

# BORNEO RESEARCH BULLETIN

Vol. 14, No. 1

April 1982



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The Borneo Research Bulletin is published twice yearly (April and September) by the Borneo Research Council. Please address all inquiries and contributions for publication to Vinson H. Sutlive, Jr., Editor, Borneo Research Bulletin, Department of Anthropology, College of William and Mary, Williamsburg, Virginia, 23185, U.S.A. Single issues are available at US\$ 2.50.

NOTES FROM THE EDITOR

The meeting of the Borneo Research Council was held during the Annual Meeting of the American Anthropological Association in Los Angeles in December, 1981. One of the highlights of the meeting was a report by Dr. Olga Petre-Quadens of the Department of Neurophysiology, University of Antwerp, on comparative studies, which include Iban, on patterns of sleep and physiological development. Currently, she writes, one of her students is continuing research on this and related subjects.

Not surprisingly, few if any of the other participants were aware of Dr. Petre-Quadens' research. I mention it because of its significance, and also to encourage readers to share information about "unreported" research projects on Borneo.

One of the matters discussed was the need for a forum for reporting current and recent research. To this end there was unanimous agreement that the Council attempt to organize a session during this year's meeting of the American Anthropological Association. The Editor has solicited papers from all those persons who have conducted fieldwork in the past two years and has submitted a proposal for an organized session. We also have requested a Business Meeting for the Council during the annual meeting, and cordially invite anyone interested in Bornean research to attend.

We are particularly grateful for permission to reproduce materials from Flora Malesiana, of which several abstracts and one review appear in this issue.

Beginning with this issue we shall produce copy for the Bulletin by word processor. The word processor has several advantages, viz., production of a more esthetically pleasing page, and reduction of the number of pages.

Response to the "Financial Report" for the past fiscal year has been gratifying and encouraging. Contributions have enabled us to repay the deficit incurred and to cover printing costs for the first issue of this new volume of the Bulletin.

I am personally and sincerely grateful to the following persons who have made contributions to the work of the Council and the support of the Bulletin: George N. Appell, Robert F. Austin, J. B. Ave, I. C. Baillie, Richard Baldauf, Jr., Carol Barnes and Richard Fidler, Geoffrey Benjamin, E. J. H. Berwick, Ian Douglas Black, Donald E. Brown, Matthew Charles, S. C. Chin, William Collier, Harold Conklin, Michael Coomans, E. J. H. Corner, Colin N. Crisswell, Michael R. Dove, R. Allen Drake, Wayne Frank, Birute M. F. Galdikas, Philip Goldman, Barbara Harrison, Chris Healey, Robert F. Inger, Erik Jensen, Linda Amy Kimball, Uschi Koch, Donald Lambert, Wayne Lerrigo, Craig Lockard, Virginia Matheson, A. R. G. Morrison, John Musgrave, Rodney Needham, Robert Nicholl, Ifor B. Powell, A. J. N. Richards, Mr. & Mrs. Paul Sack, Werner F. Schneeberger, William M. Schneider, B. J. L. Sellato, and Inger Wulff.

RESEARCH NOTES

LAND USE IN NEW AND OLD AREAS OF IBAN SETTLEMENT

Christine Padoch  
Institute for Environmental Studies  
University of Wisconsin-Madison

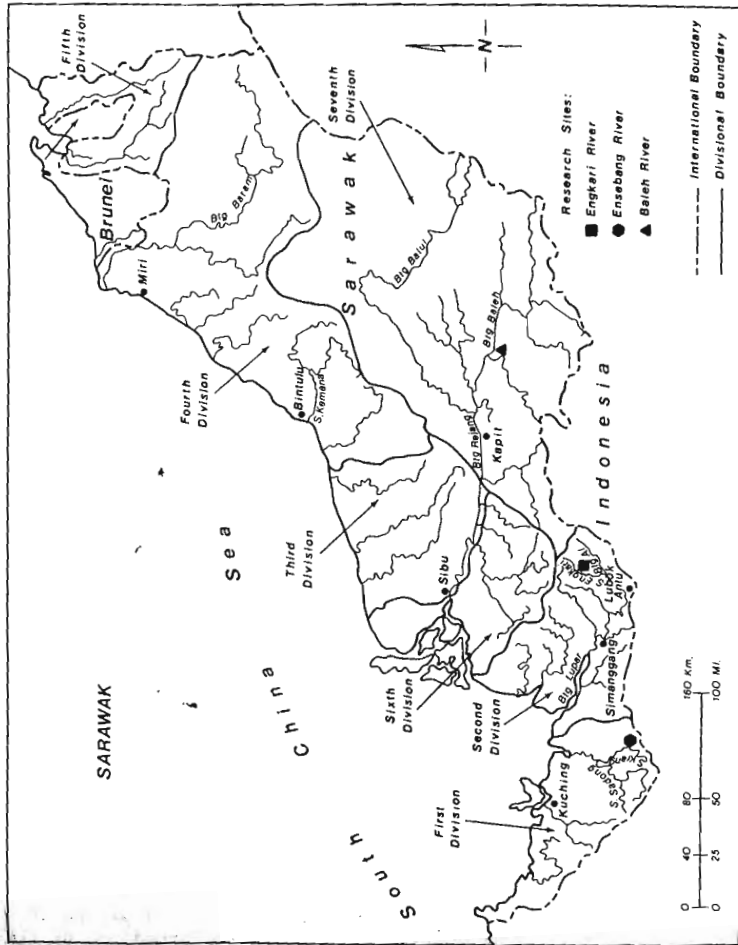
Shifting cultivation, as a form of land use, has long been, and in some circles still is, condemned as wasteful of human, biotic and land resources. During approximately the last three decades, however, researchers, principally anthropologists and geographers, have quarrelled with those long-held negative opinions. Instead, these researchers have presented the practice as, in many cases, a sound and nondestructive way of exploiting resources of a particular type in particular areas.

While such groups of shifting agriculturists as the Philippines' Hanunoo (Conklin, 1957), New Guinea's Tsembaga (Rappaport, 1968) and Bomagai-Angoiang Maring (Clarke, 1971), and the Kuikuru of the Amazon basin (Carneiro, 1960) have been largely absolved of any ecological wrongdoing, the Iban of Borneo are often cited as a prime example of prodigal users of forested land (e.g., Geertz, 1963; Vayda, 1974). Bronson notes that "the Iban are famous in the literature as prototypical mangeurs de bois" (1972).

The Iban, who live mostly in what is now the Malaysian state of Sarawak, are largely shifting cultivators of hill rice. Their fame in the anthropological and historical literature stems not only from their alleged wasteful use of forested land but also from their frequent and fierce engagement in headhunting. These two traits were not unrelated. Through warfare and intimidation, the Iban, until recent times, displaced groups of both hunter-gatherers and agriculturists, ensuring themselves an abundant supply of arable land. The chief ethnographer of the Iban, Derek Freeman, characterized their methods of using that land as destructive and wasteful. He argued that through unwise practices they so impoverished the areas which they farmed that they were dependent on an unending supply of unused forests.

Freeman's monographs (1955, 1970), which are the main source of the designation of Iban as "eaters of forests," are based on his field research among pioneering groups of Iban who only in the last half century settled Sarawak's Baleh River basin. Although Freeman cautions readers that his data and conclusions should be considered descriptive of only those Iban groups that exploit areas where free land under primary forest is still available (i.e., "pioneering" groups), the commentators of Iban

Figure 1



practices mentioned above, as well as many others, have heedlessly applied those descriptions to all Iban shifting cultivators.

In this paper, by presenting data on agricultural land use patterns that I collected between 1973 and 1976 in several Iban communities and by reexamining Freeman's published work, I hope to show that significant variation in resource use exists among communities of Iban shifting cultivators that inhabit areas characterized by differing land availability. These data will suggest that not all Iban "have become addicted" to "wasteful systems of land usage" (Freeman, 1955, p. 141) that demand continual expansion. I shall attempt to outline more inclusive and general features of Iban land use in pioneering and nonpioneering areas than those which Freeman emphasizes and to suggest some reasons for the persistence of specific patterns that both Freeman and I observed. I shall conclude by critically examining some of the evidence cited by Freeman and others for the indictment of Iban groups, both pioneering and nonpioneering, as particularly wasteful and destructive.

Characteristics of Research Sites

The data to be presented were gathered in three areas of Iban settlement -- in two of those areas by me, in the third by Freeman. All three Iban communities were composed of shifting cultivators of primarily hill rice who were only very marginally dependent on markets for food and daily supplies and who largely followed the same customary laws. The areas differed greatly in the length of time they had been settled, in the availability of unclaimed land, and in the opportunity they offered for expansion and pioneering. They also, as I shall describe, differed somewhat in natural biotic, topographic and pedological characteristics -- all factors which in some measure limit the comparisons that can be made.

The first of my research sites was an area that included several settlements (longhouses) on the Engkari River, upriver from the administrative center of Lubok Antu in Sarawak's Second Division (see Fig. 1). The area is highly dissected topographically, includes virtually no flat land, and is drained by many clear, rushing streams. It is one of the areas in Sarawak known to have been settled early by the Iban. Primary forest along the Engkari is almost totally lacking except near its extreme headwaters. All arable land has long been claimed. The region today largely comprises patches of secondary forest, rice fields, and some rubber gardens. From oral histories, genealogies, and colonial reports, I was able to determine that the region, previously inhabited by hunting and gathering populations, was first invaded by the Iban approximately three hundred years ago. Although emigration has occurred at varying rates from that time to the present, the area has, since the seventeenth century, continuously supported a sizeable population of shifting cultivators. Today the population density along the lower Engkari River is somewhat more than 15 persons per square kilometer.

In summary, the lower Engkari is a relatively long and densely settled area with neither land under primary forest nor flat or poorly drained areas suitable for swamp rice cultivation.

In contrast to the Engkari setting, my second research site near the Ensebang River in the Balai Ringin Protected Forest, a previously little exploited region of the First Division, includes extensive tracts of primary forest, very little secondary forest, and small but important tracts of flat, naturally swampy ground. When I conducted my research, the area had been settled by a very small population of Iban for about ten years and by a much larger group of new immigrants, also Iban, for only about one year. Some neighboring communities, located outside the protected forest, had been settled for a much longer period. The Ensebang region, particularly the community within the Balai Ringin Protected Forest, will serve in this comparison as an example of an area in the pioneering stage of settlement.

The land use patterns of the Engkari and Ensebang areas will be contrasted with those observed by Freeman along the lower Baleh River in 1949 and 1950. Topographically that area much resembles the Engkari. It is very broken, with virtually no flat land available for agricultural exploitation. However, in contrast to the Second Division site, the lower Baleh region, when it was studied, included large expanses of previously uncut forests. And since, at the time of Freeman's study, Iban agriculturists had been clearing and farming parts of the area for a little more than two decades, the lower Baleh drainage also included extensive tracts of secondary growth.

The three areas to be compared share much the same climate and the rather infertile soils found in most of Sarawak, though the Ensebang site has somewhat poorer soils, chemically and structurally, than the other two, as well as slightly less luxuriant natural climax vegetation (Andriess, 1972; Padoch, 1978). I have already mentioned the differences in terrain and hydrologic conditions between the First Division site and the others. However, the most striking differences between the areas stem from inequalities in the length of time each had been settled; variations in vegetative cover mainly reflect the different histories of agricultural activity in each region.

To repeat, the Engkari site was located in a long-settled area which, in 1973, totally lacked previously uncut, unclaimed tracts of forest. The Baleh and Ensebang sites are both examples of "pioneering" areas where virgin, free land was, at the time of study, still relatively abundant, and expansion into unclaimed regions was easily and constantly accomplished.

#### Iban Land Use: The Baleh Area

While variations in agricultural patterns were certainly not the only behavioral differences between the studied communities that contributed significantly to differing patterns of resource use, they were perhaps the

most striking. Variations in the performance of many of the tasks necessary in shifting cultivation as practiced by Iban and others may be important in considering the group's present and future land use patterns, since they may affect rates of forest regeneration, soil quality and erosion. Of these variables, probably the most crucial in determining rates of forest regrowth and, therefore, of long-term land capability for shifting cultivation is the cropping-fallow regime. Consideration of the number of times any piece of land is cleared, cropped, and fallowed within a span of years is especially significant in a discussion of Iban land use, because it is precisely this aspect of the Baleh group's behavior that Freeman found prodigal (1970, p. 305). Therefore, this discussion will be limited largely to the consideration of variation in cropping-fallow cycles among the residents of the Baleh, Engkari and Ensebang regions.

Freeman attributes the destructive and wasteful behavior he observed among Iban pioneers to a "superabundance" of unexploited or little-exploited land. He alleges that faced with this situation expanding Iban groups came to view forests as "an expendable resource" (1955, p. 117). He adds that "the impulse of the Iban was to extract all the wealth they could from the nearest virgin land and then move on to fresh fields" (1955, p. 117). The destructive method of land use in pioneering areas that Freeman describes and particularly condemns is the common Baleh "custom of cultivating land two or three years in succession or several times within a span of five or six years" (1970, p. 305). Such a pattern, Freeman continues, leads to "serious degradation . . . and often ends in devastation" (1970, p. 305). By "devastation" Freeman means a non-reversible deflection of normal ecological succession, that is, the creation of permanent grasslands that cannot be farmed with the tools and techniques of shifting cultivation.

The data Freeman presents concerning the land use patterns of Iban residing in his research area largely illustrate and support his general summary of Baleh cropping-fallow customs. Indeed, very young growth, that is, growth three or fewer years old, constituted a very high 22.5% of the total acreage cleared for rice farms around Rumah Nyala, one of Freeman's research sites in 1949-50 (1970, p. 291).

The other important feature of land use in pioneering areas is a marked predilection of Iban to make farms on land under primary forest; in 1949-50, Baleh residents cut 23.5% of their fields in such areas.

The farming of land under very young growth and land under primary growth together accounted for almost half the acreage planted to rice in Rumah Nyala in 1949-50. This combined pattern of farming new lands and, therefore, always migrating and refarming neighboring lands before they have sufficiently recovered from a first cropping constitutes the "problem of shifting cultivation," according to Freeman. In the conclusion of his monograph, he emphasizes the need to "stabilize" Iban shifting cultivators by both delimiting the areas allowed them and by "abolishing the practice" of refarming fields at very short intervals.

### Iban Land Use: The Engkari Area

The limitation of territory for farming is a condition with which the Iban cultivators of the lower Engkari drainage basin have dealt for many decades. Although emigration from the area has been possible and has occurred throughout recent history, a move out of the Engkari valley has usually been a very difficult undertaking and has been confined to rather few households in recent decades. Remembering Freeman's warning that "when the possibility of further expansion is ruled out, the deleterious effects of Iban prodigality become an even greater threat" (1955, p. 137), one might expect that three hundred years of continuous occupation by Iban shifting cultivators would long ago have subjected the lower Engkari region to not merely "serious degradation" but certainly to the "complete devastation" Freeman foresaw.

The continued arability of the region is a result, at least partially, of the significant departure of the Engkari land use patterns from those described for the Baleh, as shown by differences in the cropping-fallow regimes.

In the 38-household longhouse at Nanga Jela on the Engkari River in 1973-4, as shown in Table 1 below, only one-half of one farm, or about 1.3% of the total acreage, was made in land fallowed three years or less; in 1974-5, no very young growth was cleared. Of course, no farms were made in primary forest in either cropping season, as none was available in the area. Thus, almost all the farms made between 1973 and 1975 near the longhouse at Nanga Jela were made in secondary growth four or more years old.

Table 1

Duration (in years) of last fallow	Number of farms (N=39)	
	1973-4	1974-5
Less than 1	0.5	0
1	0	0
2	0	0
3	0	0
4	4.5	2
5	4	5.5
6	6	5.5
7	5	4
8-10	7.5	5
11-15	6	7
16+	5.5	10

The difference between Engkari and Baleh forms of land use is quite dramatic and important since it is the Iban's too-short fallows that earned them the epithet mangeurs de bois. That Engkari farmers do tend to

fallow their fields after each cropping for at least four, and often many more years, appears also highly significant because it suggests that the Second Division Iban have developed a sound adjustment to a situation of far more limited supplies of arable land than are found in the Baleh. However, it should be noted that while Engkari farmers appear not to share the Baleh Iban's worst fallowing habits, they do not follow a regime that both Freeman (1970, p. 305) and Smythies (1949) suggest as ideal for the Baleh: one year of cropping followed by twelve to fifteen years of fallow. The farmers at Nanga Jela, in both years of my research there, cleared land which had lain unused for a median period of only seven to eight years.

I have compared a pioneering and a long-settled area of Iban occupation and found that significant differences in land use patterns exist, suggesting that not all Iban groups can be characterized as wasteful, destructive cultivators. I shall now compare two pioneering areas in order to determine whether the "principal features of Iban land usage in virgin territory" which Freeman outlines indeed describe the farming patterns of all Iban who exploit primary forests.

### Iban Land Use: The Ensebang Area

Differing conditions and categories make it somewhat difficult to compare precisely the Baleh data with the land use choices made by settlers on the Ensebang River. In assessing the Ensebang data and the categories under which I have arranged them (in Table 2), it must be recalled that while the Ensebang pioneers had access to very large tracts of primary forest, secondary growth was quite scarce in their territory. However, some tracts of secondary growth could be borrowed from earlier settlers both within and without the Balai Ringin Protected Forest. Among the types of secondary growth borrowed by some were areas of flat, naturally swampy land, a type totally absent in the two regions discussed above. Because the following patterns employed in the agricultural use of swampy (paya) areas are generally very different from those employed in well-drained areas (Pringle, 1970; Grist, 1965), these wetlands are considered a category separate from "dry" secondary growth.

Forty-one of the forty-three households that farmed near the Sungai Pelai on the Ensebang River in 1974-5 and each of the sixty-four that farmed in 1975-6 cleared at least one tract of primary forest; but of these only seven households in 1974-5 and eighteen in 1975-6 failed to also make another field on a different type of land. The combinations farmed in 1974 and 1975 at Sungai Pelai are presented in Table 2.

The well-drained secondary growth plots that were farmed belonged mostly to residents of several longhouses outside the Balai Ringin Protected Forest. The borrowers did not know the ages of the stands, and I did not succeed in contacting all the owners. I can state generally that only one plot (part of a primary forest/secondary growth combination) was cut on the site of a previous year's farm during my two years of research,

Table 2

Types of land farmed	Number of households	
	1974-5	1975-6
Primary Forest Only	7	18
Primary for./Sec. growth	9	15*
Primary for./Swamp	16	27
Primary for./Sec. gr./Swamp	9	4
Sec. growth/Swamp	2	0
	N=43	N=64

\*1/2 fallowed less than 1 year

and that all the remaining "dry" secondary growth that was used had been fallowed for at least three or four years, and that none was notably old growth.

Although many of the swampy (paya) areas that were farmed had been made in growth only a year or two in age, this type of farming cannot be equated in its environmental effects with the short-fallow farming that Freeman describes in the Baleh. Both nutrient and regrowth (weed) patterns of wet areas are very different from those of well-drained areas, and cropping-fallow regimes can be and usually are also considerably different. Andriess notes that, unlike dry areas, even under annual cropping, some wet areas in Sarawak show no decline in yields (1972, p. 98).

#### Land Use: Diversity of Field Types

The most notable feature of the land use patterns summarized in Table 2 is the marked tendency of Ensebang residents to farm more than one type of land. This pattern was followed in 1974-5 by 86% of the households and in 1974-6 by a somewhat lower, but still considerable, 64%.

A tendency to farm more than one type of land in any one year is also noted by Freeman as common among the Iban of the Baleh. He states that "of particular interest... was the high proportion of farms containing more than one type of growth. In 1949-50, there were six farms of mixed type (i.e., 23 per cent of the total number of farms); and in 1950-1 the proportion rose to 62 per cent, when there were 16 farms of

mixed composition" (1970, p. 292). While Freeman does mention this pattern he does not stress it; he finds much greater significance in the fact that one of the land types frequently included in Baleh Ibans' combined farms was a plot being cropped for the second consecutive year. The Ensebang data, which include only one minor instance of the use of unfallowed dry land, together with a number of examples of the farming of older secondary growth and swamp land, emphasize a perhaps more general desire of Ibans in pioneering areas to diversify the types of land they farm rather than a tendency to reform last year's fields.

The farming of more than one type of land, be it in areas differing in drainage characteristics, in altitude, or in vegetative cover, is very common among shifting cultivators throughout the world. However, since farmers often vary significantly in what they plant in different kinds of fields, ethnographers note and emphasize the different crop assemblages but ignore the varying characteristics of the fields themselves. Thus, the Sema Nagas reportedly farm one field in older secondary growth and one in very young growth each year (Hutton, 1921), but the more apparent difference between the fields is that one is planted to millet, the other to padi. Similar patterns can be found among the Yukpa of Colombia and Venezuela (Ruddle, 1974), African groups including the Lala of the Serenje Plateau (Allan, 1965), groups of cultivators in mainland and insular Southeast Asia who crop both wet and dry lands (e.g., the Land Dayaks or Bidayuh/Geddes, 1954/, the Kalinga/Lawless, 1977/) and many others.

The advantages of farming more than one field type in one year vary with the particular situations and the specific differences between the fields. In explaining the Baleh Ibans' predilection for the clearing of different types of growth, Freeman first cites reasons for their farming of primary forest: the fertility of virgin soils, the desire to extend landholdings, and the wish to acquire products of the old forests for food and other uses (1970, p. 282-3). He then goes on to suggest some reasons why Baleh residents tend to combine their high forest farms with at least small strips of the previous year's farms. Among these are the often abundant crop obtained for relatively little labor and the ability of the slash from young growth to dry more quickly, insuring that in a year with a dry period insufficiently long or intense to allow the timbers of primary forest to burn, at least a small plot can be burned over and seeded. The farming of young growth is often also done, Freeman asserts, by households whose adult men have left to seek wage labor and are therefore unavailable to cut the huge trees of the high tropical rain forest. Perhaps most important in the explanation of this "prodigal" pattern, according to Freeman, is the Baleh Iban view of land resources -- endless and thus to be quickly plundered.

While the arguments repeated above are made only to explain the Baleh Iban practice of farming some plots for at least two consecutive years, they also explain in part any patterns of combined primary/secondary growth cropping. The problem of getting a good burn is admitted to be as crucial on the Ensebang as on the Baleh and probably,

indeed, as in all pioneering areas of Iban settlement. The different labor demands, both quantitative and qualitative, of different field types are also an important factor. While the slashing and felling of primary forest requires, by both Freeman's and my estimates, up to fifty man-days per hectare, such "virgin" fields, according to all the information I collected, are not weeded at all. In contrast, the clearing of one hectare of young secondary growth usually demands only about 25 man-days per hectare per crop. Since the time during which any of these agricultural tasks must be completed is sometimes quite limited, the combination of field types allows for a far better scheduling of agricultural work throughout the year than does the making of just one kind of farm.

The argument that households with insufficient male labor tend to farm very young growth is, however, not borne out at either the First or Second Division sites. On the Ensebang, the three households with no adult males present all farmed primary forest, relying for help on men from other households in their labor-sharing groups. At Nanga Jela (Engkari) there was no apparent tendency of households with fewer men to farm younger growth. Not only is labor shared among households, but some Iban women are also quite adept at wielding an axe and cutting rather large secondary-growth trees.

Where primary forest is mixed with swampy areas, the above arguments still hold. The clearing of poorly drained fields in the Ensebang area requires relatively little labor, while their weeding demands much. Again, by combining different types of fields, agricultural labor is spread more evenly through the cropping cycle than it would be were only one type of field made. It must also be noted that a significantly greater amount of work is needed in the planting of rice in naturally swampy areas than is required on any type of dry-land field. The crop in well-drained areas is planted by merely dibbling in the seed, while swamp rice tends to need transplanting. However, this added labor demand comes at a time when little or no work is needed on dry-land farms and so labor, often in short supply, is again well spaced.

Thus far I have argued that the field data point to a dominant and general land use preference among pioneering Iban for combining different types of fields. It is still unknown why this general pattern tends to take the particular form, in the Baleh area, of combining fields in primary forested areas with fields made in very young secondary growth, usually part of the previous year's farm site.

From information found in Freeman's monographs as well as from field observations, it can be deduced that the Baleh pattern may reflect the desire of households to farm two different types of land each year but to make those fields contiguous. Freeman notes that farmers in the Baleh tend to use one general area of forest -- often a spur along a small stream -- for several years, presumably making each year's field adjacent to the previous year's. In order to keep farms both diverse and contiguous, a household is apt to refarm part of its newly harvested field and to fell

the area of forest adjoining it. The pattern typical of the Baleh is the result.

There are several reasons why contiguous fields might be preferred by shifting cultivators in the Baleh. The desire of Iban farmers to erect only one hut or shelter where midday meals can be eaten, protection found during storms and agricultural tools conveniently stored is doubtless an important consideration. The time and effort saved in not walking distances from one to another field certainly also increase the efficiency of agricultural labor. Another benefit to be gained, and perhaps the most important one, is that only one person at one location can guard the farm from marauding animals. Freeman stresses the importance of watching the farms in the Baleh region where wildlife is plentiful and crop loss to pests frequent.

Depredations of animals appeared to be far less of a problem in the Ensebang area. A paved road nearby had probably interfered with important migration routes of wild pigs, and the extreme poverty of the widespread white-sand soils supported an impoverished vegetation and, hence, smaller animal populations. The consequently lessened need for guarding farms, together with the fact that many of the households comprised by the Ensebang sample had recently arrived and had no previous year's farm to refarm, may account for the near absence of the peculiar Baleh form of land use among the Ensebang Iban.

#### Summary and Conclusions

I have in this article presented and examined data bearing on Iban land use in both pioneering and long-settled areas of Sarawak. I trust that I have demonstrated that all Iban land use is not characterized by progressive destruction of primary forests and overfarming of lands and that features other than prodigality of resource use are more generally descriptive of Iban agriculture and deserve greater emphasis. It should also be noted that even a cursory review of the history and geography of Iban settlement must lead to the realization that Iban resource-use methods cannot have been as destructive as some authors have indicated. The fact that there are numerous river valleys in Sarawak, like the Engkari basin discussed above, which have been continuously settled and farmed by Iban for over three centuries immediately indicates that land use among all Iban groups is not predicated on constant abandonment of devastated lands and migration into new forests. The further observation that no extensive area of Sarawak colonized by Iban in the past has been completely abandoned voluntarily and that all such areas continue to be exploited by shifting cultivation points to the fact that the natural resources of these areas have not been exhausted.

The comparison of the Engkari site and the two pioneering areas, although strictly a synchronic comparison, does suggest that Iban methods of land use tend to change through time as population density of an area increases and the supply of unexploited, unclaimed land dwindles. The

Ensebang data further demonstrate that Iban land use methods are characterized by a desire to diversify the types of farms made each year, a pattern which subsumes the particular form of land use emphasized by Freeman. These two general aspects of Iban land use -- dynamism and diversity -- are features found widely but hitherto often ignored in the literature on traditional peoples. Only recently have these characteristics been noted and begun to receive the emphasis they deserve. It is hoped that this article will contribute to a revision of the widely accepted negative evaluation of the Iban as farmers and that "dynamic" and "complex" will replace "prodigal" as the most common epithet applied to Iban agriculture.

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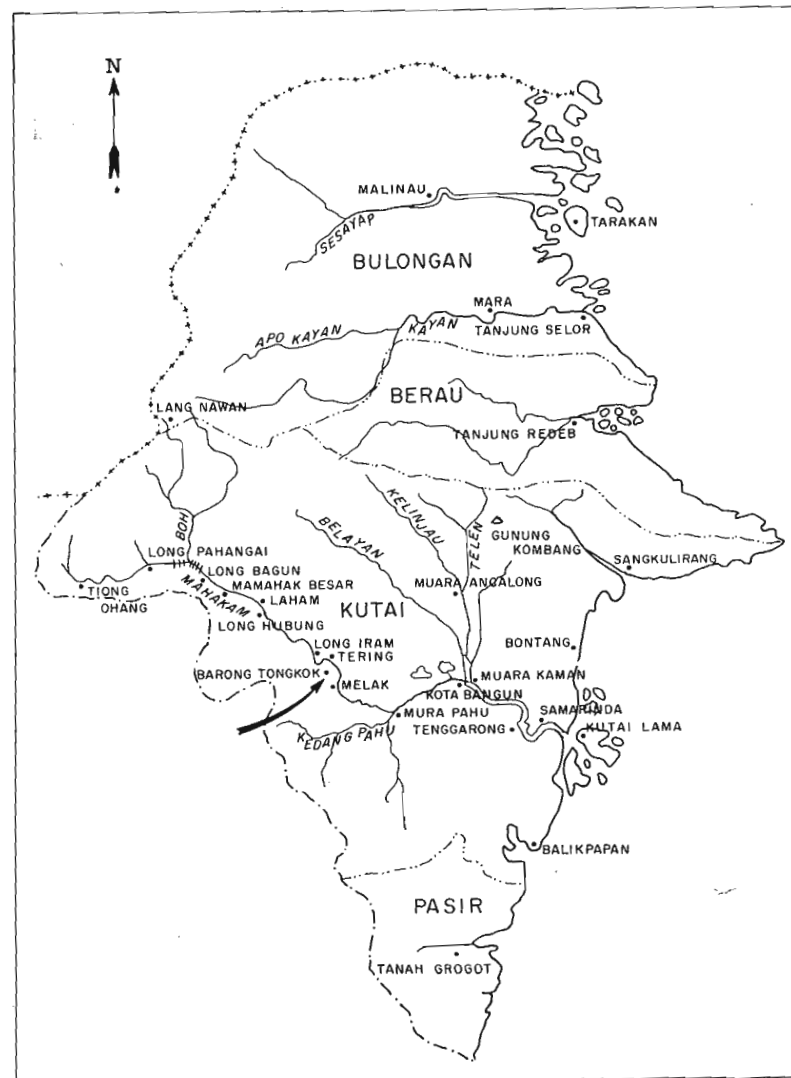
DAYAK AND TRANSMIGRANT COMMUNITIES  
 IN EAST KALIMANTAN

Mary B. Fulcher  
 Northwestern University

Introduction

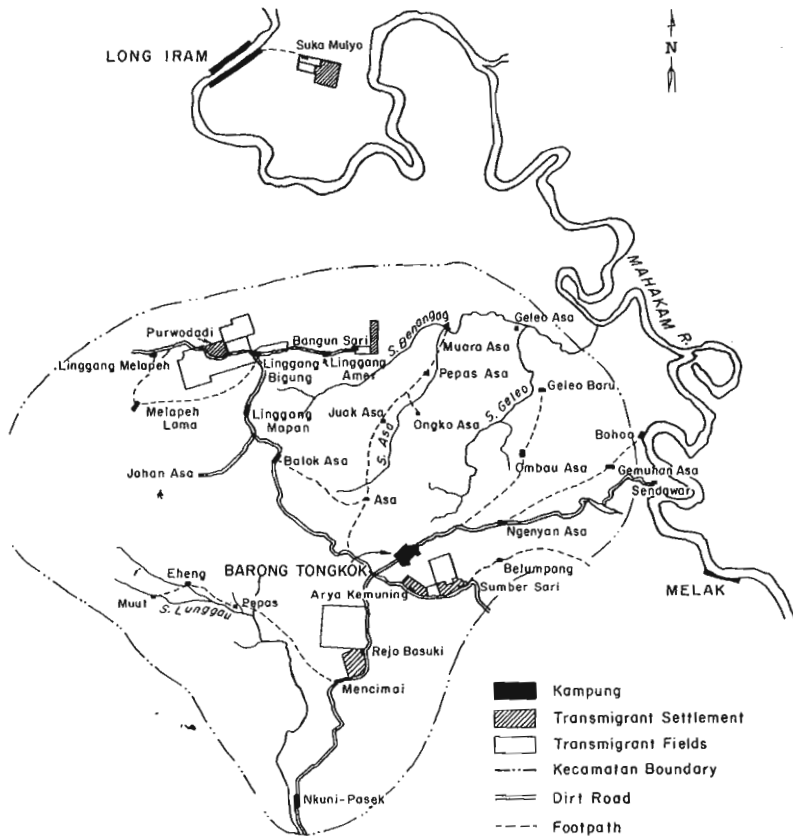
While seldom discussed in detail, the presence of Javanese transmigrants in the various provinces of Indonesian Borneo has occasionally been mentioned in the pages of the BRB (for example, see

Map 1 EAST KALIMANTAN





Map 2 Kecamatan Barong Tongkok and places named in text



Kartawinata 1978:30; Vayda 1979:25). The research discussed in this report focused on government sponsored resettled Javanese in East Kalimantan and concentrated, in particular, on their social relations with indigenous communities. As data analysis is incomplete, this research note is intended not as a detailed discussion of Dayak-Transmigrant relations, but rather, as a description of the current situation in regard to land use. Data on the related topic of land disputes is currently under review and hence will not be covered here.

Research in Indonesia, including library research and language study, was conducted in both Java and East Kalimantan during the period from June 1980 to September 1981. In Kalimantan, the specific research locale was within the middle Mahakam River area, Kabupaten Kutai, Kecamatan Melak and Barong Tongkok. This is some 166 river kilometers below the area recently discussed by Sellato (1980) in the BRB.

### Population Background

Kecamatan Barong Tongkok covers 1277 square kilometers and has a population of about 15,247 persons. Ethnically, this area is diverse, with Kutai and Buginese predominant in settlements along the Mahakam, Dayak and Javanese in separate kampung further inland. However, marketing and administrative centers, such as Melak and Barong Tongkok, display a multi-ethnic composition. Not all the Javanese are transmigrants, as small numbers, primarily East Javanese, arrive spontaneously to work in timber camps, and some ex-Army members have also chosen to remain. Table I provides population, ethnic, land, and religious data for Kecamatan Barong Tongkok.<sup>1</sup>

Settlement patterns of the Tunjung Dayak in this area have long been affected by governmental programs and policies, both in Dutch and post-Independence years. Tunjung have been requested, or otherwise encouraged to build individual family homes in specific areas alongside the major dirt roads. Longhouses, referred to as *lamin* (a term borrowed from Bahau) or, more rarely, *luu* (Tunjung) are infrequently found, tend to be small (less than fifteen families) and in a general state of disrepair. However, while the villages are permanent, the population itself is highly fluid, with families moving between ladang and kampung homes. Currently, most families live in nuclear households, with forty to sixty percent of the total village population, at any one time, maintaining residence in their field homes.

### Transmigration

Transmigrants, who arrived in 1964 and 1965, were classified as *sukarelawan* (1964) and *swakarya* (1965). The first group arrived in two waves, the men preceding their families by about four months. These resettlers, brought in as part of the then-Confrontation scheme, arrived in army uniform and held training exercises with local police units. This may well have made an impression on the Tunjung; although welcoming

Table I: Population Data, Kecamatan Barong Tongkok

Village	Land Area	Ethnic Composition		Population		Catholic	Prot.	Religion		Animist	SDA
		Mixed	Tanjung Tengah	1961	1981			Moslem	Animist		
1. Barong Tongkok	96 km <sup>2</sup>			1366	2420	150	68	310	1881	11	
2. Asa (inc. Sandawar, Belumpang)	87			802	1553	193	54	8	1284	14	
3. Johan Asa	65			469	521	198	--	--	323	--	
4. Pepas Asa	56			139	149	20	--	1	118	10	
5. Juak Asa	42			289	175	53	--	--	122	--	
6. Ongko Asa	48			186	192	7	--	--	122	63	
7. Nuara Asa	52			533	547	163	116	16	242	10	
8. Gemuhan Asa/Bohoq	75			1000	1068	50	284	240	494	--	
9. Ombau Asa	48			445	574	12	71	12	479	--	
10. Ngenyan Asa	58			675	462	39	32	--	391	--	
11. Geleo Asa	72		Tanjung Asli	894	354	11	93	3	247	--	
12. Geleo Baru	54			436	471	25	32	1	413	--	
13. Linggang Mapan	46			361	407	201	77	3	126	--	
14. Lgg. Bigung	72			810	772	53	696	20	--	3	
15. Lgg. Amer	74			870	601	195	61	--	345	--	
16. Lgg. Melapeh	80			626	851	350	250	--	251	--	
17. Mencimai	44			241	331	164	14	2	151	--	
18. Nkuni-Pasek	70			330	470	153	14	--	303	--	
19. Pepas-Eheng	62			440	480	120	--	--	360	--	
20. Muut	76			178	215	16	--	--	199	--	
21. Aryakemuning	*		West Javanese	139	141	--	--	--	141	--	
22. Rejobasuki			East Javanese	312	326	66	--	--	260	--	
23. Sumbersari			C. Javanese	473	729	13	41	--	675	--	
24. Purwodadi			"	409	701	--	--	--	701	--	
25. Bengunsari			"	482	737	--	--	--	737	--	
<b>Totals:</b>	<b>1277 km<sup>2</sup></b>			<b>12,905</b>	<b>15,247</b>	<b>2252</b>	<b>1903</b>	<b>3130</b>	<b>7851</b>	<b>111</b>	

For comparison, the overall Dayak population in East Kalimantan is estimated to be 150,000 (Coomans 1980:61). \*Transmigration land, 2 km<sup>2</sup> per village, was obtained from Dayak holdings. \*\*These date 1964-1965.

ceremonies were performed, when transmigrants appeared the usual reaction was to disappear into the forest or to close up one's home. Mutual fear was characteristic of the early period in Dayak-transmigrant relations. Now, Dayak report a significant increase in educational and health facilities since the arrival of transmigrants. Regular weekly markets and truck transportation also developed after the Javanese arrived.

Transmigration villages were placed outside of local authority: as "kampung persiapan", they were administered by transmigration officials (two men for five villages in Barong Tongkok's area) who lived and farmed with other transmigrants from 1964-65 until June 1981. At this point, the transmigration sites were declared official villages, and are presently under kecamatan administration.

In comparison with newer transmigration projects, the resettlers here did not receive much attention or assistance. Homes were built and fields cleared through gotong-royong work, and until several years later, no school or health facilities beyond those then in existence were provided. Government food allocations were insufficient and seed from Java proved uncultivable. During these early years, assistance of local Dayak was necessary; this took the form of outright gifts, barter, purchase, and theft. Ironically, it seems that contact between the groups was more extensive in the early years. As the Javanese established their village and fields, and as weekly markets grew, they had less and less need to contact Dayak.

Agriculture: Dayak and Transmigrant Comparisons

In this area, both Javanese and Dayak farm an average of one hectare per household, with Dayak more likely to cultivate several scattered plots. The amount of land under cultivation is related to household size and composition. Gotong-royong at the time of field-clearing or harvesting is practiced by both groups<sup>2</sup>, but is usually limited to invited participants. Wage labor also occurs if household resources permit. Dayak and Javanese occasionally do wage labor in each other's fields: families involved in these transactions will know one another well. If hired, Javanese are most often hired to do harvesting, while Dayak are hired to do field-clearing, at which they are said to be more experienced. This type of wage-labor is increasingly infrequent, although transmigrants weathered poor harvests from 1965 to 1967 by earning wages in Dayak fields.

Rice yields for the two groups average 0.6 ton per hectare, even though different agricultural techniques are used. On a field by field basis, both Dayak and transmigrants report a trend of increase in the yields in the second year of cultivation, with decreasing yields after that, Dayak move every two to three years, in sharp contrast to the Javanese, who will farm the same plot four to five years in succession. Dayak are more likely to leave fields at the first appearance of alang-alang

(*Imperata cylindrica*). In Javanese fields, following the long periods of cultivation, *alang* and other grasses are well-established. However, far from being intimidated by this, Javanese maintain *alang* through regular burning.<sup>3</sup> Young *alang* growth is cut and fed to livestock; older *alang* fields are burned and turned over by hand hoe (*cangkal*) twice before being returned to cultivation.

Considerable differences in the agricultural cycle and in practices of field-clearing were noted, with the transmigrants preferring an extensive field clearance which included the removal of all tree stumps.<sup>4</sup> The transmigrants, who plant and harvest two to four weeks before the Dayak, also suffer a greater crop loss to birds and other pests.

#### Rights to Use of Land

In the absence of ownership (*hak milik*), one may hold inheritance use rights (*hak warisan*), borrowing rights (*hak pinjam*), and cultivation rights (*hak pakai*, *hak usaha*). Outright land ownership occurs only when a land title certificate has been issued by the Agraria Department. Within the research area, it is widely recognized that no one owns land, with the exception of those transmigrants who have received title certificates.<sup>5</sup>

Data on Tunjung land tenure is at the moment inconclusive, but it seems likely that the pattern of individual family land holding developed after the Tunjung moved from longhouses to separate homes; in other words, during the last forty to fifty years.

Dayak cultivation rights for areas outside the designated transmigration sites are acknowledged by the transmigrants. Within the site, transmigrants claim full authority, although for many reasons they will not evict the Dayak still maintaining residence and/or fields within the area. Initial land allocations for the transmigrants did not allow for population growth or for the fallow field requirements of shifting cultivation. Therefore, transmigrants have frequently arranged to borrow Tunjung fields and are also able to obtain *de facto* ownership. These two types of transactions are discussed in the following sections.

Dayak report that only land without fruit trees or other plants which indicate continuing claim may be borrowed, but this is in reality often circumvented through the payment of compensation (*ganti-rugi*). Most borrowing occurs on an informal basis between individual transmigrant and Tunjung households and does not involve discussion or other arrangements with the respective village heads. In most cases, compensation is not asked as long as prior agreement is obtained from the Tunjung claimant. Since Tunjung often live far from their fields, it is possible for transmigrants to borrow a field unknowingly or otherwise without such permission. In these cases, by harvest time the claimant will usually request a portion of the rice crop, ranging from two to four *kaleng* (one *kaleng* equaling ten to twelve kilo of unhusked padi). Under the same arrangements, Tunjung-Tunjung and transmigrant-transmigrant borrowing

also occurs, although land under fallow or which appears infertile is not borrowed.

Both groups explain that this procedure is strictly a borrowing arrangement, "*pinjam tanah*". Land is not alienated, but simply used for planting. Compensation is only asked in cases where trees or other plants are involved. Another type of compensation concerns payments which are made when trees or crops are destroyed or damaged. This covers situations such as accidental burning, and is usually arranged between the parties involved. In these arrangements, land itself is not the issue: as Dove (1980a:15) has noted for the Melaban Kantu' of West Kalimantan, "it might be equally accurate to say that they (e.g. Tunjung) hold and exercise rights to trees, not land."

#### Obtainment of De Facto Ownership

Transmigrants have in some cases obtained what they regard as ownership (*hak milik*) of land used by Tunjung which is outside the transmigration site. This is done through a formal transaction which involves a single payment ranging from 5000 to 10,000 Rupiah and procurement of a signed, witnessed statement. These transactions are arranged through the Tunjung and transmigrant village heads. Once such a letter is signed, the Tunjung involved relinquishes claims to the land and trees.<sup>6</sup> Although, if fruit-bearing trees are covered, it is generally agreed that the former claimant may still take small amounts of fruit for household consumption, but not for marketing purposes. He or she may not, however, again cultivate the land.

Although terms referring to purchase and sale do not appear on these documents, compensation payments of this kind are a generally recognized method of evading the letter of the law. It is also seen in transmigrant-transmigrant transactions, as when, for example, a transmigrant decides to permanently leave the site. Houses and fields exchange hands under the rubrics of assistance (*bantuan*) or compensation (*ganti-rugi*). According to Transmigration Department regulations, however, buying and selling of land allocations is expressly forbidden. In cases where only transmigrants are concerned, this may occur without the knowledge of the village head. Technically, this sort of land transaction is in conflict with Indonesian national laws. Nevertheless, for the time being, at the local level these transactions are accepted as valid by both Tunjung and transmigrants.

#### Research Conclusions

The previous sections have presented a general picture of current conditions regarding land use by the Javanese transmigrants and Tunjung Dayak. But changes in land use are not the only ones which may be noted. Some tentative conclusions may be drawn concerning the impact of transmigration in the Barong Tongkok and Melak research locale.

At least for the last forty years, and certainly since the arrival of transmigrants eighteen years ago, considerable displacements have occurred in the lives of the local Dayak. These displacements may be summarized as: 1) an increasing reliance on marketing activities; 2) evidence of a nascent inequality of land cultivation rights; 3) more limited access to resources, as illustrated by indirect and direct restrictions on the use of forest products; and 4) some loss of local autonomy, which occurs, for example, when the establishment of villages is sponsored and monitored by non-local authorities, or in situations where there exist restrictions on traditional ceremonies and other adat matters.

This is not to suggest transmigration alone is responsible; without doubt other factors are involved. Events which occurred prior to transmigration certainly are significant in this context, such as military or missionary activity. More moderately, it is suggested that the presence of transmigration (including transmigration preparations and support activities) did serve to increase the rate and extent of the processes listed above. A final point is that these processes are restrictive primarily to the Tunjung, with their complex system of shifting cultivation and forest use: Javanese transmigrants have come from a limited resource, market-dominated village background and thus are less affected.

Acknowledgements

Field research was conducted under the sponsorship of the Indonesian Institute of Sciences (LIPI) and with the support of a grant-in-aid from the Wenner-Gren Foundation for Anthropological Research. Further acknowledgements are due to the Pusat Penelitian dan Studi Kependudukan, Universitas Gadjah Mada, Yogyakarta, especially to its director, Dr. Masri Singarimbun, for sponsorship of the research on which this report is based.

Notes

1. Population, religious, and land data are derived from the following sources: Census Penduduk 1961, Buku Data Transmigrasi 1980, village interviews, discussion with kecamatan officials, and kecamatan office records. It must be noted that statistics vary from source to source; hence data cited in this paper should be considered reasonable rather than exact. Similarly, as no official maps exist which designate kecamatan boundaries for Melak and Barong Tongkok, and since the boundary stones (and other landmarks) are moved from time to time, the map boundaries presented here are to be viewed as approximate. Ethnic data are derived from Dyson (1979) and the author's own notes.
2. Many Tunjung report that gotong-royong has decreased now that they are no longer living in longhouses. For a Tunjung-authored account of gotong-royong practices in this area, see Dyson (1979).

3. Transmigrants do feel threatened by a low, runner-type weed which they say cannot be eliminated by hoeing. Dove (1980b) and Soewardi (1980) provide other examples of the maintenance and utilization of alang.
4. One exception may be noted further upriver in the transmigration site at Long Iram, where the East Javanese residents of Sukamulyo have modified their agricultural practices. Transmigrants here say they consciously borrowed techniques from neighboring Bahau, and no longer remove larger tree stumps, do not hoe fields, and now plant for two years and allow a four-year fallow.
5. These land titles have not yet been distributed to all transmigrant villages in Kecamatan Barong Tongkok and Melak. Partial distribution of land certificates occurred once, in 1975. During the course of research, no case of a Dayak obtaining title to land was found. However, residents of a Kenyah resettlement site, Datah Bilang, (Kecamatan Long Iram) say they have been promised such certificates since 1971. For other cases, Agraria Department officials explained that Dayak have not been given titles because a ruling to that effect has not been issued by the Interior Department. A leading reason cited for this is that the Dayak, whom the government would prefer become sedentary farmers, continue with shifting cultivation. At this level of administration, interviews revealed a decided bias against shifting cultivation, which was seen as destructive, backward, and obstructive to timber activities. A stronger view would perhaps find the bias to be against the Dayak, as transmigrants who have turned to shifting cultivation have received land titles. Note, also, that permanent (sedentary) residence and shifting cultivation are not mutually exclusive.
6. To quote a representative such document (Surat Pernyataan): "Setelah selesai dalam hal ini diantaranya saya bersama tidak ada menaruh dendam, dan hak milik telah diganti itu, saya Fihak I sudah tidak kuasa lagi, malahan saya kuasakan penuh hal Rapak (sawah)/kayu dan lain-lain disekitarnya tidak akan mengadakan ganggu gugat lagi terhadap yang berhak ialah fihak ke II (dua) itu." This particular letter is signed by seven persons: the transmigrant and Tunjung parties involved, the Tunjung Kepala Adat, the Tunjung Kepala Kampung, the transmigrant Kepala Kampung, the Transmigration Department official residing in the village, and finally the Transmigration Department representative residing in Melak.

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### A DOUBLE POLARITY IN AOHENG TERMINOLOGICAL SYSTEM OF DIRECTION

B. J. L. Sellato

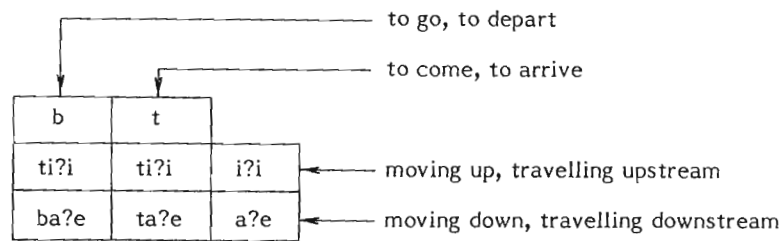
1. Terms referring to direction of movement can be grouped into pairs of oppositions, such as ascending/descending (a hill, a stair), navigating (or walking) up the river/down the river, to go/to come, to enter/to exit. Some of them refer to movement along geographical axes; e.g., up/down, upstream/downstream. Others refer to movement with regard to a definite place; e.g., to go/to come. Aoheng and Seputan terms, however, denote both types of movement:

- bi?i : to go up, to go upstream (from a definite place)
- ba?e : to go down, to go downstream (from a definite place)
- ti?i : to come up, to arrive navigating upstream, i.e. to arrive from downstream (to a definite place)
- ta?e : to come down, to arrive navigating downstream, i.e., to arrive from upstream (to a definite place)

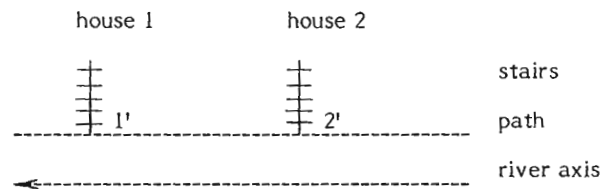
Where the Aoheng need only one term, e.g. ti?i, to express the movement "to arrive from downstream", other Borneo languages have to use three terms to express the same, e.g.:

- Kayan Uma? Leken : nae mɔn u?oh
- Busang Mahakam : ne man ho?oh
- Kenyah Uma? Kulit : nae mɔt aɣa?
- Tunjung : moot ete? na?
- Siang : rombut kat boe

The Aoheng term ti?i indicates both "to arrive" and "to move upstream." Initially the system appears to be as follows:



It should be noted that the axis of polarity concerns either a) relative movement with regard to the upstream/downstream polarity, or b) relative vertical movement with regard to the up/down (the hill, the river bank, the stairs) polarity. In a complex move, it appears that the upstream/downstream axis carries priority over the up/down vertical component, e.g.:



a complex move from 2' to 1' (to move downstream : ba?e) and then from 1' to 1 (to move up : bi?i) is summarized by ba?e.

a complex move from 1 to 1' (to move down : ba?e) and then from 1' to 2' (to move upstream : bi?i) is summarized by bi?i.

Lexical comparisons show that Aoheng/Seputan bi?i is cognate with Hovongan (or Punan-Bungan) beh, Uheng-Semukung ueh, Bukat bui, and related to Siang hia? buoe and Mandai murek to bu?ui (to go upstream), while Aoheng/Seputan ba?e is cognate with Hovongan ba?eh, Uheng-Semukung ba?e, Bukat bai, and related to Siang ba? boe and Mandai sou? (to go downstream).

Thus it appears that the pair of terms bi?i/ba?e is basic in the Aoheng terminological system.

2. Then if the terminological pair bi?i/ba?e is the basic one and the main component is the movement along the river axis, why is it that a second polarity (to go/to come, or to depart/to arrive) is included in this terminology?

The following terms, taken from the Bukat language (related to Aoheng and Seputan), may give us a hint:

- a) bui : to go by traveling upstream  
bai : to go by travelling downstream  
paē : to go (no ref. to the upstream/downstream polarity)
- b) tiβui : to come traveling upstream  
(i.e. to come from downstream)  
tiβai : to come traveling downstream  
(i.e. to come from upstream)  
tipaē : to come, to arrive  
(no ref. to the upstream/downstream polarity).

In the second set of terms (b), derived respectively from the terms of the first set (a), the direction of movement relative to a definite place is reversed ("to go" becomes "to come"), while the direction of movement along the upstream/downstream axis is unaffected. The ti-prefix appears to act as a polarity reversing prefix in relation to that definite place.

Then the Aoheng terminological set may be interpreted as:

- bi?i : to go up (upstream) → (tiβi?i) → ti?i : to come up  
(or to come travelling upstream)
- ba?e : to go down (downstream) → (tiβa?e) → ta?e : to come  
down (or to come travelling downstream)

Again, this prefix ti-affects only the direction of movement relative to a definite place, does not affect the upstream/downstream polarity. It should be noted that, if usually the direction of movement is in relation to the speaker, or more precisely to the place where the speaker stands, it may also be in relation to another place, for instance the speaker's interlocutor's place.

Another form of this prefix may be found in the Punan-Merah language:

- ləβa? : to go downstream
- tūβa? : to come down (travelling downstream)
- tūaē : to come up (travelling upstream (see Aoheng ta?e))

where tūβa? may be interpreted as a contraction of ti- + ləβa?. This type of contraction is not uncommon, in the Punan-Tubu language, for example:

deh : to go  
liγa? : downstream → deγa? : to go downstream

deh : to go  
ricu? : upstream → dəcu? : to go upstream

3. Where does this prefix ti-come from? We have seen that Bukat tipaē (to come) is the antonym of paē (to go). Likewise, Aoheng ati and Seputan hati (to come) are antonyms of Aoheng/Seputan pahe (to go). Further examples of the term "to come" include:

Land Dyak	<u>karu(?) ati</u>	(Ling Roth, Clix)	
Quop (Land Dayak)	<u>kamati</u>	(Ray, p. 78)	
Sau (Land Dayak)	<u>kati-kati</u>	(Ray, p. 78)	
Ukit	<u>tepai</u>	(Ray, p. 162)	(see Bukat)
Punan-Tubu	<u>tei</u>		

Then there may be an ancient term \*(C)ati bearing the meaning of "to come". It became agglutinated as a polarity reversing prefix under the form ti- (Bukat, perhaps Punan-Merah), then contracted in the Aoheng and Seputan languages. \*(C)ati seems to appear only in the languages of some Land Dayak groups (with its complete form), some Bukat and Punan groups (with the prefix ti- form), and the Aoheng-Seputan group (both with its complete form and the contracted t- form).

Note

ü is a symbol for a tense vowel intermediary between [y] and [ø], as opposed to [U] written u.

ae, ai, ei, oe, oi, ui are all diphthongs.

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EPISTEMOLOGICAL PROBLEMS IN THE ANALYSIS OF  
LAND TENURE IN BORNEO: A REPLY TO WEINSTOCK

Michael R. Dove  
The Rockefeller Foundation  
Yogyakarta, D.I.Y.

I. INTRODUCTION

The ongoing debate over the role of environmental factors in patterns of land tenure in Borneo has been marred by crucial epistemological misunderstandings. I addressed some of these in my

earlier article (Dove 1980) on the subject, but a more recent contribution (Weinstock 1981) indicates that some basic points are still incompletely understood. These focus on the concept of the udic moisture regime, the distinction between primary and secondary forest, the use of the case study in comparative analysis, and the concept of multiple causality.

## II. UDIC MOISTURE REGIMES

The concept of udic moisture regimes has been misunderstood and misused. Based on his use of this concept, Weinstock (1979) concludes that variation in rainfall is not an important determinant of variation in patterns of land tenure in Borneo. He writes (Weinstock 1979:8) "It is interesting to point out that the whole issue of variance in rainfall as it is used here is not particularly relevant. The lowest rainfall area still has over 90 inches of precipitation annually with no true dry month." He then says in footnotes (1979:8 FN 5, 6) that "All five areas most likely have udic moisture regimes" which he defines as ones "in which the control section of the soil is not dry for more than 90 days a year." I do not dispute this definition of a udic moisture regime, nor do I dispute Weinstock's claim that this concept accurately describes one aspect of the Bornean environment. I wrote (Dove 1980:6) as follows:

Patterns of rainfall vary considerably through the interior of Borneo, and this variation can be an important determinant of variation in social phenomena. Weinstock dismisses the importance of this variation on the basis that all of the tribal groups in question (Rungus, Ma'anyan, Land Dayak, Iban and Maloh) receive at least 90 inches of rain per year, and hence all have 'udic moisture regimes'. This conclusion can be questioned, on the basis that the range of variation in annual rainfall, among these five groups, totals almost 80 inches per year.

The conclusion that I question is his dismissal of the importance of this variation in rainfall, not what I call his "basis" for that conclusion; not, that is, his data on rainfall and moisture regimes.

What I dispute, therefore, is neither the definition nor applicability of the concept of a udic moisture regime but its relevance to the land tenure argument. What I dispute is Weinstock's assumption that because all of the sites in Borneo have udic moisture regimes, the variation among them in rainfall pattern is not significant (*viz.*, does explain any of the variation among them in land tenure). The error here is in assuming an epistemological validity for the concept of "udic moisture regime" which it does not possess. Whereas rainfall exists *sui generis* in the real world, for example, "udic moisture regimes" do not. There exist specific patterns of rainfall which it may be convenient for an observer to categorize as "udic moisture regimes" or not. Therefore, the term is nothing but a construct, constructed and utilized to illuminate particular phenomena - and the land tenure patterns of Borneo are clearly not among

these phenomena. These patterns are more illuminated by an approach which highlights the variation within Borneo in rainfall than by one which obscures it.

I argued (Dove 1979) that there is significant variation within Borneo in rainfall patterns, especially during the swidden burn-months, and that this variation is significant because it is associated with varying difficulty in burning the swiddens. This variation in burn difficulty is not brought out through use of the concept of the udic moisture regime nor, indeed, does Weinstock claim that it is. He is silent on my analysis of variation in rainfall and burn-success, and speaks only of the relationship between plant growth and udic moisture regimes - a relationship about which I said nothing and whose existence or non-existence is irrelevant to my analysis of rainfall and burning.

In short, where Weinstock (1981:108) says that "Dove does not understand the term 'udic moisture regime'", what I really do not understand is its relevance to the analysis of the covariation of environment and land tenure in Borneo. Weinstock's (1981:108) assertion that the term is "mathematically defined" is clearly beside the point. This is an a-priori truth with no relation to its a-posteriori relevance. One could just as easily define the term "tropical", ascertain that all of Borneo falls within the definition, deny (on this basis) any importance to variation in environmental factors within Borneo, and then defend this denial by reaffirming the definition of "tropical".

## III. PRIMARY VERSUS SECONDARY FOREST

Problems have attended the imposition of abstract constructs not only on Borneo's pattern of rainfall but also on its pattern of vegetation. Weinstock (1981:109) asserts that "the division of land used for swidden into secondary and primary forest, and then stating that people prefer one over the other is rather simplistic (*sic*).". The issue here should not be one of simplicity versus complexity but, again, one of the analytic utility or disutility of the categories employed. In my earlier article (Dove 1980) I made a basic distinction between primary forest and secondary forest, based on the fact that this is the fundamental distinction among vegetative types that is made by the Kantu' themselves (*viz.*, that between *kampung* 'primary forest' and *memudai* 'secondary forest' - see Dove 1981). The Kantu' make this distinction because it is meaningful within their system of forest exploitation: specifically, it is meaningful in terms of weighing the relative advantages and disadvantages of, respectively, poor burns and few weeds or good burns and many weeds. Thus, I wrote (Dove 1980:6), "With respect to the association between yield, the burn and heavy forest rainfall that they receive, the Kantu' properly value secondary forest over primary forest. This valuation is reversed, however, with respect to a second, major swidden-problem, that of regrowth." (It is unclear to me how this could be read as my "stating that people prefer one over the other" Weinstock 1981:109 .) I illuminated these indigenous categories and valuations with my own

empirical observations, expressed in numbers of liters of rice harvested per hectare (which is a function of the goodness of the burn) and the number of days of weeding required per hectare (which is a function of clearing secondary forest).

Weinstock's methodology is rather different from mine. He writes (1981:109): "In the area where I worked I saw what could best be described as a sixfold division of land types", which he then lists. A reader of this can only infer (in the absence of any further data or explanations) that Weinstock "saw" and "described" the land types according to his own cognitive system and not that of the people living on and from that land. It is not sufficient to say that such phenomena can "best be described" in a given fashion. There is no "best" system of categories with which to bisect the world, but only categories used by different cultures (whether that of Weinstock or a particular Dayak group) for different purposes. One task of any scientist working in a society other than his/her own must be to clearly distinguish at all times between his/her categories and those of the people being studied.

Just as Weinstock's categorization of land types is problematic, so too is his association of particular yields with one type or another. Whereas I (Dove 1980) documented the Kantu' evaluations of the different forest types with my own measured data on yields per hectare, Weinstock (1981:109) writes "most individuals stated that they got higher yields in primary forest swidden than they did in secondary forest swidden (emphases added)". Weinstock neither documents nor explains (the basis for) the Luangan's view. Since I explain the respectively high and low yields of the Kantu' primary and secondary forest swiddens in terms of the pattern of rainfall in their territory and the consequent problem with burning, and since Weinstock says nothing about rainfall and burns among the Luangan, his speculation on the relationship between swidden yields and forest types is therefore (the question of its validity aside) incomparable (and irrelevant) to my Kantu' analysis.

While Weinstock does not explain his association of high yields with primary forest swiddens, he does attempt to explain his rejection of my own association of low yields with such swiddens. Specifically, he rejects my assertion that the characteristically poor burns of such swiddens cannot (because of the nature of the timber involved) be remedied after the fact. He writes (Weinstock 1981:109): "One certainly doesn't move around large unburnt logs in a swidden to achieve a second burn, but many Dayaks accomplish a second burn of primary forest by collecting brush, piling it around larger logs and stumps and then starting a series of small fires." This statement is problematic for two reasons. First, it is unclear what the referent ("many Dayaks") of this observation is and on what this observation is based (e.g., personal observation, interviews, etc.). If these points were clearer, Weinstock's statement could be more accurately compared with my own observations among the Kantu' which, as I stated in my earlier paper (Dove 1980), clearly suggest that poor burns in primary forest cannot in any major sense be remedied by secondary burning. This

inability is reflected in the relative lack of labor that the Kantu' allocate to this task. According to my observations, the Kantu' are four to five times more likely to omit secondary burning in an incompletely burned primary forest than in an incompletely burned secondary forest; and when they do carry out secondary burning in the former cases they devote less than 30 percent as much labor to it (measured in terms of man-days per areal unit of unburned swidden) as they do in the latter cases.

A second problem in Weinstock's stance on secondary burning in primary forest is the peculiar method and purpose of the burning that he describes. Among the Kantu', for example, it is axiomatic that the larger logs and stumps from cleared primary forest will not burn when the swidden is fired. The Kantu' describe a good burn in primary forest as one in which all limbs smaller than a man's wrist are consumed in the first and turned into ash. Conversely, even in a good burn there is no expectation that any timber larger than one's wrist will be consumed. Since this is the case during the main burn, with flames leaping a hundred feet and more into the air, the Kantu' harbor no illusion about being able to burn these "larger logs and stumps" during remedial secondary burning. Whatever secondary burning they do, whether in primary or secondary forest, it is clearly not directed at these larger logs and stumps. In either case, the Kantu' pile the smaller, unburned brush and branches not against the large, unburned logs and stumps but away from them in the open, atop unburned ground. The purpose is two fold: first, to burn off the layer of unburned leaves and humus which otherwise would make that ground unplatable and, second, to turn the brush and branches into ash and add it to that ground for the later sustenance of the rice plants. Any energy that the Kantu' devote to secondary burning is directed towards these goals - which are attainable over limited areas, especially in secondary forest swiddens - and not towards the impossible goal of burning the large, unburned logs and stumps. Weinstock's assertion of this latter goal renders all the more problematic his comments on remedial burning in primary forest swiddens.

#### IV. SINGLE CASES AND SINGLE CAUSES

A final problematic area in the debate over Bornean land tenure pertains to the understanding of idiosyncratic case studies and their value in analyzing the multiple-causality of phenomena that extend beyond them. Some of the participants in this debate have compared the available case studies in terms of single variables and then, if this isolated comparison seems not to fit the theory in question, they have rejected the theory or questioned the validity of the case studies themselves. This is an unwarranted focus on single variables as opposed to the relationships among variables, and it stems from a misunderstanding of the integrity of the individual case and the nature and use of the individual case study.

This misunderstanding is evident in Weinstock's (1981:112 FN 10) suggestion that I use the term "village" rather than "longhouse". He



(1981:122 FN 10) supports this by saying that "not all Dayaks live in longhouses, either presently or even historically. It is a common myth that all Dayaks live in longhouses and hunted heads (sic)." Nowhere have I ever said that all Dayak live in longhouses. At the beginning of my earlier article (Dove 1980:3) I noted that the paper's conclusions would be "based on an analysis of the role of rainfall in the land-tenure system of one (emphasis added) group, the Kantu". I subsequently noted (Dove 1980:4) that my data were drawn from research "among the Melaban Kantu, an Ibanic group of swidden agriculturalists living at the juncture of the Empanang and Kantu' rivers in West Kalimantan." In the conclusions to that paper, I (Dove 1980:12-14) specify this referent at every turn, speaking (e.g.) of "establishing the role of rainfall in the development of Kantu' (emphasis added) land tenure". Since I speak specifically of the Kantu', and since more than 90 percent of those Kantu' with whom I worked lived in longhouses, there is little reason not to use the term "longhouse". This term is also favored by the fact that it is a direct translation of the Kantu's own term rumah panyai 'house long', by which they customarily refer to their settlements. There is no term in the Kantu' language which is equivalent to "village", Weinstock's term of choice. My use of the term "longhouse" has the advantages of precision and adherence to indigenous categories. At the same time this usage does not in the least prejudice the relevance of the Kantu' case to the interpretation and analysis of other cases in which the predominant pattern of settlement is not one of longhouses. To maintain the contrary reflects a basic misunderstanding of the use of abstraction and generalization in making comparative use of unique case studies.

This misappreciation of the use of case studies is associated with a misappreciation of multiple causality, which is at the root of Weinstock's ultimate denial of any determinate role to environmental factors. He maintains (Weinstock 1981:110) that I "misstated" his position when I wrote (Dove 1980:3): "Weinstock attempts to demonstrate that land-tenure practices in Borneo do not co-vary with (and hence are not explained by) ecological factors." Yet one can read in the conclusion to Weinstock's (1979:110) original article, "Environmental conditions do not provide an adequate explanation for variance in patterns of land tenure among the swidden cultivators of Borneo. An explanation for this variance will have to be found in the cultural and social aspects of these communities." This ambivalence over the role of environmental factors is due to confusion as to the nature and possibility of a plural causality. Thus, Weinstock (1981:110) says that I "contradict" myself by maintaining that environmental factors work in conjunction with other factors at the same time as I insist that he (Weinstock) hold these other factors constant if he wishes to test the role of the environment. In fact, believing that all other factors should be held constant in order to isolate and test the influence of any one factor (e.g., the environment) is not the same as believing that the one factor is the only factor with any influence. My rejection of Weinstock's falsification of the environmental theory, based on my claim that he does not hold all other determinate factors constant, in no way implies that I believe that these other factors are indeterminate

or that the environment is the sole determinant. Weinstock's (1981:110) claim that "he (Dove) states that a single environmental factor, rainfall, is determinate" is erroneous. I clearly stated (Dove 1980:4) that "the pattern of rainfall is arguably the most important of the several ecological factors that have been introduced (emphasis added)" and, further, that "it would be truer to say that ecological factors are determinate of phenomena such as land tenure in conjunction (in original) with social and cultural factors".

The continuing non-appreciation of this multiple causality is evident in the conclusion to Weinstock's 1981 article. He concludes (1981:111) that environmental factors are not "key determinates in the development of land rights" because, while Rungus and Ma'anyan have different land tenure systems, and while Kayan and Kenyah have different land tenure systems, each pair lives in the same or a similar environment. Again, therefore, variation in land tenure and non-variation in environment is interpreted as proof of the indeterminacy of the latter, disregarding the possible effects of other variables on this variation. It is worth repeating here what I earlier said (Dove 1980:4) was the singular failing of this debate on Bornean land tenure: "This is the failure to recognize that ecological factors will play a constant, determinate role only when other factors are also held constant. When other factors (e.g., social, economic, and political factors) vary, the role or influence of ecological factors necessarily will vary too."

## V. SUMMARY AND CONCLUSIONS

In summary, the analysis of Bornean land tenure continues to suffer from inattention to three particular areas of conceptualization and analysis. First, terms and categories have been employed which do not derive from the indigenous social and ecological systems of Borneo, and hence do not illuminate them. Second, the nature, value and use of necessarily unique, individual case studies has been misunderstood. Third, the theorized determinacy of given factors has been obscured by the failure to recognize the plurality of determinants and the consequent necessity to hold all other factors constant when testing the role of any one factor.

## ACKNOWLEDGEMENTS

The author's research among the Kantu' was sponsored by the Indonesian Institute of Sciences (L.I.P.I.), and was supported by the National Institute of General Medical Sciences, the Center for Research in International Studies at Stanford University, the National Science Foundation, and the Richard D. Irwin Foundation. The author wrote this current analysis while supported by the Rockefeller Foundation and working at Gadjah Mada University's Environmental Studies Center, under the directorship of Ir. Soemantri Sastrosudarmo.

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BRIEF COMMUNICATIONS

'Kaharingan' and 'Heathen', some additional remarks

J. B. Avé

- I. J. A. Weinstock's communication in BRB 13 (1), 1981:47-48, on the formal acceptance of Kaharingan as one of the official religions of Indonesia, is good news. The Dayak can now perform his religious ceremonies, elaborate his art and recite his myths and poems without fear or shame. It is, therefore, good news to anyone who feels concerned with the well-being of the autochthonous peoples of Borneo. Other aspects of Weinstock's report, however, need additional comment.
- II. The word Kaharingan is derived from the Ngaju language. This is understandable, as the Ngaju are the largest and most widely distributed Dayak group in Kalimantan, and as the Ngaju language was the lingua franca for the southern part of the island, i.e., the contemporary provinces of Kalimantan Tengah, parts of Kalimantan Selatan and of Kalimantan Barat.

Before World War II, the Ngaju Dayak had no proper name for their religion. The Dayak called their religion agama helu (ancient religion), a term still used in Kalimantan Barat, or agama biasa (usual, traditional, religion) or, speaking to non-Dayaks, they referred to it as agama Dayak (Dayak religion) (Garang: 1974:18 n.).

The word Kaharingan is not taken from the ritual language of the Ngaju, the ba(ha)sa Sangiang. The stem haring means 'to grow by itself', spontaneously arise, to regrow because of inherent life force. On an abandoned swidden, plants and weeds can haring, can spontaneously grow again. The word can also be used in a figurative sense: emotions like rage, anguish, hatred, repugnancy, can involuntarily surge up; this too is haring. The liau, souls of the deceased, after the tiwah (secondary burial) depart for the lewu liau (abode of the souls) where they stay for a long time, postponing their disintegration by consuming the danum kaharingan (danum = water) which is stored up in the batang garing. Here, kaharingan could be

translated as 'life-giving force', stored up in the 'tree of life'. Eventually, the souls will be lost and come back to the earth in the form of plants and fruits, out of which--under favorable circumstances--they can develop again into human beings. This is kaharingan, renascence. The idea of renascence was considered the quintessence of Ngaju Dayak belief, the term kaharingan was thus chosen to designate (Ngaju) Dayak religion. According to Garang, himself a Ngaju, it was adopted in 1953 (Garang, 1974:54). Tjilik Riwt, a Ngaju Dayak who later would become Governor of newly created Kalimantan Tengah, already wrote of agama Kaharingan in 1958 (Tjilik Riwt, 1958:304).

In ba(ha)sa Sangiang the word haring is also used, often with the Sangiang word for 'water' = nyalung, as in nyalung kaharingan. Another Sangiang word, garing is a remodeling of haring having a nearly similar meaning<sup>1</sup>. A third near-synonym, belum, is also used with garing and haring. Some examples: puson garing (bud of life), kare taluh belum (all living matter = the living world), and in reduplications (actually two words with nearly similar meanings, a usual method in Indonesian languages) like: batang garing belum = tree of life-giving energy or: tree of life, nyalung kaharingan belum = life-giving water. A fine example of two somewhat different meanings of haring is to be found in Schärer's great work on Ngaju myths dealing with the death cult: Baringen mantahiwei haring, haring lu-antasan bintang (Schärer, 1966:516), which I would translate (somewhat deviating from Schärer) as "The waringin (banyan) tree with drooping roots of life, growing along the canals of the stars."

- III. Weinstock's assertion that "Dutch administrators and missionaries labeled it (Dayak religion) 'hiden' (actually: 'heiden') or 'saten' (actually: satan) sounds rather strange. To mention a few civil servants: Wilken, writing on Dayak religion in general (c. 1890), Te Wechel on the Maanyan (1915), Jongejans on East Kalimantan Dayaks (1922), called this religion 'animistic', in conformity with then existing anthropological theory. But Perelaer, writing on Ngaju and Siang (1870), Kühn on the Ot Danum of the Melawi basin (1896), Nieuwenhuis (an army surgeon, later advisor to the government) on the Kayan (1900), Mallinckrodt on Kalimantan Dayaks, in particular Ngaju and Ot Danum (1928), and Elshout on the Kenyah of the Apo Kayan (1926), have given excellent factual descriptions of the religions they observed without trying to classify them. Indeed, they pointed out that these religions contained a belief in a Supreme Being with a number of deities, half-deities and culture-heroes on lower levels.

A few civil servants may have used the word 'heathen' in comparison to Islam and Christianity, not being able to designate Dayak religions with a better term. They did not seem to have used it in a denigrating sense.

- IV. Under President Sukarno's government there was enough tolerance for beliefs other than the agama's, i.e., religions having a Supreme Being and a Holy Book. Sukarno himself created a Dayak province, Kalimantan Tengah, and appointed Dayak civil service officers and governors in Kalimantan. After 1965, leaders of Islamic groups in particular, but also Christians and some military commanders, exerted heavy pressure on the followers of now officially not-recognized beliefs, using atheism (= communism) as a pretext, to make them renounce their traditional faiths. Gradually, however, the central government, in its growing anxiety towards the strongly increasing influence of Islam in political life, showed more understanding towards adherents of other beliefs, giving support to Bali-Hinduism, Buddhism, and, finally, to the ancient Indonesian religions.
- V. Whether elements of Hindusim exist in Kaharingan, is debatable. That it contains "even stronger strains of ancient Chinese ancestor worship" is something new. Many Dayak groups hold some of their ancestors in reverence, or, on certain occasions, ask them special favors. But would this justify conclusions of influence from other, better studied religions from outside Borneo? Would it not be better to make studies of the functioning of rites and ceremonies in Dayak religions within the framework of their respective cultures first, before writing down judgments at random? Working along this path of good old diffusionism we would, I fear, some day come across titles of articles as: "The Development of Dayak Religion: from Satanism to Confucianism."
- VI. The question of a formal "Book" does not seem the most difficult problem to solve. The Ot Danum Dayaks, for example, regarded by their southern neighbors, the Ngaju, as their cultural forebears, have a very extensive mythology, the (Auch) Tatum Tambun Bungai, parts of which are still being recited during ceremonies and feasts, but which has never been registered. It is a cycle of myths which, as Schärer says, leaves an unforgettable impression of poetic beauty with everyone who has heard it. (Schärer, 1966: I:3, II:841). The Katingan (branch of the Ngaju) Dayaks have a mythology of which only a small part is still being narrated. But this part only would already fill 12,000 to 15,000 printed pages (Schärer, 1966: I:2). The oral literature of the Ngaju Dayaks would comprise some 40,000 pages of print (Schärer, 1966: I:4). No fear, then, of lack of material for the required Book(s).
- VII. Lastly, the Kapuas River of contemporary Kalimantan Tengan is known among Dayaks as the Kapuas-Murung. The West-Kalimantan Kapuas River is called Kapuas Bohang. It would be advisable to adopt these names.

Note

- I. Not to be confused with the word garing in daily language for 'ivory'.

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OBITUARY

Father Gerard Bruggeman of St. Francis Xavier Roman Catholic Mission in Kanowit, Sarawak, died on Christmas Day 1981 at the home of his brother in Groenlo, The Netherlands.

Father Bruggeman was born on 3 September 1911 in Oldenzaal, The Netherlands. He received his missionary training in England and was ordained as a member of the Mill Hill Society on 11 July 1937. He was assigned to Sarawak and served at the mission in Sibul from his arrival in November 1937 until March 1940, when he was sent for the first time to the St. Francis Xavier Mission in Kanowit. Fr. Bruggeman remained in Kanowit during the early months of the Japanese Occupation, declining an invitation to join a group that hoped to travel upriver and cross into Dutch territory (ultimately unsuccessful). He was arrested by the Occupation forces in May 1942 and interned at the Batu Lintang camp near Kuching until Liberation in September 1945. He returned to Kanowit in November 1945 and remained there until January 1950, when he was transferred to Long Akah. After three years of working among the Baram communities, Fr. Bruggeman was sent again to Kanowit and remained there, even after his formal retirement from parish duties, for the next 28 years. On 23 October 1981 he left Sarawak to return to The Netherlands: "After thinking a lot I have decided to say farewell to Sarawak where I have spent 44 years of my life. It will be a sad day when I leave but I think it is the best for me to do. With my 70 years any thing may happen and I do not want to be a bother to the people in Sarawak." He planned to stay with his brother, a parish priest in Groenlo, for a few months, then settle in a retirement home for members of the Mill Hill Society in The Netherlands. His doctor found him dead in his bed, probably of a stroke, this past Christmas Day.

Fr. Bruggeman was well known for his expertise and competence in Iban language and culture. He contributed an Appendix on Third Division

Iban language to Scott's A Dictionary of Sea Dayak (1956) and after his retirement from active parish duties he compiled the only English - Iban dictionary available (mimeographed, privately circulated by the Sarawak Roman Catholic Mission). His service and dedication to all the peoples of the state were acknowledged on 5 October 1964 when he was awarded the Star of Sarawak by the newly-independent government. He was a counselor, advisor and friend to all members of the Kanowit community, both officially through the District Council and advisory boards and informally in the streets and coffee shops.

The life, work and activities of Father Gerard Bruggeman manifested the very finest ideals of his Christian faith. With his passing the people of Sarawak, and all who have been fortunate enough to have known him, have lost a respected mentor and noble friend. (Richard Fidler)

#### BORNEO NEWS

##### Borneo News

An all-day seminar entitled "The Iban and Social Change" was held at Monash University (Melbourne Australia) under the sponsorship of its Centre of Southeast Asian Studies on 28 September 1981. Four formal papers were presented, each of which was followed by discussion by the 20-odd participants who attended. The Centre anticipates publishing the papers in a single volume next year.

FRANK McKEOWN, Ph.D. candidate in anthropology at Monash, presented a paper on 'Dutch Colonialism and Iban Political Organization' based upon his field work in Kalimantan Barat. The emphasis was upon changing administrative and adjudicative roles of Iban leaders during the late nineteenth and early twentieth centuries. His sources included local oral histories and a file of early correspondence he discovered in the government offices in Semitau.

DR. MICHAEL HEPPELL'S paper entitled 'Child-Rearing and Social Change: The Iban and Sikedá' compared practices in a Third Division Iban longhouse and a 'Land Dayak' village east of Sanggau-Ledo, Kalimantan Barat. He concluded that the Iban children enjoy much higher levels of attention and support during their early years than do the Sikedá children, a difference which may account for contrasting patterns of social change between the two groups.

PETER KEDIT, on leave from the Sarawak Museum and a Ph.D. candidate in anthropology at the University of Sydney, spoke on 'Modernisation and the Iban Custom of Bejalai'. The continuing proclivity of young Iban men to temporarily leave the longhouse to work, increasingly in the oil and gas fields of Miri and Brunei, has a number of implications for Iban economy, migration, and social change.

ROB CRAMB, a Ph.D. candidate in economics at Monash and the moving force behind the all-day seminar, presented a paper entitled 'Continuity and Change in Iban Land Tenure'. In this paper Cramb described the land tenure systems of two Iban longhouses in the Betong District, Second Division. In the first longhouse, the tenure system is very similar to that described by Leach, Freeman, and others; in the second, Nanga Tapih, rights to re-clear land are not inherited but redistributed according to the bilek's needs at the beginning of each season in a manner similar to that described by Appell (BRB, 1971, 3:1, 17-20). It is Cramb's hypothesis that the Nanga Tapih system developed as a response to increased population pressure on the longhouse lands.

##### Kalimantan News

B. J. L. SELLATO is seeking information about the work, documents, and current situation of Alois Bucher. Anyone who can provide any information is urged to write Mr. Sellato c/o 187 Rue Armand-Silvestre, 92400 Courbevoie, France.

Research Centre in Samarinda. In East Kalimantan, for Mulawarman University, and with \$7,500,000 worth of government assistance from Japan, a laboratory will be built on Mt. Kalua, Tamindung. Work will concentrate on reforestation, especially in the Man and Biosphere area at Lempake, and for training on Suharto Hill between Samarinda and Loa Janan. A group of experts led by Professor Akira Kawana came over for further planning.

HERWASONO SOEDJITO spent 5 months (31 October 1979-31 February 1980 and 10 June-June 1980) at Long Sungai Barang, Kayan Hulu, near the border of Sarawak and Long Segar, Muara Wahau (1 March - 26 May 1980), East Kalimantan, doing ecological studies in primary forest and secondary forests as well as plant collecting. The study is a part of the joint Indonesian MAB (Man and Biosphere) and U.S. MAB on 'Interactions between people and forests', an integrated study that involves biologist and social scientist. During this period 1205 herbarium specimens (503 spp.) were collected from Long Sungai Barang and 1095 (305 spp.) from Long Segar, and 34 living plants were collected also.

KUSWATA KARTAWINATA and ANDREW P. VAYDA visited Long Sungai Barang on 25-29 February 1980 and Long Segar on 3 March 1980. The Herbarium specimens collected by Kuswata are in Soedjito's name. On 19 May MISS HARINI M. SANGAT joined Mr. Soedjito and spent three months at Long Sungai Barang. She investigated the use of plants by the villagers (Kenyah) and its impact on the forests and other plant communities, and she studied also other aspects of ethnobotany of the area. The voucher specimens (294 nos.) for her study are deposited at Bogor. The village of Long Sungai Barang (c. 800 m alt.) with a population of 370 is rich in useful plants that have potentials to be developed, including fruit trees such as *Euphorbia cinerea*, *Nephelium* sp., *N. eriopetalum* N. maingayi, *Xanthophyllum* sp., *Litsea garciae*, *Mangifera*

torquenda, *M. rigida*, and *Baccaurea* spp. Altogether Soedjito recorded 42 species of fruit plants growing in the home garden, and Harini M. Sangat recorded 263 species of wild plants from the secondary and primary forests used by the villagers as medicine, food, handicraft, construction, animal feed, etc.

From 22 November to 19 December 1979, JOHANIS P. MOGEA and party visited forests at Kelampi, Kasungai River and Kebinai River in the upper Kandilo River area, as well as Muara Pasir in the mouth Kandilo River, Pasir, southern East Kalimantan (they collected 350 nos.). On 10 September - 15 October 1980 Johanis P. Mogeia and party made an exploration in Kong (Mt.) Kat (1950m), and its vicinity which forms a continuous range with G. Menyapa (1050 m). 346 nos. herbarium specimens and 34 nos. of live plants were collected.

From 7 to 27 February 1980 SOEDARSONO RISWAN (Bogor) and party continued their ecological studies at the Wanariset Field Station (of the Forest Research Institute), 38 km from Balikpapan. During this period 17 nos. of general herbarium specimens, 612 nos. of vouchers and 83 nos. live specimens (including fruits and seeds) were collected. On 10 September - 3 October they revisited the area and collected 70 nos. herbarium specimens and 656 vouchers.

On 16 February - 30 March 1980 TATANG KUSWARA and AGUS CAHYONO (Bogor Botanical Garden) visited the district of Dusun Hillir, Katingan and Bukit Batu, Central Kalimantan, and collected 103 nos. herbarium specimens, 30 nos. live palms (9 genera), 84 nos. live orchids and tubers and fruits.

SETIJATI SASTRAPRADJA (Director of LBN), SOENARTONO ADISOEMARTO (Head of Museum Zoologicum Bogoriense) and LUKITO DARJADI (Director of PPA) visited Tanjung Puting Nature Reserve (Biosphere Reserve) on 3-8 May 1980. The visit was made in the framework of improvement and development program of Natural area reserves.

On 17-30 March 1980 MADE SRI PRANA and ZAMRONI of the Bogor Botanical Garden made a trip to G. Sarantak (Kabupaten Singkawang) and G. Bunga (Kabupaten Ketapang), West Kalimantan to collect live specimens of orchids, tubers, and fruit plants (188 nos.).

JEAN HANSON of the Treub Laboratory and IRAWATI of Bogor Botanical Garden visited G. Senjuju, Danau Sepedang, G. Pemangkat, G. Tanjung Gung and Danau Pitpo Lunau in West Kalimantan on 2-15 January 1980. They collected living specimens of orchids (202 nos.), ornamental plants (21 nos.), legumes (18), fruit plants (48), ginger (22), vegetable species (6), mosses (10), and herbarium specimens incl. fungi (28 nos.).

In the East Kutai Reserve, MARK LEIGHTON and his wife DEDE, from the Department of Anthropology, University of California, Davis, did

ecological field work during the years 1977-1979. They were based in a camp near the junction of Sengata and Mentoko Rivers, studying relations between fruit-eating animals (mainly monkey and hornbills) and the plants supplying them.

#### Sabah News

University of Aberdeen Expedition to Mount Kinabalu 1981 - During the summer vacation four undergraduate students from the Departments of Botany and Zoology visited Mount Kinabalu National Park in Sabah, East Malaysia, for a period of eight weeks. The object of this visit was to gain experience of tropical flora and fauna. Although most of the time was spent on the mountain in the oak-chestnut zone above 5000', visits were also made to Dipterocarp forest and mangrove communities on the coast. The group also visited the Orang-utan Rehabilitation Centre and the Sabah National Herbarium, both near Sandakan.

Specific projects were undertaken by each student, including the biology of *Agalmyla* spp. (Gesneriaceae); the physiognomy of oak-chestnut montane forest; avian-diversity and the composition and mixed-species flocks; and aspects of tree-shrew biology. The visit also provoked thoughts on the biogeographic problems posed by Mount Kinabalu. Some of the information gathered by the expedition may be helpful in the production of educational guides to the National Park, soon to be prepared by the Park Ecologist.

A full report of the expedition will be issued in due course, and it is hoped that this visit will encourage future visits and exchanges between Aberdeen and Malaysia.

#### Sarawak News

For the last year or so, MS. FATIMA FERENTINOS has been living near Kapit, Sarawak, and learning Iban styles of weaving. Previously she has worked in several parts of Indonesia on the same topic, accumulating wide experience in this important aspect of Southeast Asian arts and crafts. Some of her work was supervised by Dr. Sarah Gill, and she is the author of Threads of Tradition (Lowie Museum, U.C.B.). She is anxious to correspond with other people with the same interests, and she will shortly be available in the U.S. to lecture and give demonstrations. She can be contacted at this address: P.O. Box 4112, Aspen, Colorado; telephone (303) 925-2082.

PETER METCALF is spending this academic year at the Southeast Asia Program, Cornell University, and has a book coming out in the fall of this year. It is called A Borneo Journey into Death: Berawan Eschatology from its Rituals, and its being published by the University of Pennsylvania Press, in the new Symbol and Culture series.

Five tours were made during 1980, to Tanjung Po, Tanjung Datu, Sungai Insungai, Hose Mountains, and Gununig Silantek. They yielded c. 1400 collections to the SAR-Herbarium, whence duplicates will be distributed.

RUTH KIEW, University of Agriculture, Serdang, Malaya, surveyed Semunsam Wildlife Sanctuary (for proboscis monkeys, in the 1st Division), collecting 102 nos. mostly of herbs and palms, for the UPM-Herbarium at Serdang and SAR.

The Biological Centre in Sarawak, Senengoh Arboretum, at the 12th mile from Kuching, now contains c. 1500 plant species, half of them orchids. Stocking with rare species from Sarawak is continuing.

#### BOOK REVIEWS, ABSTRACTS & BIBLIOGRAPHY

Hanbury-Tenison, R., Mulu / The rain forest, xi+ 176 p., 2 maps + 45 phot. (1980, Weidenfeld & Nicolson, 91 Clapham High Street, London SW4 7TA). Cloth, £ 8.95 in U.K.

When working up the Rejang in 1958, I had the good fortune to read O. Beccari's Wanderings in the Great Forests of Borneo (Italian 1902, English 1904) and was captivated. He explored Sarawak as a naturalist from mid-1865 through 1867; I think he would have been delighted to read this book, which kindled so many memories of Borneo. It reflects similar keenness and ingenuity, it too evokes that sublime happiness the biologist experiences when he realizes: the richest rain forest on earth surrounds me.

Beccari, almost singlehandedly, collected very many plants and a considerable amount of animals. The Mulu crew totalled 115 scientists, who were supported by a special team to arrange things, a rather new concept in expedition organization. It lasted 15 months, the largest, longest, most productive Royal Geographical Society expedition.

The expedition, flown by the Royal Air Force, generated a wide array of contributions, conducted in a spirit of humour and no nonsense, stands out in what as a Dutchman I regard as the best of the British tradition, that funny mixture of war and peace.

The set-up is described in 54 pages, the findings in 78, in refined blends of facts and viewpoints. In a most instructive (and almost lighthearted) way the essentials of the methods through which a rain forest if studied are revealed; this alone makes the book an asset. The history of the project is described, the way up the rivers Baram and Tutoh, topography, the Caves, of course, the rain forest and its ecology, the mammals (their movements radio-tracked) and birds, the reptiles,

amphibians, fishes and insects, and finally the concept of the Park. Author is chairman of Survival International, and his pages devoted to the Penans are outstanding. Their future as tribal people who live off the forest is in jeopardy; their problems, discussed in very careful, considerate, sensible reasoning, may not be insoluble.

Gunong Api, with 1625 m the highest limestone summit between Thailand and New Guinea - limestone in layers 2100 m thick with unbroken series of fossils - owes its name to surface fires in its top area, probably caused by lightning. No orang-utans, rhinos or big cats have been sighted, but 262 sp. of mammals have, 2/3 of the Bornean fauna. Good stories include a python meal for Christmas (p. 122), and Dr. B. H. Kiew seeing a £ 10 million market for frogs' legs (p. 123). However, the whole book, through cleverly interspersed ecological observations and pleas, splendidly conveys the cause of conservation.

It makes easy reading while packing rich stories in a few sentences: "Married couples were much teased during relatively dry periods when the deafening sound of torrential rain on the tin roof was not heard for nights on end" (p. 42).

"The Medalam, down which we now floated and poled our way, has a quite different character from the Melinau. Instead of curling along under a limestone wall, trees meeting overhead to form a tunnel and with sandy bars and muddy inlets, the Medalam is a big, clear, boisterous river full of rocks and gravel beds. Fine trees line the banks, many with a red peeling bark like eucalyptus, and the open reaches were wide and deep. Rafting is the best way to travel a river, even though the Medalam had a few daunting rapids where we were nearly swamped; silently we drifted for two hours beyond the last boundary of the park at Long Mentaway seeing things a motor would have disturbed; a five-foot monitor lizard draped asleep in the sun over a submerged log; a green heron standing motionless gazing into the water; striped squirrels playing on a branch" (p. 57).

When the expedition came to an end, all traces in situ were wiped out. Yet the marks have been made. After a RGS expedition had studied a forest in the Mato Grosso, Brazil, the whole site was destroyed for 'development' (p. 148); the Sarawak Government is more likely to keep the Mulu National Park as the treasure it is; the Management Plan for 5 years has indeed been accepted. The eyes of the world are on it. (M. Jacobs Flora Malesiana, pp. 3608-9).

#### Subsistence Strategies Among Rainforest Swidden Agriculturalists: The Kantu' of West Kalimantan

Michael Roger Dove, Ph.D. Dissertation, Stanford University, 1981

This is a study of subsistence strategies within a system of swidden agriculture. It is based on two years (1974-1976) of research among the tribal Kantu' of West Kalimantan, Indonesia. The study commences with

an introductory chapter which gives an overview of the Kantu', their environment, and the methodological and theoretical background to the study. This is followed by a detailed exegesis and analysis, in separate chapters, of each phase of the Kantu' swidden cycle, comprising (1) selecting the swidden site, (2) slashing the rainforest, (3) felling it, (4) burning, (5) planting, (6) weeding, (7) guarding, (8) harvesting the rice, (9) carrying in the crop, (10) harvesting the non-rice cultigens, (11) making field houses, and (12) making swidden tools. Then follows a chapter of summation and conclusion.

The primary intent of each chapter, in analyzing each stage of the swidden cycle, is to analyze the way in which the Kantu' employ this system of agriculture to adapt to, and thereby draw their subsistence from, the rainforest environment in which they dwell. This adaptation is especially focused on two basic characteristics of the rainforest ecosystem, namely its diversity and its uncertainty. These characteristics refer to the marked temporal and spatial variation in climatic, edaphic and biotic factors. The analysis demonstrates that the Kantu' cope with this uncertainty, and exploit the diversity, by means of a two-fold strategy. First, they maximize diversity both within and among each household's swidden system. Critical to this maximization is the farming of two or three separate swiddens, of different types (e.g., cut from primary forest versus secondary forest), by each household each year; also critical is the making of decisions, within each household's swidden system, in considerable independence of the decisions of the other households in the longhouse. Second, the Kantu' maximize the exchange of both labor and the product of labor (viz., grain) between households. The exchange of grain is a hedge against harvest uncertainty. The exchange of labor can also be a hedge, but it is more important as a means of overcoming the scheduling problems (viz., alternating periods of idle labor and over-taxed labor) which typically plague swidden agriculture.

This system of subsistence adaptation is not static. Oral historical data are included in the study and they show continuous change and adjustment in the subsistence system, by which means the Kantu' respond to changes in their social and political, as well as physical, environment.

The Kantu' adaptation to their environment involves not merely their subsistence but, in more general terms, their entire society. The local environment, and the nature of their adaptation to it, is the dominant, independent variable in Kantu' life. Many aspects of behavior that would not otherwise be glossed as "economic" are determined by these economic and environmental imperatives; and this is reflected in the cognitive schemata of the Kantu' themselves.

The Kantu' adaptation to their environment through the mechanisms of their swidden system is successful, if "success" is defined as the continued health of both the Kantu' and the environment. This argues for appreciation and utilization of the traditional knowledge of the Kantu' in efforts by the national government to preserve and/or exploit more intensively the rainforest environment.

Forestry activities and deforestation problems in developing countries, 115 + 63 + 16 p. (1980; Office of Science and Technology, A.I.D., Washington, D.C. 20523, U.S.A.). Offset.

A practically-minded report, for attention of all who are involved in aid to tropical countries. Forest-related problems there are far worse than is commensurate with ongoing programs, of which detailed overviews are given, tabulated in the 63-page Appendix. Stumbling blocks in receiving and donor countries (12 and 11 points) are frankly revealed (p. 34-37).

On 17 countries a case study is made; in our region these are Indonesia, Papua New Guinea, the Philippines, and Thailand. In a couple of pages generalities are set forth, forestry problems and activities, ecological impacts, constraints, successes, and failures. Useful information and conclusions are given in straightforward language. Appendix II lists donors. (Flora Malasiana 3579)

The tropical rain forest / A first encounter is the English equivalent of the Dutch title 'Het tropisch regenwoud / Een eerste kennismaking', by M. Jacobs, a circa 350-page book published by Coutinho, Badlaan 2, Muiderberg, The Netherlands, in September 1981. The price is about Dfl. 45.

Although the book concentrates on the Malay Archipelago, it covers the big rain forest blocks of Amazonia and Africa, in examples, and comparative notes. Illustration is mostly by diagrams, but a fair amount of black/white photographs are also given. The book differs from the one by T. C. Whitmore, Tropical rain forests of the Far East (1975) in being less technical, and concentrating more on the true rain forest and less on adjoining types. It hopes to convey a more comprehensive understanding of this kind of ecosystem and its problems, and by pointing to important publications, to provide an inroad for further study.

Perhaps an English edition will be brought out later; if that happens, the title probably will be Rain Forest for Beginners (Flora Malasiana 3574).

Myers, Norman, Conversion of tropical moist forests, ix + 205 p. (1980, National Academy of Sciences, Office of Publications, 2101 Constitution Avenue, N.W., Washington, D.C. 20418, U.S.A.). Also Castle House, 27 London Road, Tunbridge Wells, Kent TN1 1BX, England. Price £ 8.10.

The best-proportioned overview of deforestation, in considerable detail. After a brief account of the methods followed in the estimates, definitions are discussed. Then the factors are examined, with their share in deforestation: forest farmers, the timber trade, cattle raising in tropical America, firewood cutting; with a chapter on monitoring the 61-page general part ends. In 3 regional reviews, for each country (46 in all)

the situation is set forth, with facts, causes, and expectations; the 15 countries in our region are covered on p. 62-116. Summarizing tables are interspersed in the running, well-balanced and well-readable text.

Justice is done to the variety in the patchwork of destruction, yet at the end, some simple predictions are given. Rapid conversion threatens Australia, Bangladesh, India, Malaya, Melanesia, the Philippines, Sri Lanka, Sumatra, Thailand, Vietnam (forests largely gone by 1990); those in Kalimantan finished by 1995, Sabah and Irian Jaya by 2000 - all "if not earlier". Through 'moderate conversion' much of Burma's lowland seasonal forests, and of Papua New Guinea's forests, will be gone by 2000. (The expectations for Africa and America are here left out. Some areas there are believed to remain intact longer; there are no such areas in Malesia.) Documentation comes from c. 400 references (Flora Malesiana 3579-80).

Perry, Lily M., Medicinal plants of East and Southeast Asia. Attributed properties and uses (with the assistance of Judith Metzger), 620 p.; 4<sup>o</sup> (1980, The MIT Press, Cambridge, Mass., U.S.A.). Price: c. DM 150.

This alphabetically arranged compilation of medicinal plants covers an area from China and S. Korea southwards to Java and eastwards to New Guinea and the Solomons; whatever was found about Burma and Thailand was included, but not India. Data are from the extensive literature, while some notes were taken from herbarium field notes (PHN, CCC, NGF). Under each species there is a clear factual evidence; sources are indicated. The Latin plant names are those in current use; where necessary, synonyms are cited. There is a valuable index to attributed therapeutic properties arranged by uses in about 100 categories. Literature has been digested up till 1961.

Though there are several excellent works on useful plants containing data on medicinal plants (Burkill, Heyne, Quisumbing, etc.) the compilation is extremely useful and Miss Perry must be warmly congratulated with this highly appreciated effort which took her 20 years to assemble and which she had the privilege to see in print at her 85th birthday. (Van Steenis Flora Malesiana 3577).

Proceedings of the U.S. Strategy Conference on Tropical Deforestation, 78 p. (1978, Office of Environmental Affairs, Room 7820, Dept. of State, Washington, D.C. 20520, U.S.A.). Excellent, business-like report of a broad-based conference. It confronts "an extremely serious problem with immediate and long-range socio-economic and ecological consequences as the result of the accelerating loss of forest and vegetative cover in the humid and semi-arid lands within or near the tropical latitudes" (p. 3). In 41 points, conclusions and recommendations are set forth, based on brief statements by participants. One case in point is the discharge of soil into the Panama Canal, result of deforestation by settlers on the watershed. Landsat has revealed that not 55% of the Philippines is under forest, as the government has presumed, but 39% (p. 42). However, "As long as the areas cleared for agriculture are not too large, the forest will be able to

regenerate itself after the shifting cultivators move on" (p. 46). This comes from L. Huguet of FAO, who of course concludes "Is the situation desperate? I don't think so because there are ways to integrate forestry in agriculture". Will the last optimism die with the last tree? But on the whole, the field is well and sensible covered; this booklet is the best to inform executives briefly and convincingly of the seriousness of the situation. (Flora Malesiana 3579).

The world's tropical forests: a policy, strategy, and program for the United States, 53 p. (1980, Dept. of State publication 9117, sold by Superintendent of Documents, Printing Office, Washington, D.C. 20402. U.S.A. Stock no. 044-000-01769-5). This document came in the wake of the former; it states the problems in concise form (p. 2, 9, 12, 14, 15, 17-19, 21, 22), and explains what the United States - and other nations, also international organizations - can do about them. A list of various agencies is on p. 27-33. Strategy and program (p. 41-50) are of broad coverage and well-conceived; they deserve close examination and wide support.

Two agencies took up the matter in an impressive way. The one is the U.S. Agency for International Development (A.I.D.). It produced a report which comes next. The other is the National Academy of Sciences, which appointed a Committee on Research Priorities in Tropical Biology, under chairmanship of Dr. Peter H. Raven, Missouri Botanical Garden, Box 299, St. Louis, Mo., U.S.A. This 14-member committee held panels on Asian ecosystems, other ecosystems, human ecology, limnology, and plant physiological ecology. It sponsored the 4th and 5th publication in our series. (Flora Malesiana 3579).

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