It is well known that in other lysogenic species there is concomitantly (*a*) spontaneous induction of some cells resulting in subsequent lysis and liberation of phage, and (*b*) more or less frequent failure in transmission of prophage during cell division, so that non-lysogenic cells arise. Normally the latter are either lysed or lysogenized by the infectious phage present in the environment, so that a state of equilibrium is reached. It is known, also, that the addition of citrate or oxalate to the culture medium can prevent re-infection, and that by this method, after many transfers, cultures free of phage can be obtained. The findings outlined above suggest that antibodies to phage, by binding free virus, may bring about the same result.

It should be recalled that Jungeblut[1] found thirty years ago that six passages of virulent cultures in broth containing antitoxin brought about a loss of ability to produce toxin; but his evidence suggested that this was a transient phenomenon. Some of our converted cultures have remained non-toxigenic during ten passages over a six-month period.

The work reported here offers support for the hypothesis that antiphage bodies are important in conversion, and may account for the occurrence of the avirulent cultures isolated from throats and from the lesions of the chronic cutaneous diphtheria cases found in some parts of the world.

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Protein Degradation of Fœtal and Cancer Tissues in the Presence of Ethionine

INTRACELLULAR proteolytic enzymes are present in many tissues and they hydrolyse proteins during autolysis. Some experimental data support the idea of a physiological action of these enzymes: the augmentation of catheptic activity during the regression of cancer[1], and of larval tails of *Xenopus*[2]. But it has been shown that intracellular protein degradation is dependent on energy[3], and that *o*-fluorophenylalanine, a well-known anti-amino-acid, inhibits protein catabolism[4,5]. Steinberg *et al.*[5] also showed that this compound does not influence catheptic proteolysis. These observations lead to the supposition of a mechanism of protein degradation different from that of the simple catheptic hydrolysis. Similar conclusions are reported by Yakovlev[6], who studied the action of phosphate, dinitrophenol and other substances on proteolysis of tissues. He reported also that fœtal tissues behave against dinitrophenol differently from the normal rat tissues.

I have investigated the action of another anti-amino-acid, ethionine, upon the intracellular protein degradation of normal and fœtal liver and of benzopyrene sarcoma. In all cases 400-mgm. aliquots of 0·5-mm. tissue slices are incubated for 3 hr. at 37° in 4 ml. phosphate buffer $M/15$ at pH 7·2 containing ethionine 2×10^{-2} M. At zero time, and at the end of the incubation, the slices are homogenized in their medium and proteins are precipitated with an equal amount of 14 per cent trichloracetic acid. On the supernatant the ninhydrin-positive substances are determined colorimetrically[7]. Table 1 gives the values of the amino-acids released in control experiments and those carried in the presence of ethionine.

Table 1. INHIBITION OF PROTEIN BREAKDOWN IN NORMAL AND FŒTAL RAT LIVER AND OF BENZOPYRENE SARCOMA

	mgm. released amino-acids/100 gm. fresh weight		
	Controls		Ethionine
	Zero time	3 hr.	3 hr.
Normal liver	108 ± 11	210 ± 18	117 ± 13
Fœtal liver	122 ± 13	180 ± 17	130 ± 13
Sarcoma	150 ± 14	270 ± 22	244 ± 21

The control experiments show decreased degradation of fœtal proteins, and increased degradation in sarcoma. In the presence of ethionine, degradation in sarcoma is slightly inhibited by the anti-amino-acid (only 20 per cent), where in both normal and fœtal livers ethionine inhibits about 90 per cent of the normal protein degradation. This difference is probably due to a different concentration of the proteolytic enzymes susceptible to anti-amino-acid in the tissues examined. It is also important to note that ethionine inhibition of protein degradation in fœtal liver is quantitatively the same as that observed in normal liver. This result is in contrast with the observations reported by Yakovlev[6] on the negative effect of dinitrophenol on fœtal liver autolysis. But it must be remembered that Yakovlev studied the autolysis of homogenates, whereas in the present case intracellular degradation is observed in tissue slices: this difference in the experimental conditions may explain the observed variations in Yakovlev's and my results.

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Presence of Œstrone, Œstradiol and Œstriol in Extracts of Ovaries of Laying Hens

GUSTAVSON[1] found a high œstrogenic activity in excreta of laying hens. Others[2] have found activity in ovaries and greater activity in maturing follicles. Hurst[3] has found œstriol and œstrone in excrement of hens, and œstriol, œstrone and œstradiol in that of roosters. The present communication describes the identification of œstrone, œstradiol and œstriol in ovarian tissue of the fowl and the results of a search for their presence in blood.

Ovaries were removed from laying white Leghorn hens. Follicles larger than about 5 mm. diamete. were slit open, and yolk material was discarded, Ovaries with follicle walls attached were weighedr immersed in methanol, and disintegrated with a Waring blendor.

Œstrogens were extracted as described by Mitchell and Davies[4] for human placenta. Residues from