Experiments on the Cold Storage of Mangoes and Other Fruits and of Vegetables

ONE of the most important schemes, judged both by its applicability to the whole of India and by the promise of its commercial possibilities, relates to the Cold Storage experiments started by the Imperial Council of Agricultural Research in Kirkee near Poona. Begun in the year 1934 these experiments have now been in progress for about five years and the results obtained so far have been embodied in two separate publications of the Council, *viz.*, *Miscellaneous Bulletins* Nos. 21 and 23, on "Mangoes" and "on Fruits and Vegetables" respectively. The cold storage plant employed in these experiments consists of an ammonia compressor, with evaporating coils cooling down brine which circulates in the different chambers. Seven such chambers, all operated automatically with regard to the regulation of temperature and designed to work with seven different temperatures, which in these experiments were 30, 35, 40, 45, 52, 60 and 68 degrees Fahrenheit, comprise the arrangement. Some 28 different varieties of mangoes from the provinces of Madras, Bihar, the U.P. and Bombay were subjected to the trials. The results of these trials have established that fresh fruit, *i.e.*, "green in colour and mature" can keep well for about seven weeks when held at 45° F. and that that is about the best temperature, all factors considered, that the Alphonso variety was found the best "keeper", that an interval of two days after picking from the trees makes no difference from freshly picked fruit in regard to keeping up to seven weeks, and that the cold stored fruit kept well and ripened normally when taken out and kept at room temperature, *i.e.*, 80–96° up to a week after such removal. Among the Madras varieties Peter appeared to be the best, its storage life being, however only four weeks. The Bihar and U.P. varieties were all poor as regards suitability for storage; it must be remembered that these fruits from long distances had suffered from the conditions of railway transport in the heat of the summer and under better conditions may perhaps behave differently. The wrapping of the fruit before being put in cold storage was found decidedly undesirable, far from its being of any advantage as might be supposed. Likewise fruit kept best when packing materials like rice straw, wood-wool, saw-dust, mango leaves, etc., were not used; only the bare minimum of such material that may be required to keep the fruits in position in the crates is recommended.

Among other fruits, the work on oranges is certainly the most important. Santra oranges from Nagpur and Malta oranges from the Punjab were the two kinds tried, and the latter was found superior to the former in respect of keeping. The fruits have to be ripe and yellow in colour, and at this stage the Maltas keep for four months and the Nagpurs for three months, held at 40° F. As with mangoes pre-storage treatment such as wrapping in paper or washing with antiseptics proved of no advantage. Other fruits tried were bananas, chikoo, litchi, apples, lemons and among vegetables potatoes, cabbage, cauliflower, French beans, peas, carrots and onions. All have lent themselves to keeping under cold storage for varying periods with the exception of the cauliflower which did not keep even for a week. Potatoes behave remarkably well; at 35° F. seed potatoes remained in dormant condition for about a whole year, with their germinating power unimpaired even after ten months of such storage.

Elsewhere we read that practical action with regard to arrangements for exporting Indian fruits to overseas markets and for providing cold storage facilities in inland railway transport awaits the results of these experiments. It may now be hoped that such action may soon be taken by the Central Government. The results deserve also to be made more widely known among people connected with the trade in mangoes and other fruits so that private enterprise may take advantage of the results in order to widen the markets for these fruits and vegetables and to lengthen the season for these fruits, so to speak, by avoiding gluts and by assuring an even supply.

A. K. Y.

Museums Association for India

THE question of the establishment of a **Museums Association** for India was considered by the Museums Conference held at Delhi in 1937 and the Conference resolved that a Central Committee should, as a preliminary, be appointed to consider ways and means of bringing the proposed Association into being. This Central Committee was to consist of seven people, among them being the Director of the Archæological Survey of India, the Director of the Zoological Survey of India and the Director of the Art Museum at Baroda with Mr. S. H. Prater, Curator, Bombay Natural History Society, as Honorary Secretary. Besides the formation of a Museums Association the object of this Central Committee would be the improvement of the standard of Museums and Museum work in this country and to provide a permanent focus of co-ordination and co-operation which is essential to the purpose. The total absence of such co-ordination in India or the means to effect it is deplored by the Markhan Report. Conferences of Museum officials, held under the ægis of the Government of India in the past, have urged the importance and necessity for a permanent Standing Committee on Museums in India. The recent Conference of Curators in Delhi, during the very

brief period it was in session, was unable to give sufficient time and consideration to the various problems affecting Museums in India. It was the unanimous opinion of those present that various questions relative to the training and qualifications of Curators, the co-operation necessary to this end, the improvement and extension of the services of Museums to the nation, the elimination of unnecessary overlapping and duplication of effort, the solution of many problems with which Museums in this country are confronted and the removal of disabilities under which they suffer were all matters which could be considered with greater advantage by a permanent body. An organisation such as is contemplated would prove of great encouragement and helpful assistance particularly to smaller museums which are now struggling under difficulties with little expert knowledge to guide them. It will also provide a body to which those contemplating the establishment of Museums or Art Galleries can look to for guidance and it will be able to express authoritative opinion on matters relating to such institutions.

It is clear that without a permanent organisation for focussing and continuing effort, the work of periodic conferences of Curators would be largely ephemeral. It is unnecessary further to emphasise the need of such an organisation or to indicate the contribution it could make to the progress of Museums in this country. The cost of maintaining a Standing Committee would in the initial stages entail the salary of a clerk, the cost of postage and stationery; there would also be the question of travelling and halting allowances to the members of the Committee for attending meetings arranged periodically at various centres in India.

Resolution 4 of the Conference recommended that the cost of maintaining the Standing Committee should be borne by the Government of India. It is understood that the Government of India have approached the various Provincial Governments and States with a view to ascertaining how far they would be prepared to contribute towards the maintenance of a permanent Standing Committee. The establishment of the Central Standing Committee should be the preliminary to the forming of a Museums Association and the question as to whether this Committee will function is dependent on the various Governments and States concerned providing for its upkeep.

CENTENARIES

By S. R. Ranganathan, M.A., L.T., F.L.A.
(University Librarian, Madras)

O'Callaghan, Francis Langford (1839–1909)

FRANCIS LANGFORD O'CALLAGHAN, an Irish Indian Engineer, was born at Cork, July 22, 1839. Having been educated at Queen's College, Cork, he received his training in engineering between 1859 and 1862, when he was employed in railway construction in Ireland and South Wales. In 1862 he entered the Public Works Department of India by competitive examination. He steadily went up the cadre until he reached the top-position of Secretary to the Public Works Department, from which post he retired in 1894.

His Chief Constructions

He built the bridge across the Indus at Attock. This earned for him a C.I.E. He designed and partly constructed the railway through the Khoja Pass to the Afghanistan frontier. He also built the railway line to Quetta. This earned him a C.S.I.

On his retirement, the Colonial Office appointed him managing member of the Uganda Railway Commission. His services in connection with this undertaking were rewarded in 1902 with the K.C.M.G.

O'Callaghan died suddenly, November 14, 1909.

Balbach, Edward (1839–1910)

EDWARD BALBACH, an American metallurgist, was born in Karlsruhe, Baden, Germany, July 4, 1839. His father, who was engaged in the smelting and refining of metals, migrated to America with his son and opened at Newark, the centre of extensive jewellery manufacture, a business for the treatment of jewellers' sweepings, which formerly had been sent to Europe. This business steadily grew and was extended to the general metallurgy of silver-lead ores. Young Balbach began to help in the growing business in his fourteenth year. He was admitted a partner in 1864.

Balbach Process

From 1859, large consignments of silver-lead ore came for smelting and refinement. The methods for treating this material were both expensive and inadequate. But in 1864, Balbach introduced a great improvement in the desilverizing process, which revolutionised the methods. The process came to be known as the Balbach Process. Balbach also made many improvements, as for instance, retorting furnaces, tilting furnaces and the utilisation of water-jackets.

Electrolysis of Copper

Another notable achievement of Balbach was in 1881 when he built the first commercial plant in America for the refining of copper by electrolysis, laying the foundation for the position America reached in the business in later years.

His Qualities

His inventive genius was coupled with a practical bent of mind. He studied and learned the business from the botton up, with a tireless energy and zeal. His presence at his post both early and late set a constant and good example to the younger generation.

Balbach died of pneumonia December 30, 1910.