TABLE II. Diphtheria Antitoxin Units per ml of Fluid from Sites of the Injection and of Serum.

Days after inj. of sites			Units/ml Fluid from sites			
No. 7	No. 8	No. 10c	No. 7	No. 8	No. 10c	Serum
12	10		225	375		60
	16			525		75
	18			425		75
	21			350		65
43			375			75
46			170			75
						425*
		8			175	425
		13			175	450

* 68 days after 1st inj.

toxin concentration was lower than in the blood. This observation supports the conclusion that antibodies are formed at the site of injection of antigen combined with adjuvants and is in harmony with the assumption that the role of these adjuvants is to evoke an accumulation of cells about the antigen which produce antibodies(6).

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Occurrence of Tapered Collagen Fibrils from Human Sources with Observations on Mesenchymal Neoplasms.* (19977)

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Collagen fibrils were first recognized in the electron microscope by Hall, Jakus, and Schmitt(1). Since then attention has been focused on their width and striations but there has been little mention of the occurrence of tapered ends. The ends of collagen fibrils from most sources have been described as square or frayed. Gross(2) has noted the presence of an occasional tapered end in preparations of skin collagen, and Porter(3) has mentioned collagen fibrils which he described as having tapered ends in tissue cultures of fibroblasts. It is the purpose of this note to indicate and discuss the relative frequency of occurrence of tapered collagen fibrils from a number of human sources.

Methods. Pieces of tissue, fresh or fixed in 10% formalin were homogenized in a standard Waring blendor or a micro Waring blendor. A drop of the resulting suspension was placed on a collodion-covered specimen grid, allowed to dry and shadowed with palladium. Preparations were examined in the RCA EMU 50 kV electron microscope.

Results. Adult human tissues. Collagen fibrils with tapered ends were encountered only rarely in preparations of Achilles tendon, dura and skin of adult human beings. Tapered fibrils were found in most samples of human endometrium taken at various intervals during the menstrual cycle.

Embryonic human tissue. Almost every collagen fibril from the skin of human embryos (6 and 10 cm crown-rump measurement) was tapered at one end and a significant number were tapered at both ends (Fig. 1). Tapering was present but less frequent in the specimens of embryonic Achilles tendon.

Benign and malignant neoplasms. Seven human fibrosarcomas were examined and tapered collagen fibrils were present in all. The number of tapered fibrils varied considerably among the fibrosarcomas. They were com-

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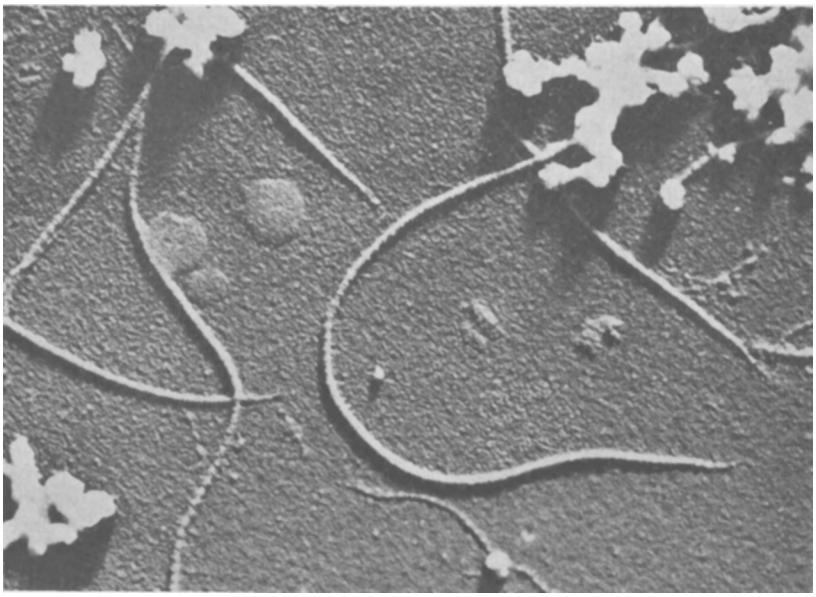

FIG. 1. Collagen fibrils with tapered ends from the skin of a 6 cm embryo. The irregular round bodies at the borders were seen throughout this preparation. A much smaller beaded fibril appears at the bottom. Palladium shadowed. ca. 23550 ×.

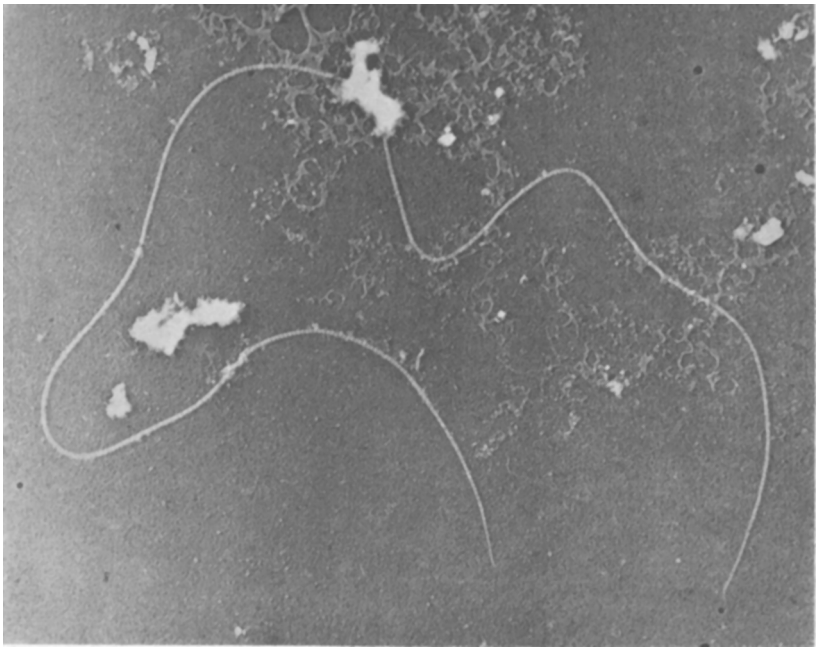

FIG. 2. Tapered fibril from a human fibrosarcoma. Note the small beaded fibrils. Palladium shadowed. ca. 8370 ×.

mon in one synovial sarcoma. In 2 of the fibrosarcomas almost every fibril had at least one tapered end and a few had both ends tapered (Fig. 2). Collagen fibrils with tapered ends were present in one of 2 sclerosing hemangiomas and were common in a Wilms' tumor. A mature keloid was devoid of tapered fibrils as was one fibroma. Tapered fibrils did occur in one fibromyoma and in one fibroma.

Discussion. Collagen fibrils with tapered ends occurring in sufficient numbers to be found easily in electron microscope preparations were associated with rapidly growing sources of connective tissue. They were abundant in preparations from the human embryo. They were almost invariably present in the rapidly growing mesenchymal tumors examined and in samples of human endometrium. In preparations of adult human skin. Achilles tendon and dura tapered collagen fibrils were rare to absent and in the more slowly growing human mesenchymal neoplasms their presence was variable. This suggests that an abundance of tapered ends is one of the earmarks of newly formed collagen.

Randall, Fraser, Jackson, Martin, and North(4) observed tapered collagen fibrils in preparations made from the umbilical cord of the rat. From this observation they suggested that growth of the collagen fibril may take place by a process of pyramidal accretion. If one assumes that the true end of the native collagen fibril is tapered in contrast to the square or frayed fractured end, then in sites of apparent active collagen formation one is seeing more true fibril ends than in adult "resting" connective tissue. One explanation for this is that the fibrils from these sites are shorter, thus more true ends are seen. In the human being then, short collagen fibrils with tapered ends are relatively common where it would seem that collagen is being actively formed.

Summary. Preparations of adult human skin, Achilles tendon, dura and endometrium; human embryonic skin and Achilles tendon; and benign and malignant mesenchymal neoplasms were examined in the electron microscope for the relative frequency of occurrence of collagen fibrils with tapered ends. It was found that tapered fibrils occurred with greater frequency where collagen apparently was being actively formed.

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A Method for the Assay of Penicillin in Animal Feeds. (19978)

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The usage of antibiotics in animal nutrition is rapidly increasing. It is obviously desirable to have an assay method for the determination of antibiotics in feeds at the levels commonly employed. A companion paper describes a method for aureomycin(1). Standard turbidimetric and cup-plate methods can not be used for the determination of antibiotic activity in feeds due to the presence of non-antibiotic materials in the unsupplemented feeds which inhibit the assay organism or modify its response to the antibiotic. The presence of these non-specific materials gives erroneously high antibiotic values for supplemented feeds and an apparent value for feeds to which no antibiotic has been added. The successful assay of antibiotics in feeds has been made possible by the use of a simple technic. The feed extracts containing antibiotics are pipetted on thick paper pads which are placed on a solidified inoculated medium. This is similar to the technic originally described by Vincent and Vincent(2) but it has been considerably refined.

The method has gone through a lengthy process of development. An early form of the method was briefly discussed in abstract(3) and enabled the determination of 4 g of procaine penicillin per ton of feed. The change from thick double layers of medium to a