

of this procedure for comparing the activating effects produced on the papain by blood from healthy and from cancerous organisms, showed that the blood from the latter possessed a lower activating capacity than the blood from healthy organisms (*cf.* Fig. 4).

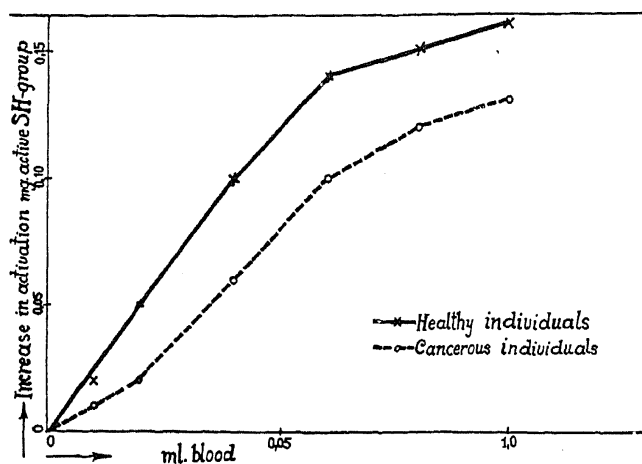


Fig. 4.

A most striking point in the result of this experiment and one worthy of particular note is that the glutathione present in the blood can only participate to a slight extent in the total capacity of activation of papain; for, the activating effect does not correspond quantitatively to the amount of glutathione found in the blood. Consequently the greater part of the activation must have been produced by auxiliary activating systems present in the blood, a circumstance which facilitates the recognition of such physiologically active systems in the blood.

It is proposed to carry out the experiments on a more extensive scale and the results obtained so far lead to the belief that an early diagnosis of cancer is possible by the study of activation phenomenon.

The differences in the behaviours of the cathepsin and arginase referred to at the commencement of this article, were pointed out by Waldschmidt-Leitz, McDonald and collaborators² and was later confirmed by the author³ working with histologically uniform structural elements of the tumour-tissue. It appears that a young, vigorously proliferating cancer-tissue, free from necrosis, is characterised by a high cathepsin and a low arginase concentration. This is especially true in the case of melanomes in horses (also included in the series of experiments⁸) and on account of its striking behaviour, this material is worthy of further tests.

These findings possessing profound physiological significance lead to the conclusion that in the cancerous cells, the synthesis of the albuminous covering, in which process, cathepsin participates, is delayed. There is no ground for the supposition that in the ageing cancerous tissue the autolytic cell-destruction is related to the catheptic activity; it is much more probable that the arginase is connected with these autolytic processes.

Further observations are necessary for elucidating the mechanism of growth of malignant swellings and the influence which such swellings exert on the organism. The relations existing between the effects of the intracellular enzymic systems arginase and cathepsin, and the typical respiration ferments, such as the aerobic dehydrases, of which the xanthine dehydrase⁶ may be specially mentioned, deserve careful investigation.

⁸ A. Purr, *Z. f. Krebsf.*, 1935, **41**, 483.

The Elephanta Caves.

THE rock-cut sculptures at Elephanta, like others in the different parts of the country, are decaying under the influence of weather and moisture, apart from the mantle of vegetation. The decomposing effects of the latter due to the exudation of organic acids have been undermining these mural decorations for generations, and several attempts have been made to arrest the process of disintegration, and preserve their architectural beauty. The Government of India, recognising the supreme importance of protecting these historical works of art from

the ravages of the elements, have appointed a strong Committee to investigate the causes of deterioration and to suggest remedial measures. The Committee is composed of Mr. J. F. Blackiston, Director-General of Archæology, Dr. S. S. Bhatnagar, Professor of Chemistry, the Punjab University, Mr. A. Croad, Superintending Engineer, Central Public Works Department, and Mr. S. N. Gupta, Principal, Mayo School of Arts. The Committee will commence their investigations in November.