OPEN DAY AT KERAVAT

By Pat Munro

Situated on the beautiful Gazelle Peninsula, the Lowlands Agricultural Experiment Station at Keravat has become the largest agricultural research establishment of the South Pacific. It was opened in 1928 as the Government Demonstration Farm and Agricultural School. In addition to research, planting material is supplied to growers all over the country from LAES and extension and training activities are carried out. Over the years cocoa has been a main concern and today Papua New Guinea's cocoa is highly valued on world markets.

Thursday 28th September 1978 was the day chosen to celebrate the 50th anniversary of LAES with an Open Day. The guests started to arrive at 9 a.m. and gathered under the huge rain tree and on the wide verandahs to hear the speeches by the Premier of East New Britain, Mr Koniel Alar; Mr Semi Tikaika, chairman of the Central Community Government, East New Britain; Mr Paul Aland, Assistant Secretary for Agriculture, and Mr John O'Donohue, the Agronomist-in-Charge at LAES.

Guests examine the displays on the verandahs

A candle-tree was planted in the front garden to commemorate the 50th anniversary. Many of the people who farm in the area attended, and were very interested participants in the bus tours around the station which followed.

On the wide cool verandahs outside the offices and laboratories, displays were set up to illustrate the work done on spices and essential oils, plant pathogens, cocoa, coffee, coconuts, oil palm, entomology and exotic fruits and nuts. Imaginative and well laid out, these displays provided a lot of information to visitors.

Mr John O'Donohue, Agronomist-in-Charge, Mr Koniel Alar, Premier of East New Britain (left) and Mr Semi Tikaika planting a candle tree in front of the Station

Since 1968 the so-called minor crops, such as spices and essential oils, have been given attention at Keravat in an attempt to diversify the country's agricultural economy. Given good management, the correct environment, and the right varieties, most spices grow well here. Although labour-intensive the work is not back-breaking, and many spices can be grown by one family on a small farm. Pepper and vanilla have received most attention to date, but other spices being worked on are ginger, turmeric, nutmeg, chillies and cardamoms. These last two form the basis of Papua New Guinea's infant spice industry. Mr Kana Abura is the spice agronomist and was one of the first Papua New Guinean scientists to be appointed at LAES. Because many areas of PNG have a malnutrition problem, Mr Abura divides his time between spices, as export-earners, and fruit and nuts as food value crops. A wide variety of planting material is available free to people in PNG, including exotic fruits like jakfruit, mangosteen, West Indian lime, avocadoes, etc. Freight charges have to be paid by the customer.

Exotic fruits on display. Jakfruit in the foreground can weigh up to 18 kg

In the cocoa display a map showed the places where established and planned clonal seed gardens and budwood material nurseries are to be found all over the country. The vegetative production of cocoa has been a very important part of cocoa work at LAES. Like other plants cocoa trees produce progeny which vary greatly in yield, quality, disease resistance, etc. when propagated by seed. So to get trees which all yield large amounts of good quality cocoa and do not get diseases, it is necessary to propagate them vegetatively, that is, by cutting or budding. For the last 20 years, cocoa cuttings have been supplied to growers from LAES. But the demand is so high that this method cannot cope with it. Now "budding" is the technique used to supply growers with vegetative material. In this method a flap is cut out from the stem of a seedling root-stock plant, 4 to 5 months old. Under the flap is inserted a "bud patch" from the desired clone (a clone is a group of plants all produced vegetatively from one ancestor). The success rate of budders is now 60%. Further research and training of budders will be under the direction of an FAO expert at LAES.

Young cocoa plants and pods

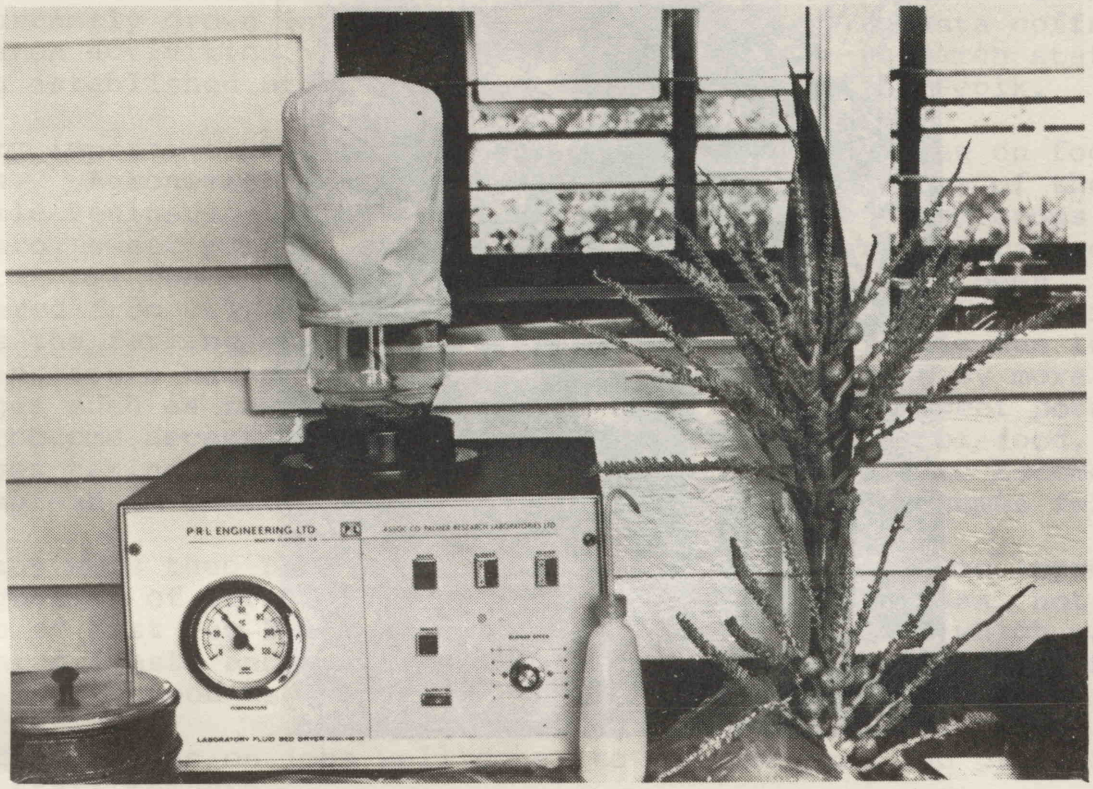
A major disease of cocoa in the province which has been worked on at LAES is cocoa dieback. In the early 1960s it occurred in epidemic proportions. Dr Philip Keane, a pathologist working at UPNG identified the cause as a fungus, previously unknown. This fungus, *Oncobasidium theobromae* grows inside the xylem vessels (water-carrying tubes) of the trees and can cause serious damage, especially to seedlings.

Black pod and canker are 2 other cocoa diseases, both caused by a fungus, *Phytophtora palmivora*. Peter Hicks worked on black pod during 1962-78 at LAES and found that spraying with copper fungicides reduces black pod. Canker is an infection of the bark and can cause "sudden death" of the whole crown of the tree. Canker has been prominent for the past 2 years.

Root disease of Singapore Taro is another disease which is being looked at. The plants get smaller and smaller until they die and if new taros are planted in the same soil they do not grow. The pathologists think that a fungus called *Pythium* is killing the roots and are testing various fungicides. If your Singapore taro should get this disease, you should plant a different crop in that soil.

Dr Chris Prior, a UPNG mycologist, is working on disease resistance of cocoa and on fungicides to protect the plants, as well as on climatic conditions favourable to *Oncobasidium theobromae* and its nutrition. The University cocoa research project has been going since 1969 and it is hoped that it will be supported jointly by the Cocoa Industry Board, the Confectionary Manufacturers of Australia and the Planters' Association. It is an excellent example of the value of co-operation between commerce, government and university.

Hybrid coconuts are an exciting development at LAES. The male flowers are removed from a tall coconut and crushed and dried to yield their pollen.



Coconut pollen can be produced in a fluid bed dryer which crushes the male florets and dries the pollen

The female palm is a Malayan Dwarf variety which is castrated by having its own male flowers removed. The female flowers are then covered with a bag to prevent other pollen reaching them and when ready the male pollen is applied to them by hand. The yield of the hybrid coconut so produced is usually very high and it is hoped that this will be the case here in PNG. In 1979 it is planned to establish observation blocks of hybrid palms together with local tall palms in all the coconut provinces and compare the yields. The Department of Primary Industry produces seednuts at the Coconut Hybrid Seed Garden at Omuru, near Madang, and another seed garden at Keravat is planned. If the hybrids prove more productive, farmers will be able to replant old blocks of coconut with hybrid seedlings starting in 1979, and so rejuvenate the coconut industry.

Hybrid coconuts usually produce more nuts

Keravat was the base for oil palm research in PNG until early 1968. Yield trials of hybrids at Keravat show that yields of 35 tonnes/ha can be obtained. However, most oil palm research is now done at places where the industry has developed, such as the Dami Oil Palm Research Station near Cape Hoskins.

Pests of coconut and cocoa have received a lot of attention at LAES. Because plants grow well in PNG so do their pests, and LAES usually has 2 entomologists working there at any one time. During the war the Rhinoceros beetle became established in New Britain and New Ireland. Other coconut pests include tree hoppers, flower bugs, spathe moths, leaf hispids, palm weevils and leaf miners. The coconut crab is a huge crab which kills cocoa seedlings by nipping off the stems with its large claws. Another cocoa pest is *Pantorhytes* or cocoa weevil borer which is well adapted to feeding on cocoa under *Leucaena* shade. Fortunately *Pantorhytes* does not fare quite so well on cocoa under coconut shade, and crazy ants will drive the pest from infested cocoa. Other pests of cocoa are Longicorns, *Pansepta*, Termites, centre borers, Rhyparids, the Cocoa looper, pod borers, mirids and capsids.

Coffee has been grown on the Gazelle Peninsula since the days of Queen Emma. Robusta coffee was one of the first crops planted at Keravat. Coffee research there has demonstrated the importance of

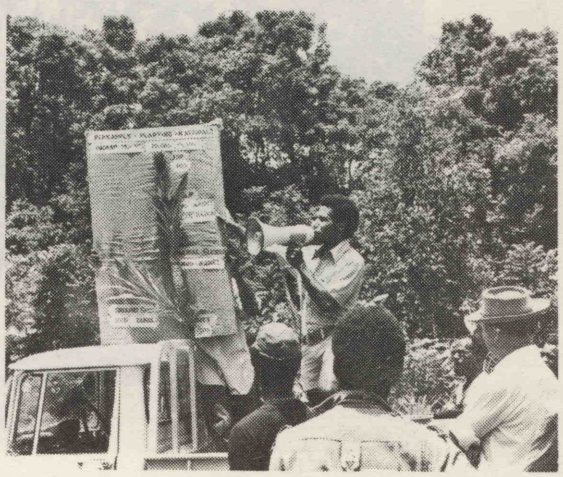
shade levels, stumping back, pruning and desuckering and various methods have been recommended to growers. The Japanese occupation destroyed a lot of the Robusta coffee plantings, however some survived, and selection, breeding and seed-production has been carried out over the years using Keravat clones and Besoeki clones from Java. Since most of the lowland coffee is currently grown in the East Sepik and Madang, Robusta coffee research activities will be transferred to a new research station being established at Gavien near Ambunti in the East Sepik.

A very important part of the work done at LAES has been on food crops. Agronomist Michael Bourke worked on food crops of the Gazelle Peninsula during 1970-76. Collections of food crops such as taro, sweet potato, cassava, yams and others are maintained at LAES. DPI can recommend varieties of corn which have been gathered from all over the world and tried out at LAES. Over the years the farming systems have changed on the Peninsula due to land pressure caused by cash cropping. As time goes by more changes such as the introduction of fertilizers for sweet potato will become necessary to produce the required amount of food. The changes taking place on the Gazelle today are likely to become widespread in other lowland areas as land pressure becomes felt.

In many ways then LAES has improved and will continue to improve the quality of life for people all over Papua New Guinea, not only those of East New Britain and the Islands. The land which was declared "waste and vacant" by the German Government in 1912 has been put to good use indeed.

Congratulations on jobs well done, to all the past and present LAES staff members.

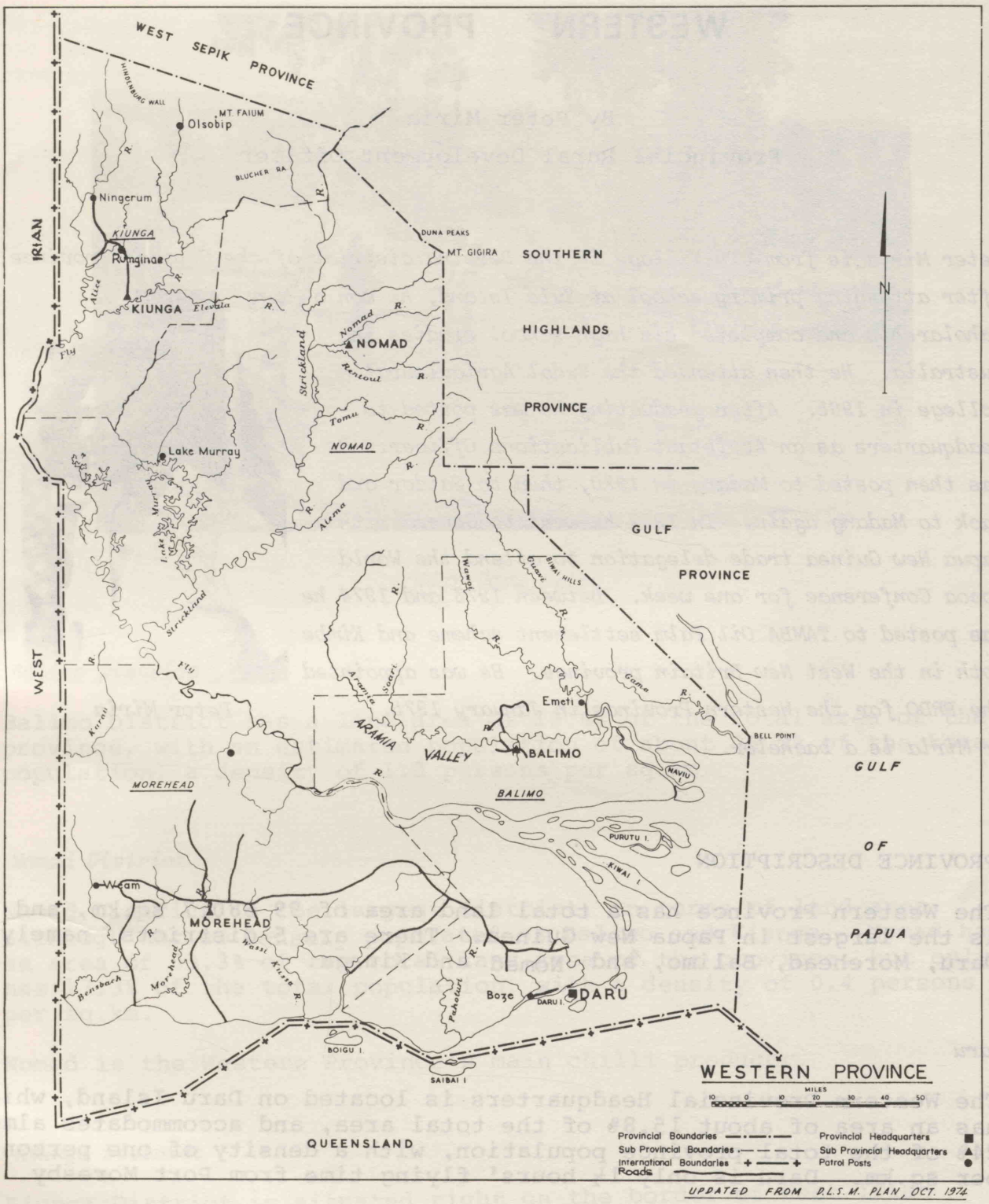
Nerrius Tiotam explaining the hybrid coconut work to a visitor



Endy Pais at the pineapple demonstration block

Ted Sitapai and John Buna (with poster) talking about cocoa

Peter Horibari at the coffee demonstration block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BLUCHER RA.
Ningerum
KIUNGA
Rumginae
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Elevala R.
Alice R.
Fly R.
IRIAN
DUNA PEAKS
MT. GIGIRA
SOUTHERN
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PROVINCE
Nomad R.
NOMAD
Strickland R.
Rentoul R.
Tomu R.
NOMAD
Lake Murray
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Kuriri R.
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GULF
PROVINCE
Wawoi R.
Guavi R.
BIWAI HILLS
Aramia R.
Saari R.
Gama R.
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