The Nimboran Community Development Project

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by

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INTRODUCTORY

The Nimboran Community Development project grew out of a proposal made by the South Pacific Commission Research Council, at its first meeting in 1949, for the establishment of two pilot community development schemes. Each was to be sponsored by the Commission, and conducted by a territorial administration which would select a suitable community "whose people would welcome and assist practically in the rehabilitation and development of their community under the guidance of a trained team ...".

The first of these pilot projects was undertaken by the Government of Fiji on the island of Moturiki, a Fijian team being responsible for the preliminary survey and the field-work of the project, under the guidance of an inter-departmental Advisory Group. In December, 1951, the Moturiki project was completed, and a detailed report on it by the Chairman of the Advisory Group, Mr. Howard Hayden, is now in course of publication.

Responsibility for the detailed planning and carrying out of the second project was accepted by the Government of Netherlands New Guinea, and Nimboran, an area approximately 45 miles from Hollandia, the capital of the territory, was selected as its site. It was decided, however, that the pattern of community development through a team of specially trained native leaders, at first envisaged by the Research Council for both pilot projects and successfully employed in the Moturiki scheme, would not be suited to the problems of the Nimboran area at this stage, as the basic requirement on which general community advancement there appeared to depend was the introduction, and in the first instance the expert guidance, of new economic procedures. The scheme drawn up, and accepted by the Commission, therefore envisages a development project supervised at first by the District Officer and his specialized staff working in direct touch with the various community activities being encouraged. These activities include a mechanized farm; a store; small industries such as basket-work, charcoal, sago-lempeng and pit-sawing; a co-operative society associated with the farm and the store; a continuation school for girls; a simple hospital with a European maternity nurse; probably a medical team; visual education and recreational activities.

Preliminary survey work for the project was carried out in 1951-52, and the project proper, to which the Commission contributed a grant of £Stg. 1,100, commenced in 1952, being signalized for the Nimboran people by the arrival of the tractor, described in the article "A Tractor goes to Sarmi Kerang" in the Quarterly Bulletin for October, 1952. The report on the project which follows was written by Dr. J. van Baal, then Head of the Bureau of Native Affairs in Netherlands New Guinea and a member of the Commission Research Council, and recently appointed Governor of Netherlands New Guinea.

The Commission's purpose in sponsoring community development schemes is
largely concerned with their value as demonstrations of particular techniques considered capable of application in other parts of the Commission region. It is thought that the approach adopted in the Nimboran project should be of especial interest for many other Melanesian areas in its attempt to introduce new economic activities and procedures and at the same time provide assistance and guidance for the new forms of social activity which are enabled to develop as a result of economic advancement. Being in this sense an experimental project in economic and social relationships, a more than usually detailed understanding of the structure of the community involved will be necessary for accounts of success or failure of the techniques used to be of significance in other territories. In this connexion the analysis contained in Sections I to VII of the report should prove most valuable as a basis of comparison as the project develops.

Since the issue of this report has been held up by delays in translation, the project itself is now well under way, and it is hoped to follow the preliminary report shortly with the first detailed account of the progress of work at Nimboran.

South Pacific Commission
Social Development Section 20th June, 1953.
NIMBORAN DEVELOPMENT PROJECT

I. Situation and Soil

Nimboran, in the broad plain crossed by the River Grimé, comprises the Nimboran Plain and a small margin on the slopes of the Nimboran Hills to the south. It lies roughly twenty miles west of Lake Sentani in the hinterland of the Netherlands New Guinea capital, Hollandia. From the villages of Kasitemoe, Imsetom, Besoem and Semonggrang, towards the upper reaches of the Grimé, the region extends westwards to the banks of the River Bop. On the north side the area is separated from the coast by the range of hills at Tanahmerah Bay, the boundary continuing north-west along the line of the Berap marshes.

The northern fringe has little importance apart from the villages of Berap and Warombaim, with 176 and 102 inhabitants respectively. The heart of the area lies with the main group of twenty Nimboran villages, all within three miles of Sarmakerang, the centre of the project. It is this part of the plain with its firm soil and compact community that offers the main opportunity for economic development.

The plain continues on either side of the Nimboran area. To the south-east it runs into the Sekoli Valley and is cut off from Lake Sentani by offshoots of the Tanahmerah Bay range. In the other direction, north-west, it extends to the coast, widening to include the basin of the River Sermowai. To the south the plain is flanked by foothills of the Central Mountains, amongst which are the Nimboran Hills. A geological survey of the whole plain was made by Te Riele and van Loenen, and in 1939 Wentholt carried out detailed research into the quality of the soil.

The Grimé Plain was formed in the post-tertiary period. Originally there was an estuary, which has disappeared owing to silting up and a relative drop in the level of the sea. The eastern part (including the Sekoli Valley) evolved out of deposits from the adjacent mountain ledges, further inland. The rest of the plain was built up from sediment deposited by the River Grimé and its tributaries and, in the extreme west, by the River Sermowai also. Different types of soil resulted from the deposits of the two rivers, that of the Grimé being considered the more fertile.

Within the Grimé area Wentholt distinguishes between six types of soil, all defined as loam and equally rich in the minerals essential for plant life. Although chemically fertile, the different types vary in the suitability of their physical structure, upon which adequate drainage depends. In the vast uninhabited part of the plain west of the Nimboran area (the first of three "terraces" into which Wentholt divides it) the natural drainage is insufficient.
The marshy soil, types 1 and 2, is unsuitable for crops without preliminary drainage.

In the Nimboran area itself conditions are better. The first terrace, with soil of type 2, reaches no further than the northern marshes, which are of little importance, and concern only the few villages north of the River Grimé, which in any case have ladanga on the higher land in the adjacent hills. It should be noted, however, that the sago does here, as in other places, are found mostly at the foot of the hills, where the villagers even go to the trouble of flooding small fields for the purpose.

In general, settlement has taken place in the areas further up the river, the second and third terraces in Wentholt's sub-division. The second terrace covers the ground roughly between Nanggoepkoe and a line drawn across the plain between Genjem and Semonggrang. The soil is chiefly of type 3. Wentholt describes it as a dark loam, varying in colour between grey and brown. It is an older soil than 1 and 2, and the longer weathering process has improved its structure. The three upper layers (altogether about 2 feet 6 inches) are satisfactorily pervious to water. The layers below this, however, are much less so, unless they happen to be intersected with layers of sand or gravel. Suitability for agriculture still depends, therefore, largely on drainage conditions. Out of a total of 8,200 acres of this type of soil, only 3,200 acres are immediately suitable for deep as well as shallow-rooted crops. The rest of the ground would need large-scale drainage.

There are also about 250 acres in the second terrace with soil of type 4, a mixture of loam and sand, superior in structure to the previous type.

Type 5 is of better quality again. It is characteristic of the third terrace, east of the line Genjem - Semonggrang. Measures are sometimes necessary to guard against standing water and to deal with waterlogged ground, but on the whole this soil will take deep-rooted crops without special preparation. Its physical structure is favourable. It also has an ample (in places, rich) content of phosphorous, limestone and magnesiu. Out of 11,400 acres of this soil, slightly under one third lies in Nimboran territory.

The sixth type of soil occurs only outside the Nimboran area, to the east, and need not be discussed.

The total area of level ground in Nimboran territory suitable for agriculture without elaborate preliminary drainage is 6,200 acres. (It should be borne in mind that a certain amount of drainage is probably always necessary). With more elaborate drainage the land available could be doubled.

No geophysical survey has been made of the lower slopes of the Nimboran Hills, where most of the villages lie. Information about the soil here is unnecessary since it is mostly broken forest country and should as far as possible be left wooded to prevent erosion.
The plain as a whole is largely covered with forest, some of it being secondary forest. Stretches of alang grass are to be found, mostly close to the villages. Where the ground is marshy it is also overgrown with trees, and bears an abundant growth of wild sago.

II. Approaches

Since Hollandia seems the obvious market for the products of the Nimboran area, transport will have to go by way of Lake Sentani. A ferry of ample carrying capacity maintains a twice-weekly service between Joka, near Hollandia, and Borowai, in the south-west corner of the lake, from whence the Nimboran area can be reached by jeep. The road, like the roads inside the area with which it links up, dates from pre-war days. It was left unmetalled, and the description "jeep road" on American maps was euphemistic. Since the war, however, considerable sums of money have been spent on its improvement, viz. £A7,717 in 1949, £A2,542 in 1950 and approximately £A1,610 in 1951. In 1952 £A1,725 was reserved for its gradual completion (to be increased if necessary), while another £A1,725 has been set aside for its general upkeep.*

At present the road will take light traffic from Borowai via Bonggerang to Kwantsjoe (approximately fourteen miles). From Bonggerang there is also a branch to within a mile and a half of Semonggrang (approximately seventeen miles from Borowai). The latter part becomes almost impassable in the wet season, but it is just possible for a jeep and trailer to get through. A 15 cwt. truck would probably be too heavy at any time. The further section, from Semonggrang to Warombaim is still unmetalled and is likely to give trouble, although its proximity to the banks of the Grimé guarantees easy drainage. It is hoped to complete it by the end of 1952.

At the time of writing the greatest obstacle to carrying the road to the heart of the area is the necessity of crossing the Grimé and the Nimboe, which being flood rivers are difficult to bridge. The only practicable site for a bridge is just below the confluence, near Warombaim, where the Grimé gushes through a narrow gorge. On their own initiative the people have put up a heavy wooden bridge (the Oranje Bridge), substantial enough for motor traffic.

It is interesting that it should have been built at this point, for in spite of oneself one tends to look for a short cut and disregard the obstacles. The shortest way is undoubtedly the track through Kwantsjoe, entailing a very steep descent to the river. It would, however, be virtually impossible to build a bridge here, except at exhorbitant cost. At the foot of the steep bank the

* In Dutch currency, f. 67,100 in 1949; f. 22,100 in 1950; approximately f. 14,000 in 1951; f. 15,000 in 1952. f. 15,000 set aside for upkeep.
broad, comparatively shallow bed of the Grimé is a great problem in flood time. Moreover, the bed of the Nimboe, which would have to be crossed a little higher up, is also too low-lying to make a bridge economically feasible. A further difficulty that combines to put this tempting short cut beyond serious consideration is the big stretch of marshland between the river crossings and Genjem.

Swamps still have to be faced on the alternative routes via Semonggrang. A motor road from Semonggrang to Pobaim would have its bridging problems and would have to pass through a mile and a half of marshy forest, with heavy, unmanageable soil (type 2). However, by cutting down part of the forest, digging trenches and raising the track by means of a layer of gravel on top of a layer of sand, it is safe to say that a reasonably good road could be made. Admittedly the descent at Semonggrang is steep, and the whole cost would, of course, be considerable.

The other possibility is the track through Warombaime, which would mean a big detour but has the advantage that the only large bridge necessary already exists in the shape of the Oranje Bridge. The approaches to Pobaim are again across wide stretches of marshland. At present, the track is almost entirely under water. There are ditches running alongside, but they have ceased to drain away the water, either because they are clogged up or because there is a depression in the ground at this point.

At first glance the route seems less favourable than that to Pobaim direct from Semonggrang, but this impression may be deceptive. It is true that the ground is more flooded. On the other hand, the subsoil does not seem to be of the unmanageable, clinging type. Moreover, the area between Warombaime and Pobaim is straddled with streams, not more than half a mile apart, lying parallel to the track and in courses up to twenty feet below the surrounding country.

They seem to offer an opportunity for drainage by means of ditches which the track from Semonggrang to Pobaim lacks. It follows that the eventual cost of a road would probably be much less. A thorough survey would be advisable, however, to decide whether or not there is a tendency towards a depression in the ground. Until this information could be gained, jeep and trailer traffic would have to be restricted to thirty tons a month at the outside.

The track between Pobaim and Genjem presents no particular difficulties. It is simply a question of some excavation to make the slopes less severe at the approach to river crossings. The surface has already been lightly metallled in this section, but could well do with further treatment.

It will be several years before the roads are finished. In the meantime, the problem of transport calls for provisional arrangements. Ox-carts are a possible solution. Four oxen are available at Genjem, and a rubber-tyred cart has been ordered. However, this will probably present its own problem as the people are not used to working with oxen and the mantri in charge does not seem enthusiastic about it. What is needed is an expert who knows how to handle the animals and could give the necessary instruction for a fortnight or so.
To contemplate road improvements at the present time that would allow for heavier traffic than jeep and trailer is as unnecessary as it would be unwise. Repairs and maintenance are commitments too expensive to be undertaken unless strictly necessary. As long as jeep and trailer can cope with the flow of produce, heavier vehicles ought not to be introduced.

There are, however, certain urgent road works to be carried out if tractor and ox-cart are to reach the area. In particular, the steep approaches to river crossings at many points between Warombaim and Genjem will have to be smoothed out. The width of excavations need not exceed fifteen feet. In the case of four rivers they will be necessary on both sides. Since the height of the banks is nowhere more than twenty feet the work will not be heavy. In view of the pressing need, the necessary survey should be made forthwith.

III. Demography

In the following population table villages have been arranged in three groups, viz. 1-5, villages situated in the triangle formed by Semonggrang, Warombaim and Pobaim, including Sarmakerang; 6-18, villages along the road from Kwantsjoe via Genjam to Berap; and 19-23, villages along the hilly southern border. The figures date from the end of 1951.

<table>
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<tr>
<th>Village</th>
<th>Present</th>
<th>Absent</th>
<th>Total</th>
<th>Men</th>
<th>Women</th>
<th>Boys</th>
<th>Girls</th>
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2181 | 267 | 2448 | 667 | 691 | 559 | 531

Total 2,448 (men and boys 1,226; women and girls 1,222).
Of these 638 live in the Nimboran Hills (156 men, 195 women, 147 boys and 140 girls) and 1260 live at the foot of the hills (358 men, 362 women, 285 boys and 255 girls). In the fertile plain there are only the four villages of Nanggoepkoe, Pobaim, Koeameno and Sarmaikerang, with a total population of 247 (63 men, 69 women, 56 boys and 59 girls).

On the outskirts, beyond the Grimé, are Semonggrang, Warombaim and Berap, with a total population of 503 (90 men, 65 women, 71 boys and 77 girls). Berap, at six miles' distance, is the only Nimboran village not situated within a radius of three miles from the centre of the land chosen for the development project. (Semonggrang, at 3-1/8th miles, is the next most distant). This means that in a circle of three miles' radius is to be found a concentration of 2,270 inhabitants, a density unusual for New Guinea.

The population has a well-balanced composition. The percentage of persons of sixteen years or under is 44.5, whilst the proportion in numbers between boys and girls and men and women may be called normal, which for New Guinea is again exceptional. Yet in 1951 deaths outnumbered births by 18 (births 134, deaths 152). There is no data to go upon for the years immediately preceding this. The only conclusion that can be drawn is that better medical care is important. These figures may, of course, be an indication of a steady decline in the population, the more so as a census taken in December 1946 showed a total population of 2,497. No mention was made of Sarmakerang, which at present has 25 inhabitants. There is no indication as to whether this village was then in existence or not. Nor is it made clear whether in 1946 those absent were reckoned with. If they were not, and if the number of people working in Hollandia at that time was as great as it is now (quod non), it must be concluded that there has been a sharp decline in numbers in the five years between 1946 and 1951 but this cannot be proved.

Some figures about births and deaths, obtained by Mr. Kouwenhoven, the District Officer, when he interrogated the women, are interesting in this respect. He recorded that to 540 married women (including those who had passed the climacteric) 1,623 children had been born and 883 were still living. The other 742 had died before the age of five.

If the figures are correct, it would mean a mortality rate of 44% among children under five. During the first year of life this percentage was 32.4. Generally speaking, fertility is not unsatisfactory. Several instances of ten children, and one of eleven, were noted in this investigation. Yet, as the other figures show, the birthrate is insufficient to maintain the population. Confirmation of this evidence must await a fresh census. It will, nevertheless, be obvious that medical care for young children is imperative.

The available statistics have not yet been fully studied. Mention should, however, be made of an enquiry into the sex of the first and last-born children. To 244 first-born boys there were 204 first-born girls. The report does not show whether the sex-ratio was in any way affected by birth control, motivated by a possible preference for boys. There is in fact a slight preponderance of boys,
which is supported by other figures. The discrepancy is, however, not abnormal. A sex-ratio of 105 boys to 100 girls also occurs amongst the white population of the United States.

IV. Social Structure

The community is divided into numerous local clans (tang), patrilineal and exogamous, each tracing its origin back to a common ancestor. It is curious that the clans seem originally not to have had proper names. A member usually named himself after his home village, the head of the clan or the clan's founder. To ask the name of the tang of a person's relations, therefore, always causes some confusion.* Apparently it was not felt necessary to use a clan name. Moreover, the groups were usually very small. A clan averages fifty members.

Villages are made up of from one to four of such clans, each living in its own group of houses, which can be more or less clearly distinguished from the others. There is a noticeable readiness for the clan to subdivide as soon as it grows above a certain size. This is probably an old practice. Sometimes one gets the impression that in the old days each clan formed a separate local group. This is not generally true today. People live closer together and village life as a whole is better organized. Government intervention has had a lot to do with this. On the other hand, the traditional association of the village with a symbol, such as a bird or a tree, has always been an influence towards greater cohesion. The symbol has little of the totem about it (there is no question of any particular taboo). Its possession is an indication that the village is an acknowledged institution, to be treated as such at a game distributing ceremony.

Nevertheless, it is the clan that is still the most important unit. The village may be defined as a combination of clans living together and for various reasons co-operating, whilst each retains its own independence. Each clan has its own headman, the eram, who ideally is the eldest son of the eldest son, down the generations from the time of the founder, the first eram. When there is no son it is the younger brother of the eram who succeeds him at his death. The korano, the village chief, was introduced into village life by the Government. He is not so much head of the village as government representative. In most cases it is impossible to make the eram korano. This combination is impracticable since the korano unlike the eram can be dismissed and replaced by authority of a District Officer. Social life centres round the institution of eram. Even if he is not of the nobility, to whom homage is paid, he is consulted in various matters pertaining to clan life, including marriage ceremonies. He is also qualified to act as mediator in serious disagreements.

* Elmberg suggests that the name of the clan may have been a village secret. I suspect, however, that he is under a misapprehension on this point.
The raising of a man to the dignity of eram is a solemn matter, traditionally attended by big festivities, the kabi. A kabi was also necessary each time a clan subdivided, a fairly regular occurrence. The advent of the Mission in 1925 put an end to these festivities, which is to be regretted since it has caused a gap in social life that is still talked about. Further particulars of the kabi are given in the next section of this report.

Before the future eram was installed it was customary to address him as dekening, but with the discontinuation of the kabi this provisional title is falling into disuse. Next to the eram stands the takai, who used to be referred to as "the eram's left hand". It is his duty to assist the eram in all matters. In the case of a new clan the office falls to the eram's next younger brother. Thereafter the title is handed down from father to eldest son in each generation. Elmberg refers to yet a third dignitary, who apparently had charge of local food distribution.

A more important part, in many ways, than that of any of the above has been played in Nimboran affairs by the warlords. It rests, however, with the eram to make the momentous decision of whether or not a clan shall go to war (and if so, in alliance with which other clans). As their titles in the vernacular would suggest, the war-lords seem to have been, more than anything, specialists in war magic. However, warfare seems to have figured less in Nimboran affairs than in those of neighbouring peoples, and inside the area peace has normally prevailed.

Between the various clans there has always existed an extensive network of social relationships through marriage and the attendant exchange of presents. There has never been any restrictive preference for regular connubial relations between particular clans. It is customary for a clan to encourage intermarriage with as many different groups as possible, still within the Nimboran area. An investigation ...ae into the marriages of thirty-six men and women belonging to one of the clans of Genjem Besar showed that all thirty-six had married outside the clan. Three marriage partners came from each of five clans, and two from each of a further four, (accounting for twenty-three marriages). The remaining thirteen partners were from different clans again, one from each. Marriage relations had therefore been established with twenty-two other clans. Observations among members of the Giay clan (Imeno) showed a similar practice.

Marriage is patrilocal. The newly-weds always move into a house of their own. No clan houses or family houses are found. There is a wide choice of eligible marriage partners: the custom of preference marriages with a particular relation is not followed. On the other hand, in addition to a fairly strict clan exogamy, an extensive kinsfolk exogamy, said to stretch over two generations, is acknowledged. This would still permit first cousins to marry, as long as they were not of the same clan. I have made a few genealogies but can arrive at no definite conclusions from them. I received the impression, however, that the marriage ban stretched back over a third generation, which would accord with Elmberg's findings.
According to Elmberg it was formerly the practice for the bride's father to select his son-in-law. Kouwenhoven gives evidence of marriages by mutual consent between the two families. Abduction seems rare. I have the impression (though possibly erroneous) that it was not so rare in the past, but a thorough investigation has never been made.

The most important item of the marriage rules is the bride price. In the past the price consisted of thirty or forty articles such as stone axes and antique glass beads. It was the influence of the Mission that led to payment in kind being replaced by the money payment customary today. In recent years the bride price has risen to as much as £100. The whole family takes part in raising the money, each member giving a few shillings and helping with the collection of contributions from others. Not only is the bridegroom's own clan approached, but also those to which his uncles and aunts and their children belong. The bulk of the money, however, is put up by the young groom himself, out of his earnings in Hollandia.

Sometimes the bride price is too high for immediate payment and marriage is permitted on deposit. Full settlement can then await the birth of the first child. When this takes place, the wife's relations are duly notified and make the customary present of a pig, after which the remainder of the price is paid. The ceremony proper to all these occasions is treated in a festive spirit.* There is no further exchange of presents in this connection.

On a man's death a portion of his valuables is divided between the brothers of his mother and of his father's mother. This is looked upon as a payment, the point being that these relatives are in duty bound to investigate the death and take action where violence is suspected.**

The nomenclature for kinship differs according to the speaker. It is typically Papuan only in respect of the different terminology for brother and sister according to whether the speaker and the person spoken to are of the same or a different sex. For example, speaking of your own brother and sister, the word used denotes whether your contemporary in the same family is of the same or the opposite sex from the person you are speaking to.

The importance attached to being the eldest, which receives expression in the institution of eram, is emphasized by the different words for an elder and a younger brother or sister; but for an amendment of this general statement, see below. Similarly, where a cousin is a child of an elder brother or sister of your parents, you always address him (or her) as elder brother or sister, even

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* According to Elmberg the birth of the first son used to be acknowledged with gifts of stone axes, for which a money payment is nowadays substituted.

** Enquiries into this duty left some doubt. It may be that where action is necessary the relatives are entitled to a further payment.
though he or she is possibly much younger than yourself.

The custom of using the term father also for a maternal uncle is not much followed, though it is true that cross-cousins and parallel-cousins are sometimes referred to as brother or sister, with an adjunct to make clear whether they are father's sister's children (-kaitjeronendi) or mother's brother's children (-usunendi). The bilateral trends in kinship terminology which harmonise so well with the emphasis put on age differences, may be interpreted as a stressing of the relevance of the nuclear family. This is corroborated by the type of housing which again favours the development of the nuclear family. As a consequence we might, perhaps, expect the special relationship between mother's brother and sister's son, so typical of the Papuan social structure, to disappear. And indeed not the mother's brother (who elsewhere in New Guinea is the customary master of ceremonies at family occasions) but the father acts as the performer of such ceremonial acts as the piercing of the boy's nose. Nevertheless even here the mother's brother has retained a special position in family life. This again is clearly demonstrated by kinship terminology: mother's brother's group as a whole (his village) is indicated by the term (i)niè-nò, which my informants translated by "father's" (though the usual word for father is ngaio).

Furthermore, mother's brothers' sons (mother's brothers' daughters are not included in this rule!) are always addressed as older brother, even if they are a mother's younger brother's sons.

Relations between the various members of a family seem to be on a very free and easy basis. I was told there were no avoidance rules or any standing on ceremony, except that it is not permissible to call relatives of an older generation by name. Brothers-in-law associate quite freely with one another.

Whether family relations are in fact as free and easy as they seem is another matter. Mythology has one predominant theme, which occurs again and again: the elder and younger brother who quarrel. It may be argued that this is probably based on a moon-myth complex, but as long as nothing more concrete is known about its origin it seems safer to assume that it is the reflection of a feature of society. A higher bride price, for instance, might well intensify the antagonism between elder and younger brother. This would have been particularly likely in the old days when the suitor was entirely committed to payment in the comparatively scarce adat ornaments.

The obligation for relatives to exchange presents is of special interest. With a few exceptions all property changes hands continually. It is common for people to ask each other for anything and everything. Requests by fathers, brothers and uncles are freely granted. It is often impossible to refuse them. Nor are they bound to return the favour. Brothers-in-law, on the other hand, are obliged to reciprocate.

Consequently, it is common for youngsters returning from town loaded with all kinds of goods, immediately to start distributing them. Particular treasures
are, however, kept locked in the wooden chest, which every Papuan owns, or wishes to own. Whatever is kept there is regarded as strictly private and not open to inspection. I have not been able to find out more, but one would probably not be far wrong in supposing that it serves as a repository for goods connected with the bride price.

There are fixed rules for the apportioning of game after a hunt. The strength of family ties may be gauged from them. A pig, for example, is divided up in the following way. One hindleg goes to one of the hunter's married sisters; the other is used to pay off any debts in the clan (if the hunter belongs to the family of the eram, perhaps half of it is given to the takai). The two forelegs are allotted to the other clans of the village, a portion being presented to them through their respective erame (the hunter's own eram receives a smaller portion for himself). The head, breast and entrails are for the hunter's own house and family circle. It should be noted that my informant did not mention the wife's family as participating at all, which one would surely expect. I omitted to enquire in what way the relatives reciprocate.

In a way, the distribution of game gives a good idea of the close relations between the various parts of the Nimboran territory (or Namblong, as it is called in the vernacular). Not only are the other clans of the village involved, and collect a large portion of the meat through their erame, but also a sister of the hunter, who may live anywhere in the area. The many intricate relationships, such as these, do indeed contribute towards making the Nimboran area structurally integral. War with other groups in the territory is banned. In any case, as has been pointed out, war does not seem ever to have been a predominant feature in the people's lives.

V. Religious and Social Life

In the old days religious and social life was concentrated almost entirely round the festivities connected with the eram. It is true that wedding feasts, and the ceremonial attached to payment of the bride price, played something of the same rôle, but on a much smaller scale. The grandest event was undoubtedly the kabi, or feast, on the occasion of the eram's installation, and a certain nostalgia for it is clearly perceptible.

Accounts of what took place at the kabi are not very informative. Elmberg's report is spoilt by being disjointed, and Kouwenhoven's memorandum is too little the outcome of really critical study to be wholly acceptable. My own investigations have only been on a small scale.

The eram-kabi is said to be a kind of investiture. However, this is a little misleading. It is more correct to say that every eram gave a feast of this nature on one occasion during his lifetime, after which the form of address dekening was discarded and eram was his confirmed title. He was the central figure. Yet it
was primarily a social event. Two whole villages (not merely clans) co-operated to launch this grand affair. It consisted of a series of banquets, held alternatively in the celebrating and the assisting village. In the eram's own village a special sacramental house was set up for him, and also, an initiation house, where the young men were instructed in the use of the sacred flutes. The celebrations were wound up with an enormous pork feast for the two participating villages. Altogether the celebrations would last for between a year and a year-and-a-half. They were always attended by dancing and chanting, which reached back to mythology.

The eram-kabi is at the centre of the people's mystical beliefs. This is apparent from the old myths, according to which all existence is traced back to the first legendary kabis where the first eram made their appearance. It seems to me that the ceremony as a whole should be looked upon as the essential thing, with the "investiture" of the eram as a side-issue. Evidence for this view is provided by the fact that a kabi was also an essential preliminary to a clan's independent existence when it broke off from the others and set up on its own. Since no celebration of the kind has taken place since 1925 one has to depend for descriptions entirely on re-interpretations, which have been strongly influenced by Indonesian gyeroes who saw the eram as a figure equivalent to the Indonesian prince. This has made it easy for too much emphasis to be laid on the investiture idea, the more so as the event took place only once in the eram's lifetime.

After the celebration was over (having been attended by people from all over Nimboran as well as from the two participating villages), the eram departed for formal visits to the headmen of the other clans, which once more led to various feasts on a smaller scale. This may be considered as his official acknowledgement as representative of his group. It is certain, however, that it was also regarded as an opportunity to settle disputes and discuss local problems.

Although one can understand that the Mission objected to these feasts — not only to their pagan character, but their whole purpose, and particularly the nature of the dancing — it cannot be denied that to forbid these celebrations was to throw out the baby with the bathwater. By means of an extensive network of mutual obligations, the festival played an important part in making Nimboran a firmly united community. The many personal relationships involved were an integral part of the people's social life and they miss them.

The festival stimulated the accumulation of wealth in its traditional forms. The riches the people have now learned to appreciate cannot be acquired in the same way as the possessions they valued in the past, such as a large herd of pigs, which could be bred without difficulty. If the new wealth is hard to come by, it is no comfort to reflect that there is not enough to go round anyway, as the Papuan remembers the horn of plenty, which he saw overflowing at the time of the American occupation. The flow has stopped as mysteriously as it began and this, in conjunction with the new atmosphere of hunger for visible riches, has led to the so-called "cargo cult", of which we have had two instances in the last two years. The background of this cult is interesting, because in it a characteristic
practice of the Nimboran people has found expression. It used to be the custom, before going out to war or to hunt, for one man to retire with a few others to his house or a place apart, and to start dancing until, trembling all over, he fell into a trance, and threw himself on the floor. In that condition he saw things as in a dream and could then direct the others to the hiding-place of either the enemy or the hunted beast. Such a seance was called kasiep and I was told that it was specifically intended for the two occasions of war and hunting expeditions.

Kasiep has now found a new application in the cargo cult. Adherents await the resurrection of their saviour, the man who was swallowed up in the earth with all his riches and who will one day rise again. The legend occurs in many variations. It involves communication with the dead, who on account of the colour of their skins, are associated with the white man, as will appear from the following.

The first of these incidents on record speaks of a vision that appeared in the road to Johannes and his brother Obed, as well as to Johannes alone in his house. This "ghost" took the appearance now of a white man, now of a Papuan. From an ornate, multicoloured wooden chest it filled Johannes' own chest at Koeimeno with all kinds of goods. Johannes' chest had to be taken to Imeno in the hills where, if left unopened, it would be stocked with further gifts.

A more important phase set in after a dream in which Johannes' father appeared to him and ordered him to build a house on the site of the old burial-ground in the woods behind Imeno and to keep it ready for the time when he would come and fill it with riches. There seems to have been a feast, too. Having gone thus far the whole movement suddenly collapsed, when another Johannes (an office boy from Hollandia) turned up at Imeno and called it a fake. He promptly opened the chest, which was then found to contain nothing but stones. There is a cargo god known as Kasiop. This word (the same as is used for the trance practice) is now applied to the cult itself. At the time, it was alleged that Kasiop had turned everything the chest held (clothes, watch, money) into stones. The villagers' faith in this explanation was shattered, however, when later the stones themselves disappeared from the table where the eram had deposited them. Johannes is now regarded with suspicion.

The second incident began when he had yet another vision in the woods, of a Papuan who wanted to give him things but was prevented by the mythical serpent Ormoebene. This mystical encounter took place in the old rubber plantation known as Bonies, near Pobaim. A dance platform was then erected over the spot. The people danced on the logs until a trembling overtook them and they threw themselves down, whereupon they began to chatter in many different tongues.

During the time of these happenings a new hospital was opened at Pobaim. Amongst those to be made medical orderlies was Johannes' brother Obed, together with Jacob from Sarmaikerang, Simeon from Pobaim and two others from Kaitemoe. Two mantrie (supervisors) came from Jakotim and Kaitemoe. The eram Balthasar who was treated there by Jacob and Simeon, was massaged and mysteriously delivered of
a stone.

In addition to the dancing at Pobaim a similar ritual was performed at Berap, where its purpose was to break the spell cast by the serpent and so release the goods. The arrival of Kasiep was expected on January 5th. The flag of New Guinea which he would carry (the official red, white and blue flag) was to be presented to the District Officer at a special ceremony to which he had been invited. During the ceremony the people were to receive all kinds of gifts, and were also to see a few sample products of their own factory, scheduled to rise up from the earth, equipped to turn out every conceivable article. Everything was arranged and the people of Nimboran were already being summoned by letter to be present on January 5th, when the District Officer intervened. There was ample reason for this. Owing to a certain Carlos Griapom and his followers the affair had taken on a political significance, and among other things the arrival of Sukarno was expected.

In my view these kasiep movements derive their name not from a cargo god or spirit called Kasiep, but from the trance practice of the same name. The beliefs centreing round it overlap with various details of the Christian Whitsun-tide. It is safe to assume that these trance phenomena played an important part in the incident with the chest at Imeno, as well as in the happenings described above.

This also explains the persistency of the whole affair. Kasiep is a means of communication with the dead and therefore very attractive. By means of the trance many deep-seated wishes come to realization: money, goods, recovery from disease; and all this in a supernatural way, without effort or work.

Kasiep is taken very seriously. I discussed it in Imeno in a meeting of about twenty men (Johannes was also present) and was struck by the feeling of uneasiness that suddenly came over the previously cheerful meeting. Something was at stake in which they really believed and that they did not want to discuss. I was particularly struck on this occasion by Johannes' grim, fanatical face.

VI. The Economic Structure

The principal food of the population is sago. They rely on the cultivated not the wild variety and both men and women co-operate in the harvesting: men fell and beat the sago, women wash the pith.

This is supplemented with yams and cassava grown in small allotments. The clearing and fencing of the land is done by men, the rest of the work mainly by women.

Hunting is another important means of subsistence in a region like this which abounds in game.
For a closed economy, restricted to this small area, Nimboran is a prosperous region, able to supply all the necessities of life. The population is industrious by Papuan standards.

The intervention of the Mission caused a disturbance of social life. The feasts have been abolished and payment of the bride price in stone articles (not easy to augment from outside sources) has been replaced by payment in money and modern goods that must all be obtained from elsewhere. The old valuables have been thrown away and it is interesting to note how activity has gradually switched to the acquisition of European goods. The cupidity of the bride's relatives is no longer limited by what is available. It is always possible to go and earn more money by wage labour. This has led to an ever increasing bride price, a cause of great dissatisfaction to the men, who are forced to go to Hollandia in order to earn extra money and buy the goods. The trend is also a source of regret to the older people and, indeed, has disadvantages that are unmistakably felt by the whole community. The women's task is made heavier; there is an increased amount of communal work to be done by the men that stay behind. Two conflicting influences are now at work: one is a variation of the old potlatch motive of the customary big feasts, the other is a natural desire to hold the community together in the face of this dispersal of its labour force. The very men, including the erama, who abuse those who go to work in Hollandia, themselves bring about this migration by raising the bride price.

This is perhaps one of the reasons why the attitude towards work is ambiguous. Work is only done out of necessity, and the compulsion to work in order to obtain goods is actually considered a disgrace. This explains the wishfulness of the cargo cult and the myth of the machine that will make all goods, like the one that was to have come up out of the earth on January 5th.

Faith in machines is unlimited. Recently when clay moulds were being baked in Genjem for preparing sago-lempeng (sago cake) and the first moulds failed in the home-built oven - the moulds in the District Officer's oven were quite satisfactory, by the way - some of the men stated that they would not make any more. They would start making sago lempeng as soon as a machine arrived to make the moulds. Everything ought to be done by machines. That work would still be necessary is something beyond their imagination.

It is unfortunate that the need for goods is so closely linked with the bride price. If more big feasts were allowed, there would be a closer bond between the community and its environment, and a return of the incentive to produce the goods necessary for them. The only feasts nowadays are a few small ones connected with marriage, funerals and celebrations round Christmas, when people from different villages pay calls on each other. The big feasts with dances, lasting several days, are a thing of the past; the urge to work hard at home and to cultivate larger allotments has disappeared with them.

The new eagerness to be dressed properly has its disadvantages. To satisfy this urge, it is necessary to go to Hollandia. As with the bride price, it also
stimulates the desire to acquire the wanted goods in a supernatural way.

If the people had more rational means of production and better transport, it is clear that they could produce nearly everything to satisfy their needs. Only a small amount of time and labour has to be spent on sago and allotments. The District Officer at Genjem estimates that a man and his family work in their allotment for 60 days a year; this is probably an over-estimate. If another 40 days are added for maintenance of houses and for hunting, there are still more than 250 days available for other activities. The scope for making labour more productive is obviously great.

Skill in handicrafts is well developed. Excellent baskets are made. There is a large number of carpenters and even a cabinet-maker, who can turn out decent work if properly supervised. Initiative is far from lacking, as the Oranje Bridge clearly shows.

VII. The Nimboran Problem

Nimboran society is by Papuan standards a society well-integrated by marriage ties, and of greater than normal size. It faces various difficulties; firstly, the usual acculturation problems of a people whose own world has collapsed and who as yet have no part in the outer world which they now recognize as real. The consequences of the resulting feeling of displacement are not mitigated when one of the most important elements in former social life, the kabi, is now prohibited (or, at least, is considered prohibited, and is, in any case, impracticable without the co-operation of the Mission and the Government). There is an obvious esteem amongst the people for this part of their dying cultural heritage.

At the same time there is a conscious acceptance of Christianity. In some directions a determined radicalism is also found. It is typical that the old stone valuables have been thrown away.

This radicalism, however, has only affected the outer form of things. The bride price itself, for instance, has continued to exist and has even grown in importance. The desire for property and wealth has attached itself to something new, in this case imported goods.

The difficulty with these goods is that they come into the category of goods that should be given away if kinsmen ask for them. They are the kind of property that is always circulating. In this respect their value is far less than that of the old stone valuables. To go working elsewhere is therefore only a means of obtaining these goods temporarily. The system of a high bride price is one of the ways to replenish one's stock. As has been pointed out, it makes working outside Nimboran necessary, a trend meeting with strong objections from those that stay behind.

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This arouses a strong desire to acquire the goods within the territory itself, as is obvious in the *kasiep* movements. The *kasiep* movements add to the evidence that the old culture is still alive and that conversion to Christianity was, sociologically speaking, mainly an adaptation to modern times, a means of becoming integrated with the new world. At the same time the *kasiep* movements show that the desire for adaptation has come to a dead end from which no escape can be seen; yet hope is not given up.

The abolition of the old feasts deprived the men of an important traditional role in society. This has led either to idleness and the dissipation of energy or to work being sought elsewhere, which in turn has laid a heavier burden on the women, whose tasks have remained practically unchanged.

Work as such is not popular. Everything is expected from the machine, which has become a kind of *deus ex machina* in the minds of the people. Nevertheless, if belief is held in a certain end a large amount of energy can be summoned up, as is again shown in the construction of the Oranje Bridge.

The greatest danger for Nimboran society is the tendency to migrate. In 1951 12% of the population was absent; amongst the men the proportion was even as high as 124 out of 667, or 18%. The number of absent women was only 49, or 7%, including the girls in training at the Hollandia hospital.

The exodus is checked by several circumstances. Firstly, the high cost of living in Hollandia makes it extremely difficult for a family to live there. If a man takes his family, he has to spend all his earnings to keep alive and it often becomes necessary to have sago sent from Nimboran. Therefore, he remains partially dependent on his relatives.

Secondly, shortage of women in Hollandia makes it inevitable that the villager should look for a wife at home. On the one hand the bride price may force people to leave, on the other, marriage itself means a compulsion to return. When a man is unable to pay the full bride price immediately, he often has to return to Hollandia shortly after his marriage. How far this has an adverse effect on the birth-rate has not been studied.

In the third place, strong pressure to return as soon as possible is exerted from Nimboran on those who leave. Their departure is frowned on; the *erama*, in particular, object. It is therefore regrettable that the *erama*’s authority has been weakened by the abolition of the *kabi*. The gap now existing cannot, in fact, be overstressed, since these feasts were part and parcel of the people’s lives and the institution of *eram*, with which they went hand in hand, is still a recognized one in society.

His continued recognition shows that there is still a marked tendency for the group to assert itself as a clan in its relations with other groups, for the *eram* is the clan’s representative, the symbol of the family group that is here manifesting itself and needs a person through whom it can take part in external
relations.

At present the one thing that aids social integration in the Nimboran area as a whole is the payment of the bride price. This is the very thing, however, that forces people to leave. Granted that the first essential is to create local opportunities of earning money and buying goods, the danger still remains that this possibility alone will not now provide a sufficient check on the tendency to leave the community. Hollandia also offers all kinds of entertainment not available at home. Moreover, acquisitiveness may induce people to try and earn extra money by going away. Here is yet a further reason to lament the absence of the kabi. Were it possible to revive it, there would be an encouragement to remain at home. Even from this too much should not be expected.

Acculturation and its attendant difficulties is the major problem. There is also the general health of the population to be considered. Infant mortality is unreasonably high. Malaria is widely prevalent, but the main cause of death among children is malnutrition and the absence of child care.

There is a great need for instruction in many fields, and for such contact with the outside world as will instruct people about its nature and make them feel related to it.

The most acute practical consideration is that of communication. The problem of the road has been amply discussed above. The outlay on it has been £100,000 (£A11,500) up to the present time, and at least another £50,000 (£A5,750) will be needed for its completion. This is certainly not wasted money. It must be borne in mind, however, that as soon as the road starts paying its way (when a productive co-operative undertaking has been established in Nimboran) and other possibilities have been realized (a far away future), it will be necessary to reconstruct and improve the road for heavier traffic.

It is a pity that no transport is possible along the River Griné because of its rapids. I do not know the other rivers. It would certainly be worthwhile making a survey of transport possibilities via the River Moaif, which approaches the south-west corner of Nimboran from Wentholt's second terrace. It is a basic precept in New Guinea that even a much longer way round by water (in this case by sea via the Walckenaer Bay) is preferable to the construction of a road. The River Bop may also offer possibilities.

VIII. The Development Plan - Economic Side

An answer to Nimboran problems must first be found in the economic sphere. The necessary money and goods have to be earned in the area.

The second stage is to use these earnings for the stimulation of social life, partly by finding a way to revive the eram-kabi in a modernized and more
restricted form, partly by educational evenings, drama (religious plays have become established already round Christmas) and other modern forms of entertainment (football, krontjong, music and singing).

At the same time there must be an improvement in public health.

Attention should be concentrated first on economic development, because this is the most expensive part of the plan. To bring about speedy progress a method of production should be found which gives maximum yields with minimum effort. Labour is expensive and scarce in New Guinea and has to be treated accordingly. The view should not be held that these people do not matter because their needs, unlimited in some respects, are ultimately small. In reality their needs are not small; moreover, these people do matter. What they need is to be recognized as human beings and to take part in human society; during the war they saw enough of the world to know when they are being kept out of things.

The soil is fertile and flat, without stones in the top layer, and offers a good outlook for mechanical cultivation. What comes to mind first is a mechanized agricultural enterprise. The only promising alternative is the laying out of cocoa plantations. Such plantations, however, only start yielding after a long period and are therefore not suitable as a first project. They are made even less suitable by the fact that cocoa is still too much in an experimental stage. Cocoa is important but it should be linked with other projects.

A piece of land for a mechanized farm, provisionally planned for a maximum of 100 acres was selected near Sarmaikerang and is now available. A survey of this plot was made by the soil expert van Soelen. There is sufficient room for future expansion. The plot is situated within 3 miles of all the villages in the Nimboran area, with the exception of Berap.*

The agricultural consultant J. Ham, D.Sc(Agron.) has produced a planting scheme (Appendix II) based on the rainfall figure, together with an explanation and estimates of costs and revenue (Appendix I). The main points made are as follows:

In a period of two years maize, ground-nuts, maize with a green crop to replenish the soil, and soya beans, will be planted in rotation, after which maize will follow again in the third year, and so on. (Compare Appendix II).

The soil will be cultivated by a Fordson Major wheeled tractor with a kerosene motor of 30 H.P. The area to be brought into production is completely flat and covered with relatively light alang-alang vegetation (a long grass or thatch grass). By ploughing once, followed by disc-harrowing and zigzag-

* Semonggrang is at a distance of 3-1/8th. miles, which certainly could not be called an obstacle.

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harrowing four times, at intervals of 10-14 days, the alang-alang becomes physiologically exhausted; after this maize can be sown. If the tractor arrives in July, it will be possible to sow 25 acres with maize in each of the months October and November; after this the next 50 acres can be cleared.

The cost of bringing into production 50 acres is estimated at £A863.13.0* (including £A230 for drains and £A218.10.0 for depreciation); the cost of making drains is no more than a guess; it is impossible to tell in advance how much labour will go into this. The provision made seems to be on the safe side. In addition, an initial expense of £A230 is needed for the construction of a shed. This brings the total of initial expenses after arrival of the tractor to £A1,093.13.0.

From then on the soil will be ready for planting. The calculation in Appendix I assumes a further cost for planting, weeding and harvesting of £A581.18.0 based on the assumption that weeding will be done mechanically. The total cost for the first 50 acres will thus amount to £A1,675.11.0. The cost for the second 50 acres will be £A230 less, as no shed will have to be built. The total cost for preparation and the first planting of 100 acres will be about £A3,277.10.0. The estimated proceeds of a first harvest are put at £A3,220 for 100 acres, which would nearly cover the initial cost.

The calculation in Appendix I of the annual working expenditure when the undertaking is running on 50 acres amounts to £A2,517.7.0 against estimated earnings of £A3,450. The estimated net profit of £A920 that would result may be called satisfactory.

It is understood that in arriving at these figures both yields and prices have been underestimated. It is not too much to hope, therefore, that the first year's profits will exceed expectations. In later years when the undertaking is more settled and several products will be reaching the market in larger quantities, it will be necessary to reckon with lower prices. As prices in the estimate are put at half the present prices, there seems, again, to be an ample margin of caution.

The estimate is based on Nimboran prices. Transport from Nimboran to Hollandia will probably cost f.0.10 per kg., or the equivalent of 1½d per lb. For the time being this can be arranged by jeep and trailer, or by the tractor with a trailer. This is assuming that the road is in reasonable condition. The ox-cart can be kept ready for emergencies. There is no need at the moment for a jeep to be bought specially, since the one used by the District Officer is available at Semonggrang. Frequent journeys are made to Hollandia and produce from Nimboran can easily be taken at the same time.

* Amounts in this section are given at the exchange rate of f.8.7 to the £. For figures in guilders see Appendix I.
The purchase, use and depreciation of the tractor and accessories deserves special detailed description. An order has been placed for a Fordson Major with kerosene engine, costing £621. The accessories are a plough with 3/2 share, a tandem disc-harrow and a zigzag-harrow. The total cost, including transport to the area, is estimated at £1,380. The instrument for weeding and for marking plant furrows for harrowing is not included, but one can be borrowed from the Department of Agriculture.

Depreciation is based on a total cost of £1,725. This may seem a high estimate, but in face of rising prices replacement costs should be the basis. From this point of view it is ample, for ploughs and harrows can be assumed to have a much longer life than the tractor, which forms the main expense.

The life of the tractor is estimated on the low side, viz. 3,000 working hours, instead of the normally assumed 5,000. Experience shows that surprises happen again and again in this country. It is, therefore, wise to assume a quicker depreciation, and it has been calculated on the basis of f.5 (11s.6d.) per working hour. In other words, the tractor and accessories can be replaced within three years by a tractor and accessories owned by the undertaking itself.* This means that the farm being planned has a sound basis and will probably even turn out to be more profitable than these calculations promise. In any case it offers scope for slow but steady expansion. The only objection to the plan as it stands at present is that it does not employ enough labour, especially since it has been decided to weed mechanically instead of manually. This reduces the calculated number of man-days for the planting scheme to about 6,000 per 50 acres per year. Against this it has to be remembered that, according to information from the agricultural engineer Perk, manual weeding meant disaster for the mechanized agricultural undertaking in Timor.

It should be added that the farm project will be carried out with the support of the Department of Agriculture, which will take full charge in the initial period.

The farm should be accompanied by a store where goods can be bought with the money earned. The framework for such a store already exists. A shop founded in the course of 1950-51 for the sale of tools showed a first-year profit of f.220. (£25.6.0). This shop was established with the help of both the agricultural consultant and the Mission. The former procured the tools, the latter advanced a credit of f.1,500 (£172.10.0). The value of the residual stock - of which part will be given back to the local agricultural officer - was f.1,103,01 (approximately £126.16.11), at the time of my visit. The books were found in good

* The reclamation and first planting of maize in an area of 100 acres, together with the necessary weeding, requires the use of the tractor for 1,000 working hours. Each year the farm requires its use for 720 working hours per 50 acres. Consequently, it will be used for over 3,000 working hours in 3 years, which means complete depreciation and replacement.
order on this occasion. They were kept by a Nimboran clerk under the District Officer's supervision. Though supervision is of course the decisive factor, even so the result of this enterprise cannot but inspire confidence.

The idea is to expand the store and make available the supply of goods from outside, which is one of Nimboran's chief needs. In Appendix III a list is given of the goods considered necessary for this trade. Some of these items will only be in occasional demand, whilst others will have a regular turnover (particularly salt, rice, sugar, kerosene and soap). It is certainly not intended to buy all the goods listed in the Appendix at once. In the early stages only a number of very marketable articles (those marked x) will be needed, representing an outlay of f.5,000 (£A575). The other articles can be introduced gradually as the store flourishes. The marked articles are important for the people's daily needs.

The store is planned to become not only a sales centre, but also a buying agency for locally produced goods. This is already the case with the basketwork from Berap (the most distant village) and arrangements will soon also be made to handle charcoal and sago-lempeng. There is also some question of the store having an interest in a sawmill (with pit saws) which is to be started.

The District Officer has done a great deal to stimulate these undertakings. Yet there are many difficulties. For example, when the assistance of the teachers was called in to encourage home basket making, in spite of it being stressed that everything was on a voluntary basis, the impression that the people were being given an order could not be avoided. Of course, this can be rectified, but it remains a fact that the people find great difficulty in understanding the difference between encouragement and an order or mild coercion. Psychologically this remains one of the big problems.

The basketwork is very important. The quality is excellent, and at present it finds an insatiable market in Hollandia. Its encouragement is certainly of interest. Products of this purely domestic industry are already regularly coming in. The Department of Agriculture is to be the intermediary for sale outside the area and samples of the work have already been sent.

Charcoal burning is the second of these small industries to have been started. As mentioned above, the shop (future co-operative store) will act as selling intermediary. Mr. Kouwenhoven expects much of this industry, as it is the intention to bake charcoal cooking stoves made of clay (angkos; see below) and sell them in Hollandia. This could, undoubtedly, boost the consumption of charcoal.

Personally, I do not expect as much from this activity as from the buying-up and re-sale of sago-lempeng, a product that is in great demand. In Genjem, clay moulds in which the sago can be baked, have been made successfully. These moulds are not particularly well finished, but they seem to fulfil their purpose. If this experiment succeeds, something may be achieved along these lines, though
in all probability production will never be high.

It is interesting that the baking of the necessary moulds out of clay proved possible. The District Officer did excellent work in this respect. It is to be hoped that the baking of charcoal cooking stoves (anglos) will also succeed.

Lastly, there is the pit-saw undertaking, for which some cross-cut saws have been supplied. The District Commissioner is of the opinion that the co-operative stores should lend assistance in this case as well. I do not agree: the wood is meant for local use, therefore it is better and more profitable for the producers if it is sold direct. The co-operative could help by selling saws, wholly or partly on credit, in cases where this seems economically justified and where full payment is assured.

An elucidation of the possibilities of the charcoal industry and the saw-mill is given in the estimates of Mr. Kouwenhoven (Appendices IV and V). It should be noted that the co-operative would do well to refrain altogether from actual participation in these little industries. It is right that it should have a stimulating function as a buying centre, but it should leave it at that to avoid any possible complications.

It is difficult to give any advance estimate of profits to be expected from the store. The policy will be to charge normal shop prices with an increase to cover transport costs. In buying products for re-sale in Hollandia the aim will be a profit of between 5 and 10%, after discounting administrative and transport costs.

No staffing difficulties should be encountered. The co-operative will need a clerk anyhow, and he will be able to conduct the store's business at the same time.

The importance of acting as a selling agency for baskets, mats, sago-lempeng and charcoal lies in the possibility of canalizing the labour surplus. These will not be the only channels, as the Department of Agriculture also plans to start encouraging cocoa plantations in the area.

IX. Form and Finances

A co-operative society is planned, which all men and independent women in the Nimboran may join. It will consist of two business undertakings: the farm and the store. The society will receive the necessary tools and credits as a loan on condition that it follows the directions of the District Officer at Genjem, consults him as to its proposals and gives him access to everything in its charge. This opens the way to making the co-operative independent when it succeeds in freeing itself from its debts.
The District Officer will fulfil his tasks in connection with the development plan supervised by a committee that is to be set up under the chairmanship of the Resident of Northern New Guinea. The committee will consist of the following members, in addition to the Resident: the agricultural adviser, J. Ham, Ds. Kijne or Mr. van der Stoep from the Mission, a doctor, a representative of the Department of Finance, and the writer of this report. It is recommended that the District Officer be asked to make a quarterly report to the commission on the progress of the scheme.

An issue of f.10 (23/-) shares in the co-operative is suggested. Adult Nimborans should be the only shareholders and it should be laid down that absence from the area for more than a year will entail forfeiture of shares. It is undesirable that any one person be allowed to hold more than one share.

Distribution of profits will take place once a year. A premium should be paid to those members who have worked for the co-operative either on the farm or by sending in products for re-sale. Such a premium should be proportionate to the amount the member has received in wages or payment. Furthermore, it would be advisable to hold up full payment of wages in the farming enterprise and issue, for the time being, say a quarter of the amount due, that is to say, make payment in the form of a small compensation for work done—a form that the people already know. They should learn that remuneration in agriculture comes only after the sale of the harvest. This has the advantage that they would then receive a considerable amount of money at one time and be able to buy something really useful. The payment of the yearly distribution of profit could be combined with such a wage payment.

It is hoped to finance the whole project from the current budget. For the purchase of agricultural implements it will be possible to fall back on the subsidy of the S.P.C., which can be transferred to the budget of the Department of Agriculture. A small deficit may be left; this could be covered by funds available in the budget.

A source has yet to be found for the cost of training a tractor-driver, which will possibly amount to f.600 (£69). The exact amount can be decided when a candidate has been accepted (this matter is still pending), but it is urgent to make an immediate provision, for which purpose the assistance of the Department of Agriculture would be valuable.

A more important expense is the one in connection with bringing into production the first 25 acres and constructing the shed. It is assumed that this outlay will be made this year. Appendix I gives the following costs:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractor (excluding allowance to cover depreciation)</td>
<td>f.2,800 (£A322)</td>
</tr>
<tr>
<td>Wages of driver and assistant</td>
<td>f.1,500 (£A172.10.0)</td>
</tr>
<tr>
<td>Digging drains</td>
<td>f.2,000 (£A230)</td>
</tr>
<tr>
<td>Construction of shed</td>
<td>f.2,000 (£A230)</td>
</tr>
<tr>
<td>Wages for planting, weeding etc.</td>
<td>f.500 (£A 57.10.0)</td>
</tr>
<tr>
<td>Purchase of sowing seed and of bags</td>
<td>f.720 (£A 82.16.0)</td>
</tr>
</tbody>
</table>

**Total:** f.9,520 (£A1094.16.0)
In this estimate it is assumed that the wages for digging drains and for the construction of a shed will be paid in full immediately as these are not part of the agricultural operations. The other wages are those that will only be paid in part.

Several items are estimated on the high side, but this is advisable in order to avoid disappointment.

In addition a credit of f.5.000 (£A575) will be needed for the store, and one of approximately f.700 (£A80.10.0) for the buying-up of native products. This will involve small quantities that are rapidly re-sold.

Consequently, the total credit needed amounts to f.9.520 + f.5.700 = f.15.220 (£A1,094.16.0 + £A655.10.0 = £A1,750.6.0.

This compares with the following resources:

(u) credit already granted, but immediately claimable from the Mission ... ... ... f.1.500 (£A172.10.0)
(b) payments on shares in the co-operative ... f.3.000 (£A345.0.0)
(c) part of the f.5.000 (£A575) credit to the store, redeemable from sales effected and profits already made ... ... ... pro memoria

Total: f.4.500 (£A517.10.0)

This leaves a deficit of f.10.720 (£A1,232.16.0), part of which can be covered by re-distribution of the funds assigned for the buying-up of native products. In this way the credit available for Nimboran out of the total Northern New Guinea allotment, could be increased from f.1.000 (£A115) to f.6.000 (£A690). Possibly the remainder could be made chargeable to the two other divisions from the same funds. On this matter consultation will be necessary, and it should preferably be handled by the Resident of Northern New Guinea.

All this relates to the 1952 budget.

Re-payment of these credits ought to be made in 1953. New credits will then be needed for the preparation of another 50 acres, for the exploitation of the 50 acres already reclaimed, and for the continuation of the store. Mr. Ham will be asked to make a detailed calculation of the amounts involved. On a rough estimate already made, the amount of credit needed in 1953 can provisionally be put at f.10.000 (£A1,150). The project will probably not be self-supporting before 1954.

A suggestion in this connection is that it should be laid down that the money reserved for depreciation is not to be available for financing current business. It should be invested separately. Without such a provision no proper
insight into the situation would ever be possible.

Finally, it should be noted that none of the foregoing estimates includes the cost of administration. However, this omission is not important. The clerk doing the work will start with a low salary, not more than f.750 (£A86.5.0) annually. The total cost of administration may be put at f.1.000 (£A115.0.0) annually. For 1952 these should only be considered as potential costs.

X. The Development Plan — Social Aspects

Nimboran is lucky enough to have had a continuation school for girls* erected within the area. It was opened towards the end of 1951 and was initially run by the missionary's wife, though since the end of March 1952 it has had its own woman teacher. The school serves not only Nimboran, but also a large part of the rest of Netherlands New Guinea. Its significance naturally lies in the example afforded by the better-educated girl who, returning to her village full of new ideas, is apt more than anyone else to contribute to a change in the way of life.

The school has only just started and still has to develop. A point of interest (noted again in another connexion below) is that in the highest class infant-welfare and infant-hygiene will be treated. This opens the way to letting the girls take part in child-care.

An opportunity for this will have arisen by the time the school has a highest class. Provision for a simple hospital has been made in the budget for this year. which also provides for a European maternity nurse. The nurse will not arrive until after the completion of the hospital, which probably means next year. By then it will be possible to achieve something more concrete; an advice bureau for mothers could certainly be opened.

Plans have been made for a mobile medical team to come to the area before the end of 1952. It will consist of a doctor, possibly an experienced assistant and certainly three older apprentice assistants for the fight against framboesia (yaws). The apprentices will get a good training in this way and will be able to do the same work independently elsewhere after taking their assistants' examination. Details of this project have not yet been worked out, but there is room for it within the scope of the present budget.

Visual instruction is very important in this field. The Information Bureau

* Continuation school: Comparable with the fifth, sixth and seventh year of primary education (translator's note).
has promised to supply an acetylene lamp film strip projector next year, which could be used for this purpose. Further consultation will be necessary to decide on desirable and available strips. The question will have to be examined thoroughly before the end of 1952 if this form of instruction is to be started early next year. The subjects need not be limited to the field of medical hygiene; they should also cover more general issues. It is of special importance to show by means of film strips that hard work is not less necessary in mechanized undertakings. Film strips on agriculture and animal husbandry would also be useful. It is hoped that it will be possible at a later stage to screen normal films with a portable projector.

The main problem in social development work, however, does not lie in this direction. Activities such as these can be organized. A task of far greater difficulty is the stimulation of the community's own social life and the encouragement of a certain amount of entertainment, for the sake of the focus of interest that it can bring about.

What counts is not simply the creation of forms of amusement. Amusement in itself is more a flight from reality than a means to mould reality into something that matters. It only finds its real function when it is linked with essential values.

To hark back again to the old-time Nimboran feasts, in these, such a link between amusement and essentials was achieved. The eram-kabi made entertainment part of a serious social event and gave the community a focus of interest. It is questionable, however, whether a simple revival of these feasts today would bring a solution. Experience shows that the younger generation holds them in contempt. Besides, there is the danger that a new eram-kabi would lead to a long series of feasts that would totally exhaust society and will not lead it anywhere, leaving the people convinced that this was actually as bad as anything else. The tendency towards over-indulgence, typical of this time of feasts, could easily contribute to total disappointment.

One of the first tasks for those who give guidance in this area will be to look for a new approach. It would be foolish to try and give more than general rules in a matter such as this, in which plans should grow in co-operation with the people themselves. This work will call for a great deal of tact, the more so since it must be taken into account that the people are Christianized.

The search for a new approach is very important. It would not do merely to complain about the unnecessary destruction of the old institutions. This is indeed regrettable, but it is more important to find ways to meet the requirements of modern times. A co-operative such as the one proposed can be a good means to this end because it can help in financing the purchase of sports equipment, musical instruments and so on. Football is already established and the interest amongst youth in more modern forms of music like krontjong is well known. The addition of a few other instruments to the famous flute orchestra could considerably increase active interest in this kind of music. These small and simple
pleasures could perhaps achieve much more in animating village life than the large spectacular feasts, because their simplicity gives village life a touch of conviviality that has emotional value.

XI. Ends and Means

The target of the development plan is a society that will be able to enter into communication with the modern world without further aid from outside and without damage to itself, a society that will feel at home in this situation and that will react rationally to the inevitable demands of the time.

It follows that everything done for this society up to the present moment by official authorities, will at some time have to be tackled independently. The question arises whether the course taken, implying development in which the official authorities take an active part, is the right course. The question is important, since a different course has been taken in development projects elsewhere, namely the practice of employing teams of natives including a specialist for each part of the project. The training of these specialists did not go very far, but even so was always on a reasonable level. One of the requirements moreover was, that all the team members should belong to the local population. The teams were under the supervision of official bodies or a special supervisory council.

The advantage of the team method is that a more co-ordinated approach towards the scheme as a whole can be achieved. It is possible to go ahead quietly without depending on official authorities. The team also knows its limits within the framework of the funds available. The attractive aspect of this procedure is that the team, so to speak, plunges into the society, lives in it, is considered as people leading the same way of life. This gives the team more chance of activating the society than would otherwise be possible.

The last point also reveals the danger of the procedure. The intensive approach, breaking through normal routine, also through the routine of existing methods of reforming society gradually, brings about a revolutionary change and makes people conscious that all institutions can be changed. They go one stage further and assume that all institutions in fact ought to be changed. The misapprehension, so frequent amongst semi-intellectuals in underdeveloped countries, that one ought to be socially active without clearly knowing to what purpose, would endanger the community. It is quite possible that it would lead to complete derailment and cause more misery than the slow rate of growth characteristic of present development.

Added to this, a team needs a certain counterbalance in the village, an authority that can check its desire to change things too thoroughly; it could not work properly without such checks. Those few Papuans who have some education are often complete potentates, thoroughly enjoying methods of coercion. This is exactly
what should be avoided. The state of affairs in Nimboran is that at present and for some time to come there will not be a sufficiently large staff of a high enough standard available to concentrate simply on fostering spontaneous activity amongst the people and directing it along the right channels.

That is the reason why another approach is more suitable in this area to achieve the same purpose. A District Officer who only has at his disposal limited help from the official apparatus is naturally forced to look for help from the population itself to keep a co-operative going, promote hygiene, and sponsor the other aims of the project. It induces him at the same time to make social development agree with existing institutions, which makes it less revolutionary as a whole and puts the stress on adaptation to an existing trend mapped out beforehand.

It is essential for him to keep in mind from the beginning that everything now organized from above, especially in the economic sphere, is meant to lead its own independent existence at some stage, even though it is intended to coordinate it all with the existing plans for a general development fund.

The District Officer should therefore avoid too much personal control and it is a good thing that he also has other duties. He should always take care that the co-operation of the population remains voluntary. It is difficult for a Papuan to believe that the Government suggests anything without it being obligatory for him. This also explains his own tendency to stimulate voluntary co-operation by coercive methods, whenever he holds a position himself. It is possible for the District Officer to avoid this pitfall, if he always keeps in mind that it is activity on the part of the local population that matters and that imperfect achievements by the people themselves are better than the most perfect achievements by the District Officer.

Before ending this report a few additional observations may be made.

Firstly, in view of the approach adopted, a fixed time scheme of further development cannot be given.

Second, the completion of the road has highest priority; for this purpose a survey should be made as soon as possible.

Third, the Resident of Northern New Guinea should now be given instructions to execute the plan and a Supervisory Board should be nominated to ensure smooth and rapid progress.

* * * * * *

Hollandia, 15th April, 1952.

Dr. J. van Baal,
Head of the Bureau for Native Affairs
Appendix 1

Details of Proposed Expenditure and Estimated Income

The application of a system of permanent agriculture opens the possibility of mechanizing the various agricultural operations, and so saves a great deal of labour. It is obviously not intended in this project to resort to a system of fully mechanized farming. This would almost eliminate the activity of the people themselves — and therewith the share of the population in increased production. It is rational, however, to mechanize the heaviest and most time-consuming kind of work. Of this, the intensive tillage required comes first. This tillage, that is to say the preparation of the soil for the next crop by ploughing, disc-harrowing and zigzag-harrowing after the previous crop has been harvested, can be performed mechanically in a way equivalent to, and often even better than, by hand. Of the other agricultural operations, planting, weeding and harvesting, weeding is the most difficult, especially in the tropics. Weeding cannot be said to be heavy — in most cases it is done by women — but it takes up a great deal of time and is boring. Therefore weeding is ranked second for mechanization.

If it is said above that a system of permanent agriculture permits mechanization, it is also true to say that a system of permanent agriculture is necessary for mechanization to effect a saving of labour and time.

Mechanized farming is not only more productive per unit of area than a shifting-cultivation system (ladang-system), but it also opens the way and provides an example for development towards a higher level of agriculture. Naturally the first start should be very simple and the plan should be gradually developed parallel with the general social development of the population concerned.

* * * * *

The tractor to be purchased is a Fordson Major wheeled tractor with a kerosene engine of circa 30 H.P. The accessories comprise a plough with 3/2 share, a tandem disc-harrow, a zigzag-harrow and a tool-frame with accessories. The performance of this tractor for not-too-heavy ground can be estimated at:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Time (hours)</th>
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</thead>
<tbody>
<tr>
<td>5 acres ploughing, 8&quot; deep</td>
<td>10 to 12</td>
</tr>
<tr>
<td>5 acres disc-harrowing</td>
<td>4 to 6</td>
</tr>
<tr>
<td>5 acres zigzag-harrowing</td>
<td>6 to 8</td>
</tr>
<tr>
<td>5 acres weeding</td>
<td>4 to 6</td>
</tr>
</tbody>
</table>

After a crop has been harvested the preparation of the soil will take a maximum of 30 tractor-hours for five acres. The time varies with the crop to be planted. For example, with kedele 24 tractor-hours for tillage would be adequate.
On days when the tractor is not needed on the farm it can be used for the transport of produce, so that a total of 1,000 working hours per year will be reached.

A second factor on which the success of the undertaking hinges is the efficiency of the workers. Nothing is known yet about this, though it is certain that productivity will be comparatively low. Much will depend on the enthusiasm of those concerned for their own co-operative. If they feel that the enterprise is really theirs, they will work better than if they only consider themselves as being on the pay-roll. It seems safe to estimate the number of days required for the different operations at somewhat over 1 ½ times the number usual in Java, e.g.:

<table>
<thead>
<tr>
<th>Days' work necessary for 5 acres</th>
<th>katjang tanah (ground nuts)</th>
<th>ke dele</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>planting</td>
<td>80 woman-days</td>
<td>90 woman-days</td>
</tr>
<tr>
<td>weeding (twice)</td>
<td>160 &quot;</td>
<td>50 &quot;</td>
</tr>
<tr>
<td>harvesting</td>
<td>110 &quot;</td>
<td>60 &quot;</td>
</tr>
<tr>
<td>Total:</td>
<td>350 woman-days</td>
<td>200 woman-days</td>
</tr>
</tbody>
</table>

| Estimate for Nimboran:          | Total:                     |        |
|                                 |                            |        |
| Nimboran:                       |                            |        |
| Total:                          | 640 days                   | 320 days |
| without weeding                 | 320 days                   | 230 days |

(In the case of ground nuts final hand weeding is desirable).

A third point deserving full attention is the sale of the products. Economic production for the world market will be very difficult, if not impossible, especially during the initial period, as it is necessary to start with a small project. Not only is the distance to the coast considerable, but New Guinea itself is very unfavourably situated in relation to the world market. Only as time goes by, if the concern runs smoothly, if those concerned are thoroughly acquainted with it, and if the area has been expanded, permitting more economical and more fully mechanized exploitation, can production for the world market become an economic possibility.

When the scheme begins the only possible market for Nimboran will be Hollandia and perhaps a few other coastal places in Netherlands New Guinea.

A circumstance favouring this project is the high internal price-level of farm products and the apparent further absorptive capacity of the local market in Hollandia. The price of unhusked ground nuts in Hollandia is 5s.9d. per kg.; of ke dele 4s.7d. to 5s.9d. per kg.

Of course prices will fall if larger supplies arrive from Nimboran; in the
calculation of proceeds a basic price of 50% of the present local level seems acceptable. Naturally, sales on this basis will be limited and it is good in this connexion that the enterprise should not be conceived on too large a scale at the beginning.

After these remarks not much space is needed to describe the outline of the undertaking itself. The presence of a Fordson Major is assumed and the first calculation is made for an area of 50 acres to be cleared and planted.

The following factors and circumstances have to be taken into account:

(i) Preparation of the soil and weeding will be exclusively by tractor.

(ii) In the Nimboran no work is done on Sundays. As it is further desirable to inspect, clean and oil the tractor thoroughly once a week, a five-day working week for the tractor should be assumed. For the above inspection Saturday seems most suitable.

(iii) Bearing the above points in mind, the area will be divided into two halves of 25 acres each, to facilitate cultivation with one tractor. This has the added advantage that the yield of the whole 50 acres will not be thrown on the market at once. Even after this division the time required for preparing the soil should be liberally estimated. A duration of one month for 25 acres seems sufficient, taking into account a loss through rain of 20%.

(iv) The average rainfall in Genjem is:

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<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>14.1</td>
<td>10.4</td>
<td>13.2</td>
<td>11.3</td>
<td>6.6</td>
<td>5.8</td>
<td>5.6</td>
<td>5.3</td>
<td>6.8</td>
<td>7.8</td>
<td>10.3</td>
<td>103</td>
<td></td>
</tr>
</tbody>
</table>

It will be seen that the climate is very wet; in particular the average number of 172.6 days of rain per year is high. There is a very wet season from December to April (5 months) and a drier season from May to November (7 months).

(v) If the market position of various agricultural products is also taken into account, ground nuts, kedelie and maize are the three crops most suitable for cultivation in Nimboran. Kedelie should be grown in the dry season. Maize does not stand heavy rain just after it has been planted: the best sowing period for maize has proved to be October to November in these regions.

The planting scheme (Appendix II) is based on this data. It is assumed that a green crop to replenish the soil will be sown with the maize twice a year.

A trading and revenue account is given before the estimate of real expenditure. In this account the depreciation of the tractor (not a real expense) is
entered and labour is estimated at the local wage level of f.1 per day (2s.4d.).

On the basis of this trade account it has been possible to judge the cash outlay which the undertaking will require.

A. Bringing into production

The land to be cultivated is completely flat and at present thinly overgrown with alang-alang (thatch grass). As soon as it has been surveyed it will be divided into rectangular plots of about 2½ acres, preferably measuring 72 x 164 yards each. Clearing will consist of repeatedly pulling out and crushing the alang-alang until it is physiologically exhausted. To achieve this the soil will be ploughed once and then disc-harrowed and zigzag-harrowed four times at intervals of 10-14 days. After this the soil will be ready for planting. Altogether, this work will take between two and three months, and an estimated 19 tractor-hours per 2½ acres.

If the tractor arrives in July, the first 25 acres can be sown with maize in October and the second 25 acres can be started in November (compare the planting scheme).

The running costs of the tractor can be put at f.14.50 per hour (£A1.13.4):*

Depreciation f. 5.-(11s.6d.) (6 litres, approximately 1½ gallons, Fuel & oil f. 4.- (9s.2d.) kerosene per hour) Driver and Wages of Papuan driver and helper assistant f. 3.- (6s.11d.) f.250 per month.

Maintenance Maintenance & repairs f. 2.50 (5s.9d.) & repairs f.14.50 (£A1.13.4)

In this calculation the high cost of depreciation strikes the eye. Under the given circumstances it seems desirable to write off the tractor over 3,000 working hours instead of over the 5,000 or 6,000 hours usual in the tropics.

Expenditure on first crop

Clearing, 19 tractor-hours per ha. (2½ acres)
for 20 ha. (50 acres) 20 x 19 x f.14.50 (approx. £A1.13.4) ... ... = f.5.510- £A 633.13.0

Digging of drains, 2,000 man-days ... = f.2.000- £A 230. 0.0

Construction of shed 10 x 40 m. ... = f.9.510- £A1093.13.0

* f.1 = 27.6 pence - approx. 2s.4d. The current rate of exchange (1952) is f.8.70= £A1.
After this, sowing can take place at once:

Purchase of maize seed, 20 ha. x 30 kg. x f.1.20
(approx. 1s.3d. per lb.) = f. 720- £A 82.16. 0
Planting and harvesting, 100 man-days per ha. at f.1.- per man-day for 20 ha. = f.2.000- £A 230. 0. 0
Two weedicings, 6 tractor-hours per ha. = 120 hrs. = f.1.740- £A 200. 2. 0
Purchase of 200 bags, f.3.- each = f. 600- £A 69. 0. 0
f.5.060- £A 581.18. 0
f.9.510- £A1093.13. 0
Total: f.14.570- £A1675.11. 0

Against this outlay is the following income:

Income from 20 ha. maize at a local price of f. 0.70 per kg. (approx. 8\(\frac{3}{4}\)d. per lb. or £A2.3.9 per bushel); 20,000 x f. 0.70 = f.14.000- £A1610. 0. 0

In this trade account it is assumed that the workers will have their own tools, such as patjols (mattocks), weedforks and choppers.

B. Annual trade account of the farm as a running concern (compare planting scheme)

1 x 10 ha. kedeelee (25 acres)
Preparation of soil: 12 tractor-hours per ha. for 10 ha. = 10 x 12 x f.14.50 = f. 1.740- £A 200. 2. 0
Planting, harvesting, final weeding, 115 man-days per ha. = f. 1.150- £A 132. 5. 0
Mechanized weeding (once) = f. 435- £A 50. 0. 6
Purchase of seed 10 ha. x 90 kg. x f. 2.- (approx. 2s.1d. per lb.) = f. 1.800- £A 207. 0. 0
Total: f. 5.125- £A 589. 7. 6

2 x 10 ha. maize
Preparation of soil: 12 tractor hours per ha. = f. 3.480- £A 400. 4. 0
Planting and harvesting: 100 man-days per ha. = f. 2.000- £A 230. 0. 0
2 x mechanical weeding: 6 x f.14.50 x 20 = f. 1.740- £A 200. 2. 0
Purchase of seed: 20 x 30 kg. x f.1.20 = f. 720- £A 82.16. 0
Total: f. 7.940- £A 913. 2. 0
b/f. | f.13.065- | £A1502. 9. 6
---|---|---

1 x 10 ha. groundnuts:

Preparing the soil 15 tractor-hours per ha. = f. 2.175- | £A 250. 2. 6
Planting, harvesting and final weeding, 160 man-days per ha. = f. 1.600- | £A 184. 0. 0
2 x mechanical weeding = f. 870- | £A 100. 1. 0
Purchase of seed: 10 x 140 kg. x f.1.50 (approx. 1s.7d. per lb.) = f. 2.100- | £A 241.10. 0

**Total:** f. 6.745- | £A 775.13. 6

**Other expenses:**

Seed for 10 ha. green fertilizing crop, 40 kg. per ha. = f. 800- | £A 92. 0. 0
Sowing green fertilizing crop 8 days per ha. = f. 80- | £A 9. 4. 0
Maintenance of ditches (drains) = f. 1.000- | £A 115. 0. 0
Maintenance of shed = f. 200- | £A 23. 0. 0

**Total:** f. 2.080- | £A 239. 4. 0

**GRAND TOTAL:** f.21.890- | £A2517. 7. 0

Against this expenditure is the following revenue (local prices):

10 ha. kadelee, 700 kg. per ha: 7000 kg. at f.1. per kg. (approx. 1s. -½d. per lb.) = f. 7.000- | £A 805. 0. 0
10 ha. katjang tanah, 1000 kg. per ha. at f.0.90 per kg. (approx. 1s. per lb.) = f. 9.000- | £A1035. 0. 0
20 ha. maize, 1000 kg. per ha. at f.0.70 per kg. (approx. 8½d. per lb. or £A2.3.9 per bushel) = f.14.000- | £A1610. 0. 0

**Total:** f.30.000- | £A3450. 0. 0

**Notes:**

1. The yields are estimated on the low side.
2. It is assumed that seed will always have to be bought.
The following observations may be made as to out-of-pocket expenses during the first six months:

1. Tractor costs per hour -

<table>
<thead>
<tr>
<th>Item</th>
<th>Rate 1</th>
<th>Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerosene, 6 litres</td>
<td>£3.60</td>
<td>8s.3½d.</td>
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<tr>
<td>Repairs and maintenance</td>
<td>£2.00</td>
<td>4s.7d.</td>
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<tr>
<td></td>
<td>£5.60</td>
<td>12s.10½d.</td>
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</tbody>
</table>

Total requirements for 500 hours at £5.60 = £2.800- £A 322.0.0
Wages of driver and helper (£250 per month) = £1.500- £A 172.10.0
                                          = £4.300- £A 494.10.0

In this calculation the wages are fully debited to the farm account. Actually the tractor will also be used, if possible, for transport in connection with the store.

2. Labour Costs -

Normally a farmer receives his income when the harvest is sold. If it is assumed that the enterprise is actually the workers' own enterprise, which is psychologically the right attitude, then the wages should not be treated as out-of-pocket expenses in the trade account, or should only partially be treated as such. Yet it does seem desirable to give the workers advances in goods, e.g. tobacco.

Estimated wage costs for the maize harvest total 50 acres x 100 man-days = 2,000 man-days.

If 25% of the wage money is used for advances in goods, the cash needed will be £500- (£A57.10.0).

3. The expense of constructing a shed at £2.000-, the digging of drains at £2.000-, and the purchase of maize seed will have to be included in full as out-of-pocket expenses.

To recapitulate: the following cash will be required during the first six months:

1. Tractor ... £4.300- £A494.10.0
2. Agricultural labour £500- £A 57.10.0
3. Other expenses... £4.720- £A542.16.0

£9,520- £A1094.16.0
PLANTING SCHEME

Rainfall

A Maize Groundnuts Maize and Fertilizing Crop Fertilized Crop Soya Beans

Leading to maize in the following year (B).

B Maize Soya Beans Maize and Fertilizing Crop Fertilized Crop Groundnuts

Leading to maize in the following year (A).

KEY TO SHADING

<table>
<thead>
<tr>
<th>Shading</th>
<th>Description</th>
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<tr>
<td></td>
<td>Tillage</td>
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<tr>
<td></td>
<td>Harvesting</td>
</tr>
<tr>
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<td>Lying fallow</td>
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Appendix II
Shop Articles Suggested for Sale at the Nimboran Co-operative

Buying and Selling Centre

Quantities given are those considered suitable for stock. Items marked with a cross are those judged most marketable. They are to be supplied by Nigimy to a total value of approximately £A575.

Food

x 1. Salt (briquettes), 250 kg. (approx. 5 cwt.)
x 2. Rice (husked) 250 kg. (approx. 5 cwt.)
x 3. Tins of fish 240
x 4. Tins of corned beef 144
x 5. Sugar 150 kg. (approx. 3 cwt.)
x 6. Tins of milk 144
x 7. Tins of roasted and ground coffee 50
x 8. Tea (van Nelle) 100 continental ozs.

Demi-Luxe Consumption Goods

x 9. Oil 200 litres (approx. 53 gallons)
x 10. Boxes of Matches 200
x 11. Shag Tobacco 500 packets
x 12. Cigarette papers 500 booklets
13. Cigarettes 200 packets
14. Cigarettes 50 tins
15. Petrol 20 litres (approx. 5 1/4 gallons)
x 16. Lighters 50
x 17. Flints 1000

Demi-Luxe Goods for Daily Use

x 18. Oil Lamps 100
x 19. Wash basins 100
x 20. Finger bowls 100
21. Glasses 144
x 22. Mugs 144
x 23. Rice riddles 36
x 24. Rice pans 36
x 25. Kettles 36
26. Spoons 144
27. Forks 144
28. Pocket torches, 3 cell 24
29. Batteries 120
30. Electric bulbs, 3.5 volt 48
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Toilet soap</td>
<td>144</td>
</tr>
<tr>
<td>32</td>
<td>Washing soap</td>
<td>2 cases</td>
</tr>
<tr>
<td>33</td>
<td>Razor Blades</td>
<td>200</td>
</tr>
<tr>
<td>34</td>
<td>Tooth brushes</td>
<td>24</td>
</tr>
<tr>
<td>35</td>
<td>Talcum powder</td>
<td>36 boxes</td>
</tr>
<tr>
<td>36</td>
<td>Combs</td>
<td>36</td>
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<tr>
<td>37</td>
<td>Hair pins</td>
<td>36</td>
</tr>
<tr>
<td>38</td>
<td>Safety pins</td>
<td>144</td>
</tr>
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</table>

<table>
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<tr>
<th></th>
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<th>Quantity</th>
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<tr>
<td>39</td>
<td>Sarongs</td>
<td>120</td>
</tr>
<tr>
<td>40</td>
<td>Pandjongs</td>
<td>20</td>
</tr>
<tr>
<td>41</td>
<td>Printed calico (3 different designs)</td>
<td>1 roll of each</td>
</tr>
<tr>
<td>42</td>
<td>White drill</td>
<td>1 roll</td>
</tr>
<tr>
<td>43</td>
<td>White calico</td>
<td>1 roll</td>
</tr>
<tr>
<td>44</td>
<td>Khaki drill</td>
<td>1 roll</td>
</tr>
<tr>
<td>45</td>
<td>Mosquito netting</td>
<td>1 roll</td>
</tr>
<tr>
<td>46</td>
<td>Pyjama material</td>
<td>1 roll</td>
</tr>
<tr>
<td>47</td>
<td>Black calico</td>
<td>1 roll</td>
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<tr>
<td>48</td>
<td>Polo shirts</td>
<td>2 doz.</td>
</tr>
<tr>
<td>49</td>
<td>Coloured calico or poplin shirts</td>
<td>2 doz.</td>
</tr>
<tr>
<td>50</td>
<td>Singlets</td>
<td>4 doz.</td>
</tr>
<tr>
<td>51</td>
<td>Shorts</td>
<td>2 doz.</td>
</tr>
<tr>
<td>52</td>
<td>Fibre shorts</td>
<td>4 doz.</td>
</tr>
<tr>
<td>53</td>
<td>Towels</td>
<td>2 doz.</td>
</tr>
<tr>
<td>54</td>
<td>Belts</td>
<td>2 doz.</td>
</tr>
<tr>
<td>55</td>
<td>Bamboo hats</td>
<td>2 doz.</td>
</tr>
<tr>
<td>56</td>
<td>Needles</td>
<td>1 gross</td>
</tr>
<tr>
<td>57</td>
<td>White yarn</td>
<td>1 gross</td>
</tr>
<tr>
<td>58</td>
<td>Black yarn</td>
<td>1 gross</td>
</tr>
<tr>
<td>59</td>
<td>Khaki yarn</td>
<td>6 doz.</td>
</tr>
<tr>
<td>60</td>
<td>Coloured yarn</td>
<td>6 doz.</td>
</tr>
<tr>
<td>61</td>
<td>Buttons (large)</td>
<td>1 gross</td>
</tr>
<tr>
<td>62</td>
<td>Buttons (small)</td>
<td>1 gross</td>
</tr>
<tr>
<td>63</td>
<td>Pins</td>
<td>12 gross</td>
</tr>
<tr>
<td>64</td>
<td>Tennis Shoes</td>
<td>2 doz.</td>
</tr>
<tr>
<td>65</td>
<td>Paper sunshades</td>
<td>2 doz.</td>
</tr>
<tr>
<td>66</td>
<td>Pencils (black)</td>
<td>3 doz.</td>
</tr>
<tr>
<td>67</td>
<td>Writing pads</td>
<td>1 doz.</td>
</tr>
<tr>
<td>68</td>
<td>Envelopes</td>
<td>100</td>
</tr>
<tr>
<td>69</td>
<td>Ink</td>
<td>2 bottles (large)</td>
</tr>
<tr>
<td>70</td>
<td>Penholders</td>
<td>2 doz.</td>
</tr>
<tr>
<td>71</td>
<td>Pen nibs</td>
<td>1 gross</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Quantity</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>72.</td>
<td>Kitchen knives</td>
<td>3 doz.</td>
</tr>
<tr>
<td>73.</td>
<td>Chopping knives</td>
<td>2 doz.</td>
</tr>
<tr>
<td>74.</td>
<td>Shovels</td>
<td>2 doz.</td>
</tr>
<tr>
<td>75.</td>
<td>Rakes</td>
<td>1 doz.</td>
</tr>
<tr>
<td>76.</td>
<td>Adzes</td>
<td>3 doz.</td>
</tr>
<tr>
<td>77.</td>
<td>Hatchets</td>
<td>2 doz.</td>
</tr>
<tr>
<td>78.</td>
<td>Grindstones</td>
<td>1 doz.</td>
</tr>
<tr>
<td>79.</td>
<td>Chisels, 1 cm.</td>
<td>1 doz.</td>
</tr>
<tr>
<td>80.</td>
<td>&quot; 2 cm.</td>
<td>1 doz.</td>
</tr>
<tr>
<td>81.</td>
<td>&quot; 3 cm.</td>
<td>1 doz.</td>
</tr>
<tr>
<td>82.</td>
<td>&quot; 4 cm.</td>
<td>1 doz.</td>
</tr>
<tr>
<td>83.</td>
<td>&quot; 5 cm.</td>
<td>1 doz.</td>
</tr>
<tr>
<td>84.</td>
<td>Smoothing planes</td>
<td>1 doz.</td>
</tr>
<tr>
<td>85.</td>
<td>Hand-saws</td>
<td>1 doz.</td>
</tr>
<tr>
<td>86.</td>
<td>Braces</td>
<td>6</td>
</tr>
<tr>
<td>87.</td>
<td>Wood drills, ½ cm.</td>
<td>6</td>
</tr>
<tr>
<td>88.</td>
<td>&quot; 1 cm.</td>
<td>6</td>
</tr>
<tr>
<td>89.</td>
<td>&quot; 1 ½ cm.</td>
<td>6</td>
</tr>
<tr>
<td>90.</td>
<td>&quot; 2 cm.</td>
<td>6</td>
</tr>
<tr>
<td>91.</td>
<td>Claw hammers</td>
<td>1 doz.</td>
</tr>
<tr>
<td>92.</td>
<td>Pinchers</td>
<td>1 doz.</td>
</tr>
<tr>
<td>93.</td>
<td>Rulers</td>
<td>1 doz.</td>
</tr>
<tr>
<td>94.</td>
<td>Combination pliers</td>
<td>1 doz.</td>
</tr>
<tr>
<td>95.</td>
<td>Saw-sets</td>
<td>1 doz.</td>
</tr>
<tr>
<td>96.</td>
<td>Files</td>
<td>1 doz.</td>
</tr>
<tr>
<td>97.</td>
<td>Sheets of emery cloth (coarse)</td>
<td>2 doz.</td>
</tr>
<tr>
<td>98.</td>
<td>&quot; (medium)</td>
<td>2 doz.</td>
</tr>
<tr>
<td>99.</td>
<td>Nails, 1&quot;</td>
<td>50 kg. (approx. 1 cwt.)</td>
</tr>
<tr>
<td>100.</td>
<td>&quot; 2&quot;</td>
<td>50 kg.</td>
</tr>
<tr>
<td>101.</td>
<td>&quot; 3&quot;</td>
<td>50 kg.</td>
</tr>
<tr>
<td>102.</td>
<td>&quot; 4&quot;</td>
<td>50 kg.</td>
</tr>
<tr>
<td>103.</td>
<td>Padlocks</td>
<td>2 doz.</td>
</tr>
<tr>
<td>104.</td>
<td>Window-locks</td>
<td>2 doz.</td>
</tr>
<tr>
<td>105.</td>
<td>Small hinges</td>
<td>4 doz.</td>
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<td>106.</td>
<td>Screw drivers</td>
<td>1 doz.</td>
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<tr>
<td>107.</td>
<td>Wood-screws, ½&quot;</td>
<td>1 gross</td>
</tr>
<tr>
<td>108.</td>
<td>&quot; 1&quot;</td>
<td>1 gross</td>
</tr>
<tr>
<td>109.</td>
<td>&quot; 1½&quot;</td>
<td>1 gross</td>
</tr>
<tr>
<td>110.</td>
<td>&quot; 2&quot;</td>
<td>1 gross</td>
</tr>
<tr>
<td>111.</td>
<td>Levelling instruments</td>
<td>6</td>
</tr>
<tr>
<td>112.</td>
<td>Buckets</td>
<td>1 doz.</td>
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<tr>
<td>113.</td>
<td>Iron wire</td>
<td>1 roll</td>
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<tr>
<td>114.</td>
<td>Rope (hemp)</td>
<td>150 metres</td>
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<tr>
<td>115.</td>
<td>Fish-hooks (small)</td>
<td>1 gross</td>
</tr>
<tr>
<td>116.</td>
<td>Fishing line</td>
<td>36 packets</td>
</tr>
<tr>
<td>117.</td>
<td>Pairs of scissors</td>
<td>1 doz.</td>
</tr>
</tbody>
</table>
Seeds

118. Onion ("charlotjes")
119. Groundnut ("Idjoe")
120. Groundnut ("Kedele")
121. Groundnut ("Tanah", Schw. 21)
122. Maize
123. Sesawi
124. Cabbage

* * * * * *
Appendix IV

Charcoal Industry

10 men at £1.50 (approx. 3s.5½d.) per day
   = 10 x 25 x £1.50 = £375.- (££ 43. 2. 6)
Licensee
   £100.- (££ 11.10. 0)
   Per month: £475.- (££ 54.12. 6)
   For six months: £2950.- (££ 327.15. 0)

Required for 1 pit 4.5 cubic metres of wood.

Produces 40% charcoal
   (1 oil-tin holds 20 litres)
   = 1,800 litres charcoal
   = 90 oil-tins full

Production 10 men = per week 2 pits in six months: 2 x 26 x 90 tins
   = 4,680 tins of charcoal

Cost in wages per tin = £2.950.- ÷ 4.680
   = £0.60.- (approx. 1s.4½d.)

Reserve for expansion of trade (forming of capital), say 10% of wages per tin
   = £0.06.- (approx. 1½d.)

Co-operative buying price should therefore be fixed at, per tin
   £0.66.- (approx. 1s.6½d.)

Packing by co-operative, per tin
   £0.08.- (approx. 2½d.)

Transport to Borowai and Kota Baroe

Retail price at Kota Baroe: £1.(2s. ½d.) per tin.

* * * * * * *
Appendix V

Sawmill

20 men, 25 days per month at f.1.50.- (£A 86.5.0) f. 750 per month

Production, first half-year: 6 x 25 x 12 planks = 1,800 planks
(1 plank measures 300 x 30 x 3 cm. = 27,000 c.c.)
1,800 planks represent 48,600,000 c.c. = 48.6 cubic metres.

For wages: 6 x f.750.- (£A 86.5.0) = f.4,500.- (£A 517.10.0)
Licensee
f. 600.- (£A 69.0.0)
f.5.100.- (£A 586.10.0)
Purchase of 6 saws at f.50.- (£A 5.15.0) each
f. 300.- (£A 34.10.0)
f.5.400.- (£A 621.0.0)

(The writing-off period for the saws is being computed at six months).

Cost price for the 48.6 cubic metres of sawn iron-wood comes to
f.5.400.- (£A 621.0.0)
48.6

= f. 111.- (£A 12.15.6) per cubic metre.

The current market price is f.1.25.- (£A 14.7.6) per cubic metre. However, it would be better to put the price somewhat higher, say at f.1.50.- (£A 17.5.0) per cubic metre, in view of the expansion of trade, which needs a reserve of capital. The wood will have to be bought by the Co-operative, which implies an expenditure of:

48.6 x f.1.50.- (£A 17.5.0) = f.7.290.- (£A 838.7.0) for the first half year.

The price per plank at this rate is f.4.05.- (approx. 9s.3½d.).

If full account is taken of a loss of 10% (due to inexperienced sawing) the price could be put at between f.4.45. - and f.4.50.- (approx. 10s.2½d. and 11s.2d.) per plank.

* * * * * *

-42-


3. The Village Library. April, 1950. 9 pp., book list.


33. A Survey of Malaria in the British Solomon Islands Protectorate. By Dr. R. H. Block, School of Public Health and Tropical Medicine, University of Sydney. November, 1952. 38 pp., appendices.


43. Research in Queensland on Tropical Plant and Animal Industries. By J. Barrau, Technical Officer, South Pacific Commission. May, 1953. 70 pp., illus., maps, appendices.


45. The Nibomar Community Development Project. By Dr. J. van Boal, Director of the Bureau of Native Affairs, Netherlands New Guinea. June, 1953. 42 pp., map, chart, appendices.