TABLE 1

Pituitary fractions	Carbohydrate, per cent.	Glucosamine, per cent.
40 per cent. Alcoholic Extract of Sheep Pituitary Powder	9.2	3.0
FSH		
(IF66A)	13.1	8.1
(IF18)	10.3	7.8
ICSH		
(L49B)	3.6	3.8
(L45DI)	5.4	5.8
Thyrotropic hormone		
(Schering)	2.9	3.5
(U89OK)	1.2	2.5
Growth hormone		
(DAP14)	2.7	1.8
Adrenotropic hormone		
(L16A4)	0.41	0
Lactogenic hormone		
(L16L4)	0.25	0
Inert globulins	3.6	2.7
Inert albumins	19.1	3.7

tary fractions and may prove a useful tool in the purification of these hormones. On the other hand, the absence of glucosamine in our adrenotropic and lactogenic preparations is important further evidence that gonadotropic hormones do not contaminate these preparations.

While from the foregoing it is evident that carbohydrate determinations alone will not differentiate gonadotropic from other pituitary fractions, they are extremely useful when employed in conjunction with glucosamine determinations. Thus, glucosamine content enables one to differentiate between gonadotropic and other fractions from the pituitary, while carbohydrate content gives the clue as to the particular gonadotropic fraction with which one may be dealing. Though future research may modify the values for either hormone, we can safely state that a glucosamine-rich pituitary fraction will be mainly FSH if it contains more than 12 per cent. carbohydrate, and mainly ICSH if it contains less than 4 per cent. of the latter.

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A SELECTIVE ACTION OF URINE AND SERUM FROM PATIENTS WITH MALIGNANT TUMORS ON EMBRYONAL AND NEWLY GROWING TISSUES

SOME two years ago there came for examination a young man of twenty-four, who had a tumor, a large embryonic cancer, of the right testicle. His urine, injected into a virgin rabbit, gave the characteristic Ascheim-Zondek reaction. The tumor was removed, and for about a month the reaction was absent. It then returned and with the appearance of metastases later on, the reaction became stronger. Being curious to see what effect this patient's urine would have on the ovaries, 20 cc were injected daily, intravenously, into a 12-day pregnant rabbit. On the fifth day the animal aborted. As this was unexpected, the urine was injected into three other pregnant rabbits, with the same result as in the first.

It was thought that the embryonic character of the tumor was the important factor, and accordingly urines of patients with tumors of corresponding types —dysgerminoma of the ovary, teratoma of the testicle and the Wilms tumor—were tested. These all produced abortion. The urines of a large number of patients with other types of malignant tumors were then tested, and in all instances abortion occurred, usually within a period of five days. Blood serum of patients whose urine had the abortifacient effect also was effective. As a control the urine or serum of a considerable number of normal individuals and ward patients free of malignancy was injected, with negative results.

The uterine changes which are produced are striking. With daily injections of the urine, there occurs, starting at the inner border of the decidual cells, a progressive placental necrosis associated with infiltration of inflammatory cells. The zone of necrosis becomes increasingly broadened until it involves the entire embryonal mass on the decidua. With the removal or absorption of the foetal structures, the uterus eventually returns to a normal state. The foetus in its early period undergoes rapid loss of its structural form. In late pregnancy it is expelled without marked change in its structure.

In addition to the action of the urine on the placenta and foetus other effects have been noted. When injected into non-pregnant rabbits, changes were found in the ovaries. These consisted of definite degeneration or destruction of the graafian follicles, especially in the granulosa cell portion, the ovaries finally becoming small and sclerotic. Further, when injected into male rabbits, the testicles showed degeneration or complete absence of the spermatogenic processes.

In some other experiments the urine was injected into rats which had been grafted with No. 256 Walker carcinoma. The usual course of such tumors is that after a certain period of growth, necrosis and sloughing occur, this beginning centrally and only gradually extending to the periphery. The process is not of a hemorrhagic nature but of a suppurating type. In the urine-treated rats a different picture was seen. Necrosis occurred, but, instead of beginning in the center of the tumor, began at the periphery and in-

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 Antituitrin 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 Mitchell[1] have shown that stearanilide $C_6H_5NHCO(CH_2)_{16}CH_3$ 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 stearanilide 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 Brohult[2] 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 B_1 IN CEREBROSPINAL FLUID

THE vitamin B_1 (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 blakesleeanus* and determined by the method of Schopfer and Jung.[3] The other portion was eluated 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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