

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 Malts 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.

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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 Archaeological 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