MR. BRISKEY: I would like to ask Darrel and Milton to come up for just a few minutes. John has given us another five minutes. If you have any questions, we would like to have them directed to these three gentlemen.

MR. PEARSON: (Michigan State University) I would like to ask Milton Bailey where this reference you referred to by G. R. Martin is found and the title of the paper.

MR. BAILEY: That will cost you $5.00, Al. The reference is: Relation of ionizing groups to the structure of the collagen fiber. Biochimica et Biophysica Acta, volume 49, page 245.

MR. MULLINS: (Louisiana State University) I would like to ask Darrel a question in regard to his comment that the quantity of reticulin in muscle is not sufficient that we should consider it in meat tenderness. Is this in regard to the reference that you pulled this from, or any work you may have done to justify this?

MR. GOLL: To start with, I haven't done any work concerning reticulin at all. Concerning the specific reference to reticulin tissue, I offhand, cannot think of any specific reference which says the reticulin is present in large amounts, although this is what I understood.

MR. MULLINS: Just add one comment, Darrel. The reason I brought this up, I am aware of that reference. I do think we would be making a mistake if we take it as the truth, because of the validity or the work it is based upon. I think this work was done several years ago. I think we would be making a serious mistake if we accept this, based upon work in our laboratory.

MR. GOLL: I understand reticulin is perhaps widespread in the sense that it is found quite generally throughout. It may not be present in as large an amount. This is what I referred to when I made the statement.

MR. MULLINS: Then I had misunderstood. I would agree with you.

MR. GOLL: I certainly agree with you, we should not overlook the relative importance.

MR. BRISKEY: Do you have other questions?

MR. KAUFFMAN: (University of Illinois) I think this is a very good opportunity to ask a dual question of our two speakers, Darrel Goll and Walter Giffee. One is doing work in leather-type hide collagen and chemistry; the other in muscle collagen and chemistry.

I would like to ask one or the other to clarify for us, the differences possibly that exist in the type of collagen and molecule you are working with; that possibly exist between the two

types. So much of the literature deals with hide collagen rather than the type of collagen that Darrel is working with, at least the anatomical connection is different.

MR. GIFFEE: This is certainly a subject that is interesting to us. I intended to imply that we felt there were differences, but we feel that the molecule of collagen is essentially the same no matter where it occurs within a given species; but the matter within it, as it is cross-linked, may be considerably variable.

Consider for instance, the behavior of a tendon. When one tries to extract a fresh tendon, he can remove most of the solution very rapidly and what you have there is structure in which the fibers are merely parallel bundles, for the most part. I'm not an ecologist. I'm getting on a little dangerous ground. Nevertheless, large yields are possible and yet the collagen shows the revisible precipitation. It will perform all the tricks in collagen today. I think this differs strongly with what may be found in the fiber where you have parallel bundles. I think you have much less organization. I think it is a matter -- and this is a focal point of our experience in collagen -- this is between cross-linking our fundamental collagen.

FROM THE FLOOR: I was just wondering if you could answer this. Do you think the answers you are getting from the connective tissue or collagen from the hides, can convey certain things toward central muscle connective tissue?

MR. GIFFEE: I feel we can, yes. I did some reading - quite a bit of reading on turnover in collagen. I wound up with a great deal of trust in the studies.

Due to the bulk of collagen, it becomes quite old and new layers of collagen are laid down. I think metabolic connective tissues might have what is compared to a higher per cent of collagens in a younger form. The principle difference would be in this type. It would not be highly organized in the skin, but we are afraid to depart from one tissue and outline a pattern. We certainly want to get into muscle tissue as soon as we can establish a pattern that is satisfactory to us.

MR. BRISKEY: In view of the time, I would like to thank all the members that participated in this program; both our morning session and second session. I would also like to thank the members of the committee for their help in establishing the program.

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