

FOREWORD

BY BARRY MAZUR

To enter the world of this book is to discover a hopeful land where ideas—pure ideas—are being washed sparkling by a rain, and they all, like sunflowers, will soon be wanting to show themselves to you, newly petalled, radiant with possibility and delight and usefulness. The authors had the genius to be able to write a math book truly for everyone; to have chosen just the right ideas to explain so that their book contains the essence of what makes mathematics truly mathematics; to have written it in so compelling a way that it can be read in a trolley car or in a foxhole; and to have written it so economically that the entire book, in its early softcover GI edition, could be slipped into an opened pack of K-rations.

The encounter with the Liebers is thrilling because the math they do is utterly wonderful. Their eye-opening simple questions about tying belts around the equator, and loosening those belts ever so slightly (section

3), have the uncanny effect of getting you, me, and Mr. MITS to think (and think deeply) in a quantitative way, before we realize what's happening to us. The Liebers invite us to the wedding of algebra and geometry (section 9). They tell, pokerfaced, an enticing, but false, proof in Euclidean geometry, the persuasiveness of which requires relying on a subtly incorrect hypothesis in one of their own diagrams (section 13). Once they assist in exposing their misleading illustration, a moral—as you can imagine—follows. They offer their readers a tincture of calculus (section 10), which, to my mind, is all that you need have in order to feel the genius of that subject. They give us a taste of finite geometries (section 15, entitled *Pride and Prejudice*) from which the concept of models for axioms of geometry so effortlessly flows that they need spend hardly a phrase on these more abstract concepts: you just see them. They do their similar magic with finite arithmetics (section 16). They explain—really explain—the fourth dimension (section 18). They explain relativity. All of these explanations are laced with morals, comments about Hitler, and a cornucopia of avuncularity.

Written in 1942, this book reflects the grimness and dangerousness of the time, brightened by the fervent belief that ideas will make for a glorious future. The GI version bore the label “Overseas edition for the Armed Forces,” and measured just $3\frac{3}{4}$ " by $5\frac{3}{8}$ ". What luck the Council on Books in Wartime had, to be able to offer the troops this educationally uplifting book, speck-

led with its bright cartoon drawings of T. C. MITS, The Celebrated Man In The Street, who—in defiance of (or perhaps oblivious to) the ravening forces of destruction of the age—is often shown sporting a hyperboloid cap and contemplating, cheerily, his place in some vast setting of the mathematical sublime.

As you will see, the book you hold in your hands is deliciously funny. Also, at times a bit exasperating. The first thing that reading it does to me is to return me to the state of a twelve year old, the authors coming at me like a loving, elderly aunt and uncle. They plunk me onto a chair which is a bit too high for my legs to reach the ground, and slide a large glass of chocolate milk and a home-baked cookie in my direction, all in preparation for showering me with exuberant lessons (of life, of math, of the world ... stuff like that), each with its concomitant ulterior moral.

But the excitement of this little book is as huge as its dimensions are small. What a contrast this book makes with the heft of, say, contemporary Calculus texts (one wonders why the students who tote them don't receive extra credit for Physical Education). Whether out of laziness or general insurrectional spirit, when I was a teenager I had a fondness for the somewhat confrontational slim books that aim to give the essence of the subject written about, with none of the claptrap surrounding it. In this, I was very much of the camp of the legendary doubter who went to Rabbi Hillel asking that the famous sage teach him all of the Torah while he, the

student, stood on one leg, to which the obliging rabbi responded by offering what is in effect the categorical imperative. It was natural, then, for me to have fallen in love with the Liebers' books. For presented here—so deftly, so lightly (with or without the chocolate milk and cookies)—is the very essence of a mathematical sensibility. All you really need to know.

