

volved not only the cancer cells but also the epithelium of the newly formed blood vessels.

It would seem, then, that the urine and serum of patients with malignant tumors have a selective destructive action on embryonal or newly growing tissue.

We have not had opportunity for intensive study of the substance responsible for the effects described. It is possibly related to hormone activity, but there is no hormonal action we are aware of which produces these effects. As has been stated, the urine originally used gave the Ascheim-Zondek reaction. That this special property was not concerned with the abortifacient action was shown by the lack of effectiveness of the urine of pregnant women which gave the reaction. In carrying this line of work further, massive doses (500 units daily) of anterior pituitary Antuitrin S together with estrogenic hormone (20,000 units) were injected into pregnant rabbits. Abortion did not occur.

Work is being continued on the many interesting problems which arise in connection with it.

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SPLITTING PROTEINS BY ULTRA-VIOLET LIGHT

THE experiments of Rideal and Mitchell¹ have shown that stearylamine $C_6H_5NHCO(CH_2)_{16}CH_3$ undergoes photolysis when exposed to light as a monomolecular film, giving anilin and stearic acid. The $-NHCO-$ group is the common peptide linkage of proteins and at first sight one might expect the stearylamine experiment to apply directly to protein splitting; however, in the amino-acids the side-chain carrying the benzene ring or other light-absorbing groups, is attached through a CH_2 group to the α -carbon atom of the acid. This means that the absorbed light quanta must travel from the ring through two CH_2 groups before it may activate the NH_2 group and cause a reaction.

In testing the possibility of such a transfer of energy from the ring to the chain, the writer has prepared benzyl stearyl amine $C_6H_5CH_2NHCO(CH_2)_{16}CH_3$, and β -phenyl-ethyl stearyl amine $C_6H_5(CH_2)_2NHCO(CH_2)_{16}CH_3$ and subjected mono-layers of each on N/1 hydrochloric acid solution to ultra-violet light of wavelength 2480 and 2537 Å, through filters. Photolysis of each compound is easily demonstrated in the properties of the film and by the reaction products. It is therefore to be expected that the peptide chains of proteins may be split at places where light-absorbing side-chains occur in the molecule. By irradiating a protein with a suitable wave-length of light, splitting

can presumably be directed to points in the peptide chain adjacent to a side-chain carrying a given light-absorbing group. Svedberg and Brohult² have recently reported the splitting of haemocyanin by light in the region of the absorption band around 2750 Å.

The above-mentioned experiments are not to be confused with the photolysis of amino-acids in general which give ammonia and the corresponding hydroxy-acid.

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VITAMIN B₁ IN CEREBROSPINAL FLUID

THE vitamin B₁ (aneurin, thiamin) content of cerebrospinal fluid has not heretofore been reported. W. Karrer was unable to detect aneurin in this fluid, using the thiochrome reaction of Jansen.¹ However, we have obtained positive results in most of the fluids examined by adopting a slight modification of Westenbrink's technique for urine.² The values encountered in 30 cases belonging to various mental diseases (epilepsia, dementia praecox, paraphrenia) averaged 2.5 γ per cent. The technique employed was briefly as follows: the sample was acidified to pH 4.0 with acetic acid and adsorbed on frankonite. The adsorbate was washed and dried at 100° C. The powder was divided in two portions. Graduated amounts of one portion were added to a series of test-tubes containing synthetic media which were then sowed with fresh spores of *Phycomyces blakesleeana* and determined by the method of Schopfer and Jung.³ The other portion was eluted and oxidized with potassium ferricyanide and the thiochrome extracted with isobutanol. The fluorescence obtained was compared with a standard under ultra-violet light in a Zeiss photometer. The *Phycomyces* test showed higher values than the thiochrome test. In all cases in which the chemical test was negative, it was possible to detect the vitamin with the *Phycomyces* test. The cerebrospinal fluids were kindly sent to us by Dr. H. Linhares, of the Psychiatric Institute of the School of Medicine.

All the tests were made with 10 to 15 cc of fluid. Two cases (catatonia and depressive state) showed the highest values, but in other cases (myxedema with cretinism and epilepsy with dementia) no trace of aneurin could be found by either test.

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² *Nature*, 142, 830, 1938.

¹ W. Karrer, *Helv. Chim. Acta*, 20: 1147-1155, 1937.

² W. G. K. Westenbrink and J. Goudsmit, *Arch. Néerl. Physiol.*, 23: 79-96, 1938.

³ W. H. Schopfer and A. Jung, *Zeit. Vitaminforsch.*, 7: 143-152, 1938; and G. G. Villela, *O Hospital*, 13: 43, 1938.

¹ *Proc. Roy. Soc. London*, 159: 206, 1937.