

TELEMETRY

Telemetry

By R. E. Young. (Temple Press Monographs on Rockets and Missiles.) Pp. vii+78. (London: Temple Press Books, Ltd., 1963.) 17s. 6d.

THE cover note claims that this book sets out to give a comprehensive treatment of the subject of telemetering in missiles which will be suitable both for students and those engaged in the testing and manufacture of missiles. I am afraid that both groups will be disappointed.

In particular, I think that the student would, for his own good, be well advised not to read this book because of the vague and often incorrect statements it contains. It consists of five chapters which deal with a variety of subjects, including some very elementary standard proofs concerning transmission lines, aeriels and receivers.

Unfortunately this elementary mathematics has suffered in some instances from printer's errors or incorrect extracting from the original reference. Mistakes like this can only confuse the student so that when the author adds in parenthesis "see any standard text-book on transmission lines" this is undoubtedly a sound piece of advice.

Modulation methods, a most important subject in radio telemetering, are dismissed in very general terms in only three pages, no mention being made of wideband improvement and the significance of modulation index in frequency modulation systems. The emphasis on high-speed oscillography and the treatment of data handling in general are not in line with modern practice nor are the arguments the author uses in discussing digital telemetry particularly valid.

Many of the facts and figures quoted as typical of present practice are wrong. For example, when describing the use of a piezo-electric material in vibration transducers the author states that barium titanate is suitable in temperature environments up to 250° C without any deterioration of its properties. This temperature is, of course, above the Curie point of the materials.

It is impossible to detail in a short review many of the inaccuracies regarding limiters, discriminators, commutation and the generation of telemetering waveforms. Perhaps the greatest single criticism is the fact that after a number of vague references throughout the book the reader is left with no clear and concise picture of typical British telemetering systems. Since this is probably the first book to be published in Britain on this subject it would have been a good opportunity to record the contributions made to the art by scientists and engineers in the United Kingdom and Commonwealth.

Regrettably it pales to insignificance when compared with American publications on a similar subject.

M. A. PERRY

CARCINOMA OF THE UTERINE CERVIX

Het Experimentele Carcinoma Colli Uteri

(English Summary—Résumé Français.) Door Dr. Michel Thiery. Pp. 542. (Brussels: Arscia Uitgaven N.V.; Presses Académiques Européennes S.C., 1963.) n.p.

IN this research monograph, the experimental induction of carcinoma of the uterine cervix is described in considerable detail. The anatomical and methodological information will be very valuable to experimentalists in the field; and some of the observations on the progression of cellular atypia and carcinoma *in situ* to frank invasive carcinoma will provide ammunition for those who now

press for mass screening of the human female population by cervical smears or other methods.

The first three chapters are devoted to descriptions of the experimental methods used and of the anatomy of the test animals. The favoured technique involved the repeated painting of the uterine portio with a suspension of 3,4-benzopyrene in acetone under direct vision. Mice of several different strains and hamsters proved more or less responsive to this method of tumour induction; rats and guinea pigs were resistant. Mice were used in most of the investigations.

Chapters 4 and 5 are concerned with the histopathological features of the lesions observed in treated animals: hyperkeratosis, epithelial dysplasia, carcinoma *in situ*, and squamous cell carcinoma. The close parallelism between these induced lesions and 'spontaneous' lesions of the human cervix is stressed. Particular attention is directed to the histopathological diagnosis of early stromal invasion, the features of the subepithelial connective tissue layer which takes the place of the basement membrane in the mouse, and to the squamo-columnar junction. Cyclical variations in the vaginal epithelium continued during treatment though their timing was frequently disturbed. The majority of tumours were squamous cell carcinomas, but one-fifth of them were mucocoepermoid in nature. Finally, modes of local spread and metastasis are considered and the occurrence of associated pathological conditions reported.

Chapter 6 is perhaps the most interesting and valuable of the whole book: it is concerned with the histochemical characteristics of normal and pathological cervicovaginal epithelium. Both glycogen content and the presence of periodic acid-Schiff-positive mucus showed cyclical variations. The former does not aid in distinguishing different grades of preneoplasia or neoplasia; it only provides evidence of the degree of cellular differentiation of the lesion. Differences in the histochemical patterns of -SH- and -SS- group reactivity were observed between normal and pathological epithelium, but differences between different lesions were not sufficiently marked or constant to be of value in differential diagnosis.

The DNA content of the basal nuclei of squamous epithelium was found normally to reach a maximum during oestrus; keratinization was associated with a decrease in DNA content. In the abnormal hyperkeratotic epithelium of treated animals, however, the DNA-level was as high as for oestrus epithelium, even in sprayed animals. In general, there seemed to be a positive correlation between the DNA value and the position of the lesion on the progressive path between pre-neoplasia and neoplasia, and the author concluded that Feulgen-histophotometry might be a valuable diagnostic tool. From a study of the levels of sixteen different enzymes, the author inferred that enzyme histochemical procedures can be successfully applied to the identification of specific cell-types and to the differentiation of various pathological lesions. In particular, he was impressed by the fact that squamous cell carcinomas showed a very high 5-nucleotidase activity which made their detection in lesions at the stage of early stromal invasion a relatively simple matter.

In the penultimate chapter the evidence for the pre-cancerous nature of various lesions is reviewed, and the *tempo* of their progression to neoplasia discussed. Finally, a comparison is made between the experimental tumours and those arising in the human cervix. Despite anatomical and genetic differences, the author concludes that "on the whole the parallelism . . . is truly striking. For this reason the experimental tumour might eventually offer new opportunities for the study of certain aspects of cervical carcinoma in man".

The book is well written, well illustrated, well documented and well produced; its greatest limitation for most workers is that it is written in the Dutch language.

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