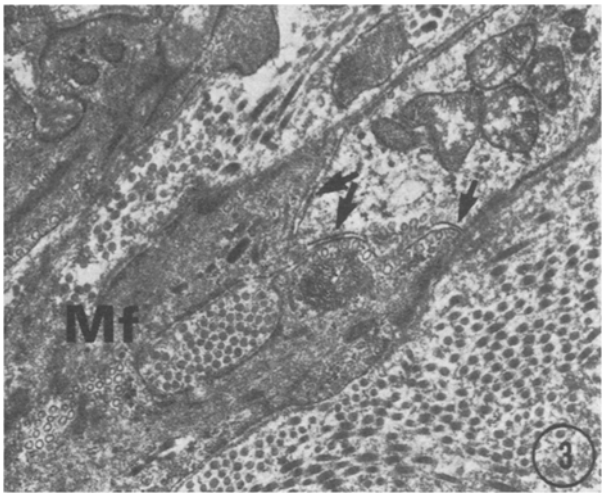

Fig. 3. Intercellular contacts (→) between 2 myofibroblasts (Mf). ×15,500.

tren's contracture[12]. Their surprising position in liver portal spaces of patients infected by Schistosoma mansoni may be related to 2 different mechanisms.

Portal spaces are involved in chronic human schistosomiasis by long standing and intense inflammatory reaction corresponding to chronic irritation caused by metabolic products and eggs eliminated by worms into the portal circulation. This inflammation may stimulate an intense proliferation of fibroblasts, with subsequent modification of their differentiation into contractile cells[9, 11], as was proposed by Gabbiani et al. in cases of hypertrophic scars[5, 10].

At the same time, vascular walls are submitted in schistosomiasis to chronic injury, resulting in inflammation and in their progressive degeneration. This lesion is a constant characteristic of chronic human schistosomiasis and precedes the development of Symmers' fibrosis. The degenerated smooth muscles of vascular walls may thus be the origin of myofibroblasts. This latter hypothesis appears to us as more plausible, but further investigations are necessary to elucidate the origin of myofibroblasts in this model.

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Piroplasmal sporozoites in the Argasid Ornithodoros erraticus (Lucas)

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Summary. The infective forms of Nuttallia meri, a small-mammal piroplasm, first appear as spindle-shaped sporozoites in and around the salivary glands of Ornithodoros erraticus (small race) 30 days after the ticks had fed on infected blood. O. erraticus is the only soft tick so far proved to transmit a piroplasm.

Nuttallia meri Gunders, 1971, was isolated and described from the fat sand rat Psammomys obesus Cretzchmar, 1828, from the lower Jordan Valley[2] and is considered a potential model for the study of piroplasmosis of economic importance. The search for possible tick vectors in nature led to the discovery, within Psammomys burrows, of only the 'soft' tick Ornithodoros erraticus (Lucas, 1849, small race).

We report here on the finding of the infective form of N. meri in the salivary glands of its natural vector.

Material and methods. Clean laboratory raised Ornithodoros erraticus (Lucas, small race), were fed on Psammomys obesus Cretzchmar 1828, or hamsters infected with N. meri. The gorged ticks were kept in a darkened incubator at 28 °C and about 80% RH (relative humidity). Ticks were dissected under a binocular stereomicroscope at different times after repletion, when salivary glands and stomachs were removed on to clean microscope slides lightly rubbed with a silicone cream, and covered. A mushroom-like weight was used to flatten the preparation which was then fixed in Bouin and stained with Giemsa stain (1:15), dehydrated and mounted.

Results and discussion. Spindle-shaped slender sporozoites were first seen in glands removed 30 days after the infective feed, and up to 85 days later (no dissections were carried out after this). The sporozoite cytoplasm stained a faint blue, and the usually central nucleus a dark red; they measured 3–4 μm (median 3.4) in length × 1 μm. A small peri-nuclear vacuole was seen in most. Immature,

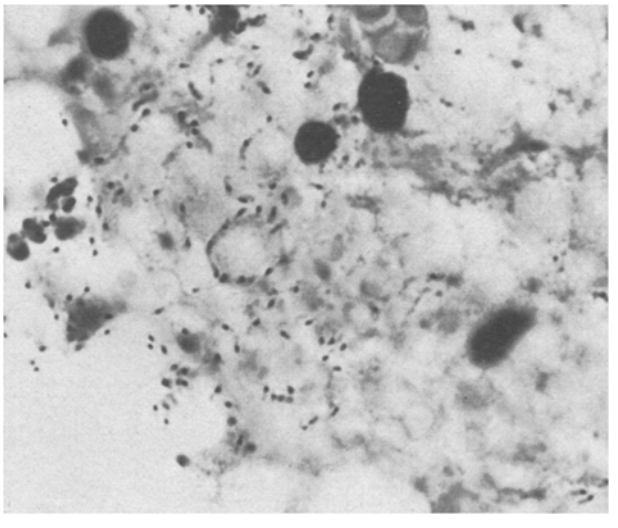

Fig. 1. Periphery of flattened salivary gland of Ornithodoros erraticus (small race) with discrete sporozoites of Nuttallia meri. Giemsa-stained, ×1200.

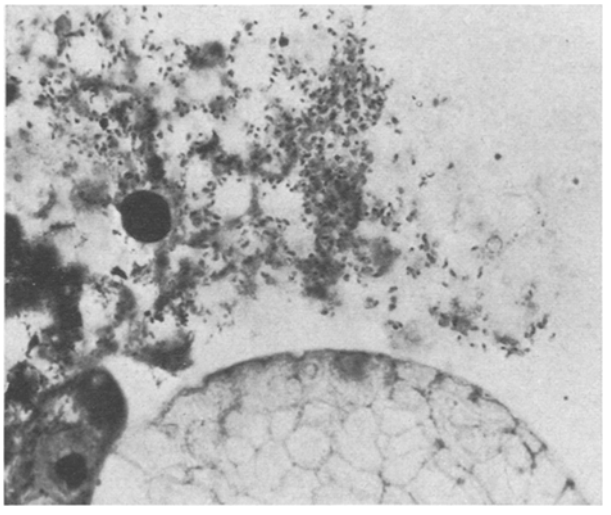

Fig. 2. Agglomeration of sporozoites of Nuttallia meri at the periphery of a salivary gland of O. erraticus. Domed, vacuolated tissue is zymogen-secreting cells. Sporozoites are mainly found adjacent to these. Flattened whole gland preparation, Giemsa-stained, ×750.

solid round specimens, and others containing a vacuole, like young malarial trophozoites, were also encountered in some preparations (figure 1). Masses of sporozoites were seen mainly on the periphery of salivary glands (figure 2) adjacent to the clear zymogen-secreting cells. They were also found within the gland tissue proper and within the saliva collecting tubules. Saliva collected from infected ticks contained sporozoites. Infected ticks transmitted N. meri to clean, laboratory-bred Psammomys and hamsters by bite, and triturated pooled infected glands, injected i.p. into splenectomized clean recipients, also effected transmission. There is a clear difference in the rates of infection, as manifest by the presence of sporozoites in the salivary glands, between ticks that had fed on infected Psammomys and those fed on infected hamsters. Of 309 clean ticks fed on Psammomys, 34% were found positive, as against 18% of 72 clean ticks fed on hamsters.

Interest in O. erraticus, small race, as a vector of Nuttallia meri stems from its being the first Argasid (=soft) tick to have been proved to transmit a piroplasm by bite[3,4]. The vectors of all known piroplasms of domestic animals (both Theilerias and Babesias) belong to the Ixodidae or hard ticks[5–10]. Although several piroplasms of small mammals have been described, their use as laboratory models for the diseases caused by piroplasms of economic importance is limited by the fact that the natural vectors of most are as yet unknown. Only in 2 instances: N. danii Tsur, Hadani and Pipano, 1960, (Babesia merionis (Rousselot, 1953) Levine, 1971) and N. microti Coles, 1914, are these known[11,12]. They are 3 species of Hyalomma and 2 species of Rhipicephalus for N. danii and Ixodes trianguliceps for N. microti, all Ixodid ticks.

The demonstration of sporozoites as the infective form of N. meri in O. erraticus clearly amplifies the contention[4] that the unidentified natural vectors of some of the small mammal piroplasms ought to be sought for among the Argasidae.

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Transcription spectra in E. coli growing rapidly or slowly

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Summary. The percentages of DNA transcribed by Escherichia coli WWU growing with doubling times of 26 or 56 min were examinated by RNA: DNA hybridization. The data indicate that more DNA was transcribed by the faster-growing cells (9.6 ± 0.3%) than by the slower-growing cells (2.4 ± 0.3%).

E. coli grow more rapidly in enriched medium than in unsupplemented minimal medium. The faster growth rate has been related to increases in DNA per cell[2] or to increases in ribosomes per cell[3] by mechanisms supposing that a smaller fraction of DNA is transcribed in the richer medium. This narrower transcription spectrum might be expected since some genes would be repressed by exogenous metabolites. However, in this communication, we report the results of RNA-DNA hybridization experiments which indicate a broader transcription spectrum in cells growing more rapidly.

Methods. DNA labelled with ^{3}H-thymidine was extracted from E. coli WWU[4] after the culture was starved of a required amino acid (arginine) for 60 min to allow completion of cycles of DNA replication in progress. The cells were lysed in an EDTA-saline solution by a freeze-thaw, lysozyme procedure and the DNA extracted by the method

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