modern-day concern for endangered species? And what of 'pouting' Maud, the professor's daughter, 'engulfed in *Vogue*', wanting 'a darling mink coat', and told to 'run along, girlie' at the mere mention of physics. This hardly strikes the right note at a time when strenuous efforts are being made to persuade girls to study physics.

Then there are problems with the plot. While Gamow deserves credit for the innovative way he introduced the physics through a story, the actual storyline has always had its weaknesses. For instance, Mr Tompkins repeatedly learns new physics from his dreams before he has had any chance of being exposed to such ideas (even subliminally) through real life situations involving the professor's lectures or

conversations. Or take the case of his holiday at the seaside. He falls asleep in the train and dreams that the professor is accompanying him on his journey. It later turns out that the professor actually is on holiday with him and Mr Tompkins is fearful that he will remember what a fool he made of himself on the train – in his dream?!

At times the physics explanations are not as clear as they might have been. For instance, in dealing with the relativistic loss of simultaneity for events occurring in different locations, a situation is described where observers in two spacecraft are to compare results. But instead of adopting the viewpoint of one of these two frames of reference, the problem is addressed from a third, and unacknowledged, frame in which both craft are moving. Likewise, the account given of the shooting of the station master, while the porter was apparently reading a paper at the other end of the platform, does not in fact establish the porter's innocence – as is claimed. (The description would need to rule out the possibility of the porter firing the gun before sitting down to read the paper.)

There is the question of what to do with the 'cosmic opera'. The idea of such a work ever being staged at Covent Garden, was, of course, always farfetched. But now we are faced with the added problem that the subject of the opera – the rivalry between the Big Bang theory and the Steady State theory – can hardly be regarded as a live issue today, the experimental evidence having come down heavily in favour of the former. And yet the exclusion of this ingenious, joyful interlude would be a great loss.

Another problem concerns the illustrations. *Mr Tompkins in Paperback* was partly illustrated by John Hookham, and partly by Gamow himself. In order to describe the latest developments in physics, further illustrations would be required , so necessitating yet a third artist. Should one settle for the resulting unsatisfactory clash of styles, or adopt a completely fresh approach?

In the light of these various considerations, a decision had to be made: I could content myself with a minimal rewrite in which I simply patched up the physics and turned a blind eye to all the other

weaknesses. Alternatively, I could grasp the nettle and go for a thorough reworking.

I decided on the latter. All the chapters needed work doing on them. Chapters 7, 15, 16 and 17 are entirely new. I decided it would also be helpful to add a glossary. The detailed changes I proposed met with the approval of the Gamow family, the publishers and their panel of advisors – with the notable exception of one consultant who was of the opinion that the text should not in any way be touched. This dissenting view was a signal that I was not going to be able to please everyone! Clearly there will always be those who would rather stay with the original – which is fair enough.

But as far as this version is concerned, it is primarily aimed at those who have yet to make the acquaintance of Mr Tompkins. While trying to remain true to the spirit and approach of Gamow's original, it aims to inspire and meet the needs of the next generation of readers. As such, I would like to think that it is a version George Gamow himself might have written – had he been at work today.

Acknowledgements

Thanks are due to Michael Edwards for enlivening the text with his refreshing illustrations. I am grateful to Matt Lilley for his helpful and constructive comments on an early draft. The encouragement and support I received from the Gamow family was much appreciated.

Gamow's Preface to *Mr Tompkins in Paperback*

In the winter of 1938 I wrote a short, scientifically fantastic story (not a science fiction story) in which I tried to explain to the layman the basic ideas of the theory of curvature of space and the expanding universe. I decided to do this by exaggerating the actually existing relativistic phenomena to such an extent that they could easily be observed by the hero of the story, C. G. H.* Tompkins, a bank clerk interested in modern science.

I sent the manuscript to *Harper's Magazine* and, like all beginning authors, got it back with a rejection slip. The other half-a-dozen magazines which I tried followed suit. So I put the manuscript in a drawer of my desk and forgot about it. During the summer of the same year, I attended the International Conference of Theoretical Physics, organized by the League of Nations in Warsaw. I was chatting over a glass of excellent Polish miod with my old friend Sir Charles Darwin, the grandson of Charles (*The Origin of Species*) Darwin, and the conversation turned to the popularization of science. I told Darwin about the bad luck I had had along this line, and he said: 'Look, Gamow, when you get back to the United States dig up your manuscript and send it to Dr C. P. Snow, who is the editor of a popular scientific magazine *Discovery* published by the Cambridge University Press.'

* The initials of Mr Tompkins originated from three fundamental physical constants: the velocity of light c, the gravitational constant G, and the quantum constant h, which have to be changed by immensely large factors in order to make their effect easily noticeable by the man on the street.

So I did just this, and a week later came a telegram from Snow saying: 'Your article will be published in the next issue. Please send more.' Thus a number of stories on Mr Tompkins, which popularised the theory of relativity and the quantum theory, appeared in subsequent issues of *Discovery*. Soon thereafter I received a letter from the Cambridge University Press, suggesting that these articles, with a few additional stories to increase the number of pages, should be published in book form. The book, called *Mr Tompkins in Wonderland*, was published by Cambridge University Press in 1940 and since that time has been reprinted sixteen times. This book was followed by the sequel, *Mr Tompkins Explores the Atom*, published in 1944 and by now reprinted nine times. In addition, both books have been translated into practically all European languages (except Russian), and also into Chinese and Hindi.

Recently the Cambridge University Press decided to unite the two original volumes into a single paperback edition, asking me to update the old material and add some more stories treating the advances in physics and related fields which took place after these books were originally published. Thus I had to add the stories on fission and fusion, the steady state universe, and exciting problems concerning elementary particles. This material forms the present book.

A few words must be said about the illustrations. The original articles in *Discovery* and the first original volume were illustrated by Mr John Hookham, who created the facial features of Mr Tompkins. When I wrote the second volume Mr Hookham had retired from work as an illustrator, and I decided to illustrate the book myself, faithfully following Hookham's style. The new illustrations in the present volume are also mine. The verses and songs appearing in this volume are written by my wife Barbara.

G. GAMOW

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