β -methylthiopropionaldehyde, which, after isolation, was allowed to react with liquid hydrogen cyanide in presence of a small amount of potassium cyanide. The crude cyanohydrin was converted at 80° into the corresponding aminonitrile, which was isolated as its oxalate and hydrolysed to methionine. It may be recalled that β -methylthiopropionaldehyde has previously been obtained from acrolein³, though apparently only under obscure conditions or in small yield. Moreover, the methylthioaldehyde has been converted by what are in principle the steps outlined above into *dl*-methionine⁴, but low yields seem to have given the premature impression that this synthesis is of little practical value.

In the present work similar reactions have also been used to prepare analogous acids such as ethionine, α -amino- γ -benzylthio-*n*-valeric acid, and α -amino- γ -benzylthio- γ -methyl-*n*-valeric acid in satisfactory yield. The last-mentioned compound has been debenzylated to give α -amino- γ -thio-1- γ -methyl-*n*-valeric acid, an analogue of penicillamine, the degradation product of the various penicillins.

A full account of these syntheses has been submitted for publication in the *Journal of the Chemical Society*.

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Origin of Erythrocytes

It seems desirable to utter a caveat in reference to Dr. S. H. Wajda's communication on the origin of erythrocytes from striated muscle¹. During the last two years, many hundreds of sections of muscles previously traumatized by various means have been studied in great detail in this Department. In view of the suggestion often made in the past (and particularly in view of the recent work of Chèvremont) special search has been made for convincing evidence of the transformation of muscle fibres into various types of connective tissue cells. Unfortunately, the histological picture is usually extremely confused in the traumatized area at first and, unless the sections are studied with a critical eye, it is possible to mistake histiocytic and other phagocytic elements for actual transitional forms between disintegrating muscle cells and various connective tissue cells. Because of these difficulties, it has been reluctantly concluded that this type of material is really not adequate for the solution of such a problem. In some cases it can be certainly demonstrated that the appearance seen under the microscope suggesting a transformation of a muscle fibre into histiocytes is quite illusory (although, of course, this does not preclude such a possibility).

It seems not improbable that the suggested transformation of striated muscle fibres into red blood corpuscles (a process which is referred to by Dr. Wajda as 'instantaneous') is also based on such illusory appearances. One of the members of this Department has been engaged for several months

in the study of living striated muscle fibres by micro-dissection, and has often watched them *in vivo* for several hours after traumatization. In no case has any process been observed which is even remotely similar to that described by Dr. Wajda.

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Nature, **159**, 254 (1947).

THE working hypothesis on blood formation on which Prof. Le Gros Clark comments was put forward because the wealth of observation behind it could not fit any established views on haemopoiesis, and because some general statement was warranted, if for no other reason, as a basis for further experiment. My views are based both on extensive cytological observation and on experimental evidence which will be fully discussed elsewhere.

I do not agree that the histological picture of traumatized muscle is so confused as to defy critical examination. The architecture of striated muscle is much more regular than that of loose connective tissue, a tissue of choice in the study of inflammation, and a cytologist should not encounter any great difficulty in following its cellular changes.

Judging from his own published work on muscle, Prof. Le Gros Clark's studies have been neither concerned with muscles working at the time of fixation, nor with acute changes in them, nor, indeed, with blood formation. This might, in part, account for his failure to confirm my observations. At the same time, I might direct attention to the fact that there is a photomicrograph (Fig. 23) in his latest paper which clearly shows cells budding off from an injured muscle fibre, and the process itself is described in some detail in the text. Prof. Le Gros Clark decided, however, that the fate of these new elements could not be determined.

It is necessary for me to emphasize again that the instantaneous discoidal disintegration of muscle fibres had been described long before I was able to confirm its occurrence. It has also been recently observed *in vivo*, and recorded cine-photomicrographically by Speidel as a "progressive transformation of single sarcomeres into discrete thin clots". As Speidel points out: "a few seconds of electrical stimulation were sufficient to initiate the formation of an incipient clot". It should not, therefore, be impossible to check Thoma's statement that disintegration may begin "plötzlich in beinahe explosionsartiger Weise" by repeating both his and Speidel's experiments.

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Internal Waves and Upwelling of Oceanic Water from Mid-depths on to a Continental Shelf

IN January 1947 at a time when the winter maximum for inorganic phosphate dissolved in the sea is usually reached, a series of observations was made in the western English Channel. In an area north of the coast of Brittany in water of 35.40–35.45‰ salinity, temperature about 1°C. higher than in the surrounding water and a zooplankton community typical of 'south-western' water¹, phosphate around 0.40 mgm.-atom/m.³ P was found. If,