HOSKINS DEVELOPMENT:
THE ROLE OF OIL PALM AND TIMBER
Plate 1. Aerial view of Hoskins. On the lower right-hand side is the central estate with the oil mill complex, labour compound and houses of company officials. On the left is Sarakolok settlement, separated from the plantation by the Lamegi River. Sarakolok community centre is in the middle on the far left. The differential development of blocks shows up clearly; the growth of secondary bush indicates that certain holders had not yet taken up their leases.
HOSKINS DEVELOPMENT:
THE ROLE OF OIL PALM AND TIMBER

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Preface

In 1967 an agreement providing for the establishment of Papua New Guinea's first nucleus oil palm plantation and processing factory was signed by Harrisons and Crosfield (ANZ) Ltd and the Papua New Guinea Administration. The project involved the introduction of a new crop, the clearing of undeveloped land, the initial resettlement of 500 families from different parts of Papua New Guinea, and the training of inexperienced labour as well as the establishment of a nucleus plantation and mill and the construction of a port.

About four years later, with the first crop soon to be harvested, it was decided to publish a series of papers on the Hoskins project. Two detailed studies were already under way: Dr A. Ploeg had commenced a study of sociological aspects of the settlement at Kapore and Dr R.T. Shand and Mr W.F. Straatmans were examining activity patterns of oil palm smallholders as part of a larger study of nucleus estates in different areas of Papua New Guinea. The results of Ploeg's study are presented as part III of this Bulletin. Some of the early findings from the Shand and Straatmans' study are set out in part IV. To these papers have been added three others. Part I gives a brief history of the oil palm project by Mr J.P. Longayroux. Part II by Mr T. Fleming outlines developments at Hoskins from the viewpoint of the company. Part V by Mr W. Jonas discusses another form of income-earning activity in the Hoskins area - timber production. It was intended to include a further paper, on the profitability of oil palm and other economic considerations, to be prepared within the Department of Agriculture, Stock and Fisheries but unfortunately it became necessary to proceed to publication without it.

Editor
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PART I

Hoskins oil palm project: an introduction

J. P. LONGAYROUX
The 1963 International Bank for Reconstruction and Development mission to Papua New Guinea recommended that the Administration encourage the establishment of two or three oil palm plantations in sparsely populated areas of New Britain or Bougainville (IBRD 1965:120). The mission's view was that the nucleus plantations and factories would be best established under the commercial management of experienced private enterprise.

Extensive field studies were carried out by the Administration and the Harrisons and Crosfield Group.1 As a result of these surveys the Talasea-Hoskins area on the north coast of New Britain was selected for the development of an oil palm industry because of its low resident population, fertile volcanic soils and excellent agricultural topography.

Harrisons and Crosfield (ANZ) Ltd, on behalf of the Harrisons and Crosfield Group of companies, submitted to the Australian government and the Administration a plan for a pilot development, and in February 1967 an agreement was signed by Harrisons and Crosfield (ANZ) Ltd and the Administration for the establishment of Papua New Guinea's first nucleus oil palm plantation. The agreement called for, first, the development of a 3,000-acre nucleus plantation-factory complex with the experienced overseas partner providing technical expertise, selected seed and staff but under the joint control of the Harrisons and Crosfield Group and the Administration; and secondly, the settlement by the Administration of the 500 families of indigenous smallholder farmers who were to plant 4,000 acres of oil palms on land adjacent to the nucleus estate plantation. All harvested fruit was to be processed in the factory into palm oil and kernels for sale in overseas markets.

A new company, New Britain Palm Oil Development Ltd (NBPOD), was registered as a joint venture, equal shares being held by the Harrisons and Crosfield Group and the Administration. It was granted an agricultural lease over 5,400 acres at Nahavio near Hoskins for the establishment of the factory and the nucleus estate, which was named 'Mosa plantation'. The smallholder plantings were to be on subdivisions nearby. The nucleus estate is within ten miles of the port since constructed at Kimbe, from where the palm oil and kernels are shipped overseas.

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1 See Fleming, p.9 for further details.
The project comprises four distinct operating sectors: (i) establishment of the nucleus plantation, and (ii) establishment of the nucleus mill, which were the responsibility respectively of Mosa Plantation Pty Ltd and Mosa Oil Mill Pty Ltd, the two subsidiary companies of NBPOD; (iii) establishment of smallholders on blocks leased from the Administration and the development of these blocks by the smallholders, and (iv) provision of infrastructure requirements, both of which sectors were the responsibility of the Administration (except for the supply of oil palm seedlings and construction of the palm oil terminal at the port, which were the responsibility of NBPOD).

Programmed implementation in these sectors required careful timing and co-ordination in order to achieve successful social, economic and commercial development. The Administration appointed a project co-ordinator to co-ordinate at headquarters level the activities of Administration departments in the implementation of the various carefully prepared time-and-flow charts involving the settlement of the smallholder families on their blocks and the provision of social services and infrastructure. In order to cover activities in the field a project co-ordinator (fields) was appointed. The field co-ordinator was assisted by a number of extension officers drawn from the Department of Agriculture, Stock and Fisheries, for example, a project supervisor, project managers and agricultural officers and assistants.

Individual smallholders were settled in family units each on their own block of land leased from the Administration on a ninety-nine-year agricultural lease. The Papua New Guinea Development Bank extended credit, in accordance with an approved standard smallholder oil palm loan budget, to each smallholder, who will repay it from the proceeds of crops. This credit was made possible by a loan to the Administration from the International Development Association (IDA) and it will eventually result in each smallholder having an unencumbered leasehold on his own block.

This agricultural development is designed to increase the effectiveness of agricultural extension since a large number of suitably motivated smallholders are concentrated in readily accessible subdivisions. In addition to the agricultural extension office, which is established in the community centre of each subdivision, primary education and medical aid-post facilities are also provided from the time smallholders and their families take up residence.

1 See also Ploeg, p.44.
2 See also Ploeg, pp.56-63.
The initial project was basically a pilot project and consequently the total area under crop did not represent an enterprise of truly commercial dimensions. Within two years it became evident that the project would prove successful and in order to make it more commercially viable the participating parties in NBPOD agreed to raise the planting targets for the smallholders from 4,000 to 10,080 acres and for the plantation from 3,000 to 6,500 acres. Subsequently further increases in smallholders' and other outgrowers' acreages were agreed upon.\(^1\) It was also agreed to increase the factory's potential final capacity from 15 tons to 50 tons of fresh fruit bunches per hour. The IDA provided a second loan to assist in financing the increased smallholder programme as well as the construction of the Kimbe overseas wharf.

In addition to the 1,560 smallholders now involved in this project, villagers along the roads to Hoskins and Kimbe are planting some 1,600 acres of oil palms on blocks of village land which they have specifically set aside for this purpose.

The nucleus estate supplies all oil palm planting material to the plantation, the smallholders and villagers from NBPOD's central nursery on the plantation. Imported hybrid seed bred by the Harrisons and Crosfield Group from selected parents is grown under irrigation in carefully controlled conditions to a suitable size for field planting; all poorly grown and deformed or diseased seedlings are culled out before final selection. The palms will produce fruit for the plantation and the settlers over a twenty-five-year period after which they will be replaced by new seedlings to be bred in the interval in the Harrisons and Crosfield Group oil palm research and breeding station at Dami. The Dami station was established at about the same time as the oil palm project was begun; it is under the supervision of a qualified agricultural scientist who is in constant touch with the research and experimental work of Harrisons and Crosfield Group as well as government-directed laboratories in other countries, covering not only agronomy and breeding but also process engineering and quality control. Harrisons and Crosfield research laboratories also provide technical services to buyers of palm products and develop new markets for these products.

Although the development of mining and secondary industries has diversified the economy of Papua New Guinea to a certain degree, further development of the agricultural sector remains important as it will provide to many Papua New Guineans an entry into a cash economy which they find easier to understand. Agricultural development is also important for the substantial contribution it makes to the export earnings of

\(^1\) See Fleming, p.11 for further details.
the country. The objectives of agricultural development generally are to increase the participation of rural people in the economy by expanding local food production for subsistence and sale, to replace imports by local production, and to increase the production of export crops. The adoption of sound agricultural practices is also encouraged in order to raise levels of productivity and efficiency as the population increases and the people seek to improve their standards of living. The development of planned, large-scale smallholder projects fits in well with these objectives since they involve large numbers of rural people and they ensure the adoption of sound agricultural practices and the best use of resources.

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PART II

The company view

T. FLEMING
Establishment of the scheme

The Harrisons and Crosfield Group operates worldwide in diverse fields, but the management and operation of tropical plantations - in Ceylon, Malaya, Sumatra, Southern India, Java, North Borneo and most recently Papua New Guinea - is a major interest. In 1972 the plantation acreage developed by the Group reached about half-a-million acres (200,000 hectares). Major crops are rubber, oil palms, tea, coconuts, cocoa and coffee.

In 1965, at the same time that the Administration's interest in major development of tea and oil palms was taking shape, the Group was becoming interested in the possibility of developing plantations in Papua New Guinea. It arranged for an initial survey and report on land available for plantation development. At that time interest centred on possibilities for tea in the highlands and oil palms on the north coast of New Britain. A survey of these areas was undertaken with the fullest help of the Department of Agriculture, Stock and Fisheries (DASF).

The report on the survey was well received by the Group in London. Because of restrictions on the amount of capital which could be remitted, one potential development had to be chosen for prior study. Oil palms at Hoskins were the obvious first choice, and the suitability of the Mosa block for this crop was more closely surveyed. Again DASF gave all possible help and very quickly ran survey striplines on a one-mile grid through approximately 18,000 acres of the Mosa block. At quarter-mile intervals along each line, six-foot-deep soil inspection pits were dug. The survey team, which included the Group's leading oil palm agronomist, spent a week inspecting the soil pits. Soils were uniformly very good and so was most of the terrain. Available figures for temperatures, rainfall and sunshine hours also indicated that the area should be suitable for the cultivation of oil palms, although there was some doubt as to the effect of the New Britain monsoon on cropping levels.¹ With this one qualification, conditions were judged to be very suitable, and all subsequent calculations were based on oil palms at Hoskins producing results equivalent to those obtained under the best Malaysian conditions.

Subject to their assessment that conditions were potentially suitable for an oil palm development, the survey team had been

¹ See p.11.
authorised to discuss the shape of a possible oil palm plantation development in Port Moresby with the late Mr F. Henderson, then Director of DASF. Assured of the strongest possible support from DASF, the survey team went on to Canberra, with directors of the Harrisons and Crosfield Group's Australian subsidiary, Harrisons and Crosfield (ANZ) Ltd, to discuss an oil palm development in more detail.

At that time the authorities in Port Moresby and in Canberra were already clear that the development should take the form of a nucleus plantation with surrounding smallholdings. Grant of a lease over plantation land would be conditional upon the plantation company's purchase of the smallholders' crops and the erection of a mill sufficiently large to process all crop. There were, however, no specific plans for the smallholding development, and initially it was thought that plantation crops would be matched by an equal tonnage of smallholding crops.

The project involved introducing a new crop into a new and completely undeveloped territory; and it was to be combined with a large-scale social and economic experiment involving an extensive resettlement of people of whom few had previously grown cash crops on a large scale and some would be growing them for the first time. In addition, the crop would be one with which all were unfamiliar. Development of the plantation would also involve training completely inexperienced labour and personnel from elsewhere in Papua New Guinea. It was decided that there was no reason why all these problems could not be successfully overcome, but that very close co-operation would be necessary between the Administration and the private company developing the first nucleus plantation. Furthermore, the risks involved were considerable, particularly as the building of a mill much larger than was needed for the plantation crop involved a heavy outlay on which there could be very little return if the smallholdings were not a success.

Taking account of all the circumstances, it was proposed in Canberra that the development of the nucleus plantation should be undertaken as a joint enterprise by equal partners, the Administration and the Harrisons and Crosfield Group. This proposal was accepted, and early in 1966 a plan was submitted providing for initial development at an outlay of $A2.5m by the nucleus plantation company. This was to allow for 3,000 acres of plantation palms being planted and brought to maturity; construction of a mill large enough to take an equal tonnage of crop from smallholdings and the plantation; and eventually construction of storage and shipping facilities at a new port which had then still to be located.
The plan was accepted and an agreement to undertake the
development was signed in February 1967. Work then continued
on the legal processes necessary to form New Britain Palm Oil
Development Ltd with the two operating subsidiaries, Mosa
Plantation Pty Ltd and Mosa Oil Mill Pty Ltd, and on obtaining
a lease over the Nahavio section of the Mosa block. Officially
development of the plantation began on 1 July 1967, but work on
the ground started on 24 May 1967 and the first germinated seed
flown in from Malaysia was planted in the nursery in July. By
then Administration plans for the parallel smallholding develop-
ment were nearing completion.

The Harrisons and Crosfield Group saw its participation in
this project as an extension into Papua New Guinea of its suc-
cessful development and management of plantations in Asia. In
doing this it naturally expected to make profits from its in-
vestment in due course, but it was well aware that with a per-
ennial tree crop this takes time, and that there were consider-
able risks involved in participating in a completely new develop-
ment of this sort.

In a separate agreement with NBPOD, Harrisons and Crosfield
undertook to provide the new company with all the management and
other services which it normally undertakes on behalf of plant-
tation companies elsewhere, but the normal charges were waived
or reduced to nominal amounts for varying periods up to 1974.
Group expertise was also placed at NBPOD's disposal free of
charge in the development period.

Progress of development

From the outset, growth of the palms at Mosa was very promis-
ing, and from 1968 on planting operations both on the plantation
and the smallholdings progressed very rapidly with the use of
seedlings grown in the plantation's central nursery. By ensur-
ing that there was always enough seedlings 'plant ready' in the
nursery to exploit good progress on land preparation, NBPOD
enabled both plantation and smallholding planted acreages to
increase far ahead of schedule. For the initial phase of the
smallholding development it had been assumed that 4,000 acres
of smallholding palms should produce a tonnage of crop equal
to 3,000 acres of plantation palms. By 1969 progress on the
ground was sufficiently encouraging to justify a second study,
which led to NBPOD's development capital being increased to
$A5m with planting targets of 6,500 acres on the plantation and
10,080 acres on the smallholdings.

In the meantime it had been decided to plan and construct
the mill building and foundations so that capacity could even-
tually be increased from 15 tons of fresh fruit bunches per hour
required under the first plan, to upwards of 50 tons of fresh fruit bunches per hour. This potential capacity exceeded the tonnages likely to be produced under the second plan. To load this capacity, NBPOD subsequently agreed to take crop from a total of approximately 12,480 acres of smallholding palms, 1,600 acres of village palms, and possibly from 1,600 acres of palms to be planted by others in the neighbourhood.

The plantation's planting programme is likely to be completed in the 1972-73 planting season, and the smallholding programme in 1973-74. By 30 June 1974 the total acreage of palms planted in the Mosa area is likely to be at least 21,000 acres. It will then be necessary to stop planting until it is known how production will relate to mill capacity.

While it was obvious from an early stage that the palms were growing extremely well in the Mosa environment, there remained reservations as to possible adverse effects on yields from the New Britain monsoon. This is considerably wetter and duller than is normally experienced in Southeast Asia, and there could have been adverse effects on pollination and fruit set, and consequently on crops. Pollination for commercial production had to be initiated in the early months of the 1970-71 monsoon, to produce crop for processing from July 1971 on.\(^1\) Crops, when they came in, proved that good pollination could be achieved during the monsoon, and this has since been confirmed by results in the 1971-72 monsoon. Initial cropping results also showed that in the Mosa environment the palms could be brought into bearing at thirty months or less from date of field planting, and at very high cropping levels. In addition, results showed that with the benefit of guidance provided by DASF, the smallholders were capable of producing crops at near record levels, instead of at the 75 per cent of plantation levels used in the original studies.

Achievement and maintenance of such cropping levels over the whole project may be a problem, since much will depend on good agronomic practices, including liberal and balanced applications of fertiliser in amounts to be determined by the use of the latest techniques in soil and foliar analysis. While longer-term production levels are emerging, NBPOD is faced with the need to extend mill capacity much more rapidly than could have been anticipated, and with the possibility that plantings already made or agreed to will load the mill to the limit of its capacity. Should this prove to be the case, further extension of plantings would involve spending major amounts on processing facilities at Mosa or elsewhere. On the other hand, should cropping levels fall from their initial peaks it will be a simple matter to plant up additional acreages to load the mill.

\(^1\) See also Ploeg, p.98ff.
By adjusting field techniques to take maximum advantage of local conditions, plantation plantings were established and are being brought into bearing at costs well within the original estimates. Gains in this direction have been offset by high costs for the mill and the port terminal; for the construction of such major installations soils in this area proved to have very poor bearing capacity. This, and the high risk of earth tremors, led to high civil engineering costs, compounded in the initial operation by the low capacity and high cost of coastal shipping to the Hoskins coast from the main trans-shipment point at Lae, and also from Rabaul.

Because of the remoteness of the area and the complete lack of local facilities, planning for the mill began a year earlier than would normally be the case. Plans had to include the eventual floating ashore of the boilers and sections of the steriliser from deep-sea freighters anchored off-shore, and the breaking down of all other items into units within the limited lifting capacity of the derricks on coastal ships. In the event, everything was brought in on time with minimal loss or damage, but for some months at the height of the shipping operation all other building operations on Mosa had to be suspended to let in shipments for the mill. Construction of the foundations and erection of the buildings were undertaken by contractors' crews, but actual installation of most of the machinery was done by local men working under the supervision of an installation engineer. In this phase specialists were only called in to undertake specific jobs.

The mill came into operation in July 1971 as originally planned in 1965. The shipping terminal at Kimbe was brought into operation in November 1971. Due to delays in finalising the port site this was somewhat later than had been planned, but was still in time for the first consignment of oil to be shipped in the same month.

In all, the NBPOD development has had its full share of the problems and setbacks which are an inescapable part of any pioneer project, particularly in a situation as remote as the north coast of New Britain has been in the early years of this project. The problems have been overcome or are in process of being overcome.

The project came into production on the date originally scheduled, and production of palm products in the first year will be almost twice as high as originally estimated. This high production derives partly from the early maturity and high cropping levels referred to earlier, and partly from a palm oil content on bunch weight which is nearly 20 per cent
Plate 2. Part of a 20ha. irrigated oil palm nursery

Plate 3. Young palms and leguminous covers
higher than is normal in the first year of production. Beyond these highly encouraging results from about 2,500 acres of palms already in production, total plantings will soon reach three times the total of 7,000 acres which constituted the combined plantation and settlement programme when the project was initiated. In this total the balance of plantings has swung heavily towards the smallholders and other outgrowers, while NBPOD funds have gone towards extending processing, storage and shipping facilities and purchasing smallholders' crops.

New Britain Palm Oil Development has thus, in a period of five years, demonstrated the potential of the area for oil palms and shown that, with goodwill and co-operation guided by the necessary expertise, it is feasible to successfully develop a nucleus plantation and smallholdings on a large scale and at a rapid pace in an area which was initially very remote and undeveloped by any standards.

Plate 4 Settlers inspecting the mill after the official opening, July 1971
The future lies in other developments on lines similar to Mosa. Provided these follow the pattern established at Mosa and have access to equivalent planning and guidance, such operations can be undertaken with reasonable prospects of good results. At the same time it must be remembered that, at Mosa and elsewhere, as development continues other problems will emerge and there will be setbacks as well as successes; in these the special skills of agronomists and processing specialists will be required in addition to those of the men responsible for day-to-day operations and management.

Labour

It had been planned from the outset to undertake NBPOD development with a minimum use of expatriate staff. Initially only two NBPOD expatriates were on the site. Two more and an installation engineer had joined by 1971. Since then the very rapid increase in the scale of operations, particularly in the mill, and increasing commitments which NBPOD has undertaken in relation to the smallholdings, have necessitated an increase to ten expatriates. These include four engineers in the mill, an operations manager whose duties include coordination of NBPOD and smallholders' harvesting and transport operations, and an office manager whose responsibilities include the accounts of individual smallholders as the smallholdings come into production. On the plantation side an additional expatriate had to be engaged after the death of an indigenous assistant manager.

In the earlier years of the project it was a major problem to find indigenous staff and technicians to fill vacancies from field assistant (foreman) level up to the level of assistant manager. It was very difficult to find suitable men, with appropriate training and experience, who were also willing and able to accept the amount of responsibility which NBPOD planned to allocate to them. The company was most fortunate in receiving all possible help from DASF which had been the main employer of men who could potentially meet NBPOD's requirements. In the initial stages DASF notified their own staff of vacancies at Mosa and at no point placed any difficulty in the way of some of their best men who left to join NBPOD. In this way a nucleus of senior and junior indigenous employees has been gradually established. These men have been of major help in the successful development of NBPOD, but only recently has the number employed begun to approach requirements. In the interim it has often been necessary to adjust to the resources immediately available and to postpone the introduction of techniques which require close, full-time supervision of small groups of workers by one supervisor. As the project has gathered momentum and a
bigger community has built up at Mosa, the problem of finding and attracting suitable men has become less acute, but a fresh phase of sharp competition for available talent may develop when other similar projects get under way in Papua New Guinea. Even when suitable men are found, the pressures to which they are subject in exerting authority over their fellow countrymen are severe, and some find that they cannot hold their position.

Turning to ordinary labour, the objective has again been from the outset to have most regular employees housed in the project area with their families. It has been recognised that this would take time to achieve under local conditions, since in Papua New Guinea there is no tradition of families settling on plantations and established customs take time to change. Initial work was done by labour drawn from neighbouring villages and by itinerant labour coming in from other areas in New Britain. This labour, and labour drawn from the smallholding areas, will continue to be used as far as it is available, particularly for seasonal work, but turnout of these workers is irregular, being influenced by their domestic situation at any given time and by their need for cash. Most of the families who will eventually form the settled labour force will have to be drawn from elsewhere, mainly from the New Guinea mainland.

In the meantime the main labour force is composed of contract labour drawn from the New Guinea mainland. The objective now is to persuade these men to bring in their families and to settle on the plantation. This process was to have started in 1971 but following a tragedy on the plantation all the contract workers then employed had to be repatriated, just when arrangements were being made to bring in the first families. Families of the present labour force are now beginning to come in, and although problems are clearly involved in the adjustment of families to life on the plantation it is now felt that the process of establishing a permanent resident labour force has been successfully begun. Most of the workers who have come to Mosa have no understanding of plantation work, and problems of communicating with junior and senior staff frequently arise. In spite of this, and the earlier scarcity of field supervisors, satisfactory work outputs have been obtained and a steady improvement can be expected as routines become established.

Relations with smallholders

From the NBPOD company side, relationships with the smallholders are still in a very early phase. During the period of planting and subsequent immaturity of palms, there is very little direct contact. The company's only major role is to have adequate numbers of well-grown plant seedlings in the nursery
ready for transport to the smallholdings when required. This has been done on the basis that the plantation and the smallholdings take 'the run of the nursery'. Adequate numbers of good seedlings have been available and problems have been minimal. It is only when the smallholdings come into production, with fruit to be accepted, weighed, transported and each individual smallholder paid for his crop that a closer relationship develops. Payment involves processing each smallholder's account, calculating the amount payable on an agreed formula related to world prices of palm oil and palm-kernels, deducting agreed charges for processing and shipping and the regular loan repayments to the Development Bank, before handing the cash to the smallholder.

In 1971-72 only half the acreage on Kapore and Tamba, the first two groups of smallholdings established, was in production, and DASF staff have been heavily involved in guiding the smallholdings' development to its present stage. One aspect the company now believes to have been a mistake was to have the smallholdings come into production within weeks of the commissioning of the mill. After arriving on their smallholdings in early 1968 when planting material had already been prepared in the plantation nursery, smallholders planted their first acreage at almost the same time as the plantation. Subsequently they tended and cultivated their palms so exceptionally well that all concerned were anxious to give them the added encouragement of bringing their palms into bearing at the earliest possible date. They began assisted pollination so that their first crop was harvested in July 1971, the same month in which the mill was commissioned on an initial load of plantation crop. This created many difficulties in the first production year, for it meant that smallholders and plantation labour had to be taught harvesting techniques simultaneously, at a time when the internal road systems had not been consolidated by use, and the mill was being run in. Too much was happening at the same time, and with crop coming in at almost twice the anticipated level, the mill had to concentrate on getting all available crop through somehow when there ought to have been opportunities to stop to make adjustments. Again everyone concerned was anxious that the smallholders should not suffer the discouragement of seeing crop go to waste. NBPOD and DASF staff made great efforts to avoid this happening, and in the end very little crop was lost; a result to which the smallholders themselves contributed by their co-operation despite numerous interruptions to harvesting routines. With the benefit of hindsight, most of those involved would probably agree that it would have made for a better and smoother operation if the smallholdings had been brought into bearing a year later than the nucleus plantation.
Harvesting of oil palm fruit requires that it should be cut at the right stage of ripeness if the maximum amount of good quality oil is to be recovered. The fruit must then be transported to the mill for processing as soon as possible, normally within twenty-four hours. Harvested too soon, the oil content is low. If it is harvested too late, or there are delays in transport and processing, oil quality deteriorates. Naturally there were doubts as to how far a large number of inexperienced smallholders would meet the necessary requirements. In fact they adjusted very quickly and results have been good. There were some initial problems through fruit being cut when under- or over-ripe but these were overcome quickly. Later, when crops and prices fell together, there was a further brief period when too much under-ripe fruit was being cut.

In some ways it was unfortunate that production started with very high crops, at a time when the price of palm oil on the world market was at a postwar peak. This combination of events led to very high initial payments and raised expectations to levels which could not be maintained. Oil palms crop throughout the year but the cropping cycle fluctuates, and so do prices. In this case, crops unfortunately went into a downward phase at the same time as prices fell back to lower levels. Consequently payments were sharply reduced, and smallholders who had been tempted to neglect their food gardens by their high oil palm earnings found themselves in some difficulties. Fortunately good work by DASF led to their acceptance and adjustment to the situation. Goodwill has resulted from this lesson learnt at an early stage, when the numbers involved were more manageable than they will be later; NBPOD is particularly concerned that the smallholders should appreciate that over the years prices and crops, and consequently their incomes, will fluctuate.

NBPOD employees are already responsible for accepting or rejecting, weighing and receiving crop at the smallholder's 'farm gate'. The fruit bunches then become the property of NBPOD. Other company employees ensure that the bunches are processed to produce the maximum amount of good quality oil and kernels. Harrisons and Crosfield as NBPOD's agents then sell the produce at the best possible price. The whole process is eventually reflected in the smallholder's receipts, with NBPOD employees again responsible for keeping his account and paying him cash each lunar month. NBPOD is also becoming increasingly involved in gearing transport of smallholding crops to smallholding harvesting programmes; the latter must in turn be geared to the working schedule of the mill.

NBPOD is very conscious of the fact that these responsibilities are already onerous with approximately 320 smallholdings at half production, and that they will become much more
onerous when 1,400 smallholdings plus other outgrowers are in full production. At that point combined peak crops from the plantation and smallholdings will approach 1,200 tons of fresh fruit bunches per day and will yield about 300 tons of palm produce per day.

The future

To keep such an operation running smoothly, and to ensure that all concerned are satisfied that they are getting a fair deal, will require a major and continuing effort by NBPOD. This will be far from easy but the company is encouraged by the success of the first phase to believe that similar success can be achieved in the longer term. The best way to handle the situation has to be worked out as the project grows. Company involvement has already come a long way from the original undertaking to make milling capacity available for smallholders' crops, and obviously will progress further.
PART III

Sociological aspects of Kapore settlement

A. PLOEG
Introduction

This Part is a preliminary report of sociological inquiries I undertook in Kapore, one of the oil palm settlements at Hoskins (see Fig. 3.1), for five months during 1969-71. It deals with three main topics: first, general sociological information about the settlers; secondly, the administrative organisation of the scheme, including the training of the settlers in oil palm growing and harvesting, and the settlers' responses to the organisation; and thirdly, the effects of the ethnic heterogeneity of the settlers on their social relationships. To a large extent I have discussed these topics in the order above mentioned but to maintain historical continuity in the presentation the sections on harvesting follow those dealing with ethnicity. The final section, also concerned with harvesting, is a postscript based on my final stay in Kapore during December 1971 and January 1972. My research complements work undertaken in the same settlement by Shand and Straatmans, the first results of which are published as Part IV of this Bulletin.

During my study Kapore had between 122 and 129 blocks of land on each of which one nuclear family was settled. Since my research time was limited, I selected a sample of twenty-eight settlers on whom to focus. This sample was stratified according to, first, the ethnic origin of settlers and secondly, their status in the settlement. During the research, however, some settlers included in the sample lost the status because of which I had selected them. Others were absent during parts of my stay and in one case my relationship with a selected settler became strained. On the other hand, I came to know and obtain information from settlers not included in the sample. Hence the distinction between sample and non-sample settlers became blurred and the stratification of the sample itself became less rigid.

I also attended and collected information about current events such as meetings, quarrels (and their settlement), feasts, weddings and funerals. On these occasions again I learnt much about and from settlers and settlement staff not included in the sample, as well as other people resident in Kapore. Additional

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1 I wish to thank Miss C. Lesley Andrews, Dr A. Chowning, Mr B. Rowe and Mr W.F. Straatmans for valuable comments and criticisms on the draft of this paper. Many thanks are also due to Marlous Ploe who drew the maps.
Fig. 3.1. Hoskins oil palm area (plans for oil palm blocks for three villages near Kimbe had not been finalised at the time of writing and hence are not mentioned here)
information was provided by Administration officials concerned with the oil palm scheme, both in Hoskins and in Port Moresby. I wish to thank them, and the settlers, for their co-operation in my research. To disguise the identity of the settlers I refer to them by fictitious names.

Since all settlers were required to live on their own blocks of land, residence in Kapore was scattered. A house for myself and Straatmans was built on a spare strip of land away from the community centre and the settlers' houses. This meant that I could only observe family life during relatively short visits, and I usually did not know what was happening in the community centre.

Because of the ethnic heterogeneity of the settlers I conducted my inquiries in English and Pidgin. I did not speak any of the vernacular languages spoken by the settlers, but all male settlers had at least a limited command of, and the large majority were fluent in, one of these two languages. Most of my information came from the fluent Pidgin or English speakers.

The Hoskins scheme was tightly organised and the life of the settlers was deeply influenced by its provisions. These covered, among other things, the age of the settlers, their domestic groups, their mode of residence, their relationships with co-settlers and kin in their home areas, their financial resources, and their work tasks. I also include here the requirements of oil palm cultivation, since these are interpreted to the settlers by the agricultural extension officers working in the scheme. While the settlers had their own ideas and expectations about the scheme and the way it should be run, they were not in a position to alter appreciably its provisions. Hence, in the following sections I frequently discuss parts of the scheme's organisation.

As in other resettlement schemes in Papua New Guinea, Hoskins oil palm blocks were allocated in leasehold to individual men, referred to here as 'block-holders'. Ideally the block-holders were themselves to develop their blocks, with the help only of their wives and grown-up children. In many cases, however, this did not happen: holders helped each other, and outsiders also assisted the holders. Most of the latter took up residence in the settlement. In Situm and Gobari, two ex-servicemen's settlements near Lae where I have carried out research, a comparable situation occurred and hence I distinguished between 'block-holders' and 'assistants' (Ploeg 1971:41). I use the same terminology here, although the situation in Kapore was slightly more complex—because many more assistants alternated between work on the blocks and outside employment. As in the Situm and
Gobari study 'settlers' refers to block-holders as well as permanent and temporary assistants; 'residents' refers to people living in Kapore, including those not engaged in the actual development of the blocks.

**Settlers' home areas**

While any resident of Papua New Guinea could apply to lease a block, the average size of the oil palm blocks (about seventeen acres with a small standard deviation) probably discouraged non-indigenous. The Kapore block-holders were all indigenes, from a limited number of home areas (see Table 3.1 and Fig. 3.2). The subdivisions in Table 3.1 were made by the holders themselves and distinguished geographical subgroups among them. Some groups, such as the Chimbu and Dagua, are also cultural groups, but other groups include people with different cultural backgrounds. In all cases, however, the groups are non-traditional in that they unite people who traditionally were members of separate, politically autonomous, and often mutually hostile groups.

The groups most readily apparent in Kapore are those listed in column 2 of Table 3.1. Chimbu, Sepik and Tolai holders subdivided themselves into geographical groups, some names of which were geographical, as in 'Sepik River people' or 'Sepik bush people', while others referred to the administrative and social centre of the area, as in 'Gembogl', 'Rabaul' and 'Kokopo'. 'Dagua' referred to a locality, and possibly also to a mission station established in that locality. The existence and membership of the groups in columns 3 and 4 were not generally known among settlers in other groups, although this was slowly changing. Within the Tolai group the subdivision between Rabaul and Kokopo was less apparent than the other subdivisions. It is possible that Tolai living inland at some distance from both centres did not identify strongly with either group. The division between bus Sepik and Dagua was also not as strict as in Table 3.1. Two Yangoru holders were usually considered to be bus Sepik, but one of them, for example, took part in a *singing* staged by the Dagua and also sided with the Dagua in their quarrels with Tolai.

The divisions and subdivisions in Table 3.1 resemble a classical segmentary system as first described by Evans-Pritchard in his writings on the organisation of Nuer tribes (1940a and 1940b). Evans-Pritchard (1940b:282), however, made clear that, in the Nuer case, tribal segments exist only as political groups in relation to other segments on the same level and that without these relations very little meaning can be attached to the concept of 'tribal segment'. In Kapore, on the other hand, the groups brought together in this 'segmentary' organisation are not defined merely by reference to such organisation, since they
### Table 3.1

**Home areas of Kapore block-holders**

<table>
<thead>
<tr>
<th>General home areas and number of block-holders from each</th>
<th>Subdivisions of home areas in column 1</th>
<th>Subdivisions of home areas in column 2</th>
<th>Subdivisions of home areas in column 3</th>
<th>Home areas of block-holders in sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Guinea mainland 86</td>
<td>Sepik 45</td>
<td>Dagua 28</td>
<td>bus Sepik** 12</td>
<td>Sepik 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ware Sepik*** 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chimbu 40</td>
<td>Gembogl 29</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Sinasina 4</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Kundiawa 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gumine 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Madang# 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Guinea islands 40</td>
<td>Tolai 33</td>
<td>Duke of York Islands 2</td>
<td></td>
<td>Tolai 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Tolai 31</td>
<td>Kokopo 18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rabaul 13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bali## 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papua 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 129</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The names of home areas are those the settlers themselves used.
** This refers to the strip of land between the Sepik flood plain and the New Guinea north coast. The group, or part of it, was also referred to as the Urat, by which name Laycock (1965:18) referred to a language spoken in the Dreikikir area. Mead (1938:172) used the name to refer to a group of people living directly north of the Arapesh.
*** This refers to the area along and near the Sepik River.
# Madang District rather than Madang town as the holder came from Manam Island.
## An island off the northwest New Britain coast.
Fig. 3.2. Home areas of Kapore block-holders
have also a separate identity as ethnic groupings which may, for example, oppose each other whatever their place in the segmentary hierarchy.

The settlers referred to the home areas mentioned in columns 2, 3 and 4 of Table 3.1 as *ples*, and to people from these areas as *wantok*. I follow their usage of these terms in this paper.

All block-holders in Table 3.1 were allocated blocks when Kapore was established in 1968, but 10 did not move to Kapore and subsequently lost their leases; 8 of these were Chimbu and 2 Tolai. Their blocks were reallocated in 1969 and 1970. In my view the Chimbu's reluctance to take up the leases indicates that resettlement for them involved the greatest changes. It was much more expensive for them to visit their home areas than for Bali or Tolai holders, and they rarely, if ever, visited their *wantok* in *ples*. Coming from the highlands, the Chimbu also had to adjust to the much hotter coastal climate. Unlike the Dagua they were not united by a net of kinship ties and they had not previously lived in the Hoskins area, unlike most of the other Sepik settlers who had been employed there.

Most holders had not severed their ties with their home areas. They wanted to maintain title to their land and cash crops there; many wanted to return after they had developed their blocks and repaid the development loans. Many also wanted to employ close kin in their enterprises. During my stay several holders had already done this. The Tolai and Bali holders could most easily visit their *ples* and the Tolai especially used this opportunity, in some cases staying away for several months. I do not know the reason for this difference between the Bali and Tolai holders; nor do I know why the latter so often visited the Gazelle Peninsula. In one case I observed, and in others I only heard, that the holders had extensive coconut and cocoa holdings which they wanted to look after in order to make some money; in some other cases I was told that the holders simply wasted their time during their stay in the Gazelle.

The home areas of the Chimbu, Tolai and Bali holders are densely populated and that of the Dagua is inaccessible. The Kapore settlers here referred to as the Dagua are in the anthropological literature better known as the Mountain Arapesh, a name coined by Mead who worked among them in the early 1930s when they were living in the Torricelli Mountains west of Wewak. Mead (1938:202, 215) described this habitat as harsh and infertile, yielding a 'very poor and inadequate diet'. Soon after World War II the Mountain Arapesh settled in the coastal area near Dagua, about forty kilometres (twenty-five miles) west of Wewak. They did not acquire formal title to their new land,
although the owners consented to its occupation. They decided to resettle again when, after years at Dagua, the owners began to complain. In Kapore they generally referred to themselves and were referred to by others as Dagua, so I decided to use this term rather than Arapesh, a vernacular term meaning 'human being' which Mead decided to use because the people then had no name for themselves (Mead 1938:153).

The geographical representation of the Kapore block-holders results from several factors. First, the Land Board, which interviews and recommends all applicants for blocks, tends to favour those with a demonstrated interest in economic advancement, either in agriculture or other occupations. It gives preference to those whose opportunities to advance in their ples are hampered by shortage of land or inaccessibility. The Board also prefers men who previously felled forest on the blocks (54 of the 129 block-holders had done this). Settlers often told me about their work as pre-settlement fellers, and this contribution to the creation of the scheme seemed to have acquired for them an almost mythical quality. Their labour made them feel they had acquired rights of identification (Crocombe 1972) to the area. Several times I heard a settler praise himself when referring to other settlers or settlement staff because he had arrived earlier and helped in the first clearings.

The pre-settlement fellers had been selected by officials of the Department of Agriculture, Stock and Fisheries (DASF) and the Department of District Administration, after meetings in their home areas in the Chimbu District, the Gazelle Peninsula and in several parts of the Sepik Districts. I do not know if such meetings were held throughout Papua New Guinea.

The didiman, unlike the Land Board, favoured selecting block-holders exclusively from among those who had undertaken pre-settlement felling. They thought that these men had a better idea of the conditions under which they would have to work as settlers, while the didiman who supervised the felling would have had a better idea of the industriousness of the prospective settlers. So far this method has worked best with the first group of settlers but has not been as effective as the didiman hoped. This was because in the later settlements,
labour for pre-settlement felling was largely carried out by settlers who were already established.

Secondly, the disproportionately large number of Dagua block-holders, considering the small size of their home area, reflected the authority exercised over them by their most prominent member. He had led the initial resettlement to the coast in order to stimulate economic development, and later, when the difficulties with the traditional owners started, he suggested the second resettlement after he, as a Member of the House of Assembly, had heard about the oil palm scheme.

Thirdly, the heterogeneity of the holders was probably increased by the fact that not all holders lived in their home areas when they applied for blocks. Most of them, including the wara Sepik holders, two of the three Papuans and the Madang holder, then lived in or near Hoskins and decided to apply after noticing the preparations for the scheme. Others lived in urban centres where they heard about it.

Most holders from the same areas were neither evenly spread over the settlement nor separated into different areas (see Fig. 3.3); an exception was the Bali cluster of blocks in one corner of the settlement. At the instigation of the didiman most block-holders had built their houses on corners of their blocks so that often three or four houses were grouped together (see Fig. 3.3). In some cases small groups of wantok were allocated adjacent blocks so that there were, for example, 'Tolai' or 'Chimbu' stretches of road. One Dagua block-holder who had been allocated a vacated block, the house on which was partly constructed, rebuilt this house on another corner of the block. It had been in a group of three and, by moving, the Dagua man avoided living in close proximity to two Tolai holders. Tolai and Dagua settlers were on bad terms. The rebuilt house was close to the house of a Chimbu holder living across the road.

The didiman felt that, when planning the first two settlements, Kapore and Tamba, they had overlooked the existence of large ethnic wards which led to the formation of separate and mutually suspicious ethnic groups.¹ Hence, when establishing later settlements, they tried to avoid this without, however, scattering wantok completely. Each holder had at least one neighbour who shared his language, while the blocks opposite (on the same side of the road) and behind were given to holders speaking other vernacular languages. In this way it was hoped that contact between non-wantok would be maximised, while settlers were still in the vicinity of persons speaking their own language.

¹ See p. 69 ff.
Fig. 3.3. Kapore settlement
Household composition

The composition of the Kapore households was influenced by Administration policy in two ways. First, the nuclear family, consisting of husband, his wife or wives and their children, was officially regarded as the primary social and economic group for the development of each block. It had to reside on its own block. While I did not make systematic inquiries among Administration officials about their attitudes to this form of settlement organisation, my impression was that many considered that the individual Papua New Guinean was more likely to be industrious and attempt to advance economically if he was unfettered by ties to large kin or local groups. In this view, village life is a relatively unfavourable context for economic advancement. However, this is not necessarily so, as is clearly shown by the enormous increase in cash cropping which has taken place in the Gazelle Peninsula and, more recently, in parts of the Central Highlands.

Another aspect of this question is how the resettlement policy, with its emphasis on the role of the nuclear family, is related to contemporary village society and Papua New Guineans' wishes for economic development. In this context I refer to Salisbury's analysis (1970:97-100) of resettlement schemes in the Gazelle Peninsula. One, at Sunam, was established by the Vunamami Local Government Council. The council allocated blocks to villages rather than to individuals. Development was initially very rapid but later its pace declined. Salisbury attributed this, first, to the lack of amenities in Sunam and, secondly, to Administration insistence that blocks be allocated to single individuals. After this allocation those who had helped develop the land but who had not been allocated blocks, in other words the great majority, felt cheated and were unwilling to give further assistance to the new holders. The communal approach adopted by the Vunamami council was not an isolated instance; other deviations from the nuclear family occurred at Situm and Gobari (Ploeg 1971:43, 55), and Popondetta. In both cases several blocks, while allocated to individual holders, were in fact developed by extended families. I do not know whether these few reported cases represent

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1 I use the term 'village' to refer to the present mode of residence of Papua New Guineans living on their traditional land, whether they live in villages, hamlets, scattered dwellings or some other form of residence.

a more general desire among Papua New Guineans for alternative
modes of resettlement, yet it seems regrettable that the Admin-
istration, while amending its resettlement policy in important
respects, so far has continued to make the nuclear family the
essential group in settlements without exploring the merits of
other, more flexible approaches.

Although the nuclear family plays a prominent role in tradi-
tional village life in many parts of Papua New Guinea, its
self-sufficiency should probably not be overrated. In tradi-
tional society, nuclear families operate as parts of communi-
ties which contain close kinsmen who can provide support in
case of need. Fortunately in Kapore, most holders had close
kinsmen as co-settlers, either in Kapore itself or in one of
the other settlements, who could give help.

A second, but much weaker, influence on the composition of
Kapore households was exerted by the Land Board which favoured
block-holders who were young family men; it considered that
they were more likely to settle down and make a determined
effort to develop their blocks than single men were. According
to the DASF work schedule, development of a block would have
placed a very heavy burden on a single man. The Board, however,
did not refuse to recommend single applicants for blocks, for
of the 129 holders listed in Table 3.1, 16 were single when they
were interviewed by the Board. Four of them were married by the
end of 1970. One of them told me that during the interview he
had lied to the Board that he was married. The estimated mean
age of the sample block-holders was 35.3 years, the estimated
median age 35, and the estimated modal age 28.

Of the 28 sample holders, 13 were assisted by one or more
of their children. Most of these children were still of school
age so they worked after school hours, on Saturdays and during
holidays. Their overall contribution to the development of the
blocks was small.1

Table 3.2 shows the size of sample domestic groups at Kapore.

The mean size of the sample domestic groups was 5.9, with a
maximum of 10 and a minimum of 2. An official census of Kapore
at the end of 1970 indicated that the average size of domestic
groups was 6.0, with a maximum of 14 and a minimum of 1.

The mean number of children of the block-holders in the
sample, excluding adopted children, was 3.7. This is not clear
from Table 3.2 primarily because absent independent children

1 See Shand, p.127.
<table>
<thead>
<tr>
<th>Domestic group</th>
<th>Total</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Holder and resident dependent family</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>family members*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident independent**</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>family members***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others resident on blocks</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>31</td>
</tr>
<tr>
<td>Absent dependent family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>members#</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The term 'family' refers to a group consisting of a husband, his spouse or spouses, his lineal descendants and their spouses. In 25 of the 28 cases tabulated the groups are nuclear families. There were two polygynous, two-generation families, and one group included not only children of the holder but also the spouse of one of the children and their child.

** The term refers to economic independence which, however, may be either permanent or temporary since the persons included may alternate between outside employment, usually either in the central oil palm estate or in the other projects concerned with the oil palm scheme, and assisting their kinsman/block-holder. This also applies to 'other residents' in the table.

*** Given the small number of persons involved, mean figures were not calculated.

# All school-children
are not included. The holders' nuclear families were still growing. From mid-1968, when their families took up residence in Kapore, until the beginning of 1971, children were born to 18 of the sample holders. The large number of children under school-age can also be gauged from the fact that in one year, while the adult population was stable, the number of school-children increased from 145 to 186.

There were fewer 'other residents' than in Situm and Gobari, where in 1968-69 the number of adult 'other residents' was about twice that of the block-holders and the adult members of their families (Ploeg 1971:43). Unlike Kapore, residents on several blocks formed more than one domestic unit in Situm and Gobari. There was also a larger proportion of long-term assistants there, while in Kapore most assistants were short-term, residing there for a limited period of time only or alternating assistance with outside employment.

Officials disapproved of the presence of the 'other residents' in the settlements because they thought, first, that the block-holders might later have to share their oil palm revenue with them and, secondly, that many outsiders might become unemployed and start trouble. Generally block-holders preferred assistance, but the development loans did not make funds available for this purpose. The holders were unsuccessful in their attempts to obtain larger loans so several earned money in outside employment. Most, however, resigned themselves to being financially unable to employ assistants, at least until they received their first returns. On a conservative estimate the block-holders may ultimately receive about $1,500 annually from the eight acres they have now planted. They can almost double this income since the average area suitable for oil palm cultivation per block is about fifteen acres. Accordingly, if the scheme is successful, the holders will be able to employ assistants. The effort required for oil palm cultivation means that many holders will need to supplement the workforce of their families, particularly when they undertake expansion.

The employment of assistants means that block-holders would receive smaller financial benefits, but in my view this is not an unmitigated disadvantage. Two objections to schemes such as

1 Except for pre-settlement felling, see pp.45 and 56.
2 See p.62.
3 However, such expansion would require the construction of a second mill which in its turn would involve another large financial investment.
the one in Hoskins are that they are very costly and that they reach only a fraction of the population (Hunter 1969:128 and International Bank for Reconstruction and Development 1965:190). Liberal employment of assistants would mean that benefits would be spread over a larger section of the population. The income the block-holders can expect is very much higher than that of most other cash croppers in their home areas. Salisbury (1970:361-3) calculated that in Vunamami in the early 1960s the average income of households in which cash cropping was the major source of income was $259.20. Only four households had an income larger than $1002, and this was probably derived not only from cash cropping. Epstein (1968:51) estimated that in 1959 the per capita income of the Tolai from the sale of agricultural produce was $50. Hence, for a family of six people (the mean size of families in the Kapore sample) the estimated income from cash cropping would be $300. Although these incomes have probably increased during the last decade, the difference between them and projected income from the oil palm blocks must still be large. B.R. Finney (1969:21) stated that up to 1968 annual per capita income in the Goroka area from coffee was less than $10.

The claim that assistants would cause strife and quarrels was also made by the settlers themselves, for example by Tolai block-holders after four young Chimbu men had attacked another Chimbu for allegedly approaching the wife of one. None of the four was a block-holder: two were assistants, the third had left his adoptive father, a block-holder, after quarreling with him, and the fourth had only recently arrived on his father's block and said he did not want to stay. All were from the Kundia area, while their victim was from Gembogl. While the incident occurred in the early evening and could as well have been organised by four block-holders, it does seem that the presence of many assistants, because it increases the number of wantok, facilitates the formation of groups prepared to commit acts of violence. In addition, the young men tended to lead a more gregarious life than the slightly older block-holders.

On another occasion a Chimbu holder attributed serious inter-ethnic quarrels\(^1\) to the presence of outsiders, but in this case the main parties in the dispute were block-holders or sons of block-holders.

The settlers explained their desire for assistance mainly in economic terms, although in some cases it appeared they missed the presence of their closest kin. The employment of a labour line may also have been a matter of prestige, enhancing the self-image of a block-holder as a modern entrepreneur as well as his self-image as a big-man. As far as the three

\(^1\) See p. 69 ff.
largest ethnic groups are concerned, the latter applied especially in the case of the Chimbu and Tolai, but not in the case of the Dagua because such a followership did not seem to be a characteristic of traditional Dagua big-men (Mead 1947:208 and 1961:32).

Brown (1970b:102) described the entourage of a Chimbu big-man as follows:

A 'big-man' has many persons in the household he heads; at least three wives provide him with food and pigs for his children and adult male dependents and contributions to feasts. Beyond this, he has an immediate following of up to twenty men with families.... He provides his own and adopted sons with land, pigs and goods for marriage and other payments.

The household of one Chimbu block-holder in Kapore had started to resemble the model Brown described but, while many Chimbu holders looked forward to the time they would have enough money to finance the travel of some kin to Hoskins, I do not know how many wanted to build up a similar following. Salisbury (1970:328-9) mentioned that traditional Tolai leaders attracted dependants to live near them who then worked for them and for whose financial needs they provided. When describing some men prominent in the economic development of Vunamami, Salisbury made clear that this pattern was still apparent.

It seems likely that either aspirations for traditional leadership (among Tolai and Chimbu block-holders) or aspirations for modern entrepreneurship, or both, will contribute to holders' need to attract a followership. Its organisation will depend on the relative strengths of the traditional and modern aspirations. A more traditional holder might form a large household of which he is the head; a more modern man might employ a number of labourers who do not form part of his household.

Previous training and occupations

Of the 28 sample block-holders, 9 had not received any school education. All but 3, however, had been in employment away from their home areas. This high proportion of block-holders with previous employment experience probably reflects the Land Board's preference for applicants who had been away from their home areas and who, in the case of highlanders, had been working in coastal areas. There is no correlation between schooling of block-holders and their employment outside their home areas: all those without school education had
been so employed. Several had acquired skills during their employment and 2 had become literate. Hence 21 of the sample holders were literate.

Table 3.3 summarises the positions held by holders before they obtained their blocks. Some had had a variety of jobs so I tabulated the one which involved the greatest skill and/or supervisory responsibility. However, from the descriptions the holders themselves gave it was not always clear what duties their jobs entailed. In addition, as they were employed at different periods of time, seemingly identical jobs may have involved different work. Consequently, while I attempted to list the occupations in order of skill, this listing is not precise.

Table 3.3

<table>
<thead>
<tr>
<th>Occupation</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation worker</td>
<td>2</td>
</tr>
<tr>
<td>Crew member on coastal vessel</td>
<td>3</td>
</tr>
<tr>
<td>Sawmill worker</td>
<td>2</td>
</tr>
<tr>
<td>Mikanik*</td>
<td>1</td>
</tr>
<tr>
<td>Police constable</td>
<td>2</td>
</tr>
<tr>
<td>Agricultural assistant</td>
<td>1</td>
</tr>
<tr>
<td>Heavy equipment driver</td>
<td>1</td>
</tr>
<tr>
<td>Storekeeper</td>
<td>1</td>
</tr>
<tr>
<td>Medical assistant</td>
<td>2</td>
</tr>
<tr>
<td>Pastor</td>
<td>3</td>
</tr>
<tr>
<td>Carpenter</td>
<td>4</td>
</tr>
<tr>
<td>Plumber</td>
<td>1</td>
</tr>
<tr>
<td>Postmaster</td>
<td>1</td>
</tr>
<tr>
<td>Stimulator of community development, Member of the House of Assembly and Parliamentary Under-Secretary**</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
</tr>
</tbody>
</table>

* Pidgin for 'mechanic': this man received training on the job and I do not know how comprehensive it was.

** The House of Assembly was first elected in 1964 and a number of Members were appointed Under-Secretaries. Under-Secretaries worked in Administration departments, not so much to direct and instruct as to be instructed in policy formulation and administrative procedures (Jinks 1971:163).
Twenty of the men in the sample had some experience of cash cropping. The remainder had spent all or most of their adult lives away from their villages. Only four had been local government councillors, luluai or tultul. I did not ask whether there were former ward komiti among them. This small number of village officials partly reflected their relative youth and partly the fact that many holders had lived away from their villages for long periods of time. All former village officials were above the average block-holder's age.

Motives for taking blocks and plans for the future

All holders greatly wanted to improve their economic and social status by developing an oil palm block. They hoped that oil palm would prove to be as profitable as the people who informed them about the scheme had said. They persistently questioned the didiman about the price at which they could sell their oil palm fruit bunches. The didiman, however, were reluctant to predict their income because of fluctuations in the price level of oil palm. Several holders told me that they had been dissatisfied with the returns from crops like coffee, copra, rice and pyrethrum and that if oil palm did not yield better results they would return to their home areas. They expressed their experimental attitude by saying: 'Mipela traïm tasol' ('We only try it out'). Accordingly, it seems they were not committed to oil palm growing for its own sake, but rather for the cash they wanted to earn by means of it. Their very high aspirations in this regard may turn out to be a 'perceptual impediment to development' (Moulik 1972:27-8) since it makes it less likely that they will be satisfied by the returns on their holdings.

Block-holders also felt that their blocks, once developed, would constitute a lasting asset from which they themselves and their children could benefit. The desire to provide for one's children was said to be an important reason for taking a block. Moreover, when their children were well provided for, the holders thought that they themselves would be looked after in their old age, partly with money derived from the block.

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1 Luluai, or village headmen, and tultul, their deputies, were appointed by the Administration. By 1971 they had been largely superseded by elected local government councillors. Councillors are assisted by ward komiti.
The holders felt that land was a more secure source of income than other enterprises open to them like carpentry, plumbing, or running a bisniskar. In their view cash crops, unlike these enterprises, continued to yield even when the grower was temporarily absent or ill. On the other hand, a bisniskar operator depended on others for work and had to spend some of his profits on repairs. Also, these types of enterprises did not allow one to provide for one's children since they might not be able to acquire the skills necessary to manage them.

Some of the pre-settlement fellers told me that they had been impressed with the fertility of the soil in the Hoskins area. The favourable growth of food crops planted during the pre-settlement felling period persuaded many men to apply.

The block-holders referred in Pidgin to managing a block, and also to the other types of enterprises mentioned above, as having a bisnis. This concept has a range of connotations, not all identical with those of the English 'business', from which it is derived. Sankoff, who first wrote about the concept and the importance it had for some Papua New Guineans in the Morobe District, stated (1969:72) that it refers to 'involvement with the cash economy in virtually any capacity other than that of wage earner'. Kapore settlers used the concept in the same broad sense. The status of an independent producer strongly appealed to them. They criticised the Nakanai, the name by which they referred to the original inhabitants of the settlement area, for working for wages when they were in need of money, rather than growing cash crops or conducting some other form of bisnis.

1 Usually a truck or a van, officially licensed to carry passengers and cargo and mostly operated by Papua New Guineans.

2 The settlers' use of this term differs from the practice followed by Chowning and Goodenough (1965-66:412-16), who refer with the term to the speakers of the Nakanai languages. In the Hoskins area only the Lakalai are Nakanai speakers. Their westernmost settlement is Kwalakessi (see Fig. 3.1). Closer to the settlement area there are speakers of two other languages, Kapore and Xarua. There is great similarity of culture among Lakalai and Kapore speakers, but maybe less so between Lakalai and Xarua speakers (i.e. personal communication: A. Chowning, September 1971). The settlers treated the Nakanai as culturally homogeneous. In some cases I will compare their comments with those of Chowning and Goodenough, but I cannot be certain that the comparison applies equally well to the Xarua speakers.
Bisnis had sociological as well as economic associations. The settlers were intent upon acquiring the affluence displayed by Europeans in Papua New Guinea and bisnis was for them the prime means of acquiring the money on which this affluence was based. The settlers felt that the arrival of the Europeans and their rule in Papua New Guinea had started a radical but welcome transformation of indigenous society which was still far from being completed. The Europeans were still most prominent in this new society and only they knew how to derive economic benefits from it. The settlers felt that Papua New Guineans would gradually acquire the knowledge and status to which they were entitled. In their view an important, if not the most important, task of the Administration was to help them become full members of this new society. In their view many Europeans gained their affluence through managing a bisnis and the settlers wanted to imitate them. Because being a bisnisman showed that the operator had gained insight into the workings of the new, European-inspired society, running a bisnis was prestigious and as such had become an end in itself.

The Kapore holders saw their oil palm holdings as the foundation upon which they could widen their bisnis undertakings. Most wanted to bring their entire block under palms with the help of some assistants to be paid out of the proceeds of the cultivated part of the block. At the same time they wanted to start other bisnis. This tendency to engage simultaneously in several enterprises has been reported from several areas in Papua New Guinea. A.L. Epstein (1969:82) mentioned that what emerges most clearly perhaps from this survey of the contemporary Matupi economy is the wide range of productive activities in which the islanders engage, providing them with a multiple source of revenue.

B.R. Finney (1969:29) reported that big-bisnis-men in the Goroka subdistrict of the Eastern Highlands 'branched out' from agriculture into other enterprises, and ex-servicemen block-holders in Situm and Gobari also regarded this procedure as desirable (Ploeg 1971:30-4).

Most Kapore holders answered my question: 'What do you want to do with the money you will derive from the block?' with 'I want to start such and such a bisnis' or 'I have not yet decided which bisnis to start'. They seemed intent upon reinvesting their money. They severely censured the Nakanaï not only for selling their land rather than using it for cash cropping but also for spending the money they had received for it on consumption goods rather than using it to establish bisnis. Salisbury (1970:267) wrote that the Vunamami made a sharp distinction...
between bisnis (a mode of production in which the produce is reinvested) and kaikai\(^1\) (a mode of production in which the produce is consumed). A large proportion of bisnis revenue was reinvested although Salisbury noted that, as was to be expected, part was consumed. While the Kapore holders were obviously interested in reinvestment, other remarks made it clear that they were also eager to spend, notably on travel, housing, furniture, clothing, and alcoholic drinks.

In Situm and Gobari I attributed the tendency simultaneously to undertake several bisnis to the desire for cash and a sense of achievement and prestige, which the settlers might have derived from European businessmen like planters who often undertook more than one bisnis. Similar considerations applied in Kapore, but two holders also mentioned that Papua New Guineans had to resort to multiple bisnis undertakings so as to more quickly reach the European level of affluence.

In addition to their agricultural bisnis, most holders wanted to establish tradestores, carpentry and plumbing workshops, and to run bisniskar. Many wanted to establish these bisnis in their home areas and to live alternately there and in Hoskins. In their absence their bisnis would be looked after by their grown-up children or by managers. The leader of the Dagua settlers said that while they were developing their blocks during their seven years' residence in the settlement, as prescribed by the lease conditions, roads would be built to open up their home area in the mountains southwest of Wewak, so they could later return and start developing their ancestral land.

The wish to return to their home areas may run contrary to the Administration's conception that the settlers' move meant a firm break with their former way of life. However, the idea that they had not committed themselves exclusively and permanently to living away from their home area may facilitate their adaptation to the new physical and social environment. Also, the wish to return may become weaker the longer the holders reside in the settlements, or they might find it impracticable to maintain bisnis enterprises in two parts of the country.

Holders also saw opportunities to establish bisnis in the community centres of the settlements. They realised that the growing income of their co-settlers was likely to increase the demand for goods and services and they wanted to take advantage of this. Tolai, especially, felt that in Hoskins they would face less competition than in the Gazelle Peninsula.

\(^1\) Pidgin for 'food' and 'to eat'.
Preparation and initial development of the Hoskins settlements

Eivers (1969:6-7) mentioned the difficulties experienced with early resettlement schemes due to the absence of education and health services, inaccessibility by road, delays in granting and processing development loans for block-holders, and absence of agricultural staff exclusively concerned with one project. In Hoskins, however, the establishment of the separate settlements was carefully prepared by means of a critical-path-type network and extension work in the settlements was the exclusive concern of the agricultural staff appointed. ¹

The establishment of the settlements was the joint responsibility of the Lands Department, which surveyed and subdivided the settlement areas, advertised the availability of the blocks and, with representatives of other departments, selected the successful applicants for blocks; the Department of Public Works, which constructed roads, schools and staff housing; the Development Bank, which processed development loan applications; the Departments of Agriculture, Education and Health, which appointed, respectively, extension staff, school-teachers, and aid-post orderlies; and New Britain Palm Oil Development Ltd,² which provided seedlings.

To ensure the implementation of activities as planned, two co-ordinators were appointed, a headquarters co-ordinator, working both in Port Moresby and in Hoskins, and a field co-ordinator, working in Hoskins. The former was attached to the Department of the Administrator,³ the latter to DASF. An important function of the field co-ordinator was to close a circuit of communication leading from the headquarters co-ordinator to departmental representatives at, successively, central, regional and district levels to the field co-ordinator so that progress made and difficulties encountered in the field were reported back to the headquarters co-ordinator.

¹ See also Natera (1971).
² As mentioned by Longayroux (p.3), this company owns two subsidiaries, Mosa Plantation Pty Ltd, concerned with the central estate, and Mosa Oil Mill Pty Ltd, concerned with the mill (Palm Oil Industry (New Britain Agreement) Ordinance 1967, Schedule, s.3). Below I refer to this company and its subsidiaries as 'the company'.
³ Even before the administrative reorganisation referred to on p.30n.
From 1967 to 1971, between 200 and 400 blocks were made available each year (Papua New Guinea Department of Information and Extension Services 1970). The average size of the blocks was 17 acres, about 15 acres of which were suitable for oil palm cultivation. The preparatory stages for each of the five groups of blocks were timed at intervals of about twelve months. The availability of blocks for leasing was gazetted around October and in January of the following year the Land Board started interviewing applicants. The selected block-holders took up residence on their blocks in June or July, by which time the physical layout of the settlements was finished; six acres of each block were felled, and tools, house-building materials and food crop seedlings ready to be handed out. The settlers' families arrived in late August or early September, and in November, just before the beginning of the wet season, oil palm seedlings were taken from the nurseries and transplanted on the blocks. Because the forest on six acres was already felled, the settlers did not have to fell forest for their first food gardens and oil palm plantings. However, the burning and clearing were left to the holders. They were discouraged from interplanting the palms with food crops, although such planting, if not continued, need not harm the growth and later production of the palms (Hartley 1967:361-3).

In Kapore this work programme was successfully carried out and contributed greatly to the rapid initial development of the blocks. The settlers themselves planted ahead of schedule: instead of planting eight acres of oil palm in three years, most settlers finished the job in two. Because most settlers planted their oil palm and cover crop at the same time, extension work was less time-consuming than if they had started planting at different times. The latter is likely to be the case when travel to the settlement is less rigidly organised and settlers themselves have to clear their blocks. Finally, most settlers faced the same cultivation problems at the same time and this may have contributed to their feelings of togetherness.

In Hoskins settlers can expect their first income about three years after taking up residence. This is not merely due to the short maturation period of oil palm, but also to the rapid development of blocks and the fact that the seedlings were about one year old when transplanted. The shorter the period between taking up residence on the blocks and receipt of first returns, the better. In Situm and Gobari the settlers had not yet received any returns from copra six years after the settlements had been established. They had become extremely weary of waiting and their morale deteriorated.
Plate 5. The company nursery.

Plate 6. A block with young oil palms (the *pueraria phaseoloides* cover crop is already well established)
Plate 7. Kapore community centre at the time of the settler's arrival. The three school-buildings on the left were used at this time as dormitories for the block-holders. The house on stilts is the didiman's residence; to its right is the house of a junior (indigenous) official. The two closely adjacent buildings in the lower right are the medical aid post and the didiman's office and storeroom. The partly visible building in the right-hand bottom corner is the market hall. At the top is the cleared part of some blocks. At the cross-roads patches are cleared for house construction. The partly visible house is used by DASF labourers.
Moreover, both in Situm and Gobari and in Kapore I observed that during this period block-holders had to be regularly prompted to maintain the area planted to palms. In Situm and Gobari the slackening of effort during this period followed intensive efforts during initial development (Ploeg 1971:7,28). Irwin (1968:8) observed the same trends in the Murua settlement near Kerema in the Gulf District.

In many respects the settlements form separate entities. Each has its own community centre containing a school, aid post, meeting and market hall, co-operative store, agricultural extension office and staff accommodation. In Kapore playing fields were established in 1970. The centres are only partly developed so far (see Fig. 3.4). The internal road system seems to have been designed primarily for the transport of oil palm fruits, and only secondarily for the movement of the settlers. While the strips set aside for road construction were one chain (twenty-two yards or about twenty metres) wide, the roads themselves were, until mid-1971, so narrow that, while driving around in a small car, I often had the embarrassing experience of forcing cycling settlers to jump off their bikes when I wanted to pass or overtake them. This situation grew worse as the number of bicycles owned by settlers gradually increased. While all blocks were situated along a road, the network of roads was such that especially the settlers in the northwestern part of Kapore could not reach the community centre without making a lengthy detour. There was an unofficial shortcut for pedestrians, but the lessee of the block concerned closed it off since passers-by tended to damage the oil palm fronds which almost touched each other (see Fig. 3.3). Until 1971 there was only one bridge across Marit Creek, because construction of other ones was deemed to be too expensive. The estimates considered, however, were for vehicular bridges. In 1971 a group of settlers led by Yaubem, the komiti bilong komiti, who were mostly living in section seven (see Fig. 3.3), offered to construct a bridge if the Administration assisted with transport and material. Their representation was readily received by the didiman who had been considering the construction of some form of crossing to facilitate transport of the harvest. As a result, a culvert suitable for vehicular traffic was ready before harvesting started in July 1971. At the same time the Administration widened the interior roads. For the future, parts of the

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1 In 1971 only one woman had a bicycle.
2 See p.52.
Fig. 3.4. Kapore community centre
vehicular roads should be set aside for pedestrians and cyclists, and narrow roads and simple bridges made especially for their use.

Settlers will probably be able to take up blocks for residential purposes in the community centre, but if all holders retain the leases over their blocks all will not be able to have dwellings there. Until 1971 there was only one enterprise in the centre run by a non-settler. The almost complete absence of such enterprises was in accordance with the wishes of the settlers, who wanted to establish their own businesses there. Some holders told me that the centre belonged to them, others said that it belonged to the Administration but was reserved for the use of the block-holders. Hence in 1970 they opposed the establishment of a second expatriate-owned tradestore there because it would compete with their own co-operative store and their children would have less opportunity to set up bisnis in the centre. Settlers said that many expatriate businessmen were only in Papua New Guinea to enrich themselves and to take the profits out of the country, rather than to help the indigenous population. They felt that this applied particularly in this case, because the storeowner apparently had not bothered about them while they were living off their meagre monthly allowances but had started establishing his store just before they were about to receive their first returns. They contrasted this behaviour with that of the expatriate owner of the first store which opened soon after the settlement was established. The settlers stressed that they would oppose the establishment of enterprises by indigenous non-settlers as much as expatriate-owned ones. However, their economic views were similar to those of Gorokans who have become increasingly concerned about the dominant position of expatriates in the economy of Papua New Guinea (B.R. Finney 1970).

Settlement staff were sympathetic towards the attitude of settlers regarding development of the community centre. In December 1970, for the first time, the Land Board met in Kapore to interview applicants for leases in the community centre and to hear other matters concerned with granting leases, so that the settlers could voice objections. The prospective owner of the second store to be established was interviewed by the Board, whose main objection apparently was that by deferring establishment of the store until mid-1970, he had not fulfilled the conditions under which the lease was granted. The settlers' main concern was the use of the community centre by outsiders, and when construction of the store building was halted, they felt that the Board had acknowledged their arguments. However, in late 1971 a final decision had not yet been made.
The teams of extension workers, who are officially known as rural development workers, include officers (mostly expatriates),\(^1\) and Papua New Guinean assistant officers\(^2\) and assistants\(^3\). The size of the teams depends on the size of the settlements. Once the settlements are established, the number in the team is decreased. Originally there were four extension workers in Kapore; one officer, one assistant officer and two assistants. Later the assistant officer's position became vacant, and in November 1971 the officer was replaced by an assistant officer. The teams are directed from a central station near the estate. There is a high density of extension workers, but not exceptionally high for a resettlement scheme (Chambers 1969:256 and Hunter 1969:172-3). The didiman who were posted to Kapore during my fieldwork were dedicated and hard-working and the success of the scheme so far owes much to their efforts. This was despite the fact that the previous training in Australia of the Australian rural development officers was not a very appropriate preparation for extension work in Papua New Guinea.

During my fieldwork, extension services centred on cultivation and maintenance methods rather than farm management and time allocation. Philipp (1970:4-5) pointed out that instruction in the latter was essential for the training of indigenous cattle operators and the same applies to cash crop smallholders. Many holders told me there was a lot of work involved in developing a block but they may have exaggerated the task because they did not know how to assess its size.

Moreover, extension work seemed to assume that the holders were to be the main workers on the blocks. This was not always so: several holders were skilled tradesmen and continued in their trade, either part-time or full-time. Most of them left the development of their blocks, partly or wholly, to kin or other helpers. While the presence of helpers was not favoured by the didiman, their number is likely to rise and maintenance and further development of the blocks will increasingly depend on them. Consequently the management of such helpers might profitably become a subject of extension work for the Hoskins block-holders.

To facilitate contact with the block-holders the didiman appointed komiti, or committee men. This was done on an ethnic

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1. With a diploma or university degree in agriculture.
2. With two years' training in agriculture after several years of high school.
3. With about one year of training in agriculture after primary education.
basis so that komiti acted as intermediaries between their wantok and the didiman. This system did not work, partly because wantok often lived in separate parts of Kapore and contacting them proved too time-consuming. Also, the didiman felt that the komiti often garbled the information they were supposed to transmit to their wantok. Hence they persuaded the settlers to divide the settlement into a number of sections consisting of contiguous blocks. In each section one komiti was elected. In Kapore eight sections were created with an average of 16.1 blocks. At the beginning of 1970 a komiti bilong komiti, or first committee man, was elected from among the existing komiti. This system was fairly successful. The didiman met regularly with individual sections, mainly for extension purposes, so the komiti had less to do in this regard. In addition to these meetings there were meetings of all the komiti and the didiman, several of which I attended. They were called by the didiman and the komiti did not hold meetings on their own initiative without the didiman being present. During the meetings komiti were sometimes openly critical of the Administration and made suggestions, mostly unrealistic, for improvements. The better-informed didiman pointed out the difficulties and most of the suggestions were dropped. This situation is difficult to avoid, yet it might well lead to feelings of frustration among the komiti and consequently the other settlers. Hence it would seem desirable that the didiman try to implement, possibly in some modified form, the komiti's ideas.

Several sections initially organised working parties and other communal undertakings but they did not develop into lasting units of social interaction. The failure to continue communal undertakings was often attributed to the lack of cooperation from non-wantok in the various sections. The sections did acquire some significance as a primary means of identification although often probably in a geographical sense only. Moreover, the komiti gained a role in settling disputes between settlers, either because they themselves were skilful in this regard, or because they reported disputes to a local government councillor, or to Yaubem, the komiti bilong komiti, who was considered one of the best dispute-settlers in Kapore. Early in 1971 the komiti were again engaged in extension work.  

Incorporation of settlements in District administration

In his discussion of settlement schemes in Africa, Chambers (1969:188ff.) devoted emphatic attention to what he called

1 See p. 98.
'island' schemes: relatively small settlements in isolated areas which exist as separate settlements for a long time. Staff express their 'island' attitudes in their possessiveness with regard to the scheme and are inclined to regard themselves as the sole agents entitled to deal with it. The settlers' feelings of separateness may be expressed in a hostile attitude towards the original inhabitants of the area. Hence island schemes are characterised by a lack of 'close contact with district level organisations, both administrative and political' (Chambers 1969:191).

The oil palm settlements were not island schemes although they showed some elements of separateness from the environment. They formed separate geographical units, distinct from the Nakanai villages, while there were very few Nakanai among the settlers. The Nakanai villagers, however, who were growing oil palm were subjected to much the same regimen as the settlers were. They received approximately the same amount of supervision and were supposed to live on the blocks they were allocated. These blocks were situated on traditionally owned land but may later be brought under individual tenure.

In the settlements the didiman were the most conspicuous representatives of the Administration. Due to staffing difficulties there was no kiap permanently resident in the settlements and never was more than one resident. Consequently the didiman, in their day-to-day dealings with the settlers, handled matters which otherwise would have been handled by kiap. The didiman were often the first Administration officials to be informed about quarrels among the settlers. Usually, however, these were solved either by the settlers themselves or by the Assistant District Commissioner in Hoskins.¹ The Local Court Magistrate, initially posted to Talasea and later Kimbe, since 1969 the District's headquarters, did not regularly visit the settlements, partly because of pressure of work and partly because of communications difficulties (an all-weather road to

¹ Papua New Guinea is divided into a number of Districts, each subdivided into subdistricts. A subdistrict is headed by an Assistant District Commissioner (ADC), a District by a District Commissioner (DC). The Deputy District Commissioner (DDC) is second in command in a District. Papua New Guineans refer to field officials of the Department of the Administrator at all levels as kiap. Many kiap are also part-time magistrates and preside over Local Courts empowered to deal with minor civil and criminal matters (Young 1971:57-8). If they so desire, they may leave matters to be settled by full-time Local Court Magistrates.
Kimbe was still not finished in early 1972. The agricultural extension staff formed a separate administrative entity under the headquarters co-ordinator while the settlements were being established. Later they became a regular part of DASF.

The wide role of the didiman in settlement administration seems to have been one of the less satisfactory aspects of the project. It resulted from the fact that the loan of the International Development Association,¹ which helped finance the project, only provided money for the purely economic side and not for welfare aspects so that the settlements had to compete for scarce finance and personnel with other parts of the District. If a welfare officer had been seconded to the project from the beginning, the establishment of sporting fields and clubs, for instance, might have promoted communication among settlers. The block-holders could have made the fields communally after they had built their houses and established their food gardens, but before their families had arrived. They were still living communally in the community centre then and the inclination for communal work which seemed to lapse later may still have existed. There will be an even greater need for welfare services once the settlers start receiving returns from their oil palms.

Similarly, if a co-operatives officer had been concerned with the project from the start the co-operative stores in each of the settlements would have received more supervision and attention. As it was, these tasks were an additional burden for the didiman. During fieldwork in Kapore in 1970 neither the didiman, the indigenous directors, nor anybody else in the settlement knew how profitable the store was. In 1971 the situation improved after the arrival of a block-holder with extensive clerical and bookkeeping experience. Good profits could be made on these stores and if their success were publicised, interest in the venture and confidence in the possibility of interethnic co-operation would increase.

The didiman also represented the Papua New Guinea Development Bank in the administration of the block-holders' development loans. Much of the time of one of the didiman was taken up by this work so perhaps a bank officer should be seconded to the settlement staff.² The Hoskins holders formed a con-

¹ The Association is an affiliate of the International Bank for Reconstruction and Development, i.e. more commonly known as the World Bank, and its special task is to finance development projects in developing countries.
² This is at present (April 1972) under consideration.
Plates 8. The interior of the settlers' co-operative store

sizable proportion of the Bank's borrowers. By June 1970, for example, 950 of the Bank's 2,718 loans were to Hoskins holders. Their total allocation was $1.75m or 13.5 per cent of approved loan money for that year (Papua New Guinea Development Bank 1969-70:6).

The settlements were situated in an isolated part of the country, but isolation became less marked as the scheme was implemented and Administration publicity was given to this large-scale attempt at rural development. Hospital and education facilities were improved, the road network was upgraded and expanded, several bridges were built, the Hoskins airstrip was enlarged and air services increased and the first sizeable wharf in the area was constructed. It is likely that these improvements would have been effected in any case, but
at a much slower speed. Finally, considerable numbers of visitors have come to Hoskins and Kimbe to see the scheme.

'Island' symptoms were most pronounced in the relationships between the settlers and the Nakanai. The settlements were included in the Hoskins Local Government Council area and in 1972, when all settlements are established, the settler-councillors will form a large minority on the council. Kaporé was divided into two wards in which separate elections were held. To emphasise the unity of the settlement, it would be preferable to make it into a single ward electing two councillors. The settlers, however, tended to look down upon the Nakanai and many favoured separate councils for the two groups.

Development loans

As is usual in resettlement schemes, the holders received a loan from the Papua New Guinea Development Bank for the development of their blocks. Specific parts of the total loan sum were allocated to specific purposes, as shown in Table 3.4.

Table 3.4
Development loan for oil palm smallholders

<table>
<thead>
<tr>
<th>Purpose of funds</th>
<th>Year during which money is made available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>House-building materials</td>
<td>350</td>
</tr>
<tr>
<td>Subsistence allowance</td>
<td>140</td>
</tr>
<tr>
<td>Living allowance</td>
<td>96</td>
</tr>
<tr>
<td>Tools and equipment</td>
<td>60</td>
</tr>
<tr>
<td>Planting material</td>
<td>135</td>
</tr>
<tr>
<td>Pest and disease control</td>
<td>12</td>
</tr>
<tr>
<td>Rental</td>
<td>14</td>
</tr>
<tr>
<td>Legal and loan fees</td>
<td>18</td>
</tr>
<tr>
<td>Pre-settlement felling</td>
<td>75</td>
</tr>
<tr>
<td>Removal expenses</td>
<td>100</td>
</tr>
<tr>
<td>Contingencies</td>
<td>190</td>
</tr>
<tr>
<td>Annual expenditure</td>
<td>1,190</td>
</tr>
</tbody>
</table>

* The maximum amount available to holders was $1,870.

1 This seems to be possible on the basis of s.15 of the Local Government Ordinance 1963-70.
2 See further p.92ff.
The years referred to in Table 3.4 were the four successive periods of twelve months following the grant of the loan. For most Kapore block-holders these periods ran from March 1968 to March 1969, and so on. The loans resembled those awarded to smallholders by the Native Loans Board (Smallholder Sole Coconut Budget 1965), the predecessor of the Development Bank, except that the Board made no money available for contingencies or pre-settlement felling and a much smaller amount for house-building materials.

These materials consisted of the parts of a standard model house of sawn timber with a corrugated iron roof. The roof covers two square rooms of 10ft by 10ft and an open breezeway of 10ft by 20ft. Rainwater is collected from the roof in a 600-gallon tank. When I first did fieldwork in Kapore in September 1969, settlers, especially those with small families, were content with these houses but those with larger families felt they had to build extensions. The frequent presence of co-resident assistants contributed to the overcrowding. Many settlers regarded the houses as transitory and planned to build better ones. I was surprised, however, to hear the very negative opinions about these houses which the settlers expressed during the visit of the United Nations Trusteeship Council Mission in February 1971. Then it seemed that they were very anxious to live in larger and more expensive houses and described their present dwellings as fit only for animals. While it is true that the houses were small and elementary, they were an improvement on houses in Situm and Gobari settlements (Ploeg 1971:35), where many holders had to spend the first six months in what they described as summarily built shacks. When I started fieldwork in the latter settlements, almost six years after they had been established, several holders were in the process of building their third house. Especially for Chimbu settlers the Kapore houses were an improvement on their houses in their home areas. In the Hoskins settlements large families should be provided with larger houses, and corrugated iron supplied for the roofs of cook-houses and latrine buildings. There was little roofing material available around the settlements. The use of *kunai*\(^1\) was strongly discouraged and most settlers had used scrap corrugated iron for roofing. The provision of larger houses would probably necessitate a slightly higher loan, although existing loan funds could be

\(^1\) *Imperata cylindrica*, a grass species, is an undesirable plant in newly established plantations because it tends to crowd out other species and may hamper the growth of the young plantation crop. In Papua New Guinea it is widely used for thatching roofs, but the *didiman* feared that if it was so used in the settlements, seeds might be brought in and the grass established.
used for the corrugated iron. Most holders had built separate cook-houses and several had started improving the house, usually by flooring and walling the breezeway.

The subsistence allowance which was paid during the first six months enabled the holders to buy food before their gardens came into production. Part was used for subsistence purposes, the rest as a living allowance. Although the didiman explained to the settlers for what purposes the allowances were paid, false impressions were created about the size of future payments. During my stay in Kapore payment of the subsistence allowance was discontinued and people complained about the smallness of the living allowance, then $8 per month. They made several unsuccessful pleas to Administration officials for an increase. The allowance was indeed small, especially because, as the settlers' diet was inferior to the one they were accustomed to in their home areas, they needed to buy food. In Kapore the settlers were actively discouraged from keeping pigs, so for their animal food supply they had to buy pigs from the Nakanai or buy tinned meat or fish, all largely beyond the means of many holders; hunt and fish, which did not yield much; or keep chickens, which most holders did but not in large numbers. The few coconut and betel palms the holders had planted were still too young to bear fruit. They had not planted many because officials feared that the young palms might be damaged by an insect pest which breeds in coconut palms. Settlers, particularly those from coastal areas, wanted to buy betel nuts and coconuts from the local population but they had only limited supplies of money.

Another factor underlying the complaints of many settlers about the small cash allowance was that they had been accustomed to a relatively high level of income. This was especially so for the skilled tradesmen and successful cash cropers, mostly Tolai, who had difficulty limiting their expenses to $8 a month. As a result they took up their trade, sometimes neglecting their blocks, or left for their home areas to obtain money from their cash crop holdings. This was not favoured by the didiman.

Finally, holders said they preferred to receive the living allowance in larger amounts, perhaps in two-monthly or three-monthly payments rather than monthly. Holders might run out

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1 Personal communication: W.F. Straatmans, July 1972.
2 Pigs could damage the young palms while foraging. In Situm and Gobari pigs were kept in enclosures but often managed to break through the fences.
3 See p.65.
Plate 9. A settler's house

Plate 10. The same house seen from the side of the breezeway. The settler has built a floor in the breezeway and has started to wall it in. Unlike most cases, cooking is done in the house. An open wood-fire is built on a metal plate on the floor of the breezeway and firewood is stored underneath.
of money long before the next payment, but this would be their own responsibility and many would derive satisfaction from having a greater say in handling their own financial affairs. Many block-holders save sande, an arrangement whereby one or more holders hand over their monthly allowance or part of it to a fellow holder, who will return the money during the following months. This arrangement is also practised in urban areas by wage-earners. The holders said they did so because the allowance did not enable them to purchase the goods they deemed essential. Hence, they said, a holder who received several monthly allowances simultaneously would be able to buy a reasonable amount of food and clothing for himself and his family. I could not ascertain whether this information was correct, or whether people might use the money for larger, occasional purchases. The latter seemed likely to occur when a holder told me that he wanted to use it to pay for the air-fare to Chimbu of his kin-helper.

Two-monthly or three-monthly payments of the cash allowance would also mean less time-consuming administration, a more powerful sanction on poor standards of work if they are withheld, and a clearer distinction between payment of the living allowance and the monthly payment of wages to plantation labourers. The tools and equipment for which money was allocated included such items as plates, spoons, cups, blankets, mosquito nets, an axe, bush knives and grass knives. Together they formed a very elementary set of utensils for a farmer and his wife and children, while many settlers owned a very extensive range of utensils. The set handed out seemed to have been assembled on the assumption that the settlers and their families were not only the units of production but also the units of consumption, which, in Kapore, was not the case. In addition, while a bachelor/block-holder received one plate, one cup, one blanket and so on, no block-holder received more than four of each item irrespective of the size of his family. The money spent on these items could have been better used to provide corrugated iron or other material for roofing cook-houses and latrine buildings.

The removal expenses were the costs incurred by the holders for their own and their families' travel from their former residences to the settlements.

Of the loan money only the living and part of the subsistence allowances were handed out in cash; the remainder was paid in kind. The rate of interest on the loan was 6 per cent and it was added

1 Gutkind (1965:55) reports the existence of a similar arrangement among Africans in Mulago, Uganda.
2 See p.64.
to the main sum on a semi-annual basis.³ Repayments were to be made through deductions by the oil palm company from the amounts payable to holders for the fruit they delivered. The Bank set specific minimum amounts to be paid during specific quarters. If these amounts are less than 50 per cent of the total amounts due to the holders, the Bank can require them to repay the loan in amounts larger than the minimum ones, provided these amounts do not exceed 50 per cent of what the holders are entitled to from the company. Table 3.5 lists loan repayments as planned, and estimated net returns.

Since in Kapore the development of the blocks has proceeded more rapidly than assumed in the schedules shown in Table 3.5, the amount of money actually taken up by the holders may be less than the maximal amount, while repayments can start earlier.⁴ Hence Table 3.5 gives only a rough approximation. It does show, however, that when the repayments are started, the minimum amounts to be paid are appreciably smaller than 50 per cent of the estimated gross returns.

Many holders mistakenly thought that they had borrowed $1,870 rather than the amount they had taken up. Accordingly they were reluctant to refuse any of the goods and money advanced because they thought they would have to make repayments for them anyway. This idea persisted even though the Bank distributed dockets to individual settlers stating how much of their loan money they have taken up. Similarly settlers who had not received their monthly allowance because their blocks were considered to be in a poor state, were concerned that they nevertheless would have to make repayments for it. Very few block-holders were able to calculate for themselves how much money they had borrowed and how much they had to repay, so they will have to trust the Development Bank in this respect. Finally, while most settlers knew that they would have to repay more than they received, many did not realise that, given an annual rate of interest of 6 per cent, repayments might be as high as 150 per cent of the loan sum. Several holders spoke about the interest as if it were a gift in return for the financial advances provided by the Bank, and as if the size of this gift was to a certain extent to be determined by themselves.

³ The normal rate of interest on Development Bank loans was 5½ per cent but is likely to be increased. The rate of 6 per cent in the case of the oil palm scheme is prescribed in the agreement between the Administration and the International Development Association and cannot be increased without prior consultation with the Association (IDA (Agricultural Development) Credit Agreement Ordinance 1970, first schedule, article 1, s.1.01).
⁴ But see also p.100.
Table 3.5
Loan repayments and estimated net returns*  
($)

<table>
<thead>
<tr>
<th>Year</th>
<th>5**</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated returns after deduction of operating costs**</td>
<td>121</td>
<td>445</td>
<td>814</td>
<td>1,096</td>
<td>1,305</td>
<td>1,417</td>
<td>1,424</td>
</tr>
<tr>
<td>Loan repayments as planned</td>
<td>21</td>
<td>251</td>
<td>435</td>
<td>576</td>
<td>681</td>
<td>737</td>
<td>167#</td>
</tr>
<tr>
<td>Estimated remaining net returns</td>
<td>100</td>
<td>194</td>
<td>379</td>
<td>520</td>
<td>624</td>
<td>680</td>
<td>1,157</td>
</tr>
<tr>
<td>Minimum repayments</td>
<td>0</td>
<td>100</td>
<td>400</td>
<td>560</td>
<td>560</td>
<td>720</td>
<td>628</td>
</tr>
</tbody>
</table>

* These figures were prepared by the Development Bank in association with project staff. They are conservative since they do not take into account the fact that the oil palm seedlings planted by the settlers shortly after arrival were over six months old. Accordingly harvesting started during the fourth year after resettlement. This meant that settlers had to take up a smaller amount of loan money and could start repayments earlier than planned. Both factors reduced the ultimate amount to be repaid.

** For most Kapore block-holders this year runs from March 1972 to March 1973. Repayments, as planned, will be completed halfway through the eleventh year, i.e., by September 1978.

*** Operating costs are estimated at $57 and include rental, and expenditure for equipment and pest and disease control.

# The estimated total amount to be repaid is $2,968.

Chimbu and Sepik settlers preferred a different method of repayment. They wanted to pool the money they received selling oil palm fruit bunches and to use it to clear the debt of one holder in one payment, or, as they put it in Pidgin, long wan san (literally, during one sun). In this way, they felt, repayment would be quicker than if the holders repaid their debts individually in small instalments. After I had explained that this would clash with the way in which the Bank
calculated the interest on loans (for the holder whose loan was paid first would officially have to pay much less interest than the one whose loan was repaid last), people admitted that this might be so but they expressed the hope that the Bank's policies would be flexible enough to allow its borrowers to follow the repayment arrangements they preferred.

Correspondence between the Bank and the settlers was almost entirely in English and usually in complicated legal English. Hence most settlers only knew about the Bank's communications through oral information and their memories of this oral information. This unsatisfactory situation could be partly improved by the adoption of Pidgin or Motu in correspondence with settlers.¹

All, or almost all, holders received development loans regardless of their financial situation. From the comments of several block-holders they appeared to think this was a deliberate policy, although it would seem desirable that holders rely as much as possible on their own funds. This would not only save the Development Bank's resources but would reduce the amounts the holders ultimately had to repay. I know that several settlers possessed private funds, originating from earlier economic activities, and probably many more did since the propensity to save was one of the characteristics the Land Board favoured in prospective block-holders.

Administration officials felt that holders' private funds were not really individually owned so that, if they were spent on development blocks, outsiders with title to the money might establish claims to the blocks or their returns. While some savings may not have been individually owned, I doubt if this was a general phenomenon. Also, the present system of providing all or virtually all holders with loans did not prevent expenditure of personal savings.

Settlers' private funds would have been increased if they could have sold some of their belongings before moving to the settlements. This was particularly so with pigs which often were given away or slaughtered for farewell parties. Several Chimbu settlers told me that they had given away more than twenty pigs. These figures may be exaggerated, but even if a future settler sold only three or four pigs he would increase his cash funds considerably. However, since selling to co-villagers may be socially unacceptable, DASF personnel could act as brokers, although this role might be considered inappropriate and staff shortages might make the suggestion unworkable.

¹ Annual reports of the Bank are written in English, with a Pidgin summary.
Reactions of settlers and settlement staff

After they had finished planting in late 1969 the holders became increasingly weary of waiting to sell their first fruit bunches. They were anxious to sell and even more anxious to know what income their fruit bunches would bring. They were puzzled by the requirement to pick and discard the first fruit bunches their palms produced. It was explained to them that these bunches were of poor quality and that their removal would promote the quality of later bunches (Hartley 1967:434), but they were afraid that this would delay the receipt of their first returns. Most settlers had come to Hoskins in the hope that oil palm would be an extremely profitable undertaking. They had been told, or believed they had been told, that this was so but felt they might have been cheated. Not being sure about their returns, they were reluctant to spend too much effort maintaining their blocks. Anyway, their opinion about what was a reasonable standard of maintenance might have differed from that of the didiman. As a result many settlers were subject to repeated prodding by settlement staff. Several told me that they were like labourers on a plantation run by the Development Bank with the didiman acting as bosboi. They said they disliked their lack of independence, which is the more understandable since many had been independent and successful farmers before. The resemblance perceived between the settlements and plantations may have been facilitated by the monthly payment of both the settlement living allowance and, generally, plantation wages. Hence I argued above that the living allowance should be paid out at a different interval.

The didiman realised the undesirability of interfering too much in the lives of the settlers and tried to avoid it. Yet the settlers felt they had become part of a rigid organisation which they were unable to change appreciably. It is incorrect to blame the didiman for the regimentation since this was probably unavoidable in a resettlement scheme like the Hoskins one. Hunter (1969:163) commented that 'in many cases they are an awkward compromise between a plantation and a settlement', and this makes them less attractive as a means to promote cash cropping.

The holders felt they lacked security of tenure and they were concerned about this. They were aware that the Administration could remove them from their blocks (but not of the legal restrictions under which it would have to operate) and consequently were afraid they could be summarily evicted. In 1969 there were rumours that the whole scheme was a fraud and was really designed to help the Administration take over a large
plantation with the help of what the settlers felt was cheap labour. By 1970, however, these rumours had died down. In early 1971 new suspicions arose when the settlers thought that the soil in the company plantation received better fertilisation. In fact, there were differences between the fertilisation programmes in the smallholder settlements and in the plantation. Although officials said that the differences were unlikely to result in greater yields in the plantation and although poor yields in the smallholder settlements were not in the interests of the company since it also processed the fruits, it was understandable that the settlers were concerned. Six months later, however, just before the first harvest, settlers felt that their fruits were of better quality than those on the estate, since the plantation labourers there were reputedly not as diligent as themselves. Although the occurrence of such suspicions is regrettable, it might well be impossible to avoid them altogether. Chambers (1969:161) observed that the more closely a settlement is controlled, the more likely it is that the settlers will regard it with suspicion.

In 1970 the Administration made its first effort to evict a Kapore holder and his family who had left their block unattended for almost six months. The Development Bank declared that the holder, by not maintaining his block, had failed to fulfil the loan conditions and it reclaimed the money it had advanced. In case the holder could not repay, which was most likely, it intended to foreclose. On hearing of the Bank's action, the holder returned to his block, refused to leave it and started to bring his plantings into good order, helped by wantok. Given his apparent desire to hold on to his lease and to develop it, a court procedure to obtain an order to make him leave his block would probably have been unsuccessful, so the Bank dropped its action. Although many of his co-settlers felt that the holder, by his long absence, had only himself to blame if he lost his block, they did support him against the didiman and the Development Bank by helping him on his block and pleading on his behalf. While this case probably removed some of the insecurity the settlers felt over the terms of their tenure, I am not sure to what extent this was so. When I left Kapore in 1971 no settlers had been evicted. The Development Bank decided that it would warn negligent holders in advance that they would be required to repay their loans if they did not improve their blocks. In the cases of which I have knowledge the warning was given six months in advance.

This procedure is less complicated and time consuming than the alternative procedure whereby the holder forfeits his lease, as described in s.54 of the Lands Ordinance 1962-66.
One of the purposes of resettlement is to raise production and, because of the large investments involved, it should be possible to remove unproductive block-holders.\(^1\) Apparently in the Hoskins scheme eviction procedures had not been worked out beforehand, exemplifying Apthorpe's point (1968:11) that

\[
\text{...there is on the part of Government planning also, a tendency to underrate - or even not to consider at all - the need for sanctions, the need to plan for 'failure of the system'.}
\]

In planning an eviction procedure, legal advice should be sought. In addition to administrative and juridical difficulties, however, eviction also elicits great resentment among the block-holders. Several told me that they would refuse to leave if the Administration tried to take over the block to benefit from their efforts. On the other hand, one assistant told me that he would like to get a block in Kapore after its holder had been evicted. He even had a specific block in mind, then not well maintained. Apparently he thought that its holder and his family, after eviction, would be escorted to their home area by the Administration. This, in fact, might be desirable in such cases. One disadvantage of the forced removal of block-holders might be that they, once back in their home area, might spread false and unfavourable rumours about conditions in the settlements. This is the more likely because these holders might well try to avoid the shame they would experience when admitting to their wantok in their home areas that it was their own fault or incapacity which caused their removal. Such rumours might discourage others from applying for blocks in future settlements. I was told that this had happened in the Duke of York Islands, off the Gazelle Peninsula.

Early in 1971 settlement staff started to investigate the possibility of replacing unsatisfactory settlers, of their own accord, by one of their close kin. Such action would be less likely to lead to tension between the new and the former holders. However, as it was difficult to find a kinsman both agreeable to the holder and willing to take over his block, no such replacement had been effected by late 1971.

Like the settlers, senior settlement staff might also have felt caught in a tight organisation. Their task was to ensure that the settlers planted and maintained their eight acres of oil palm, in other words they had to implement the obligation the Administration had undertaken when it obtained credit from the International Development Association that settlers would

\(^1\) Cf. Crocombe (1968:89).
plant at least 12,400 acres to oil palm by June 1975 and would maintain and harvest these palms.\textsuperscript{1} However, they had little control over settler selection.

Extension work in settlement schemes was not only advisory, but also supervisory. Chambers (1965:156-7) distinguished three sets of attitudes among settlement managers:

During the colonial period...managers were usually in sympathy with a colonial-paternal set of attitudes. Later, near and after independence, especially with the young idealists [with which expression Chambers refers primarily to volunteers and indigenous staff (1969:145, 158)], a democratic-advisory set of ideas came to bear on settlement schemes but was moderated by what may be described as technocratic-disciplinary approaches to management, especially as pursued by foreign aid experts.

Chambers (1965:158-9) described the technocratic-disciplinary approach as follows:

[They] regarded themselves as technicians concerned, rather like managers of commercial estates or plantations, only with securing high production and high returns. To them settler representative bodies were analogous to trade unions, and settlers to labourers. They demanded high disciplinary powers to ensure the presence of settlers on the job, and easily applicable sanctions (including eviction) for failure to comply with instructions. At the same time the more complex schemes that were being introduced provided genuine justification for discipline on technical grounds. The high degree of authority previously vested in the white father figure [which Chambers associates with the colonial-paternal set of attitudes] could now be claimed on the basis of technological imperatives.

This description fits the approach followed by the didiman in the oil palm settlements, although the didiman were also concerned with community relationships. They demanded compliance with instructions in agricultural matters, felt that there was a certain lack of compliance, and then experienced a lack of

\textsuperscript{1} These obligations are embodied in the IDA (Agricultural Development) Credit Agreement Ratification Ordinance 1969, first schedule, article 4, s.4.10, part (b) and the IDA (Agricultural Development) Credit Agreement Ordinance 1970, first schedule, article 4, s.4.06, part (b).
power to do very much about it. The only sanction they could readily apply was to withhold the monthly cash allowance. Eviction was a matter for the Lands Department, which could cancel the loan agreement and, when the settler was unable to repay the outstanding loan sum, could foreclose the mortgage on the block. The didiman did not have the final say and they apparently felt that both the Development Bank and the Lands Department were more reluctant to proceed with eviction than they themselves were.

The didiman's perceived lack of participation in settlement administration could perhaps be eased by further co-ordination. First, a didiman could be appointed to the Land Board constituted for interviewing the applicants for oil palm blocks in place of a DASF representative not specifically concerned with the scheme. (Furthermore, during these interviews one or more established block-holders from Hoskins could also be appointed to the Board. Rotation would be desirable to ensure that holders did not decide on applications of kin or wantok.) These measures would also enable better communication with the Board about the performance of settlers selected earlier.

Secondly, the appointment of a staff member of the Development Bank, as mentioned, would provide the Bank with more intimate knowledge of the local situation and intensify communications with settlement staff.

Finally, the task of the co-ordinators was primarily to prepare and control the establishment of the settlements. Because settlements in the Hoskins project were established in five successive years, the co-ordinators were also concerned with the management of the earlier settlements during their first years. Officials envisaged that the experience gained with the earlier settlements would make the work of the co-ordinators less and less necessary during the first years of the later settlements, so that their task would be completed with the establishment of the last settlement. I would like to make two suggestions concerning these arrangements. First, when the establishment of a settlement is being prepared, activities originate mainly at headquarters and have to be implemented in the field. When the settlement is established, the main development takes place in the field and may have to be followed by action and co-ordination at headquarters. Consequently while in the preparatory stage co-ordination has to take place from headquarters, in subsequent stages this might better be done from the field, so that with the establishment of a settlement the task of the headquarters co-ordinator should be completed and the field co-ordinator could be given the main responsibility for co-ordination. He could then be given direct access to the various Administration officials in Port
Moresby concerned with resettlement. Secondly, while experience gained with the earlier settlements is likely to facilitate the management of the later ones, it seems doubtful if this would make co-ordination unnecessary. For this reason a co-ordinator should remain in office for as long as required.

The above instance illustrates the general principle that field staff should be given a very large say in settlement matters, for as Hunter said (1969:204-5):

It is not only that effective agricultural policy must be essentially local policy, to fit as closely as possible the physical factors, the population density, the stage of modernisation and attitudes reached locally. It is also that most really fruitful experiments, often capable of wider application, naturally emerge from local initiative - naturally, because they depend on the sensitive appreciation of local problems which only comes from immersion in them.

Ethnicity I. Quarrels between Tolai and Dagua settlers

The matters of most concern to settlers in addition to oil palm cultivation and the conditions of the resettlement policy, were the relationships, first, between settlers of different ethnic backgrounds and, secondly, those between settlers and Nakanaï. In 1970, when several brawls between groups of wantok occurred, the emphasis was upon interethnic relations between the settlers. While they were still of concern in 1971, the uneasy relations between settlers and Nakanaï came more and more to the fore. In the following sections I first present an account of the main events which took place in Kapore and during which interethnic relationships became controversial, and later discuss relationships between settlers and Nakanaï.

The first serious quarrel took place in March 1970, almost two years after the block-holders had taken up residence in Kapore. I was not present at the time and my account is based on oral information. The source of dissonance was an arrangement whereby school-boys of the top standards worked for one hour on a particular block whose holder would pay $1 to the school. As the money did not form part of the Parents and Citizens' fund,¹ the teachers could spend it without consulting

¹ This fund is raised by the Parents and Citizens' Association, usually referred to as the P. and C. In Papua New Guinea, following Australian practice, the parents of children of a particular school and other interested members of the community can form an association which raises funds to improve facilities and discusses developments in the school with the headmaster. It may also attempt to influence the implementation of education policies in the school.
the P. and C. Association. This type of arrangement was well known in the Gazelle Peninsula (Salisbury 1970:154-5) and the Tolai, above all, seemed to have favoured it. It was discussed and, the Tolai claimed, agreed upon in a P. and C. meeting. Elias, the recently appointed headteacher who was himself a Tolai, welcomed it for financial reasons. The previous acting headteacher, Karob, a Dagua man, had established the school. Since the Tolai and the Dagua were the main protagonists in the quarrels to be described, it was unfortunate that both men could be associated with opposing groups.

The arrangement was not put into effect for some weeks and finally Nason, a Tolai block-holder who was secretary of the P. and C. and an affinal relative of Elias, decided to have the school-children work on his block. This they did, but four Sepik settlers, spurred on by Maika, the most prominent Dagua man, who was then one of the two local government councillors in Kapore, objected and went to Nason's block to collect the Sepik children. Three of the men were from Dagua; the fourth, Nakom, was from Yangoru, in the marginal area between Dagua and Uarat.1 Nakom apparently told Nason that he was a lazy fellow. Most holders would consider this a serious insult and be deeply hurt. Elias, the headteacher, was embarrassed by what had happened and closed the school for the next day. Many of the Sepik settlers had not been present at the P. and C. meeting and some claimed that they had never agreed to the arrangement; others said that it had been discussed but never finalised. Maika said that the remuneration was too low and that the money anyway should go into the P. and C. fund.

The situation remained tense and culminated in a fight the following Saturday. The settlers' accounts of how this fight developed differed and I will not spell out the differences. Unless mentioned otherwise, the following account is by Tomas, a classificatory brother of Nason and then a section komiti, but not of either Nason's or Nakom's sections. According to Tomas, Nason came to his place and asked if he would go to Nakom's house with him to settle the trouble. Nason was somewhat drunk. The two went to Nakom's house, but there Nason and Nakom started to insult each other again and it came to a fight. Nakom had offered $2 to Nason as compensation for his earlier insults, but Nason had refused it, saying, as he told me, that this should have been offered in front of the local government councillor. Since he came with a komiti and with the avowed intention of settling the dispute, while a councillor lived not far away, this refusal seemed incongruous.

1 See p.26.
When the other Tolai heard that Nason and Nakom had been fighting, they assembled and went to Nakom's block and, according to most accounts, another and larger fight developed. A number of settlers tried to separate the fighters. Among them were Meli, the Tolai former councillor, Korul, who was a Chimbu and Meli's successor as councillor, and Yaubem, a Dagua and the komiti bilong komiti. During the brawl people hurled insults at each other and Maika, although absent, was a prominent target. Some of the remarks referred to sexual misdemeanors which the Dagua condemned very strongly. Nakom told me that he had already sensed that another fight was forthcoming when Nason refused his offer of $2.

Afterwards hostile feelings persisted. Men armed themselves, while women and children kept to their houses. Karob, the former headteacher, said that the situation had started to resemble the 1961 Rabaul riots in which two persons were killed and which he had witnessed while he was at school. He told me he had been afraid that the Nakanaï might join the Tolai to fight the New Guinea mainlanders, and that the fight might also extend to other settlements. But there was no more fighting and some time later, after the settlers had received their monthly allowance, a reconciliation feast was held on the suggestion of the didiman. Drinks bought by the Dagua and Tolai in the community centre were exchanged by the two groups before being consumed. Some people from other groups also attended. However, the occasion was not successful, partly because Maika was ill and unable to attend. He was not presented with drinks and, when he told me about it in 1971, he still seemed annoyed at what he regarded as a slight.

A sequel to the quarrels occurred a few months later, in June and July, while I was in the settlement. These troubles started on a Saturday afternoon in the community centre. There was a party in the house of Makoro, a Bougainvillian agricultural assistant, recently married to a daughter of Yaubem. Those present included Yaubem himself and a number of young Dagua men, including sons of both Yaubem and Maika. There was much drinking and the party was noisy and bright. Then Mikail and another Tolai settler came to Makoro's house and soon afterwards there was a fight between the feasting party and the two Tolai with several of their wantok. I do not know exactly what happened since the versions of the two parties differed. According to the Dagua, the two Tolai came to Makoro's house to quarrel with him, since he had criticised them for not maintaining their blocks well. Makoro and Yaubem tried to lead them away, but the other Dagua, claiming that the two men, helped by a third Tolai (a teacher living near Makoro) had started fighting, had chased them away. After this, they said, two other Tolai
block-holders, Meli and Tomas, had appeared and started fighting, but they also had been chased away.

The Tolai, and several other settlers, said that the Dagua had started the fight while Makoro and Yaubem were leading the two Tolai away, and had also attacked the teacher. The latter had not provoked the Dagua. While the fight was still going on, Meli and Tomas had appeared. The two men said that they had wanted to let the Dagua go back to Makoro's house to finish the trouble.

The young Dagua men, several armed with sticks, chased Meli who sought refuge in the house of the Chinese storeowner for whom he worked. I had left the community centre just before the trouble started and heard about the fight fifteen minutes later in the house of Korul, the Chimbu councillor. A teacher came to the house asking Korul to get the police because there was a fight going on. Korul decided to first consult Maika, the other councillor, since he had been criticised before by Maika for charging people in Maika's ward and so was anxious to avoid the semblance of unilateral action. The teacher, Korul and I went in my car to see Maika. They told him there had been a fight and that the Dagua had started it. Maika seemed upset about the news. He criticised Makoro for repeatedly providing his affines with drinks and urged us to go to Nahavio and inform the didiman. After this the didiman left with Korul and the teacher to get police assistance. I returned to the settlement and did not notice any further disturbance.

The next morning Meli, who lived nearby, visited me and said that the Dagua who had been at Makoro's party had, after the fight, gone to Yaubem's house and then damaged the property of Topia, an elderly Tolai living along the road they had to follow. Later, when Meli had returned to his own house, they had come there and, he claimed, cut down several banana plants and some shrubs. They had also damaged the rainwater tank. When they came Meli had sent his wife and children to a neighbouring block and had himself hidden in the house of a neighbour, a young unmarried Sepik man not from Dagua, with whom Meli and his family were friendly. Meli asked him to go and get police protection. One of the Dagua, Haiwa, called Meli's name and threatened him by saying that he would return with his bow and arrows. Police came to guard his house and early the next morning they noticed that Haiwa came to Meli's block carrying his bow and arrows; his face was painted black, which, according to Meli, was a certain sign that he had violent intentions. The police prevented him from entering Meli's block.
The following day, Monday 29 June, the ADC in Hoskins (a Papuan) was to hear the case. Meli had asked me if I intended to go and if he could go with me. I agreed and we went early to Hoskins together with Korul. On our way we passed through the community centre where Maika and the other Dagua were waiting for transport. Maika and Meli shook hands and they talked briefly about settling the trouble. The two seemed well-disposed towards each other. Arriving in Hoskins, we had to wait a long time before the case was heard because some of the damaged objects had to be collected from Kapore. After the bar of the nearby Hoskins hotel was opened, at ten o'clock, several Dagua settlers went there. I joined them at noon and by then there were many people drinking, and the discussion had become heated. They were extremely and aggressively anti-Tolai and Korul, who was standing next to me whispered softly, 'You should not listen to this, it is bad talk'. Among other things, it was said that Meli had falsely accused the Dagua of damaging his house and garden. He had, they said, done this himself to put them in an unfavourable light. Maika also sharply censured the Tolai, especially Meli. This was the first time I noticed with whom his sympathies lay. After having offered me a beer, he started to chide me for siding with the Tolai. Yaubem drew my attention to this, saying that Maika, in the course of his career, had learnt not to shrink from giving his opinion to Europeans. A strategy for handling the case had been worked out by then. The Dagua wanted it to be heard by a Local Court Magistrate rather than by the ADC, and Yaubem added that, if necessary, he would bring the matter before the Supreme Court. My impression then was that the Local Court was considered different from and of higher status than a court presided over by the ADC. This view would have been erroneous, but I did not check the correctness of my impression. Yaubem denied that he and his wantok had felt that the ADC was not competent as a magistrate.

Early in the afternoon preparations were ready for the hearing. The young Dagua men who had taken part in the fight informed the junior kiap present in the office that they wanted the matter to be heard by the Local Court Magistrate. Maika himself, however, went to the office of the ADC and started complaining loudly about the Tolai and their propensity to start trouble in Kapore. Meli, outside the office, made some scathing interjections. Maika became increasingly agitated while talking, and several of the Dagua present seemed to think that his behaviour did not serve their cause. At last he left the ADC's office and collected the other Dagua men around him to go back to the settlement. I returned with Korul, Topia and Puliga, a Urat Sepik holder. All three roundly condemned the intemperate behaviour of Maika. Topia said, 'If we elderly men
start promoting trouble, who is there to stop it?' They were afraid that Kapore might be the scene of troubles for a long time to come. When we approached the turn-off to the Kapore community centre, we noticed a policeman stationed there and the reaction of the three men was most favourable, since they considered that the presence of what they called 'the long arm of the Administration' would prevent further fighting.

Shortly afterwards the DDC arrived from Kimbe with a Bougainvillean police inspector and several constables. Maika arrived also and a discussion developed between the DDC and Maika in which the latter again aggressively pointed out how the Tolai had repeatedly misbehaved. The DDC announced that there would be an investigation of the case the next morning by the inspector, and a court session some days later. Maika also reproached the Administration for failing to post police in the settlements to prevent the fighting.

The next morning the police inspector conducted the investigation. The Tolai and Dagua presented their conflicting versions of the fight in the community centre. The Dagua men admitted that they had been drunk at the time and since they also admitted that they had started to fight Mikail and the other Tolai, under the impression that the two wanted to fight Makoro, they were charged for this. The Dagua then maintained that Méli and Tomas had reopened the fight. This the two men in their turn denied. Tomas especially, flared up, saying that the Dagua, since they were drunk, could not have noticed whether or not he and Méli had intended to fight. The two men were not charged. Subsequently Méli maintained that the Dagua had damaged his house and garden and that Haiwa had later come to his house to kill him. All this was hotly denied by the Dagua. The inspector, however, proceeded to charge them for damaging property. He criticised the young men extensively, claiming that if they had not drunk too much they would not have started this fight. He said they were only small boys making things difficult for their fathers who wanted to start bisnis. Making such statements at this stage of the inquiry is, according to Gluckman (1965a:10) a frequent phenomenon during court sessions in 'tribal' societies:

...a striking feature of this procedure is that judges during this cross-examination already begin to pass both legal and moral opinions on the actions of the parties and on the sentiments and motives that may be reasonably deduced to explain

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1 Gluckman (1965b:xv) used the expression 'tribal' societies to refer to pre-literate or pre-industrial societies.
those actions. For though the judges are trying to reconcile the parties, in the hope that the threatened relationship may endure, they have to defend the law.

While the settlers were not living in a 'tribal' community and the police inspector was not performing a tribal role, I would account for his traditional line of behaviour by reference to the persistence of traditional ideas. The other Dagua present at the hearing realised that the Tolai might win the case. Since they thought the hearing was the court session, they were afraid that their wantok might be sentenced straightaway. Maika was not present and hence some Dagua asked me to go in my car and bring him to the hearing. Wishing not to reinforce the impression that I sided with the Tolai, I went to Maika's house, but he had apparently gone to Kimbe. When I returned the hearing was still continuing. There was still disagreement about the fighting in the community centre, about the damage done to Meli's property, and about the intentions of Haiwa. Yaubem repeatedly stressed that the Tolai were the real cause of the trouble, that this was the third time they had made trouble, and that it should stop. The other two quarrels he had in mind were the fight after the communal school-work on Nason's block had been interrupted and a disagreement between Meli and Maika when they were both councillors. While Maika favoured a fee to be paid by sellers at Kapore market, Meli did not, and he had spoken out against this during a meeting without consulting Maika.

Yaubem's testimony seemed to illustrate another of Gluckman's conclusions (1965a:8-9) about hearings and court sessions in tribal societies, namely that all grievances between the parties tend to come to the fore and not merely the one which brought them to court. Gluckman related this to the nature of social relationships in these societies in which people often have contact for long periods of time and in a multiplicity of roles. Because the primary aim of the court session is to reconcile the parties so that community life can resume undisturbed, judges are apt to consider all points jeopardising the relationship between the parties.

Another example of this tendency occurred when Elías, the headteacher, said that the teachers felt involved in the case since one of them was attacked by the Dagua. They felt the trouble seemed almost to be one between themselves and the Dagua. During the first quarrel, when the communal school-work had been interrupted, they had also been involved, and hence the teachers felt uneasy and preferred to live outside the settlement. These statements were followed by a discussion
of several grievances against the teachers which, however, was cut short by the inspector saying that this was a matter for the P. and C. His behaviour here does not seem in line with Gluckman's observations, but very probably the inspector was trained to conduct a hearing with the preparation of a specific charge in mind rather than of a list of all the dissensions between people intimately or distantly involved in the case.

I am also puzzled by Yaubem's insistent blaming of the Tolai, especially because he told me several months later that the Dagua had also been wrong. If his intention was to become reconciled with the Tolai, his denial that the Dagua had responsibility for the quarrel would hardly seem to serve this purpose. It may be that he could not be expected to shame his wantok by admitting in public their responsibility, but this would not account for the vigour with which he accused the Tolai. On the other hand, he remained very friendly with Tomas, talking and joking with him. When I asked Tomas how he had managed to maintain good relationships with the Dagua, he simply said that he had learned how to get on with 'different' people during an earlier part of his career when he lived among Manus people as a pastor.

Two days later, on Thursday 2 July, the court case was held by the magistrate who was from the Talasea subdistrict. A formal charge had been prepared and was read out by the inspector. He seemed to have misunderstood some of the evidence presented two days before since he stated that the damage to Meli's house was done by Haiwa and not by the other young Dagua men. The session did not last long: the Dagua men admitted that they had started a fight and they were convicted and each fined $2. The magistrate also warned them that such misbehaviour, if continued, would disturb relationships in Kapore and thus might hamper the rapid development of bīsnis. Meli failed to receive compensation for the damage done to his house and garden since he admitted that he had not actually seen the Dagua do it. Immediately after the court session and before the attendants had started to disperse, Maika spoke and said that from then on people should not join a celebration or feast without being invited, in order to avoid trouble.

The case was brought up again the following week on Thursday 9 July, when the Prime Minister of Australia was to visit Rabaul. In case this had to be cancelled because of the then unstable political situation in the Gazelle Peninsula, plans were made for an alternative visit to the Hoskins oil palm settlement. Preparations to receive the Prime Minister were made in the Kapore community centre and on Thursday settlers from all the settlements were transported to Kapore to provide an appropriate
welcome. When it became clear that the Rabaul visit would continue, the didiman and other Administration officials, who had not informed the settlers about the possible visit, gave another rationale for the preparations and the meeting. It became a farewell for one of the didiman and a discussion of the recent troubles in Kapore. First the DDC spoke, again pointing out the dangers of the lack of unity among representatives of different tribal groups in Kapore and in Papua New Guinea in general. Then three block-holders spoke: Meli, Maika and Korul, representing the three major ethnic groups in Kapore. Meli, speaking emotionally with a choked voice, affirmed his belief that an attempt had been made to kill him. He recalled that during the Land Board meetings, when the block-holders were interviewed, they had promised not to start troubles in the settlements. The implication was that the trouble-makers had not fulfilled the conditions on which they had been allocated a block and hence they should be removed. Meli said this explicitly several times in private. Maika regretted the lack of co-operation among the settlers. He referred to the communal work in the community centre which, he said, the Tolai especially ignored. He disclaimed any responsibility for the present troubles which had started while he was at home. Korul admonished the settlers not to join in when they noticed other settlers quarrelling or fighting. He repeated Maika's suggestion that parties and feasts should be held away from the community centre. The organiser should invite people to his party and not allow others to attend, in order to prevent trouble. He also said that the presence in Kapore of outsiders was dangerous, because they were inclined to make trouble. Nevertheless, in the present case the protagonists of both parties were block-holders or children of block-holders.

In general, the Kapore settlers took a very serious view of the troubles. All non-Dagua settlers to whom I spoke blamed the Dagua and several even added that Yaubem had probably encouraged the young men to damage Meli's property. They expected more violence. They felt also that frequent drinking aggravated the situation and some wished that drinking laws were more strict. Shortly after the court session several men told me that Meli should have been awarded compensation. Later, however, people tended to say that the magistrate had given a good judgment because further troubles had not occurred. Maika's complaints that police should have been posted in the settlements were widely supported by the settlers, but I was told that if people wanted trouble one policeman would not be enough to stop them. Settlement staff were also concerned about the absence
of police and attempted to have this situation changed. Only in mid-1971 did a policeman, a senior constable, take up residence in the Kapore community centre.

Not all Dagua sided with their wantok. One evening when I drove back from Hoskins to Kapore, I had as passengers Karob, the former headteacher, and Nason. Although I could follow only part of their conversation, I noticed that Karob disapproved of what the Dagua had done during the troubles with Meli. He claimed that he himself was not really a Dagua. As far as I know he could only claim this because, as a teacher, he had left his wantok at an early age and had never made a living among them.

Ethnicity II. The deaths and funerals of Wemin and Biragu

When talking about the troubles described in the previous section, settlers often said that, in case of a serious fight, the Sepik and Chimbu would join against the Tolai because they were from the New Guinea mainland and their home areas were close. While the Chimbu remained aloof during the troubles just described, shortly afterwards it became evident that their relationships with Sepik settlers were closer than those with Tolai. This appeared when Wemin, one of the Chimbu block-holders, died.

Wemin became ill during the night of 13-14 July 1970. He vomited a great deal and his wife asked me the next morning if I could take him to the hospital in Nahavio. This I did, but the nature of his illness was not determined. He was sent back to Kapore, then again to Nahavio and then on to Talasea, the location of the West New Britain District hospital. There he died early the next morning. His corpse was returned to Kapore in the afternoon when the cause of death was still unknown. Hospital staff suspected that he might have eaten poisonous food. A doctor, who had come in the car which had carried Wemin's body, asked if he could pick some leaves from a kumu shrub growing near the house, since he had been told that Wemin had eaten leaves from this shrub shortly before he became ill.

A large crowd of settlers, mostly Chimbu and Sepik, gathered near the deceased's house and speculation about the cause of death started almost immediately. The Sepik men took an active

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1 In the House of Assembly several requests were made for more effective police control in the settlement areas (House of Assembly Debates, Second House, tenth meeting of the first session, vol.II, no.10, pp.2797, 2817, 2823, and vol.II, no.11, pp.3189-90).
part in the discussions and the Chimbu seemed to accept this as a matter of course. Wemin's neighbour, Puliga, suggested that they go to the kiap, who had recently taken up residence in Kapore in a vacant settler's house, to ask for permission to pull mambu, a magical practice originating in the Maprik area. The settlers present favoured this action, stressing that this was not 'samting bilong kros na pait' ('it did not have anything to do with quarrelling and fighting') but that people wanted to know how Wemin had died. People apparently thought that the practice was forbidden since by indicating a culprit it might lead to tension and fighting. It was also proposed that the kiap and police should be invited to be present.

Afterwards Dama, one of Wemin's affines, came and said that he had been with Wemin in the Talasea hospital the night before he died. One of the doctors had told him that Wemin might have eaten poisonous food and the other people agreed that this was a possibility, although they eliminated the kumu leaves because they were a common food. At this point the didiman arrived and told the men not to start accusing each other of having worked sorcery. He stressed that some diseases could kill a man very quickly. At the end of the afternoon I saw the didiman's wife in the co-operative store in the community centre. She said that the symptoms of Wemin's disease indicated that he had died after having eaten bad pork.

While the deliberations about the best way to find out about the cause of death were going on, a group consisting mainly of women sat around Wemin's body, which was lying in the breezeway of his house. The mourners, whose number steadily increased, brought gifts: cooked food for their fellow mourners, clothes for the corpse, and pieces of white and bright red cloth, such as towels, sheets and laplap, for the coffin. Dama made a list of the gifts (excluding the food gifts) and of the donors. According to the list, 21 objects had been presented, 18 by Chimbu living in Kapore, 2 by Puliga, Wemin's Sepik neighbour, and 1 by me. Dama also mentioned the cash value of the gifts. In some cases the value listed differed slightly from the price at which they were available at the stores. The total value, as listed, was $24.55. There

1 The practice is performed with a long bamboo stem, in Pidgin called mambu, which is specially prepared. A number of men standing in a row place the stem loosely over their stretched forearms. One end of the stem touches the corpse. Questions about whether the death had been caused by disease or by sorcery are put to the stem. Movements of the bamboo indicate affirmative answers to the questions. If sorcery has been committed, questions are asked about the identity of the sorcerer.
were only a few Tolai mourners, including Topia (who lived across the road), Meli and Tomas.

During the discussions about the cause of death, it seemed that the settlers saw disease, on the one hand, and witchcraft or sorcery on the other, as the alternatives. This contrasts with the situation, first described by Evans-Pritchard (1937:509) as occurring among the Azande in southwest Sudan, in which beliefs of 'dual causation' can make people ascribe misfortunes both to phenomena like disease and to witchcraft. According to Gluckman (1965b:221), such a pattern of beliefs has been analysed 'through most of the tribes of the world'. I am uncertain whether to ascribe its absence among the settlers to their exposure to European cultures or to their traditional cultures.

During the evening a coffin was made of planks transported by the didiman and the burial took place early the next morning. The corpse was brought to the graveyard in the didiman's utility. A deep grave had been dug by Sepik settlers. This presentation was also recorded by Dama. According to his list, 8 men had helped dig - 6 Dagua and 2 bus Sepik. The Sepik men also lowered the coffin and filled in the grave. It was oriented towards the sun and the corpse was placed in such a way that the head was directed towards the sun. There were no Tolai settlers present. Immediately after the burial Korul made a speech thanking the Sepik men for their assistance. Because he was married to a Maprik woman he could address all the Sepik men as affines. He promised similar assistance by the Chimbu if a Sepik settler died. He mentioned also that the kiap had disapproved of the settlers' wish to pull mambu. According to Korul, he had said that Wemin had died of a big sore inside his belly. Later the kiap told me that Korul had come to see him and that he had mentioned the possibility to him that Wemin had died of appendicitis but that he had not been positive about this. Korul may well have deliberately twisted the kiap's words to present them as expressing a definite opinion since, if the kiap thought he knew the cause of death, there would be no need for further inquiries. Accordingly the other settlers could not say that Korul had not pleaded enough with the kiap. Yaubem, who was among the Sepik settlers in the graveyard, answered Korul's speech. He said that Korul was like a kinsman to him and that the Chimbu and the Sepik settlers were one people now they had left their home areas and were living together in Kapore. He maintained that if a Tolai died he would help the Tolai also.

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1 See p.74.
Afterwards the people returned to Wemin's house. They ate and continued to discuss the possible causes of death. Gaima, a Chimbu agricultural assistant, wondered if Wemin had eaten bad pork. He had heard that the didiman believed this and he knew also that Wemin had eaten pork during the previous weekend. On Saturday a wild pig had been shot by Dama, who had slaughtered and distributed part to Wemin. He had boiled it in water and eaten it on Sunday. People did not seem convinced by this new theory because many Chimbu had eaten parts of this pig and had not become ill. Gaima told me that he thought they were not convinced because 'ol i tingting long kros tasol' ('they always think mischief has been done').

When I returned to Wemin's house later that day, Korul told me that the other settlers thought that he had wanted to stop them from pulling mambu and had fabricated the kiap's prohibition. He maintained, however, that the prohibition was real, and that he himself would like divination to be performed. Later he told me how, when he was in Maprik as a policeman, he had located a jail-breaker by means of pulling mambu. He also felt that the kiap had not allowed it to be performed only because he thought that performing it would kill a culprit. Had he known that this was not so, he would have allowed it. Korul asked me if I could bring Maika, Dama and another Chimbu blockholder, a relative of Wemin, to Kimbe so they could ask the District Commissioner for permission to pull mambu. He himself did not want to go since he wanted his co-settlers to receive an independent report. Korul, who as councillor was clearly in an awkward intermediary position between the settlers and the kiap, complained that the hospital staff had brought the corpse back to Kapore before performing an autopsy.

The next day I went with the three men to Kimbe where they were heard by the DDC. Maika addressed him and acted as if he spoke on behalf of the other two men. He explained the case and asked if the men could pull mambu. The DDC refused, saying that pulling mambu was a foolish custom practised in pre-contact days, but not suitable in modern times. He said that men who practised it were likely to be sent to jail. Maika turned to the other two men saying, 'You see, the kiap does not want it'. He then told the DDC about the lack of medical attention given to Wemin. After some hesitation, the DDC promised to discuss the matter with the hospital authorities, adding that there was no doubt that Wemin died from eating bad pork. Highlanders, he said, liked to gorge themselves on pork and ate it although it was several days old. Dama and the other Chimbu remained silent, although later Dama said that Wemin had eaten only a small piece. He knew because he himself had given it to him. On the way back to Kapore all three men
showed their discontent with the interview. Maika regretted that they had not been able to speak to the DC himself because he was more inclined to 'harim tok bilong mipela' ('listen to what we have to say'). Maika then claimed he was in favour of pulling mambu. This was the last attempt made by the settlers to get official permission to perform the practice. Shortly afterwards I left for Port Moresby.

A few months later, in my absence, there was a ceremony to reciprocate the help given by co-settlers during the funeral. Counter-prestations were made in food and alcoholic drinks. These had been bought or provided by Chimbu and were distributed partly to Chimbu and partly to Sepik settlers. By this time Wemin's widow had remarried and Nime, her new husband, a close kinsman of Wemin, made a list of the contributors and their contributions of alcoholic drinks. The list contained the names of twenty-five Chimbu block-holders, but the actual number was probably larger since I know that at least one contribution listed as having been given by one person was in fact given by two. Nime said that he would have to reciprocate all the contributions. Other Chimbu denied this, but Gaima said that Nime might reciprocate when the contributors themselves were in need of valuables, for example, for a wedding or funeral.

During the distribution, gifts were transferred to groups of men rather than to individuals. Two bus Sepik men, one of them Puliga, received cartons of beer, spirits and food for further distribution. Likewise two Dagua block-holders, one of them Maika, received gifts for further distribution, as did a group of Tolai holders who had provided food for the mourners. The didiman, who had succeeded the one working in Kapore when Wemin died, received one carton of beer, one bottle of spirits and food for the help his predecessor had given. If I had been present I would have received a gift in return for the sheet I had contributed for the funeral. A number of cartons of beer and bottles of spirits were finally distributed among the Chimbu themselves. Nevertheless, several Chimbu described the proceedings as a Chimbu presentation of gifts to the Sepik in return for the support the Sepik had given. They did not specifically mention intra-Chimbu divisions. A Chimbu block-holder claimed to have been given eight cartons of beer which he had distributed among the 'lain bilong man i dai' ('group of the man who died'), who appeared to be both from Gembogl, Wemin's home area, and central Chimbu.

Intra-Chimbu divisions became apparent at a wedding held in February 1971 between a Gembogl bride and a Sinasina groom. In this case prestations were said to have been made between
the Gembogl and the Sinasina rather than among the relatives of the bride and the relatives of the groom, thus referring to two persisting, geographically defined groupings rather than the accidental ones defined by the kin relations to bride and groom. I was not present at the ceremony so I do not know if the other non-Gembogl Chimbu were included among the Sinasina. The dualistic way in which the transactions were described seems to be an example of a trend noticed by Brookfield and Brown (1963:10) who wrote: 'A kind of dualism appears in the opposition of segments and the splitting and pairing of groups.... Pairs of linked subclans are very common'.

Exchange of valuables after a death is customary among the Chimbu, and Brown (1961) has given a detailed description of exchanges she observed in 1958 in central Chimbu. The Kapore Chimbu said that the prestations on the occasion of Wemin's death were different from those customary in their home area. Dama told me that most of Wemin's close kin lived in the Chimbu area and that his co-settlers had given their help nating (without being obliged to). The subsequent exchanges had been counter-prestations for this help. Hence, when a close maternal kinsman of Wemin, who was a block-holder in one of the other oil palm settlements, asked Dama for a gift to which he was customarily entitled (Brown 1961:89), Dama had refused, saying that there might be customary exchanges later in Chimbu. He told me, however, that he doubted that this would be the case.

The goods in the exchanges analysed by Brown (1961:79-80) were food and what she referred to as 'valuables', namely gold-lip shells, headbands set with cowrie shells, other shell ornaments, decorative stone axes and occasionally fur and feather finery. Chimbu in Kapore said that in their home area only the feather finery was still in use. These statements seem to be confirmed by Brown (1970a:254-5). In Kapore alcoholic drinks were second in importance to food, reflecting their significance as ceremonial goods. The drinks were often consumed shortly after transfer. On both occasions mentioned - Wemin's death and the Chimbu wedding ceremony - people dispersed into small groups because it was feared that brawls would break out if everyone drank together. I joined one such group after the wedding ceremony. All the drinks were consumed and Korul told me that this was a sign of their poverty: later when they had more money the settlers would have a permanent supply in their cupboards, 'just like you Europeans do'.

Burton-Bradley (1968:5) described how for mixed-race persons in Port Moresby drinking alcoholic beverages was formerly a 'status-conferring attribute' which distinguished them from Papua New Guineans. This situation changed in 1963 when the
latter were allowed to drink. During my fieldwork, drinking seemed to be a status-conferring attribute for the Kapore settlers because it signified the removal of one of the marks of their inferior status, particularly vis-a-vis Europeans.

It may seem wasteful that in Kapore the exchange valuables like shells and feather ornaments, which can be used over and over again, can be replaced by alcoholic beverages which mostly are used only once and then seem to be consumed immediately. Use of durable valuables, however, does not preclude further expenditure on them: I was told that Chimbu spent a great deal of money purchasing feathers and feather ornaments. Moreover, an advantage of alcoholic drinks is that they can be used as an interethnic valuable.

Early in 1971 the death of Biragu, an elderly Dagua holder, provided the opportunity for the Chimbu to reciprocate the support they had been given when Wemin died. I was not living in Kapore at the time and the following account is based on oral information only. Like Wemin, Biragu died in the Talasea hospital. His body was brought back the following afternoon and, after a wake, buried in the Kapore cemetery. Mead (1940:430) stated that the Dagua dispose of a corpse 'as quickly as possible' and that, if a death occurs at night, the burial is usually over by ten o'clock the next morning. Here the proceedings were interrupted by the work programme of the settlers. I was told that traditionally people would not have worked during the morning of a wake, but in this case settlers had to hand-pollinate the flowering oil palms. Hence they dispersed and returned around noon. The burial took place in the afternoon. The didimani said that no attempts had been made to have the work programme altered.

The greatest expenditure during the ceremonies was made by Jaromo, a classificatory son of Biragu and also a close neighbour. Jaromo had gone with Biragu to the hospital and had been with the latter when he died. He bought new clothes to dress the body in and made the coffin (he had been a carpenter before coming to Kapore). Before the burial, money and other goods were collected. Jaromo said that $70 was collected, $50 of which was placed in the coffin while the rest was given to the widow. Maika added that the money was put in the coffin and buried with the corpse because at the burial there was no male member of the mother's clan of the deceased who was entitled to take the money. The others present did not dare take it. The contributors named were all Dagua, most from Kapore. Jaromo contributed $30. At that time he had more money than usual.

1 Cf. Mead (1947:198).
because he had been working at felling forest for the estate company. The large amount, Jaromo said, was because Biragu had been helping him on his block and he had not yet reciprocated this aid. In addition to the money, some bed sheets, laplap and towels were presented, but in smaller quantities than when Wemin died. Food was also presented and part of it cooked at Biragu's house and handed out to the mourners and helpers. Later more money and two pigs were given to the widow. This money was divided between her and Maika, her close classificatory brother.

The grave was dug by Chimbu and, as far as I know, one Tolai, Nason, Biragu's neighbour, helped. Several other Tolai presented food. After the burial people returned to Biragu's house and the Dagua spent another night there. Two Chimbu told me that they had been offered money in return for their help but both had refused because they considered that accepting it would have been unchristian.

The Dagua stressed that the time they spent on mourning in Kapore was much shorter than in pre-contact days. Jaromo said that this was because nowadays they thought of making money and resumed work much more quickly. The behaviour of the Dagua on this occasion resembles that of four Orokaiva entrepreneurs of whom Crocombe (1967:18-22) wrote that they spent much less time on traditional social obligations, including mourning, than did other villagers whose entrepreneurial activities were minimal.

Ethnicity III. 'Progress' and 'progressiveness'

The influence of ethnic or tribal loyalties on social relationships has been observed in many ethnically heterogenous communities and it has been variously referred to as 'urban tribalism', 'supertribalism' and 'ethnicity' (Epstein 1967:280). Epstein used the term 'urban tribalism' as distinct from 'rural tribalism' because

the latter... refers to a particular kind of social regimen in which social relationships are organised within a distinctive structural and cultural framework; in the former the tribe is no longer an organised political and social unit, but serves rather as a means of classifying a heterogeneous population into a limited number of meaningful categories.

He went on to say that 'urban tribalism' operates especially in domestic relationships, leisure activities, casual social contacts, and in voluntary associations, such as for mutual
aid. In employer-employee relationships it is often less important.

When discussing this phenomenon in Kapore, I use the term 'ethnicity' (Wallerstein 1960:133) rather than 'urban tribalism' because it seems to occur among ethnically heterogeneous communities in both rural and urban contexts. It is true that Wallerstein presented urban examples to describe the phenomenon, but the term he employed to refer to it and the explanations he gave did not exclude rural phenomena.

In Kapore ethnicity was apparent in domestic relationships, especially between the members of the domestic units, in most cases nuclear families. Most of these units were established in the home areas before resettlement; and as resettlement had not appreciably changed the mode of livelihood, traditional roles could be continued. Consequently life in these units tended to continue life as it had been in traditional communities. As far as external relationships were concerned, however, non-traditional 'ethnic' ties might be established to overcome the scarcity or absence of close kin outside the nuclear family. Most settlers appeared to have one or a few close kinsmen living in one of the settlements. During my research such people tended to have many contacts. The greatest density of kin relationships occurred among the Dagua settlers because of the smallness of their home area.

The traditional character of domestic life was to some extent broken by interethnic marriages. There were eleven such unions among Kapore block-holders in early 1971. I regard as 'interethnic marriages' those in which at least one spouse could not understand the vernacular language of the other spouse when they married. The members of such unions could also establish interethnic links outside the nuclear family. Often these links were expressed in a kinship idiom, as, for example, when Korul addressed the Sepik settlers who had assisted in Wemin's burial as affines.

I have not yet analysed the quantitative material I collected concerning the relationships between settlers in leisure activities, visiting, and voluntary associations. While my impression is that people tended to associate with wantok, there were many exceptions. An example was mentioned above, namely the relationship between Meli and his Sepik neighbour. Another example was provided by a group of settlers made up of Tolai, Sepik, Chimbu and other men, formed to help each other organise drinking and dancing parties. In another case a group of wara Sepik settlers, all fairly young men, decided to form working parties to maintain their blocks. They all lived in

1 See p.72.
two neighbouring sections of Kapore. On the request of a Tolai block-holder, who was about the same age and lived in the same part of Kapore, they allowed him to join them. In yet another case a gambling group was formed comprising settlers from different home areas. On the other hand, efforts to establish a Kapore soccer team ended in discontent because the captain of the team favoured his wantok over others.

As appeared above, ethnicity influenced the course which quarrels between settlers took. People were inclined to assist their wantok when their rights were infringed, or supposedly infringed, upon by outsiders. The group involvement which resulted was deplored by the settlers, yet it occurred again and again. There was no reluctance, however, to call in a non-wantok to settle a quarrel, even when it was a quarrel between wantok. Skill in settling disputes was highly regarded and seemed to override ethnic considerations.

Ethnicity was less important in the governmental organisation of the settlement, insofar as people were prepared to let themselves be represented by non-wantok. This applied to both the section komiti and local government councillors. An important factor in this regard might have been that these officials were elected for a limited period of time only. Moreover, the section heads did not possess great powers, so the way they performed their task was not of great concern to the settlers. Also, there had been no important confrontation between the settlers and the didiman or the Administration in which the section komiti could have played an essential role and as a result of which people could have rated their efficacy. In the case of the local government councillors, the contrast between settlers and Nakanai was perceived as more important than the contrast between wantok-settlers and non-wantok-settlers. During the latest council elections in one of the Kapore wards, for example, the Sepik settlers did not nominate a candidate. There were two candidates: Korul, the sitting Chimbu councillor and Tomas, a Tolai. Yaubem, the Dagua komiti bilong komiti, advised his wantok to vote for Tomas, who won easily. As there were seven votes for Korul and nine Chimbu voted, at least two Chimbu did not vote for him. The result of this election was that the three top settlement officials in Kapore (the two councillors and the komiti bilong komiti) were drawn from the three main ethnic groups, Tolai, Chimbu and Dagua.

Since the settlers distinguished themselves on ethnic lines, the question arises as to what kinds of differences they perceived between the groups. As I have not finished my research I cannot draw definite conclusions. Tentatively I suggest that in interethnic relationships differences in traditional customs
were not paramount, but rather the 'progressiveness' of the ethnic group concerned and the 'progress' they had made were important. These terms were not used by the settlers themselves, who tended to use expressions like 'kirapim ples' ('getting an area going') and 'Papua Niugini i kirap nau' ('Papua New Guinea gets going now') or they referred to the growing interest in doing bisnis and to the growth in the amount of bisnis. I chose the two terms in imitation of a term used by West Irianese who in the 1950s, and maybe still now, referred with the Malay word kemadjuan (progress) to the changes which were taking place in their society and the further changes they hoped would occur. Among the settlers a comparable desire for change and for taking part in this change occurred. I regard the settlers' preoccupation with 'progress' as a cultural theme defined by Opfer (1948:120) as 'a postulate or position, declared or implied, and usually controlling behaviour or stimulating activity, which is tacitly approved or openly promoted in a society'.

'Progress' and 'progressiveness' were most readily measured in terms of economic advancement and in attitudes towards this advancement but, as will appear below, these were not the only two indices.

'Progress' implies the idea of a move away from the traditional towards the modern type of society. It is interesting to compare it with the notions of being 'civilised' or 'uncivilised' which, according to Pons (1969), were important categories for Africans living in what was then called Stanleyville. According to Mitchell (1969:5-6), the same holds for Africans in South and Central African towns. Pons wrote (1969:12) that the two notions were

difficult to define precisely because they too were used in many different contexts.... The fact is, however, that the two terms referred, in one form or another, to the broad contrast between the modern and the traditional... Pons stated that Africans in Stanleyville often rated each other according to the degree to which they had become 'civilised'. However he stressed (1969:150) that the meaning people gave to the term was subjective and depended on their own life situation.

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1 See, for example, Schoorl (1967:179) and van der Leeden (1961:55).
In contrast to the notions of 'progress' and 'progressiveness', 'civilisation' was strongly associated with urban life. Village life, according to Pons (1969:12), was considered ' uncivilised' and backward. While it may be considered self-evident that the Kapore settlers, themselves living outside the towns, considered that 'progressiveness' could be an attribute of rural dwellers, comparable views have been reported from urban areas. Rew wrote (1970:292) that in a Port Moresby brewery

the young Ewo men [a group of men from near Ewo mission station in the Northern District of Papua] presented the town as an unwelcome place. Their ideal was neither the town - which they presented as disreputable - nor the traditional-rural - which they presented as pagan - but 'civilisation'... for these young men civilisation was identified as being more educated and bringing modern goods and services to the rural areas.

Later he stated (1970:293) that 'an emotional and ideological rejection of urban residence was by no means restricted to those with minimal stakes in the industrial system'. Likewise R.S. Finney, who made a survey of achievement needs and interest in entrepreneurial activities among high school students in several parts of New Guinea, reported (1971:83) that 'despite much discussion in New Guinea about the urban drift of the country's young people', the students she studied were interested in 'locating [their] businesses in the immediate home area, i.e., their own village'.

On the other hand, Rew (1970:294) recognised the possibility that rural aspirations among urban workers did not materialise because 'the town dweller may easily misjudge the rural situation - either by underestimating village conflicts and antagonisms or overstating the potential for his talents'. Accordingly they may prolong their stay in town and intensify their commitment to urban life (1970:294ff).

Of the three main groups in Kapore the Tolai were the most advanced business and they tended to be financially better off than the other groups. Most settlers had seen or had heard about the large areas in the Gazelle Peninsula brought under cash crops by the Tolai. The Tolai were also the group with the longest contact with Europeans. This explained for the Sepik and the Chimbu settlers why the Tolai had progressed so far, and they emphatically pointed out how quickly they themselves had grasped opportunities for doing bisnis, claiming that under the same conditions they would have reached the same level of development. They contrasted this with the poor
performance of the Nakanai who had been in contact with Europeans for a much longer period of time than they themselves.\footnote{Rew (1970:133-4) pointed to comparable lines of reasoning when discussing ethnic contrasts as perceived by Papua New Guineans in Port Moresby: 'Papua' versus 'New Guinea' is a recurrent theme in Port Moresby social life. It derives largely from contrasted histories of administration and economic development and from current economic and political status.}

In addition to economic advancement, other features were utilised to measure progressiveness. A propensity for fighting was regarded as a lack of progressiveness, especially by the Tolai and Sepik settlers. During a dispute which arose after a young Tolai man had knocked down a Chimbu boy with his bicycle, groups of Tolai and Chimbu gathered at the place of the incident and a threatening situation developed. Yaubem settled this dispute and he told me he had reproached the people for threatening to fight. He had been especially critical of the Tolai because 'they had been under European administration for a long time'.

The Tolai were inclined to view the polygyny practised by several Chimbu and Sepik as a sign of backwardness. They, and also some Sepik settlers, sometimes spoke about the Chimbu in a condescending way. They felt the Chimbu were particularly prone to violence. Tolai tended to comment unfavourably upon what they regarded as the uncouth behaviour and untidy appearance of the Chimbu. Two Tolai were greatly amused when I told them that, until recently, Chimbu rubbed themselves with pig grease to enhance their sexual attractiveness (Brown 1962:63). A Sepik man, when commending a Chimbu to me, said that the man was a Chimbu 'but that he had been put right a bit' when he was in Administration employment.

The fact that the settlers were living together in a heterogeneous community was for many of them one indication of their progressiveness because they felt it would promote national unity. In their view the existence of Kapore, and of the other oil palm settlements, foreshadowed the future interethnic society of Papua New Guinea. The possibility that settlement life would be disrupted by interethnic strife was accordingly the more deplored. Given the absence of an inclusive network of pre-existing ties among the settlers and of strong collective economic interests, it seems doubtful whether harmonious relationships could have been restored if the troubles described above had developed into more serious strife. An escalation
could have taken place quite accidently, for example, if a Dagua block-holder rather than Wemin had died under similarly mysterious circumstances. Suspicions of sorcery committed or commissioned by Tolai could then have led to further eruptions of violence. A comparable, escalating series of troubles might well occur in the future and hence the presence of police, to intervene and stop further escalation, is appropriate. The settlers themselves considered it highly desirable that police be posted in Kapore. They realised that among them there still was a strong inclination to take to violence and they felt the police would act as a brake.

Early in 1971 relationships between Tolai and Chimbu became tense when a Tolai overseer was killed on the central estate by a group of labourers from the Southern Highlands District. Chimbu settlers felt that the Tolai, ignorant of the distinction between Chimbu and Southern Highlanders, might try to revenge themselves upon the Chimbu settlers. Their concern was understandable since the name 'Chimbu' is often used indiscriminately to refer to all highlanders. When, some time later, a settler from the Huon Peninsula was found dead in one of the other settlements, the presumption was again that the Tolai had taken revenge by killing a New Guinean mainlanders. When I left the field, however, the culprit had not yet been found. By that time the fear of a Tolai revenge had subsided.

In general, however, the settlers became more inclined to stress the desirability of living in amity together and they seemed to be building up a fund of goodwill towards each other. Several times I overheard settlers teasing fellow-settlers from other ethnic groups for supposed ethnocentrism. Such teasing shows traces of a joking relationship with its elements of conjunction and disjunction between the partners. On another occasion I heard how a Tolai and a Sepik block-holder made fun of another Tolai whose harvest of oil fruits had been far below average and who, both men said, was very lazy. Another example of the beginning of Kapore unity occurred during a quarrel at a Kapore party. The trouble had been started by an outsider and later I was told that one of his Kapore wantok had reproached him, saying that it did not do for a non-Kapore man to come to Kapore and to start trouble there.

The pattern of quarrelling in Kapore is related to the particular ethnic situation in the settlement. First, Maika was anxious to continue the leadership role which in his home area he had discharged for so long and - if not for outsiders then certainly for his followers - so commendably. In the settlement, however, there was no organisational niche for such a role. I was told by settlement staff that he tried to
extend his influence among the Tolai but suffered a rebuff. He
did become a local government councillor but with a Tolai coun-
cillor, Meli, beside him. Many of his wantok were not in his
own ward. His strained relationship with Meli may well have
influenced the course of the troubles between the Dagua and the
Tolai. While it seems generally undesirable to allocate blocks
to persons intent on seeking power, it seems even less desir-
able to select persons who are likely to attempt to perpetuate
a former position of power in the changed social environment,
rather than build up a new position on the basis of achievements
in the settlement. Secondly, the large size of the Dagua group
enabled the formation of a group of adolescent men who, because
of their number, more easily resorted to violence.

Resettlements are risky undertakings (Chambers 1969:7) and
the multi-ethnicity of the Hoskins settlements makes them even
more risky. It is doubtful if the ethnic heterogeneity could
have been avoided. Allocation of groups of blocks to particu-
lar ethnic groups would probably have elicited the protest,
necessarily limited, of the groups left out and might have led
to interethnic strife in national institutions such as the House
of Assembly, which would have been a more serious threat to
national harmony than quarrels among settlers.

Finally, an undertaking from which great social, economic or
other benefits are expected should not be abandoned simply be-
cause it is risky. Rather, it should be undertaken in the full-
est possible cognisance of the risks entailed so that they can
be minimised. Hence it seems wise that police are now posted
to the settlements, for trouble in Kapore might not have reached
the proportions it did if the posting had occurred earlier. On
the other hand, I do not favour Ward's suggestion (1971:104)
that the Hoskins block-holders should have been housed in a
central township rather than dispersed on their blocks. A rural
population is residentially much less mobile than an urban one
and, supposing a township had been built, parties to a dispute
would have found it difficult to avoid each other. As mention-
ed, several Kapore settlers thought that their community centre
offered too many opportunities for quarrels to develop and that
parties were better held away from the centre and on the blocks.

Relationships between settlers
and Nakanai

The notions of 'progress' and 'progressiveness' were also
the main determinants in the relationships between the Nakanai
and the settlers. The latter felt that the Nakanai had made
few efforts to advance and criticised them accordingly.
Settlers considered that the Nakanai had retained several objectionable traditional customs. Many elderly women still wore traditional dress which settlers tended to ridicule. The settlers also believed that the Nakanai still practised a great deal of lethal sorcery and they compared the low population density near Hoskins, which according to them was the result of this sorcery, with the very high densities in the Gazelle Peninsula, Chimbu District and near Maprik, as evidence of the discontinuation of lethal sorcery in these areas. I was also told that the Nakanai fear of sorcery kept them confined to their houses from the early evening to the morning, but I do not know if this was so. While it is true that the Lakalai formerly preferred to stay indoors during darkness,¹ this was for fear of spirits rather than sorcery. However, their fears seem to have abated in recent years.²

The settlers were aware that the Nakanai, or at least several groups among them, were long-standing cargo cultists (Chowning 1967:40). While many settlers did not seem to be completely certain that the cargo beliefs were invalid, they tended to explain them as resulting from laziness. This they found confirmed by the small interest the Nakanai showed in cash cropping and establishing other types of biznis. I doubt if the settlers had made a thorough investigation of the extent of the Nakanai's cash crop holdings. More likely they based their comments on the holdings bordering the road from Kapore to Hoskins which were small, newly planted and badly maintained. They also did not realise that the Nakanai, until recently, had to sell most of their cash crops to local traders who offered poor prices. This probably discouraged them from putting much effort into cash cropping. As far as the Lakalai are concerned, Chowning (1967:31) and Goodenough (1955:27) reported that they, contrary to the impressions of the settlers, were hard workers.

For the settlers another indication of the Nakanai's lack of progressiveness and insight into economic opportunities was their sale of so much of their land rather than their use of it for biznis and, having sold it, not using the money for biznis. The settlers disregarded the fact that the Nakanai had very large holdings and that much of the land in the interior, because of problems of water supply, was unattractive to people who, unlike themselves, did not have corrugated iron and water tanks for catching rain water. Frequently I was told that the Nakanai were stupid not to think of the interests of their

¹ Personal communication: A. Chowning, September 1971.
children who were deprived of the resources necessary to start business. During my stay land sales were still going on. The Nakanai sold small parcels of land, as far as I know only to Tolai, of whom some were block-holders, some were working in wage employment in the Hoskins area, and some were from the Gazelle Peninsula.

The settlers expected that the Nakanai would later attempt to retrieve the land, but that this would not be possible since they had accepted the purchase price. They realised that there might be trouble over the alienations but counted on the Administration to support them. When I made references to the troubled situation in the Gazelle Peninsula, I was told that this was different because the Tolai had received very little or nothing for their land while the Nakanai had received large sums of money.

During my research many Nakanai, women more than men, had entered wage employment, which the settlers considered a lowly occupation. Because so many women were employed during the day they could not look after large enough gardens and had to buy food from settlers at the weekly Kapore market. For the settlers this was another focus of censure.

Since I worked among the settlers and only occasionally visited Nakanai villages, I do not know their attitudes towards the settlers. It did seem that the people were very amicable towards strangers. They were impressed by the oil palm scheme, and people in Mai, the village closest to Kapore, told the local priest that they should put more effort into cash cropping and other business enterprises. They also showed great interest in the possibility of growing oil palm on their own land. The settlers, however, predicted that the palms, as a result of poor maintenance, would become overgrown and die.

Many settlers maintained social relationships with Nakanai individuals or groups. These relationships were variously based. Two Kapore block-holders, who worked in the settlement area before the scheme started, were married to Nakanai; a close kinsman of another Kapore holder was married to a Nakanai woman and was living uxorilocally. Several others, especially Tolai, had come to know Nakanai men before they resettled because the latter had worked in the Gazelle Peninsula, had traded shell money, or had been to school together, and so on. Others had established relationships after resettlement. Mostly people utilised these ties to establish an exchange relationship, through which they could receive betel nuts and coconuts in exchange for money or food.

1 This is also Chowning's opinion (personal communication, September 1971).
Settlers and Nakanai maintained formal contacts in the Hoskins Local Government Council. The settler councillors complained that the Nakanai councillors did not tok stret (talk straightforwardly) and stopped many good proposals put forward by the settlers. One issue which the Kapore councillors took very seriously arose when the council had been too lenient in granting tax exemptions and had to curtail its work programme as a result. One of the curtailments proposed concerned the construction of a sports field in Kapore community centre. The settlers had been granted tax exemptions but they felt strongly that they were entitled to council support. Accordingly, although the curtailment was rejected, I heard later several complaints that this attempt had been made.

The feelings of the settlers towards the Nakanai became even more critical during the visit of the Select Committee on Constitutional Development to Hoskins. This was a parliamentary committee which had to prepare proposals for constitutional changes embodying increased participation of local politicians and political institutions in the government of Papua New Guinea. It attempted to gauge the opinions of Papua New Guineans by holding public meetings throughout the country and inviting comments on questions which had been publicised beforehand. One of the questions concerned the date for self-government.
Plate 12. Three Tolai block-holders preparing for a wedding feast. The man on the left is preparing a dish made of megapode, or bush fowl, eggs. The eggs had been bought from the Nakanai and the Tolai holder knew how to prepare the dish because he was from Matupit near Rabaul where eggs are collected on the slopes of one of the volcanoes surrounding Rabaul harbour. The Nakanai collect them in a thermal area which forms part of their territories. The two other men came from the Kokopo area where they were close neighbours. They knew the Matupit man because his block was close to theirs, but he was also linked to them because he had matrilateral kin ties with people in the Kokopo area. We had just brought supplies for the feast in my car. Among the supplies was a small bottle of whisky which is being consumed.
On this question the opinions of the settlers and a group of Nakanai differed sharply. The settlers present during the meeting favoured self-government, some in 1972, others later. The argument favouring later self-government was mostly based on the early stage of development of the settlers' bisnis. Later, people felt, the settlers would have more money and be able to pay more taxes. Then they could be self-governing because their tax money would make up for the decrease or discontinuation of Australian aid. A group of Nakanai, who were said to be cargo cultists, opposed the settlers. They said that they wanted nothing to do with self-government and that their voice should prevail over that of the settlers because they had been living in the area for a long time while the settlers were only newcomers. Other Nakanai, however, were in favour of self-government, although not immediately. During these discussions, the meeting became more and more unruly. Several attempts were made to restore order and the Nakanai president of the Hoskins council told the group of cargo cultists that the meeting provided only an opportunity for discussions and that those present should be allowed freely to voice their opinions. When finally a settler, who gave the impression of being drunk, started to reproach the Australian Administration for the slow pace of development, a fight broke out and the meeting had to be suspended.

This incident seemed to convince the settlers that it was impossible to co-operate with the Nakanai. They ignored the fact that only a section of the Nakanai had opposed them. Many settlers favoured separate councils for themselves and for the Nakanai, although others argued that the current council should remain in existence; without it tensions and quarrels between the two groups would be more difficult to solve. Thus, while the settlers' emphasis on unity in the first place concerned unity among themselves, consideration was also given by some to unity among settlers and Nakanai.

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1 The amount of tax money which the settlers will contribute to public funds is very small compared with the amount of Australian aid, so their arguments were invalid. Other arguments in favour of independence by 1976 or 1980 took into account the fact that many areas in Papua New Guinea were still scarcely developed and that this should be changed before self-government was granted. These arguments were equally invalid, since large parts of the country will probably still be little developed by 1976 or 1980. Nevertheless, the members of the committee took note of the dates for self-government mentioned by the speakers without apparently recording the underlying arguments.
Preparations for harvesting

Late in 1970 preparations for harvesting started when the didiman advised block-holders to cease picking and discarding the young oil palm fruit bunches. Instead the young bunches were to be hand-pollinated at the time of flowering. This was a fairly elaborate task, partly because the time during which a bunch can fruitfully be pollinated is short, so pollination has to be done every three or four days; and partly because a bunch is set with small flowers, covered by a sheath, so care has to be taken that the pollen reaches all the flowers. An additional problem was that not all blocks had enough male flowers to enable the holder to pollinate all the female flowers. Hence the holders had to collect pollen from their blocks which was then pooled on the central estate and again handed out to the holders. They had to use this pollen within a few hours of receiving it. When the pollination programme started the holders had to inspect the first four acres to oil palm only; this work took them most of one morning and had to be done twice a week.

To facilitate extension work the didiman sent the section komiti to the estate where staff members trained them in hand-pollination. Subsequently there were meetings in Kapore - first for all the holders and later for each individual section - during which the didiman and the komiti explained the procedures to be followed. I witnessed the general meeting and two section meetings and to me it seemed that the komiti explained the techniques clearly, while, more importantly, what they said seemed to assume that they considered them worthwhile and manageable. In general the holders showed great interest, primarily because pollination signified that the first harvest was coming close. The actual work was disliked because it was repetitive and followed an exacting time schedule. Several settlers disregarded the didiman's advice, until the end of 1970, to cut the young fruit bunches, apparently because they doubted that they would be unable to sell these bunches after they had developed. Several also did not undertake hand-pollination. The result, according to the didiman, would be that many of the fruits of these bunches would not grow so the company would reject them because of their low oil content. Many rejections might lead to an increase in discontent, especially if hand-pollinated bunches are rejected or non-pollinated ones accepted.

The pollination programme coincided with artificial manuring of the oil palm holdings and with discussions about how to organise the transport of the oil palm fruits from the blocks to the factory. The didiman had suggested several possibilities
Plate 13. Distribution of pollen. The pollen is collected by the block-holders and pooled centrally; then it is distributed to the block-holders by an agricultural assistant.

Plate 14. A block-holder pollinating a flowering bunch (the plastic bottle containing pollen is in his right hand)
to the settlers: the transport could be handed over to the company managing the estate and mill; it could be run by another company, not controlled by the settlers; it could be run by a joint venture of the settlers and some other agency; or it could be handled by the settlers themselves. The settlers, as in the case of outsiders' businesses in the community centre,1 opted to exclude outside interests and were strongly in favour of establishing their own transport company. They felt that an outsider would charge higher prices than they themselves would, while they also realised that an outsider might not exclusively employ settlers and their grown-up children. The problem was, however, to raise the money to buy the heavy tractors and trailers necessary. The solution conceived by the settlement staff was to use a part of the development loan, namely part of the monthly cash allowance. This allowance was scheduled for payment over four years (see Table 3.5) while the holders would receive their first returns about three years after initial payments. Hence about $64 would be left which, if the holders were agreeable, could be spent for other purposes. This idea was put to the settlers who welcomed it.

During the ensuing months many settlers experimented with pollination. Some left a few bunches unpollinated to find out if the pollinated ones would in fact grow better. They also experimented with techniques for spraying the processed pollen. The recommended method employed flexible plastic bottles with the opening covered by cloth. Most settlers started to use other types of cloth and also other bottles, usually baby-bottles. The best results were apparently achieved by a holder using a baby-bottle with a rubber teat but this invention had not, as yet, been taken over by others when I left the field in July 1971. The quality of oil yielded by palms is closely related to the ripeness of the bunches when cut (Hartley 1967: 435ff). To teach the settlers when to cut bunches, the section komiti were again sent to the central estate to receive instruction. Later they held meetings with the settlers in their section, with one of the DASF extension staff present, to show them what they had learnt. This method seemed to work satisfactorily.

1 See p.50.
At the same time the settlers had also to clear small plots where they would deposit the harvested bunches to be collected for transport to the oil mill (see Fig. 3.5). The fruits were to be carried along paths made between the rows of palms. The paths were not easy to make because tree stumps and the stems of felled trees were in the way. Accordingly few men made them as advised. Just before harvesting started the settlers were provided with jute and ropes to fasten to a pole carried on the shoulder. Since oil palm fruit bunches may weigh twenty pounds or more, the didiman considered that, for manual transport, this method of carrying required least effort because the load had to be lifted minimally. However, only a few men used the jute and ropes in this way. Some used the jute to fashion stretchers on which they loaded bunches. Others made it into bags with the strap carried over the shoulder. Some women tried to use the jute and rope as a netbag. Some simply used the ordinary netbags, while others used large enamel bowls carried on the head. The few who followed the advised procedure did manage to carry more bunches at one attempt than did the others.

Preparations were also being made at this time for the official opening of the oil mill on 14 July 1971. The management of the factory encouraged the Papua New Guineans to participate as much as possible and the latter readily availed themselves of the opportunity. Large groups of settlers were present during the welcoming of the Minister for External Territories who performed the opening ceremony, during the official speeches which, with the exception of a speech by one of the settlers, were made in English and translated into Pidgin, and during the inspection of the factory. The komiti bilong komiti and directors of the co-operative societies were invited to the cocktail party afterwards. Kin of settlers had come to Hoskins for the opening. Many settlers regarded the small number of factories in their country as a clear indication of its lack of development. Consequently they appreciated the establishment of the mill as a sign that progress was being made. People were impressed by the size of the milling complex and expressed regret that they had not seen it in operation.

Groups of settlers, plantation labourers and Nakanai performed traditional dances (singsing). In Kapore Chimbu, Dagua (with some other Sepik men), and Tolai had prepared separate singsing. The Dagua, however, cancelled their performance because of a quarrel with Dagua in Tamba settlement who claimed that the Kapore Dagua had unilaterally informed the factory management which singsing they wanted to perform. This singsing was bought by Maika from a group of people living near Madang when he and his wantok were living on the coast west
of Wewak. Maika taught the Kapore Dagua how to perform it properly. The Tamba men wanted to perform another *singsing*, but since the management had decided that one ethnic group could perform only one *singsing* and that the group of dancers should not exceed about fifty people, this was not possible. These restrictions on the number of *singsing* and participants were made because of the killing of a Tolai overseer a few months earlier; plantation management was apprehensive that animosities still persisted and would lead to brawling and fights.

During preparatory discussions management had offered to reward the dancers for their performance. The Kapore settlers, however, were opposed to receiving rewards, saying that they wanted to perform the *singsing* as an expression of gratitude to the management for the establishment of the factory, thus also emphasising the contribution they felt the company was making towards economic development in their area.

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**Fig. 3.5.** Generalised modular arrangement of eight smallholder blocks
Plate 15. The couple harvesting use large enamel bowls to transport bunches rather than the nets distributed.

Plate 16. A block-holder levers a bunch with his chisel while harvesting (he has already cut the frond underneath the bunch).
The first harvest took place on 19 July. The settlers had been warned to start early so that they would be ready when a tractor and trailer came to collect the harvested bunches. The didiman had prepared a work programme according to which each block had to be harvested once a week. As much as possible blocks on opposite sides of roads were to be harvested on different days so the holders could help one another. I witnessed only the first two days of harvesting and the planned pattern of co-operation was mostly followed. However, there were many more helpers than planned, including assistants living on the block to be harvested, some block-holders and assistants from other parts of the settlement, and also holders from other settlements. Usually the additional helpers were kin of the harvesting holder, although in some cases it was not just the kinship tie which prompted people to help one another but rather the previous prestations which had characterised their specific relationships.

Harvesting is very heavy work and has to be done quickly. Carrying bunches takes a great deal of effort and cutting them is difficult because many bunches are so large that they are stuck between the stems of the palms and other bunches and fronds. Cutting the older fronds facilitates cutting the ripe bunches but seems to harm the growth of the palms. The didiman had warned the settlers against doing this but many did not heed the warning. In addition, fronds and bunches have sharp spikes so the harvester has to be cautious. Because of the large amount of assistance most harvesting holders received, they were able to complete the work in three or four hours. It was my impression that the planned work unit, namely two married couples, in many cases would not have been able to complete the work in time. However, people were still inexperienced, the absence of enough roads on many blocks did not allow easy transport, and this harvest was particularly large. There were a number of very ripe bunches which, if it had not been the first harvest, would have been cut the previous week. Also people, because of their inexperience, sometimes cut unripe bunches. Several settlers harvested more than 200 bunches. Collecting and transporting the harvested bunches to the oil mill proceeded less efficiently than harvesting, partly because, as the harvest was larger than expected, transport facilities were inadequate.

Harvesting proceeded in great excitement and many settlers were elated by the results. Once I was particularly requested to photograph a holder standing beside the heaps of bunches harvested on his block. He had the largest harvest in his section, more than 300 bunches; I was told, however, that the
Land Board had been reluctant to recommend him for a block since he did not seem to have the strength required for such work.

The lengthy preparations for the harvest had aroused the high expectations of the settlers with regard to the profitability of this new crop. When DASF and other Administration officials told the settlers that cultivation of oil palm was more profitable than that of other crops, they seemed to have misinterpreted this and to have come to believe that the returns of this new bisnis were radically different from those they had been engaged in before, much more so than they in fact were. Sankoff (1960:78), when analysing the expectations of Papua New Guineans in the Morobe District about social and economic development, observed:

> With each new scheme or project (co-operative society, savings and loans society, local government council, even the establishment of savings accounts and the distribution of bankbooks), people's hopes are raised, only to be dashed again when they realise that there has been no appreciable change in their standard of living, no significant increase in their income, in fact no real progress, for them, at all.

For many Kapore settlers it seemed that an increase in their income would only be significant and progress only be real if it enabled them to attain a standard of living similar to the one they saw displayed by Europeans. People showed great interest in several of the 'luxury' objects in my house, such as a gas lamp and stove, but they were most interested in my car. I was asked several times for its price and some made clear that they would like to use a car privately rather than for bisnis. Many said they were looking forward to being able to travel and to see the places other people were telling them about. In most cases people were eager to go to Port Moresby, and some wanted also to go to Australia. Because of the constant flow of visitors to the oil palm scheme and the frequent absence of settlement staff in Port Moresby and elsewhere, travelling may have been seen as an aspect of the European way of life which the settlers wanted to emulate.

The dissatisfaction of the settlers with their current standard of living was vigorously expressed during the visit of the 1971 Trusteeship Council Mission to New Guinea. The visit took place in early February while I was living in Kapore. A meeting was held in the Kapore community centre and settlers from all settlements attended. Most of the visit was taken up
by settlers presenting to the mission their views on conditions in the settlements. There were many complaints and requests for further assistance. The sharpest criticisms were directed at the houses with which the settlers were provided. There were other complaints about the small size of the development loans and the small expenditure on community services. The speakers were well prepared and several had written down the main points they wanted to discuss. In general, the terms they used were less critical than I had heard just before the meeting started.

The behaviour of the settlers before and during the meeting shows several parallels with the behaviour of urban workers during a strike at a Port Moresby brewery in 1965. It was very short-lived, achieved little and, according to management and Administration officials, was purposeless. Rew (1970:30ff.) argued that it was an example of expressive rather than instrumental politics. Spokesmen for the strikers made a series of complaints, and, in Rew's view, the primary significance of these complaints was that they expressed a basic grievance against the racial segregation operating in the brewery and the town at large. Many complaints were made about their housing because the inferior status of the workers 'was most conspicuously symbolised in the contrast between their own living conditions and those of Europeans' (Rew 1970:311). The settlers also protested against their housing conditions and, although Rew's descriptions make clear that the settlers were better off than the brewery workers and they could hope to improve their houses shortly with money earned by selling oil palm fruits, there was still a conspicuous difference between settlers' houses and the house of the European didiman. Given the socio-economic conditions in Papua New Guinea this difference may be considered unavoidable, but the criticism of the settlers was implicitly directed at these conditions since they felt entitled to economic equality with Europeans.

The settlers hoped that the returns from their oil palm blocks would enable them to live like Europeans do in Papua New Guinea. They seemed to regard the Administration as being obliged to help them attain this standard and they also expected help from private enterprise. While I know that in their view private enterprise in Papua New Guinea should not operate to profit only itself, I am not certain if the settlers felt it was as strongly obliged to help as was the Administration.

Similar ideas on the obligations of the Administration and private enterprise have been reported from other parts of Papua New Guinea, notably by R.S. Finney, who in her survey among high school students from several parts of the country also investi-
gated their attitudes towards Europeans. She concluded (1971: 106) that although

few [Europeans], even in the Administration, would see themselves as being in New Guinea solely for altruistic reasons, and surely businessmen could be surprised to discover that they are expected to run businesses for the benefit of New Guineans rather than for personal profit,

the students 'assumed parental and unselfish interest on the part of Australia' and 'thought it natural that New Guineans should make requests of, and expect their wants to be of interest to, Australia' (R.S. Finney 1971:104). Brown (1967:31) observed that Kondom Agaundo, the most prominent promoter of economic development among the Chimbu, asserted in many of his speeches that 'the mission, the government, the doctor and business have all come to Chimbu to help them'. B.R. Finney (1970:124-5) described how Gorokans hoped to benefit from land sales to European planters:

It is apparent, then, that the land rush of the early 1950s was not just a one-sided, European affair; Gorokans as well as Europeans had their eyes firmly set on profiting from 'partnership'. While the settlers were after cheap land, labour and produce, the Gorokans were out to make a profit furnishing these, and were also anxious to learn about European productive techniques in order to obtain a more direct and rewarding access to the wealth offered by the outside world.

The Gorokans' expectations were not fulfilled, however, because they remained junior partners in the relationship and Finney (1970:134) asserted that in future enterprises Gorokans would be prepared to work only if they were equal, if not senior, partners.

For the Kapore settlers the oil palm scheme was the means whereby the Europeans had discharged their obligation to help them advance. But in assessing the ability of the scheme to satisfy their economic and social aspirations, the settlers noticed only their elementary housing and the small size of their loans. This they interpreted as signifying that the scheme might not be as profitable to them as they had hoped and that, accordingly, they were still being treated as inferior to, or, in Finney's term, as junior partners of, the Europeans.
**Postscript: settlers' reactions to earnings**

The preceding part of this paper was written prior to my final field trip during December 1971 and January 1972. During this trip only was I able to observe the settlers' reactions to their earnings which they first received in September 1971. Returns were higher than anticipated due to, first, much higher yields than expected, especially from the settlers' blocks, and secondly, a high price level for palm oil. Several holders received about $150 gross per month over the first five months of harvesting. Comparing this figure with the projected returns shown in Table 3.5, it appears that these settlers during the first five months earned more than they were scheduled to earn during the first eighteen months after the commencement of harvesting. Loan repayments were accordingly accelerated, which meant a considerable saving in interest to be repaid. Yet many people were not fully content with what they received. My stay lasted for six weeks and I only became gradually aware of their discontent. I am uncertain if this was because at first I did not perceive it or because it grew during my stay. Discontent was not as strong among the Tolai, with their greater experience in cash cropping and other *bisnis*, as among Sepik and Chimbu settlers.

One reason for the discontent was the method of harvesting. The settlers had been told by the didiman that the harvested fruit bunches would be weighed on collection at the blocks. But when the delivery of the scales were delayed the first bunches were counted at the blocks and later weighed at the oil mill. Returns were calculated on the basis of average bunch weight. The settlers soon protested against this, partly because this method favoured settlers who produced small bunches—in other words those settlers who did not hand-pollinate properly—and partly because they could not observe the weighing-in themselves. They called a meeting with the didiman and kiap during which the DC explained that the scales were soon to arrive. Their arrival, however, provided only a partial solution because many settlers were unable to read them properly and so could not check the figures mentioned. No instruction was given in how to read the scales. Moreover, they measured in kilograms, a measure unknown to the settlers. Many had previously sold coffee, copra or other cash crops which were weighed

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1 The reactions described in this section occurred prior to the reduction in prices mentioned by Fleming (p.19), which took place after my last field trip.
in pounds and they noticed that weights expressed in kilograms seemed to be much smaller than when expressed in pounds. They wondered whether this entailed a financial disadvantage for them.

Another source of concern was the method of payment. Payments occurred every four weeks for deliveries made from three to seven weeks before. Automatic deductions were made for transporting the harvested bunches from the blocks to the mill and for repaying the development loan (about 5 per cent and 47.5 per cent respectively). These figures were given on a pay-slip which, among other things, also mentioned the amount (in kilograms) harvested during the pay-period concerned, the price of one metric ton or 1,000 kilograms of oil palm fruit bunches, and the percentage of this price which the settlers received. Since the oil content of fruits of young palms is low and increases gradually (Hartley 1967:256), the settlers were to receive the full price only after several years. However, the actual price per ton which the settlers were currently receiving was not mentioned and very few were able to calculate it from the figures provided. Several settlers told me that they had been able to check prices given for a known account of copra or coffee for a given price by means of a ready reckoner. They would have liked to check their oil palm revenues similarly but because they did not know the price per ton they were unable to do so and felt insecure over this. The didiman had told the settlers that with an increase in the oil content of their produce they would receive a better price but several settlers had apparently expected this to happen within a few months.

The pay-slips also mentioned the outstanding balance of the development loan, but there was no clear relationship between the balance shown on one pay-slip, the amount repaid, and the balance shown on the next one. This was because the Development Bank in the meantime had debited the balance with new entries, for example, for fertiliser, rent and interest. Sometimes the balance was reduced by a larger amount than the last repayment. This puzzled those settlers who were able to check these figures. For less sophisticated settlers the figures on the pay-slip, at least those concerning the development loan, seemed to lack reality. Several still wondered whether they had to repay the full amount of the loan, namely $1,870,¹ although the figures given indicated that the outstanding balance was less.

¹ Cf. p. 61.
The Development Bank intended to provide all block-holders who borrowed money from it, that is, all Kapore block-holders, with balance sheets showing both advances and repayments made, the dates on which they were made, and the resulting balance, in the same way as, for example, balance sheets of cheque account holders. I knew of only one holder who had received one and he did not understand its significance. Every effort should be made to explain to the settlers that these sheets provide an opportunity for them to follow and check the operations of the Bank.

In general, officials seem to have underrated the wariness of the settlers towards the Administration and institutions such as the Development Bank. With regard to harvesting and payments also, it was clear that extension work focused too much on agricultural practices and too little on the workings of the large undertaking in which the settlers had to co-operate with Administration, Bank and company officials and which was new to them and only partly understood. Dore (1971:54-5) remarks about modern co-operatives that they

are based on institutionalised suspicion.... Man, the assumption is, has an inevitable tendency to corruption. Therefore organisations must build in checks and balances such as the audit and the periodic re-election of officers.... Institutionalised suspicion in the long run benefits all, including those against whom it is directed. Thus the treasurer welcomes the audit... because it clears him of suspicion.

Dore's argument applies also to the Hoskins project. Hence officials should assume that settlers regard their actions with suspicion and they should, as much as possible, institutionalise checks by means of which settlers can scrutinise these actions. The company and the Development Bank should work with the didiman in the extension work.2

Other symptoms of the wariness of the settlers were, first, their repeated desire that some of them should be sent to Malaya where, they had been told, oil palm was an established crop. These men would then be able to find out for themselves about oil palm cultivation there, how much the palms produced,

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1 Cf. p.109.
2 T.K. Moulik makes an analogous suggestion about the tobacco companies operating in the central highlands ("Tobacco men are fuming", Papua New Guinea Post-Courier, 26 November 1971).
and the price per ton of fruit bunches. One holder asked me to write a letter to Malaya inquiring about this price and about the availability of accommodation for guests. This desire was felt also by settlers whose palms were less developed. One of the settlers was a candidate for the 1972 House of Assembly and I witnessed a campaign meeting he held in a settlement established two years after Kapore. The candidate mentioned that, if elected, he would try to arrange for settlers to be sent to Malaya to observe oil palm cultivation there. This remark elicited an enthusiastic response from the audience.

Secondly, settlers tried to check with me information they had received from the didiman. For example, the meaning of the different figures on the pay-slips had been explained to them, but several asked me to explain them, claiming no explanation had been given. Such wariness might be partly overcome if more photographs and films about oil palm cultivation and the processing of fruit bunches were shown. Such materials could be shown frequently while settlers observe the growth of their own oil palms.

The settlers were also concerned about the decreasing number of fruit bunches the palms were producing. This resulted partly from the fact that the palms bore a larger than average number of bunches just after the settlers had stopped cutting the unripe premature bunches. There might also have been seasonal variations in bunch production but, more importantly, soil fertility might have been deteriorating. Investigations were being undertaken to assess the most effective fertilisation programme. In general, the number of bunches decreases when palms grow older but this is offset by the increase in bunch size (Hartley 1967:236-7). Moreover, as mentioned above, the oil content of the fruits will increase in the next few years.

The main cause of settlers' uneasiness, however, was their unrealistically high expectation about the profitability of their undertaking and the speed with which their standard of living would be raised. The settlers were not told what income they could expect from their holdings and rumours circulating in Kapore about the returns quoted fantastically high prices for oil palm. Several settlers told me that they would receive 50¢ or even $1 per fruit. On this basis one bunch would yield up to $100 or more, whereas the actual yield is about 20¢ to 30¢ per bunch. One settler told me that these beliefs had started because the settlers knew they had to pay around 75¢ for one seedling, each of which sprouted from one fruit. It may well be that many Papua New Guineans, when attempting to explain the conspicuous affluence of expatriates living in
their country, exaggerate the profitability of the latter's economic undertakings. Sankoff (1969) found that indigenous shareholders in Namus, a mission-inspired company based in Lae, were bitterly disappointed about the returns on their investment, although the company had paid dividends of up to 10 per cent (Fairbairn 1969:31). A Kapore block-holder, who had bought a $20 share in a local hotel enterprise, asked me how much profit he could expect from this. I told him that he was most likely to receive about $1 to $2 per year and I gave him some examples of returns I myself had received on similar investments. He answered that $1 to $2 was not worth his while and that he would try to get his $20 back. Later I heard this holder and another holder again discuss how much profit a $20 share would yield. The shareholder, apparently discarding my argument, said that it might be about $100 per year, but the other man said that hotel enterprises were highly profitable so he could expect more. Unfortunately I did not make systematic inquiries into the opinions of other Kapore settlers on this matter.

Several settlers told me that, in contrast to what they had been told by DASF and other Administration officials, the returns they received were similar to those from cash crops such as copra and coffee. While, for oil palm, returns per man-day are higher than for other cash crops (Emmery 1970:12), it seems to me that settlers said they were similar because, in their view, returns did not show the 'significant'¹ increase they had expected. They said that a number of settlers did not feel it worth their while to maintain the second half of their holding which was scheduled to come into production during late 1972. In fact, several of these holdings were neglected and the palms were so closely surrounded by pueraria vines and other plants that it seemed unlikely they could be pollinated. Pollination should have started shortly after my last visit if harvesting was to begin on schedule.

The settlers' uneasiness led to a sharp clash between one of the didiman and a Kapore settler. The didiman had called a meeting after a group of Sepik settlers had threatened to assault one of the company officials who weighed the harvested fruits upon delivery. The Sepik men, whose identity the didiman did not disclose, had claimed that the official, a Tolai, favoured his wantok by overvaluing their harvest and under-valuing the harvest of the Sepik settlers. The didiman spoke

¹ My observations do not extend to the period during which 'payments were sharply reduced', as described by Fleming (p.19).
out strongly against these suspicions and threats, arguing that the official had worked among the settlers for several years, was an honest man and was well known to them. He added that the official's actions could be checked since the harvested fruits were again weighed upon arrival at the oil mill complex. There, however, the loads of single carts are weighed and these usually do not coincide with the harvests of individual settlers. Also, weighing at the mill does not occur in the presence of the settlers and they cannot check its accuracy. The didiman warned that in the future he would not accept the harvest of settlers who made similar accusations. This meant that they would be unable to pay their loan instalments, so the Development Bank would foreclose on them.

The didiman was answered by Yima, an argumentative and opinionated Sepik block-holder, who started by accusing the section komiti of inactivity because they did not convene meetings and so made it impossible for the settlers to transmit their problems to them. He said the settlers were greatly concerned about the smallness of the returns which had not enabled them to improve their standard of living. The didiman unwise tried to interrupt, but Yima told him curtly to wait until he had finished. He continued by saying that the weighing in the oil mill was deceitful since he had harvested about 4½ tons during the latest pay-period and received only about $30. Since the meeting took place only a few days before I left I was unable to check the accuracy of these statements. If Yima had in fact harvested 4½ tons in one month, his return should have been about $50. The didiman, angry by now, answered these charges by referring to the honesty and trustworthiness of the company. He reminded the settlers that if they were in wage employment they would receive far less than they did now and that those who were dissatisfied were free to sell their block leases and go. Yima seemed to take this as a threat and said that he would resist any attempt to take his block from him. Then another settler, Nawani, started to defend the official accused of dishonest weighing. Yima interrupted him, saying that Nawani was only trying to please the didiman. At this point the didiman became furious, said he had had enough of the Kapore settlers, left the meeting, and drove off in his car. His departure did not impress the settlers, one of whom said that if he resigned another would take his place. Later Nawani said that he had only wanted to 'kaisim tok bilong masta' ('find out what the white man had to say') and to press subsequently for instruction in reading a scale.

While many settlers doubted the veracity of Yima's allegations, I heard Nawani's wish for instruction repeated by
several settlers, together with more general expressions of dissatisfaction.

The clash illustrates several points I referred to earlier. First, didiman and settler were talking at cross-purposes. While the former was referring to the large size of the settlers' income relative to that of most other Papua New Guineans, Yima was referring to the standard of living he had hoped to attain. Secondly, while the didiman stressed that the company and its officials were trustworthy, it would seem preferable to open their actions as much as possible to the scrutiny of the settlers. Finally, the disappointment of the settlers who accused the official was in this case expressed in interethnic hostility; Yima also attacked the settler officials. Given the short period of my research, I feel unable to predict what further responses settlers will make to cope with their disappointment, but in this tense situation an active but careful approach by Administration and other officials is necessary.

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PART IV

Activity patterns of oil palm smallholders

R. T. SHAND
AND
W. F. STRAATMANS
Introduction

This paper presents the first results of a project designed to examine the activity, income and expenditure patterns of smallholders at Kapore, the first subdivision established at Hoskins. The survey began in 1968, soon after the commencement of Kapore, and continued over four years, during which time the blocks were established and the first palms came into production.

After a brief description of the conduct of the survey and some comments upon the data obtained, the paper presents an overall picture of the pattern of settler activities based on the average performance of sample households during the first year of the survey. This is followed by case studies of individual household performances. The paper concludes with some remarks concerning the range of these activity patterns and the significant influences upon them. The analysis is by no means exhaustive even in relation to the data selected for this paper (for example, we concentrate primarily upon economic activities). It should be regarded as part of the larger continuing study which may well require some modifications of interpretation as later survey years are examined. Even so, we consider such modifications will not seriously imperil the inferences drawn in this interim analysis.

The survey

After exploratory investigation in the area to determine the most appropriate survey method and fieldwork techniques, it was decided to conduct the survey on a basis which was essentially a compromise between the competing ideals of obtaining data which gave depth of detail on individual households, and data which gave a wide coverage of households and a representative picture of the whole settlement.

1 The authors are greatly indebted to Mrs Beverly Gothe and Mrs Audrey Cornish for assistance in the preparation and analysis of data for this paper. Figures were drawn by L. Pancino.

2 The study project also included a parallel survey, conducted for identical purposes and along identical lines, of smallholders growing tea on blocks on the periphery of a nucleus estate at Wurup, near Mt Hagen, in the Western Highlands.
Three visits a year were made to selected households over the four-year period. During each visit data were recorded on a daily basis for each household, seven days a week over four weeks. Thus data were collected for 25 per cent of each year (although not for all households in year 1), a large sample proportion on a time basis. A data recorder for each household was appointed to obtain accurate details of the activities of each household member. Each evening the details of the day's activities were recorded on data sheets (prepared in Pidgin). The sheets were finalised after extensive testing and modification under field conditions. Each day's sheets were checked in the field and any apparent anomalies were subsequently discussed with the recorder and informant involved. After each visit data were again checked, then processed and coded for computer recording and analysis.

Nine households were included in the first visit of year 1 but one was excluded after this visit. By the end of the year the number had grown to 17, about 13 per cent of the 129 settler blocks at Kapore. The major ethnic and regional groups to which settlers belonged - Chimbu, Sepik and Tolai - were represented in the survey sample. In year 1 there were 3 Chimbus (subsequently increased to 6), 7 Sepiks, 5 Tolais (later increased to 7) and 1 Papuan. One household from Manam Island was also included.

The selection of particular households was a difficult process because of the unusual and exacting nature of data collection. In order to record a large volume of detailed data respondents needed to have a significant level of literacy in Pidgin. Not all household heads had achieved this so substitute recorders had to be found who were literate, reliable and who had the confidence of the household. Mostly these were children of the family or relatives who had some schooling, although a few were friends. Despite the obvious difficulties inherent in such arrangements, few of the informants or recorder-informants showed themselves as unreliable or unsatisfactory sources of data, although various individual weaknesses necessitated special attention from the fieldworker in order to eliminate or minimise inconsistencies and errors. In year 1, 17 of the 18 household records were considered reliable enough for inclusion in the analysis. With respect to the one excluded (household 9), only one visit was recorded and this was made with difficulty owing to poor contact between recorder and informant and the absence of a satisfactory alternative recorder.

Another requirement in household selection was a reasonable expectation that the informant and recorder would continue to
co-operate over the full four years. While this need not detain us here as we are involved with only the first year, it is worth noting that there were very few 'drop-outs' over the period and indeed many who requested inclusion had to be refused in order to avoid an unmanageably large sample.

Some of the households included in the following analysis provided records on only one or two visits. Numbers were particularly limited in visit 1, which was used to test the schedule of questions, the nature of informant response, and the recorder-informant working relationship. The data obtained were carefully assessed to determine whether any adjustments in survey approach were needed. During this visit some of the families who were being tested with the questionnaires failed to provide data with the regularity and accuracy required. This generally was not due to any unwillingness to co-operate, or because the rewards for co-operation were too low. In most cases it was due to an inadequate standard of literacy and a rate of progress in developing an acceptable recording standard which was too slow even with constant checking and intensive instruction on procedures. Visit 1 did, in fact, involve considerable training and as a result even for those 8 households included the first two weeks' data could not be relied upon for accuracy. Only the subsequent two weeks' recording is included in the analysis below.

Some households were on a reserve list of informants in case of drop-outs and were tested for suitability with the questionnaire during visit 1. Their data for that visit, however, could not be used for analysis. A number of these households were subsequently included in the sample and commenced recording in visit 2. A few of those who filled gaps in visit 2 left by visit 1 drop-outs were of obviously high literacy levels and required no testing before inclusion. One individual (household 18) was added to the sample in visit 3 for this reason.

The data for year 1 comprise records of three visits for 8 households, two visits for 8 households and one visit for 1 household. Records for each household comprised four weeks' data for each visit except the first where they were restricted

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1 Informants were paid $6.50 per month at the conclusion of each visit.

2 Most commonly there was a problem in adapting to the different time-scale which was required for recording a full day's activities.
to two weeks. Details of sample household composition are given in Table 4.2.

Six major categories of activities were distinguished in the survey, three of them economic - subsistence, cash cropping (oil palm) and other - and three non-economic - household, leisure and miscellaneous.\(^1\) Sub-categories were distinguished within each of these as shown in Figs. 4.6 and 4.7. Activity data were recorded on the basis of a thirteen-hour day (day-light hours) and included each member of the family - husband, wife (one or more) and children. Work on the household's own block (own) and help given to others (other) were recorded separately, and outside assistance given by relatives or friends not living on the block (Fig. 4.3) was also included to obtain a total work picture of the informant's block.

**Activity patterns: the average household**

We now turn to an examination of activity patterns, first of the average sample household, and then of individual households as case studies (Table 4.1 and Figs. 4.1 to 4.7). The annual average performance was calculated as the average of the three separate visits during the year, thus giving equal weight to each visit. However, as mentioned, the number of observations, particularly in visit 1, was limited, and the selection of sample households provided no assurance of a representative cross-section of performance of the whole population of settlers.\(^2\) For this and other reasons, much attention is given below to the analysis of individual sample household performances.

Table 4.1 shows the average household's average daily allocation of time for year 1. Subsistence gardening absorbed an average of 4.3 hours daily per household block. About 50 per cent of this was contributed by the wife, about 30 per cent by the husband, and the rest by household children and outside help with an emphasis upon the former. The assistance given by the average household to others in subsistence tasks over year 1 (0.4 hour average daily) exceeded that received from outside although the difference was not substantial. In the aggregate, time devoted to this work category by individuals

\(^1\) These were, of course, expressed in familiar terms to the settlers on the data sheets used daily in the survey.

\(^2\) The limitations of the calculations of the average household as a representative indicator can be further appreciated from the foregoing discussion of survey method and data.
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Fig. 4.1.
Average daily time allocation of average adult male, year 1
was low, with 9 hours per week per adult male, 15½ hours per adult female and 5½ hours per week for children and outside assistance. However, the total figure of 30 hours per week is quite significant, and slightly more so when the addition of help given to others increases the total to 33 hours per week. The sharing of these tasks thus greatly reduced their significance for individuals, particularly adult males.

Oil palm work absorbed an average of 6.6 hours labour daily on the average household's own block, or a substantial 46 hours weekly, of which outside help contributed 24 per cent. Within the household the adult male was the main contributor, well ahead of the wife who nevertheless made a considerable effort (over 13 hours weekly). The combined totals of subsistence and oil palm work for the adult male and female were similar (3.9 and 4.1 hours daily, respectively). Total assistance provided to others for oil palm work by average household members was 1.3 hours daily on average which was a little lower than the average outside help received (1.8 hours) and was roughly one-quarter of the effort devoted by the household to its own block.

The low average for other economic activities indicates the settler households' high general concentration of involvement in year 1 on the two categories of subsistence and oil palm work. This third category, combined with the two main categories, gives the sum total of household economic activities. For the adult male this amounted to about 38 hours per week of which 31.5 hours were devoted to his own household interests. The adult female's total contribution to the household interests was similar to the male's (albeit with a slightly different distribution of effort), although because her assistance given to others was on average a little less than that of the male, her total economic involvement was also slightly lower (35 hours per week). The total contributions of children and of outside help were both minor. The average total level of involvement of the household in its own economic interests was a substantial 69 hours per week, while 14 hours per week were received from outside help, and total assistance given to others averaged 11 hours per week.

The difference in average economic activity between males and females was more than compensated for by the inputs of the latter in household activities, which were greatly in excess of those of the adult male (21 as against 13 hours per week). This category was, in fact, the most important for the adult female, followed by subsistence gardening and oil palm work. It can be seen from Table 4.1 that among non-economic activities, housework and leisure absorbed virtually all remaining
Fig. 4.2. Average daily time allocation of average adult female, year 1
time for both average adult males and females. Children's interests were more diverse, as might be expected.

Comparison of average household activity patterns for particular visits with the annual average does not reveal a great range of variation. It was most notable in time given to subsistence tasks where, in visit 1, the averages for the adult male, female and for children were much higher than in subsequent visits. This may have been because visit 1 coincided with the initial establishment of food gardens for many households. The below average inputs for this work in visits 2 and 3 may be more indicative of long-term requirements once gardens are established and producing. Thus the annual average may be somewhat inflated by the relatively high inputs of visit 1.

In oil palm activities there was considerable intervisit variation for the average adult male with a range of from 14.7 to 23.8 hours per week on his own block and from 3.5 to 9.1 hours per week in assistance given to others. Average female labour was steady over all visits while children's contributions remained minor, and outside help for the average household was variable. This picture of general variability appears consistent with expectations during the establishment phase on settlement blocks, when particular visits may coincide in some cases with periods of intense activity (e.g., land preparation) and with other periods when labour demands are much lower (e.g., for maintenance tasks after planting). This assumes, of course, that settlers follow the same time-path of block development, but this assumption seems broadly reasonable in the light of data given in Table 4.2, although some variation between households in the timing of oil palm tasks was apparent.

There were no major variations in other economic activities between visits which would suggest particular concentration of such activities at particular periods of the year. However, involvement in other economic activities was greatest in visit 2 for the adult male when the combined average of subsistence and oil palm activities was lowest.

Total involvement in economic activities was greatest during visit 1 for the adult male and female primarily because they were then most heavily involved in subsistence work. In this period the average male allocated a total of 42 hours per week to economic activities and the average female 40 hours per week, while outside assistance from others was also at its maximum. Average leisure hours both for average adult male and female were low in visit 1, suggesting that the demands of subsistence work may have required a sacrifice in leisure.
Outside help received by the average household averaged 2 hours per day for the whole year and the averages for particular visits did not vary significantly, as shown in Table 4.1. However, Fig. 4.3 shows the considerable variation between households in outside help received. Some like households 6, 11 and 16 received none at all, others like households 14 and 17 received little, while a number availed themselves of large amounts, for example, households 3 and 12. For those which did receive help, there was considerable intervisit variation in the amount. With few exceptions, the help received was overwhelmingly devoted to oil palm tasks.

Figs. 4.4 and 4.5 provide a breakdown of the distribution of daily activities during the week for the adult male and female respectively in the average household, for year 1 and for the three separate visits.

For the adult male, data for the year indicate a fairly consistent average total input for economic activities of about 7 hours per day (own and other) on weekdays, 4 to 5 hours on Saturdays and 2 hours on Sundays. Labour inputs for subsistence were maintained at 1 to 2 hours per day throughout the week. Other economic activities were similarly distributed although with fewer hours, particularly on Saturdays and Sundays. The category which was seriously reduced on Saturdays, and more so on Sundays, was oil palm work. Among other activities, leisure was important on Saturdays at about 5 hours average and more so on Sundays (almost 9 hours). Assistance given to others was significant throughout the weekdays but less so on weekends.

Time allocation for the average adult male on particular visits showed some variation from the year's pattern. One feature was the assistance given to others in oil palm work during the weekdays of visit 1. Another was the greater allocation of time to oil palm work in visit 3, while a third was the concentration of other economic activities during the weekdays of visit 2.

For the adult female, economic activities were again concentrated on weekdays with an average of 4 to 5 hours per day.

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1 The fact that total average daily times in all categories do not add up to 13 hours is due to a fault in the computer programme which could not be rectified in time for the adjustment to be made for this paper. The correction will add marginally to each category but will not change the relative importance of each.
Fig. 4.3. Average daily outside assistance given to sample households, by task, year 1
The average was a little less than 4 hours on Saturdays and less than 2 hours on Sundays when leisure was particularly important (almost 8 hours average). Subsistence work was important throughout the week and comprised most of the weekend work as well. The average time spent on leisure was slightly lower for adult females than for adult males. Data for particular survey visits show a relatively large time allocation for subsistence work for adult females in visit 1 (garden establishment) and for other economic activities in visits 2 and 3. Assistance to others was most significant in visit 1.

The three categories of economic activity of the survey households were broken down into sub-categories in the questionnaires and Fig. 4.6 shows the distribution of time allocated to specific tasks for the average adult male and female arranged by days of the week for year 1 as a whole. For subsistence gardening, work was distributed fairly evenly for the adult male between the four main tasks of land preparation, planting, maintenance and harvesting. There were fluctuations in total time devoted to subsistence tasks over the week but these were not great. As noted above, the average adult female devoted slightly more time to subsistence than the male and she, too, showed some fluctuations, but again not important ones, in times allocated during the week. There was a relatively heavy emphasis by the adult female on land preparation and harvesting. Presentation of these data on a yearly basis does, of course, tend to mask intervisit variations among tasks. The greater allocation of time to oil palm work by the average adult male compared with the female is clearly shown in Fig. 4.6. Among individual tasks, land preparation was dominant for the male and female, and particularly for the former. Among categories of other economic activities, wage employment was the most important for the adult male and female, followed by work for the government (mostly casual labouring), council and community.

Three main categories of household work were distinguished in the survey: housebuilding, housework and visits to the tradestore and market (Fig. 4.7). For the adult male, housework was consistently important throughout the week, though store and market visits were almost equally so. For the female, there was greater emphasis on housework. Store and market visits were clearly an important Saturday occupation for both sexes.

Leisure activities were also divided into three main categories with rest and relaxation as the most important for both male and female. Both spent about an hour per day on social calls. The adult male spent more time than the female did on walks away from his house and block.
Fig. 4.4.
Distribution of daily activities by the average adult male over the week, year 1
Fig. 4.5.
Distribution of daily activities by the average adult female over the week, year 1.
Fig. 4.6. Distribution of economic activities by particular tasks for the average adult male and female, within the week, year 1.
Fig. 4.7. Distribution of non-economic activities by particular tasks for the average adult male and female, within the week, year 1
Among miscellaneous activities, attendance at church on Sunday was the most important category. Sickness was a minor factor in terms of actual time absorbed, although it was an important component, relatively, in this last activity grouping.

Case studies

We now turn from consideration of the average sample household to the performance of particular households. Two major factors influenced these performances. First was the composition of the household, and Table 4.2 presents relevant details of the sample for the three visits.

The average sample household varied little between visits and typically comprised a husband and wife, a child half of the time, and varying outside help which averaged about one-half a labour unit for the year. Thus there were approximately three labour units available during each visit.

During the three visits there was little variation in the adult male population of individual households; in only one was there consistently more than one adult male (household 1). There was a greater variation in availability of adult females. Several informants were unmarried while some married during the year. Some who were married commenced the year without their wives but were later joined by them on the block. Two polygamous households were included in the sample. There were few households with children consistently present during each visit and over the three visits. Households 1, 5 and 16 were notable exceptions.

Outside helpers did not contribute to many households during visit 1 (only 3 of 9 households) and only significantly in one of these (see Fig. 4.3). In visit 2 outside help was more common (9 of 16) and was substantial in 7 of these (one helper present more than half the time). By visit 3 it was still more common (12 of 17) although it was considerable for only 4 of these. The evidence suggests there was an initial settling-in period during which households were largely self-reliant. As time passed the system of giving and receiving assistance developed and was generally important in visit 2 when heavy demands were placed on available labour, for example, for block development.

Thus the overall size of the household unit did not vary greatly, except in a few cases where a wife joined her husband late in the year. The main variations arose from contributions of outside assistance with a general tendency towards a greater contribution for more households as the year progressed. There
was a range of labour availability among households. At one extreme was household 14 comprising a single male settler who received no outside help. At the other was household 1 in which there were 2 males, 2 females and 2 children and some outside help, and household 16 with 1 man, 1 wife, 1 adult daughter, and 4 other children and no outside help. The average household size calculated for each visit clearly did conceal sizeable individual household variations.

The second factor was the extent of progress in block development for oil palm during the three visits. The objective of DASF was to have at least the first four acres of oil palm (240 palms) planted by the end of 1969. Individuals varied in the time in which they accomplished this. Table 4.3 shows this, and the times of the three survey visits. It indicates that a few had only planted three acres (180 trees) by the time of visit 1 while the majority had planted more. There appeared to be no general relation between the size of household with outside help shown in Table 4.2 and the timing of extent of oil palm planting shown in Table 4.3.

For those who had planted 180 palms or more, the major tasks of land preparation, and the burning and cutting of big timber still remaining after pre-felling, had been completed. Planting itself was speedily accomplished for once the block was officially recognised as being ready (cleared, striplined, with holes ready for palms), adults of the household and helpers (8 to 10 people) would complete the job in a couple of hours. If recorded time for planting was large, it meant that time involved in waiting for the arrival of the truck with the trees was included. Delays due to breakdowns and bad weather were not uncommon.

Those households whose oil palm times were greater than average fell into two groups. One comprised those who were trying to complete this work as quickly as possible in order to be free for other remunerative work. The second comprised the 'relaxed' types who applied themselves in much the same way as they did customarily. For them, work would be liberally interspersed with time off for smoking, or in the case of women for feeding the baby, etc. The most important other economic

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1 The original objectives were for 3 acres in 1968, 3 acres in 1969 and 2 acres in 1970 but these were changed by circumstances to 4 acres by February-March 1969 and 4 acres by February-March 1970 (personal communication: R. Arnison, 27 October 1972).
Table 4.2
Sample household composition for each visit, year 1*

<table>
<thead>
<tr>
<th>Household</th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adult males</td>
<td>Adult females</td>
<td>Children</td>
</tr>
<tr>
<td>1</td>
<td>2.0</td>
<td>1.9</td>
<td>2.9</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
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</tr>
<tr>
<td>18</td>
<td>1.1</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Average household</td>
<td>1.1</td>
<td>0.9</td>
<td>0.5</td>
</tr>
</tbody>
</table>

* Household composition refers to only those who contributed towards economic activities. A labour unit signifies the presence of an individual (adult male or female, children or outside helper) on a block during the course of a survey or visit. Fractions of a unit indicate an individual was present only during part of the whole period. Nothing is implied concerning the pattern of activities or the relative work values of individuals.
activity open to the settlers was timber-cutting for DASF or Mosa plantation. Most of the work for the department was available in other resettlement areas in early stages of development, first around Mosa and Sarakolok-Lakiemata, and later at Gavuvu and Pote-Galai. There was also some work on bridge-building.

On the basis of data given in the figures on individual household time-allocation, Table 4.4 compares each household's average time inputs per annum with those of the village sample household's allocation. The discussion which follows examines those which differ markedly from the average household. The limitations of these data should, of course, be kept in mind: there were three visits for only 8 households, two visits for another 8 and one visit for 1 household.

Household 1. The head of household 1 had preceded his family which arrived on the block in August 1968, one month before we commenced recording visit 1. By that time he had built his house, planted food crops and 180 oil palms and could afford to relax a little. This explains the below average labour input for oil palm work during the visit. The household head's cutting of timber for DASF on other blocks accounts for his above-average inputs into other economic activities. Fig. 4.1 shows that this occurred mainly in the first half of 1969 (visit 2).

Both his wives gave above-average time to maintaining and expanding the food gardens, not only for their own needs but to provide a marketable surplus. Sales developed successfully during visit 3 when the time devoted to other economic activities was twice the average (Fig. 4.2). They built a food stall on the roadside of their block, which was on the main road from Cape Hoskins to Nahavio and Mosa, and sold peanuts, cucumbers, beans and other vegetables. They also sold vegetables at Kapore market each Saturday. The fact that these activities were negligible during visits 1 and 2 meant, of course, that their annual average was reduced to approximately the all-household figure.

This household relied on an average amount of help from outsiders. The informant indicated he had relied upon wantok for assistance during the initial establishment phase which preceded our recording. Visit 1 does, however, record above-average help given to others on their oil palm blocks in return (Figs. 4.1 and 4.2). This assistance diminished greatly in visit 2 and was virtually nil in visit 3 when so much of their time was absorbed in their own other economic activities.

Income data were collected on this activity.
## Table 4.3

Timing of oil palm planting and survey visits, Kapare sample farmers, year 1

<table>
<thead>
<tr>
<th>Sample household</th>
<th>1968</th>
<th>1969</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>180</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>2</td>
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<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>180</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Visit 2
** Visit 2
*** Visit 3

Source: Records of the Department of Agriculture, Stock and Fisheries, Nahavio.
From the DASF quarterly progress reports it appears that the emphasis placed upon other economic activities at the expense of oil palm work caused the household to fall behind schedule - the striplines on the first four acres planted to palms were not cleared satisfactorily and they had not commenced clearing the additional four acres which were to be planted up later. Progressive analyses of later visits will show whether, and if so how, this household caught up.

Household 2. Oil palm planting activity of this household was about average with 180 palms planted during visit 1 and 60 more during visit 2. The household head allocated more than average time to oil palm work in visit 3 (stripling, brushing and ringing) to the detriment of subsistence work, of which he did more in visits 1 and 2.

His wife's contribution to oil palm work was about average in visit 1 but rose above it subsequently. However, she was working at a slower pace later in the year as she was pregnant and not in good health. She kept away from the house, worked at set tasks and came home towards the end of each afternoon; this tended to raise the number of hours. There was no interest in growing subsistence produce for sale. Indeed, some of the female subsistence labour in Fig. 4.2 was contributed by a grandmother, who principally cared for the first child, born in 1967.1

In addition to their own labour, this household received considerable outside help. There was a marked growth in such assistance from nil in visit 1 to an average of more than 5 hours in visit 3. Much of this work was probably devoted to the preparation of the second four-acre section of the block to be planted up. By contrast, the help given by wife or husband to others during the year was limited. For oil palm, it was less than half the average for the husband, while the wife gave assistance only in visit 3 and even this may have been partly supplied by the grandmother.

Household 3. Several factors influenced this household's activity pattern. First, the husband was by training a carpenter and being unused to farming both he and his family took time to adjust to the new way of life. Secondly, there were twenty-six categories of activities to choose from and the husband, as recorder-informant, had considerable difficulty

1 The labour situation improved after visit 3 following the birth of the second child with a fitter wife, and the wife's brother's arrival to help with some of the work.
in conceptualising the meaning of the various tasks to be recorded; this resulted in an overstatement of the labour input which, combined with a lethargic, 'stop-go' approach to subsistence and oil palm work, made the labour input to oil palm in particular appear excessively high. The husband did much carpentry work at Nahavio, Kapore and probably also at Tamba, both before visit 1 and during visit 2 (Fig. 4.1) and again after visit 3. The large input under other economic activities in visit 2 was his contribution to the construction of the new co-operative tradestore building at the Kapore community centre.

The husband is shown as having given somewhat more than average assistance to others, while the reverse was true for his wife. Although not shown in the foregoing data, the husband also worked as a carpenter for others. The high inputs of outside help received by the household (Fig. 4.3) may be at least partly compensation for the assistance the husband gave to others. It is, however, also a reflection of the considerable social life of the household which has tended to become incorporated in economic activity data. The outside helpers did assist with the clearing and burning of growth beneath and between the trees but they also spent much of the time relaxing and talking, and cooking food in the open rather than in their houses. Thus some of this time, classified as oil palm maintenance work, and probably some of the time the husband devoted to others, should be allocated to housework and leisure. This, however, would require a special observer to work with household members throughout the day to be able to distinguish the categories, and even then their behaviour would probably alter in consequence.¹

Household 4. This 'household' consisted solely of a bachelor at least until visit 3. He spent more than average time on non-economic activities which were mainly concerned with establishing himself in the eyes of the local Chimbu community (see miscellaneous activities in visit 1, Fig. 4.1). Indeed, by the end of 1969 he had been elected councillor for the Chimbu group at Kapore. His establishment efforts were reflected in his readiness to assist others at all times in preparing land and planting oil palms. His input, for example, was twice the average during visit 1.

¹ This is an example of the difficulties of securing accuracy in time-allocation records and in this case only the informant's faithfulness and goodwill and the great efforts he took to perform his task satisfactorily, kept him within the sample.
These two related interests caused him to drop behind schedule in his own oil palm work. Table 4.3 shows he had not planted trees by the end of visit 1 while Fig. 4.1 shows no oil palm work for visit 1, and Fig. 4.3 shows no use of outside help for this work during that visit.

Realising his situation, he commenced oil palm work with outside assistance and by the end of visit 2 had managed to plant 240 palms on his block. Indeed, by the end of visit 3 he had been allowed a special 'incentive planting' quota of 60 palms by DASF which placed him with the leaders in this activity. He was, in fact, a hard worker (and a conscientious informant/recorder).

This man soon appreciated the labour problems of being a single man with increasing social responsibilities as a consultant, leader and councillor. During visit 2 he achieved a temporary solution by partial reliance upon outside help and by reducing his help to others (to the average). By visit 3 he had arranged for a Chimbu family to stay with him; the husband had employment elsewhere in the settlement while the wife assisted with subsistence and housework. This in turn enabled the informant to reduce his subsistence inputs. This arrangement lasted until the informant's marriage soon after visit 3.

The food crop situation improved greatly with the visit 3 arrangement but not to the point where a surplus was available for sale. For this and the reasons given above, other economic activities were of negligible significance.

Household 5. The most significant characteristic of the time records for this Tolai household was the absence of the husband for most of visit 3 and of the wife for most of visit 2. Each absence was recorded as leisure, but from later interviews it appeared that the family combined its work in the Kapore settlement with management of coconut and cocoa plantings which the husband shared with relatives in their home village near Rabaul. For these reasons, the annual labour inputs in oil palm and subsistence work were below average.

The dual efforts did not restrict progress on the Kapore block. As Table 4.3 shows, the household had not only planted the four acres by the end of visit 3 but had also established 60 'incentive' palms (and a further 60 soon after). The husband himself had a great capacity for work. Before visit 1 he sometimes worked through part of the evening or night, clearing or burning the bush by the light of his kerosene pressure lamp.

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1 He also recorded for household 1.
His oil palm labour input was about three times the average during visit 1. His above-average inputs on oil palm work during visit 2 put him ahead of schedule and enabled his absence in visit 3.

The wife contributed above-average time to oil palm work when on the block (visits 1 and 3). There were also four children mostly of school age who helped with the work after school. This was of great significance during visits 2 and 3 when one or other parent was away. The children contributed over 30 per cent and 50 per cent of total weekly labour units devoted to subsistence work in visits 2 and 3 respectively. During visit 3 they contributed 40 per cent of the total weekly labour inputs for oil palm work. This was one of two families with a significant input of children's labour.

The household also made use of outside help (often paid labour), particularly in visit 1 when it received an average of slightly more than 3 hours of outside assistance per day.

This household had no interest or involvement in other economic activities in the Kapore area.

Household 6. Both male and female labour inputs on oil palm work were half the average viewed on an annual basis. This was because the heavy work of land preparation and striplining for planting (the first 180 trees) had already been completed by the time of visit 1. The considerable man-hours devoted to oil palm in visit 2 arose from preparation work prior to planting a further 60 palms. This household did not draw upon any outside labour during the three visits. Labour given to others was less than average in visit 1 and was nil in visit 2 when the wife was expecting a child (born one month after the visit). Both husband and wife gave much greater than average assistance to others in visit 3.

Two other features in the labour pattern stand out clearly. One is the greater than average involvement of the husband in other economic activities. He had acquired skill in operating a portable chainsaw (a gift from his brother in Lae) which he used to cut timber for payment on blocks being cleared. The second is the above-average time commitment to subsistence work. This again had a cash-earning motive, for the household marketed the surplus.

- The household comprised husband, wife and two small children, as well as the husband's elder sister with one adult daughter.

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1 The first daughter was a very keen and intelligent recorder for the household.
(our recorder) and a small child. The $8 per month living allowance was clearly inadequate to support all seven people and explains the efforts made to supplement income.

Household 7. The annual labour inputs of the male household head were below average for all work categories, although not notably so. He was a Tolai who had left his family (wife and eight children) in their home village during visit 1 because one of the children was receiving hospital treatment. This explains the absence of female labour inputs during visit 1.

The husband worked by himself and did not receive assistance from outside labour during this visit. In later visits he did, and in all three visits he assisted others to a fairly typical extent. In view of the fact that he was behind schedule (see Table 4.3), the time he devoted to oil palm work in visit 1, which was then mainly land preparation and striplining, was far too low. In anticipation of the arrival of his large family he did spend much time during visit 1 on food-crop planting, but this diminished greatly in visits 2 and 3.

The informant returned to his home village, having planted 180 palms, between visits 1 and 2 and brought back his family and others with him (fifteen in all).1 Visit 2 work on oil palm was about average for both husband and wife and was concerned mainly with land preparation for a further 60 palms planted before visit 3. Food crops planted by the husband provided sufficient for the household although not enough for the sale of a surplus so that other economic activities for females were of no consequence.

This informant and the male head of household 6 were related and had frequent social contact. Their work performances, however, were in great contrast. It may be that the head of household 7 attempted to emulate the other's dual operations, but if so he was far less successful in the settlement.2

Household 8. This household was among the leaders in oil palm work, principally because both the husband and wife were hard workers. The husband was a carpenter by trade and worked for DASF in the establishment period prior to visit 1. After

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1 One son remained in Wairiki village to complete his standard 6 school year.

2 Indeed, after visit 3 this informant's prolonged stay at his home village led to his temporary eviction from his settlement block.
block allocation, however, the household devoted itself almost exclusively to oil palm work, not only to plant the first four acres but to prepare the next four acres in anticipation of planting material being made available. A further reason for working ahead of schedule was the husband's plan to visit his home in the Sepik.

The husband's annual average labour input for oil palm work was about twice the sample average. The above-average allocation of his visit 1 time to it involved the establishment of the initial 180 palms. The lower average inputs of visit 2 coincided with the planting of the 60 additional palms, for which all preparatory work had been completed. The twice average inputs of visit 3 are explained by preparation work for further expansion.

The wife's oil palm work contribution was particularly marked during visit 1 when the work demands were high. Outside help was called upon only in visit 3 (average of 3 man-hours per day) when DASF encouraged incentive plantings in order to establish the second four acres without delay.

The work commitment of this household's members on their own block probably meant that little time was available to offer help to others. Their contribution to others was less than average for all three visits.

Household 10. Because the head of this household worked as a driver for DASF and later part-time for the Chinese trade-store at Kapore, his planting programme had a late start. We have no record for the visit 1 period as he was absent during much of the time and only worked on his return.

With a labour input by the male of about twice the sample household average for oil palm work in visits 2 and 3 and with a larger than average input from the wife, this household was able to have 240 palms planted by the end of visit 2 and 300 by the end of visit 3. This also necessitated the assistance of substantial outside help in visits 2 and 3 (2 man-hours per day). The wife's labour inputs for subsistence work were low in visit 2 because of the pressure of oil palm work but were greater than average for visit 3. There was little household interest in food crop production for the market, partly because of the husband's earnings as a driver and partly because the wife was incapacitated and also had small children to care for.

Household 11. Data for the visit 1 period were not recorded but on the basis of DASF records it appears that this household was active and fast-working with 180 palms planted by visit 1 and a further 60 in visit 2. The husband's work inputs were about average in visits 2 and 3 though by that time heavy pre-
paratory work had been completed. The wife's oil palm labour inputs were low in both visits because she was looking after a one-year-old child. Her inputs for subsistence work were average or above average.

The husband was an individualist and did not rely on any outside help and in turn gave little assistance to others. His other economic activities comprised employment in timber-cutting and bridge-building.

Household 12. During the first three visits this informant was a bachelor and his work activities were closely associated with those of household 6. His palms were planted early, partly no doubt because of significant outside help in visits 2 and 3 (average of 2.7 and 13.6 man-hours per day respectively), which was probably given by household 6. He in turn assisted others with average help in visit 2 and more than average help in visit 3. It is likely that much of this was devoted to oil palm work on a neighbouring block whose holder was partially incapacitated.

This settler was a welder by trade but could not take such employment, for example, with the Mosa factory, because it would interfere too much with his block's development. The heavy allocation of labour to oil palm work in visit 3 reflected his desire to establish a further four acres of palms, in anticipation of his marriage which took place in October 1969, after visit 3.

Household 13. This settler was a bachelor who had an adopted son. The latter, however, contributed little positively in the way of labour inputs and indeed caused considerable domestic disruption. The settler worked part-time on Mosa plantation but despite this his oil palm performance met requirements. He received outside help during visit 2 in particular, mostly for subsistence gardening work; however, for the purposes of recording, the adopted son was considered as outside help. Like household 17, this man had no wantok with whom he could arrange exchanges of assistance.

Household 14. The planting history for this bachelor-householder parallels that of household 4 in that neither had planted palms up to or during visit 1. He did not, however, show the same initiative or sense of responsibility as the latter, and thus not the same keenness concerning the block's development. At the end of visit 3 DASF noted that he had not satisfactorily cleared the striplines between his palms. He extended less than average assistance to others (none at all in visit 2) and received none for oil palm work from others. His only female assistance came from a relative who lived with
him for a period including visit 2. Her assistance with subsistence work largely enabled him to plant 180 palms by the end of this visit. Soon after, however, she left to stay with another Chimbu family. In other respects this settler, as a bachelor, is an average case.

Household 15. This householder was another bachelor in year 1 who had a young boy staying with him (who was considered as outside help). The former's labour input was variable and generally below average and he relied upon outside help to a considerable degree, mostly for oil palm work but also for subsistence work to a lesser (average) extent.

The other economic activity recorded was the trapping of wild pig and cassowary in which he had special skills and which earned him some extra income. He also used this to his advantage in social contacts, inviting people for a meal in return for help given. The informant encountered some personal difficulties and despite his efforts, his block was officially considered to be one of the most poorly maintained in the settlement subdivision.

Household 16. This settler was an elderly man whose labour input was not very effective. His wife, also elderly, also contributed a labour input of limited efficiency and their total oil palm labour input was about half the average. To a large extent they relied upon their children for assistance. These supplied 40 per cent of oil palm and over 20 per cent of subsistence labour inputs during the two visits.

Labour shortage delayed planting and during visit 1 (not recorded) they were still in the preparation and stripling stage for the first 180 palms. By the end of visit 2, 240 palms were established but no incentive plantings occurred subsequently. They did not have to rely upon outside help but, on the other hand, could give little to others.

The high inputs of female labour in other economic activities (four times the average) arose from the employment of the eldest daughter in the co-operative tradestore and later in the Chinese tradestore.

Household 17. This Papuan was a bachelor who married soon after visit 2, and whose wife contributed in visit 3. He was an efficient, reliable worker who met oil palm block requirements. He had no wantok, being the only Papuan there at that time, and so neither gave nor received assistance.

Household 18. This household only commenced recording during visit 3. It comprised the husband, two wives and an old relative. The husband claimed he was the only one who worked,
commenting that his wives just fooled around and did not do one tap of work. They were absent from the block for no purpose most of the time and he expressed a desire to throw them out. Accordingly his wives are not recorded as contributing towards economic activities. He recorded higher than average oil palm labour inputs and average hours in food garden tasks. He apparently was able to remain on schedule (Table 4.3) with the aid of outside helpers, though this was only one-half of the average in visit 3. The fact that outside help for subsistence work was four times the average in visit 3 gives some substance to his claim of non-participation by his wives. As a result of his circumstances he could give little help to others.

Concluding remarks

The activity pattern of the average household was considered at length above so it remains to add some comments on the range of performances outlined for individual sample households.

First, we may note that the recording period for each household varied from as long as two-and-a-half months to as short as four weeks, and some activity patterns were strongly influenced by the timing of the survey visits. This was because some activities, particularly economic activities, were by no means fully synchronised in time for all households within the sample. Secondly, it was found that it was not easy for all recorders to allocate time to specific tasks accurately and economic activities were probably overestimated in a few instances. Thus some of the variation can be ascribed to the method and conduct of the survey itself. The case studies do, however, clearly indicate that the variations went well beyond those explicable in such terms.

A number of households devoted substantially more than average time to economic activities in order to earn higher money incomes in the immediate future, in the longer term or both. In one case at least the motive was financial necessity; in others it appeared as an ambition for rapid financial betterment. The objectives were pursued in a number of ways. Some allocated above-average labour inputs to subsistence production in order to produce a marketable surplus of foodstuffs which could, in cash terms, supplement their subsistence allowance,¹ and possibly beyond that, continue to provide a supplementary cash income once the allowance ceased. Others supplemented their subsistence allowance with wage income from

¹ Paid until food gardens came into production.
employment off their settlement block. This commonly occurred where the husband was already skilled in a trade or acquired some skills after arrival in the settlement. Still others concentrated on exceeding their schedule of work on oil palm by establishing the expected (four-acre) area of palms earlier than officially scheduled, thus minimising the period until the first income from the crop was received, and by planting further areas in order to accelerate the growth of cash income in the longer term. Outside help, even paid labour, was an important enabling factor for such individuals.

There were also reasons for households devoting less-than-average time to economic activities. In a few instances, physical factors such as advanced age, restricted mobility, poor health, pregnancy and infant care responsibilities reduced individual work capacity and efficiency. Household size also influenced performance, at least temporarily. It was, for example, more difficult for a bachelor than for a husband and wife team to maintain the required rate of block development unless outside assistance was available. This is not surprising in view of the contribution made to economic activities by the wife. Where the household was not one of a group of wantok, the additional assistance desired was not readily available. In some instances, a diversity of economic interests tended to delay oil palm development temporarily. In others, however, households showed considerable initiative in marshalling household labour effectively and in obtaining outside assistance in ways which minimised such delays. Other factors were lack of marital co-operation, emphasis (in time allocation) on attaining influence in community affairs or on maintaining close social contacts, and for some a lack of ambition or strong interest in economic advancement. However, even though the above factors influenced time allocation, all households did achieve a level of block development acceptable officially for year 1.

Finally, the case studies showed that a number of underlying factors contributed to the growth of labour exchange between households during the year. The system of providing mutual assistance appeared generally to parallel that existing in settlers' home areas. It was desired or needed by households for a variety of reasons. For some it enabled a faster rate of economic progress to be achieved, especially through the speedy planting of a large area with oil palms. For others, it helped to overcome a chronic labour shortage in the household due to illness, old age, small household size or poor personal relations within it. It was very often called upon for tasks which required heavy labour inputs over a short
period, for example, for planting palms. Overall the particular circumstances and objectives of households determined the degree of reliance placed upon outside assistance.
PART V

Timber production in the Hoskins area

W. JONAS
**Introduction**

The International Bank for Reconstruction and Development mission which investigated the economic development of Papua New Guinea stated in its report that the country's forests in general 'are potentially a large earner of income' (IBRD 1965: 155), and after setting targets for its five-year plan it suggested that initially 'the increased output be in the form of export logs' (IBRD 1965:155). While the target figures set by the mission have not been achieved (see Fig. 5.1), log outputs and general timber production have increased, and a major contributor to the increase has been the Hoskins area. Today Hoskins forests are the largest single source of export logs from Papua New Guinea. This Part discusses the production of timber in the area and outlines the problems encountered in establishing an extractive industry in a developing country where ecological conditions, land-use competition, demands for rapid political and economic advancement, and dependence on external markets pose obstacles to efficient resource utilisation.

**The timber resource base**

The main vegetation associations of the area are the climax communities of tropical rain forest, swamp forest and mangrove forest, anthropogenically induced seral communities which consist mainly of forest regrowth, and catastrophic seral communities on the slopes of the volcanoes. The Department of Forests classifies these associations into the following broad types (see also Fig. 5.2):

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1. The author wishes to acknowledge the assistance given by officers of the Department of Forests in Konedobu and in Hoskins, and by Mr R. Grattidge of the Stettin Bay Lumber Co. Fieldwork in Hoskins was made possible by a research grant from the University of Papua and New Guinea. Maps were drawn by Marlous Ploeg.

2. These forests cover that land referred to by the Department of Forests as the Hoskins Timber Area:

The area... lies between Kapiura and the Metelin rivers to the east, the Kulu-Dagi TRP area boundary to the west, and the limit of economic accessibility to the south. The Bismarck Sea and the southern Numundo plantation boundary complete the boundary to the north. (Grattidge 1969:9).
Low rain forest
High rain forest
Gardens and regrowth
Kamarere
Campnosperma
Swamp forest and tree swamp
Swamp and mangroves

Table 5.1 shows the extent of commercially valuable species as estimated by Department of Forests officers in 1960. A

Table 5.1
Commercial species of trees, Hoskins timber area*

<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Trade or common name</th>
<th>Million s/ft</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dracontomelum mangiferum</td>
<td>NG walnut</td>
<td>9</td>
<td>2.2</td>
</tr>
<tr>
<td>Aglaia spp.</td>
<td>Aglaia</td>
<td>9</td>
<td>2.2</td>
</tr>
<tr>
<td>Calophyllum spp.</td>
<td>Kalofilum</td>
<td>8</td>
<td>2.0</td>
</tr>
<tr>
<td>Euc. deglupta</td>
<td>Kamarere</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Homalium foetidum</td>
<td>Malas</td>
<td>55</td>
<td>13.7</td>
</tr>
<tr>
<td>Pometia tomentosa</td>
<td>Taun</td>
<td>16</td>
<td>4.0</td>
</tr>
<tr>
<td>Canarium spp.</td>
<td>Galip</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Octomeles sumatrana</td>
<td>Erima</td>
<td>36</td>
<td>9.0</td>
</tr>
<tr>
<td>Pometia pinnata</td>
<td>Taun</td>
<td>20</td>
<td>5.0</td>
</tr>
<tr>
<td>Terminalia spp.</td>
<td>Terminalia</td>
<td>21</td>
<td>5.2</td>
</tr>
<tr>
<td>Planchonella spp.</td>
<td>Planchonella</td>
<td>9</td>
<td>2.2</td>
</tr>
<tr>
<td>Alstonia scholaris</td>
<td>White Cheesewood</td>
<td>18</td>
<td>4.5</td>
</tr>
<tr>
<td>Celtis spp.</td>
<td>Celtis</td>
<td>49</td>
<td>12.2</td>
</tr>
<tr>
<td>Pterocymbium beccarii</td>
<td>Amberoï</td>
<td>47</td>
<td>11.7</td>
</tr>
<tr>
<td>Spondias dulcis</td>
<td>Spondias</td>
<td>55</td>
<td>13.7</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td>41</td>
<td>10.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>401</td>
<td>99.8**</td>
</tr>
</tbody>
</table>

* Net merchantable volume over 7 feet GBH (Girth at Breast Height) by species. It should be noted that with increased utilisation standards, net merchantable volume is constantly changing. Total gross volumes can be calculated but these, in terms of utilisation, are fairly meaningless.

** Total does not reach 100 per cent because of rounding-off of percentages.

Source: Department of Forests files (1960).
Fig. 5.1 Log exports from Papua New Guinea, 1964-65 to 1968-69
similar breakdown is not given for the total area now under consideration but it is estimated that 1,433 million super feet (s/ft) of merchantable timber is available from 332,994 acres of workable land (see Table 5.2).

### Table 5.2

<table>
<thead>
<tr>
<th>Area</th>
<th>Acreage</th>
<th>Estimated merchantable volume (million s/ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kulu-Dagi</td>
<td>82,040</td>
<td>368</td>
</tr>
<tr>
<td>Hoskins TP232</td>
<td>84,772</td>
<td>207</td>
</tr>
<tr>
<td>Kamarere</td>
<td>7,000</td>
<td>54</td>
</tr>
<tr>
<td>TL69-7-105</td>
<td>870</td>
<td>4</td>
</tr>
<tr>
<td>TP167</td>
<td>27,300</td>
<td>90</td>
</tr>
<tr>
<td>Lollo-Kapiura</td>
<td>60,600</td>
<td>360</td>
</tr>
<tr>
<td>Mopili</td>
<td>20,412</td>
<td>100</td>
</tr>
<tr>
<td>Ru-Lamegi-Orr creeks</td>
<td>50,000</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>332,994</td>
<td>1,433</td>
</tr>
</tbody>
</table>

Source: Grattidge (1969:26). A very lengthy and detailed species breakdown is given in appendix 8 of the same report.

Most of the commercially valuable species of trees come from the tropical forests of the coastal lowlands where pumice sand and gravels and some volcanic ash provide relatively well drained, though not highly fertile, soils. Annual average rainfall is more than 130 inches and while up to 60 per cent of this may occur between December and March there is sufficient moisture at all times to maintain dense plant growth. Temperature figures are unavailable but it is estimated that the daily average temperature is about 80°F with small annual and diurnal ranges. The area has thirty-two miles of coastline with many sites suitable for the ponding of logs and loading on log boats, the most suitable anchorages being Malalia, Buluma, Gigo Point and Numundo.

**Background to development**

In 1959 the partnership of Thompson and Wright was given permission to work the Cape Hoskins forests in an area adjacent to the present main operations. This permit was granted because the loggers' timber supplies about forty-five miles along the coast were being exhausted and because Papua New Guinea was
Fig. 5.2. Forest resource factors, based on information available at 31 December 1969
experiencing a general shortage of sawn timber. In order to continue operating, the partnership shifted its sawmill from Bialla to the present site of Kwalakessi and during the period of reconstruction attempted to tap the log export market in Australia. By the end of 1959-60, 123,000 s/ft of logs had been shipped to Australia and 1,300,000 s/ft of sawn timber was sold on the local market, mainly in Rabaul. Production continued to increase with 210,000 s/ft of logs and 600,000 s/ft of sawn timber being exported in 1961-62. ¹ Over 900,000 s/ft of sawn timber was sold on the local market during the same period.

Continued export attempts proved discouraging, however, with problems of production at Hoskins,² and lack of knowledge of Papua New Guinea timbers and thus reluctance to purchase among Australian buyers. A slump occurred in the export market in 1962. The major shareholdings in the company of Thompson and Wright Pty Ltd were taken over by the Sydney-based firm of Clarke Bros Holdings Ltd in that year, the new investors planning to use the timber in furniture production. Once again, however, problems of supply from the Hoskins end and difficulties of machining much of the timber for use in furniture limited success. At about the same time Thompson and Wright successfully tendered for the present Cape Hoskins timber area adjacent to the area they were then working, and they also attempted to enter the Japanese log export market. Like their Australian counterparts, Japanese buyers were reluctant to accept the Hoskins timbers but persistent efforts by company representatives resulted in increased sales. In 1963, 4 million s/ft of logs was shipped to Japan and exports continued to expand as Japanese buyers became more familiar with the timbers and more willing to experiment with new varieties. By 1965 Japanese interests were willing to buy into the logging venture and in that year the New Guinea Lumber Development Co. Ltd, which was half-owned by a subsidiary of Japan Line Ltd, purchased 50 per cent of the shares in Thompson and Wright Pty Ltd. This not only further increased the potential of the Japanese market but also made available Japanese capital for development. The Japanese company of Nissho-Iwai Pty Ltd then purchased 75 per cent of the shares in the company, now known as Stettin Bay Lumber Co. The remaining shares were purchased by the Papua New Guinea Development Bank.

¹ By this time the partnership had become a registered company, Thompson and Wright Pty Ltd.
² See p. 161 ff.
The Administration has purchased both land with timber on it and the rights to harvest timber from land still owned by indigenous people. Land purchases at the end of 1962 totalled 109,201 acres, while timber-rights purchases extended over 221,350 acres. The loggers operate under licences and permits subject to the Forestry Ordinance. Stettin Bay Lumber Co. holds licences and permits over 194,982 acres, and two smaller operations hold licences to work 550 acres of forest.

Logging operations

Trees are felled with axes and chainsaws and are cross-cut to full log length in the bush. They are then snigged to ramps for sorting into those for export and those which are to be sawn. Export logs are trucked to the beach, nearly all going to Buluma, where they are debarked by local women. Logs are then graded and separated into red and white timbers, the former going mostly to Hiroshima while the latter are shipped to Tokyo, Nagoya and Osaka. After further preparation on the beach, which includes spraying with insecticides, the logs are rafted out to ships which are able to anchor within 100 yards of the shore.

The logs selected for sawing are trucked to the mill at Kwalakessi, although some may be taken to the Buluma mill. After cross-cutting they are sawn on the Kwalakessi circular mill or the Buluma band mill. Average production from the Kwalakessi mill is 7,000 to 8,000 s/ft per day. The Buluma mill has a capacity of 30,000 s/ft per day but has never reached this figure and has not operated continuously since it was constructed in 1965. The sawn logs are shipped from the wharf at Kwalakessi.

The Japanese buyers who specify the volumes required and their size distribution favour the following trees:

Red timbers: Taun Calophyllum
              Pencil Cedar
              Planchonella
              Kamarere

White timbers: Amberoi Labulla
              Basswood
              Sterculia
              Pacific Maple

By June 1971 a total of 31,434,262 s/ft of timber had been harvested from the Hoskins area. Table 5.3 lists the most commonly harvested species and their uses, based on whether they are sold as logs or as sawn timber.

It is difficult to estimate the contribution of forestry operations to the general development of the Hoskins area in monetary terms. In 1969 the Stettin Bay Lumber Co. employed
Table 5.3
Commonly harvested species and their uses

<table>
<thead>
<tr>
<th>Species</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dracontomelum</td>
<td>Sawmill and export</td>
</tr>
<tr>
<td>Aglaia/Amoora</td>
<td>Sawmill but mainly export</td>
</tr>
<tr>
<td>Calophyllum</td>
<td>Export</td>
</tr>
<tr>
<td>Campnosperma</td>
<td>Export</td>
</tr>
<tr>
<td>Palaquium</td>
<td>Sawmill but mainly export</td>
</tr>
<tr>
<td>Cedrella</td>
<td>Sawmill</td>
</tr>
<tr>
<td>Canarium</td>
<td>Sawmill but mainly export</td>
</tr>
<tr>
<td>Euc. deglupta</td>
<td>Sawmill and export</td>
</tr>
<tr>
<td>Homalium</td>
<td>Sawmill</td>
</tr>
<tr>
<td>Mangifera</td>
<td>Sawmill and export</td>
</tr>
<tr>
<td>Neonauclea</td>
<td>Sawmill</td>
</tr>
<tr>
<td>P. tomentosa</td>
<td>Sawmill but mainly export</td>
</tr>
<tr>
<td>T. solomonense</td>
<td>Sawmill and export</td>
</tr>
<tr>
<td>Alstonia</td>
<td>Sawmill</td>
</tr>
<tr>
<td>Anthocephalus</td>
<td>Export</td>
</tr>
<tr>
<td>Endospermum</td>
<td>Export</td>
</tr>
<tr>
<td>Octomeles</td>
<td>Sawmill and export</td>
</tr>
<tr>
<td>Planchonella</td>
<td>Sawmill and export</td>
</tr>
<tr>
<td>Pterocymbium</td>
<td>Export</td>
</tr>
<tr>
<td>Sloanea</td>
<td>Export</td>
</tr>
</tbody>
</table>

Source: Grattidge (1969:45-6).

22 expatriate staff and 138 indigenous staff in a variety of jobs but very few of the oil palm settlers have earned money through this type of employment. No provision was made in the Department of Forests Logging Plan for settlers to find casual employment in timber production operations and DASF officers concerned with the oil palm scheme have actively discouraged settlers from finding casual employment off their blocks. This is not surprising considering the amount of time and work involved in the preharvesting period and in maintaining established blocks.¹ A truck driver, a chainsaw operator and a bulldozer driver - people with special skills - have been employed by the logging company but employment of oil palm settlers as casual labourers has been minimal.

¹ See Ploeg, p.127.
Problems encountered in developing the timber resource

The resource base for timber production in the Hoskins area indicates that logging operations should be a successful resource venture. Adopting the criteria of Firey (1960), timber production here is ecologically possible, ethnographically adoptable and, given that merchantable trees exist in quantity, it should also be economically gainful. The history of logging operations, however, has shown consistent financial failure by the operators and poor utilisation of the timber resource, so that

the resultant forest is a patchwork of volumes and species being the result of interaction between a variable virgin bush, selective logging, and greater or lesser efficiency of the bush boss of the time.

(Grattidge 1969:41)

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1 This, of course, is not the only criterion for economic gainfulness in forest operations. Unfortunately figures related to the economics of logging operations are difficult to obtain. Richardson's minimum requirements for economic operations are a resource base of just over 10,000 s/ft per acre which can be logged at a rate of 62,500,000 s/ft per year for twenty years at an f.o.b. cost of $2.16 per 100 s/ft (Richardson 1968:73).

Most of the figures available for Hoskins are based on net merchantable volumes for log exports rather than for integrated and diversified programmes which would enable greater volumes to be harvested. The average net merchantable timber over 7 ft GBH has been estimated at 6,269 s/ft per acre for the Kulu-Dagi area (Australian Timber Journal 1966). Allowing a 5½ per cent increase (a figure arrived at after taking the mean percentage increase for the first three logging areas in the Hoskins Logging Plan), this density figure is increased to only 6,614 s/ft per acre, and Grattidge (1969:163) estimated the average volume per acre for logs at 8,000 to 9,000 s/ft. He also estimated (personal communication, 1970) that the logs landed on board the ship cost about $2.20 (plus 40¢ royalty). The cutting rate for the area is 50 million s/ft per acre for a suggested twenty-eight years, but this length of time will probably decrease. Since Richardson wrote not only for West Irian but also about 'large-scale export of veneer and sawlogs' (Richardson 1968:72), it is difficult to compare these figures but it is possible that, other considerations aside, for logging alone operations here may have been, and perhaps still are, very marginal economically.
Four sets of factors appear to be responsible for this situation: (i) the ecological conditions which make the resource possible also pose problems regarding the gainfulness of its development; (ii) the resource processes which have actually been adopted have at times been of doubtful gainfulness; (iii) marketing of the forest products has been a difficult task and has imposed restrictions on bush operations; and (iv) the development of the oil palm scheme has led to the destruction and incomplete removal of timber.

The tropical conditions which promote the growth of the forests at the same time mitigate against the cheap extraction of logs unless precautionary measures involving added time and planning are adopted. Rain falls on about twenty-two days of each wet-season month, increasing the depth and extent of the permanent swamps of the Kulu-Dagi area. The alluvial and clay soils become sticky and muddy, logging operations are interrupted, and time is lost. Large portions of the Kumbango block become flooded. The clay soils of the Du Faure area, which are deep and poorly drained, require surfacing and ballasting. The northwest winds which bring the rain, cause heavy seas to pound the coast and this creates difficulties with the rafting of logs and the loading of ships. Blue stain and insect attacks on felled logs have increased, reducing the merchantability of the timber. Fine days during the wet season and the intense heat of the 'dry' season cause logs to dry and split and hence to decrease in value.

As is to be expected in an area with varying features and a tropical hot, wet climate, vegetation characteristics vary widely. There is the typical large number of species and different species are dominant in different areas. This variation is reflected in variations in volumes per acre and average log size. Since buyers' specifications and requirements greatly influence what is harvested, an irregular pattern of logging areas often results as logging operations jump from one area to another in order to get those species demanded, rather than systematically removing all commercial timber in one area before progressing to the next.

External factors, as shown below, have influenced the adoption of particular logging patterns but certain practices, which appear to have been nongainful, can perhaps only be explained by operators' lack of knowledge. These practices fall into two main groups: extraction of the logs, and care and treatment of the logs once they have been removed from the forest.

1 See p.167.
Fig. 5.3. Past logging roads, Hoskins timber area
In the past there has been little pre-planning of logging operations in terms of assessment of timber in particular areas or the location of logging areas and roads. For example, roads have been constructed into an area which contains particular species. Some of the trees have been removed. The loggers have then shifted to another area, which may be several miles away, to extract the same type of timber. A ship has called and the loggers have returned to the original area, where the roads have already been built and perhaps by this time consolidated. From here and loggers have removed as quickly as possible the logs which the buyers have specified. The result has been a resource process lacking any systematic nature, a less intensive removal of trees than is desirable, and a road system lacking order (see, for example, Fig. 5.3).

It has been estimated that, in terms of time taken to hitch and unhitch logs to and from the tractors which snig them, the costs of operating the tractors, the costs of building roads, and the value of the logs involved, there is an 'optimal' snigging distance of thirty chains\(^1\) and it is desirable that feeder roads be built in accordance with this distance. Here, however, distances have varied greatly and in some cases have exceeded 100 chains.

In 1965 Lembke (1965) wrote about the treatment of export logs:

...during these early days, in their [Thompson and Wright's] desire to develop an export market, criticisms levelled at them by buyers were also well founded at times.... Presentation and preparation were not good - species were not distinguished properly, end cross-cutting was bad and marking poorly done.

And in 1969, according to Grattidge (1969:43):

Logs are exported from Buluma mainly, where they are stockpiled on the beach awaiting shipment. A minimal amount of care is given to the presentation of logs, little attention being paid to end splitting, blue stain and insect attack whilst in storage. Logs shipped are floaters, no facilities for loading sinkers being available.

It was mentioned above that attempts to enter the Australian market were largely unsuccessful. Australian buyers were

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\(^1\) Personal communication: R. Grattidge, 1970.
reluctant to make large purchases because shipping services were irregular and costly, and complaints were made about the quality and treatment of the timber. Related to this was the Australian industry's limited knowledge; those species which were demanded were few in number. Since these species were scattered throughout the area the result was, once again, selective logging without the systematic removal of all timbers.

Entry into the Japanese market in 1963, the increasing confidence of Japanese buyers during 1964 when exports rose to 6 million s/ft and Japanese involvement in the financial side of the company in 1965 have meant increases in timber sales. Nevertheless, buyers' specifications have influenced the types of trees felled and thus the location of felling activity. Not all of the wide range of species can be utilised (Celtis, for example, is difficult to saw because of a high silica content and Homalium splits during felling); badly formed trees cannot as yet be profitably worked; and, in general, red species are in higher demand than white species.

The development of the oil palm scheme and the nearby township of Kimbe, the demand for timber for construction work at the Kieta copper project, and increasing demands for timber from the Rabaul area have meant that the present market for sawn timber is strong and more of the varied species in the bush can be used. But the limited capacities of the sawmills at Buluma and Kwalakessi restrict a fuller utilisation of potentially merchantable trees.

With adaptation to the ecological conditions possible, and knowledge of logging under tropical conditions and of market openings improving, development of the Hoskins timber resource has become increasingly favourable. However, the development of the oil palm scheme has raised a new set of problems.

The Hoskins timber area contains land of high agricultural potential and all of the land purchased so far for the oil palm scheme is within the main timber area. Consequently it is desirable that all merchantable timber be removed from the areas designated as suitable for oil palm before planting of the palms takes place. In the past, however, this has not been the case.

Progress in the oil palm scheme since 1967 has been very rapid; developmental pressures have forced logging operations to be very selective and have created extraction difficulties. Since the timber on six acres of each proposed oil palm block was felled prior to occupation, it was difficult for loggers to push snig tracks through the bush without severely damaging
the topsoil. In addition, extraction has been in the form of salvage operations with loggers being forced to move rapidly through the forests, removing only the best specimens of those trees in demand at the time. The Buluma and Kwalakessi saw-mills have limited processing capacities, and despite the present buoyancy one cannot assume that there will be an unlimited log export market. As shown above, there certainly has been an upper limit in the past. Consequently the rapidity of the salvage logging operations and the burning of felled and unutilised logs have resulted in the destruction of valuable timber. Table 5.4 shows that by 1969 over 75 million s/ft of timber had been destroyed and it is estimated that by 1971 over $2.7m worth of timber will have been lost. (This figure directly relates to the value of the timber itself, based on the average price of export logs, and does not take into consideration multiplier effects from, say, employment and taxation.)

There has also been insufficient co-ordination of roading and bridging with the result that unnecessary duplication has occurred and timber has been lost. Once the deadline for the development of an oil palm area is set, the timber operators must remove as much timber as possible within the time limit imposed. When the Sarakolok-Lakiemata areas were being opened

Table 5.4

<table>
<thead>
<tr>
<th>Area</th>
<th>Acreage</th>
<th>Year subdivided</th>
<th>Unharvested volume per acre (s/ft)</th>
<th>Total volume harvested (million s/ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapore</td>
<td>2,300</td>
<td>1967</td>
<td>4,500</td>
<td>10.35</td>
</tr>
<tr>
<td>Tamba</td>
<td>2,970</td>
<td>1968</td>
<td>4,500</td>
<td>13.36</td>
</tr>
<tr>
<td>Sarakolok</td>
<td></td>
<td>1969</td>
<td>4,500</td>
<td>26.1</td>
</tr>
<tr>
<td>Lakiemata</td>
<td>5,800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nahavio</td>
<td>5,285</td>
<td>n.a.*</td>
<td>4,500</td>
<td>23.78</td>
</tr>
<tr>
<td>Buvussi</td>
<td>7,500</td>
<td>1970</td>
<td>3,100</td>
<td>23.25</td>
</tr>
<tr>
<td>Galai</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pota Galai</td>
<td>3,990</td>
<td>1971</td>
<td>6,000</td>
<td>23.94</td>
</tr>
<tr>
<td>Kavui</td>
<td>5,000</td>
<td>1971</td>
<td>2-3,000</td>
<td>12.00</td>
</tr>
<tr>
<td>Kumbango</td>
<td>4,800</td>
<td>n.a.</td>
<td>6-9,000</td>
<td>65.00</td>
</tr>
</tbody>
</table>

* Not available

up, however, the Stettin Bay Lumber Co. was reluctant to bear the full cost of a bridge across the Lamegi River because the amount of timber that could have been removed within the given time would have made it uneconomic. In addition, logging roads are usually sealed off once the oil palm development schemes begin operating and the new oil palm roads which are superimposed on the old logging roads are generally impassable to the heavy timber trucks.

**Future forest production and other land-use**

Apart from the basic facts that, given fertile soils and gentle slopes, there are greater short-run returns to be obtained from agricultural crops, and that forestry production can be successfully carried out on land which has soils too poor and slopes too steep for other commercial cropping, the dividing line between land which should be set aside for forestry and land which should be given over to agriculture can be a difficult one to determine. However, it does seem certain that forestry operations should be continued in the area and a report to the Department of Forests (Grattidge 1969) suggests that these be of several types.

Protection forests will be necessary if agricultural development on the Dagi River plain leads to population pressure in the area and the cropping of the hills in the headwater areas of the river. Denudation of vegetation in these hills would lead to increased run-off, siltation, changes in river action, and thus at times the possible inundation of the agricultural lowlands. Similar conditions apply in the Mt Bango area where removal of the tree cover could result in land slips and, since the pumice there is not well consolidated, the covering of fertile alluvium downstream by less fertile and coarser deposits. Protection forests should also be established in areas along the Lamegi, Dagi and Ru rivers which are newly settled, with the result that trees are being removed.

It is suggested that 'community' forests also be set aside close to each area of agricultural settlement so that wood is available for fuel and that smaller, round timbers can be provided for building. In some cases these community forests could also serve as protection forests.

Of greater importance are commercial and industrial estates or plantations, but here information related to the economics of production is particularly scarce. Given present rates of harvesting, the expected life of the forests is approximately twenty years. This figure is most likely to lessen, however, with the introduction, for example, of chip, veneer and recon-
stituting mills, plans for which have been tentatively dis-
cussed by the Japanese interests. Of course, the scale of
planting and the silvicultural techniques to be adopted can-
not be seriously considered until the nature and final use of
the plantation forest products are determined, but several
factors known at the present time make some form of planting
advisable. The town of Kimbe is expanding rapidly and demands
for sawn and finished timber are consequently increasing. The
terms of the Kulu-Dagi lease provide for a log intake of 1
million s/ft per month: this will rapidly exhaust present sup-
plies and alternative sources will have to be found. The chil-
dren of people now in the town of Kimbe or involved in the
agricultural scheme will provide a possible labour pool for
working future forests. Then, too, as experience in other
tropical areas has shown, there is a risk in having the econ-
omy of one region based on the production of one major com-
mercial crop. To date the oil palm scheme has been outstand-
ingly successful internally but - and there is no reason to
assume that oil palm products should provide an exception-
world markets for tropical crops are notoriously unreliable.
It would appear desirable, then, that planting of forests be
undertaken on land which is likely to be of low agricultural
potential and also on land which, while unutilised by agri-
culture at present, may be given over to non-tree-cropping in
the future.

Most of the land purchased by the Administration so far has
been that with seemingly obvious agricultural potential - flat,
fairly fertile, often alluvial lands close to centres of pres-
ent and planned development - but of the land alienated, 728
acres have been set aside for the development of plantation
forests. Table 5.5 shows the land purchases and their possible
use as seen by the Department of Forests.

Of the land which is still owned by the indigenous popula-
tion, three main areas are suitable for the development of
forest plantations. Approximately 40,000 acres of the Mt Du
Faure Range, which is of low agricultural potential but ad-
jarant to and accessible from Kimbe, could lend itself to
forest plantations and it is unlikely that demands would be
made on this land for other purposes before at least one ro-
tation of tree crops had occurred. Another 50,000 acres of
fairly broken country is available in the headwater areas of
the Ru, Lamegi and Orr rivers where, once again, agricultural
potential is fairly low. It has been pointed out above, too,
that protection forests will be necessary in this area anyway,
in order to prevent future damage to settlements in the Lower
Dagi area. The third possible area, approximately 25,000 acres,
Table 5.5

Summary of land purchases in vicinity of Hoskins

<table>
<thead>
<tr>
<th>Year of purchase</th>
<th>Name</th>
<th>Area (acres)</th>
<th>Possible use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>Tabai-Rikau</td>
<td>2,395</td>
<td>Agricultural subdivision, 530 acres reserved for forestry</td>
</tr>
<tr>
<td></td>
<td>Hoskins station</td>
<td>82</td>
<td>Town site</td>
</tr>
<tr>
<td>1961</td>
<td>Kapore</td>
<td>2,990</td>
<td>Agricultural subdivision completed, about 800 acres of swamp and forest stand suitable for forestry use</td>
</tr>
<tr>
<td>1962</td>
<td>Kalo-Kwalakessi</td>
<td>266</td>
<td>Industrial land</td>
</tr>
<tr>
<td></td>
<td>Dami</td>
<td>1,561</td>
<td>120 acres reserved for forestry station</td>
</tr>
<tr>
<td></td>
<td>Lavilelo</td>
<td>645</td>
<td>Agricultural subdivision</td>
</tr>
<tr>
<td>1963</td>
<td>Galai</td>
<td>4,062</td>
<td>Proposed 1970 oil palm subdivision</td>
</tr>
<tr>
<td>1964</td>
<td>Pota Galai</td>
<td>34,539</td>
<td>18,650 acres is suitable for forestry purposes, including protection forest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1964</td>
<td>Laktemata Sarakolok</td>
<td>3,710</td>
<td>Oil palm subdivision 1969, section of about 1,000 acres in the south suitable for forestry</td>
</tr>
<tr>
<td></td>
<td>Nahavio</td>
<td>5,285</td>
<td>Harrisons and Crosfield estate</td>
</tr>
<tr>
<td></td>
<td>Tamba</td>
<td>4,500</td>
<td>Oil palm subdivision 1968</td>
</tr>
<tr>
<td>1966</td>
<td>Kumbango</td>
<td>4,959</td>
<td>Proposed Harrisons and Crosfield plantation</td>
</tr>
<tr>
<td></td>
<td>Buvussi</td>
<td>5,800</td>
<td>Proposed 1970 subdivision, about 1,000 acres suitable for forestry (included in Pota Galai)</td>
</tr>
<tr>
<td></td>
<td>Siki</td>
<td>868</td>
<td>Proposed agricultural subdivision, 78 acres forest reserve</td>
</tr>
<tr>
<td></td>
<td>Nahavio no.2</td>
<td>335</td>
<td>Harrisons and Crosfield oil palm plantation</td>
</tr>
<tr>
<td>1968</td>
<td>Mopili</td>
<td>20,412</td>
<td>Suitable for forest purposes except for small areas of flat agricultural ground</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bugare</td>
<td>662</td>
<td>High agricultural potential, southern area Togulo suitable forestry, about 2,000 acres</td>
</tr>
<tr>
<td></td>
<td>Wukoku</td>
<td>1,277</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Togulo</td>
<td>4,099</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malilimi</td>
<td>4,550</td>
<td>Suitable for forest purposes, very low agricultural potential</td>
</tr>
<tr>
<td></td>
<td>Kwe</td>
<td>721</td>
<td>Agricultural subdivision</td>
</tr>
<tr>
<td></td>
<td>Tamba no.2</td>
<td>758</td>
<td>Oil palm subdivision 1969</td>
</tr>
</tbody>
</table>

is in the vicinity of Mt Bango. The planned Dagi-Kapuira road traverses this zone which, with deep, coarse, fairly infertile soils, would be of little use for agriculture but is suitable for growing Kamarere.

Conclusions

Forestry and logging operations in the Hoskins area appear to have been a good example of Melanesian 'timber mining', where

all statements of policy and good intention notwithstanding... operations were planned... with the object of obtaining the maximum yield of merchantable timber at least cost. (Brookfield with Hart 1971:195)

Superimposed on this situation have been ecological difficulties, unsystematic logging and handling operations, marketing problems, and, more recently, competition for land-use. While it may be true that forestry operations here paved the way for the oil palm scheme by providing some initial infrastructure (Brookfield with Hart 1971:195), this has nevertheless been at the expense of the forestry operations, and thus ultimately the total economy. More careful planning and systematic operating by the logging interests, and greater co-ordination between those interested in agriculture may have meant that greater all-round returns would have been achieved.

If forestry operations are to be continued in the area, and several reasons why they should be have been suggested above, then timber must no longer be treated as a nonrenewable resource, and the operations must be based on more than export logging and preliminary processing.

Nothing can be done now, of course, about the timber which has already been destroyed but steps must be taken to ensure that such destruction does not recur. This may mean

the establishment and maintenance of legal frameworks which will preserve suitably selected areas for long-term forestry and will discourage the waste of forest resources in the remaining areas. (Keay 1971: 25)

It will certainly necessitate greater planning and co-ordination by all bodies involved in land-use development in the area.
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Abstract

New Guinea Research Bulletin  Hoskins development: oil palm and timber
No.49, 1973

Economic development in the Hoskins area of West New Britain has concentrated primarily on the establishment of an oil palm plantation and a number of indigenous smallholdings; there has also been considerable timber exploitation in the area. This Bulletin contains a collection of five papers by different authors, four writing on oil palm and one on timber. The first paper is a general introduction to the oil palm scheme, the second an outline of developments and problems from the participating company's point of view, the third a sociological investigation of smallholders, and the fourth a study of their activity patterns. The final paper outlines the commercial development of the timber resource and its relation to the nearby oil palm complex.
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