that, in practical terms, the test was not suitable in its present form for routine cancer screening. However, the relatively high percentage of positive tests in early cancer indicate the possible role of monitoring the patients’ response to treatment, in detecting the recurrence of tumour at an early stage and in differential diagnosis.

Further studies are currently in hand to investigate the possible role of the Makari intradermal test in the monitoring of response to treatment and in the early detection of recurrent tumour. The preliminary results of these studies indicate that the surgical removal of a tumour may lead to the conversion of the Makari skin test from positive to negative and during the follow-up period a negative test may convert to positive on the appearance of local or distant recurrence of the tumour. It is important to stress that these data are of a preliminary nature and that further experience is required with more cases and a considerably longer period of follow-up. Nevertheless, the present data strongly support the need for further studies in relation to the monitoring of treatment and the detection of recurrent tumour.

THE VALUE OF HORMONE MEASUREMENTS IN TUMOUR MANAGEMENT. K. D. BAGSHAWE. Department of Medical Oncology, Charing Cross Hospital, London

The practice of measuring hormones and other substances produced by tumours, or by specific organs in response to tumours, is becoming a major occupation in the cancer field. One of the problems is to match the resources available to the problems which can be defined and the distinction between research and clinical routine operation requires constant assessment. The range of possible measurements is already very wide and the number of patients to whom tests are applicable is already large even though most of the measurements do not yet relate to the commonest malignancies.

The measurement of tumour products as diagnostic aids is well established as a means of distinguishing between neoplastic and non-neoplastic causes for certain rare but “interesting” syndromes. But some important applications are slow to reach clinical practice, possibly because the conditions themselves are not regarded as “interesting” to physicians.

Measurements may be applied to problems of tumour localization. Selective venous sampling probably has a limited area of application but it has a requirement for precision in measurements which is not readily sustained on a routine basis. Localization of tumours within the CNS can take advantage of the blood–brain barrier and although such methods have been available for gonadotrophin producing tumours for the past decade, their use has not been widespread even though they are of substantial practical value.

Screening operations based on tumour products are valid for only a limited range of tumours at the present time. Again, the interval between developing a technology appropriate to such a problem and putting it into clinical operation may be very long. In the case of uncommon tumours, screening programmes are practicable only if carried out on a regional or national basis.

The concept of monitoring the clinical course of tumours with serial measurements has been established for a limited range of tumours and it is clear that it may sometimes be necessary to follow more than a single indicator substance. Different indicator substances may provide different forms of information and the form of information provided by a given indicator substance may be different for different tumours.

Nevertheless, some propositions currently discussed in this field should perhaps be examined critically. Do we really mean “predictive” tests? Also, where we are threatened by complexity we should perhaps seek to avoid it at the outset and extract a maximum of information from the simplest measurements. “Multiparametric Analysis” is not an end in itself and may be a passing reflection of present inadequacies.

HORMONES AND THE PROSTATE. K. GRIFFITHS. Tenovus Institute for Cancer Research, Welsh National School of Medicine, Cardiff.

Regression of prostatic carcinoma in a large proportion of patients treated by anti-androgen therapy, either castration or oestrogen administration, clearly indicates the
sensitivity of these tumour cells to hormonal stimulation. This treatment results in the decrease in plasma testosterone, and although the effectiveness of the therapy might suggest that this androgen or its prostatic metabolites may have some aetiological role in the development of cancer of the prostate, there is at present little evidence to incriminate any hormonal imbalance. It is of interest, however, that McNeal (1970, Proc. 3rd Tenovus Workshop, p. 23) has recently challenged the traditional view that carcinoma of the prostate originates from atrophic, androgen deprived epithelium of the gland in the elderly man. Instead, he suggests that carcinoma arises from active glandular epithelium, again directing attention to an aetiological role of prolonged androgenic stimulation.

It is obvious therefore that further studies are required of the relationship between prostatic disease and endocrine function. Investigations from these laboratories have to date failed to show any major significant differences in the levels of prolactin, LH, FSH, androstenedione, testosterone or oestradiol-17β in plasma from normal men and those with either benign prostatic hyperplasia or carcinoma of the gland. More detailed studies in which plasma hormone levels in patients on oestrogen therapy were carefully monitored indicated differences in the endocrine response between patients and suggested that such studies may provide more relevant and interesting data.

For example, the prolactin levels in the plasma were found to be markedly elevated in certain patients after initiation of oestrogen therapy. Many earlier studies have directed attention to the possible relationship between prolactin and the prostate, and it is also known that hypophysectomy can still produce regression of prostatic carcinoma even after orchidectomy and adrenalectomy (Fergusson, 1972, in Endocrine Therapy in Malignant Disease, p. 237).

The eventual lack of responsiveness to oestrogen therapy in many patients, resulting in progression of the disease, has been considered due to secondary production of androgen by the adrenal. A series of Synaehen stimulation tests on patients before and during diethylstilboestrol therapy indicated an increased capacity of the adrenal to produce testosterone during treatment.

Little information exists on human prostatic steroid receptor complexes. Such steroid receptor studies in relation to hormone action within the prostatic cell are particularly valuable, and may eventually indicate the mechanism by which oestrogens can directly influence the metabolism of the prostate.

ASSAY OF STEROID HORMONE RECEPTOR IN CANCERS, METHODOLOGY AND PERSPECTIVES. R. K. WAGNER, A. HUGHES and P. W. JUNGBLUT. Max-Planck Institute for Cell Biology, Wilhelmshaven, Germany.

The assay of steroid hormone receptors is now widely used as an index of hormone dependency of certain cancers, since it is known that receptors are required for the full course of hormonal action. A variety of procedures have been employed for evaluating the spare (unused) receptor content of tissues. They make use of the high affinities of receptors for their respective steroids, which allows the measurement of labelled steroid receptor complexes, after separation from excess of free steroid and dissociation of unspecific complexes. Another requirement for accurate receptor assay is the ability to distinguish between steroid receptor complexes and those formed with specific plasma proteins, contaminating tissue extracts. All requirements are met in a single step by the very sensitive agar gel electrophoresis at low temperature, which allows e.g. the determination of oestrogen- and androgen receptor in mammary and prostate cancer in the presence of sex hormone binding protein (Wagner, 1972). In assessing the predictive value of quantitative receptor assays in cancers, it has to be considered that the concentration of spare receptor depends not only on the uniformity of the tissue specimen investigated but also on the hormonal status of the patient. Hormone action is always accompanied by receptor depletion and replenishment. The latter is due to de novo synthesis rather than to recycling of used receptor. Continuous hormone supply can thus result in low actual concentrations of spare receptor, which should not be mistaken as an indicator of "marginal" hormone dependency.