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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. Analysis 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 opinion, 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 Baker, Ian Balfie, Ruth Carol Barnes and Richard W. Figler, Paul Beaumont, Stanley Bedlington, E. J. H. Corner, Barbara Harrison, Stephanie Morgan, Christine Padoch, Ifor B. Powell, Mr. and Mrs. Paul Sack, William Schneider, Richard Stutzer, 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

Because of the rapidity with which social and ecological changes are occurring in East Kalimantan (Deroosemen 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 NAB (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. Jesup (Graduate Program in Ecology, Rutgers University) and Dr. Carol J. F. Colfer (University of Hawaii at Manoa), and one Indonesian investigator, Drs. Herawasono 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 Jesup 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 Mulyaanma 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. Syamsuri Arman (Tanjung Pura University, Pontianak), Ir. M. Brotokusumo (Mulyaanma University, Samarinda), Dr. C. H. Ratta (Lambung Mangkurat University, Banjarbaru), and Dr. A. Sahur (Sawadadin 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 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 rarity 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; pref-ace and Chambers 1980 on what the latter calls "quick-and-cleat" 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 helped to correct some of the 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 formed 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 homeland (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 falling 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 (Matters 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 Bgls pepper-farmers, seeking more 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 Sangai 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 laterals 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 700.

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 swidden ladangs, old fields, secondary forest, or "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 Mt'long village group forty years ago. His work was complemented by that of Soebijanto, 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 60 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 Niesenhuys expedition of 1900 (Steenis-Kruseman 1950; Kartanwarta 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 1980a) 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 (Nyhus 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 (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 reserves 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, Florin 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 villages 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 remarried 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 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 (Kartadinata 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" Kenyahs from the Apo Kayan is located on a alluvial plain in Kecamatan Muara Waul. Participant observation of forest-related activities was Colfer's main work here, supplemented by informal interviews, inadung 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 Segar, 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 traditionallism 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 inadung-hunting and in free-lease woodcutting for making balok (beams) for sale. They have also found ways to undertake extensive, year-round agriculture in poor yields of cassava, yams, and other crops, as well as to provide staple crops for their personal consumption by their forest-converting "shiftiing cultivators by necessity" previously referred to and hoping to find them in the vicinity. Some of these farmers are shifting cultivators from the island of Buton (Butang), which is near southeastern Sulawesi. Our preliminary investigations showed that most of these farmers were using small land that other people had converted in the last few years, and that they 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 interations with the forest, attention shifted to unlicensed woodcutters, pepper-farming Bugis migrants, city-based owners of forest land, and other subjects with palatable impacts on the forest. Four of the Indonesian trainees who joined the project concentrated their research on these subjects.

Beneficial as the exercise of economic rationality has been for raising the people's standard of living, it cannot be said to have been unfallingly good for the forest. The familiar conflict between what is ecologically desirable and what is economically desiriable 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. in width. 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 those in the Apo Kayan, are turning economically valuable areas of forest into unproductive Imperata grasslands. Indeed Soedjito found mainly grasses, climbers, and forbs 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 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 the vicinity. Some of these farmers are shifting cultivators from the island of Buton (Butang), which is near southeastern Sulawesi. Our preliminary investigations showed that most of these farmers were using small land that other people had converted from forest decades earlier. Few of these 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 interations with the forest, attention shifted to unlicensed woodcutters, pepper-farming Bugis migrants, city-based owners of forest land, and other subjects with palatable 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 to provide pepper plantations for 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 1960s, but most came in the 1970s. 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 1,700 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 swampslands, see Lineton 1975, chap. 6, and Vayda 1980; interview 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 mere 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 masy."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. Fertilizers are used, and erosion and loss of soil fertility can be such that some sites of former pepper plantations become along along (Imperata cylindrical) 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 migrations will increasingly move in other directions than to East Kalimantan’s pepper-growing areas in the coming years because of declines in market 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. It shows that even if these 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 cutting 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 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 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, 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 (Husnah 1978).

Woodcutting teams similar to those along the Samarinda-Balikpapan road were operating along the road from Samarinda to Kaura, a coastal town 20 km. north of the mouth of the Mahakam River, as reported by Arman that in this area in 1980 was no less than 100, each with a chainsaw and capable of producing half a cubic meter of wood per day. Arman, like Brokotusumo, had originally chosen these research topics because they were of interest to agricultural usage of forest land by farmers and speculators. Reference to the operations 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
poor soils elsewhere in Borneo, can support herbaceous agriculture only for
short periods. As one tropical forest ecologist has noted, "no sustain-
able low-input alternative crop has yet been devised for much of the land
able, no sound ecological basis for any selection system has yet been
established. Indeed Ashton's (1980) "selection system" will rarely be successful in
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.
which the government has been encouraging for the purpose of rural develop-
ment. Along the Sminda-Mata Badak road these groups were found to
have obtained permits from the government to cut forest land to agricul-
ture use and then to have concentrated on getting timber from the land.
Some areas, which were subject to logging, have been subject to logging,
and the areas planted—on land which could be planted—by these
people, as Ashton (1980) has repeatedly described as "clandestine opl-er-ating...
the vulture which struck the lethal blow" (Jacobs 1978). 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.
protection of supplies, and the fluctuations in world demand for
primary forest products. The products whose trade she looked at
most closely are commercial varieties of rattan, resin, edible birds' nests, aloe wood (gaharu, obtained in the Aga Kayan from Aquilaria species), Borneo ironwood (Alminia), and some rare and valuable smaller commodities such as bamboo and rattan.

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,
government officials, and representatives of various forest products
the basic trading system, comprising forest collectors at one end, urban
buyers and exporters, forest

While warning against making such people as we the subjects in our
project the scapegoats for deforestation, we must note also that what
these forest-felling entrepreneurs do not, as Ashton (1980: 3438) has repeatedly described as "clandestine operating in 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—nor rootless, landless people—squeezed
from their homelands by unequal land tenure or population growth (and)
struggling to make what living they can amidst unacknowledged ecological
conditions" (Buckwell 1979: 18, cf. Eel 1978; Raven 1981: 30). When
our subjects engaged in activities causing environmental damage, it was,
as a rule, because these activities seemed more profitable than any per-
ceived alternatives and not because of any 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 the predicted tampering of the Indonesian timber
industry's "cowboy mentality" (Saco, 1970) actually occurs. If
pricing policy, pressures for increased domestic processing, and generally
stricter enforcement of the forestry agreements between concessionaries
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
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 prod-
oucts 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, resin, edible birds' nests, aloe wood (gaharu, obtained in the Aga Kayan from Aquilaria species), Borneo ironwood (Alminia), and some rare
and valuable smaller commodities such as bamboo and rattan. 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,
government officials, and representatives of various forest products
the basic trading system, comprising forest collectors at one end, urban
buyers at the other, and varying types and numbers of middlemen in between.

The conclusion tentatively reached is that the system does
multiple functions, and the balance between the credit and labor
requirements of the collectors living far from capital-holding buyers of forest products, varying environ-
mental 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 cane too close to the shoots, harvesting immature canes, and unsustainably 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 karu (the name for practices which were considered 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 ships 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 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 collectors 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 wildfliers whose nests are taken. The fact is that the people’s resource-decay-shielding 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).

Introduction

One of the purposes of our research project on "Interactions between People and Forests in East Kalimantan" (Vayda et al. 1980) 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 permanent migration.

The approach we have used in our research has been to identify 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 confusion

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 (Cuklin 1954, Nye and Greenland 1960, Clarke 1976, Granstaff 1978, Rusakdjo et al. 1978).
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 Bileh Ibans in Sarawak, and Rappaport's, of the Tsembaga Maring in Papua New Guinea. Freeman (1970) saw the Ibans as intransigent 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 ritualized, conservatively regulated system which maintains a balance between populations of people and pigs on the one hand, and their environment on the other. 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 repetitive pattern or the other, and the ability of the people themselves to adaptively change these 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 reviews in Padgoch 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, Pelten 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 McGill 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, Padgoch (1978) tested Freeman's (1970) hypothesis that the Ibans' cultivation system would fail if they could not move into new areas of primary forest. Padgoch 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 Chinu 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 Sunatra 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 1976). Our research in East Kalimantan reveals that Kayah 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 Padgoch 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; Barmelm 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). Priessen et al. 1976 report an increase in rice yields in the second year of shifting cultivation from an area of podsolic soil in Central Kalimantan. 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). Priessen et al. 1976 report an increase in rice yields in the second year of shifting cultivation from an area of podsolic 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 Kenyah' shifting cultivators in West Kalimantan adopted household land use rights soon after than settled near their territory. One reason for adopting the new system seems to have been to establish claims to land - claims which the Ibans 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 the reason 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, Rustadter 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 1973:28), 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 Kyan 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 Jentang) 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 Ua' Tukung) at Long Sungai Barang, three other Kenyah groups had come and gone. In fact, the Ua' Tukung arrived before the last of those three groups (the Lepe' Sem) had finished moving from their village on the nearby Danun River. The Ua' Tukung bought the rights to Lepe' Sem secondary forest, as well as acquiring some older secondary forest made by an earlier group (the Lepe' Timi Kenyah). They also continued to use fields in secondary forest they had made near their old home on the Banun 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 which is in cultivation. 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 Ulu Tubang had fertile land to cultivate near their old home on the Jemahang 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 Ulu Tubang 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 Jemahang, 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 (Jemahang, Kaping, and Nesaang 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 (Kaseletemen Kenduhak, or Kaspen), 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 Belai, 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 petaiulation 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 1979 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 Sarang, 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 Regional office in Long Nawang). During the rice harvest in March 1980 (with the population little changed) 55 men - about 6% 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). 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). 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). Beaus and Kenyahs trading on the Mahakam were harassed by Kutai officials once their goods were 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 Mahak. 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 aloes wood [Indonesian, gaharu; Kency, sekou; in the Apo Kayan, obtained from trees of the genus Aquilaria, family Thymelaeaceae] which grows in primary forests, particularly around Long Sungai Baraung, 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 Baraung 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 Kintulu, said he had no desire to join him himself. "It's too hot," he complained.) The prevalent view seems to be that one should "wait and see" what the government will do to improve the 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 into three large village centers at Long Newang, Long Ampung, and Mahak Baru. 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 migration 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 Kuris 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. 40) 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 Kuris, 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 these 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. Satter and Mistry 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 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 refugees since they, like other shifting cultivators, are accustomed to moving back and forth between rice field hamlets and village centers (Miles 1976, Whitlitt 1979).

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 downs -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 may 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 cultivation 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 tokyo (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 fallow 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 see Burkill 1965:198-206, 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 McMay 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 environment 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 of 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, Hermawan Soedjito, Carol Pierce Colfer, and Kuswata Kartawinata, for their discussions with me of shifting cultivation, trade, migration, and forest ecology. Greta A. Waton 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.
1. Present address: Long Sanga Baran, 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 (ILPI) and with the cooperation of Mulawarman University. Dr. Andrew F. Vayda was the principal investigator. This paper has been submitted (in Indonesian) for publication in Berita Ilmu Pengetahuan dan Teknologi (1981).

3. Cf. Schrieke's (1957) analysis of the Wamai (Vishnu) "good-king" in old Java as restorers of cosmic and political order. (If Rappaport's 1970 interpretation of ritual regulation is "Vishnu's" (i.e., of an equilibrating or self-restoring system - are Freeman's destructive (or acting according to a "Shiva model")?)

4. See Konstadder (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) 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. (Linares 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 "Renoma lokasi regrouping desa dalam vilaiyah kecamatan Kayan Hulu tahun 1978/1979," Great's office, Long Nawang. A recently taken census taken in early 1980, the population of Kayan Hulu is 5,365, with a mean village size of 383 (standard deviation = 280). 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). Indeed, 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. 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?


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

<table>
<thead>
<tr>
<th>Age of Field</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>2nd year</td>
</tr>
<tr>
<td>Number of Yields</td>
<td>19 (24)</td>
</tr>
<tr>
<td>Mean Yield</td>
<td>64.9 (68.3)</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>31.5 (30.3)</td>
</tr>
</tbody>
</table>

Notes:
1. Includes fields made for only one year.
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.
The purpose of this paper is to describe some consonantal sound changes that occur in the Kadazan 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-Bun 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 Manir 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. The work lists used in this study were collected during March-July 1979 from 35 villages in the Penampang, Papar, and Beaufort districts. 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.

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.

Some 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:

$t \sim \phi$

Some lexical items have the regular sound change of $t \sim \phi$ word-initially. (See Figure 2.)

<table>
<thead>
<tr>
<th>Word</th>
<th>Phonemic Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>addu</td>
<td>adua</td>
<td>'day'</td>
</tr>
<tr>
<td>too</td>
<td>too</td>
<td>'long'</td>
</tr>
<tr>
<td>culu</td>
<td>culun</td>
<td>'person'</td>
</tr>
</tbody>
</table>

Distribution: $t$ | $\phi$ |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WPP</td>
<td>WP</td>
</tr>
<tr>
<td>WP</td>
<td>M</td>
</tr>
<tr>
<td>M</td>
<td>B</td>
</tr>
</tbody>
</table>

$z \sim \phi$

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

<table>
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<tr>
<th>Word</th>
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<tr>
<td>asag</td>
<td>asag</td>
<td>'big'</td>
</tr>
</tbody>
</table>
| ologa | ologa | 'full (person; of food)'
| kog | kog | 'wood' |
| lomog | lomog | 'swim' |
| lug | lug | 'space under house' |

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.

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<td>too</td>
<td>'long'</td>
</tr>
<tr>
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<td>culun</td>
<td>'person'</td>
</tr>
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<table>
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<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>WP</td>
</tr>
<tr>
<td>WP</td>
<td>M</td>
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FIGURE 1. Map of villages and their grouping into phonological dialect areas.
Distribution:  
<table>
<thead>
<tr>
<th></th>
<th>WPP</th>
<th>EPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>z</td>
<td>y</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Word</th>
<th>Transcription</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>hako</td>
<td>layo</td>
<td>'ginger'</td>
</tr>
<tr>
<td>hamin</td>
<td>lamin</td>
<td>'house'</td>
</tr>
<tr>
<td>bikut</td>
<td>likut</td>
<td>'back of person'</td>
</tr>
<tr>
<td>bouson</td>
<td>jouson</td>
<td>'hungry'</td>
</tr>
<tr>
<td>Bonok</td>
<td>junaq</td>
<td>'fat' (noun)</td>
</tr>
<tr>
<td>tubeg</td>
<td>tulag</td>
<td>'bone'</td>
</tr>
<tr>
<td>tohing</td>
<td>tolingo</td>
<td>'ear'</td>
</tr>
<tr>
<td>tombosos</td>
<td>tombojo</td>
<td>'bird'</td>
</tr>
<tr>
<td>valu</td>
<td>walu</td>
<td>'eight'</td>
</tr>
</tbody>
</table>

Distribution:  
<table>
<thead>
<tr>
<th></th>
<th>WPP</th>
<th>EPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>l</td>
<td></td>
</tr>
</tbody>
</table>

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. (See Figure 5.)

Figure 5

<table>
<thead>
<tr>
<th>'leaf'</th>
<th>'chin'</th>
<th>'trail'</th>
<th>'tear'</th>
<th>'thorn'</th>
<th>'rain'</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPP L</td>
<td>loun</td>
<td>loo</td>
<td>lahan</td>
<td>onou</td>
<td>ugi</td>
</tr>
<tr>
<td>EPP r</td>
<td>roum</td>
<td>roo</td>
<td>yalan</td>
<td>onou</td>
<td>rugi</td>
</tr>
<tr>
<td>WP y</td>
<td>youm</td>
<td>yoo</td>
<td>yahan</td>
<td>onou</td>
<td>yugi</td>
</tr>
<tr>
<td>M d</td>
<td>daun</td>
<td>yoo</td>
<td>onou</td>
<td>ugi</td>
<td>asam</td>
</tr>
<tr>
<td>M d</td>
<td>doun</td>
<td>yoo</td>
<td>onou</td>
<td>ugi</td>
<td>asam</td>
</tr>
<tr>
<td>B d</td>
<td>roo</td>
<td>alan</td>
<td>onou</td>
<td>ugi</td>
<td>asam</td>
</tr>
</tbody>
</table>
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.)

\[
\begin{array}{lcl}
\text{ataxom} & \text{atax} & \text{sharp}' \\
\text{ka\c{c}op} & \text{ka\c{c}} & \text{eyelashes}' \\
\text{opurak} & \text{opuk} & \text{white}' \\
\text{garan} & \text{gan} & \text{'name'} \\
\text{boros} & \text{bob} & \text{'language'} \\
\text{sargus} & \text{sga} & \text{'comb'}
\end{array}
\]

Distribution:
\[
\begin{array}{c|c}
\text{EPP} & \text{WPP} \\
\hline
\text{F} & \text{F} \\
\end{array}
\]

Intervocalic /h/ occurs in W 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.)

\[
\begin{array}{lcl}
\text{man\c{c}ak} & \text{man\c{c}} & \text{give}' \\
\text{kabau} & \text{kau} & \text{'chicken lice'} \\
\text{momihid} & \text{momid} & \text{'wipe'} \\
\text{koni\c{c}ab} & \text{koni\c{c}} & \text{'yesterday'} \\
\text{mol\c{c}ahig} & \text{mol\c{c}ah} & \text{'old (person)'} \\
\text{tubat} & \text{tub} & \text{‘wein'}
\end{array}
\]

Distribution:
\[
\begin{array}{c|c}
\text{W} & \text{WPP} \\
\hline
\text{h} & \text{WPP} \\
\end{array}
\]

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 7 above (See Figure 8.)

\[
\begin{array}{lcl}
\text{EPP} & \text{W} & \text{WPP} \\
\hline
\text{kozi\c{c}ahon} & \text{kozi\c{c}ah} & \text{kozi\c{c}ah} & \text{'east'} \\
\text{ngi\c{n}i\c{c}og} & \text{ngi\c{n}i\c{c}} & \text{ngi\c{n}i\c{c}} & \text{‘(river) eel'} \\
\text{gond\c{u}j} & \text{gond\c{u}} & \text{gond\c{u}} & \text{‘fingernail’} \\
\text{zi\c{i}wu} & \text{zi\c{i}w} & \text{zi\c{i}w} & \text{‘floor’} \\
\text{og\c{i}jot} & \text{og\c{i}j} & \text{og\c{i}j} & \text{‘crowded, narrow’} \\
\text{os\c{i}ju} & \text{os\c{i}j} & \text{os\c{i}j} & \text{‘yellow’}
\end{array}
\]
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.

\[ v \sim v \sim b \] free variation

The use of a voiced bilabial semi-vowel (\( w \)) 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 semi-vowel (\( w \)); most of the WPP villages use the voiced labio-dental fricative (\( v \)); most of the M villages use the voiced bilabial fricative (\( b \)). In B, Kinuman uses (\( h \)) in most instances, whereas Takuli uses (\( v \)) in most instances. (See Figure 9.)

\begin{tabular}{|c|c|c|c|}
\hline
\( w \) & \( v \) & \( b \) & \textit{Free total number}\% \textit{of word lists} \\
\hline
EPP & 10 & 3 & 13 \\
WPP & 5 & 3 & 9 \\
WP & 2 & 1 & 6 \\
N & 4 & 1 & 5 \\
B & 2 & 2 & \\
\hline
\end{tabular}

Figure 9. \( w \sim v \sim b \sim \) 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 /t/. Three lists from WPP also have an initial /w/.

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
wutu & watu & katu \\
\hline
\end{tabular}

'stone'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
waul & vaiq & haiq \\
\hline
\end{tabular}

'filter'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
vuoq & voq & Eoqok \\
\hline
\end{tabular}

'pig'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
baew & baw & baw \\
\hline
\end{tabular}

'river'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
katup & sau & sao \\
\hline
\end{tabular}

'spouse'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
bawet & bav & baet \\
\hline
\end{tabular}

'ashes'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
bun & buh & buh \\
\hline
\end{tabular}

'stop'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
buhun & buhun & bahan \\
\hline
\end{tabular}

'stage'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
buhun & bawan & bahan \\
\hline
\end{tabular}

'spouse'

\begin{tabular}{|c|c|}
\hline
\( w \) & \( v \) & \( b \) \\
\hline
buhun & bawan & bahan \\
\hline
\end{tabular}

'soap'

waha vaha kaha

'water'

waig vaiq haiz

'filter'

woqok voqok taoqok

'pig'

bawdy baway baey

'rever'

sawo saxo saux

'spouse'

tawu taw bu

'ashes'

w v b variation of word lists

EPP 10 3 13

WPP 5 3 9

WP 2 1 6

N 4 1 5

B 2 2

Figure 9. \( w \sim v \sim b \sim \) free variation.

Numbers show how many word lists use each variant.
In some word lists of WP /l/ occurs word-finally where a zero phoneme would be expected. For example, Gana uses **sumimbul** 'run' where Limbahau uses **sumimbuu**.

**d ~ h ~ ds ~ 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 **pobu**, 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 **a: mosu**. Tagudon uses **ns: mansu**. Pogtnon uses **d** instead of **ds**. The village borders on the WPP area. Kogop uses **h** as does WP, to which it is geographically close.

**Conclusions**

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 shmetathesis occurs. It is also distinguished by the use of root-initial /l/. (See 1 ~ r ~ y ~ d ~ 6) 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 Longkogungon the name.
'Kadazan Pahu' is used. Tagudon gave the same name, but they also called their language by the name of 'Sinuilhan'. In Muyug, both 'Kadazan' and 'Dusun' are used. Kogopon gave three terms: 'Kadazan', 'Kaduyan' (local pronunciation of 'Kadazan'), and 'Dusun Uy Papar'. In some places 'Kadazan Penampang' and 'Kadazan Pahu' 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 (Casas, 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, Bagan, Sumtan, Inobong, Kipowo, Kolopis, Longkoggon, Muyug, Pogonon, Potuki, Sugud, Tagudon, Tanaki, Terawi, Tungangog Sugud, Tuvon (Penampang District); Gadung, Gana, Himbutong, Kogopon, Limbahau, Limputong, Liman, Mandaliipau, Penampang Baru, Sabandil, Tibabar (Papar District); Kimman, Mandangin, Pinopok, Poring Valley, Tahak, Takapan, Tukui, Tanudi (Beaufort District). The villages of Bagan, Longkoggon, Mandaliipau, 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 '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 main language families in the dialect area of M, where the intervocalic /h/ does not occur. This may be due to the fact that these four villages are geographically very close to WP, where the intervocalic /h/ occurs. One village in the WP groups has the intervocalic /h/. The village, Poring Valley, is located near the dialect area of M, where the intervocalic /h/ occurs.

6. The phoneme /z/ is a voiced alveolar grooved fricative in all places except 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.

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

<table>
<thead>
<tr>
<th>EPP</th>
<th>WPP</th>
<th>WP</th>
<th>M</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>raha</td>
<td>sea</td>
<td>has</td>
<td>has</td>
<td>ras</td>
</tr>
<tr>
<td>ras</td>
<td>yaha</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aresa</td>
<td>aza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ya</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPP</td>
<td>WPP</td>
<td>WP</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>raha</td>
<td>daat</td>
<td>dehat</td>
<td>'sea'</td>
<td></td>
</tr>
<tr>
<td>daat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. In WP, five villages use omu 'tear', four use lomou. Six WP villages use ap 'thorn', three use layg. The village, Kolopis, uses houn 'leaf' instead of loun.

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

<table>
<thead>
<tr>
<th>WP</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPP</td>
</tr>
<tr>
<td>adalas</td>
</tr>
<tr>
<td>tontogogon</td>
</tr>
</tbody>
</table>

10. In EPP nine of the thirteen word lists retain the intervocalic /h/. In the lists from Inobong, Kipowo, Tuvon, and Pogonon the intervocalic /h/ does not occur. This may be due to the fact that these four villages are geographically very close to WP, where the intervocalic /h/ does not occur. One village in the WP 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, Tuvon. There /l/ corresponds to the WPP /h/. Jilinsog 'eel', lisiu 'floor', londasu 'finger nail', oloisou 'yellow'.

12. Gadung in WP uses the voiceless bilabial fricative p: patau 'stone', pzig 'water', poyok 'pig', sapo 'spouse'.
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 beliefs 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 task. 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 Panan" (NSP). The Achsel (or Peniding) number more than 2000 souls in Kecamatan Long Apari (Upper-Mahakam). There are fewer than 400 Seputan in the same area, and about 300 Aheng-Busang scattered along the upper Busang River (Central-Kalimantan); the latter are cousins of the Kereho-Upeng 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 Aoheng 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 Selatto 1980), the MSP tribes are the only remnants of the populations which were living there before the Bahau-Basang-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, Punan-Merah and Punan-Liasum, 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.


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, Sibu and Miri, and four small towns. Total sample size will be 2500 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 Kinsco, Jalan Indera 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 (Law Basang), 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 Soon, 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 TAO Guest House from November 30 through the first week in December. Those who attended were: Bernard J. L. Selatto, Nikita Siberoff, Anna Lowenhaupt, Joseph Weinstock, and George N. Appell.

Selatto, EBSH, is engaged in linguistic and anthropological research among the Penulid in the Upper Mahakam region and various Punan groups. Siberoff, CEFSING, is working on the translation of various Bahau texts. Anna Lowenhaupt, Department of Anthropology, Stanford University, is
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 Sarawinda entitled, Bulatan Budaya Kalimantan, which is to serve as a medium for the publication of the results of scholarly results by Indonesian and foreign scholars.

**Borneo 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:


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:

<table>
<thead>
<tr>
<th>Language</th>
<th>Educational Titles</th>
<th>General Titles</th>
<th>Health and Miscellaneous</th>
<th>Total Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahasa</td>
<td>10</td>
<td>35</td>
<td>8</td>
<td>53</td>
</tr>
<tr>
<td>Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>35</td>
<td>68</td>
<td>41</td>
<td>144</td>
</tr>
<tr>
<td>Iban</td>
<td>32</td>
<td>61</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>Chinese</td>
<td>13</td>
<td>41</td>
<td>5</td>
<td>59</td>
</tr>
<tr>
<td>Kadazan</td>
<td>9</td>
<td>1</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Bau/Jagol</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Kayan</td>
<td>3</td>
<td></td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Kenyah</td>
<td>2</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Bukar/Sadong</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Blahah</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Melayu</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Murut/Lan Dayeh</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

1. Including literary, poems, folklore, history, etc.
2. In addition to items tabulated, there are phrasebooks or wordlists from English to Malay, Bau/Jagol, Iban, Blahah, and Murut/Lan 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)
The Indonesian Government seeks to balance the country's wood exports. Accounted for about 16.5 percent of the country's wood exports is in the form of logs and processed timber from East Kalimantan. The company, P.T. Inhutani, is 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 Yaskki 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.$116.8 million, had been filed recently.

Inhutani Plans Fully Integrated Wood Industry

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-owned 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.

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

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 rearing 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.

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A new species of lizard, Harpesaurus thecalichrous, 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. Rhinoceros macaques were the dominant import in 1977, but after the Indian ban on rhesus exports, effective 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, mouse lemurs, 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. Box 62, Bogor, Indonesia.

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 Mahakan River area and in the Penfilling 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 ethnohistoric and comparative linguistics of the Penfilling, Seputan, Penyavung, and related "Pauer" groups. His goal is to complete an ethnohistoric reconstruction of the peoples of the Fuller-Schweizer mountain ranges and the Upper Mahakan River region. He is attempting to reconstruct the proto-Penfilling 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 Mahakan area that includes an introduction in French and English and a transcript and translation of Penfilling songs. The record is entitled "Dayak Music of Borneo" and is distributed by the Société Francaise de Productions Phonographiques, Paris. Sellato also has an article appearing in the 1981 issue of Archipel entitled, "Une région isolée de Borneo: le Haut Mahakan.'

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

MIKITA SIBEROFF, of Paris, has done research in 1979 on shamansim and agricultural rituals among the Bahau Dayaks of Tring, Kecamatan Long Iman, and the Tanjung Dayaks of Kecamatan Melak, two groups located in Kabupaten Kuala, East Kalimantan. Siberoff is currently engaged in collaboration with DES. 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 Kaltim in the very near future to continue collecting traditional literature among the Tring Bahau and Tanjung Dayaks, if adequate funding is quickly made available. His current address is 1, rue de l'Ancienne Mairie, 92100- Boulogne, France.

KISIAN 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.

GREENE WATSON, a graduate student in anthropology at Rutgers University, is working in a village in Samada, 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 Liangam (Lawangan) Dayaks. He has focused upon Kaharingan (see report), environmental and agricultural issues, ethnicity, and other related topics.
JOHN TRANSFIELD 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 ABU, RAHMAN (Sabah Forest Development Authority), and plant collector DEMOOL BIN SUNDALING (Sandakan). Sabah now appears committed to plant cultivation.

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

Sarawak News

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BOOK REVIEWS, ABSTRACTS & BIBLIOGRAPHY


One of the roles of book reviewing is not to take an author to task for failing to do things he had no intention of doing, or 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 citations from 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 University Press 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. Bamfield, with the intention of preparing a biography. Bamfield'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 cost, 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 1837 and seemed certain to succeed their uncle as Rajah. Together with the biographies of James by Gertrude Jacob and Spence St. John Sarnak Under the Two White Rajahs established the orthodox view of the first seventy years of the Raj: 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 excesses of Brooke and his 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 attachment 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 army 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 military
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 Malas from Ibans in order to free the latter from the 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 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 comedy Iban 'wenchers' 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 gundok or native concubines while he was stationed at Simanggang, one of whom produced a son later baptized by the local S.P. G. missionary as Isaka Brooke. When Ranees 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. T. Daykin. He was later taken to Canada and it was 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 willingness for Isaka to be whisked off to England contrasted oddly with his understanding of comely Iban 'wenches' is noted and Crisswell suggests that he may have been the father of one of the children of Isaka and his "wife", although Isaka was not considered to be a "true" wife by the local population. The Brooke family were prapists, it is likely that Charles responded to circumstances "where he had little option but to conform generally with traditional practice", but to dorm generally with traditional practice.

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 for criticism in this area, and a biography should clarify what appears to have been a case of personal opportunism. Perbps this explains the coolness which Baronesse Burdett-Coutts and Spencer 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's own correspondence would also offer a useful corrective to the orthodox version of events.

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 fall-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 Baronesse Burdett-Coutts and Spencer 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's own correspondence would also offer a useful corrective to the orthodox version of events.

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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 Yau. R. E. Holtum'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 Fruenology (1938). In a paper by A. Lamb and C. L. Chan on orchids (pp. 213-222), 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, Skylises 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. 760 sq. km.), more than the land area of Singapore Island, and now receives about 10,000 visitors annually. In 1977, an addition was made of 26 sq. mi. around Mt. Templar (1200 m) in the little-known North, but 25 sq. mi. were excised in the Southeast to mark a deposit of 77 million tons of copper ore. A ridge 15 km. west of the mine to keep the tailings produced by the flotation works at Menut. 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. 80). In the 1960s, vegetable cultivation was introduced at Ranau (1200 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 Editor, Flora Malesiana Bulletin, Number 33, July 1980, Malaysia), an index. (reprinted by permission of Dr. M. Jacobs, Editor, Flora Malesiana Bulletin, Number 33, July 1980, pp. 3648-3649.}


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 the "characteristic structures of Indonesian languages," confined largely to an examination 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.


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 them 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 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.


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 him permission to make use of part of the land for the current year's rice fields. Other purposes summarized 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.


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 arens) have a monopoly on relativism. They receive corves from commoners (hipaus and pangins), and control the surplus labor of slaves (japens). 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 Bulyu area of Sarawak, and particularly in the village of Bener.


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 Epic of Sarawak Dayaks. Much new exposition is included. Only the English language versions are given, a large selection reorganized with a practical value and more abstract cultural associations of the fungi generally:

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The pelian bejereki is a rite traditionally conducted by the Iban menang, 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 (menang mana). The paper contains the full text with English translation.

Sather, Clifford, "Iban Folk Mycology," The Sarawak Museum Journal, Vol. 26,


This paper concerns Iban ethnomycolgy, i.e., the way in which the Iban classify and deal with the locally occurring fungi, or kula. 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 fungi 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;
of the Council also include providing counsel and assistance to research endeavors, conservation activities, and the practical application of research results.

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