INTRODUCTION

In this report the adaptation of the inhabitants of Limi Panchayat, Humla District, Karnali Zone will be discussed and the potential for development in the area assessed. The report which is based on fieldwork carried out from March to September 1974, will specifically (1) provide a corpus of basic ethnographic-ecological data which can be used by planners in RMG to develop this and other similar high mountain ecosystems located throughout northern Nepal, and (2) provide some tentative, yet specific suggestions concerning areas for implementing development.

LOCATION AND PHYSICAL ACCESS

Limi is a high, narrow mountain valley that runs northeast-southwest and contains three villages, two along the main river and a third a short way up one of its tributaries. The three villages from east to west are called Tsang (mdzang), Alzhi (wa rtse), and Til (til) and are respectively 12,900', 12,100' and 12,700' in elevation.

Although there are several trails linking Limi with the rest of Nepal, only one of these is completely within Nepalese territory. This trail runs from Limi, via the approximately 17,000' Nyalu Pass, to Simikot and the other villages along the Humla Karnali River and its tributaries (hereafter referred to as the Humla Karnali ecozone). From Tsang, the closest Limi village, the trip to Simikot takes anywhere from three to five days on foot depending on weather conditions and the nature of the load carried. During summer when the pass is clear of snow the trail is easily travelled by animals, but during the winter months (roughly mid-November to mid-April) it is totally closed to traffic of any kind.

Two other trails link Limi to Nepal but both these require transit through Tibet. The most important of these follows the trail connecting Limi with Purang (Tibet) but veers southwest and goes via the Tingar Pass on the Tibet-Nepal border back into Nepal and then to the Darchula area. From Darchula the trail goes into India and ultimately to Kathmandu via Tanakpur, Lucknow and Raxaul. This trip takes about twenty days from Limi to Kathmandu and is the main route used by Limi traders. However, like the Nyalu Pass trail, it is unusable during the winter months.
The other route also passes through the Purang corridor but this time veers southeast over the approximately 16,500' Nara Pass to the Yari region in the western Humla Karnali River valley. It is infrequently used and is, in any case, impassable during the winter months.

Limi is linked to Tibet by two major trails. One of these goes north to the pasture areas east of the Lake Manasarowa region of Tibet and the other one north-northwest to the major Tibetan trading center of Purang. The Purang route is usable all year round and goes up the Purang valley through the Tibetan villages of Sher, Kojar, Gangtse, Gajin and Purang (Gonggū tšō). It takes from two to five days, depending on weather and load, to get from Til to Purang.

The second trail runs north of Limi via the approximately 18,000' Labcha Pass to the Tibetan "Northern Plain" (changtang) east of the Manasarowa region. It is the route used by the Limi yak and sheep herds in their annual moves to and from their winter pasture in Tibet. It is not usable during the winter months but individuals on foot can sometimes cross the pass during spells of good weather. It takes roughly one day from Tsang to the pass.

Geographically, then, while Limi is totally cut off from the rest of Nepal for the winter, access to the Tibetan region of China exists throughout the year. This situation in a sense symbolizes Limi's traditional dual orientation. Completely Tibetan in language and culture, Limi for centuries (going back at least to the era of the Jumla Malla kings) has politically been a part of Nepal. In fact, although Limi traditionally paid "person tax" (mi khral) to Tibet, it more importantly paid "land tax" (sa khral) to Nepal. This ambivalent practice ceased, however, following the 1961 Sino-Nepalese Border Treaty in which it was settled that Limi is unambiguously an integral part of Nepal.

CULTURAL AND DEMOGRAPHIC CONTEXT

The population of the Limi Valley is 791. These inhabitants comprise an endogamous population which is divided between three villages. Alghi, the largest, contains 320 persons. Tsang is next with 286, and Til is smallest with 183. The Tsang age-sex pyramid which follows is representative of the other villages. While this age-sex data does not permit precise delimitation of population growth rates, when supplemented with socio-cultural indices it does indicate that the population of Limi is undergoing growth. This growth underlies the entire question of development since it is already straining the "traditional" productive capacity of the valley. We will return to this question in a later section.

As mentioned earlier, Limi is an area of Tibetan language and culture. The Limi inhabitants speak a Western Tibetan dialect and are Buddhists of the Driyung Kadgyupa sect. Clothes, food, rituals
Fig. A. Age-Sex Pyramid for Tsang
and both agricultural and pastoral technologies are all typically Tibetan. However, Limi is a part of Nepal and there is no "conflict of interests" on the part of its inhabitants. They see themselves as Nepalese nationals and do not have a negative attitude at being either a part of a "Hindu Kingdom" or part of a polity in which Nepali, an alien language, is the national language. In fact, the people of Limi are very receptive to Nepali. Many of them speak Nepali at some level and one, the Pradhan Pancha is able to read and write haltingly. There is considerable interest and support for the teaching of Nepali in the village and most Limi people would like the present program (where only two or three weeks of instruction are offered in summer) expanded. The Limi people unquestionably see HMGI as a friendly supporter in their vision of the future.

SUBSISTENCE ECONOMY: AGRICULTURE

Both agriculture and pastoral nomadism are practiced in Limi, although agriculture is considered by the inhabitants as the more basic and more important of the two. In response to questions comparing the two subsistence modes, Limi people frequently express this by the comment that "land doesn't die the way yak and sheep do."

The staple crop in Limi is barley. This accounts for about 95% of the seed sown with mustard and turnip accounting for most of the remainder. A little wheat is grown in Til and the largest two or three landowners in Limi plant a few fields with potatoes. Fields are terraced and irregular in size and shape. One crop is grown annually during the summer and all agricultural land must be irrigated. The soil is sandy (detailed soil analysis not completed) and thus excellent for barley cultivation. Larger landowners practice some crop rotation and all people fertilize their fields with cattle and human manure, the latter composted with dried leaves and ash. Yields vary, of course, in accordance with the quality of soil, the amount of fertilizer and water used and the type of care taken in cultivation but on the whole, yields of fifteen times the seed sown, for example, are not at all uncommon in Tsang. Crops are sown in mid-May and harvested in mid-September.

A great deal of the difficulty in understanding the overall adaptation of areas such as Limi stems from the fact that there are major internal social divisions which have different access to resources and productive output and consequently different adaptive strategies. For example, the average size of families varies considerably with social strata of which there are three in Limi. The highest stratum is called "trongba" and consists of the families who in theory are the corporate descendents of the founding families. For the 13 families in this stratum in Tsang the average size is 8.4 persons. The second stratum is called
"mirey" and consists of families who originated by splitting off from the trongba families. There are 29 such families in Tsang and their average size is 5.6 persons per unit. The third and lowest category is called "morang."* It consists of households of individual men or women, or in the case of mothers, women with their unmarried children. There are 10 such families in Tsang each averaging only 2 members per unit.

With respect to land resources, while virtually all households (using Tsang as our example) have arrable land, the distribution is unequal. Most of the 13 trongba families have holdings averaging about one acre per family, but the mirey families average land holdings of less than 1/3 of an acre and their land is generally of poorer quality. The morang have only one or two small plots each and one of these has no land at all.

Taking Limi as a whole, there is no question that there is a deficit of locally grown food. This reality is amply demonstrated by the fact that Limi inhabitants purchase large amounts of barley, and to a lesser degree, sour buckwheat, wheat and rice from the Chefris, Thakuris and Bhoanas of the Humla Karnali ecozone each year. Barley is purchased mainly in mid-June after the Humla Karnali area has harvested its winter barley crop and buckwheat in September after the summer buckwheat has been harvested. However, in terms of food requirements for specific strata, most of the trongba families do produce enough barley for their own consumption, and some, in fact, generate considerable surpluses which they loan to local people or sell to Tibet. Before assessing the potentiality for developing agricultural output in Limi, let me discuss the pastoral nomadic dimension of their subsistence economy.

Pastoralism is the second major dimension of the overall Limi adaptation. Limi has excellent pasture areas east, northeast, and southeast of the main valley and there are about 5,000 sheep and 1,000 yaks in the area.* There are also smaller numbers of goats, cows, hybrids (dzo, etc.), and horses. Although many families own one or two hybrids and cattle, the most important pattern with regard to animal husbandry is the "full blown" pastoral nomadism. In this mode sizable herds of sheep and yak are moved periodically to different pasture areas in Limi and Tibet with the herders living with the animals throughout the year in traditional black yak-hair tents. The animal movement cycle includes pasture areas in Tibet and Limi with the animals migrating to Tibet in October for the winter and returning to Limi in late May for the summer.

* Morang actually means "woman-self."

* The very severe winter of 1972-73 reduced the Limi herds substantially and these figures are on the low side.
The pasture areas in Limi are communally owned and each year lots are picked to determine which families use which pasture areas. In general there are three main moves during the summer period. First, the more southern areas (such as Nying and Talung) are used and then, in late June, all the animals move across the Piguü Pass (ca. 15,500') to the higher pasture areas nearer to the Tibetan border. In late August–early September, the animals return briefly to the first pasture areas and from there, by mid. October, go to their winter quarters in Tibet. Since the early 1960's, the Limi herdsmen have been restricted to the use of only one pasture area in Tibet, and this area is not of a quality comparable to what they obtained before that. While still better off than most of the northern peoples of Nepal who are no longer permitted winter pasture in Tibet, this new situation has had an important impact on Limi's perception of the opportunity costs of pastoralism vis a vis agriculture and trade. By opportunity costs I mean the cost of any course of action or sustaining activity as compared with some other action or activity. The uncertainty of the long-term availability of pasture in Tibet and the quality of the pasture itself have led Limi herd owners to consciously restrict the extent of their capital investment in yak and sheep by limiting the size of their herds. As will be discussed in more detail in a later section, this has resulted in a situation where the overall national plan to improve and expand animal husbandry in the Northern Regions is not readily applicable in Limi unless long term guarantees are forthcoming regarding availability of winter pasture.

Nonetheless, the maintenance of herds of sheep and yak is very lucrative. The animals are not only used for carrying salt from Tibet to Limi and from Limi to the Humla Karnali ecozone but also for wool, meat and milk products. In 1974 the price of wool in Limi was six to nine "tre" (one tre is roughly two mana) of grain per sheep's wool. The range in price varies in accordance with the size and quality of the wool. Taking seven tre per sheep's wool as an average, a person with 170 adult sheep would obtain grain equal to about one half an acre of arable land. This, as will be remembered, is more than what the mirey strata families normally have in land. Another example of the large profits associated with animals can be seen from a 1973 example. In this case a family with a herd of about 350 sheep sold 150 of the males and old females in Jumla and obtained an average price of 150 rupees per animal or a total of 15,000 rupees. The family still had over 100 ewes so that in a few years' time it could rebuild the herd to its original size. Similarly, there is a flourishing trade in the sale of young yaks to traders from Mugu who make an annual trip to Limi in summer. Consequently, although yak and sheep require a substantial outlay of labor, and while the risks are very great, the profits are also very large.
Like land, however, the distribution of animals in Limi is very uneven. Using sheep as our example, in Tsang, the village with the most animals, only 17 out of 52 families have 90 or more sheep. In all of Limi there are only 22 such large sheep-owing families. Of the 17 Tsang families having large herds of sheep, 7 are trongba and 10 are mirey but those 7 represent 54% of the trongba families whereas the 10 represent only 34.5% the mirey. The morang have no sheep at all.

Consequently, even the combined output of the pastoralism and agriculture does not satisfy the basic subsistence requirements of the people of Tsang. In fact, it accounts for the needs of only about 57% of the population, although for many of these it provides a substantial surplus. What then of the remaining 43%? How do they obtain their living?

CRAFTS, TRADE AND LABOR

One of the most important additional sources of income for the moderately poor (middle level) families is the production of wooden eating and drinking bowls called phoba. The profit from this work is substantial. The average number of bowls collected by an individual during one winter season is about 325. The 1974 bulk rate for these in Limi was 10 rupees per bowl and consequently an individual would gross 3250 rupees if he sold all his bowls in bulk. His living and travel expenses were no more than 500 rupees and his net profit was therefore 2750 rupees which would have brought about 750 tre (1500 mana) of barley, wheat or sour buckwheat in 1974. In terms of land, this is equivalent to the output from the average size land holdings of mirey families.

Although bowl making is the most important craft industry, carpentry is also important economically. However, unlike the bowl craft, this requires no capital and is thus a feasible source of income for even the very poor. Limi is fortunate in having substantial birch and pine forests nearby which are used to make a variety of products such as tent stakes, house beams, house pillars, yak and horse saddles and eating/drinking bowls made from birch (which is considered much less valuable than the wood collected in India because it does not have the beautiful grain of the latter). Because there is no wood in the adjacent areas of Tibet this wood trade is one of the most important components of the trade with Tibet. All carpentry and wood crafting is done by males.

A third craft practiced in Limi, this time by women, is weaving wool cloth used primarily for making clothes. This is a particularly important source of income for the morangs ("unmarried women"). Most of this woolen cloth is sold to the Chetris, Thakuris, and Bhotellas of the Humla Karnali ecozone.
For the real poor however, labor is the main source of subsidiary income. The poor perform a variety of labor functions in Limi including agricultural and herding tasks, carpentry, wool work, leather tanning, and sewing. These are done both on a day wage basis, and for herding, on a seasonal basis. Wages always include food and beer for the days employed and sometimes also salary in the form of grain and/or the loan of traction animals and equipment. In addition to this, four or five of the wealthiest families retain full time servants and shepherds who are given room, board, clothing and a nominal salary.

As important as the labor opportunities found in Limi, are those available in the Humla Karnali ecozone. During the winter months a substantial number of Limi people move to one or another of the villages (both the Nepali and the Tibetan speaking ones) in this area. In the winter of 1973-74, for example, members of 17 Tsang families wintered there. These Limi people perform a variety of jobs such as tanning leather, carpentry, wool work, weaving, sewing, and field labor. This labor not only provides their food requirements for the winter months, but also some profit to carry back to Limi in April. The size of the profit, of course, depends to a large extent on the ratio of workers to consumers in each family unit.

In addition to these economic strategies, trade is also extremely important, although clearly more so for the well-to-do than the poor. Trade can be broken down into four main patterns (1) trade with Tibet, (2) trade with the Humla Karnali ecozone, (3) trade with India-Kathmandu, and (4) trade with Mugu.

In traditional times only the first two patterns were important. Limi people rarely went to India or Kathmandu and then generally only to visit the important Buddhist pilgrimage sites. The events in Tibet following 1959, however, substantially altered this. Limi traders are no longer permitted unlimited and unsupervised trade in Tibet. They are legally allowed to trade only in the official trading center at Purang and then only with official agents of the government. All Tibetan-Chinese products, moreover, can be purchased only in officially designated stores and goods must be sold by Limi traders to Tibet before any can be purchased.* No longer can individual Limi people directly buy wool from Tibetan nomads and no longer can they take their yak herds to Northern Tibet to collect their own salt. These and other restrictions have seriously affected the traditional Limi Tibet trade, particularly the salt and wool trades. This is not to say that trade with Tibet is no longer important or lucrative for it is. Rather it indicates that the magnitude and nature of this trade has changed.

* The 1974 Sino-Nepalese Trade Treaty, however, will alter this.
The trade with Tibet involves a variety of goods and products, and Limi people purchase at least 40 items in Purang (Tibet). While most of these are manufactured articles such as cloth, matches, cigarettes, thermos flasks, soap, batteries, etc., there are also important non-manufactured products such as rock salt and Tibetan (brick) tea. In turn, Limi sells products such as mustard oil, butter, wooden items (bowls, beams, planks, etc.) and animals (horses, hybrid dzos) to Purang.

While brick tea is a critical Limi staple obtainable only from China, salt has traditionally been the most important overall trade item. Professor Haimendorf (in "Trans-Himalayan Traders in Transition") has expressed serious reservations about the future of the salt trade, and although it is now less lucrative then when Limi men could go and get their own salt (paying an export salt tax to the Tibetan government), it is still a very attractive business both in Limi and in the rest of Humla. Let me cite some examples: In 1974 a Limi man sold a horse to the government at Purang for 325 Chinese dollars (a sum equal to 1300 rupees in Limi). While this price is low compared to Limi where the same horse would sell for upwards of 2000 rupees, because that individual could purchase salt with the 325 Chinese dollars at the official Chinese rate of roughly 10 tre per dollar, the ultimate profit was greater than selling the horse in Limi. Basically, this person was able to obtain roughly 41 yak loads of salt. At the 24:1 Limi rate of exchange this amount of salt was equivalent to 1640 tre of barley which at the 3 rupee 1974 price was equal to 4920 rupees. Even if we assume the horse might have sold for 2920 rupees in Limi, by selling it in Purang a profit of 2000 rupees was obtained. Although the profit in salt is excellent, this type of trade is mainly restricted to families with many carrying animals, i.e. the already well-to-do. If a person had 5 male carrying yaks it would take approximately 8 trips to bring the 4100 tre of salt back from Purang. Since each trip would take at least 10 days (round trip), this means a total of at least 80 days would be required to transport the salt to Limi. This places an unacceptable time-labor burden on a family since it would probably take them three or more years to transport it all. In the actual case mentioned above, the family used 42 sheep and 10 yaks to transport the salt and still had to make 3 trips.

The sale of wood objects is also profitable and somewhat more accessible for families with only a few carrying animals. For example, one family I know of took 9 wood yak saddles and 6 wooden beams to Purang to sell. They received 33 Chinese dollars which was converted to about 330 tre of salt. In turn this was converted to 132 tre of barley which was equal to about 396 rupees of which about 300 was profit.
Trade with the Humla Karnali zone has been partially discussed above. We need only add here that in addition to the salt-for-grain trade, Limi imports radish, cayenne pepper, lentils, garlic, yeast (for beer), honey, butter and various manufactured items such as cigarettes which Humla traders bring up from the south. There is also a substantial cash trade in grains with Limi inhabitants purchasing barley, buckwheat (sour), wheat, flour, and rice. In 1974 all grains were 3 rupees a tre with the exception of rice which was 6 rupees. Limi sells wool, woolen cloth, horse saddles, animals (mainly hybrids and goats) and manufactured items obtained from Tibet-China to the Humla Karnali zone.

Trade with India and Kathmandu is the third major dimension. As indicated above, this is a relatively new pattern but one which has become very lucrative. The main items in this trade are Tibetan antiques (statues, tankas, silver items), musk and the wooden bowls mentioned above. The first category of items comes from Tibet and the second both from Humla and Tibet. The last item has been discussed earlier. Although the risks from the first two types of items are obviously high, the profit is also great and it more than makes up for any losses the recent Chinese policies concerning trade have caused. However, this source of income is also highly unstable and is likely to decrease in significance in years to come. The bowl trade, however, is extremely important for the long run since it can be readily expanded. The market for these bowls in Tibet, among the Tibetan refugees in India, Nepal and Sikkim-Bhutan, and among the other Bhotea populations of Nepal is very good and sales for the past few years have been brisk. In light of this it is not surprising that one of the wealthy Limi families has bought land at Bodnath in Kathmandu and plans to build a house-inn there mainly for Limi traders. It is my guess that in the near future Limi traders will enter into the retail-wholesale business in Kathmandu.

There is also a significant trade with people from Mugu who come to Limi each summer. They purchase mainly wooden bowls and young yaks in Limi and sell Nepalese-Indian manufactured products (such as matches and cigarettes) and muskrat skins, the latter being used in Limi to decorate dresses. The balance of payments is overwhelmingly in favor of Limi in this trade.

PROBLEMS AND POTENTIAL

The above sections have outlined the adaptation of the inhabitants of Limi Panchayat. Agriculture has been seen to be the basic subsistence mode with virtually all of the inhabitants of the valley holding arable land, albeit with considerable disparity in the amount of that land. Pastoralism and trade were shown to be important in terms of the overall wealth of the area but basically limited to the wealthy segment of the population. The poorer families' survival was seen to depend mainly on crafts, labor and petty trade as supplements to their basic agricultural
output. On the whole, though, Limi, as of 1974, was relatively successful economically. The various economic strategies employed by the inhabitants generated surpluses which allowed many of them to function well above subsistence levels. There was no out-migration of the type said to exist in other northern areas (such as Mugu) and in other parts of the midlands. The problems generated by the changes which have occurred in Tibet following 1959 have been met and the overall adaptation of the area is still very successful. However, the future of the Limi Valley is somewhat more problematic.

The most serious problem facing Limi is that of population increase. Although further research is necessary before the entire demographic picture can be understood, all evidence points to Limi presently undergoing significant population growth. Since Limi does not have access to "modern" medical facilities* the main factor causing this increase seems to be a tendency for younger brothers to break away from fraternal polyandrous marriages and establish neolocal, monogamous families. As can be seen in the author's paper ("Fraternal polyandry and fertility in the N.W. Himalayas") polyandry traditionally functions to reduce population growth by lowering aggregate fertility levels, and the current tendency toward monogamy in certain circumstances is certainly one of the causes, if not the main cause of this population growth.

Given its increasing population base, Limi must increase productivity to retain its current standard of living. For reasons discussed above, pastoralism is unlikely to be expanded. Trade and crafts are viable possibilities but agriculture is the most promising alternative. Limi is very fortunate in having a considerable amount of unused land which could be converted into agricultural fields. The bulk of these are located about three hours walk east of Tsang at the point where the north-south Talung Valley meets the east-west Limi Valley. Although several Tsang families have been "test" planting there for the past three years, they have not met with outstanding success, even though this area in the distant past had been the site of a village (the house and field outlines can still be seen). Basically, successful agriculture there hinges on improving 1. water, 2. seeds, and 3. upkeep. The first factor could be improved easily with minimal government aid and the third requires simply a more serious commitment on the part of Limi farmers to live there throughout the summer which would emerge if the yields were large. The matter of seeds, though, is somewhat more difficult. Due to the higher

* Although there have been smallpox inoculations, these have not been well received. For example, in 1974 a team came through Limi but the villagers did not permit inoculation saying they already had them and since they were not sick they would rather hold on to the medicine until they needed it.
altitude in this area the growing season is shortened and the risk of losing a crop or obtaining very poor yields is a real one. The development of improved barley seeds which will produce good yields in a shorter growing season could not only open up this area but could also lead to the development of other areas at even higher elevations. Some of this can be begun with seeds used in areas like Dolpo where barley is traditionally grown at this and higher elevations, but I think a program to develop such seeds would be useful as it could ultimately improve and expand agriculture throughout the northern part of Nepal. The Limi people claim that the Chinese have been able (after about five years of work) to grow barley in the area around Lake Manasarowa, a high altitude area which previously was entirely pasture land. Barley has also been developed which will grow in Phari, Tibet at over 14,000'.

The entire issue of improving agriculture in the mountain areas is one which deserve serious attention. Even though the output from such land can never equal the productivity of Terai land, careful nurturance of the economic situation in remote mountain areas like Limi could prevent the impoverishment of traditional economies and thus avoid social dislocation and out-migration. At some later time I will discuss the question of agricultural development in Limi in more detail, particularly with respect to the social problems involved.

Another direction that should be considered in Limi is a program to preserve the pine and birch forests around Limi. These are used for both firewood and for carpentry with no counter-balancing program of aorestation. Unless long term action is taken, Limi may end up like many areas in the midlands with serious wood and erosion problems. The answer in this case does not seem to be the prohibition of the use of wood for crafts since so much of the income of the area and its trade with Tibet is directly concerned with wood products. However, even a modest program of aorestation would balance the present use of lumber resources in Limi.

I have downplayed the importance of pastoralism with regard to the future of Limi because of the winter pasture problems mentioned above. However, it is my contention that the inhabitants of Limi would rapidly increase their herds if H.M.G. was able to procure a long-term pasture use treaty with China. Limi traditionally has excellent, centrally organized, pasture rotation systems, so that I would estimate that even if their herds increased to about 10,000 - 13,000 sheep the ecological balance could be maintained. Given the excellent quality of this wool and the growing scarcity of wool as a international commodity, this would be a very important source of income for the area, particularly if the salt trade becomes less profitable.
Although only indirectly related to the question of future subsistence problems, education can obviously play an important role in the development of an area such as Limi. The people there are eager to improve their competence in Nepali and would welcome a more expanded program for their children. Furthermore, since there is an on-going tradition of literacy in Tibetan, I believe that Nepali primers written in Tibetan and bilingual glossaries would be welcomed by the adults who speak some Nepali and want to improve their spoken skills and learn to read. Several asked me if I had any such materials. On an interrum basis, that is until literacy in Nepali is more widespread, the distribution of "technical" pamphlets with both Tibetan and Nepali might also be useful.

Since population growth looms as one of the most serious factors affecting the adaptation of the inhabitants of Limi, any action which would bring family planning ideas or techniques to this valley will be very beneficial. The population is receptive to family planning and during my stay there many men and women requested birth control mechanisms from me.