

described the changes in the cellular components of rat livers damaged by administration of carbon tetrachloride, or of carcinogens, particularly thioacetamide. The reduced oxidative activity of livers of animals treated with carbon tetrachloride was ascribed to mitochondrial damage. It was shown that the loss of pyridine nucleotides, which accompanies ageing of normal isolated mitochondria, was increased at an early stage in animals to which carbon tetrachloride had been administered; and it was suggested that the early mitochondrial injury visible in otherwise normal livers of rats poisoned by carbon tetrachloride could be attributed to a localization of the carbon tetrachloride leading to changes of mitochondrial 'permeability'. In animals with chronic thioacetamide poisoning at the pre-cancerous stage, the ageing of the mitochondria could be reversed by pyridine nucleotides or by versene, although there appeared to be no change in 'permeability' to the nucleotides and no uncoupling of oxidative phosphorylation. There was, however, a reduction in phosphatidic acid synthesis. The nuclei and nucleoli of these livers were enlarged and showed an increased ratio of ribonucleic acid to protein; and incorporation of glycine was more rapid than in the controls. Acute thioacetamide poisoning caused a reduced rate of oxidation of fatty and keto acids by the mitochondria. This effect could be reversed by versene, and was thought to be due to ionic imbalance in the tissue, leading to accumulation of calcium ions.

During the discussion, Dr. Judah described some work on mitochondrial fractionation in which it had been possible to destroy the adenosine triphosphate-inorganic phosphate exchange reaction without uncoupling oxidation from phosphorylation. This was contested by Prof. Ernster, on the ground that the presence of substrate during oxidation might have reactivated the system catalysing exchange. Further lively discussion did not resolve this important point. Otherwise, the discussion of the papers was concerned with issues of interpretation and with points of detail.

The formal papers and the discussion of the symposium are to be published as a book.

PETER MITCHELL

LINEN INDUSTRY RESEARCH ASSOCIATION REPORT FOR 1956

THE report of the Council of the Linen Industry Research Association for 1956* records continued co-operation with the Irish Linen Guild but a slight fall in membership, from 276 to 269. Dr. A. J. Turner retired at the end of March after sixteen years as director and was succeeded by Mr. D. A. Derrett-Smith.

Basic research was carried out during 1956 on the behaviour of fibres during drafting and carding, and on the blending of flax with 'Terylene', nylon and 'Fibro'. Investigations have been made to determine the finest count of yarn which can be wet-spun using various proportions of flax and man-made fibres. Work continued on the new servo-drafting control system for reducing yarn irregularities and a study

* Linen Industry Research Association. Report of the Council, 1956. Pp. 20. (Lambeg: Linen Industry Research Association, 1957.)

of nap formation in flax slivers indicated that nap in yarns can be reduced appreciably by changes in processing methods. Special warping creels have been developed for linen yarns and a survey has been made of the cones and cheeses now in use. Two new forms of shuttle guard have been developed to decrease the risk of injury from flying shuttles. Work on lubricating materials has provided an explanation of difficulties experienced with certain oils and much progress has been made in sizing spun yarns from man-made fibres. The penetration problems which arise in dyeing and finishing linen have been examined in the light of experience gained with linen fabrics that have been rendered non-swelling, and increased efficiency in applying flame-proofing emulsions has been thus obtained. Methods for applying thermo-setting resins to linen fabrics to confer crease-resistance have been modified and an instrument has been developed for testing the water-proofness of wax- and chemical dry-proofed canvases.

At the thirty-seventh annual general meeting of the Association on January 4, the chairman, Mr. H. B. McCance, expressed concern about the possible adverse effect of the Restrictive Trade Practices Act on co-operative research. Mr. D. A. Derrett-Smith, referring to flax production, said that the Dutch white-blossom Wiera variety is promising to meet growing conditions in Northern Ireland without detriment to yield or quality. Because it is becoming difficult to find labour for dam-retting or tank-retting, work is proceeding on the direct comparison of the green flax process with Irish dam-retted flax for wet-spinning. Besides such fundamental research, last year 662 research problems proposed by members were dealt with at Lanbeg, as well as 2,520 routine tests, and it had been necessary to ask members to limit requests for such tests so far as possible. Mr. Derrett-Smith said that several promising young graduates had been recruited to the staff, and under the re-introduced scholarship scheme seven students were receiving practical training during the day and attending courses of evening study at the Belfast College of Technology leading to the B.Sc. degree in chemical technology.

THE COPRA INDUSTRY OF ZANZIBAR

COPRA is the dried 'meat' of the coconut and contains about 67 per cent of an excellent edible oil which is also used for making soap. Copra cake or meal is extensively used for animal feed or as fertilizer. The total annual world production of copra is about 1,780,000 metric tons (1951), and of this about 3,500 tons and 12,000 tons are produced annually by the islands of Pemba and Zanzibar, respectively. The problems associated with production have been described by D. W. Hall (*Col. Plant and Anim. Prod.*, 5, No. 4).

The islands of Zanzibar and Pemba are heavily wooded with coconut trees, and each tree produces 20-60 fruits a year. The average annual yield on Government plantations is 40 fruits per year.

Labour gangs climb the trees and cut down the fruits, and other gangs collect the fallen fruits into piles. The fruits are then transported to the main collecting centres, at each of which there is a kiln, or to individual kilns. The coconuts are left in heaps on