

appears therefore that better utilization of food (possibly due to a lowered metabolic rate) can be attained by the oral use of stilbœstrol on fattening cockerels. Our findings are therefore contrary in this respect to those of Jaap and Thayer³. It was further noticeable in our œstrogen-fed birds that carcass quality was improved over controls in the respects outlined by Lorenz².

The possibility suggested by Jaap and Thayer³ that other synthetic œstrogens may be more active orally, weight for weight, than stilbœstrol for poultry, however, is not ruled out and is being explored.

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¹Lorenz, F. W., *Poultry Sci.*, **22**, 190 (1943).

²Lorenz, F. W., *Poultry Sci.*, **24**, 128 (1945).

³Jaap, R. G., and Thayer, R. H., *Poultry Sci.*, **23**, 249 (1944).

⁴Thayer, R. H., Jaap, R., and Penquite, R., *Poultry Sci.*, **23**, 555 (1944).

Fructose, a Constituent of Semen

BULL spermatozoa separated by centrifugation and washing from the seminal plasma can survive anaerobically only if some glycolysable carbohydrate is added¹; they can utilize glucose, fructose and mannose but not glycogen. In the whole semen, on the other hand, the spermatozoa survive without any additional sugar and they live at the expense of a reducing carbohydrate already present in the seminal plasma. Hitherto, this carbohydrate has been regarded as glucose². However, in view of the inadequate evidence as to the identity of the sugar, an investigation of its chemical nature was undertaken. It revealed that the greatest part of the reducing sugar content of the seminal plasma is derived not from glucose but from fructose. From 120 ml. of bull semen, on purification, 15 ml. of a solution were obtained in which both the optical activity and the reducing value were determined and found to correspond to 630 mgm. fructose. Fructose was also identified as crystalline methylphenyl-fructosazone³. In small samples of semen (0.1 ml.) it was found possible to estimate fructose quantitatively by an adaptation of the method of Roe⁴; the analysis of seven freshly collected samples of bull semen gave the following results.

Reducing sugar, mgm. per cent	785	635	498	447	1090	531	1098
Fructose, mgm. per cent	779	592	480	376	1040	453	1062

On standing, the amount of fructose in the whole semen falls progressively and lactic acid is formed as the result of fructolysis.

Hitherto, with the exception of embryonic liquids and of certain metabolic dysfunctions like fructosuria^{5,6}, there was but scanty evidence for the occurrence of free fructose in the animal body, and frequently the claims were based merely on the non-specific colour reactions. The identification of fructose in the seminal plasma by levorotation and by the isolation of the methylphenylfructosazone establishes this sugar as a natural constituent of an important body fluid.

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Mr. R. Clarke, Mr. E. Conn, Mr. L. E. A. Rowson, Mr. G. Smith and Mr. D. L. Stewart.

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¹Mann, T., *Nature*, **156**, 80 (1945).

²For references see Salisbury, G. W., and Vandemark, N. L., *Amer. J. Physiol.*, **143**, 692 (1945).

³Neuberg, C., and Strauss, H., *Z. physiol. Chem.*, **36**, 227 (1902); *Biochem. Z.*, **4**, 292 (1907).

⁴Roe, J. H., *J. Biol. Chem.*, **107**, 15 (1934).

⁵Orr, A. P., *Biochem. J.*, **18**, 171 (1924).

⁶Needham, J., "Biochemistry and Morphogenesis" (Cambridge University Press, 1942), 616.

Scientific Affairs in Europe

IN view of Dr. Buzzati-Traverso's letter¹ passed on by Prof. Julian Huxley, it may be of interest to put on record that I was, so far as I know, the first Allied man of science to make contact with the University of Padua at the close of the campaign in northern Italy this spring. The eagerness with which the few recent copies of *Nature* I happened to have with me were received and devoured by the scientific staff impressed on me, more than anything I had previously experienced, the complete isolation of Italian scientific workers.

The scientific departments at Padua are well equipped by comparison with Milan, where local interest in the welfare of the University is, as might be expected, much less than at Padua, which is naturally proud of its great traditions as a university town. Consequently, Padua has been, even during the War, a more favourable environment for research than might have been expected—witness the recent letter in *Nature* by Prof. d'Ancona². Though bombed seriously on occasions and temporarily closed during the final weeks of the campaign (some members of the staff and many of the students took an active part in the partisan movement) the University did not, like Bologna, suffer from a prolonged paralysis.

I would like to re-emphasize Dr. Buzzati-Traverso's statement that the most urgent need of Italian scientific men (and this must apply also to other parts of Europe) is "to become acquainted with the scientific production of the Allied Nations during the last five years". The distribution of current numbers of *Nature* and of the more specialized reviewing and abstracting journals is essential, but is only part of the answer; and it will presumably be several years before libraries, even when undamaged, can be made "comprehensive and up-to-date". The most desirable, practicable and rapid method of rehabilitating the Continental research worker (so far as information is concerned) is surely to put him into personal contact with an Allied man of science working in the same field, or with the appropriate learned society which could refer him to a suitable specialist. In this way he could most easily obtain information on recent developments and copies of original publications in his special subject. Such contacts can be established immediately, and more could be done to encourage and facilitate them. Other aspects of international scientific co-operation will require at least some time for effective organization.

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Nov. 20.

¹*Nature*, **156**, 576 (1945).

²*Nature*, **156**, 603 (1945).