BULLETIN (New Series) OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 23, Number 2, October 1990

0273-0979/90 $1.00 + $.25 per page

The theory of fixed point classes, by Kiang Tsai-Han. Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo, and Science Press, Beijing, 1980, xi+174 pp. ISBN 3-540-10819-X and 0-3887-10819-X

Every pampered Western mathematician should read at least the epilogue to this book. The book itself is a readable and helpful account of an important topic in genuine mathematics.

From a technical point of view, I am the wrong person to review this book. When I wrote a little book on fixed points, I avoided the methods of algebraic topology as far as I could and did the things that could be done using basic methods of metric space topology and elementary functional analysis. I took on the job of reviewing Kiang's book because of the publisher's blurb: "... it will serve as a good introduction to algebraic topology and geometry." I thought it would be an easy way to learn some more about these things. (I never read much of Brown's book on the Lefschetz fixed-point theorem because of its formidable-looking machinery.) I also hoped to find the answer to a question that a student asked the author: "How did Lefschetz get the idea to formulate his theorem and give his proof?"

So what did I get out of it? I learned a lot about covering spaces and homotopies (much of which I had seen before, some time; Kiang gives an appendix reminding the reader of the basic properties). I enjoyed the way these tools are used. I learned all I want to know about Nielsen fixed-point theory. But I still don't know how Lefschetz got his ideas, and I still can't read Brown's book. There is a gap in the technical machinery used, and in the level of exposition. Brown is not user-friendly, but Kiang is, for someone with my background.

What is the book about? A compact connected polyhedron X has a "universal covering space" $\widehat{X}$ which we can imagine as lying over it (in much the same way that a Riemann surface lies over the part of the plane where an analytic function behaves itself). Unless X is simply connected, several or many points of $\widehat{X}$ lie over each