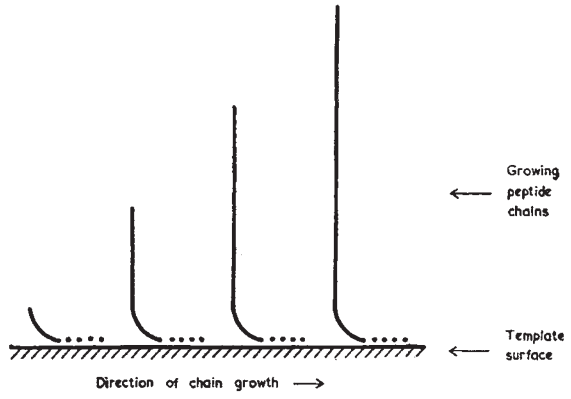

amino-acids can occur, and a further 'wave' of biosynthesis may pass along. Many peptide chains at different stages of growth may thus be attached to the template at the same time, as is suggested in the diagram.

If a template were to carry simultaneously twenty growing protein molecules in different stages of development, the actual time of biosynthesis of each molecule would be twenty times the apparent time per molecule. Thus the time of biosynthesis of a protein may be much longer than is generally supposed. In the biosynthetic experiments, the amino-acids are drawn from a pool with which the labelled amino-acid may or may not have become equilibrated. In any normal biological system, the specific activity of the pool changes with time, and to show that differential degrees of labelling of the same amino-acid residue in different parts of a protein chain are due to transpeptidation, it must be shown that the difference is too great to be accounted for by changes with time in the activity of the pool. Conclusions are therefore not valid without evidence of the time of biosynthesis of a single molecule of the particular protein being investigated. No such evidence appears to be available, so that transpeptidation cannot yet be said to have been demonstrated in protein biosynthesis.

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[1] For collected references, see Campbell, P. N., and Work, T. S., p. 996 of this issue of *Nature*, and also ref. 3(*c*).

[2] For collected references, see Borsook, H., *Fortschr. d. Chem. org. Naturst.*, **9**, 292 (1952).

[3] (*a*) Anfinsen, C. B., *Science*, **114**, 683 (1951). (*b*) Anfinsen, C. B., and Steinberg, D., *J. Biol. Chem.*, **189**, 739 (1951); *Fed. Proc.*, **10**, 156 (1951). (*c*) Steinberg, D., and Anfinsen, C. B., *J. Biol. Chem.*, **199**, 25 (1952).

[4] Dounce, A. L., *Enzymologia*, **15**, 251 (1952).

Quantitative Estimation of the Total Solids in Fresh Whole Milk by Oxidimetry

Since the major organic constituents of milk, with the possible exception of the fat, carry readily oxidizable groups, it should be possible to measure their amount by oxidimetry. Although the fat itself may not be readily oxidizable, it may possibly be measured indirectly by means of the substances associated with it in the fat phase and which are probably present in proportion to the amount of fat. Thus it would appear reasonable to believe that an oxidimetric method could be devised for measuring the total solids of milk. Such a test could be carried out much more rapidly and simply than by the methods usually employed.

After several trials using ceric sulphate in N sulphuric acid and ferrous-*o*-phenanthroline as oxidant and indicator respectively, the following method was tentatively adopted as a means of testing the theory.

The milk was secured from the weigh-tank and 10 ml. was diluted to 100 ml. with distilled water and well mixed. 10 ml. of the diluted milk was transferred to a casserole containing 20 ml. of distilled water, two drops of ferrous-*o*-phenanthroline were added and the mixture titrated against 0·01 N ceric sulphate in N sulphuric acid until the orange colour was discharged. The titration was continued after the lapse of one minute, and the total number of millilitres of ceric sulphate used was taken as the titre value of the milk. (It was found that titrating at a constant rate yielded closer agreement between duplicates.)

Thirty-one samples of herd milk representing milk from five different breeds of cows were tested by this method, and the results compared with the value for total solids obtained with the A.O.A.C. gravimetric method ("Methods of Analysis", A.O.A.C., 7th edit., 1950).

The results yielded a coefficient of correlation between titre values and total solids values of $r = 0{\cdot}912$ with a standard error of estimate of $\pm$ 0·238 per cent total solids. It is noteworthy that the error between duplicate titrations was approximately $\pm$ 0·05 ml., causing a final error of $\pm$ 0·22 per cent in the total solids, which is in good agreement with the standard error of estimate.

While the above method in its present form may not serve as a practical means for measuring the total solids in milk, it does justify the view that such measurements may be done by oxidimetry, and should serve as a starting point in the search for a rapid and accurate method.

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A New Linkage in Tobacco

In about seven genetic linkages so far found in *Nicotiana* species, only one concerns *tabacum* and another *rustica*. The rest of the five linkages were discovered in interspecific crosses involving *N. tabacum*, *N. langsdorffii* and *N. sanderæ*[1]. Kelaney[2] found a linkage between a gene *Br* for broad-constricted leaf with the gene *Pk* for carmine-pink flowers with a 7·5 per cent crossing-over. Boortzev[3] mentions linkage of 4·35 per cent between seed colour and compact habit in *N. rustica*. Clausen and Cameron[4] have isolated twenty-four monosomics of tobacco and were able to locate cytologically eighteen genes for sixteen characters in nine chromosomes by crossing the monosomics with a standard tobacco type. In six of the chromosomes identified, more than one gene has been found, but the authors do not mention the position of genes and distances between them.

We present here a new case of linkage between a gene for petiolate condition and absence of auricle of leaf found in a cross made during 1949–50 between Lanka and Yellow-Special varieties of *N. tabacum*.