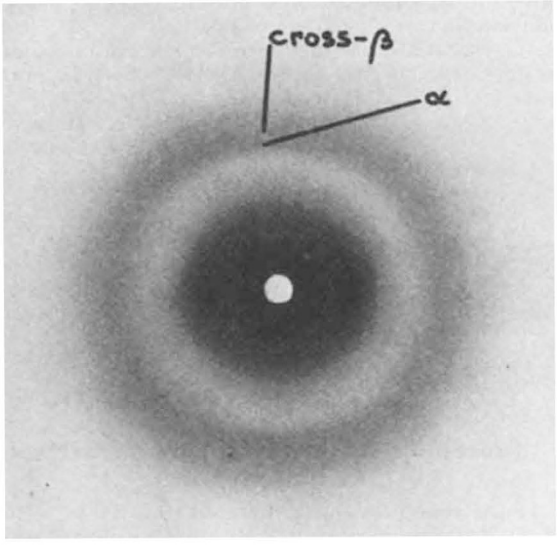

Fig. 1. X-ray diagram of a film of actomyosin dried at neutrality, treated for 48 hr. at *p*H 5, washed to neutrality, re-dried and oriented by stretching

neutrality, the attendant drop in *p*H during splitting[4] is in fact the cause of an artefact. It seems more likely, however, that the transference of protons during the splitting of adenosine triphosphate is the fundamental event itself, and that experiments involving protons alone are simply another expression of the fact that local migration of protons to some part of the actin–myosin complex causes collapse of specific polypeptide chains. Overall shortening of the complex will then take place according to the arrangement of the sites where the adenosine triphosphate is split.

I thank Prof. W. T. Astbury for his encouragement of this work, Dr. G. N. Graham for assistance in the preparation of actomyosin, and Mr. A. Millard for the photographic reproduction of Fig. 1. The work, which is aided by a grant from the Muscular Dystrophy Associations of America, Inc., will be described in detail in due course.

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Effect of Fatty Acid Mixtures on the Rice Stylet Nematode (*Tylenchorhynchus martini* Fielding, 1956)

IN the course of other experiments, the metabolic fatty acids produced by *Clostridium butyricum* Prazmowski were shown to be active against *Tylenchorhynchus martini* Fielding, 1956. Fatty acids in aqueous solutions at those concentrations extracted from artificial culture filtrates proved highly effective in inactivating *T. martini*[1].

In the present work all possible combinations of the extracted acids—butyric, propionic, acetic and formic—were prepared at concentrations of 10^{-2}, 10^{-3} and 10^{-4} *M* in distilled water. Equal quantities of each acid in each combination were prepared at the various concentrations. Twenty active nematodes were submerged in each acid solution at each concentration until all the nematodes were quiescent. If the nematodes remained quiescent for 15 min. after they had been removed from the acid solutions into water they were considered to be inactivated. The *p*H of the acid solutions was determined.

Although nematode response was variable, it is evident from the results presented in Fig. 1 that the combination of butyric and propionic acids was more effective at 10^{-3} and 10^{-4} *M* than either butyric or propionic acid alone. Other results (not presented in Fig. 1) show that any combination containing 2, 3 or 4 of the above-mentioned acids was more effective than any one acid alone at the same molar concentration. Effectiveness of the acid mixtures was related to combined molecular weights. Thus, butyric and propionic acid mixtures were more effective than propionic and acetic acid mixtures. Relative effectiveness of the individual acids was dependent on their molecular weights and decreased in the order of butyric, propionic, acetic and formic. The *p*H-range of all solutions was between 3·3 and 4·4.

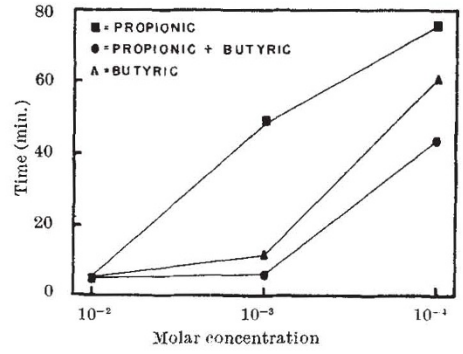

Fig. 1. Time in minutes required for inactivation of *T. martini* in water solutions of butyric and propionic acids and a mixture of the two acids at three different molar concentrations

Other experimental procedures thus far have failed to elucidate the mechanism of the effects of mixtures and single acids on this nematode.

Thanks are due to Dr. John P. Hollis at Louisiana State University for his constructive advice during this study.

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Free Radicals from Chlorpromazine

THE report has been made recently of the isolation in urine of a metabolite of chlorpromazine which was designated as a free radical from its electron spin resonance[1]. Absorption data revealed no distinct characteristics in the ultra-violet and visible ranges. The same compound was formed also by photo-oxidation with ultra-violet light. The oxidation-level of the free radical was thought to be intermediate between chlorpromazine and its sulphoxide, and, as a result, a provisional formula was suggested involving the heterocyclic sulphur.