Apart from the chapters in the book there is an excellent appendix supplying relevant background material on algebraic topics: equivalence of quadratic forms (Witt's theorem), algebraic extensions, finite fields and characters of finite abelian groups. Among the chapters and sometimes augmenting the text of the various sections comprising a chapter, there is also a very fine collection of examples. References to the literature and discussions of the latest developments on the various topics are particularly welcome and one would have wished that the authors had been more systematic in this one respect, especially as the work of Russian authors may occasionally be overlooked. The book concludes with a number of tables of arithmetical constants taken from various published sources, e.g. class numbers for quadratic and cubic fields, fundamental units for quadratic fields, irregular primes and discriminants of maximal and non-maximal orders. In total, this makes a really significant and distinguished addition to the literature on Number-theory and in recording our indebtedness to the authors, I also thank the translator who has managed to convey the mathematical sense of the original while permitting the style of the authors to permeate the translation.

J.H.H. Chalk, University of Toronto

Scales and Weights, by Bruno Kisch. McGill University Press, 295 pages + 98 plates. $15.00.

This interesting book is devoted to the history of weighing, from the earliest times to the introduction of the metric system. Paintings in Egyptian tombs, excellently reproduced in the book, show clearly that metrology was already an old art, or perhaps an old science, more than 3000 years ago. The Egyptian paintings show beautifully constructed scales sometimes weighing materials and sometimes used by Egyptian gods to weigh peoples' souls before passing divine judgement. This concept of spiritual weighing was, of course, a familiar one in biblical times as is shown by the famous story of Belshazzer's feast.

The book deals faithfully with the various instruments used in weighing, such as scales with a variety of weights, bismars with no weights and steelyards which use only one weight. Many of the 98 plates give clear pictures of such apparatus dating from the earliest times down to the modern chemical balance. A bismar consists of a beam carrying at one end a scale pan and having a variable point of support. The point of support is moved until a balance is reached and a mark at the position of balance then shows the weight in the pan. The steelyard is somewhat similar but the point of support is fixed on the beam while a weight can be moved along the beam until a balance is reached.

Comprehensive tables are given of various systems of weights used from biblical times to our own time, a feature which should be of great use to all students of metrology. The number and variety of these systems is amazing.

The history of the metric decimal scale is given in chapter 3. It was already clear in the 18th century that the dizzying welter of weights and measures then in existence must be replaced by a standard system. The honour of introducing the present metric system goes to France where its use was made compulsory in 1840. Practically all countries, except Great Britain and the U.S.A., followed France's excellent lead. Why these two countries have not yet fallen into line remains a mystery. Which weighs heavier a pound of gold or a pound of feathers ? Coarse materials, such as feathers, are weighed in the Avoirdupois system of measure but noble metals, such as gold and silver, are weighed in the Troy system. Now the avoirdupois pound is heavier than the troy pound so that the pound of feathers is heavier than the pound of gold (by about 80 grams).

For the student of metrology this book is essential and even the amateur will find many interesting things in it, especially the plates.

Charles Fox, McGill University

Introduction to Algebra, by Sam Perlis. Blaisdell Publishing Co., Waltham, Mass., Toronto, London, 1966. xx + 440 pages. $9.50.

There are presently available dozens of introductory texts in modern algebra, mostly covering the same material varied only by the author's particular emphasis. The book under review is no exception, but it does do a good job in presenting the fundamentals in a clear, direct manner.

The list of chapter headings reads as follows: Fundamental Concepts, Linear Equations and Matrices, Groups, Rings, Integral Domains, Fields, Divisibility, Classical Algebra, Vector Spaces, Extension Fields, Determinants, Linear Transformations, Forms and Matrices, Length and Orthogonality. The introduction of matrix computation, elementary matrix operations and the vector spaces of n-tuples in the second chapter makes the transition to the abstract more gentle. In addition, it provides a plentiful supply of nontrivial examples of groups and rings, thus making these concepts less one-dimensional than they often appear to beginning students. In general, the author gives well-chosen examples, motivates the theorems well and gives straightforward proofs. There are plenty of good exercises at the end of each section.

The material covered is a proper subset of that covered in Birkhoff and MacLane, but it should be quite sufficient for a one-year course. Alternatively, the book could be used as a text for separate half-year courses in abstract algebra and linear algebra.

John D. Dixon, University of N.S.W., Australia