provides an admirable introduction to a continuum mechanics course.

The second half of the book concerns the gradient operator and vector integral theorems. The chapter on the gradient is the weakest of the book and is unsatisfactory on two counts. First, the author grapples with the difficulty of producing a coordinate free definition of grad, div and curl. He introduces $\text{grad } f = \hat{n} \partial f / \partial n$ in a coordinate free way, but then introduces div and curl in a specific coordinate system and only refers to proof of invariance in a problem at the end of the following chapter. This inconsistency can only lead to confusion. Second, the poor definition of gradient leads to a deficient proof of the crucial result $\nabla(f+g) = \nabla f + \nabla g$; the author proceeds

$$\nabla(f+g) = \hat{n} \frac{\partial}{\partial n} (f+g) = \hat{n} \frac{\partial f}{\partial n} + \hat{n} \frac{\partial g}{\partial n} = \nabla f + \nabla g.$$

The last step indicates that $\hat{n} \partial f / \partial n = \nabla f$, but from the definition given, $\hat{n}$ is normal to the level surface of $(f+g)$ and the identification is not true. The final chapter on vector integral theorems gives a reasonable account of the subject.

The publishers have produced a well laid out book with few misprints and the author has tried, on the whole successfully, to blend a traditional introduction with a more modern approach to vectors, sprinkling the book with well graded examples, many of considerable mathematical or physical interest.

D. M. BURLEY

COMPUTER GRAPHICS

Emerging Concepts in Computer Graphics

Edited by Don Secrest and Jurg Nievergelt. (1967 University of Illinois Conference.) Pp. ix + 418. (Benjamin: New York and Amsterdam, October 1968.) \$12.50.

THE book is a collection of papers presented at a conference at the University of Illinois in November 1967. It seems incredible that the publishing of the book concerned with such a rapidly changing area should take so long, and yet the publishers disclaim all responsibility for its late appearance, as the volume was printed direct from typescript as a quick method of publishing! The book contains no index, glossary, collected bibliography or information about the authors. The method of reproduction necessitates diagrams and text appearing on separate pages so that they can rarely be studied together.

There have been several properly printed, edited books published within six months of a conference and with careful planning this could be cut further. Conference organizers and publishers must realize that it is vital for conference material to be distributed rapidly.

The papers are generally of a high calibre and cover most of the graphics topics emerging at that time, although there is inevitably some overlap and great variation in style. The hardware papers describe plasma displays, hybrid processors, pattern recognition encoding, and a computer aided instruction system incorporating slides. The software papers discuss a picture calculus, the problem of directness, observations on a graphic system, computer aided programming, computer graphics for designers, computer graphics in macromolecular chemistry, and experience in the application of interactive graphics. The application papers relate experiences in experimental structures, computer-animated movies, automated graphics in structural steel fabrications, and a general review of applications. Regrettably, some of the papers presented at the conference, including one on laser beam deflexion, have not appeared in the book, and the films shown at the conference are not fully described.

The most interesting hardware discussed is the plasma display, effectively a matrix of discharge tubes, 0.025 inches apart in a glass plate. A 4 inch $\times$ 4 inch version has

now emerged and there are no intrinsic difficulties expected in increasing the size. The device combines the display and storage facilities without the non-selective erasure disadvantages of a storage tube. It is transparent and can therefore be superimposed on to a static picture or on to slides. The 40 cells per inch is somewhat coarse resolution, but this may be countered by using a larger screen—the usual 1,000 point screen would be 25 inches square.

Other hardware described include ARTIX, a hybrid graphical processor which could be used either as a stand alone terminal or as a satellite to a large digital machine, and PEPR (Precision Encoding and Pattern Recognition) for analysis of film recorded data from bubble chamber tracks.

Among the interesting papers in the software section, the paper on "A Picture Calculus" describes an interesting method of building pictures from primitive elements; "Observation on a Graphic Console System" suggests a method of quantifying the assessment of its effectiveness; "Computer Graphics for Designers" outlines a most useful method of manipulating pictures; and "Experience in the Application of Interactive Graphics" gives a valuable account of aircraft design work.

The experimental structures paper describes a novel application of common interest to architects, engineers and designers, and in the review paper "Computer Graphics" the exciting possibilities of an animated figure are described.

This is an expensive book, but many of the papers contain valuable information on computer graphics, the newest and most exciting field of computing, and it must therefore be included in any scientific library. It is unfortunate that it is not better produced and these conflicting aspects make it difficult to review constructively.

R. D. PARSLow

Obituaries

Professor B. S. Platt

BENJAMIN STANLEY PLATT, professor of nutrition in the University of London, died at his home in London, on July 18, 1969, at the age of 66. For twenty-five years he had combined the posts of director of the MRC's Human Nutrition Research Unit, from which he retired two years ago, and head of the department of human nutrition at the London School of Hygiene and Tropical Medicine. Born in 1903, Platt graduated from Leeds University with first class honours in chemistry in 1923, later obtaining MSc and PhD and graduating in medicine with honours in 1930.

From 1932 to 1938 Platt was associate in medicine and head of the department of medicine in the Henry Lester Institute of Medical Research in Shanghai. His years in Shanghai set the pattern for the rest of his professional life. With his lifelong friend Gwei Djen Lu, he showed that the biochemical lesion of thiamine deficiency in the pyruvate oxidase stage of glycolysis, which Rudolph Peters and his associates had observed *in vitro*, occurred in fulminating human beriberi. When he was able to obtain a few grams of the newly isolated vitamin in 1936, he observed that the intravenous injection of 5 mg of thiamine restored the blood level of pyruvic acid to normal and his patients recovered.

This immediate application to clinical medicine of what Peters has described as a new and revolutionary approach to pathology, and the nice definition of the precise lesion, shows one aspect of Platt's character: but it was also characteristic that he took a wider view. He related the occurrence and severity of beriberi to factors influencing metabolism—fever illness and muscular effort—and in the