

effect of dipeptids in a similar manner. Leucyl-glycin and carnosin have been tested. The leucyl-glycin was a synthetic product. The carnosin was obtained from muscle. It was prepared by Dr. D. W. Wilson.

Both of these substances are toxic in large doses. Their toxicity is not as marked, however, as is that of the α -amino acids. The leucylglycin is more toxic than the carnosin.

During the course of these experiments we prepared and tested peptones prepared from beef. These were found not to affect in any way the growth of the cells.

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A note on the healing in and migration of foreign bodies in the animal body.

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We have made some observations on the difference in the behavior of different species of animals towards foreign bodies on which we wish to report very briefly.

If we apply very thin wires of copper around the neck of white rats in such a way that apparently they do not exert any marked pressure on the skin, these wires heal in at the ventral aspect of the neck, but not at the dorsal and lateral aspects, in a considerable number of cases, after they have at first produced some ulceration. About four weeks after the onset of the ulceration the skin begins to heal over the wire and soon the wire is buried deep in apparently normal tissue. Gradually the wire may migrate deeper into the tissues of the ventral parts of the neck and in one case it was found resting on the trachea, the tissues covering it being apparently quite normal. Thus the migration of foreign bodies can be imitated experimentally in certain cases.

In a large number of white mice and in three guinea pigs wires which had been applied in a similar manner, or even somewhat more tightly, did not heal in, but led to a transitory, more or less, superficial ulceration and scab formation. After some time such ulcers

may heal, only to form again, in case the wire should continue to irritate the skin.

Microscopically we find in the rat in the first stage, that of ulceration, the base of the ulcer formed by fibrous or hyaline tissue which is infiltrated by fibroblasts. The wire is seen lying at the base of the ulcer surrounded by necrotic tissue and polynuclear leucocytes. On the whole, the capillaries run radially towards the surface of the ulcer, while the fibrous tissue and the fibroblasts are arranged in a direction more or less parallel to the surface of the ulcer. At the side of the ulcer near the tip of the regenerating epithelium, the growing connective tissue is more cellular and less fibrous and the capillaries are more dilated and a greater influx of polynuclear leucocytes is observed than at the base of the ulcer; at the latter place the pressure is greater and this may be responsible for the greater production of dense fibrous tissue and the poorer development of capillaries.

In cases in which the wire healed in we find it in later periods embedded in a canal which is surrounded by a small zone of necrotic tissue and polynuclear leucocytes. This zone is followed by an area of dense fibrous tissue, surrounding the wire on the whole more or less concentrically (although some deviations may occur), while the capillaries run more or less in a radial direction towards the wire; however, at some places they may adapt themselves to the concentric course of the fibrous tissue. Certain deviations from this arrangement seem to occur. Mechanical factors, pressure and pull, and a stereotropic reaction, determine probably essentially the direction in which the fibroblasts are arranged, and pressure as well as certain chemical factors cause probably the transformation of the fibroblastic into fibrous tissue.

The blood capillaries evidently do not respond to the same degree to the mechanical factors which determine the movements of the fibroblasts; they often run in a direction approximately radially to the lines of pressure and often continue to follow this direction at a time when the connective tissue has assumed an arrangement parallel to the lines of pressure and at right angles to the blood vessels. We may point out that from a teleological point of view, the difference in the reaction of connective tissue and capillaries appears as a useful adaptation to the requirements

of tissue growth. The radial growth of the capillaries, in contradistinction to the concentric growth of the connective tissue makes possible the nourishment and persistence of the newly formed tissue, and thus the definite organization of dead material.

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Experiments on antiscorbutics. Report of an antiscorbutic for intravenous use.

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At the last meeting of this Society we presented a paper on guinea-pig scurvy, which had been induced by a diet of oats, hay, and water. In the present paper we wish to report some protective and curative experiments on pigs which were fed on this diet, as well as on the use of various antiscorbutics in the scurvy of infants.

Guinea pigs developed scurvy on the above diet in spite of a daily per capita allowance of five grams of dried vegetables. Three lots of vegetables were used on three groups of pigs: (1) a commercial preparation of mixed vegetables; (2) carrots dried at room temperature last summer; (3) carrots rapidly dried a few weeks previously at a temperature of about 130° F. All the pigs in each group developed scurvy, those of group 3 developing the disease somewhat later than the others. A watery decoction of orange peel was able to protect against scurvy. A similar preparation, made from orange peel that had been dried at room temperature a few months, retained only mild antiscorbutic properties.

Orange juice proved to be a most effective antiscorbutic in very small amounts. If, however, it was kept in the refrigerator for about three months it lost considerable of its potency, the pigs to which it was fed failing to gain normally. Orange juice which had been subjected in an autoclave to 110° C., at ten to fifteen pounds pressure, although antiscorbutic, did not enable pigs to gain in weight as did the unheated juice. Orange juice that was