again offering courses in tensor calculus and the study of curves, surfaces and Riemannian spaces—courses which are also proving useful to research students in such other fields as Applied Mathematics, Physics and Engineering. This has shown up the need for a textbook written in a modern style, and several books have been published in the past year or two in an attempt to meet this need; the book under review is one of them. It is a free translation of the author's *Differentialgeometrie* published in Leipzig, and is admirably written in a style that will appeal to both British and American readers. Although the book is restricted to curves and surfaces embedded in euclidean 3-space, tensor calculus is used throughout and it is indicated how and where results may be extended to Riemannian n-space. There is no systematic treatment of tensor calculus as such, e.g. through tensor algebra which is the way many teachers now prefer to do it, but the various ideas and formulae of the calculus are introduced as they are needed for the development of the geometry.

After chapters on geometrical preliminaries and the theory of curves, a chapter is given to the concept of a surface and properties of the first fundamental form, followed by a chapter on the second fundamental form. It is perhaps unfortunate that the important idea of Gaussian curvature is introduced with the second rather than the first fundamental form where it properly belongs as an intrinsic property of the surface; this is one of the places where the historical development of the subject is not in line with what is now generally regarded as desirable. This comment applies also to the treatment of geodesics and geodesic curvature in the next chapter, intrinsic ideas treated in what is admittedly the more concise non-intrinsic way. This chapter also includes an interesting account of the Gauss-Bonnet theorem and its applications, which is one of the important links between classical and modern Differential Geometry. The next chapters are on mappings of various kinds and on absolute differentiation and Levi-Civita parallelism, and finally there is a long chapter describing a number of special surfaces, ruled surfaces and developables, and surfaces of constant Gaussian curvature.

The author has been careful throughout to focus attention on geometry without any sacrifice to analytic rigour, a sacrifice that marred so many of the earlier texts on curves and surfaces. It is perhaps a pity that the book contains no systematic treatment of Riemannian or other generalised spaces, but in a book of this size the author must decide whether to do this or to give space to special problems and special surfaces. The latter is perhaps of less significance in relation to modern interests but it will certainly be useful to have such an account handy for reference, particularly for applications outside geometry.

Many useful problems are given and there is a carefully prepared section on their solutions. The book is excellently printed and produced in this country by the Oxford University Press.

A. G. WALKER

SEMPLE, J. G., AND KNEEBONE, G. T., *Algebraic Curves* (Clarendon Press: Oxford University Press, 1959), 361 pp., 45s.

The stated aim of this book is to introduce the reader to some of the fundamental concepts and methods of modern algebraic geometry by a discussion of the theory of algebraic curves. In the reviewer's opinion this aim has been very successfully achieved.

The book is well written with many useful and interesting historical notes (including Appendix C) and with summaries at several places of earlier parts of the work. In many of the chapter introductions lucid explanations are given of the motivation for the work which follows. A comprehensive survey, with references, of the algebra required in the book is given in Appendix A.

Throughout the book the ground field is taken to be of characteristic zero and in fact is really intended to be the field of complex numbers.

The first seven chapters are confined to plane algebraic curves, a useful survey of the first six chapters being given at the beginning of Chapter VII. Chapter I contains a survey of the classical theory of algebraic curves. In the short Chapter II, Bezout's Theorem is introduced, the representation of point sets by two-way forms being used. In Chapter III an account is given of the four types of extension field of the ground field which are used in the book. Chapter IV deals with quasi-branches and branches. Chapter V contains the statement of Puiseaux's Theorem (proof in Appendix B). The idea of a *place* on a curve is introduced and results on intersection theory given in terms of places. Chapter VI deals with some traditional theory of plane algebraic curves. Chapter VII contains the theory of the function field.

Chapter VIII extends ideas and notation in the earlier chapters to curves in S_r, r-dimensional projective space.

Chapter IX considers curves in S_3 using the theory of Cayley forms and briefly mentions how the theory proceeds for curves in $S_r (r > 3)$.

Chapter X deals with the theory of linear series on a curve. It contains a discussion of Noether's Theorem and leads up to a proof of the Riemann-Roch Theorem.

Chapter XI deals with the rather special topic of infinitely near points in the plane. This is a useful introduction to the recent generalisations in this subject.

J. HUNTER

GOW, MARGARET M., *A Course in Pure Mathematics* (English Universities Press, 1960), 619 pp., 40s.

This book aims to cover the syllabus in Mathematics for Part I of the London B.Sc. General Degree, and also to provide a suitable course in Mathematics ancillary to Honours courses in Physics, Chemistry, etc.

Apart from the inadequate treatment of inequalities, Dr. Gow has achieved the the first aim. However, several important topics (Vectors, Fourier Series, Bilinear Transformations) of interest to ancillary students are omitted.

The theory of determinants is rather sketchy. Even at this level, determinants can be defined in terms of permutations and so yield the working rules.

The treatment of complex numbers is presented in great detail and well illustrated by diagrams, but on page 103 a complex number is *defined* as a *point* in the Argand diagram!

Despite a few blemishes, the treatment throughout is clear and straightforward and there are many worked examples and excellent sets of exercises.

B. SPAIN

DEFARES, J. G., AND SNEDDON, I. N., *An Introduction to the Mathematics of Medicine and Biology* (North Holland Publishing Co., Amsterdam, 1960), 663 pp., 94s.

This well-written book is intended to help research workers in the biological and medical sciences. Since, however, it assumes that the reader has ceased the study of mathematics for some years it can be recommended to anyone commencing his studies at an elementary level.

After the algebraic preliminaries and a discussion of functions, the differential and integral calculus is considered. There is a chapter on the logarithmic and exponential functions defined by means of integrals rather than series (on the whole, series are avoided in the book, though there is a proof of Maclaurin's theorem). A chapter on integrals, including the Gamma function, Beta function and Laplace