

BORNEO RESEARCH BULLETIN

Vol. 13, No. 1

April 1981



Notes from the Editor: Reports on Current Field Work; Contributions for the Support of the Borneo Research Council	2
--	---

Research Notes

Research in East Kalimantan on Interactions between People and Forests: A Preliminary Report	3
Why Do Apo Kayan Shifting Cultivators Move?	16
Some Consonantal Sound Changes in the Kadazan Dialects of the Penampang, Papar, and Beaufort Districts of Sabah, Malaysia	33

Brief Communications	47
--------------------------------	----

News and Announcements	49
----------------------------------	----

Borneo News	56
-----------------------	----

Book Reviews, Abstracts, and Bibliography

Colin N. Crisswell: <i>Rajah Charles Brooke: Monarch of All He Surveyed</i> (R. H. W. Reece)	59
Luping, D. M., W. Chin, and E. R. Dingley, eds.: <i>Kinabalu: Summit of Borneo</i>	62
Nababan, P. W. J.: <i>Languages of Indonesia</i>	63
Nicolaisen, Johannes: <i>Penan Death-names</i>	64
Nyandoh, R.: <i>Bidayuh Gawai Mpijog Rantau Festival</i>	64
Rousseau, Jerome: <i>Kayan Stratification</i>	64
Rubenstein, Carol: <i>The Honey Tree Song: Poems, Chants, and Epics of Sarawak Dayaks</i>	64
Sandin, Benedict: <i>The Pelian Bejereki: Iban Rite of Spirituality Fencing an Expectant Mother</i>	65
Sather, Clifford: <i>Iban Folk Mycology</i>	66
Bibliography	66

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

Reports on current field work dominate this issue, and are encouraging. During the late 1970s there was a decline in proportion of such reports, and an increase in the proportion of contributions based upon work completed a year or more prior to publication, analyses of literary sources, or discussions of issues addressed in earlier volumes. Lest these remarks be misunderstood or misconstrued as ungracious, let me hasten to note that the change was inevitable and, perhaps, even desirable. For a variety of reasons there was a smaller number of researchers in the field, and we had an opportunity to reflect upon and consolidate hypotheses and conclusions. Publication of one's materials after leaving the field is usual. Review and reinterpretation of one's materials are important. And analyses and syntheses of published materials, as well as exchanges based upon differences of opinions, are essential aspects of scholarship. We are indebted to those scholars who enhanced the Bulletin and enriched its readers throughout the 1970s.

Volume 13 seems auspicious in the number of reports treating current and continuing research. In addition to materials appearing here, we have received articles by Carol J. Pierce Colfer, Andreas Massing, and Joseph Weinstock for the next issue. We invite prompt submission of field reports, and encourage the contribution of all types of materials.

We had intended to publish a "List of Fellows" in this issue, but have decided to delay it until September in order to accommodate the research reports which appear here.

Our gratitude is expressed to the following persons who have made financial contributions for the support of the Bulletin: E. K. Adams, Martin Baier, Ian Baillie, Ruth Carol Barnes and Richard C. Fidler, Paul Beavitt, Stanley Bedlington, E. J. H. Corner, Barbara Harriison, Stephanie Morgan, Christine Padoch, Ifor B. Powell, Mr. and Mrs. Paul Sack, William Schneider, Richard Shutler, Barbara B. Smith, Orville Smith, John Sutter, Carol and James Warren, Peter Weldon, and William Wilder.

THE BORNEO RESEARCH COUNCIL

The Borneo Research Council was founded in 1968 and its membership consists of Fellows, an international group of scholars who are professionally engaged in research in Borneo. The goals of the Council are (1) to promote scientific research in Borneo; (2) to permit the research community, interested Borneo government departments and others to keep abreast of ongoing research and its results; (3) to serve as a vehicle for drawing attention to urgent research problems; (4) to coordinate the flow of information on Borneo research arising from many diverse sources; (5) to disseminate rapidly the initial results of research activity; and (6) to facilitate research by reporting on current conditions. The functions (continued on p. 6

RESEARCH NOTES

RESEARCH IN EAST KALIMANTAN ON INTERACTIONS BETWEEN PEOPLE AND FORESTS: A PRELIMINARY REPORT

Andrew P. Vayda
Cook College, Rutgers University

Because of the rapidity with which social and ecological changes are occurring in East Kalimantan (Daroeman 1979, Kartawinata et al. 1978), it has become urgent to make forest management in the province more effective and to combine it with development that benefits the people who live in or by the forest and use it. Policymakers attempting to achieve these objectives have been handicapped by the lack of information on existing uses of forests by people in East Kalimantan. The U.S.-Indonesian MAB (Man and Biosphere program) project on "Interactions between People and Forests in East Kalimantan," supported by funds from the U.S. Forest Service and the U.S. Agency for International Development and administered by the Environment and Policy Institute of the East-West Center, was intended to provide such information. More specifically, research undertaken in the project was intended to show: (1) the range of people's forest-related knowledge; (2) their repertoire of forest-related activities; (3) the variety of situations in which decisions to engage in those activities or to change them are made; and (4) the environmental and socioeconomic effects that the activities have.

Three main locations were chosen for the research because of the opportunities they afford for studying significant variations in shifting cultivation and other forest-related activities and in the conditions under which they are practiced. The two locations to which two American investigators, Timothy C. Jessup (Graduate Program in Ecology, Rutgers University) and Dr. Carol J. P. Colfer (University of Hawaii at Manoa), and one Indonesian investigator, Drs. Herwasono Soedjito (Herbarium Bogoriense, Bogor), were deployed in September and October of 1979 are: (1) the remote interior plateau called the Apo Kayan, which is the home of nearly ten thousand Dayak people living in longhouse communities, possessing a wealth of forest-related knowledge, and practicing an apparently stable, long-fallow, forest-maintaining form of shifting cultivation; and (2) the Telen River lowland area, where settlements of migrants from the Apo Kayan were established prior to the post-1967 timber boom and where the subsequent granting of timber concessions has led to further changes in the physical and socioeconomic conditions to which migrants are adapting. Soedjito ended his field work in July 1980 and Colfer ended hers in September of that year, but Jessup is remaining in the field in the Apo Kayan until at least June 1981.

The third main location was the vicinity of East Kalimantan's booming capital city of Samarinda. Initial work here, consisting of reconnaissance trips and surveys by me and students of Mulawarman University, began in October 1979. A supplement from the U.S. Agency for International Development to the original U.S. Forest Service project grant enabled four Indonesian human ecology trainees, Drs. Syamsuni Azman (Tanjung Pura University, Pontianak), Ir. M. Brotokusumo (Mulawarman University, Samarinda), Dr. G. M. Hatta (Lambung Mangkurat University, Banjarbaru), and Drs. A. Sahur (Hasanuddin University, Ujung Pandang), to begin intensive research in the Samarinda vicinity in March and April of 1980 for approximately five-month periods. A fifth Indonesian human ecology trainee, Dra. Harini M. Sangat (Herbarium Bogoriense, Bogor), joined the Apo Kayan research team for eleven weeks beginning in May 1980.

In addition to the investigators at these locations, another American investigator, Nancy Lee Peluso (formerly at Gadjah Mada University, Yogyakarta), was engaged in research from October 1979 to July 1980 in selected forest, village, and urban locations where the so-called minor forest products are collected or traded and along the riverine and land trade routes by which they are transported. As a senior research associate of the project, Dr. Kuswata Kartawinata (head, Herbarium Bogoriense) visited all of the research locations and held consultations with all investigators. As project director, I myself made several visits to the locations from my base in Samarinda and frequently exchanged letters with the more remotely located investigators regarding their research. Face-to-face consultations between me and the investigators in the Samarinda vicinity were easier to arrange and occurred one or more times per week. Much of my time was devoted to administrative aspects of the project.

Given the limited time and funds available in the project, the rapidity and uniqueness of change in East Kalimantan, and the lack of previous work to build on, the investigators did not concentrate on obtaining findings as a result of highly rigorous and quantitative studies. Instead they resorted mainly to ad hoc combinations of qualitative and quantitative methods to discover and analyze important processes and systems that are operating in East Kalimantan (cf. Hill 1970; preface and Chambers 1980 on what the latter calls "quick-and-clean" methods of rural research). The project is, however, providing a foundation for more specialized and rigorous studies. A proposal for such studies in the Apo Kayan has already been submitted (Vayda with Jessup 1980).

Unlike some other human ecologists (e.g., Boyden 1979), the investigators also did not undertake to observe and describe comprehensively the lives and interactions of the people studied. Instead, they concentrated their attention on particular activities that affect or can affect the forest and on the causes and effects of those activities.

The approaches used by the investigators have already served to produce some findings important for development planning. Thus the work in the Apo Kayan has shown that, contrary to assumptions prevailing among East Kalimantan development planners, the Dayak people there, rather than uniformly being dangerously nomadic destroyers of the forest, vary in their mobility from time to time and from village group to village group and make most of their

ladangs (swiddens) in previously farmed sites left in fallow long enough for forest regeneration. The work in the Telen River lowland area has shown that, contrary to government hopes and expectations, land use by some Dayak shifting cultivators "resettled" with the aid of government subsidies is not less but more extensive than in the Apo Kayan homelands (where chainsaws and outboard motors are not readily available) and does more damage to the forest.

The work in the Samarinda vicinity has shown that felling logged over forests--the completion of a process of forest destruction begun by the timber companies--is not always by such poor, subsistence-oriented, land-hungry farmers as have been called "shifting cultivators by necessity" in other parts of the world (Watters 1971); often it is by city-based merchants, government employees, and professional people seeing investment opportunities and by commercially oriented interisland migrants such as the Bugis pepper-farmers, seeking not mere subsistence but rather wealth enough to be able to advance themselves socially by such means as making the pilgrimage to Mecca. And the work on the trade in minor forest products has shown that, contrary to recommendations often made, benefits to the collectors cannot be readily increased at the expense of the traders.

Some details about research activities and findings at the various locations and some suggestion of the significance of the findings follow.

I. The Apo Kayan. Research in the Apo Kayan was concentrated in the Kenyah Dayak village of Long Sungai Barang (Sai Barang) and its hilly environs, a mosaic of primary forests, secondary forests of different ages, *ladangs*, and settlement areas occurring on soils ranging from podzols and latosols to andosols and more complex mountain soils. The population was close to 2,500 in the 1960's, but migrations to the lowlands, mainly for the sake of better access to trade goods such as salt, kerosene, and steel tools, have reduced it to a present size of about 370.

Jessup's work in Sai Barang consisted of informal interviews, visits to village households and rice fields, and day trips accompanying men and women to their present *ladangs*, old fields, secondary forest (or "old old" fields), and primary forest, as well as systematic collection of census information, time allocation data, and land use histories extending back to the first occupation of Sai Barang by the present Ma'Tukung village-group forty years ago. His work was complemented by that of Soedjito, who systematically sampled and collected specimens from *ladangs*, orchards, and forests in Sai Barang in order to determine their structure and species composition. He and Sangat also recorded the people's use of plants for tools and utensils, for medicine (some 40 different species used), for food (at least 142 different plants, including 67 wild species), for handicrafts (43 wild species), and for building houses and bridges. A number of apparently new species, including several species of domestic fruit trees, were discovered by the investigators. Before our project, the only botanical collecting from the area had been done by the Nieuwenhuis expedition of 1900 (Steenis-Kruseman 1950; Kartawinata et al. 1981b).

The research in Sai Barang and elsewhere in the Apo Kayan is continuing. Among the findings important for the follow-up investigations that have been proposed (Vayda with Jessup 1980) are these: (1) As already noted, most *ladangs* are made in secondary forest; this is true even where primary forest is easily accessible, as in the case of recently established villages. (2) Some of the secondary forest now being used for shifting cultivation was first cleared (converted from primary forest) as long as a century ago, perhaps even earlier. (3) Although some primary forest is still being cleared, the rate of abandonment of old secondary forest (as the result of emigration from the Apo Kayan) is greater than the rate of clearing in primary forest; therefore the extent and average age of secondary forest have been increasing. (4) The landscape in the vicinity of such villages as Sai Barang from which there has been substantial emigration in recent years includes a zone of active shifting cultivation extending no more than about five kilometers from the village and a larger, more distant area composed of patches of secondary forest varying in age from ten to more than 100 years.

Landscape exhibiting this pattern are now rare in Kalimantan or, for that matter, anywhere in the tropics because such factors as population increase and the advent of timber companies, commercial plantations and ranches, and peasant migrants have led elsewhere to a rapid re-conversion of any available secondary forest patches, either by the indigenous shifting cultivators or by others (Myers 1980). The Sai Barang pattern, however, is representative of conditions which were more common in tropical forests in the past and which have certainly been an important factor in the distribution and structure of many so-called "primary" forest ecosystems (Fosberg 1960; Hartshorn 1980; Padoch and Vayda in press). The Sai Barang area is therefore of theoretical interest for the study of ecosystem or landscape development in tropical forests, as well as having practical significance for the design of conservation areas or reserves within which primary forest species can recolonize secondary forest patches while a diversity of habitats to which different species are adapted is maintained (cf. Foster 1980, Gilbert 1980, Pickett and Thompson 1978).

With respect to the design of reserves and the planning of tropical forest management systems, it is noteworthy also that the investigations of the history of shifting cultivation, migrations and changing population densities in the Apo Kayan (Jessup 1981) have revealed dynamic adjustments to changing environmental, social, and economic pressures on the part of the Kenyah people who live in--or have lived in--that isolated region. There has been a great diversity of mobility patterns within and between village groups and between different historical periods over the last two centuries. Some groups, in some periods, have moved as frequently as once every six to ten years, while others have lived in the same village for 150 years. Villages have split, and the "daughter" villages have, in some cases, gone their separate ways, to Sarawak or down the Mahakam River; some have rejoined with people from the parent village; still other groups join people from a separate village group, even other ethnic groups.

Moreover, migrations vary in size and speed as well as in frequency: in the 18th century thousands of Kenyahs entered the Apo Kayan from the northwest, as thousands of Kayans were leaving in virtually all directions.

Between 1965 and 1975, thousands of Kenyahs emigrated to the Mahakam River and the lower Kayan; others moved across the border to Sarawak. But all through the 19th century village groups moved. The reasons for moving are, like the resultant migration patterns, diverse (Jessup 1981). Internal social and ecological processes have played a part -- competition for land, warfare, status rivalries, and the maintenance of kinship ties, for example -- as have external influences and perturbations, such as the institution of a Dutch colonial administration in the early 20th century, the Second World War, and, most recently, the oil and timber booms of the 1970s. Given the diversity and fluidity of land use and settlement patterns in the Apo Kayan during the last two hundred years, it is perhaps remarkable that one of the first impressions an ecologist receives on visiting the area is the apparent stability of the "forest-farming" ecosystem (Kartawinata et al. 1978, 1981b) -- or, if not stability, at least a form of dynamic harmony between people and their forest environment.

The combination of this impression of harmony or stability and the evidence of dynamic adjustments by the Kenyahs suggests that viable tropical forest management systems need not be formulated in static terms, nor even on the basis of carefully programmed changes, but rather can give scope to the kind of flexible and adaptable human behavior which we are finding in the Apo Kayan.

II. Long Segar. This Telen River lowland community of some 1,000 "resettled" Kenyah Dayaks from the Apo Kayan is located on an alluvial plain in Kecamatan Muara Wahau. Participant observation of forest-related activities was Colfer's main work here, supplemented by informal interviews, *ladang* measurements, and the systematic collection of census data, land use histories, and data on time allocation, diet, and health and on generational differences in forest-related concepts. For a month, comparable data were collected by her in Long Ampung, the Apo Kayan village whence most of the Long Segar Kenyahs had migrated. To facilitate making Apo Kayan-Telen River comparisons, Soedjito joined Colfer for two months in Long Segar to conduct studies similar to those pursued by him in the Apo Kayan.

In our original research proposal and in an already published description of the project (Vayda et al. 1980), three models of the economic behavior of rural and tribal people were set forth, and the research in Long Segar has borne out the appropriateness of the third model, emphasizing economic rationality and continuing responsiveness of changing circumstances, rather than the other two models, emphasizing traditionalism and stagnancy. The Long Segar people have been quick to adopt chainsaws, outboard motors, and other new tools and techniques that could benefit them economically, both in *ladang*-making and in free-lance woodcutting for making *balok* (beams) for sale. They have also found ways to undertake experiments with new crops like cloves and pepper well before the government resettlement agency (Respen) provided seeds or seedlings. At the same time, the people have been "wise rejectors" of animals requiring daily care and other proffered innovations that would have interfered with their attending to necessary tasks in the annual round connected with swidden agriculture. They have tended also to reject Respen's emphasis on "modern" single-family houses

as a necessity for their well-being, and some Long Segar Dayaks have even sold the handsaws, hammers, measuring tapes, and nails provided by Respen for house-building and have applied the sale proceeds towards the purchase of chainsaws and outboard motors. (For more details of the adoptions and rejections noted in this paragraph, see Colfer et al. 1980; on the concept of the "wise rejector," see Helleiner 1975:49.)

Beneficial as the exercise of economic rationality has been for raising the people's standard of living, it cannot be said to have been unfailingly good for the forest. The familiar conflict between what is ecologically desirable in the long run and what is economically desirable in the short run--a conflict largely absent from the Apo Kayan--does obtain in Long Segar. The "ecological wisdom" of the Kenyahs in the Apo Kayan apparently gets lost in Long Segar's new technological and commercial environment. The people have been cutting primary forest rapidly to make *ladangs*. Apparently because of poor soil and also because of being able to market surplus rice (for which the markets are lacking in the isolated Apo Kayan), the people have made these *ladangs* much larger than those in the Apo Kayan. And, with the passage of years since the first settlement of Long Segar in 1964, they have had to go farther and farther from their village to find suitable primary forest for the *ladangs*. This extensive mode of land use has been facilitated by labor-saving machinery, including the chainsaws and outboard motors. A main *ladang* area cleared and planted in 1979 measures approximately 300 hectares and is 5 or 6 km. upriver from Long Segar. Reversion of such vast fields to forest is likely to be difficult and there is accordingly a danger that the Long Segar shifting cultivators, unlike the sometimes maligned Apo Kayan ones, are turning extensive areas of forest into unproductive *Imperata* grasslands. Indeed Soedjito found mainly grasses, climbers, and ferns and not many seedlings of woody species in areas where the Long Segar people had recently made large *ladangs*. When primary forest is no longer readily accessible to the people (and this condition may develop soon if current government plans to establish plantations just north of Long Segar and to move thousands of Javanese transmigrants into the area are realized), increased cutting of young secondary forest for *ladangs* in Long Segar and subsequent further land degradation will become likely.

III. The Samarinda Vicinity. Initial reconnaissance trips and surveys in the Samarinda vicinity involved looking for the forest-converting "shifting cultivators by necessity" previously referred to and hoping to find them in communities of poor farmers such as recent migrants from the island of Buton (Butung), which is near southeastern Sulawesi. Our preliminary investigations showed that most of these farmers were using hilly land that other people had converted from forest decades earlier. From this land, the farmers were obtaining rather poor yields of cassava, pineapples, and other crops--for sale in nearby city markets and for consumption by their own households whose members often included urban laborers. With the realization that these farmers had only weak interactions with the forest, attention shifted to unlicensed woodcutters, pepper-farming Bugis migrants, city-based owners of forest land, and other subjects with palpable impacts on the forest. Four of the Indonesian trainees who joined the project concentrated their research on these subjects.

Impacts of Bugis pepper-farmers on East Kalimantan forest can be clearly seen from the major Samarinda-Balikpapan road, which had been under construction for more than a decade and was finally opened to the public in 1976. Along about twenty-five kilometers of this road is the Loa Janan subdistrict, forest previously selectively logged by timber companies has been converted to pepper plantations by Bugis migrants both from elsewhere in East Kalimantan and from the homelands of the Bugis people in South Sulawesi. Some of these migrants had arrived in the 1960's, but most came in the 1970's. Help in getting settled and obtaining land was provided to later arrivals by kin and friends among the earlier settlers. In 1980 Sahur found 770 Bugis households with pepper plantations in Loa Janan, and he estimates that 1,170 hectares of logged over forest have been cleared for these plantations. The land use strategy of these pepper farmers is essentially that of Bugis migrants to other frontier areas of Indonesia. By this strategy, forest is cleared from land which is then planted with rice or other annual food crops from which the farmers subsist until the perennial commercial crop that they have also planted is ready to be harvested; after the perennial crop has begun to yield, the land is no longer used for food staples. (On this strategy among Bugis coconut-growers in Sumatra's coastal swamplands, see Lineton 1975; chap. 6 and Vayda 1980; interviews that Sahur and I conducted in April 1980 in Sulawesi indicated the same strategy to be operating among Bugis clove-growers in that island's frontier areas.) And like the Bugis rural migrants elsewhere, those along the Samarinda-Balikpapan road had gone there not in a desperate quest for sheer subsistence but rather in the expectation of having better opportunities away from home to advance themselves socially as well as economically. Sahur found that seventy of them had already become *haji*.

Like the Kenyah Dayaks of Long Segar, the Bugis pepper-farmers act rationally to achieve their goals. In doing so, however, they, again like the Long Segar people, engage in some practices that are environmentally damaging. These include the clean-weeding of the pepper plantations for the approximately ten years before decline in yields causes their abandonment. No fertilizers are used, and erosion and loss of soil fertility can be such that some sites of former pepper plantations become *alang alang* (*Imperata cylindrica*) grasslands and some others are no good for many years for growing any economically useful plants other than a few fruit trees.

It need not, however, be inferred from such observations that Bugis pepper farmers will be responsible for widespread environmental degradation in East Kalimantan, for Sahur's research suggests that Bugis migrants will increasingly move in other directions than to East Kalimantan's pepper-growing areas in the coming years because of declines in pepper prices, increases in clove prices, and the opening of new frontiers suitable for clove-growing in Central Sulawesi and elsewhere. The research nevertheless is significant for development planning in East Kalimantan insofar as it shows that Bugis migrations and land-opening are well organized processes whereby lands along new roads can quickly get at least temporarily settled (and environmental damage can result) if commercial crops can profitably be grown there. Plans, such as are currently being made in East Kalimantan, for new roads and for conserving forests along such roads clearly need to take the processes into account.

Among the activities studied by Hatta and Arman in the Samarinda vicinity was woodcutting as a commercial operation by people other than timber concessionaires. Some environmental damage results of course from this also. The woodcutting that was observed is, however, much less mechanized than either illegal timber operations elsewhere (e.g., in West Kalimantan as reported by Sacerdoti 1979b) or the logging performed by the approximately 100 timber concessionaires operating at present in East Kalimantan. Along the Samarinda-Balikpapan road, between fifty and sixty unlicensed woodcutting teams were at work in 1980, each equipped with a chainsaw and each consisting of a chainsaw operator and his assistant and two men to transport the sawn planks or beams from the cutting site to the roadside. This transporting was either by carrying on human shoulders or by skidding with a water buffalo. Transport of the wood from the roadside to sawmills was by trucks. Financing and provisioning of the woodcutting teams was by entrepreneurs of "bosses" in communities with sawmills. These bosses had recruited the chainsaw-operators, who then, generally on the basis of kinship, had recruited other members of the teams. Both bosses and workers were ethnically Banjarese.

Most of these unlicensed operations were in forests that had been selectively logged by timber companies within the last few years. Having been assigned to other MAB projects in East Kalimantan (Kartawinata et al. 1981a), direct investigations of the effects of mechanized logging were not part of our project. Hatta therefore used findings from other studies to compare the forest damage resulting from mechanized logging with the damage he found in a one-hectare sample area that had been subjected recently to unlicensed cutting by Banjarese teams but not to mechanized logging by timber companies. Only 25% of the standing trees were damaged in Hatta's sample plot, but about 50% were damaged in mechanized logging areas (Kartawinata 1978, 1980). If only crown and/or branch damage are considered, the figures are 15% and 41% for the sample plot and mechanized logging areas (Abdulhadi et al., in press) respectively. As for gaps in the forest, these could hardly be seen in the sample plot, whereas about 30% of mechanically logged areas is made bare by skid trails, haul roads, and logyards (Kartawinata 1978, 1980). In areas so disturbed, the desirable woody species that can grow are few and their rate of recolonization is generally slow (Kartawinata 1978, 1979). The compacting of soils by tractors and other heavy machinery constitutes further environmental damage where the timber companies operate (Hamzah 1978).

Woodcutting teams similar to those along the Samarinda-Balikpapan road were working along the road from Samarinda to Muara Badak, a coastal town 20 km. north of the mouth of the Mahakam River. Arman estimates that the number of teams in this area in 1980 was no less than 100, each with a chainsaw and each capable of producing half a cubic meter of wood per day. Arman, like Brotokusumo, had originally chosen as his research topic the processes whereby land cleared for agricultural use from logged over forest is acquired by urban entrepreneurs and speculators. Reference to the operation of these processes in East Kalimantan has been made elsewhere (Vayda et al. 1980), and some data concerning them were collected. As, however, the research progressed, it was found that many of the city-based entrepreneurs, including merchants and government employees, were interested less in profit from land speculation and absentee land ownership than in

profit from cutting and selling the timber on the land. This focus makes sense from a short-term profit-maximizing standpoint insofar as the poor soils of most of the forest lands in the Samarinda vicinity, like soils elsewhere in Borneo, can support herbaceous agriculture only for short periods. As one tropical forest ecologist has noted, "no sustainable low-input alternative crop has yet been devised for much of the land" (MDF (Mixed Dipterocarp forest) has previously occupied" (Ashton 1980; cf. Jacobs 1979). It may be that many forest-felling entrepreneurs recognize this, even if many agricultural development planners do not. In order to facilitate access to land from which timber could be cut, city-based entrepreneurs have even become members of the so-called Farmer Groups (*Kelompok Tani*) and Village Cooperative Units (*Koperasi Unit Desa*) which the government has been encouraging for the purpose of rural development. Along the Samarinda-Muara Badak road these groups were found to have obtained permits from the government to convert forest land to agricultural use and then to have concentrated on getting timber from the land. Some areas from which forest was felled by the groups were much larger than the areas planted--or apparently ever intended to be planted--by them. Rural residents among Arman's informants stated that woodcutting rather than farming was what kept them in the countryside. Conformably it was what attracted urbanites there.

It is important to maintain perspective on the research findings in the Samarinda vicinity. The pepper farmers and woodcutting teams that were studied have undeniably contributed to environmental damage in East Kalimantan. But they have contributed relatively little, partly because the scale of their operations has been small compared to that of the timber companies which have logged some 2.5 million hectares of East Kalimantan forest since the beginning of the timber boom in the late 1960's. Most of the companies profess to use the "Indonesian selective logging system," which is intended to combine forest exploitation with conservation; it is, however, generally acknowledged that the specifications of the system regarding the minimum size of trees to be cut and the number, spacing, and size class of residual trees to be left standing as core trees have rarely been heeded in practice (Kartawinata 1978; Sastrapradja et al. 1980). Moreover, even if the rules had been followed, it is not clear that they would have served to maintain forests without significant "genetic erosion" and species loss (discussed in Kartawinata et al. 1981a), for, as Ashton (1980) notes, no sound ecological basis for any selection system has yet been established. Indeed Ashton's data and arguments lead to the conclusion that "a selection system will rarely be successful in MDF, with the possible exception of parts of the Philippines where there are claimed to be major differences in stand structure." A further point is that both the pepper farmers and woodcutting teams studied in our project did most of their forest felling in logged over forest in the wake of the timber companies. The fact that such felling sometimes completes the destruction of forest should not be allowed to obscure the role of the timber companies in the process. A graphic statement of this point has been made by Ewel (1978): "To say that deforestation results from the action of the peasant farmers is analogous to saying that the vulture which struck the lethal blow killed the dying horse."

While warning against making such people as were the subjects in our project the scapegoats for deforestation, we must note also that what Jacobs (1980: 3428) has reproachfully described as "claims made on nature in the name of the poor people" cannot be readily applied to our subjects. Unlike forest-destroying farmers elsewhere, the subjects are not desperately poor people--not "rootless, landless people...squeezed from their homelands by unequal land tenure or population growth (and) struggling to make what living they can amidst unfamiliar ecological conditions" (Eckholm 1979: 18; cf. Ewel 1978; Raven 1981: 30). When our subjects engaged in activities causing environmental damage, it was, as a rule, because those activities seemed more profitable than any perceived alternatives and not because no other means of gaining subsistence for themselves and their families were available.

Taking a more positive view of these activities, we may note a role for some of them in case the predicted taming of the Indonesian timber industry's "cowboy mentality" (Sacerdoti 1979a) actually occurs. If pricing quotas, pressures for increased domestic processing, and generally stricter enforcement of the forestry agreements between concessionaires and the government reduce timber production and drive out some companies, the kind of woodcutting that Hatta and Arman studied may be combined with reforestation methods to have a legitimate place in contributing to supplies for domestic markets and for doing so in a way that brings some economic benefit to people in rural areas, makes use of their already demonstrated organizational and technological capabilities, and is considerably less damaging to the forest than are the mechanized operations of timber companies.

IV. The trade in minor forest products. How important minor forest products can become for agro-forestry development in East Kalimantan will depend not only on factors in the forest and in the communities of the primary collectors but also on the availability and nature of channels through which the products can be moved and marketed. Peluso studied these channels for nine months. The products whose trade she looked at most closely are commercial varieties of rattan, resins, edible birds' nests, aloe wood (*gaharu*, obtained in the Apo Kayan from *Aquilaria* species), Borneo ironwood (*ulin* or *Eusideroxylon zwageri*), and some rare and valuable smaller commodities such as bezoars and bear bile. The research featured the collection of statistical data from trading companies and stores and government offices, participant observation in the course of trading trips and collecting expeditions and interviews with current and former river traders, urban buyers and exporters, forest collectors, village shopkeepers, trade-boat and taxi-boat operators, missionary pilots, priests, and government officials. Various forms of the basic trading system, comprising forest collectors at one end, urban buyers at the other, and varying types and numbers of middlemen in between, were recorded. The conclusion tentatively reached is that the system does maintain an effective balance between the credit needs of collectors living far from capital-holding buyers of forest products, varying environmental constraints on supplies, and the fluctuations in world demand for various forest products.

Peluso was attentive to her research also to destructive and inefficient collecting and marketing activities, e.g., harvesting birds' nests before completion of the hatching cycle and, in the case of rattan, cutting canes too close to the shoots, harvesting immature canes, and unsufficiently drying the rattan before bundling or shipping it. Historical research suggests that difficulties in controlling the quantities and quality of the products harvested have recently increased as a result of the overall expansion of the trade networks. The following summary is from a report by Peluso (1980):

During the explosion of general economic prosperity at the time of *banjir kap* (the name for practices which were common at the beginning of the timber boom in the late 1960's and early 1970's and involved manually felling trees near the rivers and then floating the logs down), clever entrepreneurs had built boats or shops which they retained after the general trade in logs was restricted to timber companies approved by the central government.

Since that time, some of these relatively new entrepreneurs have limited their business activities to the sale of trade goods and foodstuffs; others have participated in the trade in minor forest products only when the prices for certain products have been particularly high; still others have taken on the trade in minor forest products as a regular occupation. The competition at all stages of trade has thus increased sharply and is even more pronounced when the urban prices of forest products rise significantly. At such times, the number of part-time river middlemen looking for lucrative deals also increases. Collectors gain more bargaining power in that there are more potential buyers of their forest products, but they do not make the best of this situation by trying to improve the quality of their products. Rather, knowing that someone will buy, they offer large quantities instead of high quality. Formerly, regular traders could enforce greater quality control over contractors with whom they had credit ties. In addition, there seemed to be more mutual respect among the traders in certain locales in regard to territorial rights--the rights to forest products collected by particular contractors and other debtors. However, control is becoming increasingly difficult as part-time or new entrepreneurs offer, for example, to pay cash for wet or dry rattan of any quality in order to break into the market. Regular traders subsequently accept low-quality forest products to protect their relationships with, and their investments in, their contractors.

Here again, short-term economic considerations are apparently being put ahead of long-term ecological ones. Peluso, like the other investigators, found that her subjects typically acted in what they considered to be their best interests. The problem is not one of ignorance. Collectors whose harvesting methods are destructive know, for example, the regeneration cycles of the varieties of rattan growing in their locales and the reproductive cycles of the swiftlets whose nests are taken. The fact is that the people's resource-destroying behavior brings quick profit to them and, since traditional controls over these resources (such as the sultan's

rights to certain valuable forest produce) have been eliminated, policies of harvesting as much as one can from a resource before somebody else gets to it gain ground inevitably. An important but often ignored implication of such findings is that education and propaganda will be insufficient to change people's behavior. Some way will have to be found to institute effective new controls in place of the lapsed traditional ones or some concrete and profitable alternative sources of income will have to be offered to those who are now acting destructively.

Acknowledgments. For their help and cooperation, I thank the institutions and individuals mentioned in the first four paragraphs of this report. Parts of the section on the Apo Kayan are drawn from a proposal prepared jointly by Timothy Jessup and me (Vayda with Jessup 1980).

Bibliography: Abdulhadi, R., K. Kartawinata, and S. Sukardjo, in press. "Effects of Mechanized Logging in Lowland Dipterocarp Forest in Lempake, East Kalimantan," in *Proceedings of the International Working Group on Dipterocarpaceae, Second Round Table Conference, Kuala Lumpur*. Ashton, P. S., 1980, "The Biological and Ecological Basis for the Utilisation of Dipterocarps," *Bio-Indonesia*, Vol. 7, in press. Boyden, Stephen, 1979, *An Integrative Ecological Approach to the Study of Human Settlements*, MAB Technical Notes 12, Paris: UNESCO. Chambers, Robert, 1980, "Understanding Professionals: Small Farmers and Scientists," IADS Occasional Paper, New York: International Agricultural Development Service. Colfer, Carol J. P., Herwasono Soedjito, and Albar Azier, 1980, "On Resettlement from the Bottom Up," in *Proceedings, National Resettlement Workshop, Samarinda, April 1980*, Jakarta, in press. Daroesman, Ruth, 1979, "An Economic Survey of East Kalimantan," *Bulletin of Indonesian Economic Studies* 15(3):43-82. Eckholm, Erik, 1979, *Planting for the Future: Forestry for Human Needs*, Worldwatch Paper 26, Washington: Worldwatch Institute. Ewel, Jack, 1978, Views submitted to State Department-AID Strategy Conference on Tropical Deforestation, June 12-14, 1978, Washington, D.C. Mimeographed. Fosberg, F. R., 1960, "Nature and Detection of Plant Communities Resulting from Activities of Early Man," in *UNESCO Symposium on the Impact of Man on Humid Tropics Vegetation, Goroka, Territory of New Guinea*, pp. 251-262. Foster, Robin B., 1980, "Heterogeneity and Disturbance in Tropical Vegetation," in *Conservation Biology: An Evolutionary-Ecological Perspective*, M. E. Soule and B. A. Wilcox, eds., Sunderland, Mass.: Sinauer. Gilbert, Lawrence E., 1980, "Food Web Organization and the Conservation of Neotropical Diversity," in *Conservation Biology: An Evolutionary-Ecological Perspective*, M. E. Soule and B. A. Wilcox, eds., Sunderland, Mass.: Sinauer. Hamzah, Zofri, 1978, "Some Observations on the Effects of Mechanical Logging on Regeneration, Soil and Hydrological Conditions in East Kalimantan," in *Proceedings of the Symposium on the Long-Term Effects of Logging in Southeast Asia (BIOTROP Special Publication No. 3)*, R.S. Suparto et al., eds., Bogor: BIOTROP, pp. 73-87. Hartshorn, Gary S., 1980, "Neotropical Forest Dynamics," *Biotropica* 12, supplement, pp. 23-30. Helleiner, Gerald K., 1975, "Smallholder Decision Making: Tropical African Evidence," in *Agriculture in Development Theory*, L. G. Reynolds, ed., New Haven: Yale University Press, pp. 27-52. Hill, Polly, 1970, *Studies in Rural Capitalism in West Africa*, Cambridge: Cambridge University Press. Jacobs, Marius, 1979, "A Plea for S.E. Asia's Forests," *Habitat*, August, pp. 8-12. _____, 1980, "Vanishing Species: Things Wrong Between Man and Nature," *Flora Malesiana Bulletin*, No. 33, pp.

3427-3431. Jessup, Timothy C., 1981, "Why Do Apo Kayan Shifting Cultivators Move? A Preliminary Report," *Borneo Research Bulletin* 13:1, pp. 16-32. Kartawinata, Kuswata, 1978, "Biological Changes after Logging in Lowland Dipterocarp Forest," in *Proceedings of the Symposium on the Long-Term Effects of Logging in Southeast Asia (BIOTROP Special Publication No. 3)*, R.S. Suparto et al., eds., Bogor: BIOTROP, pp. 27-34. _____, 1979, "An Overview of the Environmental Consequences of Tree Removal from the Forest in Indonesia," in *Biological and Sociological Basis for a Rational Use of Forest Resources for Energy and Organics: An International Workshop*, S.G. Boyce, ed., Asheville, N.C.: Southeastern Forest Experiment Station, U.S. Department of Agriculture, pp. 129-140. _____, 1980, "East Kalimantan: A Comment," *Bulletin of Indonesian Economic Studies* 16:3:120-123. Kartawinata, Kuswata, Andrew P. Vayda, and R. Sambas Wirakusumah, 1978, "East Kalimantan and the Man and Biosphere Program," *Borneo Research Bulletin* 10(1):28-40. Kartawinata, Kuswata, Soenartono Adisoemarto, Soedarsono Riswan, and Andrew P. Vayda, 1981a, "Human Impact on the Lowland Dipterocarp Forest in East Kalimantan, Indonesia," *Ambio*, in press. Kartawinata, Kuswata, Andrew P. Vayda, Timothy C. Jessup, and R. Sambas Wirakusumah, 1981b, "Pengenangan Cagar Biosfer sebagai Alternatif Pembangunan di Apo Kayan" (The Establishment of a Biosphere Reserve as a Development Alternative in the Apo Kayan), *Berita Ilmu Pengetahuan dan Teknologi*, Vol. 25, in press. Lineton, Jacqueline, 1975, *An Indonesian Society and Its Universe: A Study of the Bugis of South Sulawesi (Celebes) and Their Role within a Wider Social and Economic System*, Unpublished Ph.D. dissertation, School of Oriental and African Studies, University of London. Myers, Norman, 1980, *Conversion of Tropical Moist Forests*, Washington: National Academy of Sciences. Padoch, Christine, and Andrew P. Vayda, in press, "Patterns of Resource Use and Human Settlement in Tropical Forests," in *Structure and Function of Tropical Forests*, F. B. Colley and H. Lieth, eds., Elsevier Series on Ecosystems of the World. Peluso, Nancy Lee, 1980, Progress Report on "Trade in Minor Forest Products Sub-project," typescript. Pickett, S. T. S., and John N. Thompson, 1978, "Patch Dynamics and the Design of Nature Reserves," *Biological Conservation* 13:27-37. Raven, Peter H., 1981, "Tropical Rain Forest: A Global Responsibility," *Natural History* 90(2): 28-32. Sacerdoti, Guy, 1979a, "Indonesia at the Crossroads," *Far Eastern Economic Review*, November 30, pp. 63-66. _____, 1979b, "Where Timber is Booty," *Far Eastern Economic Review*, November 30, pp. 64-65. Sastrapradja, Setiati, Soenartono Adisoemarto, Kuswata Kartawinata, and R. C. Tarumingkeng, 1980, "The Conservation of Forest Animal and Plant Genetic Resources," *Bio-Indonesia*, Vol. 7, in press. Steenis-Krusenan, M. J. van, 1950, Note in *Flora Malesiana* 1(1):385-386. Vayda, Andrew P., 1980, "Buginese Colonization of Sumatra's Coastal Swamplands and Its Significance for Development Planning," in *Proceedings of the Jakarta Workshop on Coastal Resources Management*, E.C.F. Bird and Aprilani Soegiarto, eds., Tokyo, United Nations University, pp. 80-87. Vayda, Andrew P., with Timothy C. Jessup, 1980, "Shifting Cultivation and Patch Dynamics in an Upland Forest in East Kalimantan, Indonesia," Research proposal submitted to the "Consortium for the Study of Man's Relationship with the Global Environment," typescript. Vayda, Andrew P., Carol J. Pierce Colfer, and Mohamad Brotokusumo, 1980, "Interactions between People and Forests in East Kalimantan," *Impact of Science on Society* 30:179-190. Watters, R. F., 1971, *Shifting Cultivation in Latin America*, FAO Forestry Development Paper No. 17, Rome:FAO.

WHY DO APO KAYAN SHIFTING CULTIVATORS MOVE?

Timothy C. Jessup
Rutgers University Ecology Program¹

Introduction

One of the purposes of our research project on "Interactions between People and Forests in East Kalimantan" (Vayda et al. 1980)² is to provide useful information for development planners, including those involved with resettlement programs, about forest-related activities of shifting cultivators in different parts of the province. In this paper I will report on some observations I have made of shifting cultivation in the Apo Kayan, a remote interior plateau near East Kalimantan's border with Sarawak. I believe the question posed in the title of this report is an important one for resettlement planners to consider because it focuses attention on the relationship between a critical (and much criticized) aspect of land use - "shifting" from one field to another - and migration or resettlement on a larger scale, from one residence to another, a process which resettlement planners in Indonesia and elsewhere are interested in controlling. The question of "moving" also leads to a consideration of travel on a temporary basis for purposes of trade and employment, and the effects of such travel on more permanent migrations.

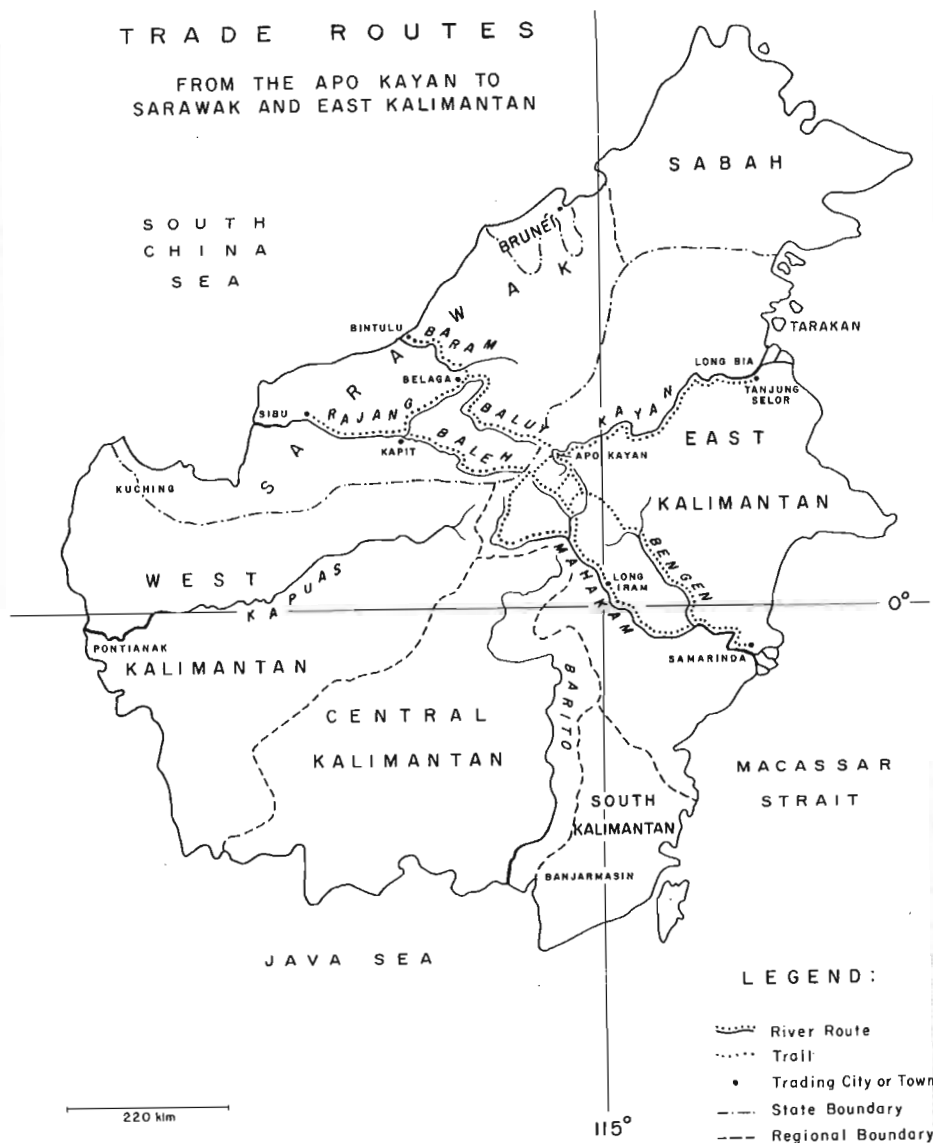
The approach we have used in our research has been to start by identifying particular human activities which affect or can affect the forest, and then to try to understand those activities through attention not only to the goals, knowledge, and resources which actors have, but also to the situations or contexts in which they act. The situations are not, however, defined at the start; rather, by tracing the relevant influences and effects of an activity outward, away from the actors and their immediate environment, we are able to discover which factors are significant for our understanding of the activity and its impact on the forest, and which can be left out of the analysis.

Theoretical confusions

The shifting of cultivation from one field to another is sometimes confused with moving residences or settlements - that is, a pattern of land use on a local scale is confused with migration on a broader scale of time and space. Hill called the former pattern "recurrent cultivation," a system which involves "individual farmers returning to cultivate their portions of land after fallow" (1970:15). Recurrent cultivation (which I shall still refer to as "shifting cultivation"), as it is practiced in many traditional, "forest farming" systems, combines a complex cropping system with sustained yield management of secondary and primary forest resources (Coklin 1954, Nye and Greenland 1960, Clarke 1976, Grandstaff 1978, Kunststadter et al. 1978).

TRADE ROUTES

FROM THE APO KAYAN TO
SARAWAK AND EAST KALIMANTAN



But there is also a more sophisticated confusion - about the causes of moving fields and communities. Many shifting cultivators (including those in the Apo Kayan) move from one field to another every few years, and they also move their residences at longer intervals. The "sophisticated confusion" comes from a widely held belief among anthropologists, geographers, and others that these two kinds of moving have some necessary, causal relationship. Specifically, migrations are supposed to be population responses, either to environmental degradation brought about by shifting cultivation (e.g., decreasing soil fertility and crop productivity, increasing scarcity of primary forest), or to an increase in population beyond the size that can be supported by the shifting cultivation system. (The latter response - to population increase - is similar to the first because it is supposed to avoid environmental degradation by relieving population pressure on resources.)

Authors who have characterized shifting cultivation as a destructive form of agriculture that inevitably degrades the environment (see reviews in Conklin 1954, Grandstaff 1978) and those who believe that shifting cultivation in its traditional forms can function as part of a stable, productive forest ecosystem (e.g., Conklin 1954, Rappaport 1968, Clarke 1976) share two basic assumptions. The first assumption is that shifting fields (Hill's "recurrent cultivation") and migration have similar functions or purposes, that is, to maintain or restore a balance between people's need for food and the environment's capacity to produce it (the environment, in this case, being the whole forest-farming system, not necessarily fixed in one place). The second assumption is that the behavior of shifting cultivators, and the cultural contexts in which they act, are unchanging, or only slowly and gradually evolving. A corollary of this second assumption (for those who believe in the stability of traditional systems) is that both local and long-term stability have broken down when traditional shifting cultivators have come in contact with "civilization" - or a cash economy - because the people have been unable to adapt to the new conditions.

These assumptions underlie views as disparate as Freeman's, of the Baleh Ibans in Sarawak, and Rappaport's, of the Tsembaga Maring in Papua New Guinea. Freeman (1970) saw the Ibans as inveterate destroyers of primary forest who must keep moving because they cannot (or will not) cultivate secondary forest. Rappaport (1968) suggested that Maring warfare, territorial conquest, and migrations are part of a ritually regulated system which maintains a balance between populations of people and pigs on the one hand, and their environment on the other.³ Although Freeman's characterization of the Ibans as destructive pioneers seems diametrically opposed to Rappaport's idea of a self-regulating, conservative ecosystem, both depend on the notion that changes in the availability or quality of agricultural resources (1) are of prime importance in "triggering" expansion or migration and (2) come about as predictable consequences of the shifting cultivation practices (cf. Vayda 1976). Furthermore, the behavior of the shifting cultivators in question is seen by both Freeman and Rappaport as fixed, in one repetitious pattern or the other, and the ability of the people themselves to adaptively change those patterns is denied.

The assumption that shifting cultivators move only in response to population pressure or environmental changes is contradicted by my observations in the Apo Kayan, as well as by studies in other parts of Borneo (Miles 1976, Vayda et al. 1980) and elsewhere (see review in Padoch and Vayda 1980). The evidence points to a diversity of causes of, or reasons for, migration; many of these causes are unrelated to food production, or to maintaining an equilibrium between population and environment. The idea that an equilibrium must be maintained in order for a population or ecosystem to survive (persist) is, in fact, misleading. Of course it is usually easier to survive in a well balanced, predictable environment, but even a tropical rain forest is, in the long run, an unstable place - as is indicated by recent archaeological and paleoecological research (Brown 1979, Flenley 1978, Harrison and Turner 1978). People who are successful in circumstances they know well during a period of environmental stability are (by definition) well adapted - for a time - but to survive a period of instability it is not enough to have been adapted in the old environment. People must be adaptable, i.e., able to respond to new problems and opportunities (Vayda and McCay 1977, 1978).

The second assumption mentioned above - that traditional shifting cultivators are essentially unchanging, and that they cannot adjust to the problems and opportunities of a "modern" cash economy - is cast in doubt by ethnographic and historical evidence. For example, Padoch (1978) tested Freeman's (1970) hypothesis that the Ibans' cultivation system would fail if they could not move into new areas of primary forest. Padoch compared Ibans who were pioneering in primary forest with Ibans who had not moved in many years, and who had little or no access to primary forest. She found that the people in communities where primary forest was scarce adjusted their land use practices to utilize the secondary forest more effectively. Furthermore, in communities where opportunities to emigrate were limited, population growth rates were lower, and the people's involvement in non-agricultural economic activities was greater.

Brown (1979) presents historical and ethnographic data on land use, population distributions, migration, and trade in the New Guinea highlands showing that Chimbu shifting cultivators have repeatedly adapted to environmental and social changes, rather than remaining in the kind of equilibrium proposed by Rappaport (1968). People who, less than 50 years ago, were using a stone-age technology, and who have only recently come in contact with a cash economy, were nevertheless able to take advantage of opportunities to raise and sell cash crops in areas where roads have been built. In the case of Sumatra and Kalimantan, shifting cultivators have been growing cash crops for more than 50 years, and they produce a significant portion of Indonesia's rubber and clove exports (Pelzer 1978). Our research in East Kalimantan reveals that Kenyah shifting cultivators who have recently moved from the Apo Kayan to lowland areas have adapted their economic activities in response to new opportunities (e.g., a market for surplus rice and forest products) and new technology (chainsaws, outboard motors, rice mills) (Colfer n.d., Vayda et al. 1980). These and other studies (see reviews in Padoch and

Vayda 1980, Vayda et al. 1980) refute the argument that shifting cultivators cannot adjust to new environmental and economic conditions, or that they avoid and resist change.

Reasons for moving

A decline in the yield of successive harvests is the most common reason given in the literature of shifting cultivation for the abandonment (or moving) of fields. Watters (1971:37) points out the diversity of factors underlying the decline, which may include loss of soil fertility, increased weed competition, increased depredation by pests, or accelerated erosion. He goes on to say (p. 49):

The rapidity of forest regeneration and of weed invasion in the humid tropics is ... obvious, and given the buildup of humus under the forest fallow and the choking of weeds, shifting cultivation is a rational response to these natural conditions.

Whitmore (1975:229-30), reviewing the literature on shifting cultivation, cites the following causes of decline in yield:

...deterioration of the nutrient status of the soil (due partly to changes in its microflora and fauna), erosion of the top-soil, deterioration of the physical condition of the soil, multiplication of pests and diseases, and increase of weeds. ... It now seems that weed invasion is the main reason why a farmer abandons his fields.

(See reviews of causes of shifting fields, in Clarke 1976, and of declining yields, in Sanchez 1976.)

According to shifting cultivators I have interviewed in the Apo Kayan the situation there is somewhat different (perhaps in part because of the high altitude - about 800 meters - and the presence of relatively young, volcanic soils in the area; Bemmelen 1970:329). They say that if fields are made in old secondary forest or primary forest their rice yields can be higher in the second year of cultivation than in the first. This is supported by data on rice yields (as reported by farmers) from first, second, and third year fields during the last 40 years (see Table 1, pg. 32). Driessen et al. 1976 report an increase in rice yields in the second year of shifting cultivation from an area of podzolic soil in Central Kalimantan.) Some farmers in the Apo Kayan had an explanation for this increase. They attributed it to the decay of *atup*, a mat-like layer of fine roots which covers the soil in primary and old secondary forest. During the first year of cultivation the *atup* impedes the growth of rice seedlings (they say), but by the second year it has decomposed, thus adding to the organic matter in the soil as well as allowing easy penetration of the soil by the roots of rice plants. As rice yields increase, so do the number and vigor of weeds, and consequently so does the time required for weeding. To escape the weeds a farmer moves to (makes) another field.

Another important part of the situation in which an Apo Kayan farmer decides to move or stay in a field is the intentions expressed by other people; i.e., people do not act alone. People must coordinate their activities in order to make their fields together, adjacent to one another. A group of fields is less vulnerable to animals from the surrounding forest than is an isolated field because the perimeter which must be guarded is smaller. The fields are all planted more or less simultaneously so that the crops will ripen at the same time - if a field is planted too early or too late it will ripen out of phase with other fields and will attract more than its share of pests. (Seasonality of rainfall is also a critical factor in the choice of planting times.) Although cooperation is important, farmers can usually choose which group of people they will cooperate with. This allows some extra flexibility, since in a given year it may be possible to move (or stay) with one group, to join another group, or to make two or more fields with different groups.

Land use rights are sometimes involved in the selection of field sites, but this is not always the case. Dove (1978) reported that Melaban Kantu' shifting cultivators in West Kalimantan adopted household land use rights soon after Iban settled near their territory. One reason for adopting the new system seems to have been to establish claims to land - claims which the Iban and the government would recognize. Dove noted that although secondary forest had been preferred for cultivation, people began clearing more primary forest in order to establish rights to land near the borders of their territory. In the Apo Kayan, people in some villages recognize hereditary rights to secondary forest (descending from the first person to clear the primary forest) but in other villages these rights, though understood, are not now in use. In the village of Long Nawang, where good land near the village is relatively scarce, households have (and claim) rights to clear certain fields (Whittier 1973:62). In Long Sungai Barang and Long Uro', however, there is plenty of good land and hereditary rights, where they exist, are not usually claimed; the first household to mark a patch of forest in a particular year is entitled to clear it. Another reason land use rights are less important in Long Sungai Barang (in comparison with Long Nawang) is that much of the land now cultivated there was first cleared by members of another village, and the rights are held in common by the village as a whole (see below). People there told me that they have used the system of land use rights in the past, in different circumstances, which suggests that it is a "cultural precedent" which can be used or discarded in different situations (cf. Bennett 1976, Vayda et al. 1980:186).

Primary forest and secondary forest

Shifting cultivators in the Apo Kayan, as in other parts of Borneo (Dove 1980, cf. Vayda 1961), usually make their fields in secondary rather than primary forest. One old man in Long Sungai Barang told me that one of the reasons people cleared primary forest when they first moved there was to 'make' secondary forest, which is easier to clear. (Compare this with Dove's report of people making secondary forest to establish land rights.)

Secondary forest is more than just fallow vegetation. "Fallow" implies that the land is out of use between periods of cultivation, but old fields and secondary forest (older fields) provide habitats for many plant and animal species used by people (Conklin 1958, Kunststadter 1978). Some of these species are rare or absent in primary forest (Whitmore 1975:228). In the Apo Kayan old fields are sources of food - including cultivated fruit trees as well as wild plants and animals - clothing, fuel, and building materials (Soedjito n.d.).

By moving their fields every few years, shifting cultivators repeatedly renew the process of ecological succession in different parts of the landscape so that at any one time there is a diverse "patchwork" of new fields, old fields, secondary and primary forest, as well as of various gardens and orchards near the villages. Old fields are unstable - they soon return to secondary forest - but as long as new fields are being made the "supply" of useful plants and animals living in old fields will be maintained.

Not only do shifting cultivators reuse old fields which they have made, but they also move into areas of secondary forest made by other shifting cultivators before them (see Vayda 1961). Whittier (1973:24) used genealogies and oral histories to date the entry of the Kenyahs (the ancestors of the present inhabitants) between 1820 and 1850, about the same time as the emigration of the Kayans from the Apo Kayan to other parts of Borneo (cf. Rousseau 1977). The Kenyahs paid the departing Kayans for the rights to their land (Whittier 1972:28), which implies that they were buying the rights to secondary forest made by the Kayans, in accordance with the land use rights system still practiced by some Kenyahs.

Some Kenyah village groups have moved from one tributary of the Kayan River to another, while others have left the Apo Kayan (see Whittier 1972:28ff). The inhabitants of Long Sungai Barang, where I have collected land use histories, moved there from the next river valley to the north (the Jemhang) about 40 years ago. What is interesting about that move, in the context of this discussion, is that between the time of the Kayans' departure and the arrival of the present inhabitants (the Una' Tukung) at Long Sungai Barang, three other Kenyah groups had come and gone. In fact, the Una' Tukung arrived before the last of those three groups (the Lepo' Bem) had finished moving from their village on the nearby Danum River. The Una' Tukung bought the rights to Lepo' Bem secondary forest, as well as acquiring some older secondary forest made by an earlier group (the Lepo' Timai Kenyah). They also continued to use fields in secondary forest they had made near their old home on the Hemahang River.

This brief history of Long Sungai Barang illustrates two points about shifting cultivation and migration which are worth emphasizing. The first is that shifting cultivation does not necessarily "wear out" the land on which it is practiced. Even after more than 100 years, secondary forest is considered by shifting cultivators to have sufficient future value to be borrowed or traded like other agricultural land.

The second point is that, if land left behind when shifting cultivators move is still valuable, then they must have reasons for moving - and for all moving together - other than that the land left behind is exhausted.

The diversity of habitats created by shifting cultivators is reflected in the reasons for moving and in the selection of village sites. Thus the Uma' Tukung had fertile land to cultivate near their old home on the Jenahang River, but they were too far from primary forest to easily obtain the large trees needed for building houses. The primary forest near Long Sungai Barang, however, had not been cleared by any of the previous inhabitants, and it is still kept by the Uma' Tukung as a timber reserve and a source of other useful forest products. When I asked people why primary forest so near the village had not been cleared (while some fields had been made much farther away), I was confused at first, because some people said it was a forest reserve, while others said the soil was poor for growing rice. Considering these different - though not contradictory - reasons, and those given above for moving from the Jenahang, I have come to the tentative conclusion that the pattern of land use in Long Sungai Barang is an adaptation of complementary needs and activities to the local diversity of soils and vegetation, and that the village site was chosen accordingly.

Migration and trade

"If Sungai Barang is such a great place," the reader may ask, "why have so many people moved away?" Indeed, Kenyah village groups have moved in and out of the area since the 19th century (Whittier 1973:30), most of them coming from further down the Kayan (Jenahang, Ampung, and Nawang rivers) and leaving over the watershed to the Mahakam River. The most recent migrations, in the early 1970s, were assisted by the Indonesian government's resettlement program (Resetelmen Renduduk, or Respen), which helped more than 1,000 people from Long Sungai Barang to move to Ritan Baru (*kecamatan* Tabang) and other villages on the Mahakam and its tributaries. People still living in Long Sungai Barang - about 370 now - say the others left primarily because of the difficulties in obtaining trade goods in the Apo Kayan, particularly salt, cloth, kerosene, cooking pots, and steel tools.

For a century or more the people from the Apo Kayan have gotten trade goods by working on the Kayan and Mahakam rivers in East Kalimantan and the Baluy, Rajang, and Baram rivers in Sarawak. In the 20th century Kenyah men from the Apo Kayan have worked in Sarawak (and to a lesser extent in East Kalimantan) cutting timber, planting and harvesting plantation crops such as pepper and cloves, tapping rubber, and collecting minor forest products, as well as engaging in various other part-time occupations. The men travel in groups, and sometimes stay away from home for several years before returning with a load of trade goods. (See Whittier 1973; cf. Padoch 1973 on Iban trade expeditions.)

The absence of men can be a problem for the people who stay behind in the Apo Kayan as Whittier (1973:133-34) described in the case of Long Nawang after Confrontation:

During Confrontation travel ceased and no trade took place. At the end of Confrontation, the Lepo Tau had been without trade goods for several years except for the salt dropped in by the army. Massive expeditions set off for Sarawak, leaving Long Nawang a village of women, children and elderly. A labor shortage resulted and rice crops were poor. In 1970 large numbers of men returned home putting a bigger drain on already meager rice supplies.

When I asked a Kenyah man why the Kenyahs like to live in large villages (cf. Whittier 1978) his first answer was that trade expeditions could go away from a large village and still leave enough young men behind to work in the rice fields. Many villages in the Apo Kayan were reduced in size by emigrations in the 1960s and early 1970s. Long Sungai Barang, for example, had a population of 1,440 in 1970 (Whittier 1973:19; about 1,000 people had already left during the 1960s) but in 1978 only 363 inhabitants remained. Of these, 84 were males of 15 or older (statistics from *kecamatan* office in Long Nawang). During the rice harvest in March 1980 (with the population little changed) 55 men - about 65% of the adult male population - were away from the village, in Sarawak or on the Mahakam. The absence of men from a village is not always a problem, but it is a potential problem. It leaves the people at home with less flexibility in their choice of activities and will make them more vulnerable in situations requiring additional labor.

It is possible that trade-related problems have stimulated migrations in the past, particularly when conditions to which people had been accustomed changed for the worse, e.g., when the Sultan of Kutai extended his political and economic control into the upper Mahakam in the latter half of the 19th century (Nieuwenhuis 1929:27).⁵ In the 1880s the price of salt was so high on the upper Mahakam (more than 16 times the price in Samarinda, where the Sultan held a monopoly) that many people living there traveled to Sarawak to buy salt (Nieuwenhuis 1929:22).⁶ Kenyahs from the Apo Kayan also traded in Sarawak at that time, in part because of hostile relations with the Kutai government (Whittier 1973:130). Behaus and Kenyahs trading on the Mahakam were harassed by Kutai officials; some had their goods stolen and other were imprisoned (Nieuwenhuis 1929:27-29). "On the other hand, Kayans in Sarawak claim that their ancestors moved from the Apo Kayan (about 200 years ago, according to Rousseau 1977) because of opportunities to sell forest products in Brunei and other trading centers of the northwest coast (Southwell 1959)."

Miles (1976) examined a modern case of trade-oriented migration by shifting cultivators in Central Kalimantan during the 1960s. In addition to seeing people move from upriver agricultural communities to market centers downstream he found changes occurring in settlement patterns near Kuala Karis, a village in the upriver area:

The standard theories of shifting cultivation emphasize the breaking up of one local nucleus into a number of more convenient nuclei. In the vicinity of Kuala Karis the opposite process is in operation. ... (Most) of the people ... have migrated in the opposite direction from that in which their farms are located. ... Obviously, other influences must be counteracting the effects of shifting cultivation. (Miles 1976:9-10)

The "other influences" he discovered were opportunities in the village center for wage labor and selling forest products.

In the mid-1970s airstrips were built in several Apo Kayan villages for use by the Mission Aviation Fellowship (MAF), a church-related organization of pilots. Small planes flown by MAF carry goods and passengers to and from Long Bia', on the lower Kayan; Tarakan, near the mouth of the Kayan; and Samarinda, at the lower end of the Mahakam. Although the flights have reduced the time and danger involved in obtaining some trade goods, the cost of transportation (even though it is partially subsidized by MAF) is high and getting higher with the rising price of fuel. The flights are not frequent enough to meet all the transportation needs of people in the Apo Kayan, even if they didn't have to leave the Apo Kayan to earn enough money to pay for the imported goods. (The collection and sale of aloe wood (Indonesian, *gaharu*; Kenyah, *seko*; in the Apo Kayan, obtained from trees of the genus *Aquilaria*, family Thymelaeaceae) which grows in primary forests, particularly around Long Sungai Barang, has very recently become a source of cash, but it is too soon to tell how this new activity will affect people's decision to move.)

People with whom I have talked in Long Sungai Barang expressed a number of opinions on the subject of emigration from the Apo Kayan, though all agree that a critical factor is the difficulty of obtaining trade goods. Some say they want to move in any event while others say they will definitely stay. (One man who has seen the "modern life" at close quarters in Sarawak, having been as far as Bintulu, said he had no desire to join it himself. "It's too hot," he complained.) The prevalent view seems to be to "wait and see" what the government will do to improve conditions in the Apo Kayan in the next few years.⁷

Some suggestions for resettlement planning

Current plans for resettlement of shifting cultivators in the Apo Kayan, *kecamatan* Kayan Hulu, are to "regroup" twelve of the fourteen villages there into three large village centers at Long Nawang, Long Ampung, and Mahak Baru.⁸ Work began in 1980 at Long Ampung on a landing strip which will be able to accommodate larger planes than those which can now land at the MAF strips. One aim of the Respen program in the Apo Kayan is to discourage further emigration by providing for people's needs in these three centers.

The process of "nucleation" planned by Respen in the Apo Kayan is similar in some ways to a process that Miles (1976) observed in Central Kalimantan; here, migration to a market center was involved. Miles found that shifting cultivators living near the market village of Kuala Karis on the upper Mentaya River, as well as those farming further upstream, moved their residences away from their fields into the market center (see above, p. 10) in order to take advantage of opportunities for non-agricultural economic activities such as wage labor, the sale of forest products, and other specialties created by local demand within the village. These activities grew up around traders living in the

village, who depended in turn on a regular supply of trade goods from downstream. Like Apo Kayan communities, villages further up the river were cut off from trade by rapids, and, as Miles points out, people in those isolated villages were more vulnerable to fluctuations in prices and demand for forest products than were residents of Kuala Karis, where the market economy provided them with alternative sources of income. Economic security as well as opportunity attracted people to the market center. Households in the upriver settlements were more self-sufficient than those in the market center, but they were also more vulnerable to trade related problems.⁹

On the basis of Miles' study and my observations in the Apo Kayan I tentatively suggest a general strategy for resettlement planners: develop a flexible program which will attract (not compel) people to move towards a number of village centers or "nuclei" by offering them opportunities and security. A basic point to keep in mind is that it may not be possible to accomplish all the objectives of a program at once and that therefore it may be wise to keep a number of options open and to experiment with various alternatives. It is not necessary to select a single plan at the outset; however, the priorities of objectives may suggest a general approach. For example, if the principal goal of the Respen program is to discourage emigration from the Apo Kayan (or to encourage people to stay), then it may be better to proceed more slowly with the "regrouping" of villages. If several resettlement centers were to be set up initially as pilot projects - perhaps as centers for employment or health care - they may or may not attract people from other villages. If they don't, the project has not "failed." People might have other reasons for not moving, and the next step in the program would be to discover what those reasons are and to make adjustments accordingly. To keep the program flexible, people administering it must not let their expectations become fixed plans, and if the project does not seem to be working out as expected (for example, if nobody is moving to the resettlement centers) they must not assume it is because the shifting cultivators are "uncooperative" or that they are trying to spoil the project (cf. Sautter and Mondjannagni 1978:75). An important assumption underlying the strategy I have proposed is that people being resettled have useful knowledge to contribute to the program, knowledge about their problems and about what action is appropriate in their situations (Vayda 1979, Driessen et al. 1976). If they do not do what is expected (if they do something unexpected) it may be that the planners' expectations are inappropriate and that the plans rather than the people need to be changed.

Because of the diversity of situations and activities within the Apo Kayan there may not be one "best" resettlement plan. Not only are different approaches to development possible in different villages, but planners or program managers may have to revise their ideas of what a proper or desirable settlement pattern should be. To take the example of "nucleation" again" it may be impossible to find a plan, or combination of plans, which will attract all the people from all the villages in the Apo Kayan to live in a few, large resettlement centers.

Some people, for one reason or another, may choose to live in smaller groups, near their fields for instance, even if they have to travel farther to use the facilities in the village centers. I suggest that the program managers acknowledge this diversity and allow for it in the settlement patterns which develop from the program. A number of smaller, outlying hamlets or residences is not incompatible with the development of a few large village centers where most people could maintain their permanent homes and where health care, education, and markets could be provided. Such a pattern is, moreover, likely to be accepted by the Kenyahs since they, like other shifting cultivators, are accustomed to moving back and forth between rice field hamlets and village centers (Miles 1976, Whittier 1973).

Developing trade and employment in the Apo Kayan

The immediate needs of people in the Apo Kayan are for improved health care, a reliable supply of trade goods, and easier access to wage labor. I will briefly discuss some possibilities for developing the latter two, which could be accomplished either by improving existing trade routes or by creating new economic opportunities in the Apo Kayan.

(1) Improving existing trade routes. The greatest difficulty in finding jobs or markets outside the Apo Kayan is getting there and back. One solution would be to provide transportation by air to and from the down-river areas, paid for by workers from the Apo Kayan, their employers, the government, or some combination of these. Another possibility is to clear and maintain the existing channels in small streams where *prahus* must be dragged. (People have told me that when the trade routes were used more often the channels were kept free of rocks, but now it is more difficult to get through.) (2) Possibilities for economic development in the Apo Kayan include the collection and sale of minor forest products and the cultivation of cash crops. These might be combined as an agroforestry system (similar to the present shifting cultivator system) in which forest and field crops are rotated. The main problem is in finding products which have a high and reliable price for their weight. Rather than bringing products to market from the Apo Kayan, people now find it more profitable to work near the markets. An exception is aloe wood, which has become an important source of cash, especially near Long Sungai Barang. In 1979 a *tokay* (trader) from Tanjung Selor came to the Apo Kayan in search of the wood, the price of which had recently risen on the international market. (The cause of the price increase is still obscure - to me - but it may be related to a falloff in the exports from other Southeast Asian countries such as Vietnam.) The price is apparently unstable, however; at any rate the collectors and buyers in the Apo Kayan are concerned that it could drop unexpectedly. (For more information on aloe wood see Burkill 1966:198-206, 1117; and Peluso n.d.)

Tourism might also be developed in the Apo Kayan, possibly in conjunction with a program of forest conservation and research suggested by Kartawinata et al. (1981). A few tourists pass through the area now and then, and the number will probably increase if regular air service

is established. "Wilderness" tours might be organized and led by naturalists and local guides, to take enthusiastic plant- and animal-watchers into the forest. Similar schemes have been economically successful in South America and Papua New Guinea (see, e.g., advertisements in Natural History magazine).

Summary

I have tried to distinguish different kinds of moving in an Apo Kayan shifting cultivation system and to emphasize the diversity of reasons or causes involved. These can be complex; it is not always possible to find a single cause.

Sometimes it is possible to ask, as a "thought experiment," what would happen if people didn't move in a particular situation and one can then see some of the problems that are avoided by moving a field or a settlement, but this method does not always give a satisfactory explanation of why people do move (cf. Vayda and McCay 1977). It is not enough to say that they are acting according to "tradition," because traditions are not necessarily fixed; shifting cultivators have often changed or discarded traditional ways of doing things in response to new conditions.

The decision to move to another place - to another field, another valley, or another river system - always involves weighing the known difficulties and advantages of the old place against the uncertainties of the new. Consultation and cooperation between people are important during the process of making a decision as well as during and after the move itself. A person gets most of his information about his environments from other people, and his activities usually depend to some extent on how the people around him are expected to behave.

Development planners have expectations about how people will or should behave, whether the people happen to be shifting cultivators or fellow planners. I suggest that planners consult and cooperate with the people for whom they are making plans, just as they consult and cooperate with their colleagues. These plans can be flexible programs rather than rigid schedules, programs which take account of the diversity of shifting cultivators' environments and activities, and which are capable of responding (adapting) to new problems which may arise during the course of development.

Acknowledgements

I would like to thank my fellow researchers - Andrew P. Vayda, Nancy Lee Peluso, Herwasono Soedjito, Carol Pierce Colfer, and Kuswata Kartawinata - for their discussions with me of shifting cultivation, trade, migration, and forest ecology. Greta A. Watson and Cynthia Mackie (both of Rutgers) made several helpful comments on an earlier draft of this paper. I thank Dr. Vayda for his editorial assistance.

Notes.

1. Present address: Long Sungai Barang, d/a MAF, Kotak Pos 82, Samarinda, Indonesia. The findings reported in this paper are preliminary, and may be extended or revised as my research in the Apo Kayan continues.
2. The grant supporting this research was awarded by the U.S. Forest Service - U.S. MAB "Consortium for the Study of Man's Relationship with the Global Environment" and was administered by the Environment and Policy Institute of the East-West Center. Research was done in association with the Indonesian MAB Program (LIPI) and with the cooperation of Mulawarman University. Dr. Andrew P. Vayda was the principal investigator. This paper has been submitted (in Indonesian) for publication in *Berita Ilmu Pengetahuan dan Teknologi* (1981).
3. Cf. Schrieffer's (1957) analysis of the Wisnu (Vishnu) "god-kings" in old Java as restorers of cosmic and political order. (If Rappaport's interpretation of ritual regulation is a "Vishnu model" - i.e., of an equilibrating or self-restoring system - are Freeman's destructive Ibans acting according to a "Shiva model"?)
4. See Kunstadter (1978) on the maintenance of habitat diversity by shifting cultivators in Thailand. See Pickett (1980) on "patch dynamics" (processes of disturbance and succession which create and maintain diversity, within and between habitats), and Pickett (1976, 1980) and Wiens (1976) on adaptation by plants and animals to "patchy" (heterogeneous) environments.
5. Archaeological evidence suggests that migrations of shifting cultivators occurred for political reasons in the first millennium A.D., in western Panama:

Apparently the migrations of peoples ... started well before maximum population densities and sociopolitical differences had evolved. ... The implications of our data accord better with the theory ... that group fissioning and migrations may take place well below the carrying capacity of the land and for other than simple ecological reasons. Social factors, rather than strictly environmental ones, also seem to explain the general sparseness of occupation in the immediate area. At present, the best explanation for the avoidance of these rich and well-placed lands seems to be a desire to keep social, and later political, distance from the larger villages to the southwest. (Linarea et al. 1975:143.)

6. Sellato (1980) reports that the price of salt at Long Apari on the upper Mahakam is still (again?) ten to twenty times as much as in Samarinda, and that the supply is unreliable.
7. In the last few months of 1980 I received reports that fairly large numbers of people from Long Nawang and other villages downstream were either leaving the Apo Kayan or preparing to leave in 1981. I will be investigating these reports in the near future.
8. According to "Rencana lokasi regrouping desa dalam wilayah kecamatan Kayan Hulu tahun 1978/1979," Camat's office, Long Nawang. According to a kecamatan census taken in early 1980, the population of Kayan Hulu is 5,365, with a mean village size of 383 (standard deviation = 286). With this population, after "regrouping," the three

large village centers would have populations of 2,266, 1,419, and 915. The two villages not included in the plan (as of 1979) are Netulang (285) and Long Lebusan (480).

9. Miles' study illustrates what I think may be a general problem or "cost" of the flexibility which has been observed among shifting cultivators (Padoch and Vayda 1980, Vayda et al. 1980), that is, the uncertainty associated with economic marginality (see Kunstadter et al. 1978) and the health hazards and risks of geographical isolation. (It could also be argued that living on the margin of a national economy allows the freedom to be flexible; I am suggesting that flexibility and uncertainty go together.) Miles' observation of trade-oriented migration suggests that one way in which people respond to the uncertainty is to give up some of their flexibility in exchange for security in a more specialized (though less diverse) economy. This implies that the flexibility, which enables the marginal cultivator to choose whether or not he will join the center, is lost in the transition; i.e., it is more difficult to return to the margin than it was to move to the center. (The transition may not be irreversible but there is a steep gradient.) I am not saying that the market economy itself is less flexible, or less capable of change, than the marginal economy, but rather that each person or household in the market center is limited to a narrower range of activities than in the more remote villages. The relatively small number of options may, however, give more security within a normal or "expected" range of economic fluctuations. Are the more flexible-marginal shifting cultivators better able to cope with drastic changes?

Bibliography: Bemmelen, R. W. van 1970. *The Geology of Indonesia*. The Hague: Martinus Nijhoff. Bennett, J. W. 1976. "Anticipation, adaptation, and the concept of culture in anthropology." *Science* 192:847-53. Brown, P. 1979. "Change and the boundaries of systems in highland New Guinea." In *Social and Ecological Systems*. P. Burnham and R. Ellen, eds. Burkill, I. H. 1966. *A Dictionary of the Economic Products of the Malay Peninsula*, Vol. I, Kuala Lumpur (reprint of the 1936 edition). Clarke, W. C. 1976. "Maintenance of agriculture and human habitats within the tropical forest ecosystem," *Human Ecology* 4:247-59. Colfer, C. P. n.d. "Research report for MAB project on Interactions between People and Forest in East Kalimantan," In preparation. Conklin, H. C. 1954. "An ethnoecological approach to shifting agriculture," *Trans. N.Y. Acad. Sci.*, Series II, 17:133-42. Dove, M. 1978. "The significance of the distinction between primary and secondary forest in the swidden system of the Melabau Kantu." Presented in the Dept. of Anthropology, Univ. of California, Santa Barbara. . 1980. "Development of Tribal Land-rights in Borneo: The Role of Ecological Factors," *Borneo Research Bulletin* 12:3-19. Driessen, P., P. Buurman, and Permadhy. 1976. "The influence of shifting cultivation on a 'podzolic' soil from Central Kalimantan," In *Peat and Podzolic Soils and their Potential for Agriculture in Indonesia*, Bogor: Soil Research Institute Bul. No. 3. Flinnley, J. R. 1979. *The Equatorial Rain Forest: A Geological History*, London: Butterworth. Freeman, D. 1970. *Report on the Iban*. London: Athlone Press. Grandstaff, T. 1978. "The development of swidden agriculture

(shifting cultivation)," *Dev. and Change* 9. Harrison, P. D., and B. L. Turner (eds.) 1978. *Pre-Hispanic Maya Agriculture*, Albuquerque: Univ. of New Mexico Press. Hill, P. 1970. *Studies in Rural Capitalism in West Africa*. Cambridge: Cambridge Univ. Press. Kartawinata, K., A. P. Vayda, and R. S. Wirakusumah. 1977. "East Kalimantan and the Man and Biosphere Program," *Berita Ilmu Pengetahuan dan Teknologi* 21(2):16-27. (Reprinted in *Borneo Research Bulletin*, April, 1978.). Kartawinata, K., A. P. Vayda, T. C., Jessup, and R. S. Wirakusumah. 1981. "Pengembangan cagar biosfer sebagai alternatif pembangunan di Apo Kayan, Kalimantan Timur." (Submitted for publication in *Berita Ilmu Pengetahuan dan Teknologi*). Kunstadter, P. 1978. "Ecological modification and adaptation: an ethnobotanical view of Lua' swiddeners in northeastern Thailand," *In The Nature and Status of Ethnobotany*. R. Ford, ed. Ann Arbor: Museum of Anthro., Univ. of Michigan, Anthropological Papers No. 67. Kunstadter, P., E. C. Chapman, and S. Sabhasri (eds.) 1978. *Farmers in the Forest: Economic Development and Marginal Agriculture in Northern Thailand*. Honolulu: Univ. Press of Hawaii. Linares, O. F., P. D. Sheets, and E. J. Rosenthal. 1975. "Prehistoric agriculture in tropical highlands," *Science* 187:137-44. Miles, D. 1976. *Cutlass and Crescent Moon: A Case Study of Social and Political Change in Outer Indonesia*. Sydney: Centre for Asian Studies, Univ. of Sydney. Nieuwenhuis, A. W. 1929. "Ten years of hygiene and ethnography in primitive Borneo (1891-1901)," *The Effect of Western Influence on Native Civilization in the Malay Archipelago*, B. Schrieke, ed. Batavia: G. Kolff. Nye, D. H., and D. J. Greenland. 1960. *The Soil Under Shifting Cultivation*, Harpenden: Commonwealth Agricultural Bureau. Padoch, C. 1978. *Migration and Its Alternatives Among the Iban of Sarawak*, Ph.D. dissertation, Columbia Univ. Padoch, C., and A. P. Vayda. 1980. "Patterns of resource use and human settlement in tropical forests," *In Structure and Function of Tropical Forests*, F. B. Golley and H. Lieth, eds. Elsevier Series on Ecosystems of the World (in press). Peluso, N. L. n.d. "Research report for MAB project on Interactions between People and Forests in East Kalimantan." In preparation. Pelzer, K. J. 1978. "Swidden cultivation in Southeast Asia: Historical, ecological, and economic perspectives," *In Farmers in the Forest: Economic Development and Marginal Agriculture in Northern Thailand*, Honolulu: Univ. Press of Hawaii. Pickett, S. T. A. 1976. "Succession: An evolutionary interpretation," *Amer. Natur.* 110:107-119. . 1980. "Non-equilibrium coexistence in plants," *Bull. Torrey Bot. Club*. Rappaport, R. A. 1968. *Pigs for the Ancestors: Ritual in the Ecology of a New Guinea People*, New Haven: Yale Univ. Press. Rousseau, J. 1977. "Kayan agriculture," *SMJ* 25:129-56. Sanchez, P. A. 1976. "Properties and Management of Soils in the Tropics," (Chapter 10: *Soil Management in Shifting Cultivation Areas*) New York: Wiley. Sautter, G., and A. Mondjarnagni. 1978. "Traditional strategies, modern decision-making and management of natural resources in forest and preforest zones of Africa," *In Management of Natural Resources in Africa: Traditional Strategies and Modern Decision-Making*. MAB Technical Notes 9. Paris: Unesco. Schrieke, B. 1957. *Ruler and Realm in Old Java*, Indonesian Sociological Studies, The Hague. Sellato, B.J.L. 1980. "The upper Mahakam area," *BRB* 12:40-46. Soedjito, H.S. n.d. "Research report for MAB project on Interactions between People and Forests in East Kalimantan," In preparation. Southwell, C. H. 1959.

"The Kayan and the Kenyahs," *In The Peoples of Sarawak* (part 4). Tom Harrison, ed. Kuching: Sarawak Museum. Vayda, A.P. 1961. "Expansion and warfare among swidden agriculturalists," *Amer. Anthr.* 63:356-58. . 1976. *War in Ecological Perspective: Persistence, Change, and Adaptive Process in Three Oceanian Societies*, New York: Plenum Press. . 1979. "Human ecology and economic development in Kalimantan and Sumatra," *BRB* 11:23-32. Vayda, A. P., C. P. Colfer, and M. Brotokusumo. 1980. "Interactions between people and forests in East Kalimantan," *Impact of Sci. on Soc.* 30:179-90. Vayda, A. P., and B. J. McCay. 1977. "Problems in the identification of environmental problems," *In Subsistence and Survival: Rural Ecology in the Pacific*. T. P. Bayliss-Smith and R. G. A. Feachem, eds. London: Academic Press. Vayda, A. P., and B. J. McCay. 1978. "New directions in ecology and ecological anthropology," *In Human Behaviour and Adaptation*, N. Blurton Jones and V. Reynolds, eds. London: Taylor and Francis. Watters, R. F. 1971. *Shifting Cultivation in Latin America*, Rome: FAO. Whitmore, T. C. 1975. *Tropical Rain Forests of the Far East*, London: Clarendon Press. Whittier, H. L. 1973. *Social Organization and Symbols of Social Differentiation: An Ethnographic Study of the Kenyah Dayak of East Kalimantan (Borneo)*, Ph.D. dissertation, Michigan State Univ. 1978. "The Kenyah," *In Essays on Borneo Societies*, V. T. Kind, ed. Hull Monographs on South-East Asia No. 7. London: Oxford Univ. Press. Wiens, J. A. 1976. "Population responses to patchy environments," *Ann. Rev. Ecol. Syst.* 7:81-120.

Table 1: Rice yields (expressed as ratio of seed harvested to seed planted) reported by Long Sungai Barang shifting cultivators, from fields cleared in primary forest or old secondary forest between 1942 and 1978. (Total number of informants = 7.)

	Age of Field			Difference
	1st year	2nd year	3rd year	(2nd year - 1st year)
Number of Fields	19 (24) ¹	19	5	19
Mean Yield	64.9 (68.3) ¹	79.4 ²	82	14.5
Standard Deviation	31.5 (30.3) ¹	29.3	35.6	37.1 ³

- Notes: 1. Includes fields made for one year only.
2. Difference between 1st and 2nd year fields is significant at $p < .1$ (paired t-test, d.f. = 18, $t = 1.709$).
3. Standard deviation of the difference.

SOME CONSONANTAL SOUND CHANGES IN THE KADAZAN
DIALECTS OF THE PENAMPANG, PAPAR, AND BEAUFORT
DISTRICTS OF SABAH, MALAYSIA

Inka Pekkanen
Summer Institute of Linguistics

Introduction

The purpose of this paper is to describe some consonantal sound changes that occur in the Kadazan¹ dialects spoken in the Penampang, Papar, and Beaufort districts of Sabah, Malaysia.

The Penampang, Papar, and Beaufort districts were chosen as the basis of this study for the following reasons:

These three districts form the southwestern end of the large area in which Kadazan-Dusun dialects are spoken. In the southwest, the Kadazan dialect area borders on the Bisaya language and the Kadazan of the Kuala Penyu district, which is locally known as Tatana but which lexico-statistically differs notably from most Kadazan dialects. In the south the area borders on the Murut languages. Another reason why these three districts were chosen for this study is that they offer a broad spectrum of phonological variations. The Penampang Kadazan dialect, which is one of the dialects of Sabah used in radio broadcasts and local newspaper, is also spoken within this area.

This study is based on the data collected during an extensive language survey carried out by the Malaysia branch of the Summer Institute of Linguistics.²

The work lists used in this study were collected during March-July 1979 from 35 villages in the Penampang, Papar, and Beaufort districts.³ The villages were chosen on the basis of information given by district officials, village headmen, and other local people. An attempt was made to collect material from every place where, according to these sources, the language was said to be different. The people who supplied the language data were native speakers of the dialect.⁴

After initial comparison of the word lists from the Penampang, Papar, and Beaufort districts, five distinct groups emerged. It must be stressed that this grouping is based totally on sound changes. The division does not take into account grammatical differences, percentages of shared cognates, or mutual intelligibility between dialects. A comparison of shared cognates percentages, however, supports this division.⁵

Figure 1 shows the villages from which data were collected. The dialect boundaries do not attempt to be geographically accurate; they are only used to indicate which villages belong to each group.

Sound changes

The sound changes were studied by charting cognates in the work lists and comparing their phonological shapes. This led to establishing two types of sound changes: those which are regular within each phonological dialect group, and those which display irregularities within the groups. They will be discussed in separate sections.

The examples are given in semiphonemic writing, as phonemic analysis has not been done in all these dialects. Thus, for instance, /o/ is used for the allophones of the mid central or back unrounded or slightly rounded vowel.

The five dialect areas are Western Penampang/Papar, Eastern Penampang/Papar, Western Papar, Membakut, and Beaufort. Hereafter they shall be referred to as WPP, EPP, WP, M, and B, respectively.

Regular changes

Some sound changes were found to be regular within each group. Seven such changes are displayed here

t ~ ø

Some lexical items have the regular sound change of t ~ ø word-initially. (See Figure 2.)

<i>tadau</i>	<i>adau</i>	'day'
<i>tinan</i>	<i>inan</i>	'body'
<i>topos</i>	<i>opos</i>	'lungs'
<i>tulun</i>	<i>ulun</i>	'person'

Distribution:	t	ø
	WPP	WP
	WPP	M
		B

z ~ y

In a word-medial position /z/ occurs in all dialect areas except in EPP, where /y/ occurs.⁶ (See Figure 3.)

<i>agazo</i>	<i>agayo</i>	'big'
<i>ovizau</i>	<i>nowiyau</i>	'full' (person; of food)
<i>kazu</i>	<i>kaɣu</i>	'wood'
<i>humozog</i>	<i>lumoyog</i>	'swim'
<i>puzut</i>	<i>puyut</i>	'space under house'

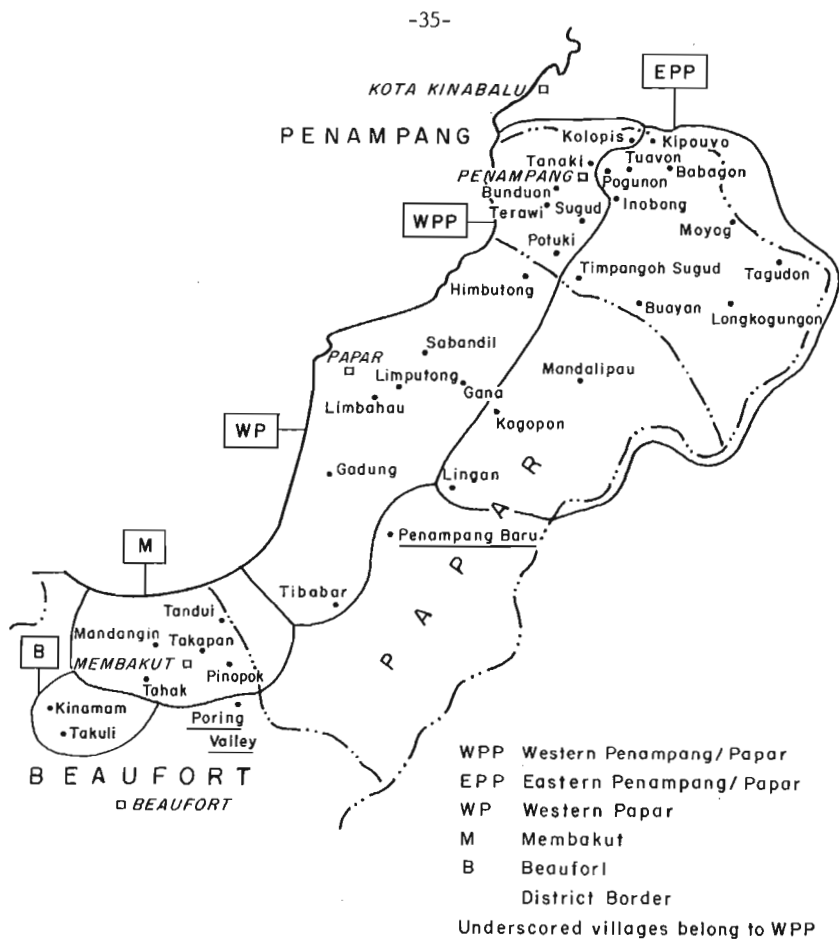
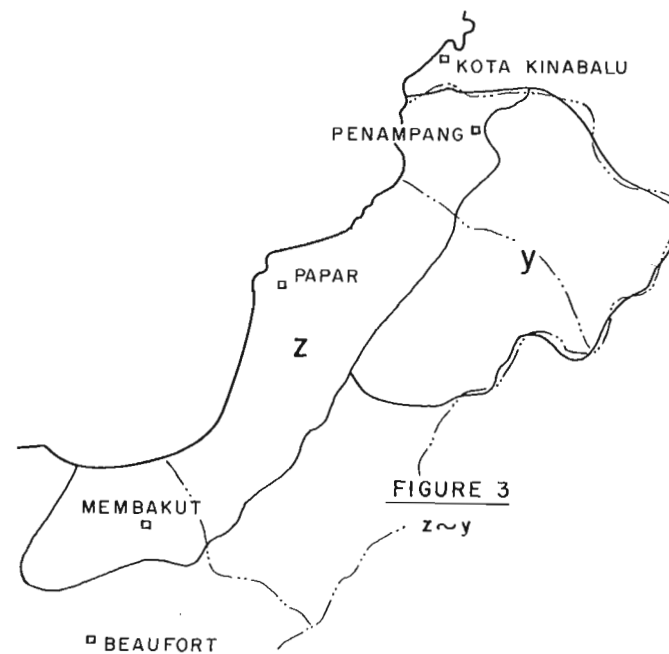
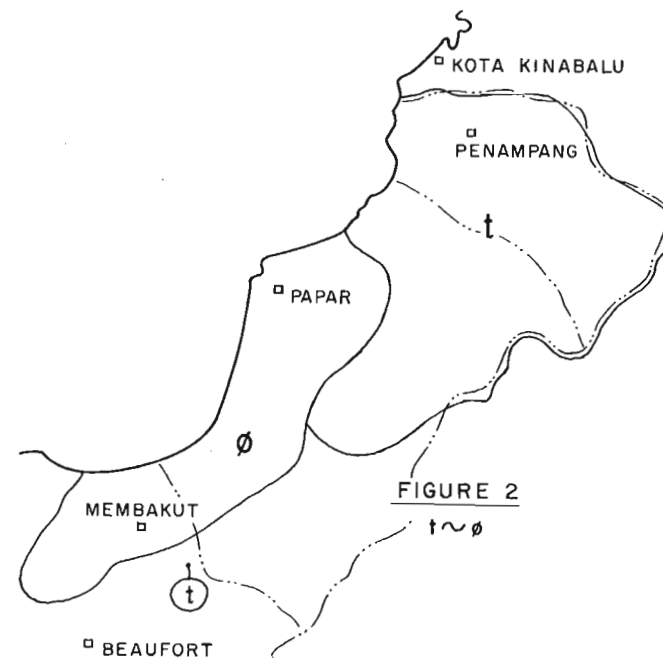


FIGURE 1. Map of villages and their grouping into phonological dialect areas.



Distribution:	z	y
	WPP	EPP
	WP	
	N	
	B	

h ~ l

Word-initially or medially, /h/ in WPP and WP corresponds to /l/ in other areas. (See Figure 4.)

<u>hazo</u>	<u>layo</u>	'ginger'
<u>hamin</u>	<u>lamin</u>	'house'
<u>hikud</u>	<u>likud</u>	'back (of person)'
<u>houson</u>	<u>louson</u>	'hungry'
<u>hunok</u>	<u>lunok</u>	'fat' (noun)
<u>tuhaj</u>	<u>tulan</u>	'bone'
<u>tohiyo</u>	<u>tolijo</u>	'ear'
<u>tombohog</u>	<u>tombolog</u>	'bird'
<u>vahu</u>	<u>walu</u>	'eight'

Distribution:	h	l
	WPP	EPP
	WP	N
		B

l ~ r ~ y ~ d ~ ø

The correlation between initial liquids /l/ and /r/, the semivowel /y/, the voiced stop /d/, and the lack of initial consonant is best illustrated through a chart showing the sound changes in different dialect groups.⁷ (See Figure 5.)

Figure 5

	'leaf'	'chin'	'trail'	'tear'	'thorn'	'rain'
WPP l	loun	loo	lahan	omou	ugi ⁸	asam
ø						
EPP r	roun	roo	ralan	romou	rugi	rasam
WP y	youn	yoo	yahan	yomou	yugi	yasam
M d	daun					
y		yoo				
ø			alan	omou	ugi	asam
B d	doun					
r		roo				
ø			alan	omou	ugi	asam

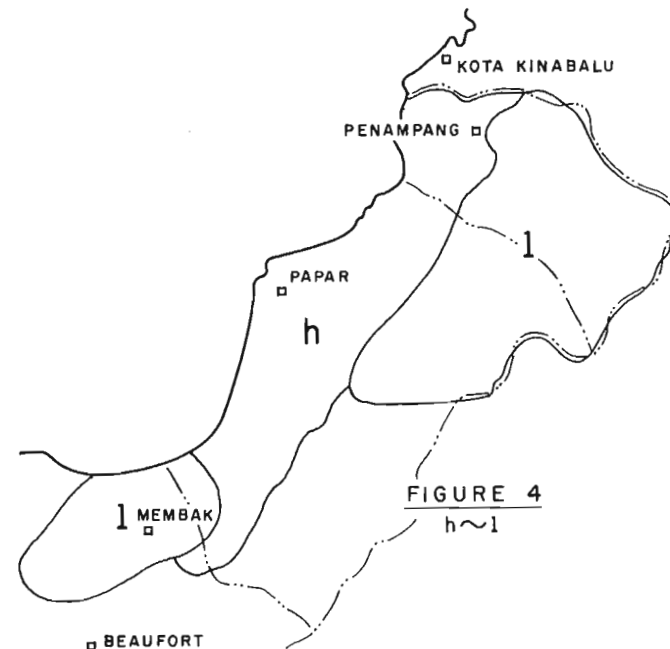


FIGURE 4
h ~ l

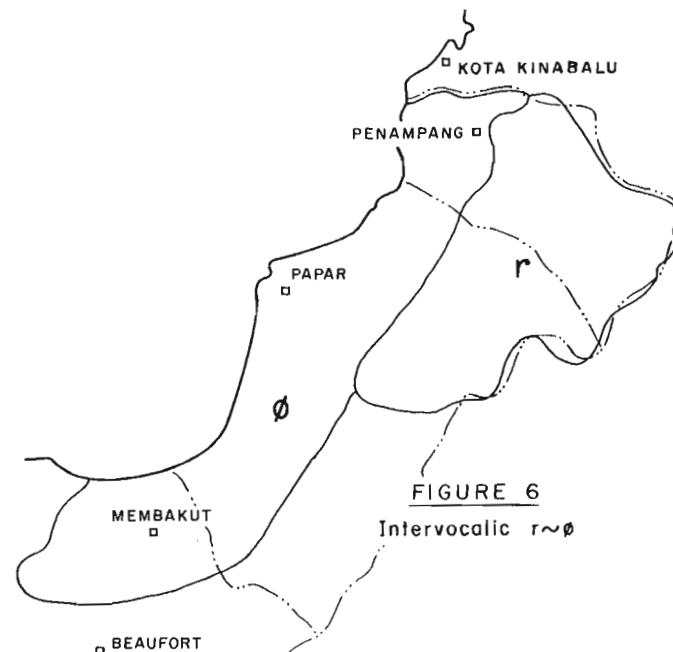


FIGURE 6
Intervocalic r ~ ø

VrV ~ ϕ

Intervocalic /r/ only occurs in EPP. Where it does not occur, lengthening of the vowel results if both vowels are the same.⁹ (See Figure 6.)

atarom	ataom	'sharp'
kirop	kiop	'eyelashes'
opurak	opuak	'white'
garan	gaan	'name'
boros	boos	'language'
surud	suud	'comb'

Distribution:	r	ϕ
	EPP	WPP
		WP
		M
		B

VhV ~ ϕ

Intervocalic /h/ occurs in WP and M but not in WPP and B.¹⁰ Where /h/ does not occur, lengthening of the vowel results if both vowels are the same. (See Figure 7.)

manahak	manaak	'give'
kahau	kaau	'chicken lice'
momihid	moniid	'wipe'
konihab	koniab	'yesterday'
molahig	nohoiig	'old (person)'
tuhāt	tuāt	'vein'

Distribution:	h	ϕ
	WP	WPP
	M	B

Metathesis of /s/ and /h/

When /s/ and /h/ occur in a word, in that order, they are metathesized in WPP. The phoneme /h/ corresponds to /l/ in EPP, M, and B, as presented in h ~ l above (See Figure 8.)

EPP	WP	WPP	
kosilahon	kosihahon	kohisaun	'east'
sinsilog	sinsiho	hihinsog	'(river) eel'
sondu <u>lu</u>	sondu <u>hu</u>	hondusu	'finger nail'
siliu	sihiu	hisiu	'floor'
osolot	osohot	ohosot	'crowded, narrow'
osilou	osihou	ohisou	'yellow'

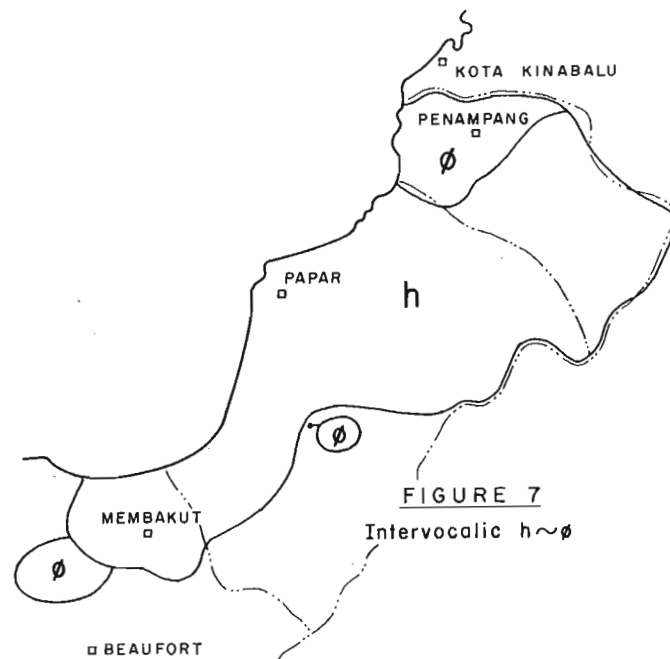


FIGURE 7
Intervocalic h ~ ϕ

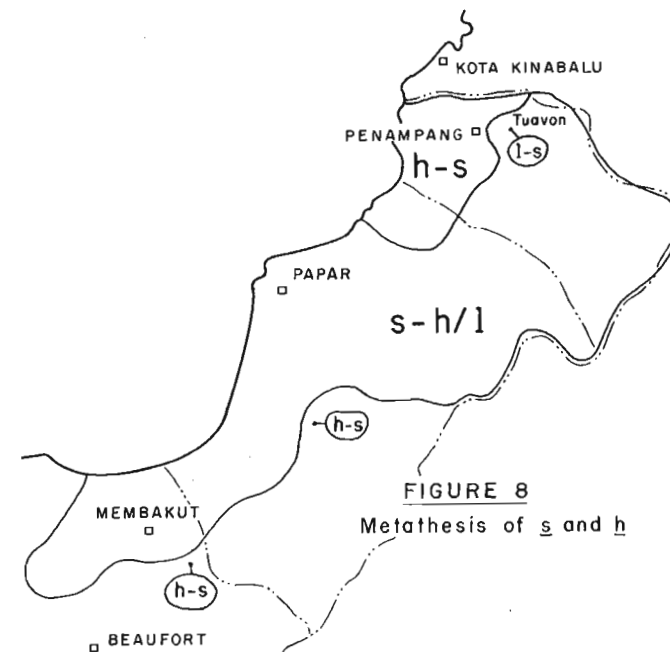


FIGURE 8
Metathesis of s and h

Distribution:	No metathesis	Metathesis
	EPP	WPP
	WP	
	M	
	B	

Irregular changes

This section deals with sound changes which do not fall neatly into groups that would correspond to the five dialect groups defined in this paper. Thus, there are more variations within each area than there are in the other sound change patterns described in the preceding section.

$w \sim v \sim b$ free variation

The use of a voiced bilabial semivowel (*w*) in some areas corresponds to the use of a voiced labio-dental fricative (*v*) or of a voiced bilabial fricative (*b*) in other areas. In some villages any two or all three are in free variation in analogous environments in words.

Most of the EPP villages use the bilabial semivowel (*w*); most of the WPP villages use the voiced labio-dental fricative (*v*); most of the M villages use the voiced bilabial fricative (*b*).¹² In B, Kinamam uses (*b*) in most instances, whereas Takuli uses (*v*) in most instances. (See Figure 9.)

w	v	b	
<i>watu</i>	<i>vatu</i>	<i>batu</i>	'stone'
<i>waig</i>	<i>vaig</i>	<i>baig</i>	'water'
<i>wogok</i>	<i>vogok</i>	<i>bogok</i>	'pig'
<i>bawaj</i>	<i>bavaj</i>	<i>babaj</i>	'river'
<i>sawo</i>	<i>savo</i>	<i>sabo</i>	'spouse'
<i>tawu</i>	<i>tavu</i>	<i>abu</i>	'ashes'

	w	v	b	free variation	total number of word lists
EPP	10			3	13
WPP		5	3	1	9
WP		2	1	3	6
N			4	1	5
B				2	2

Figure 9. $w \sim v \sim b$ free variation. Numbers show how many word lists use each variant.

A further variation is manifested by the words for 'moon' and 'snake', which begin with a labial fricative in most areas in accordance with their distribution pattern shown in Figure 9, except for EPP. In EPP, the word for 'moon' has an initial /t/ in most lists; in two lists it has an initial /w/, in one list an initial /v/, and in one list no initial consonant occurs. The word for 'snake' in EPP begins with /t/ in all other word lists except two, in which it has an initial voiced bilabial stop /h/. Three lists from WPP also have an initial /h/.

<i>vuhan</i>	WPP, WP	'moon'
<i>bulan</i>	M, B	
<i>tulan</i>	EPP	
<i>ulan</i>	EPP	
<i>wulan</i>	EPP	
<i>vulan</i>	EPP	

<i>vuhanut</i>	WPP, WP	'snake'
<i>bulanut</i>	M, B	
<i>tulanut</i>	EPP	
<i>bulanut</i>	EPP	
<i>buhanut</i>	WPP	

$g \sim h \sim t \sim \emptyset$

Only two items in the word list illustrate the change between the word-initial /g/, /h/, /t/, or zero phoneme.

The following changes were found:

	'cloud'		'leg'
h - g	<i>havun</i>	<i>gakod</i>	EPP
g - t	<i>gavun</i>	<i>takod</i>	WPP, EPP
h - h	<i>havun</i>	<i>hakod</i>	WP, M
g - h	<i>gavun</i>	<i>hakod</i>	WP, M
\emptyset - h	<i>abun</i>	<i>hakod</i>	M
\emptyset	(form given not comparable)	<i>akod</i>	B

$l \sim r \sim h \sim (V:\emptyset)$

Where a liquid /l/ or /r/ occurs word-finally in EPP, other dialects have a zero phoneme or a glottal fricative /h/. When the final /l/ or /r/ does not occur, the final vowel may be lengthened. Kolopis in WPP has a glottal stop instead of a lengthened vowel.

l/r	h	(V:) \emptyset	
<u>akapal</u>	<u>akapah</u>	<u>akapaa</u>	'thick'
<u>akato</u>	<u>akato</u>	<u>akato</u>	'itch'
<u>tampajil</u>	<u>tampajih</u>	<u>tampajii</u>	'ankle'
<u>sumimbar</u>	<u>sisimbah</u>	<u>sumimbaa</u>	'answer'
<u>tansar</u>	<u>tansah</u>	<u>tansaa</u>	'fence'
<u>totombir</u>	<u>totombih</u>	<u>totombii</u>	'needle'
		<u>totombi</u>	'needle'
		<u>totombi?</u>	'needle'

In some word lists of WP /l/ occurs word-finally where a zero phoneme would be expected. For example, Gana uses *sumimbul* 'run' where Limabau uses *sumimbuu*.

$d \sim h \sim ds \sim dz$

The changes in the medial consonant or consonant cluster in the word for 'bathe' generally follow the division of the area into dialect groups. The root is *poDu*, where /D/ stands for the medial consonant(s). However, in WP, Gadung uses *dy* instead of *h*. In the same area Tibabar uses *dz*, which is used in M and B. Geographically Tibabar is very close to M.

In EPP several variations have been found. Moyog uses *s: mosu*. Tagudon uses *ns: mansu*. Pogunon uses *d* instead of *ds*. The village borders on the WPP area. Kogopon uses *h* as does WP, to which it is geographically close.

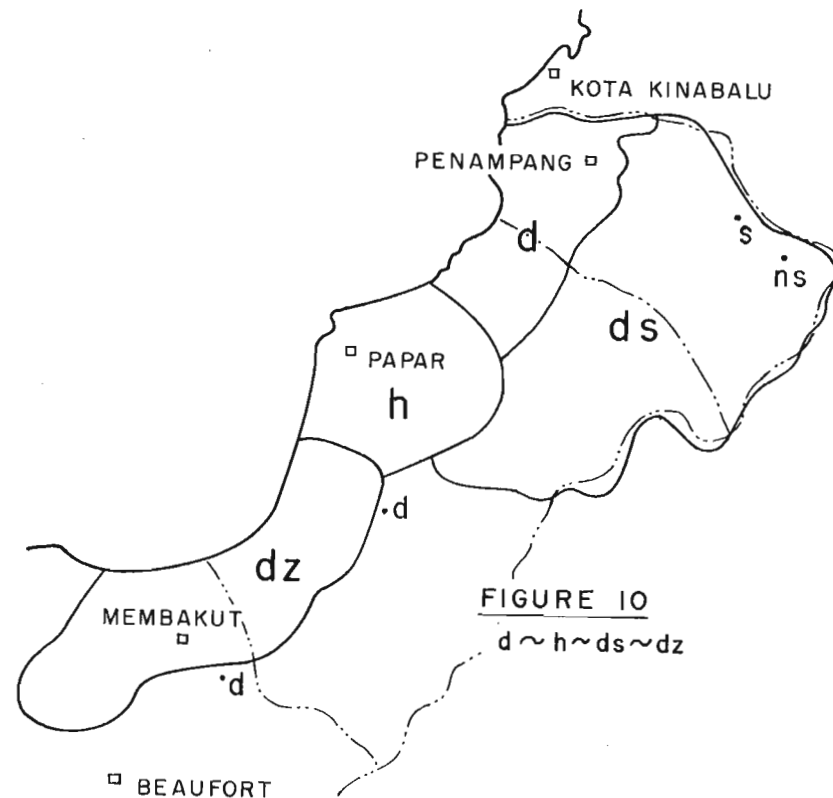
d	<i>mimpodu</i>	WPP
h	<i>mimpohu</i>	WP
ds	<i>mimpodsu</i>	EPP
dz	<i>mimpadzu</i>	M, B

Conclusion

It has been noted that with different sound changes the five phonological dialect areas fall into different groups. Some sound changes are particular to one group only. Thus, only EPP uses the intervocalic /y/, whereas the other groups use /z/. Also, EPP is the only one to use /r/ in initial, medial, and final position in words. WPP is the only one in which the *s/h* metathesis occurs. It is also distinguished by the use of root-initial /l/. (See $l \sim r \sim y \sim d \sim \emptyset$) Only WP uses the root-initial /y/ consistently in contrast with the EPP /r/. M and B generally pattern together with one or more of the other groups, but they are distinguished from each other on the basis of the occurrence or non-occurrence of the intervocalic /h/. Thus it can be noted that for the majority of sound changes, all of the lists within a phonological dialect group pattern as a unit.

Notes

1. Each language informant was asked what the name of his language was. Most informants gave the name of Kadazan. In Longkogunon the name



'Kadazan Pahu' is used. Tagudon gave the same name, but they also called their language by the name of 'Sinulihan'. In Moyog, both 'Kadazan' and 'Dusun' are used. Kogopon gave three terms: 'Kadazan', 'Kadayan' (local pronunciation of 'Kadazan'), and 'Dusun Ulu Papar'. In some places 'Kadazan Penampang' and 'Kadazan Papar' were given as names for their dialects.

2. Over 300 villages were visited in the twenty-three districts of the state. At each village a word list, ethnographic questionnaire, and a two to three-minute tape recorded story were collected in order to prepare sufficient linguistic data for later dialect intelligibility testing (Casad, 1974). The word list contains 367 items. It is adapted from the word list used by the Philippine branch of the summer Institute of Linguistics.

3. Word lists were collected from the following villages: Babagon, Buayan, Bunduon, Inobong, Kipouvo, Kolopis, Longkogungon, Moyog, Pogunon, Potuki, Sugud, Tagudon, Tanaki, Terawi, Timpangoh Sugud, Tuavon (Penampang District); Gadung, Gana, Himbutong, Kogopon, Limbahau, Limputong, Ligan, Mandalipau, Penampang Baru, Sabandil, Tibabar (Papar District); Kinamam, Mandangin, Pinopok, Poring Valley, Tahak, Takapan, Takuli, Tandui (Beaufort District). The villages of Buayan, Longkogungon, Mandalipau, and Tagudon were not visited, but the data was collected elsewhere from native speakers habitually living in those villages. The people of Penampang Baru in the Papar district have moved there from the Penampang district and said they spoke 'Penampang Kadazan'. The word list from Poring Valley also represents 'Penampang Kadazan', as a number of the present inhabitants have moved to the village from the Penampang district.

4. Word lists were taken by different technicians under field conditions, which were not always ideal for maximum accuracy in transcription. The elicitation was done in Bahasa Malaysia, but occasionally English was used also to clarify the meaning of a given item on the word list.

5. A matrix comparing cognate percentages of all these lists shows that although the relationships between the m/range from language family to subdialect (see Smith, 1980), the closest relationship of each list is to another within its phonological group. Two exceptions are noted. Kolopis in WPP is equidistant from Poring Valley within the same group and from EPP Tuavon, to which it is geographically close. Tibabar in WP has the highest percentage of shared cognates with Poring Valley in WPP.

6. The phoneme /z/ is a voiced alveolar grooved fricative in all places except Tibabar in WP, where a voiced alveolar affricate (dz) is used, and Gadung in WP, where a voiced affricate (dy) is used, the point of articulation being closer to a palatal one.

Tibabar	Gadung	Other places using /z/	
(tidzan)	(tidyan)	(tizan)	'belly'
(nabidzau)	(napidyau)	(ovizau)	'full' (person)
(sidzam)	(sidyam)	(sizam)	'nine'
(hadzo)	(hadyo)	(hazö)	'ginger'

7. An interesting complexity is noted in two words. The words for 'blood' and 'sea' demonstrate a wide range of forms as illustrated below.

EPP	WPP	WP	M	B	
raha	zea	haa	haa	raa	'blood'
raa		yaha			
araha					
ara					
ya					
EPP	WPP	WP, M			
rahat	daat	dehat		'sea'	
lahat					
dahat					
daat					

8. In WPP, five villages use *omou* 'tear', four use *lomou*. Six WPP villages use *ugi* 'thorn', three use *lugi*. One village, Kolopis, uses *houn* 'leaf' instead of *loun*.

9. In some words /l/ in medial position corresponds to /r/ in EPP.

WP	EPP	
ad a las	ada r as	'strong'
tontol a ugukan	tontar r ugukan	'throat'

10. In EPP nine of the thirteen word lists retain the intervocalic /h/. In the lists from Inobong, Kipouvo, Tuavon, and Pogunon the intervocalic /h/ does not occur. This may be due to the fact that these four villages are geographically very close to WPP, where the intervocalic /h/ does not occur. One village in the WPP groups has the intervocalic /h/. The village, Poring Valley, is located near the dialect area of M, where the intervocalic /h/ occurs.

11. This metathesis has also been found to occur in one of the EPP villages, Tuavon. There /l/ corresponds to the WPP /h/: *lilinsog* 'eel', *liisiu* 'floor', *londusu* 'finger nail', *olisou* 'yellow'.

12. Gadung in WP uses the voiceless bilabial fricative p: *patu* 'stone', *paig* 'water', *pogok* 'pig', *sapo* 'spouse'.

Bibliography: Antonissen, A., Kadasan dictionary and grammar (Canberra, 1958). Casad, Eugene, Dialect intelligibility testing (Norman, Oklahoma, 1974). Clayre, B. M., "A comparison of some dialects of Dusun," Sabah Society Journal 3:1 (Jesselton, 1966). Gossens, A. L., "A grammar and vocabulary of the Dusun language," Journal of the Malaysia Branch of the Royal Asiatic Society 2:2 (Singapore, 1924). Smith, Kenneth D., The languages of Sabah: a tentative lexicostatistical classification (To appear). Wurm, S. A., and B. Wilson, "English finderlist of reconstructions in Austronesian languages (post-Brand-setter)," Pacific Linguistics C-33 (Canberra, 1975).

BRIEF COMMUNICATIONS

Kaharingan: Borneo's "Old Religion" Becomes Indonesia's Newest Religion

Joseph A. Weinstock

Kaharingan is the name which is now widely accepted for the traditional religion of the Dayaks of southern Borneo. Until the second world war the religion of the Luangan (Lawangan), Maanyan, Ngaju and Ot Danum Dayaks had no specific name. It was simply referred to as "the religion" or "the old religion". During the colonial period Dutch administrators and missionaries labeled it "hidden" (heathenism) or "saten" (satenism). It was not until the period of Japanese occupation during the war that a non-derogatory name arose for the traditional Dayak religion.

There is some debate regarding the precise origin of the term Kaharingan, but it appears most likely to have arisen from Bahasa Sangiang, the ritual language of the Ngaju Dayaks of the Kapuas River.¹ The root, *haring*, means "self-existent" or "source". Thus, the term *Kaharingan* has been variously said to refer to the "source of life", "vitality", "water of life". The reference to water is quite common, with one popular interpretation being that *Kaharingan* refers to "water so pure that a baby can be bathed in it".

After independence Kaharingan was not recognized by the government as a "true" religion, but only as a belief. This posed problems for the people since under the Panca Sila everyone had to have a religion. This became particularly acute after the 1965 coup when anyone without a religion was suspected of being a communist. Thus, in the past decade and a half many Dayaks have nominally declared themselves to be Christians. Likewise, many Kaharingans have encouraged their children to declare themselves Christians before they go to school outside the village so as to avoid discrimination.

In the early 1970's discussions were begun within the government regarding the status of Kaharingan. These discussions culminated in Kaharingan being declared an official religion on March 31, 1980 as part of the religious category, Hindu/Dharma/Kaharingan. The decision to put Kaharingan into the same category with Hinduism stems from the mistaken belief that Kaharingan is an ancient form of Hinduism. While some elements of Hinduism exist in Kaharingan, there are even stronger strains of ancient Chinese ancestor worship and indigenous traditions.

Acceptance of Kaharingan by the government has enhanced the status of Kaharingan and boosted the morale of the people, but it also offers some potential problems. Without a formal "book" there is a great deal of pressure to codify the belief system and practices of Kaharingan. Since a fair degree of variation occurs among the various tribal groups, and actual ceremonial format varies almost from village to village, this may be an insurmountable chore. A more serious threat may be the attitude of the Balinese Hindus. Many Balinese Hindus view the Kaharingan Dayaks as lost sheep returning to the fold. It appears quite likely that the Balinese Hindus will not be willing to accept Kaharingan as a separate religion.

Notes

1. This is the Kapuas River of Central Kalimantan, not to be confused with the Kapuas River of West Kalimantan.

Three-Gender Personal Pronouns in Some Languages

of Central Borneo

Bernard J. L. Sellato

This short paper presents some preliminary linguistic data on a few little-known languages of the Muller-Schwaner Mountains, across the three Indonesian provinces of East-, West- and Central Kalimantan.

These languages are spoken by a group of formerly nomadic small tribes, some of them still partly dependent on sago. We will refer to them as "Muller-Schwaner Punan" (MSP). The Aoheng (or Penihing) number more than 2000 souls in Kecamatan Long Apari (upper-Mahakam). There are fewer than 400 Seputan in the same area, and about 300 Kereho-Busang (or Punan-Penyavung) scattered along the upper Busang river (Central-Kalimantan); the latter are cousins of the Kereho-Uheng of the Keriau river (West-Kalimantan). The Punan-Bungan form a few small villages on the Bungan river (West-Kalimantan). Very few of the Nanga Ira'

people of the upper Kapuas are left. The Huvung were assimilated long ago by the Aoheng, but still form a village of their own at Nanga Enap (upper Kapuas).

As far as the upper Mahakam is concerned (see Sellato 1980), the MSP tribes are the only remnants of the populations which were living there before the Bahua-Busang-Kayan invasion from the Apo Kayan. Linguistically, the MSP group is quite distinct from the Bahau group, and seems to be distantly related to the Bukat group (which includes Bukat, Punan-Merah and Punan-Lisum, as far as is known).

One of the peculiarities of the MSP language group is a three-gender third person pronoun system. Gender is distinct only in the singular. The "he" pronoun is used exclusively by male speakers (including young male children), female speakers using a form identical to the "she" pronoun instead. It can also be noted that the Aoheng language has dropped a separate form for "she", both male and female speakers using the neutral form instead.

		SEPUTAN	KEREHO	NANGA IRA'	AOHENG
Male Speaker	he	ana	ana	ana	ana
	she	is0	s0	s0?	h0
	it	h0	h0	h0	h0
Female	he	is0	s0	s0?	h0
	she	is0	s0	s0?	h0
	it	h0	h0	h0	h0

Bibliography: Bernard, J. L. 1980. "The upper Mahakam area," Borneo Research Bulletin 12:40-46.

NEWS AND ANNOUNCEMENTS

Survey Research Malaysia Begins Fieldwork

In March, 1981, Survey Research Malaysia (SRM) began fieldwork for the second media and marketing index which it has carried out in Sabah and Sarawak. The survey will cover the cities of Kota Kinabalu, Sandakan, Tawau, Kuching, Sibuan and Miri, and four small towns. Total sample size will be 2600 randomly selected households and individuals, divided evenly between Sabah and Sarawak. Four hundred households will be selected in Kota Kinabalu and in Kuching, 300 in each of the next largest towns, and 150 in each of the four small towns.

The first SRM study of this kind in Sabah and Sarawak was carried out in 1979. SRM has undertaken similar surveys in West Malaysia since the late 1960s on an annual basis and also has done many other studies in East Malaysia.

A variety of reports are produced with the General Report likely to be of greatest interest to Bulletin readers. These reports contain data on the socio-economic characteristics of the adult population in the towns covered and on their mass media habits, including frequency and recency of daily/weekly/monthly newspaper and magazine reading, cinema going, radio listening, and television viewing. Figures are grossed up to total population values for easy comparisons with government and other reports on these towns. The costs of the General Report is approximately US\$3000 and the report will be available by the end of July, 1981.

Further information on the research can be obtained from Mr. Yong Kim Seng, Managing Director, Survey Research Malaysia, Sdn. Bhd., 63c Wisma Kimtoo, Jalan Loke Yew, P. O. Box 2231, Kuala Lumpur, Malaysia.

Kayan, Iban Dictionaries

C. Hudson Southwell and A. J. N. Richards have edited Kayan-English and Iban-English dictionaries, respectively. Richards' dictionary is now in proof with publication by Oxford University Press expected in the first half of 1982. Southwell's dictionary was reproduced from typescript in Marudi, Sarawak, in May, 1980, and totals 389 pages.

Concerning his project, Southwell writes: "I have been working (on the dictionary) for over 30 years. It therefore reflects the traditional language as well as modern usages. I came to Sarawak in 1928 and have worked in Iban, Murut (Lun Bawang), Kelabit and Kayan, but I have made a special study of the Kayan language and am happy to have been able to get this Kayan-English dictionary published before I retire to Australia.

"The process of compilation, and the lexical methods used are discussed in the General Introduction. Also, a certain amount of anthropological data are recorded under words covering cultural themes. I am therefore hoping that this Kayan dictionary may be useful as supplying source material for workers in Southeast Asian fields of study."

The dictionary, published from private funds, may be ordered from Madam Lily Soo, P.O. Box 153, Marudi, Baram, Sarawak, East Malaysia at M\$18 plus postage, or from Mr. Southwell at Gracewood Lodge, 20 Roebuck Drive, Manning 6152, West Australia for M\$20 or A\$10.

EPIK Conference in Samarinda,

November 30 to December 9, 1980

A conference on Ethnographic Problems in Kalimantan (EPIK) was convened in Samarinda at the TAD Guest House from November 30 through the first week in December. Those who attended were: Bernard J. L. Sellato, Nikita Siberoff, Anna Lowenhaupt, Joseph Weinstock, and George N. Appell.

Sellato, EHESS, is engaged in linguistic and anthropological research among the Penihing in the Upper Mahakam region and various Punan groups. Siberoff, CeDRASEMI, is working on the translation of various Bahau texts. Anna Lowenhaupt, Department of Anthropology, Stanford University, is

studying social organization and ritual among the Bukit of South Kalimantan. Joseph Weinstock, a graduate student in the Department of Rural Sociology at Cornell University, is making a general survey of the Luangan group in Central Kalimantan and the Benuaq in the Mahakam River region. He has traveled extensively in these areas during his year of research. George N. Appell, Department of Anthropology, Brandeis University, is beginning ethnographic and linguistic fieldwork in the Kabupaten Bulungan, East Kalimantan.

The conference included a presentation of the results of research by the participants. Past research in the region was critically evaluated, and the importance of future research was discussed. The problem of finding qualified anthropologists to undertake research in Borneo was considered, particularly those trained in the study of modernization. And the problem of finding funds to support ethnographic research in Borneo was explored.

One of the results of the conference was the formation of a local journal in Samarinda entitled, *Buletin Budaya Kalimantan*, which is to serve as a medium for the publication of the results of scholarly results by Indonesian and foreign scholars.

Hull Occasional Paper Series

The Centre for South-East Asian Studies has begun the publication of a series of Occasional Papers. The Papers which are now ready for issue are:

- No. 1 "British Attitudes to Indigenous States in South-East Asia in the Nineteenth Century," by D.K. Bassett, 71 pp., £ 1.50, excluding postage.
- No. 2 "Ethnic Classification and Ethnic Relations: A Borneo Case Study," by V.T. King, 49 pp., £ 1.50, excluding postage.

It is hoped to publish similar low-cost Papers written by staff of the Centre or associated colleagues approximately twice a year. The Papers will normally reflect the particular interests of the Centre, which is concerned with the study of the economics, modern history, human geography, politics, sociology and social anthropology of South-East Asia.

Institutions, departments or individuals who wish to receive copies of the Occasional Papers should write to The Secretary, Centre for South-East Asian Studies, University of Hull, Hull HU6 7RX, England.

The Borneo Literature Bureau

The Borneo Literature Bureau (*Biro Kesusastraan Borneo*) was funded jointly by the State governments of Sarawak and Sabah. During its existence, the Bureau not only published official educational and other materials, but also provided an outlet for the work of local authors writing in a variety of vernacular languages. Its scope is demonstrated by the range of titles listed in the Bureau's final catalogue, issued in 1976, tabulated below:

Language	Educational Titles	General Titles ¹	Health and Miscellaneous	Total Titles ²
Bahasa Malaysia	10	35	8	53
English	35	68	41	144
Iban	32	61	7	100
Chinese	13	41	5	59
Kadazan		5	1	6
Bau/Jagoi		1	3	4
Kayan		3		3
Kenyah		2		2
Bukar/Sadong		1		1
Biatah		1		1
Bidayuh		1		1
Murut/Lum Dayeh		1		1

¹ Including literary, poems, folklore, history, etc.

² In addition to items tabulated, there are phrasebooks or wordlists from English to Malay, Bau/Jagoi, Iban, Biatah, and Murut/Lum Dayeh.

In 1977 the national language and publishing agency, Dewan Bahasa dan Pustaka (D.B.P.), established a branch in Sarawak, at Kuching, taking over the Borneo Literature in its entirety. The objective of the D.B.P. as defined by the Dewan Bahasa dan Pustaka Ordinance (1959), is "to develop and enrich the national language" and priority is therefore given to the publication of books in Bahasa Malaysia.

On a visit to the Kuching office of D.B.P. in October, 1980, I was, in fact, told that the Sarawak branch did not have local control over the choice of titles. Future policy would be set by the national headquarters, and was likely to involve the publication of Malay-language works only, or (exceptionally) parallel bilingual texts (e.g., English and Malay). D.B.P. will not, therefore, continue the role of its predecessor in the East Malaysian states in promoting the vernacular languages of Sarawak and Sabah.

The impact of the Borneo Literature Bureau in this field is certainly a potential research topic. The strongest interaction, to judge from the number of titles, was with Iban writers. Whether their output achieved a significant cultural impact must be a matter for careful evaluation. That the market was overestimated I judge from the number of unsold copies of many titles that were remaindered and offered for sale (in October, 1980) at large discounts.

As far as I know, the 1976 catalogue of B.L.B. is still available. Interested readers are advised to contact the Director, Dewan Bahasa dan Pustaka, Cawangan Sarawak, P.O.B. 1390, Kuching, Sarawak, as soon as possible. (Earl of Cranbrook)

Timber Resources in East Kalimantan¹

Approximately 28.8 million acres, or 20 percent of Indonesia's total commercial of 144 million acres, lie within East Kalimantan.

In addition to the Inhutani operations (see below), East Kalimantan's timber industry currently comprises 92 forest concession holders, 29 large sawmills, 230 smaller milling facilities, four plywood mills and one chip mill. Local timber industries have a combined processing capacity of 2.5 million cubic meters per year.

The Government anticipates the establishment of 16 additional wood-based industries in East Kalimantan by 1984, bringing the total annual capacity of local industry to 5 million cubic meters.

The province's local Investment Coordinating Board (BKPM) said 12 domestic investment applications for timber-based industries, valued at U.S.\$116.8 million, had been filed recently.

Inhutani Plans Fully Integrated Wood Industry¹

The completion of the first stage of a feasibility study of a pulp and paper mill project in East Kalimantan province has brought P.T. Inhutani, a state-run forestry corporation, nearer to its goal of establishing an integrated wood industry to utilize the millions of cubic meters of wood wastes from local sawmilling industries.

Preliminary results of the study, which is scheduled to be completed in 1981 by Yaakko Pyry Consulting Company, a Finnish firm, projects the plant's capacity at 42,000 tons of paper, 16,000 tons of pulp, 6,300 cubic meters of veneer, 81,500 cubic meters of plywood and 62,000 cubic meters of sawn timber.

The project will cost an estimated U.S.\$ 560 million and will be implemented in a joint venture with foreign participants. Negotiations with potential investors are currently in progress.

Established as a limited liability corporation in 1973, P.T. Inhutani is the second largest state forestry company in Indonesia, with forest concessions totalling 6.17 million acres; all of its concessions are in the province of East Kalimantan. The company, which is in its seventh year of operation, exports an average of 1.2 million cubic meters of logs and processed wood per year.

The Indonesian Government hopes to balance the country's wood exports between logs and processed timber on a 50:50 ratio, by value, and has recently imposed export quotas on logging operations to stimulate the establishment of downstream industries. The Government anticipates annual earnings of about \$2 billion from exports of logs and processed wood by 1984. (In 1979 processed wood accounted for about 16.5 percent of the country's wood exports.)

Inhutani has endeavored to follow Government directives and has established industries to produce greater quantities of processed timber for export.

The company currently operates several facilities, ranging from sawmilling to the manufacture of molding, wood-wool cement board, carved doors and windows and prefabricated housing.

Inhutani has also completed advanced planning of two plywood mills.

Forest Management

Since its foundation, the state-owned company has established standards for forest management procedures and logging operations.

Conservation of timber resources is an integral part of Inhutani's operating policy. The company observes selective cutting rules and manages two nurseries whose experimental farms grow seedlings used for enrichment planting and replanting areas denuded by farmers who still practice "slash-and-burn" farming methods.

Research conducted by the nurseries on various tree species and perennial crops helps to establish which trees or plants are most suited to the local terrain.

Inhutani's forestry research will be further supported by the Tropical Reforestation Research Center, which is being constructed in Samarinda, East Kalimantan, with a \$6.4 million grant from the Japan International Cooperation Agency.

Swamp Buffalo Investigation Study Initiated in Brunei

A census and management study of the indigenous swamp buffalo (*Bubalus bubalis*) has recently been initiated in Brunei with a view to defining and establishing an improved management program. The work is being carried out on a joint basis between the veterinary and livestock sections of the Department of Agriculture and staff at the Sinaut Agricultural Training Centre.

Field staff are currently carrying out a State-wide census which incorporates a farmer management questionnaire, body measurement and carcass measurement study. In conjunction with this, a feedlot program will be initiated at the Sinaut Centre to provide data on possible optimal growth rates.

Later in 1981, it is hoped to establish a cooperative ranching program and further feedlot investigation units.

The program organizers would be pleased to hear from any other workers undertaking research programs into the swamp buffalo in the region. The person to contact is The Director, Sinaut Agricultural Training Centre, c/o Brunei Shell Petroleum Company Limited, Seria, Brunei.

¹ Reprinted, Indonesia Development News.4:2, p.8, October 1980.

UNEP Experts Meeting on Tropical Forests¹

A UNEP Experts Meeting on Tropical Forests was convened in Gabon for 25 February to 1 March, 1980, but actually held in Nairobi. Of the c. 55 participants from 25 countries, some 20 qualified as experts . . . in the opinion of one (real) expert from the Netherlands. The U.S.A. sent 8 or 9 persons, Brazil 3, Indonesia none.

An Overview Document had been prepared in advance. . . This 70-page Overview Document (UNEP/WG.35/4, 8 Jan. 1980), with its 253 numbered paragraphs, is the best account of rain forest problems so far. It is divided into a descriptive part (57 p., 203 par.) and a Programme of Activities.

New Lizard in Sarawak

A new species of lizard, *Harpesaurus thescelorphinos*, has been discovered in Sarawak and is described by F. Wayne King in the Sarawak Museum Journal. It is the first of its genus to be found on the island of Borneo. (*Oryx* XV:4, p. 334, August 1980).

Primate Imports

In 1977-78, the United States imported about 60,000 primates, 90 percent of them from Malaysia, Indonesia, India, the Philippines, Kenya, Bolivia, Thailand and Somalia. Rhesus macaques were the commonest import in 1977, but after the Indian ban on rhesus exports, effective from April 1 1978, they were replaced by other macaques from South-east Asia. The other major imports, in declining order, were squirrel monkeys, tree shrews, marmosets, black-faced vervet monkeys, baboons and douroucoulis. (*Oryx* XV:4, p. 328, August 1980).

Women and Deviance

Professor M. D. Evans and several colleagues are writing "a book on the comparative (cross-national) study of women's involvement in deviance, notably crime." He is interested in "the extent of women's involvement in crime (as compared with men's), and in the ways in which female crime is dealt with by the community and the criminal justice system (types of punishment meted out to women as compared to those meted out to men, and the like)." Persons having data on this subject are asked to write Professor M. D. Evans, Department of Sociology, 1126 E. 59th Street, Chicago, IL, 60637, U.S.A.

Research Opportunities

The Agricultural Development Council, Inc. may be able to assist one or two U.S. Ph.D. students, although not financially, to do research in South and Central Kalimantan. Inquiries should be addressed to Dr. William L. Collier, Associate, The Agricultural Development Council, P. O. 62, Bogor, Indonesia.

BORNEO NEWS

Regional News

THE ASIA FOUNDATION has made a grant of \$2933 to enable PERWARI (Women's Association of the Republic of Indonesia) to conduct a workshop on the Role of Women in the Promotion of Home Industries for the Benefit of Family Welfare in Banjar Baru, South Kalimantan, and a grant of \$7070 to enable the Center for the Study of Land Law at Lambung Mangkurat University (Banjarmasin) to publish its newsletter and disseminate the results of discussions, symposia, seminars, and workshops and research on land law (The President's Review and Annual Report, 1979, pp. 31. 33).

JOHN HOBDA, a helicopter pilot for Airfast Service, P.O. Box 29, Singapore 2879, is building a library of photographs of the indigenous peoples of Borneo and Thailand. He has currently photographs of Kayan, Kenyah, Iban, Punan and Kelabit in Sarawak, and also some photographs of the Ngadju of the Kahayan River in Kalimantan. Hobday also has been building a library of photographs of the natural history of the region. His permanent address is No. 5, Fulford Park, York, England. These photographs are available for publication purposes. His agent for his natural history photographs is Peter Ward, Natural Science Photos, c/o Entomology Department, Natural History Section, British Museum, London.

Borneo News

G. N. APPELL while visiting the Institute of Southeast Asian Studies in Singapore in July, 1980, gave a seminar on "The Status of Bornean Ethnography." Appell then spent a week visiting the Department of Anthropology, University of Malaya. In addition to reviewing and inventorying the theses dealing with Borneo ethnography written by students in the Department of Anthropology, he gave a seminar on ethnographic research in Borneo and its current status. Also during July Appell and his family visited the Sarawak Museum and the Brunei Museum, and Mrs. Appell made a brief visit to the Rungus village where she and her husband originally did field work in the early 1960s.

During August, September, and October, Appell was a Visiting Fellow in the Department of Anthropology, Research School of Pacific Studies, Australian National University, in Canberra. He gave seminars on "What Constitutes a Healthy Society" and "Status of Borneo Ethnography." He also gave a seminar on epistemological issues in anthropological research at the University of Sydney. As a result of his work at the Australian National University, Appell is preparing a book of contributed essays entitled, Modernization and the Emergence of a Landless Peasantry. Anyone who might like to contribute to this monograph should contact G.N. Appell.

Appell and his family are currently in East Kalimantan where he is undertaking linguistic and ethnographic research until September, 1981. On their way to Kalimantan from Jakarta they visited Michael Dove at Gadjah Mada University and Patricia Whittier at Airlangga University. They also attended the EPTK Conference held in Samarinda in early December.

¹ Reprinted Flora Malesiana Bulletin 33, p. 3407, July, 1980.

Kalimantan News

WILLIAM L. COLLIER, Associate of The Agricultural Council, Inc., reports that the Council has selected 14 villages in the Coastal Wetlands in South and Central Kalimantan and will be carrying out studies in these villages for the next two years. His article, "Fifty Years of Spontaneous and Government Sponsored Migration in the Swampy Lands of Kalimantan: Past Results and Future Prospects," printed in Prisma: The Indonesian Indicator (No. 18, September 1980, pp. 32-55), focuses on transmigration, a topic of interest to many readers of the Bulletin.

DRS. G. SIMON DEVUNG, Fakultas Keguruan dan Ilmu Pendidikan of Universitas Mulawarman, will be delivering a paper entitled, "The Pronoun System in the Bahau Hwang Tring Dialect," at the Third International Conference of Austronesian Linguistics, Denpasar, Bali, 1981.

LAURENTIUS DYSON of the Fakultas Ilmu Social, Airlangga University, Surabaya, is planning to do field work among the Ma'anyan people of Kalimantan with a focus on their ritual.

MARY BETH FULCHER, graduate student from Northwestern University, is doing field work in a transmigration community in East Kalimantan.

DARMANSYAH GUDAI, of the Fakultas Keguruan, Universitas Lambung Mangkurat, Banjarmasin, is studying in the Ph.D. program in the Department of Linguistics, Faculty of Arts, Australian National University. He plans linguistic field work on the Ma'anyan language.

DES HOBAN is working as an adviser to the Planning Board in the Province of Kalimantan Barat, having been engaged for this purpose by the Australian Development Assistance Bureau. Hoban is attempting to compile a general bibliography on the province and would appreciate references or collections for Kalimantan Barat. Hoban also is seeking support and assistance for BONNYFACE SURENG, an Iban from Kampung Kedang in Kecamatan Empanang who is now working in the Bupati's Office in Putussibau as an adviser on Dayak affairs, and who wants to write on the history and culture of the Dayak of Kalimantan Barat. Anyone able to contribute to either project is encouraged to write Mr. Hoban c/o Australian Economic Planning Project, P.O. Box 28, Pontianak, Kalimantan Barat, Indonesia.

ANDREAS MASSING is planning a book on the Mahakam basin, its people, ecological settings and economic development, to be entitled, The Making of a State: The Sultanate of Kutai in East Borneo. He will leave the TAD Project in March to take a post as assistant professor at the Probenius Institute, Frankfurt University. He will be at Purdue University for three months beginning in April.

CHRISTINE PADOCH conducted field research from mid-January until early August, 1980, in several districts in the Krayan district of East Kalimantan. Her project, sponsored by L.I.P.I. and the Man and Biosphere Program and funded by the U.S.D.A.-Forest Service, focused primarily on the agricultural systems of the Lun Dayeh, on their population dynamics, land tenure, and

other aspects of resource use in the area. The study was largely comparative, with communities engaged in wet rice agriculture contrasted with areas where shifting cultivation predominated as a farming method.

BERNARD J. L. SELLATO has been engaged in research in the Upper Mahakam River area and among the Penihing from May, 1974, to December, 1975, and from December, 1979, to April, 1981, under the sponsorship of the Ecole des Hautes Etudes en Sciences Sociales, Paris. Sellato has been doing general ethnographic research but has focused on the ethnohistory and comparative linguistics of the Penihing, Seputan, Penyavung, and related "Punan" groups. His goal is to complete an ethnohistorical reconstruction of the peoples of the Müller-Schwanner mountain ranges and the Upper Mahakam River region. He is attempting to reconstruct the proto-Punan linguistic grouping for the center of Kalimantan. He also has been collecting basic vocabularies from other groups in East Kalimantan for his study of the comparative linguistics of the region.

Sellato has made a phonograph record of the Dayak music of the Upper Mahakam area that includes an introduction in French and English and a transcript and translation of Penihing songs. The record is entitled "Dayak Music of Borneo" and is distributed by the Société Française de Productions Phonographiques, Paris. Sellato also has an article appearing in the 1981 issue of Archipel entitled, "Une région isolée de Borneo: la Haute Mahakam."

His permanent address is rue A. Silvestre, 92400 Courbevoie, France.

NIKITA SIBEROFF, CedRASEMI, Paris, has done research in 1979 on shamanism and agricultural rituals among the Bahau Dayaks of Tring, Kecamatan Long Iram, and the Tunjung Dayaks of Kecamatan Melak, two groups located in Kabupaten Kutai, East Kalimantan. Siberoff is currently engaged in collaboration with DRS. SIMON DEVUNG in (1) the translation of several Tring Bahau texts used in agricultural rituals; (2) the editing and enriching of a text by S. Devung on the history of the Tring Bahau, and (3) the compiling of a dictionary of the Tring Bahau language. He hopes to be back in Kalimantan in the very near future to continue collecting traditional literature among the Tring Bahau and Tunjung Dayaks, if adequate funding is quickly made available. His current address is 1, rue de l'Ancienne Mairie, 92100-Boulogne, France.

RISWAN SOEDARSONO recently returned to the University of Aberdeen after completing his field work for his doctoral dissertation on nutrient cycling in pioneer woody vegetation in Kalimantan. He is currently continuing analytical work, and will be starting writing up shortly, which he hopes to finish within a year.

GRETA WATSON, a graduate student in anthropology from Rutgers University, is working in a village in Samuda Kecil, Kalimantan, where she expects to be for approximately two years.

JOSEPH WEINSTOCK, a graduate student in Rural Sociology from Cornell University, has spent approximately 18 months in East and Central Kalimantan studying the Luangan (Lawangan) Dayaks. He has focused upon Kaharingan (see report), environmental and agricultural issues, ethnicity, and other related topics.

Sabah News

JOHN DRANSFIELD from Kew collected rattan between mid-March and mid-May, 1979, in Sabah, Thailand, and the Philippines. He again worked in Sabah from 14 August to 17 November, 1979, to prepare an inventory of the rattans of Sabah and to make recommendations on rattan cultivation. Rattan flora of Sabah now stands at about 100 taxa of which 25 were recorded for the first time during this survey. On the survey he was joined by A. J. HEPBURN (Forest Department, Sandakan), MUSTAFA BIN ABDUL RAHMAN (Sabah Forest Development Authority), and plant collector DEWOL BIN SUNDALING (Sandakan). Sabah now appears committed to plant cultivation.

STEFAN VOGEL and A WEBER, W-Herbarium, Vienna, visited Sabah and Sarawak from 25 July to 11 October, 1979. Vogel filmed the pollination of Momordica (Cucurb.); its flower produce no nectar but oil, which is foraged by highly specialized bees of Ctenoplectra. Weber studied Gesneriaceae and other forest herbs, concentrating on shoot and inflorescence morphology of Monophyllaea. They collected about 200 specimens.

Sarawak News

MICHAEL LEIGH, Government Department, University of Sydney, has completed a three-year secondment working with the Yayasan Ilmu-Ilmu Sosial (Social Science Foundation of Indonesia). For the past year he has been the Social Science Adviser/Australian Project Leader for the program for development of the social sciences. Previously, he taught at the Social Science Research Training Stations in Jakarta and Aceh. Part of the expanded program has involved training programs and research supervision for staff at Universitas Tanjungpura, Pontianak.

RICHARD SCHWENK, formerly missionary/rural sociologist working in the Upper Rejang, is now CEED Director, Philippine Christian University. His complete address is Taft Avenue Corner, Pedro Gil Street, P.O. Box 907, Manila, Philippines.

BOOK REVIEWS, ABSTRACTS
& BIBLIOGRAPHY

Colin N. Crisswell. Rajah Charles Brooke: Monarch of All He Surveyed, Kuala Lumpur, Oxford University Press, 1978, pp. 253.

One of the laws of book reviewing is not to take an author to task for failing to do things he had no intention of doing, of not writing the book that the reviewer would have written. The problem for the academic reviewer of Colin Crisswell's biography of Charles Brooke is that in spite of the expectations aroused, it is only marginally an academic work. The author tells us at the outset that although "not a great deal of primary material relating directly to his life has survived," he has made good use of the Public Record Office and the Sarawak Museum for his sources. In fact, however, he has not consulted a vast body of original manuscript material

which has been available at Rhodes House Library, Oxford, for some years. While his bibliography lists official sources and unpublished works consulted, he identifies only a selection of quotations and dispenses with the full apparatus of scholarship. Rajah Charles Brooke: Monarch of All He Surveyed is essentially a popular work which will be widely read and much enjoyed, but it must also be judged on the basis of its academic ambitions, confirmed by the prestigious Oxford In Asia imprint under which it appears.

Contrary to Colin Crisswell's claim, he is not the first biographer of Charles Brooke. In about 1907 the Second Rajah handed over his papers to a trusted senior officer, C. A. Bampfylde, with the intention of preparing a biography. Bampfylde's manuscript was later "polished" by the Rev. S. Baring-Gould, a professional writer whose son was also in the Sarawak Service. When the intended publisher, Henry Sotheran & Co., balked at bearing the risk, Charles agreed to bear the cost of printing. The resulting volume, entitled A History of Sarawak Under The Two White Rajahs (London, 1908), in fact dealt in some detail with the reigns of both James and Charles, serving as the official history of Sarawak. As far as Charles was concerned, it fostered the idea of the "strong man" who had saved the Raj during the dark days of the Chinese rebellion and the "Malay Plot". At the same time it diminished the role of Charles' older brother, John Brooke Johnson (better known as Brooke Brooke), who bore a major share of the administration from 1857 and seemed certain to succeed their uncle as Rajah. Together with the biographies of James by Gertrude Jacob and Spenser St. John Sarawak Under The Two White Rajahs established the orthodox view of the first seventy years of Brooke rule: a view which was not substantially modified by the appearance of Sir Steven Runciman's officially commissioned The White Rajahs in 1960.

Colin Crisswell's writing is very much within the tradition of the "court" historians. He is a skilled stylist who is clearly more interested in charming the general reader than in offering a serious contribution to the reinterpretation of Sarawak history commenced by Robert Pringle and Craig Lockard. His prose sometimes verges on the purple, as in this evocation of the jungle:

Little sunshine filters through the gloom of the forest floor, where the silence is only broken by the cackle of a hornbill and the chorus of cicadas at sunset (p. 6).

The temptation to dwell on the exoticisms of Borneo and its inhabitants has claimed yet another writer. However, it can only add to the book's popularity

From an academic point of view, Crisswell's generally uncritical attitude is exemplified in his acceptance of the orthodox early history of the Raj. As Graham Saunders has pointed out, James Brooke's attainment of the government of Sarawak was largely ensured with the assistance of ship's cannon. And to maintain that James' main asset in his subsequent efforts to secure his position was his personality is to overlook the absolutely crucial role of Royal Navy captains greedy for pirate-money. While he cites Pringle's Rajahs and Rebels from time to time, Crisswell echoes Charles Brooke's own account of his milita

exploits in *Ten Years in Sarawak*. Charles is allowed to reflect at one point on the loss of innocent lives at the hands of his barely controllable Iban forces, but for the most part the narrative celebrates his derring-do without asking too many questions about the ultimate purpose. Crisswell writes of separating Malays from Ibans "in order to free the latter from undue Malay influence." The reality was that the traditional alliance between Malay leaders and Ibans in the Second Division had to be broken off if Brooke power was to be sustained. James himself had earlier written: "If left to my own resources, I must become chief of the Dayaks . . ." Nor does Crisswell seem to have taken account of Pringle's reinterpretation of the "Malay Plot" and his narrative of events is less than clear at this point.

Not only does the book not provide a critical account of Charles Brooke's public career, it does little to reveal the "inner man". Charles' appreciation of comely Iban "wenches" is noted and Crisswell suggests that he probably had at least one illegitimate child by a native mistress. In fact the Rhodes House records reveal that he had a series of *gundek* or native concubines while he was stationed as Resident at Simanggang, one of whom produced a son later baptized by the local S.P.G. missionary as Isaka Brooke. When Rane Margaret came to Sarawak for the first time in 1870, she discovered Isaka (or Esca as he was later known) at Simanggang and took him back to England where he was fostered by the rector of Sheepstor in Devon, the Rev. W. Y. Daykin. He was later taken to Canada and it was from there in 1927 that he made a somewhat ill-judged claim to the succession. Charles Brooke's willingness for Isaka to be whisked off to England contrasted oddly with his published opinion a few years earlier that intermarriage between Europeans and natives of Chinese would ultimately produce a group of people better adapted than Europeans to develop Sarawak's resources.

This information is offered not to tarnish the reputation of a truly extraordinary man but to indicate that there is a good deal more information available on the Second Rajah's personal life than Colin Crisswell has been able to consult. Rhodes House's collection of his correspondence could have been used to answer some of the more interesting questions posed about his career. For example, his relationship with his brother and his uncle is crucial to an understanding of how he became Rajah. His own parents accused him of disloyalty and Crisswell does not produce any evidence that Charles interceded on his brother's behalf. Charles was the happy beneficiary of his brother's dramatic falling out with their uncle and a biography should clarify what appears to have been a case of personal opportunism. Perhaps this explains the coolness which Baroness Burdett-Coutts and Spenser St. John showed towards him. Charles was a man of action, no doubt, and possessed remarkable physical courage, but his isolated up-country life helpfully isolated him from the court politics of Kuching and his brother's agonized efforts to prevent James from selling off Sarawak to the highest bidder. Brooke Brooke's own correspondence would also offer a useful corrective to the orthodox version of events.

The one line of critical argument which can be detected in what is a predominantly descriptive narrative has to do with the nature of Brooke rule and it is here that academic readers will take most heed. Colin Crisswell's belief is that Charles responded to circumstances " . . . where he had little option but to conform generally with traditional practice . . ." Charles " . . . realized

that the limited resources of the Brooke government made it essential to adopt (sic) local behaviour, like the love of war and head hunting, to his own ends." The Brookes were pragmatists, it is true, but Crisswell wants to make a virtue of necessity by describing them as " . . . more ethical and certainly more successful than the other Europeans who tried to carve themselves a kingdom in the east . . ." A more interesting idea which he deals with only fleetingly is that Charles actually preferred the values of Iban society to those of his own. Had it not been for the absence of both his uncle and his brother in England in 1858, he would have built his own longhouse in the Skrang and lived there Iban-style with his followers. Charles' military success, significantly enough, was attributed by the Ibans to his communion with their goddess of war. The fascinating thing about Charles Brooke is that he very nearly "went native".

Colin Crisswell's celebration of Charles Brooke will be read with pleasure by many people and it is a useful addition to the general literature on Sarawak, but it is difficult to avoid concluding that he lost an opportunity to come to grips with by far the most interesting of the three White Rajahs. (R. H. W. Reece, St. Antony's College, Oxford)

Luping, D.M., W. Chin, and E. R. Dingley, eds. *Kinabalu, Summit of Borneo*, Kota Kinabalu, Sabah, Malaysia, The Sabah Society, 1978, pp. 482.

The word "Kinabalu" may mean "Chinese widow" (or) "solitary father" (p. 31), according to the late Tom Harrisson in an entertaining introductory chapter. Following this, D. V. Jenkins sums up "the first hundred years" after the ascent by Low in 1851: an account of 53 visits by 47 references.

Marine sediments deposited in North Borneo were uplifted; what erosion left is now the Crocker Range. Under it, a mass of magma intruded and solidified; one to two million years ago it began to rise 5 mm a year. This became Mt. Kinabalu, the solitary mountain with its broad, jagged summit, its highest point 4175 m. During the Pleistocene, 5 sq. km. of the summit was under ice, except the steepest peaks which protruded as "nunataks". The ice left a moraine at 3100 m, not far from Pakka Cave. The Pinosuk Plateau lower down was overrun by mixed gravels. The rock of the level summit plateau is still peeling off in flakes; this is thought to be an after-effect of the stress inside the rock during the uplift. The whole process is neatly explained by L. C. Myers, although his timing is much at variance with the one supplied by geologist C. Jacobson on p. 104. The original crystalline basement, two main crops of ultra-basic rock and some porphyry are beside the big dome of hornblende adamellite.

E. J. H. Corner's paper on Plant Life covers pages 112-178. He led the Royal Society Expedition in 1961, and revisited the mountain three years later. Sure enough, he established 78 species of *Ficus* for the mountain, 13 of them endemic, out of 135 for the whole of Borneo. The genus reaches its altitudinal record here at 10,600 feet (3200 m). In an animated manner he discusses this group, and many others, viz. herbs (16 items), Nepenthes, parasitic flowering plants (4 items), *Rubus*, common trees and shrubs (13 items), and other plants of particular interest (22 items).

P. F. Cockburn in a paper on the flora (pp. 179-190) briefly discusses the zones, one of them ultrabasic, as if this were an altitudinal feature. Some typical plants are named; most noticeable are the fine pen drawings by Ms. Chin Pak Hau. R. E. Holttum's paper on ferns (pp. 199-210) expertly 9 categories in popular terms; it is somewhat reminiscent of his chapter 13 in Verdoorn's Manual of Pteridology (1938). In a paper by A. Lamb and C. L. Chan on orchids (pp. 219-252), some fantastic ideas about vegetation history are set forth, together with chatty notes on genera and species; there may be in Kinabalu Park "a thousand species, if not more."

The zoological part seems particularly informative as it contains a Checklist of the Butterflies (345 sp.), of Fishes (32 sp.), of Frogs and Toads (43 sp., none endemic, with ecological notes). As for the birds, Smythies gives notes to some 80 species, numbered in accordance with his Birds of Borneo; also a systematic annotated checklist has been given of 289 species in 44 families, 254 are resident, 30 are migrants. For the small mammals, too, there is a checklist: 101 sp., with indication of altitude and preference (1/3 on the ground, 2/3 in the canopy). There is only one big cat, Felis bengalensis.

Kinabalu National Park, gazetted in 1964, now occupies 301 sq. mi. (c. 750 sq. km.), more than the land area of Singapore Island, and now receives about 10,000 visitors annually. In 1972, an addition was made of 26 sq. mi. around Mt. Templer (1200 m) in the little-known North, but 25 sq. mi. were excised in the Southeast to work a deposit of 77 million tons of copper ore. A dam was made at 15½ km from the mine to keep the tailings produced by the flotation works at Mamut. The lifetime of the mine has been estimated at 15 years, "and problems could arise if there is no alternative employment for those people who have changed their traditional way of life" (p. 83). In the 1950s, vegetable cultivation was introduced at Ranau (1300 m); this cut into the forest in various places. In 1972, the road connection between Kota Kinabalu, Ranau (pop. 2000) and Sandakan was completed.

The book ends with biographical notes on the 18 collaborators, a list of publications not mentioned in the foregoing papers (103 titles), a list of prices for visitors (address of the Warden: Box 626, Kota Kinabalu, Sabah, Malaysia), and an index. (reprinted by kind permission of Dr. M. Jacobs, Editor, Flora Malesiana Bulletin, Number 33, July 1980, pp. 3448-3449).

Nababan, P. W. J. "Languages of Indonesia," IN Papers on Southeast Asian Languages: An Introduction to the Languages of Indonesia, Malaysia, the Philippines, Singapore, and Thailand, Teodoro A. Llamzon, ed., Singapore, University Press, 1979.

This paper attempts to give an overview of the language situation in Indonesia. It provides a brief survey of the numerically more important languages, including population figures, and some remarks on language relationships and multi-lingualism. The paper devotes three pages to a discussion of the "characteristic structures of Indonesian languages," confined largely to an enumeration of Malay-Minangkabau phonological correspondences. In a concluding section, the author discusses the "sociocultural context" of Indonesian languages, with special emphasis on language contact and interference. A table is included listing 32 languages in use in Indonesia together with approximate populations according to the 1971 census.

Nicolaisen, Johannes, "Penan Death-names," The Sarawak Museum Journal, Vol. 26, No. 47, July/Dec. 1978, pp. 29-41.

The author studied the Penan of the 7th Division in 1973 and 1975. Death names are, as defined by Rodney Needham: "terms which are applied to surviving relatives of a deceased person and which divide these into a number of categories according to their relationship to that person." They are given to the relatives of the deceased immediately on his death and those who get death names must be referred to and addressed only by their death names during the mourning period. The author gives an inventory of the 43 death names he found, and he gives short descriptions and an analysis of the Penan's burial customs and taboos during the mourning period. He also attempts to explain the reason for the use of the death names, in connection with the attempt to keep away evil spirits.

Nyandoh, R., "Bidayuh Gawai Mpijog Rantau Festival for the First Clearing of the Padi Fields," The Sarawak Museum Journal, Vol. 26, No. 47, July/Dec. 1978, pp. 43-56.

A chief purpose of this festival, which lasted three days in July 1977 was to honor the spirit, Pulang Gana, who is the creator of the lands and the rivers, and to ask from him permission to make use of part of the land for the current year's rice fields. Other purposes surmised by the author are the placating of other spirits and various blessings. He also described the process, with detailed descriptions of the kind and amount of offerings, and the different procedures and prayers on each day and night.

Rousseau, Jérôme, "Kayan Stratification," Man, Vol. 14, No. 2, June 1979, pp. 215-236.

It is generally assumed that simple societies with subsistence economies cannot have social classes, but only status levels. Contrary to that view, an analysis of Kayan social organization demonstrates that this group of central Borneo shifting cultivators is differentiated not only into three classes but, since the intermediate class is split, into four status levels, or strata. These four hereditary strata establish the basis of the political structure and of the mode of production. Members of one stratum (the *marens*) have a monopoly over chieftainship. They receive corvees from commoners (*hipuys* and *panyins*), and control the surplus labor of slaves (*dipens*). Classes and status levels are thus not mutually exclusive. On the contrary, the presence of formally defined strata is an important element of some class structures. For instance, the differentiation of commoners into two strata is a fundamental feature of the Kayan system, which contributes to maintaining its stability. This article is based on research carried out in 1970-72 and 1974 in the Baluy area of Sarawak, and particularly in the village of Uma Bawar.

Rubenstein, Carol, The Honey Tree Song: Poems, Chants, and Epics of Sarawak Dayaks, Athens, Ohio, Ohio University Press, 1981.

The original work was done during 1971-74 while Ms. Rubenstein was sponsored by the Ford Foundation. Songs, chants, song-cycles and epics, secular and religious, all previously unrecorded or transcribed, were collected and

translated in a life-cycle format within each of the seven major groups: Iban, Bidayuh, Melanau, Kelabit, Kenyah, Kayan, and Penan.

The aim was to find out the real and often complex meanings of the poems in the song-language of each group, which was usually vastly different from the colloquial speech of each group, or that generally used in folktales, and to present the poems in an English language version, line by line as much as possible, which was faithful to the original in image, rhetoric, voice, intent, mood, and nuance. It was additionally necessary to contextualize the poem, identify and explain obscure images and words, and document background.

The content ranges from lullabies to dirges, including chants of initiation, songs of courtship, battle, headhunting, journeying, working, hunting, farming, sickness, healing, and the hereafter, as well as several song-cycles and epics in complete form.

The first result of the research was the two-volume Special Monograph No. 2, Poems of Indigenous Peoples of Sarawak: Some of the Songs and Chants, Parts 1 and 2, Sarawak Museum Journal, Vol. 21, No. 42, appearing in 1975, published by the Sarawak Museum with a grant additionally provided by the Ford Foundation. Both the indigenous-language and the English-language versions are included.

The second result of the research is the revised version, published by Ohio University Press in 1981, entitled The Honey Tree Song: Poems, Chants, and Epics of Sarawak Dayaks. Much new exposition is included. Only the English language versions are given, a large selection reorganized within a life-cycle format (excepting the long song-cycles and epics, which comprise a separate section: *The Renong* song-cycle of the Iban; the *Brayun* song-cycle of the Bidayuh, and three Kelabit epics--*Balang Lipang*, *Adi*, Song of *Agan*, and the Song of *Tukad Rini*.)

Each section is introduced by an explanatory article, relating the songs within to their Dayak contexts. The Introduction, in fourteen sections, including a brief Bibliography, describes the environment and translation process, along with the background and events leading up to the project and the years following its completion. Seven individual articles describe each of the original expeditions and groups in detail. Photos and a map are also provided. The book is introduced by two Prefaces: Preface 1 by Jerome Rothenberg relates to Ethnopoetics, the study of oral literature in and out of its natural setting; Preface 2 by Vinson Sutlive relates to Anthropology and the real Dayak world, as manifested in song and celebrations he has experienced. The cover is an original Kayan painting in traditional style by Jok Bato. The book is approximately 700 pages.

Sandin, Benedict, "The *Pelian Bejereki*: Iban rite of spirituality fencing an expectant mother," The Sarawak Museum Journal, Vol. 26, No. 47, July/Dec. 1978, pp. 57-80

The *pelian bejereki* is a rite traditionally conducted by the Iban *manang*, or shaman, to protect an expectant woman from possible miscarriage. The

research on which this account of the *pelian bejereki* is based was made possible through the assistance of the Smithsonian Institution Urgent Anthropology Small Grants Program. The *pelian* text recorded here was collected from a senior, fully consecrated shaman (*manang mansau*). The paper contains the full text with English translation.

Sather, Clifford, "Iban Folk Mycology," The Sarawak Museum Journal, Vol. 26, No. 47, July/Dec. 1978, pp. 81-102.

This paper concerns Iban ethnomycology, i.e., the way in which the Iban classify and deal with the locally occurring fungi, or *kulat*. It is based on research carried out in three field sessions in 1977-78 in the Second Division of Sarawak. The vernacular names applied to the funga varieties are those of the Saribas Iban, although alternative names are given where these are known. As far as possible, the author has tried to give scientific identifications of Iban fungal taxa. The author gives descriptions of the 65 specific varieties of fungi that are distinguished by name locally, followed by an account of the practical value and more abstract cultural associations of the fungi generally.

BIBLIOGRAPHY

- Anderson, A.J.U., 1977. "Sago and Nutrition in Sarawak," Sarawak Museum Journal, No. 25, pp. 71-80.
- Annual Report, Sinaut Agricultural Training Centre, 1980, Tutong, Brunei, Sinaut Agricultural Training Centre.
- Freeman, Derek, 1979. "Severed Heads that Germinate," IN R. H. Hook, ed., *Fantasy and Symbol*, Academic Press, pp. 233-246.
- Furtado, J. I., 1979. "The Status and Future of the Tropical Moist Forest in Southeast Asia," IN Colin MacAndrews and L. S. Chia, eds., Developing Economics and The Environment: The Southeast Asian Experience, McGraw-Hill, pp. 73-120.
- Jacobs, M., 1978. "Forests for People . . . Once?" *Tiger Paper* 5(4), pp. 25-41.
- Kalkman, C., 1979. "The Rijksherbarium, In Past and Present," *Blumea* 25, pp. 13-26.
- Kiew, Ruth, 1979. "New Species and Records of *Iguanura* (Palmae) from Sarawak and Thailand," *Kew Bulletin* 34, pp. 143-5.
- King, Victor T., 1979. "Research on Former Nomads in West Kalimantan (Western Indonesian Borneo)," *Bulletin of the International Committee on Urgent Anthropological and Ethnological Research*, Vienna, No. 21, pp. 89-98.
- _____, 1980. "Structural Analysis and Cognatic Societies: Some Borneo Examples," *Sociologus* 30, pp. 1-28.
- Kurata, S., 1976. "Nepenthes of Mount Kinabalu," Sabah National Parks Publication No. 2, pp. 1-80.
- Larsen, K., and S. S. Larsen, 1978. "*Bauhinia dewittii*, A New Bornean Species," *Gard. Bull. Sing.* 31, pp. 1-3.
- Laubenfels, D. J. de, 1979. "The Species of *Agathis* (Araucariaceae) of Borneo," *Blumea* 25, pp. 531-541.
- MacAndrews, Colin and L. S. Chia, 1979. Developing Economics and the Environment: The Southeast Asian Experience, McGraw-Hill.
- Mahabale, T. S., 1978. "The Origin of the Coconut," The Paleobotanist 25, pp. 238-246.

- Meher-Homji, V. M., 1979, "Distribution of the Dipterocarpaceae: Some Phytogeographic Considerations on India," *Phytocoenologia* 6, pp. 85-93.
- Moldenke, H. N., 1979. "Notes on New and Noteworthy Plants," CXXIV, *Phytologia* 43, p. 222.
- _____, 1979. "Some Novelties from Sabah," *Phytologia* 43, p. 252.
- Moore, H. E., Jr., 1979. "Endangerment at the Specific and Generic Level in Palms," *Principes* 23, pp. 47-64.
- _____, and J. Dransfield, 1979. "The Typification of Linnaean Palms," *Taxon* 28, pp. 59-70.
- Rousseau, Jérôme, 1980. "Iban Inequality," *Bijdragen tot de taal-, land- en Volkenkunde*, pp. 52-63.
- Smith, J. M. B., 1979. "Vegetation Recovery from Drought on Mt. Kinabalu, (North Borneo)," *Mal. Nat. J.* 32, pp. 341-2.

THE BORNEO RESEARCH COUNCIL (contd. from p. 2)

of the Council also include providing counsel and assistance to research endeavors, conservation activities, and the practical application of research results.

Support for the activities of the Council comes from subscriptions to the *Borneo Research Bulletin*, Fellowship fees, and contributions. Contributions have played a significant part in the support of the Council, and they are always welcome.

Fellows of the Borneo Research Council

The privileges of Fellows include (1) participation in the organization and activities of the Council; (2) right to form committees of Fellows to deal with special research problems or interests; (3) support of the Council's program of furthering research in the social, biological, and medical sciences in Borneo; (4) subscription to the *Borneo Research Bulletin*.

The Fellows of the Council serve as a pool of knowledge and expertise on Borneo matters which may be drawn upon to deal with specific problems both in the field of research and in the practical application of scientific knowledge.

Fellowship in the Council is by invitation, and enquiries are welcomed in this regard.

INFORMATION FOR AUTHORS

Research Notes: These should be concerned with a summary of research on a particular subject or geographical area; the results of recent research; a review of the literature; analyses of the state of research;

and so forth. Research Notes differ from other contributions in that the material covered should be based on original research or the use of judgment, experience and personal knowledge on the part of the author in the preparation of the material so that an original conclusion is reached.

Brief Communications: These differ from the foregoing in that no original conclusions are drawn nor any data included based on original research. They also differ in consisting primarily of a statement of research intentions or a summary of news, either derived from private sources or summarized from items appearing in other places that may not be readily accessible to the readers of the *Bulletin* but which have an interest and relevance for them. They will be included with the contributor's name in parentheses following the item to indicate the source. Summaries of news longer than one or two paragraphs will appear with the contributor's name under the title and prefaced by "From".

Bibliographic Section: A Bibliography of recent publications will appear in each issue of the *Bulletin*, and, consequently, reprints or other notices of recent publications would be gratefully received by the Editor.

Other Items: Personal news, brief summaries or research activities, recent publications, and other brief items will appear without the source specifically indicated. The Editor urges those contributing such news items to send them in the form in which the contributor wishes them to appear rather than leaving this to the discretion of the Editor.

All contributions should be sent to the Editor, Borneo Research Bulletin, c/o Department of Anthropology, College of William and Mary, Williamsburg, Virginia, 23185, U. S. A.

STYLE FOR CONTRIBUTIONS

Please submit all contributions double spaced. Research Notes and Brief Communications should be limited to approximately eight double-spaced pages. Footnotes are to be avoided wherever possible. Bibliographies should be listed alphabetically by author at the end of the contributions: author should appear on a separate line, then date, title of article, journal, volume number, and pages. For books, include place of publication and finally publisher. References in the body of contributions should be cited by author's last name, date, and page number as follows: (Smith 1950:36-41). For punctuation and capitalization refer to Bibliographic Section.

Names mentioned in the News Section and other uncredited contributions will be capitalized and underlined.