PROGRESS OF NATIVE AGRICULTURE IN THE MADANG DISTRICT.

By Colin C. Marr, Inspector and Instructor.

Introduction.

In his report,* Colonel Ainsworth pointed out the importance, in fact, the essential necessity, of the development of native agriculture as a means of raising the status of the native.

The terms of the Mandate, "to promote to the utmost the moral and material well-being of the natives", if they are to become more than a mere empty literal form, must be translated into action, and to this end the development of native agriculture as recommended by him is the first and most obvious step.

Colonel Ainsworth advocated a policy of agricultural development, under which the natives will gradually become producers, and so help to increase the exports of the country, and at the same time improve their own material well-being. (Para. 34.)

In para. 64, dealing with the Agricultural Department, he said: "I consider that the Department should be responsible for instruction and advice in connexion with the cultivation of food and other economic crops by the natives, and that such instruction form the main and, for a time, the only line of industrial education undertaken by the Administration".

In para. 181, he stated, "The Education Ordinance, *inter alia,* provides that the Administrator may establish education in agriculture, and I suggest that such education be started without delay".

Again, in para. 185, he comments: "The greatest educational force is, and will be, example and industry, and in the case of the New Guinea native that example and industry, for some years yet to come, must be tillage of the soil, which is the oldest form of industry known to man".

In view of the foregoing recommendations, the Administration, through the medium of the Department of Agriculture, has, during more recent years, re-adjusted its policy so that, at the time of writing, we find an instructional staff of officers composed almost entirely of graduates of an Australian university or agricultural college, patrolling the many districts in the Territory. Instruction is given in improved methods of agriculture, particularly with regard to rotation of crops and the necessity of cessation of such primitive methods as the disastrous "shifting agriculture", so commonly practised by all tribes throughout the Territory.

The mere introduction of new food crops for cultivation will not suffice, in the present conditions of the native population, to meet the requirements of the situation. The disinclination or apathy, too often present, must be dispelled, and under the best conditions, where the natives are eager to learn, they need instruction and tuition, and more than anything, practical demonstration.

This will in the end be overcome when cultivation is extended over wider areas and crops are grown in greater variety. At the same time the native population has to accustom itself to the new foodstuffs, to provide storage for the crops harvested, and generally to advance toward the betterment of an agricultural people.

* Report by Colonel John Ainsworth, C.M.G., C.B.E., D.S.O., on "Administrative Arrangements and Matters Affecting the Interests of Natives in the Territory of New Guinea, 1924."

At present native cultivation is practically confined to coco-nuts (*Cocos nucifera*), *taro* (*Colocasia esculentum*), yams and mammies (*Dioscorea spp.*), bananas and plantains (*Musa spp.*), sugar cane (*Saccharum officinarium* and *Saccharum robustum*); and to a lesser extent, varying with the locality, "aibika" (probably *Abelmoschus manihot*), "pit" (probably *Saccharum arundinaceum*) and papaia (*Carica papaya*). In the first instances cited the crops are all of long-term habits, that is, planting takes place one year and the crops come into bearing in the course of two, three, four or more years. The effect on village life is that one season's work in clearing and planting, with the stimulating and invigorating effect that all such industrious effort brings, is followed by several years of apathy during which little is done. To inculcate some real agricultural instinct in the native population, it is essential that they should be taught the cultivation of annual crops, where the seasonal operations of tilling the land, sowing the seed, and harvesting the crops occur regularly.

There are other crops in view for introduction and cultivation, in conjunction with accessory crops, which are necessary to counteract failure of any one crop in the schedule. Two crops are in view, namely, rice on the coastal areas, and soya-beans in the recently controlled higher-altitude hinterland.

The revenue of many countries in the world is dependent largely on the export of its native produce harvested. The corollary to a large export trade is a considerable revenue to Administration, whether derived from export tax, import duty, or head tax, and under the financial stringency existing in the Territory, this consideration is important both from the point of view of the original cost in introducing new crops, and its probable ultimate cost. The results of this policy should more than justify the original outlay.

Under the policy of native agricultural development, the natives are required to grow crops which, if the object of the policy is to be obtained, will result in the creation of a surplus of agricultural products for export.

This will apply generally throughout the Territory, but not in the Rabaul district, where the natives have, through the process of absorption, become industrialists, and are not beholden to agriculture for their livelihood to any great extent.

Crops Generally.

The shortage of grain crops—other than maize—and the native custom of subsisting almost entirely on root-crops, indicates that other cereals should be introduced into the native dietary for supplementary reasons.

Rice has been tried out in the Rabaul district with moderate success, but climatic and adverse soil conditions combined to produce rather disheartening results. Notwithstanding, however, one Paramount Luluai (or Head-man), has continued to plant annually sufficient rice to meet the needs of his family, who find no difficulty in hulling the grain with a hand pestle and mortar sufficient for their needs as required. The grain is not as full as that produced in other parts of the Territory, and it is confidently expected that further experimentation with this particular cereal will yield more encouraging results.

During Dr. Bryce's period as Director of Agriculture in this Territory, 6 tons of selected seed maize of the varieties of Hickory King and Red Hart Flint were imported from the Department of Agriculture in South Africa. The whole consignment was fumigated before despatch from South Africa, and it arrived in this

Territory in excellent condition. The seed was distributed amongst the natives through the District Office, to plantations through the Expropriation Board, and individually to missions, private planters, and natives, as requests were received. The Hickory King variety was confined to the Bismarck Archipelago, and the Red Hard Flint to the New Guinea mainland and the Solomon Islands. The results were not an unqualified success, the Red Hard Flint variety seemingly being the better of the two.

The introduction of seed into any new country with new conditions of soil and climate is always attended by some uncertainty. It can be easily followed, therefore, that the work of acclimatization and selection of suitable types assumes a position of some importance, and the necessity of continuous observation under the conditions afforded by an experimental station is demonstrated.

In view of the diversity of soils and of the variety of climate obtaining between the several districts of the Territory, it is evident that intensive experimentation is warranted in each district. To date only one experimental or demonstration plantation is in existence, and that is at Keravat, situated in the New Britain district, 30 odd miles from Rabaul; but the results obtained thereon cannot be logically assumed to be applicable elsewhere in the Territory.

The Madang district, particularly the hinterland embracing the Ramu, Wahgi and Purari valleys, which appear to hold great possibilities in both grazing and the cultivation of higher-altitude crops such as cinchona, tea, coffee, and soya-beans, is sorely in need of an experimental station close to the township of Madang and within the limits of travel to the average planter in the district.

Approximately two years ago, the Director of Agriculture recommended the establishment of a station in the Upper Ramu area for the purpose of experimentation with various tropical and sub-tropical crops. An officer of the Department of Agriculture was sent to this area, which at the time was situate in the Morobe district, and the results obtained appear to be most promising and warrantable of expansion. Since this station was established, this portion of the hinterland has been transferred to the Madang district. It is confidently expected that, with the addition of a station on the coastal area working in conjunction with the inland station, increased developmental work would result.

Rai Coast.

During the past two years the Administration, to consolidate Government influence, has posted an officer of the District Services at Saidor, on the Rai coast, south of Madang township, and about 60 miles by airline. This move was brought about in view of recent hostilities amongst inland tribes.

A suitable site was chosen as a base, centrally situated, and with good soil conditions. An airport has been constructed alongside the base, thus bringing Madang within 35 minutes by air.

Whilst on patrol in this area in the early part of this year, opportunity was taken of visiting several portions of the hinterland under the guidance of Mr. Patrol Officer Greathead, for the purpose of making a brief agricultural survey of the country.

Intense interest was shown by the natives in agricultural instruction, and the greatest co-operation afforded by the District Services representative, who expressed the keenest interest in all matters pertaining to agriculture.

All coco-nut groves, native-owned, in the district were found in a clean and orderly condition, and practically free of pests and diseases.

The common belief throughout the Territory that coco-nut palms on the Rai coast are stunted, and give a poor yield, is unfounded. Many areas of palms are as healthy as those elsewhere in the Territory, and were estimated to be yielding at the rate of 1 to 1½ tons per hectare per annum. Unfortunately, little forethought by natives has been exercised in the past in the selection of suitable sites for coco-nut areas, but it is probable that they were compelled to utilize whatever land was available close to each village site, owing to the hostile nature of their neighbours.

Generally speaking, it may be safely stated that, on the whole, the soil conditions on the Rai coast are not up to par with those of the rest of the Territory, excepting perhaps Gazelle Peninsula, the south coast of New Britain, and portions of the Wewak coast.

Whilst at Saidor Base, plans were drawn for laying out the station correctly with avenues, gardens and an orchard.

The following seed, which was sent out from the Botanical Gardens, Rabaul, and planted in bamboo pots under shade, will be transplanted out in the field when ready:—

Coffea robusta.

Cassia multijuga (avenue tree).

Thevetia neriifolia (Allamanda hedge).

Murraya exotica (hedge resembling privet).

In addition to the above, the following fruit trees were planted to establish an orchard in the district:—

Brazilian cherry.
Cherry guava.
Rambutan.
Avocada pear.
Soursop.
Mandarin.
Mango.
Root cuttings of seedless breadfruit.

The soil conditions at Saidor Base, being of a deep, well-drained alluvium, are excellent. Amongst a quantity of vegetables recently received from this station was a pumpkin weighing 56 lb., whilst a bag of maize resembling Manning Silvermine (cross between Iowa Silvermine and Manning or Macleay White) equalled any seen in Australia.

A quantity of vegetable seeds obtained from a well-known Australian nurseryman was decently distributed in the district, particularly amongst the hill tribes of the Rai coast and hinterland.

The seeds introduced include—

Lettuce (Mignonette).
Cabbage (Enkhuizen Glory; Succession; Earliball).
Kohl Rabi (Early Purple).
Tomato (Burwood Prize; Bonny Best).

Potatoes, eschallots and carrots, previously introduced to the higher levels on the Rai coast, have shown remarkable adaptability, and will eventually merge into the native dietary system.

Agriculture—General.

The following is a report on the agricultural activities in the Madang district for the period 1st July, 1936, to 30th June, 1937.

Rainfall.—The average rainfall over 20 years is 136.26 inches. During the period, the total rainfall registered at the Meteorological Station, Madang, was 154.02 inches, the heaviest falls being recorded in February, November. and December.

Plantations.—Copra is the basic primary product of the Madang district, although extensive additions to existing cocoa areas have taken place over the last twelve months.

The total area under cultivation in the district is 12,608 hectares, but several applications for land have been received in respect of the Rai coast sub-district, and it is expected that, during the ensuing year, extensive developmental work will result.

The planting of coco-nuts and cacao by one planter on Kar-kar Island was carried out on a fairly large scale, whilst another plantation was commenced on Baga-bag Island.

The Agricultural Inspector and Instructor was able to visit most plantations, and it is expected that more frequent visits will be paid in the near future.

Stock.—No serious diseases were reported, and apart from a minimum of tick on cattle, and swamp-cancers on horses, general good health throughout the district is noted.

Rattan Cane.—Samples of rattan-cane from the mainland and Kar-kar and adjacent islands were despatched to the Director of Agriculture for tests of resiliency and comparison with rattans from other countries, with a view to the future marketing of this commodity.

Derris Root.—Several bales of this medicinal insectifuge in raw root stage of various lengths were forwarded to the Director of Agriculture, for rotenone content comparison with similar root of other countries, with a view to the possible marketing of this product.

Coco-nut Groves.—Extensions to grove areas on the Rai coast have been reported by the field staff. This revival of interest in an industry of primary importance to the Territory as a whole is pleasing, and can be attributed to—

(1) the recent improved prices in copra; and
(2) the sudden activity in the Rabaul district during the past twelve months, whereby natives have been encouraged by the Administration to prepare and market their own copra.

Natives who have completed their contracts of service with employers in Rabaul, on returning to their villages on the Rai coast, are now settling down, and with the above in view are preparing large areas of land preparatory to planting up coco-nuts. Where medium-sized groves already exist, driers are being erected, and copra will be produced in the near future.

Every assistance and encouragement is being given by the Administration, and arrangements will be made for the marketing of this produce on their behalf, as the Rai coast is rather isolated with no trading facilities available.

Unusual interest and activity has been shown by the Paramount Luluai of Kar-kar Island in extending the grove area of his village from 20 hectares to approximately 90 hectares, within the last twelve months. Every assistance has been accorded by the manager of the adjoining Kululi Plantation, and in addition to coco-nuts, a small area of cacao has been established under his guidance and supervision. Other than this area no further plantings are recorded on the island.

The Agricultural Officer of the district completed a patrol of the Rai coast area, extending some 60 miles over the Madang-Morobe border, and in addition to the inspection of plantations, advice was accorded natives regarding the control of pests and diseases affecting their coco-nut groves and native foods.

Manam Island.—Owing to the severe nature of the eruption occurring on this island in October and November, 1936, the annual tobacco crop—on which the inhabitants rely for revenue—was so severely damaged as to be of no commercial value whatever.

Extensive damage also resulted from falling ash and grit (scoria), on to the leaves of food crops such as taro, bananas, &c., whilst similar crops situated at higher levels near the rim of the crater were rendered useless through scorching. The peppering, however, merely delayed the maturity of the crops, but, being later than customary, trading with the mainland natives was lost.

Saidor Base.—The grounds flanking this new Administration emergency airport have been systematically laid out with lawns and suitable avenue trees introduced from the Botanical Gardens, Rabaul, and a small orchard of tropical fruit trees is now being established.

On the maturity of these trees, seed or cuttings will be available for distribution to the local planters and native populace in the area.

Bogia Base.—Should an officer of the District Services be stationed in this area, it is intended that similar agricultural activity will eventuate as at Saidor Base.

Madang Township.—Further avenue planting in the township was conducted with a flowering tree, botanically known as *Peltophorum ferrugineum.* Varieties of tropical fruit trees were planted in the grounds of several Administration bungalows.

Native Foods.—The staple food of the Madang district natives at the present time is taro and yam, the only exception occurring in the Lower Ramu valley, where sago palm (sac sac) forms the bulk dietary.

Except on Manam Island, no food shortage occurred in the district.

Sweet corn can almost be regarded as a staple food, as it is to be seen in nearly every native garden, growing between taro, yam, mammies, aibeka, bananas, pit and sugar cane.

Irish potatoes, carrots, parsnips, eschallots, cabbages, parsley, lettuce, kohl rabi, tomatoes and radishes have been introduced to many villages above 2,000 feet altitude, and have taken well amongst the natives.

It is hoped that before long Madang township will be supplied regularly with vegetables.

Root cuttings of a seedless type of breadfruit tree (*Artocarpus spp.*) have recently been introduced to the district through the Department of Agriculture, and have been distributed amongst the natives.

A quantity of fruit trees, including Avocada pear, rambutan, mandarin, lime, sour-sop and custard apple has also been sent to higher inland villages.

DERRIS FOR DOG TICKS.

When derris powder is applied to ticks already attached to a dog the ticks do not immediately die, but on the following day they will all be dead and dried up. After applying the powder to the dog ticks may get on it and re-attach quite soon, but if they get on the dog within three days after the powder has been applied they will die without engorging. To make a derris powder wash, add one heaped tablespoon of the powder to one gallon of water in which one tablespoon of soap flakes has been dissolved. Mix thoroughly. After washing, the dog should be exercised to drain off the surplus fluid, or this may be taken off by drying roughly. The wash, like the powder, does not kill ticks instantaneously or prevent others attaching, but will kill the latter for three days after bathing.