taining no polysaccharide. This mechanism would account for the liberation of all the acid during the first half of the enzyme reaction and, if the fine fibrils observed in the electron microscope during the initial stages are aggregates of pure proelastin, would also explain their rapid disintegration. Proteolytic enzymes such as trypsin which have been shown to digest elastic tissue after prolonged treatment must be assumed to attack the proelastin units themselves.

The proposed structure would also account for the liberation of protein units of similar properties by the prolonged action of reagents such as alkali and performic acid, capable of disrupting the polysaccharide, since similar units of proelastin could originate from both the cement material and the fibrils. A reagent favouring polypeptide hydrolysis such as oxalic acid would be expected to have a different action, as indeed is the case. Chemical reagents might be more drastic in their removal of polysaccharide than the enzyme, and the retention of sugar residues masking the ends of the proelastin from the cement material, in the case of protein solutions prepared by elastase, could preclude the thermal denaturation of the whole preparation.

Thus we suggest that there is considerable evidence in favour of the existence of two common entities in the elastic staining fibres of human aorta and of ox ligament.

The polysaccharide–elastomucin—content of aorta is higher than that of ox ligamentum nuchæ, and this finding is supported by the presence in the aorta of sheets of amorphous material at the e.m. level and of the lamellæ at the light microscope level. The smaller concentration of elastomucin in ligament would explain the more rapid rate at which this tissue finally passes into solution, since little mass would be dissolved during the earlier removal of the cement substance. Schultz[17] in 1922 suggested that the staining capacity of elastic tissue was due to the impregnation of elastin by mucin, which he identified as the 'chromatropic ground substance' present in many tissues. Our proposed structure gives a rational foundation for these deductions which were based solely on histological observations.

Whether any enzyme function is associated with the linear aggregation of proelastin, as is the case with actin, is unknown. It is significant, however, that Banga and Nowotny[18] have reported the presence in aortic tissue of an ATP-ase different from the muscle enzyme and which falls in amount as the elastin content of the aortic media decreases with increasing severity of arteriosclerosis.

A knowledge of the structure of elastic tissue is essential for an understanding of clinical problems. Balo and Banga[19] have applied their studies of elastase action to the problem of arteriosclerosis and have suggested that the degeneration of human elastic tissue is brought about by the enzyme elastase, which they had shown to be present in beef pancreas. Further, the enzyme was thought to be controlled by an inhibitor present in the sera of normal persons, but absent from those of patients with vascular degeneration. We have been unable to obtain elastase from normal human pancreas processed in an identical fashion to the hog and beef pancreas used for the routine preparation of the enzyme. This observation has been confirmed by a personal communication from Mr. E. Levin, of the Viobin Corporation, from whom the hog pancreas used in this work was obtained. It may be that, in the human, elastase is secreted in organs other than the pancreas, but it is more likely that the whole question of elastomucin involvement in arteriosclerosis is far more complex than that of a simple enzyme/inhibitor system, and more studies are needed, especially into the mucoid/protein interrelationship, in order to assess the changes involved in vascular degeneration. Again, in the present communication we have ignored the possible participation of lipoid as a tissue stabilizer, but in view of the changes associated with arteriosclerosis, no hypothesis would be adequate that ignored so important a factor.

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[1] Clark, W. E. le Gros, "The Tissues of the Body", 33 (2nd edit., Clarendon Press, Oxford, 1945).
[2] Tunbridge, R. E., Tattersall, R. N., Hall, D. A., Astbury, W. T., and Reed, R., *Clin. Sci.* (in the press).
[3] Benninghoff, A., *Z. Zellforsch.*, **6**, 348 (1927).
[4] Richard, A. N., and Gies, W. J., *Amer. J. Physiol.*, **7**, 93 (1902).
[5] Stein, W. H., and Miller, E. G., jun., *J. Biol. Chem.*, **125**, 599 (1938).
[6] Neuman, R. E., *Arch. Biochem.*, **24**, 289 (1949).
[7] Hall, D. A., *Nature*, **168**, 513 (1951).
[8] Lowry, O. H., Gilligan, D. R., and Katersky, E. M., *J. Biol. Chem.*, **139**, 795 (1941).
[9] Spencer, H. C., Morgulis, S., and Wilder, V. M., *J. Biol. Chem.*, **120**, 257 (1937).
[10] Neuman, R. E., and Logan, M. A., *J. Biol. Chem.*, **186**, 549 (1950).
[11] Adair, O. S., Davis, H. F., and Partridge, S. M., *Nature*, **167**, 605 (1951).
[12] Wood, G. C., unpublished results.
[13] Balo, J., and Banga, I., *Schweiz. Z. Path. u. Bakt.*, **12**, 350 (1949).
[14] Balo, J., and Banga, I., *Biochem. J.*, **46**, 384 (1950).
[15] Banga, I., *Z. Vit. Horm. und Fermentforsch.*, **4**, 49 (1951).
[16] Orekhovitch, V. N., Tustanovsky, A. A., Orekhovitch, K. D., and Plotnikova, N. E., *Biochimia*, **13**, 55 (1948).
[17] Schultz, A., *Virchow's Arch. path. Anat.*, **239**, 415 (1922).
[18] Banga, I., and Nowotny, A., *Acta Phys. Acad. Sci. Hung.*, **2**, 327 (1950).
[19] Balo, J., and Banga, I., *Nature*, **164**, 491 (1949).

OBITUARY

Dr. J. C. James

JOHN CHARLES JAMES was born at Harrow in 1920. He passed through Harrow County School to Queen Mary College, London, where he took first-class honours in chemistry in 1940. After a period in the laboratories of the London Passenger Transport Board, he became a research student under C. W. Davies at Battersea Polytechnic (where he was made lecturer in 1945), and was awarded the Ph.D. degree by the University of London in 1947. Since 1948 he had been a lecturer in chemistry in the University of Glasgow.

Deriving from his training at Battersea, his earlier work, and most of his published work, involved the accurate measurement of electrolytic conductivities, from which were elucidated various ionic interactions in solution. During the past two years he had become interested in the polarography of non-aqueous media and in the double-layer capacity at electrode surfaces; he and his students were opening up several very promising lines of research in these related fields. James was an able and industrious experimentalist, ingenious in adapting electronic techniques to the

study of electrochemical problems. He had also recently collaborated in the first reliable determination of the dielectric constant of anhydrous sulphuric acid, proving this important quantity to be not much higher than that of water. Only the first-fruits of all this later work have yet been published.

Though of a quiet disposition, James was a good and witty lecturer, very popular with his students, and well liked by his colleagues. He was unmarried. His untimely death in a mountaineering accident in the Jotunheim, Norway, on July 9 is a great loss to electrochemistry in Britain. J. C. SPEAKMAN

NEWS and VIEWS

Parliamentary and Scientific Committee : Deputation to the Lord President of the Council

A DEPUTATION from the Parliamentary and Scientific Committee, including Lord Samuel (president), Lord Waverley (past-president), Sir Ralph Glyn (deputy-chairman) and Mr. M. Philips Price (vice-president), which waited on Lord Woolton, the Lord President of the Council, on July 28, while welcoming the indications in the speeches of Lord Woolton and Lord Cherwell in the debate in the House of Lords on June 11 that the Government recognizes the urgent importance of exploiting discovery and research as rapidly as possible and of a much closer liaison between science and industry, asked for further information as to the specific action the Government proposed to take in the immediate future, especially in so far as such action would make a valuable contribution to productivity and the balance of payments crisis. Further information was also requested as to the action the Government proposes to take to meet the very serious criticism of the last report of the Advisory Council for Scientific and Industrial Research, especially in regard to the recruitment of staff and the execution of the Department's Building Programme. In this connexion the Parliamentary and Scientific Committee urged that it was false economy to hold up essential developments in the country's scientific and technical resources. Research must be based on reasonably firm budgetary expectations for several years ahead, and sudden and unexpected limitations or cuts caused more than a proportionate retrenchment. The deputation also urged the extension of the co-operative research scheme to research in veterinary medicine and agriculture and asked for further information as to the steps to be taken to build up a technological institution of university rank and to increase the financial assistance available for selected technical colleges.

The deputation also indicated the Committee's strong endorsement of the main conclusions in regard to scientific man-power of the last report of the Advisory Council on Scientific Policy, and also represented to Lord Woolton that the facilities for the publication of original papers and abstracts in the field of chemical sciences also called for inquiry and action by the Government. Some replies received in reply to a question as to the extent to which industry made effective use of the results of scientific research and any obstacles to the utilization thereof, included in a questionnaire circulated by the Committee prior to the House of Lords debate, suggested that the absence in Britain of an efficient abstracting journal or journals was a major obstacle and that there was a case for further support from the Government for scientific publication generally. Defective liaison services, the lack of trained men both on boards of directors as well as in production, difficulties experienced in obtaining licences and delivery of items of plant, financial problems arising out of plant obsolescence and taxation policy were also contributory factors, as well as the general backwardness of some industries. Lord Woolton expressed his keen interest in the points raised and promised to give them careful consideration.

Wool Industry Research Levy

AN Order increasing the wool industry research levy was approved by the House of Commons on July 24. The amount of the levy depends on both the employment in the industry and its consumption of raw material. Both have declined, and the increase has been requested by both sides of the industry, by the Wool Textile Delegation and by the National Association of Unions in the Textile Trade, and it was estimated by the Parliamentary Secretary to the Board of Trade that the amended rate would have yielded £70,000 in place of the £48,000 actually collected during the first six months of this year or the £114,000 produced by the first year of the levy approved in October 1950. Of the £48,000 collected this year, £31,000 was based on the employment unit and £17,000 on the supply and consumption of fibre. The Parliamentary Secretary expressed himself as satisfied with the programme of research conducted by the Research Association and stated that the £100,000 required to qualify for the grant from the Department of Scientific and Industrial Research was regarded as adequate for the programme in mind. Some concern as to the value of that programme was expressed in the debate, notably by Mr. Mikardo, who urged that the most forward-looking and imaginative research was being done not in the Research Association establishments but in industry. He questioned whether the research association was devoting sufficient attention to what he called the fundamental problems of the industry, and asked whether the distribution of expenditure on research between the research association, the universities and the technical colleges was that most appropriate to enable the industry to make the best use of scientific knowledge. Mr. Mikardo was as concerned as other speakers in the debate that there should be adequate expenditure on research and the fullest possible utilization of its results by the industry. The distribution of research effort is not a matter for the Board of Trade, however, and Mr. Mikardo scarcely made his case sufficiently specific to warrant the Department of Scientific and Industrial Research setting up a further survey panel from what he said alone.

United Nations Resolution on Indigent Aliens and Refugees

ON August 9, 1951, at its thirteenth session, the Economic and Social Council of the United Nations adopted a resolution directing attention to the report on assistance to indigent aliens prepared by the Secretary-General at the Council's request and re-affirming its recommendation that governments